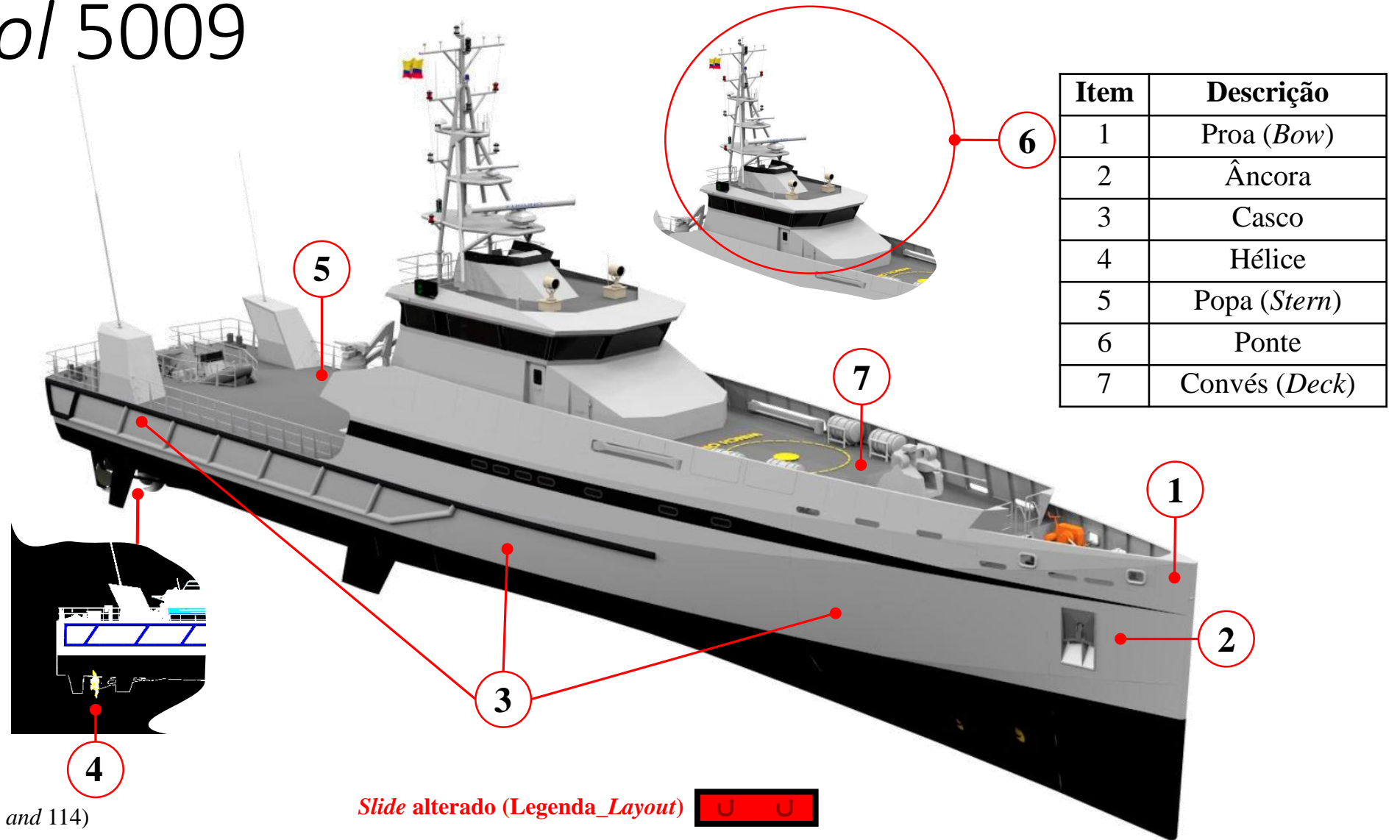


# Stan Patrol 5009



Item	Descrição
1	Proa ( <i>Bow</i> )
2	Âncora
3	Casco
4	Hélice
5	Popa ( <i>Stern</i> )
6	Ponte
7	Convés ( <i>Deck</i> )

- Predictor de Produtividade
- Muther  Astinave
- Ship type
- Cálculo CGT
- Bibliografia
- Nomenclatura
- Productivity
- Blocks and Sections
- Estrutura do casco (*sections 112, 113 and 114*)
- Layout
- Matriz de para (Volume)
- Bill of Material (*Groups*)

- Layout – Proposta Walther / 06/06/2018
- Keywords
- Algoritmo Evolutivo
- Layout – Proposta Walther / 16/06/2018
- Layout – Parâmetros de cálculo – 1 *block* (seção 112) (Matriz de Fluxo)
- Layout – Parâmetros de cálculo – todas as seções (Matriz de Fluxo)

Slide alterado (Legenda\_Layout)

## ***Bulkhead (BHD) fabrication***

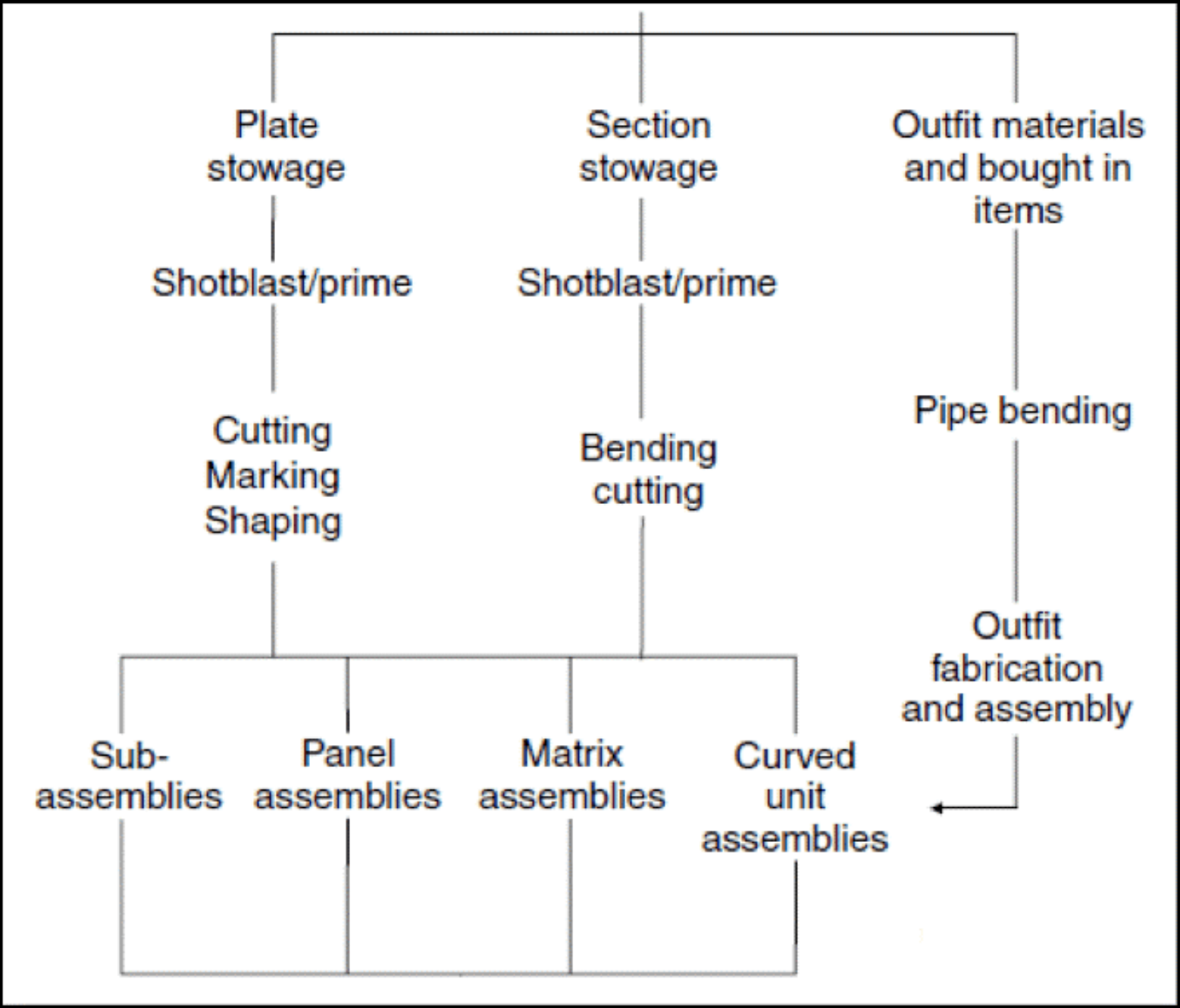
***<https://www.linguee.com.br/ingles-portugues/traducao/bulkhead.html>***

- *Bulkhead fitting* —encaixe do anteparo.
- *Bulkhead deck* —pavimento das anteparas.
- *Bulkhead door* —porta da antepara.

**SOBENA (Sociedade Brasileira de Engenharia Naval)**

***adjustable matrix-jig workstation***

**Um gabarito de instalação está disponível para habilitá-lo a uma instalação segura e autônoma do sistema completo**

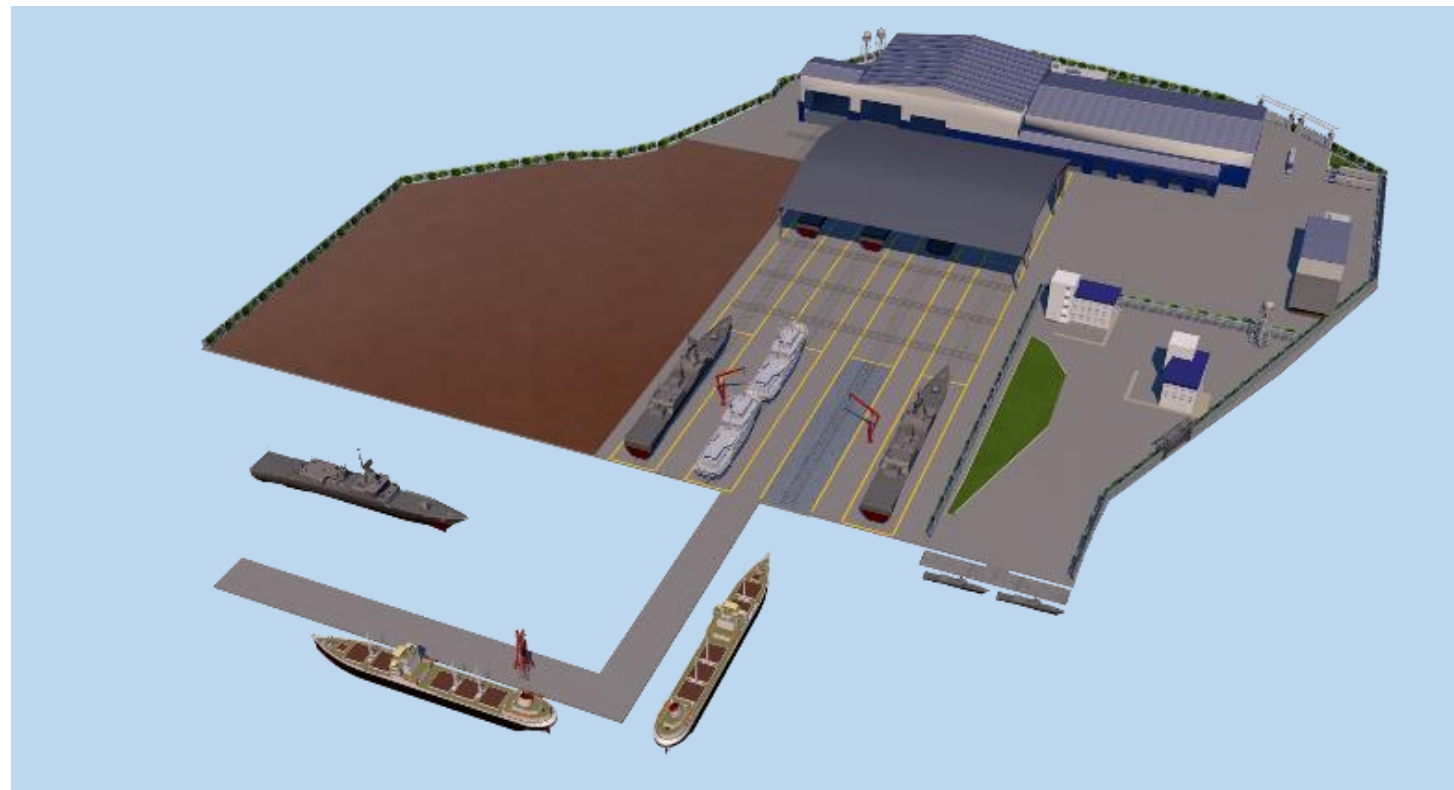


# KEYWORDS

- *Facility layout planning (FLP);*
- *Shipyards layout;*
- *Alignment;*
- *Genetic algorithm (GA);*
- *Stochastic growth algorithm.*

Wazzolini

Rosangela11



- [http://www.ingentaconnect.com/content/sname/jspd/pre-prints/content-jspd\\_160046](http://www.ingentaconnect.com/content/sname/jspd/pre-prints/content-jspd_160046)

C:\Usuários\walther\Documentos\Simulação Pós 2017\Arquivos ASTINAVE 24082017\GÉNESIS

*What does the abbreviation "BHD fabrication" mean?*

*What does the abbreviation "Sdn Bhd" mean?*

***Building Heavy Dock (BHD) / Building Heavy Division (BHD) / Bachelor Housing Division (BHD) / Berhad (BHD)***

***BulkHead – a dividing wall or barrier between compartments in a ship (Production line for bulkheads) BHD***

# Algoritmo evolutivo

- Em **algoritmos genéticos** a **recombinação** ou *crossover* é um **operador genético usado para variar a programação** de um **cromossomo** ou cromossomas de uma **geração** para a próxima. É análogo à reprodução e recombinação genética, sobre as quais os algoritmos genéticos são baseados. **Uma recombinação é um processo de se pegar mais de uma solução progenitora e produzir uma solução descendente a partir deles. Existem métodos para a seleção dos cromossomos.**
- <https://www.obitko.com/tutorials/genetic-algorithms/portuguese/tsp-example.php>

# Métodos de seleção de cromossomos para o cruzamento

- 1) Amostragem estocástica uniforme (*Stochastic universal sampling*) O indivíduo é selecionado com base em sua aptidão. A probabilidade de um indivíduo ser selecionado aumenta proporcionalmente à medida de sua aptidão em relação aos demais candidatos a progenitor. Os indivíduos são mapeados em segmentos contíguos de uma reta proporcionais à sua aptidão.
- 2) Método da Roleta (*Roulette wheel selection*) (SCX) Também é conhecido como seleção proporcional à aptidão (*Fitness-Proportionate Selection*). O indivíduo é selecionado com base em sua aptidão. A probabilidade de um indivíduo ser selecionado aumenta proporcionalmente à medida de sua aptidão em relação aos demais candidatos a progenitor. Difere da amostragem estocástica uniforme simplesmente por ser em uma roleta viciada ao invés de uma reta.[1]
- 3) Seleção Boltzmann (*Boltzmann selection*) Estabelece uma pressão de seleção variável de acordo com o tempo da pesquisa de solução. Inicialmente, permite a reprodução de indivíduos com baixa aptidão de modo a manter a diversidade da população e evitar convergências prematuras. Com o tempo, vai aumentando a pressão seletiva de modo a favorecer cada vez mais os indivíduos com aptidão mais alta.[2]
- 4) Método do Torneio (*Tournament selection*) Consiste em selecionar uma série de indivíduos da população e estabelecer entre eles uma competição pelo direito de ser um dos progenitores.[1]
- 5) Seleção por *ranking* (*Rank selection*)
- 6) Seleção Truncada (*Truncation selection*)
- 7) *Steady state selection*
- 8) Seleção local (*Local selection*)
- 9) *Partially Mapped Crossover* (PMX)

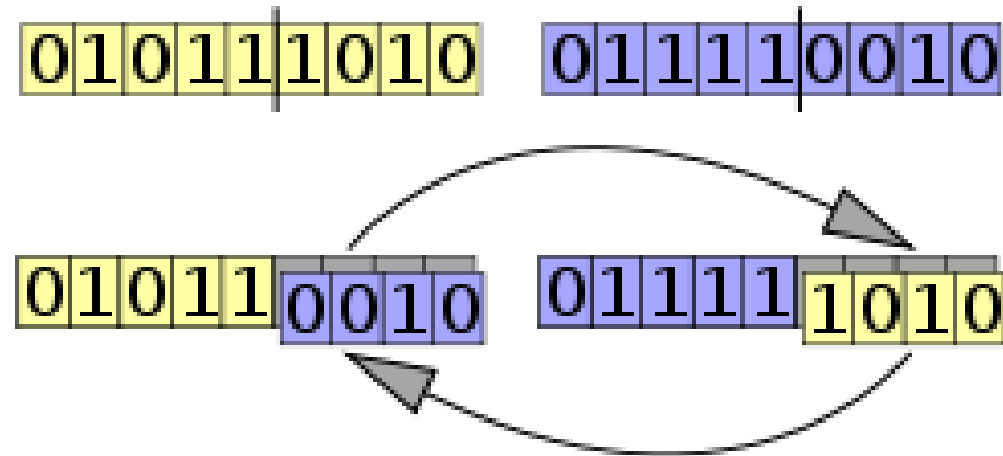
# Seleção local (*Local selection*)

## Técnicas de recombinação

Muitas técnicas de recombinação para organismos existem que usam diferentes estruturas de dados para armazenar elas mesmas.

## Recombinação em um ponto

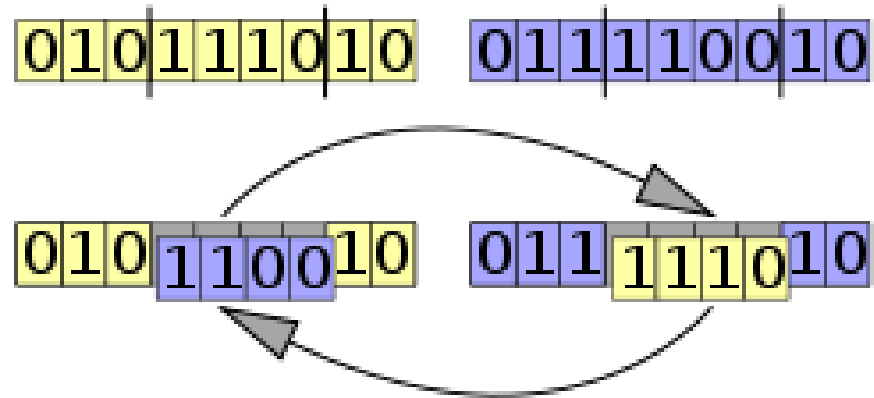
Um único ponto para recombinação é selecionado em ambos os organismos progenitores.  
Todos os dados além do ponto selecionados são trocados entre os progenitores.  
Os organismos resultantes são os filhos:





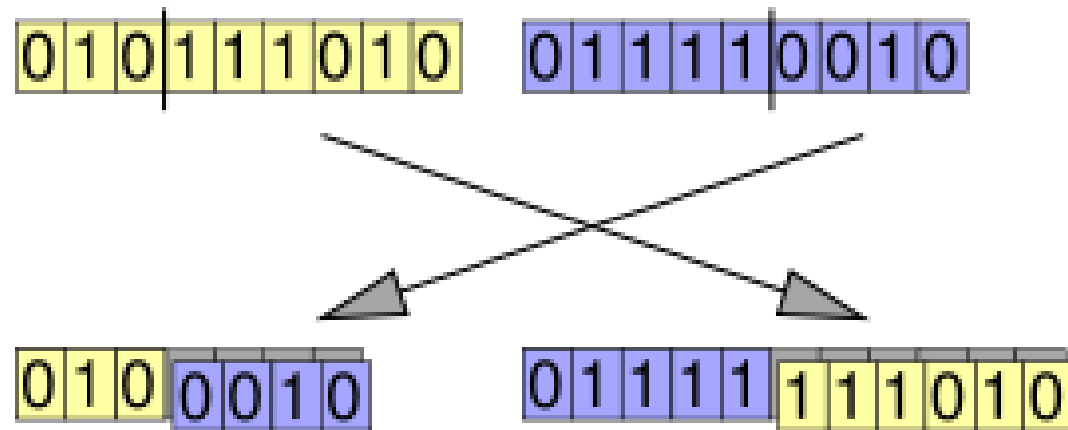
## Recombinação em dois pontos

A recombinação em dois pontos necessita que dois pontos sejam selecionados nas cadeias dos organismos progenitores. Tudo que está entre estes dois pontos é trocado entre os progenitores resultando nos filhos:



## "Corte e emenda"

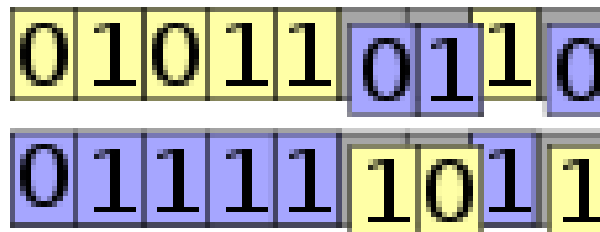
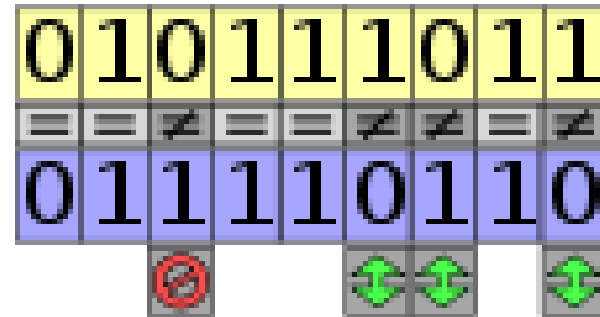
Outra variação de recombinação, a abordagem "corte e emenda", resulta na troca de comprimento entre os filhos. A razão para esta diferença é que se escolhe o ponto de corte de cada progenitor separadamente.



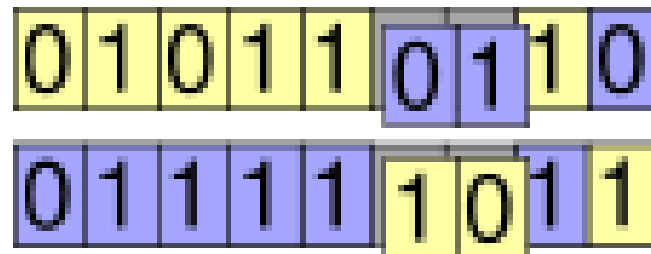
## Recombinação uniforme e recombinação metade uniforme

Em ambos estes esquemas os progenitores se combinam para formar seus descendentes.

No esquema da recombinação uniforme (UX do inglês Uniform Crossover), os bits do vetor são comparados individualmente entre ambos progenitores. Os bites se intercambiam com uma probabilidade fixada, usualmente 0.5.



No esquema da recombinação metade uniforme (HUX do inglês Half Uniform Crossover), exatamente a metade dos bits que são diferentes são trocados. Por isto se faz necessário se calcular a distância de Hamming (número de bits diferentes). Este número se divide por dois, e o número resultante é a quantidade de bits diferentes que tem que ser intercambiados entre os progenitores.



# Recombinação com três progenitores

- 1) Nesta técnica, o descendente é derivado a partir de três pais. Eles são escolhidos aleatoriamente. Cada bit do primeiro pai é verificado com o bit do segundo pai se eles são os mesmos. Se são os mesmos então o bit é levado para a prole de outro modo o bit do terceiro pai é levado para a prole. Por exemplo, os seguintes três pais:
- 2) pai1 1 1 0 1 0 0 0 1 0
- 3) pai2 0 1 1 0 0 1 0 0 1
- 4) pai3 1 1 0 1 1 0 1 0 1
- 5) produzem a seguinte prole:
- 6) prole 1 1 0 1 0 0 0 0 1

# Recombinação para cromossomos ordenados

- 1) Dependendo de como o cromossoma representa a solução, uma troca direta não pode ser possível. Um desses casos é quando o cromossomo é uma lista ordenada, como uma lista ordenada das cidades a ser percorrida para o problema do caixeiro viajante. Existem muitos métodos de recombinação para cromossomos ordenados. A já mencionada recombinação de N-pontos pode ser aplicada para cromossomos ordenados também, mas isto sempre necessita de um reparo correspondente, na realidade, alguns métodos de recombinação ordenados derivam desta idéia. Contudo, algumas vezes uma recombinação de cromossomos produz recombinações que violam a restrição de ordenamento e portanto necessitam de ser reparados. Vários exemplos de operadores de recombinação (também operadores de mutação) são dados em [4]:
- 2) ***Partially matched crossover (PMX): Neste método, dois pontos de recombinação são selecionados aleatoriamente e o PMX atua posicionando trocas sábias. Os dois pontos de recombinação fornecem a seleção correspondente. Ela afeta o cruzamento pelas operações de troca, posição por posição. Neste método os pais são mapeados para o outro, portanto, também se pode chamar *partially mapped crossover*. [5]***
- 3) *Cycle crossover (CX)*: Começando em qualquer gene  $i$  no progenitor 1, o  $i$ -ésimo gene no progenitor 2 torna-se substituído por ele. O mesmo é repetido para o gene deslocado até que o gene que é igual ao primeiro gene inserido fica substituído (ciclo).
- 4) *Order crossover operator (OX1 ou OX)*: Uma parte de um dos progenitores é mapeada para uma porção do outro progenitor. A partir da porção substituída, o resto é preenchido pelos genes remanescentes, onde genes já presentes são omitidos e a ordem é preservada.
- 5) *Order-based crossover operator (OX2 ou OBX)*

# Recombinação para cromossomos ordenados

- 6) *order-based crossover operator* (OX2 ou OBX)
- 7) *position-based crossover operator* (POS)
- 8) *voting recombination crossover operator* (VR)
- 9) *alternating-position crossover operator* (AP)
- 10) *sequential constrictive crossover operator* (SCX) [6]
- 11) Outros métodos possíveis incluem o *edge recombination operator*.

## **Recombinações tendenciosas**

Para os operadores de cruzamento que trocam seções contíguas dos cromossomos (por exemplo, k-ponto) a ordenação das variáveis pode tornar-se importante. Isto é particularmente verdadeiro quando boas soluções contêm blocos de construção que podem ser perturbados por um operador de crossover que não respeite esta ordem.

## Referências

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- 3) Sivanandam, S.N.; Deepa, S.N. (2008). *Introduction to Genetic Algorithms*. Berlin, Heidelberg, New York: Springer-Verlag. [ISBN 978-3-540-73189-4](#)
- 4) Pedro Larrañaga et al., "Learning Bayesian Network Structures by searching for the best ordering with genetic algorithms", IEEE Transactions on systems, man and cybernetics, Vol 26, No. 4, 1996.
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- 6) Ahmed, Zakir H. "Genetic Algorithm for the Traveling Salesman Problem Using Sequential Constructive Crossover Operator." International Journal of Biometric and Bioinformatics 3.6 (2010). Computer Science Journals. Web. <http://www.cscjournals.org/csc/manuscript/Journals/IJBB/volume3/Issue6/IJBB-41.pdf>.



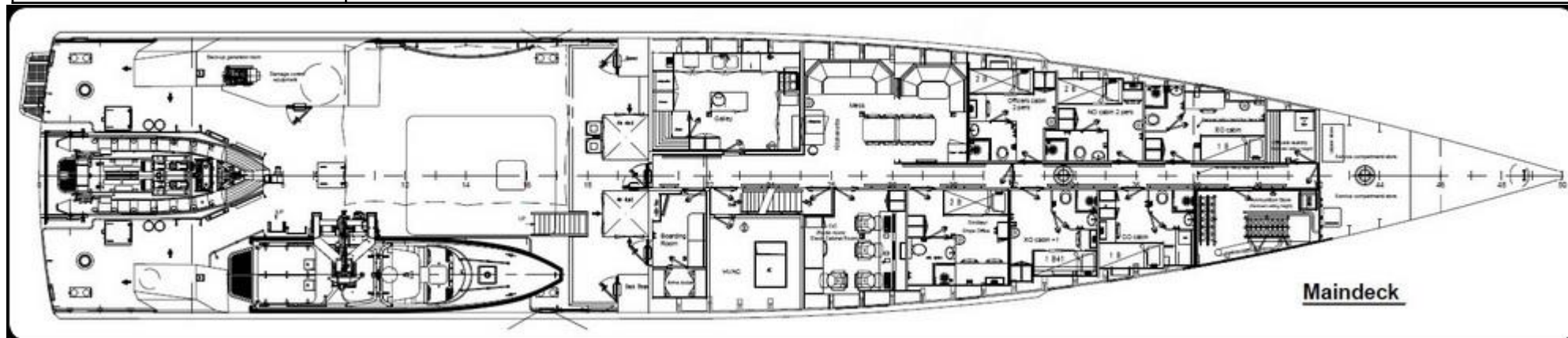
## Referências

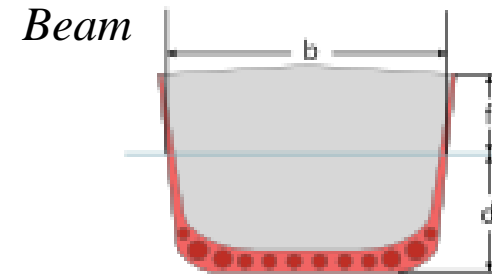
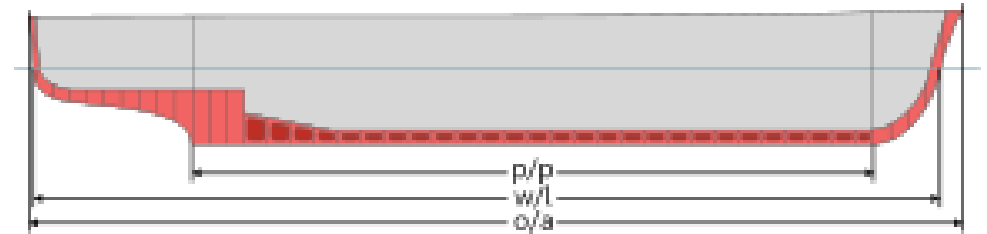
- 1) John Holland, *Adaptation in Natural and Artificial Systems*, University of Michigan Press, Ann Arbor, Michigan. 1975. ISBN 0-262-58111-6.
- 2) Larry J. Eshelman, *The CHC Adaptive Search Algorithm: How to Have Safe Search When Engaging in Nontraditional Genetic Recombination*, in Gregory J. E. Rawlins editor, *Proceedings of the First Workshop on Foundations of Genetic Algorithms*. pages 265-283. Morgan Kaufmann, 1991. ISBN 1-55860-170-8.
- 3) Tomasz D. Gwiazda, *Genetic Algorithms Reference Vol.1 Crossover for single-objective numerical optimization problems*, Tomasz Gwiazda, Lomianki, 2006. ISBN 83-923958-3-2.

# *STAN PATROL 5009 Type: PATROL VESSEL*



<i>Name of the ship</i>	<i>STAN PATROL 5009 (STANDARD)</i>
<i>Type of ship</i>	<i>PATROL VESSEL</i>
MMSI	(5009)
<i>Gross tonnage</i>	≈ 282 tons
DWT	≈ 66 tons
<i>Lenght (meter)</i>	50,1
<i>Beam (meter)</i>	9,32
<i>Crew</i>	28
<i>Builder</i>	DAMEN SHIPYARDS GROUP

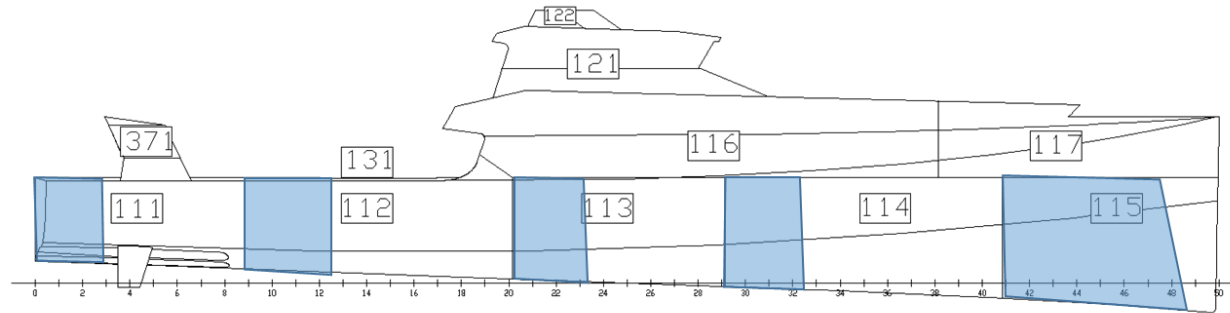




# *Blocks and Sections*

## *Bill of Material*

The beam of a ship is its width at the widest point as measured at the ship's nominal waterline. The beam is a bearing projected at right-angles from the fore and aft line, outwards from the widest part of ship. Beam may also be used to define the maximum width of a ship's hull, or maximum width including superstructure overhangs. **A dimensão *Beam* de um navio é a sua largura no ponto mais largo, medido na linha de flutuação nominal do navio. O *beam* também pode ser usado para definir a largura máxima do casco de um navio, incluindo as saliências da superestrutura.**



**Block 101**  
(67,37 tonnes)

**Block 102**  
(48,35 tonnes)

**Block 103**  
(11,07 tonnes)

**Block 104**  
(34,04 tonnes)

**Section 111**

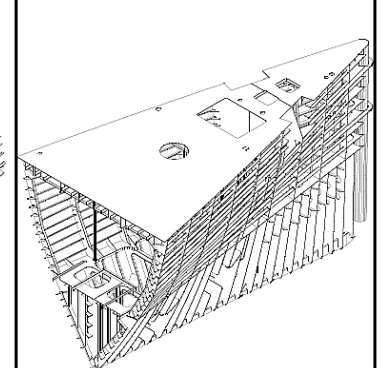
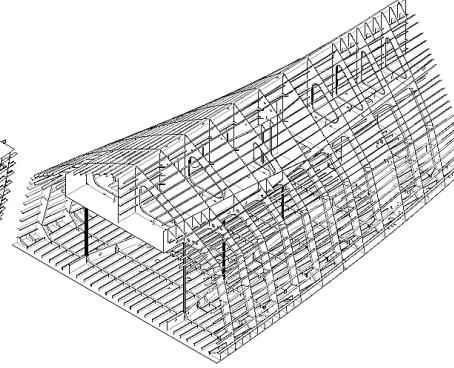
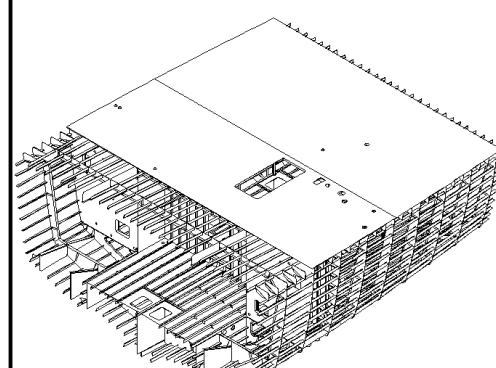
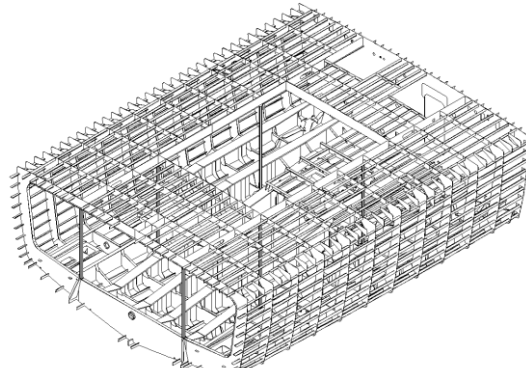
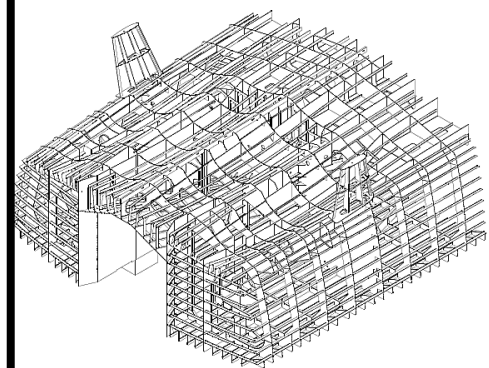
**Section 112**

**Section 113**

**Section 114**

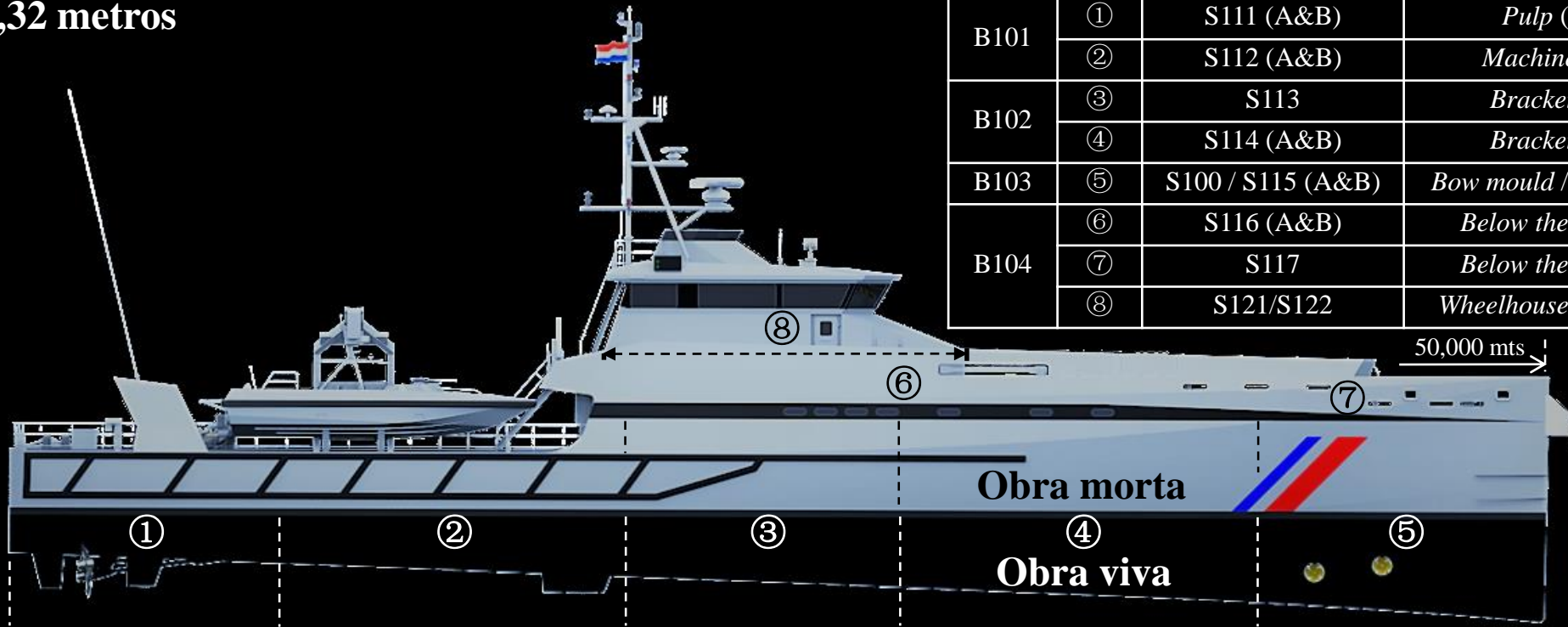
**Section 115**

**Section 116**  
**Section 117**  
**Section 121**  
**Section 122**

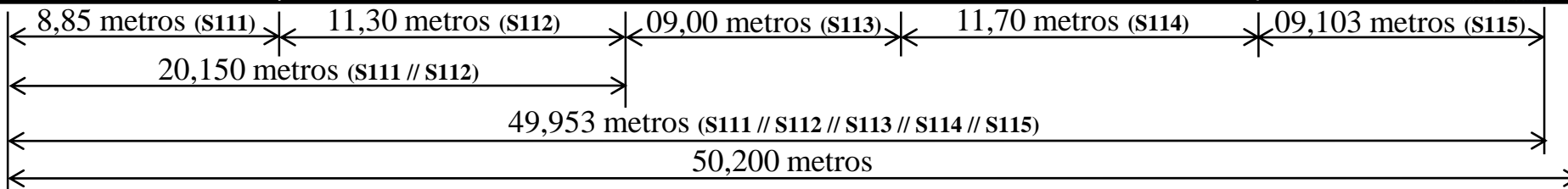


**Beam  $\approx$  9,32 metros**

**Beam O.A. ≈ 9,32 metros**

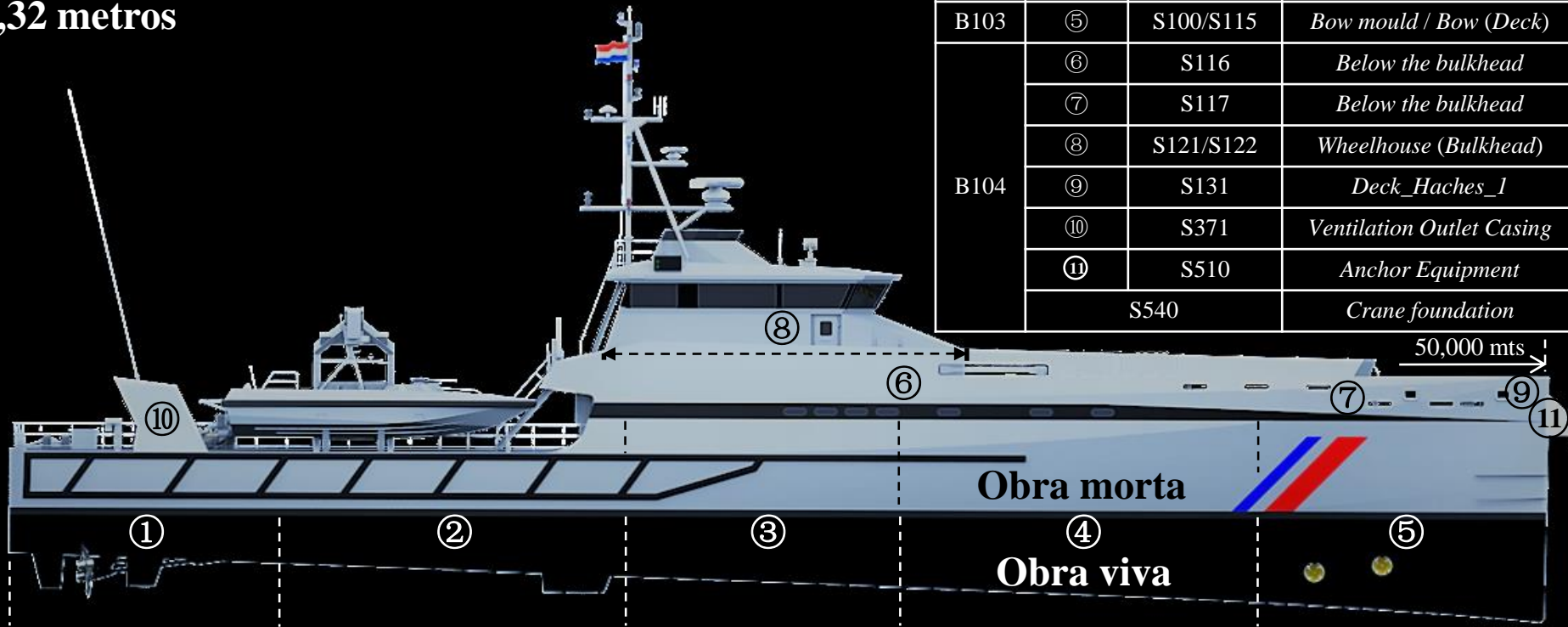


Block	Part	Section	Description
B101	①	S111 (A&B)	Pulp (Deck)
	②	S112 (A&B)	Machine House
B102	③	S113	Bracket / deck
	④	S114 (A&B)	Bracket / deck
B103	⑤	S100 / S115 (A&B)	Bow mould / Bow (Deck)
B104	⑥	S116 (A&B)	Below the bulkhead
	⑦	S117	Below the bulkhead
	⑧	S121/S122	Wheelhouse (Bulkhead)

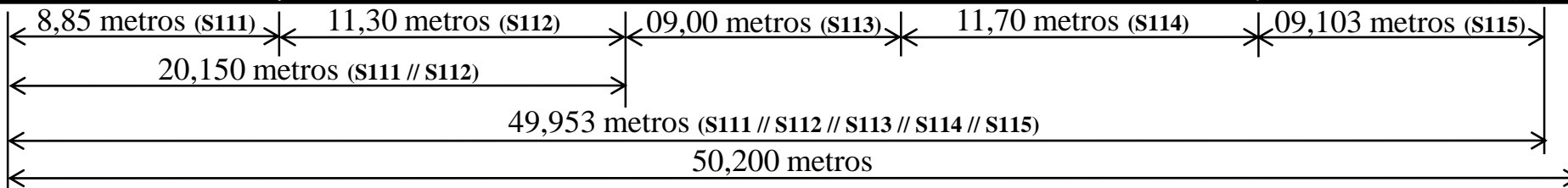


Section	Length	Weight	Weight (with solder)	Total hours	Section	Length	Weight	Weight (with solder)	Total hours
<b>Section 100 (Bow mould)</b>	<b>09,103 mts</b>	<b>08,41 ton.</b>		<b>240 hours</b>	<b>Section 115</b>	<b>09,103 mts</b>	<b>11,00 ton.</b>		<b>2.400 hours</b>
<b>Section 111</b>	08,85 mts	25,75 ton.	28,88 ton.	3.648 hours	<b>Section 116</b>	18,150 mts	21,22 ton.		2.592 hours
<b>Section 112</b>	11,30 mts	38,21 ton.	41,81 ton.	4.080 hours	<b>Section 117</b>	12,000 mts	07,98 ton.		2.304 hours
<b>Section 113</b>	09,00 mts	24,95 ton.	25,44 ton.	3.264 hours	<b>Section S121/S122</b>	11,800 mts	04,26 ton.		1.440 hours
<b>Section 114</b>	11,70 mts	22,47 ton.	22,89 ton.	3.216 hours	<b>Section 105 (Outfitting)</b>	-----	05,64 ton.		-----

**Beam O.A. ≈ 9,32 metros**



Block	Part	Section	Description
B103	⑤	S100/S115	Bow mould / Bow (Deck)
B104	⑥	S116	Below the bulkhead
	⑦	S117	Below the bulkhead
	⑧	S121/S122	Wheelhouse (Bulkhead)
	⑨	S131	Deck_Haches_1
	⑩	S371	Ventilation Outlet Casing
	⑪	S510	Anchor Equipment
		S540	Crane foundation



Section	Length	Weight	Weight (with solder)	Total hours	Section	Length	Weight	Weight (with solder)	Total hours
<b>Section 100 (Bow mould)</b>	<b>09,103 mts</b>	<b>08,41 ton.</b>		<b>240 hours</b>	<b>Section 115</b>	<b>09,103 mts</b>	<b>11,00 ton.</b>		<b>2.400 hours</b>
<b>Section 131</b>	-----	00,80 ton.		-----	<b>Section 116</b>	18,150 mts	21,22 ton.		2.592 hours
<b>Section 371</b>	-----	02,30 ton.		-----	<b>Section 117</b>	12,000 mts	07,98 ton.		2.304 hours
<b>Section 510</b>	-----	01,10 ton.		-----	<b>Section S121/S122</b>	11,800 mts	04,26 ton.		1.440 hours
<b>Section 540</b>	-----	00,20 ton.		-----	<b>Section 105 (Outfitting)</b>	-----	05,64 ton.		-----

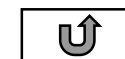
<i>Block</i>	<i>Block name</i>	<i>Weight [tonnes]</i>	<i>Beam</i>	<i>Length</i>	<i>Weight [tonnes] Block</i>
B101	<i>Aft Ship</i>	25,31	9,32 mts	8,85 mts	63,37
B101	<i>Aft Ship</i>	22,97		11,30 mts	
B101	<i>Aft Ship</i>	15,09		-----	
B102	<i>Mid Ship</i>	25,43		9,00 mts	48,35
B102	<i>Mid Ship</i>	22,92		11,70 mts	
B103	<i>Fore Ship</i>	11,07		9,103 mts	11,07
B104	<i>SuperStructure</i>	22,03		-----	34,04
B104	<i>SuperStructure</i>	8,01		-----	
B104	<i>SuperStructure</i>	4,00		-----	
<b>Total Weight</b>		156,83		9,32 mts	≈ 50,00 mts

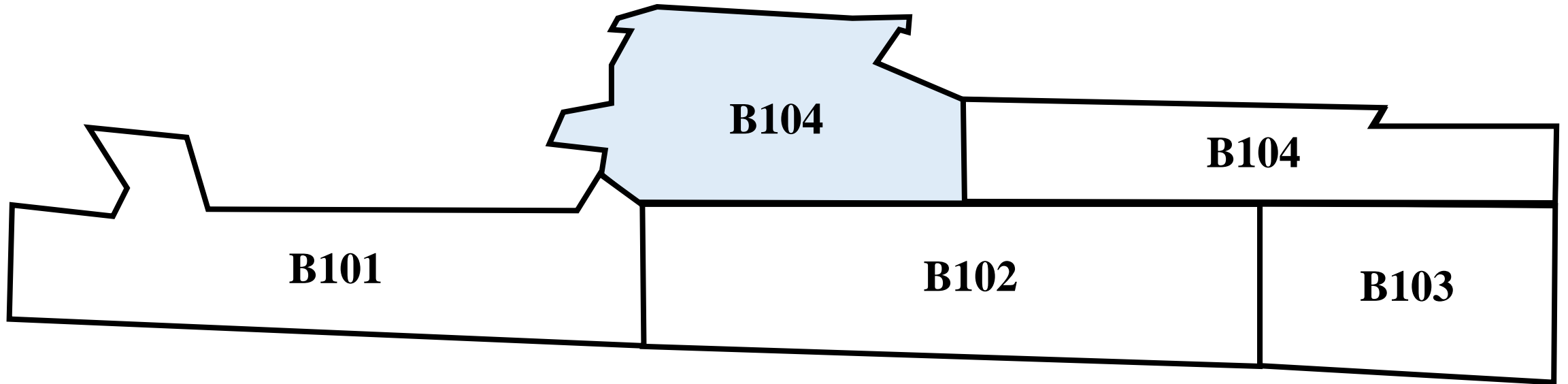
Model – 5009 (Beam O.A. ≈ 9,32 metros)

\*\* Beam ≈ 9,32 metros

Length ≈ 11,70 metros (máximo)

Weight [tonnes] Block ≈ 63,37 (Ponte Rolante ≈ 100 tonnes)





Cabine  
Parte do *Block* 104





Estrutura do casco (*sections 112, 113 and 114*)

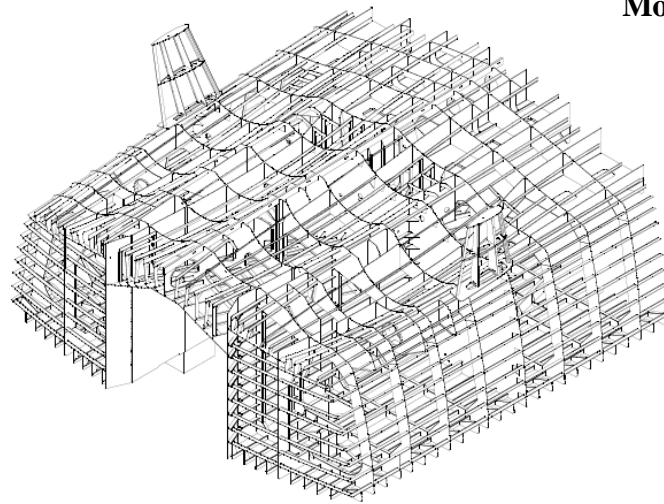
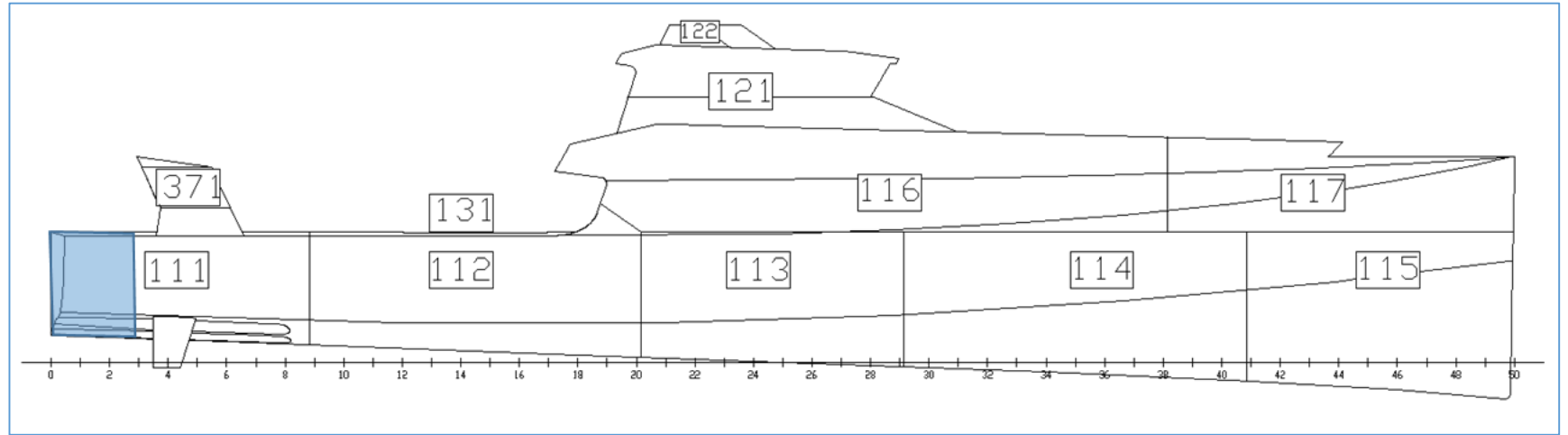
*Sections*



*Sections*



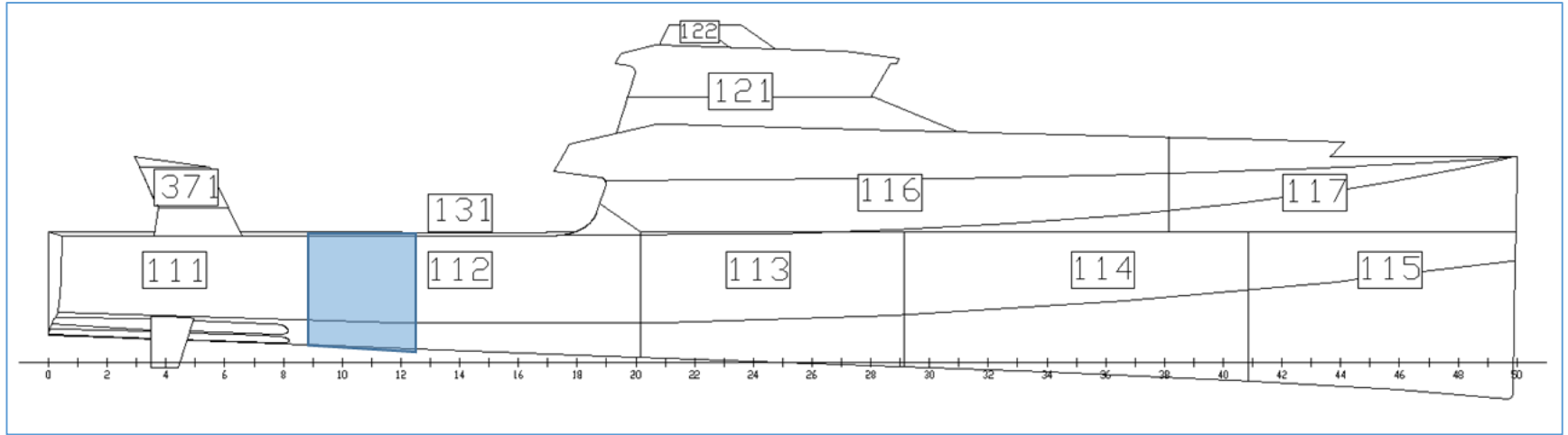
# Block 111



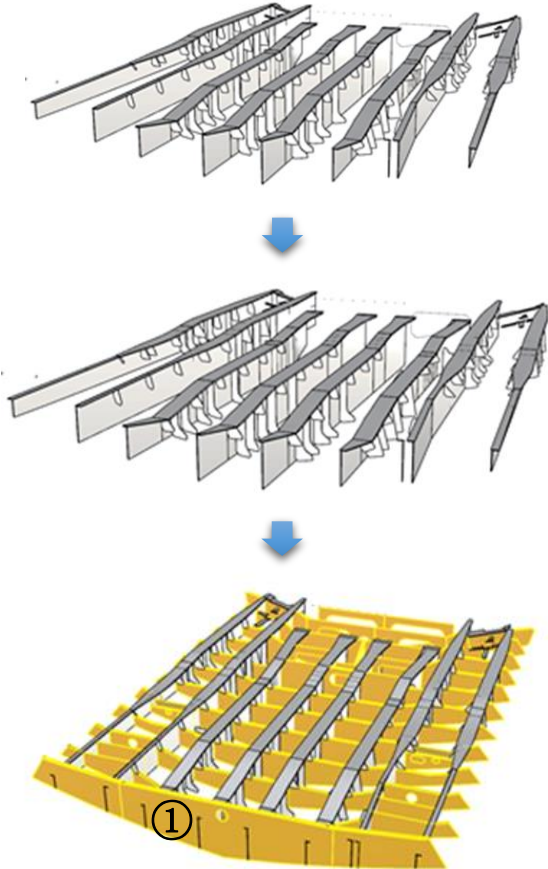
**Montaje de Planchas de Fondo**



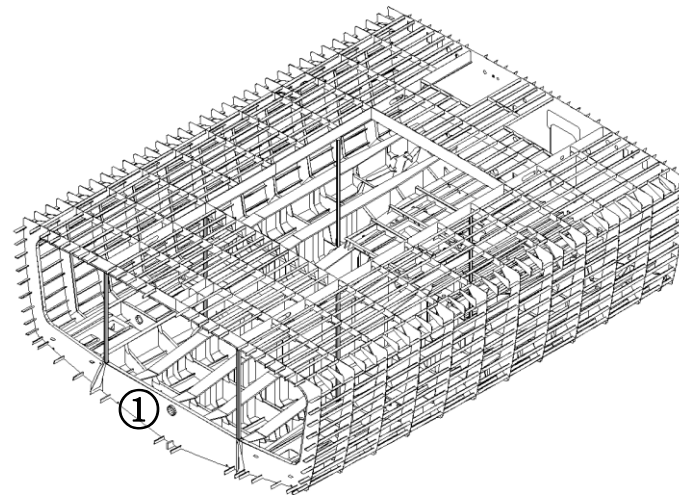
# Block 112



Montagem e solda do sub-bloco de fundo

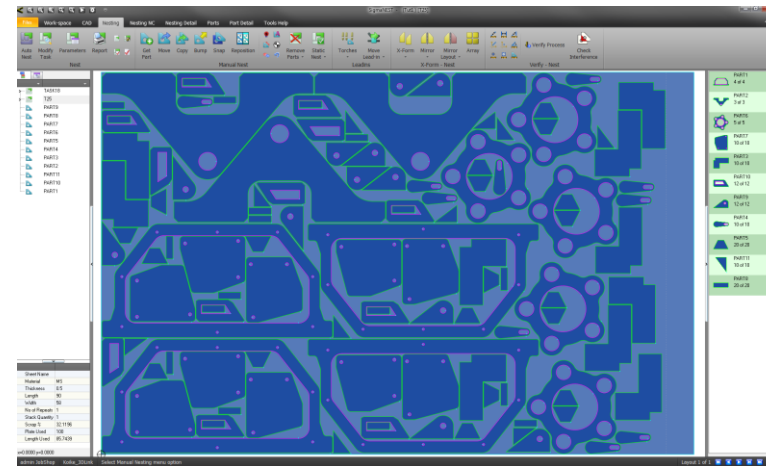
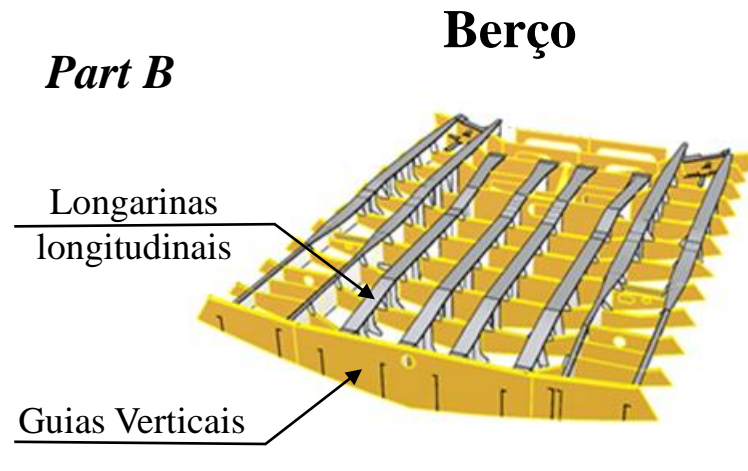


Acople Sección A – B del bloque



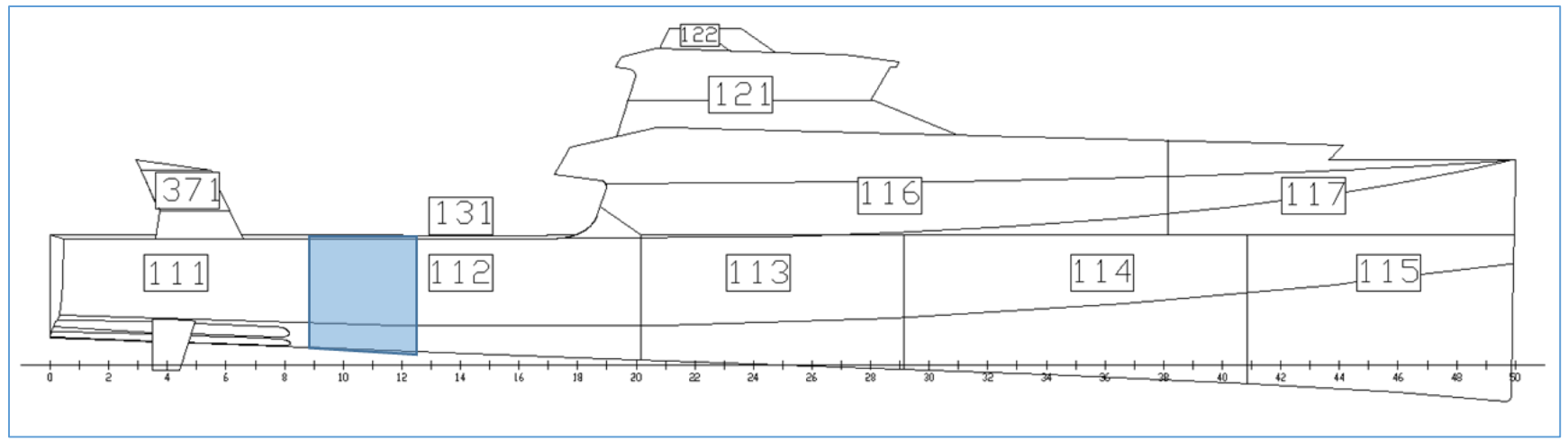
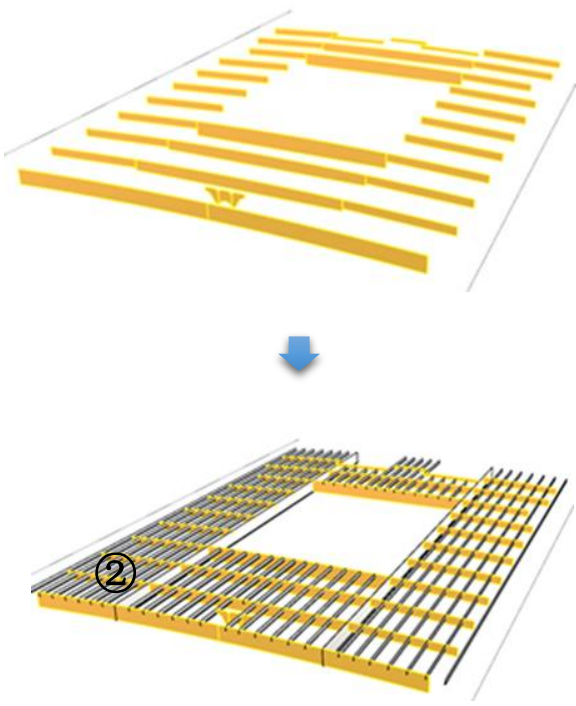
# Berço do Bloco 112 – *Bill of Materials* (BOM) e *Bill of Process* (BOP)

- Corte das longarinas longitudinais e pré-montagem – Damen (✓), caso contrário é necessário investimento em máquina de corte e *software* de *Nesting* para o melhor aproveitamento das chapas.
- Corte das guias verticais – Damen (✓), caso contrário é necessário investimento em máquina de corte e *software* de *Nesting* para o melhor aproveitamento das chapas.

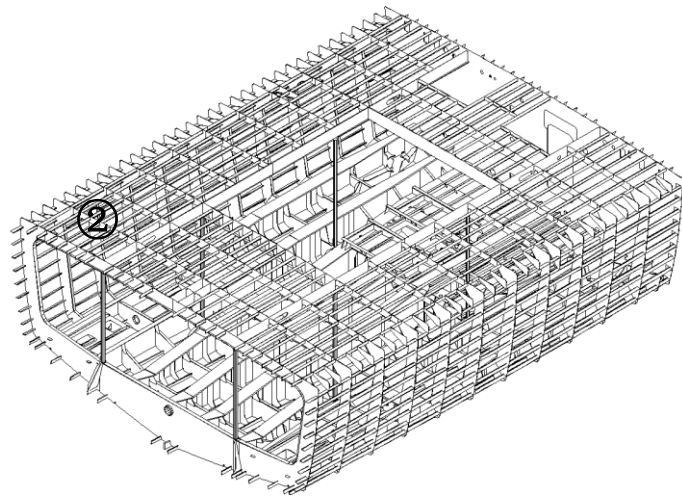


# Block 112

Montagem e solda do sub-bloco do convés (*deck*)

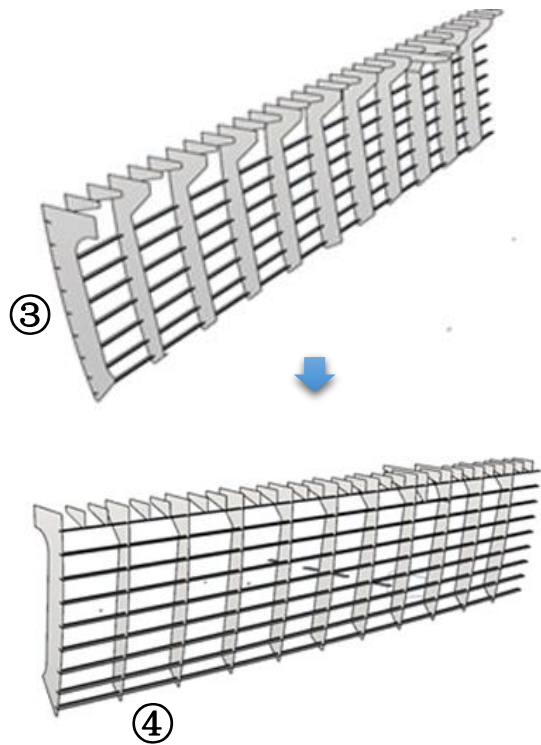
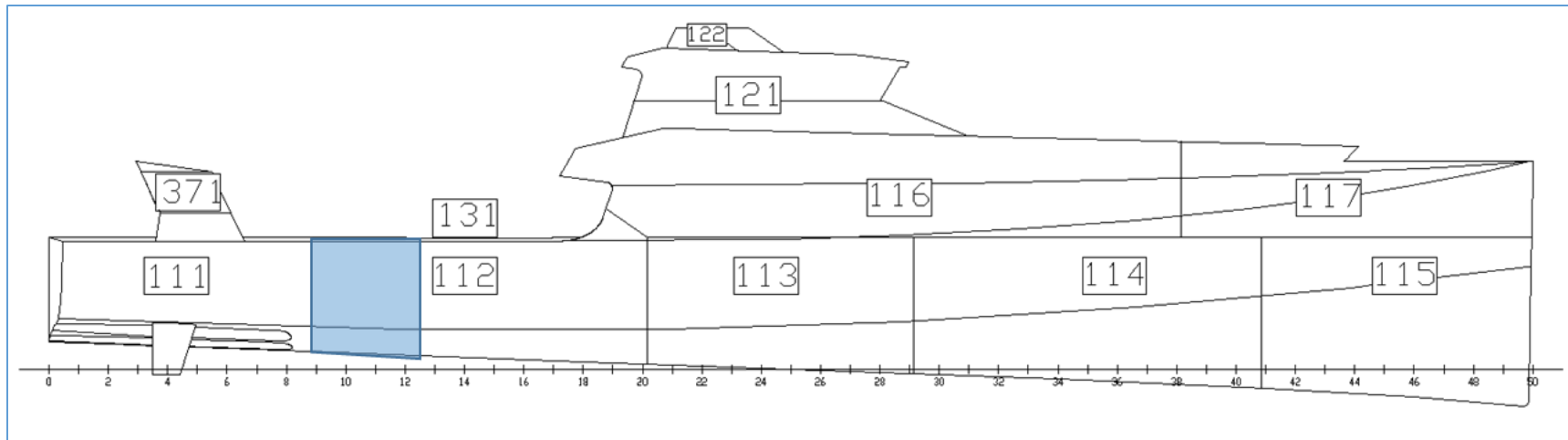


Acople Sección A – B del bloque

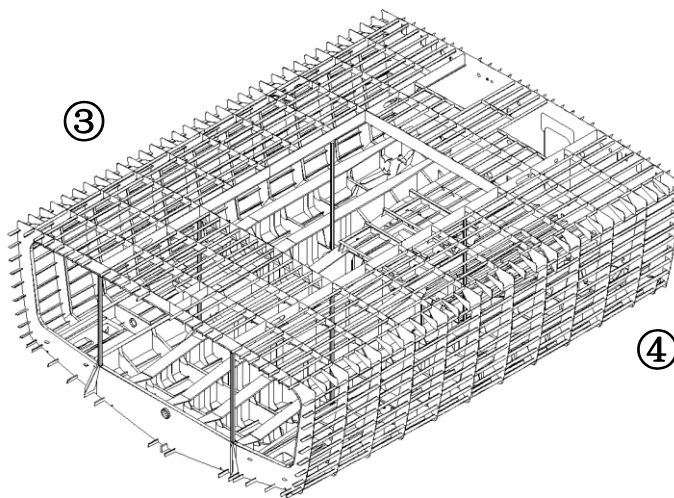


# Block 112

montagem e solda do sub-bloco do costado de estibordo e bombordo



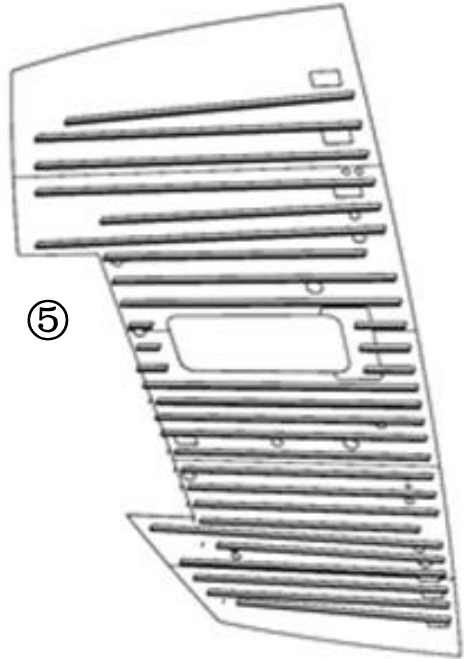
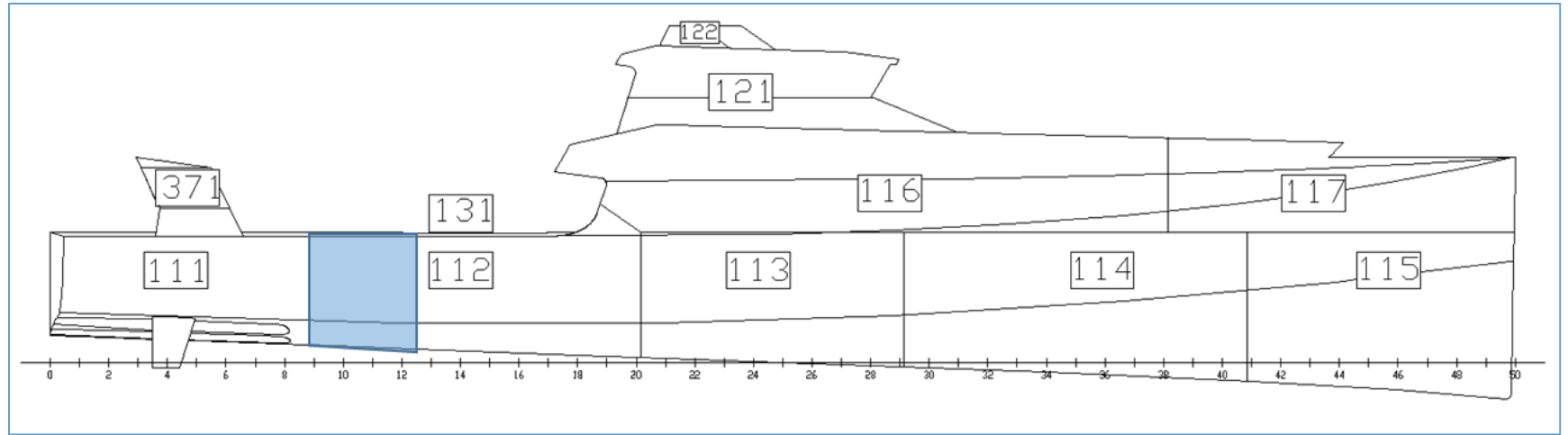
Acople Sección A – B del bloque



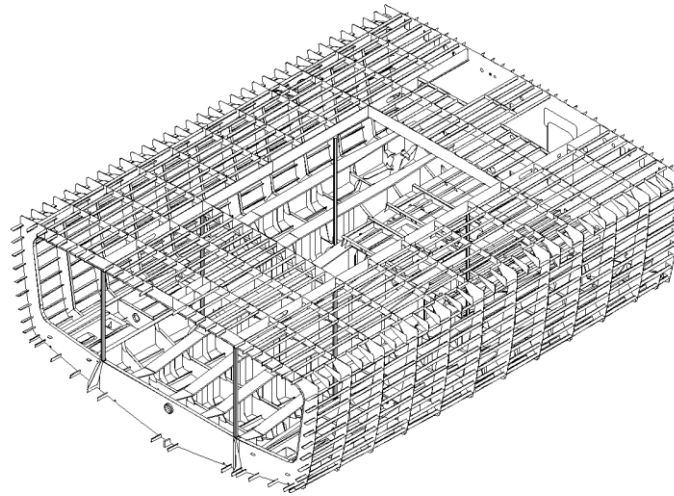


# Block 112

Montagem e solda do sub-bloco da antepara

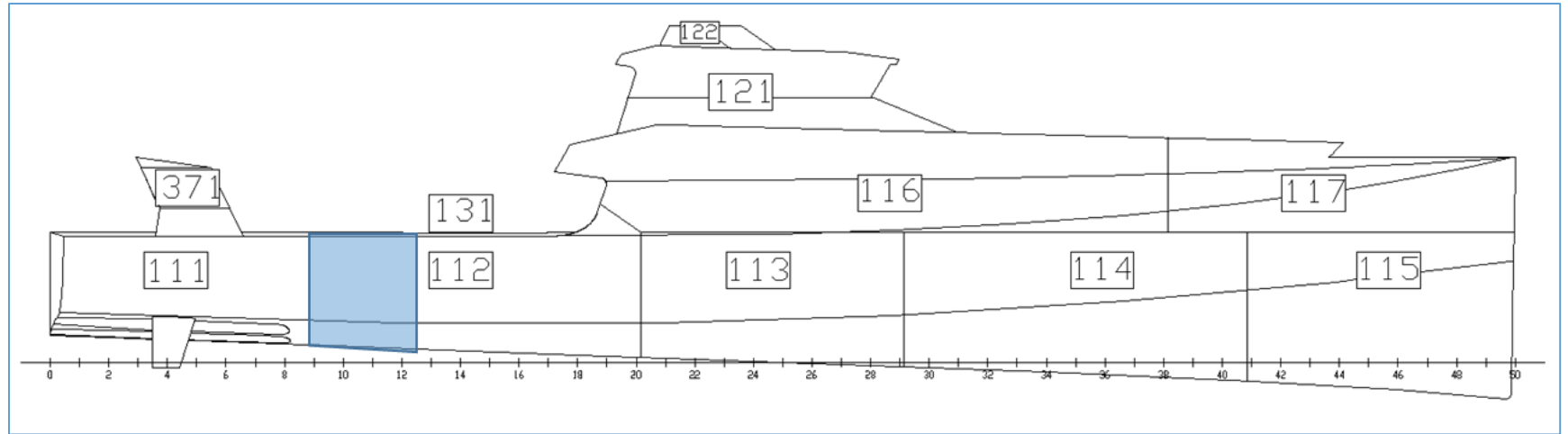
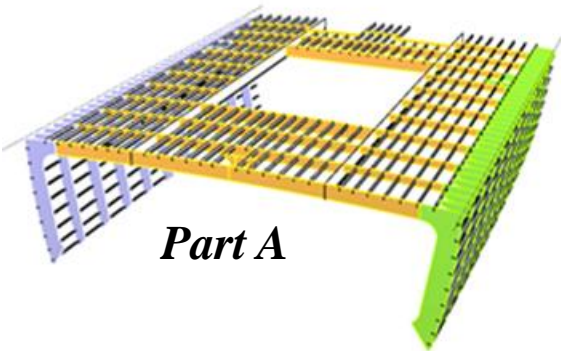


Acople Sección A – B del bloque

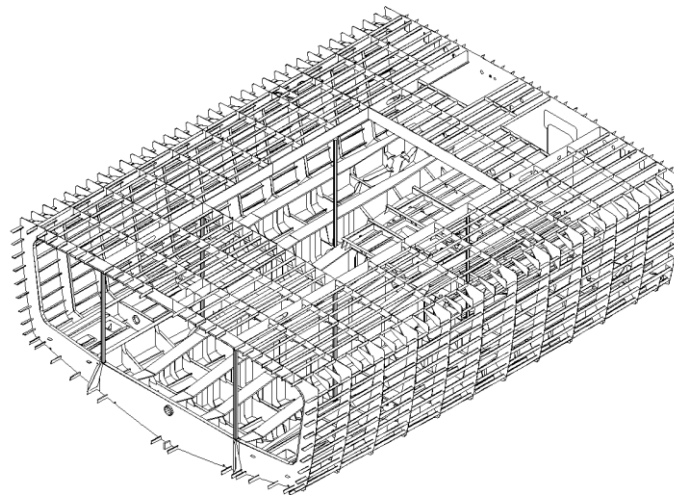


# Block 112

União dos sub-blocos para conformar o bloco 112

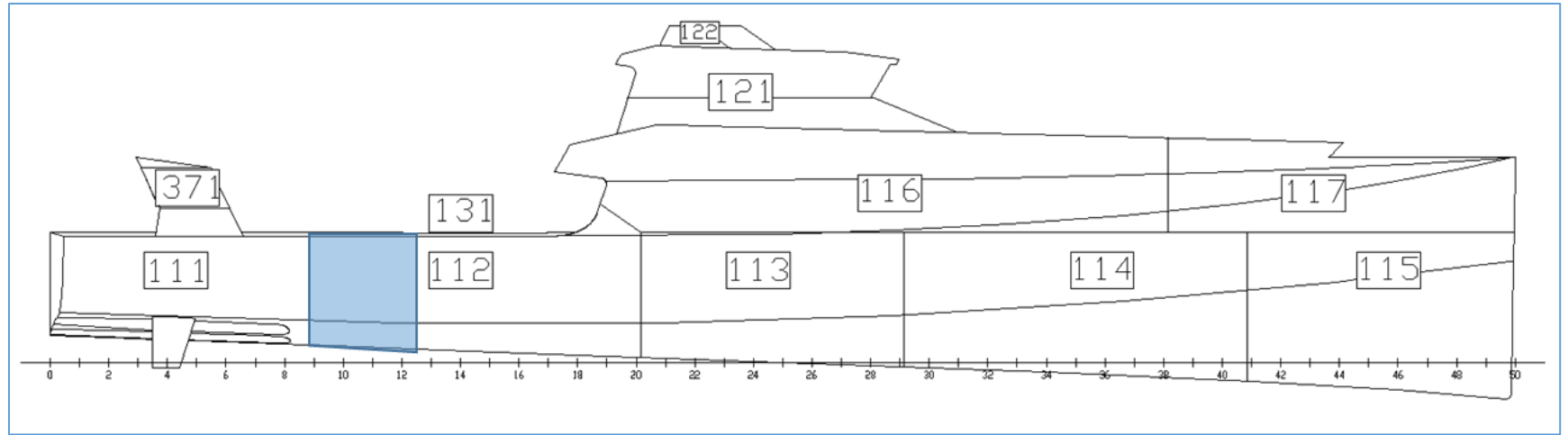
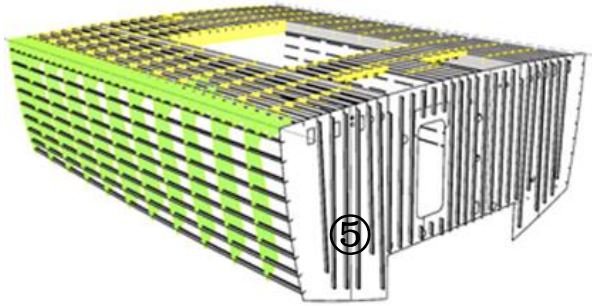


Acople Sección A – B del bloque

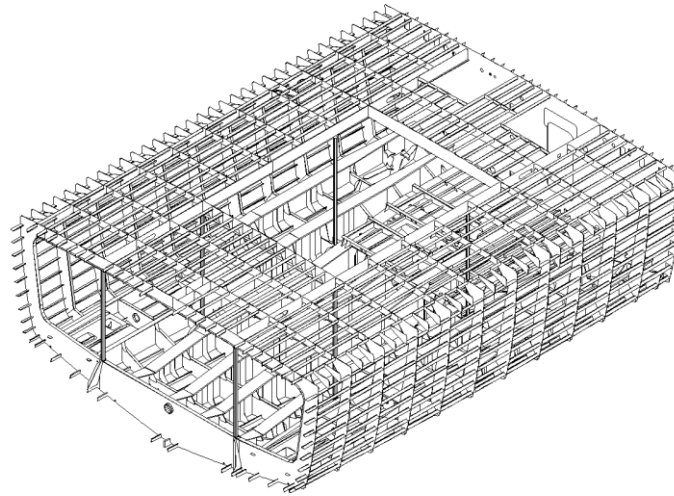


# Block 112

União dos sub-blocos para conformar o bloco 112

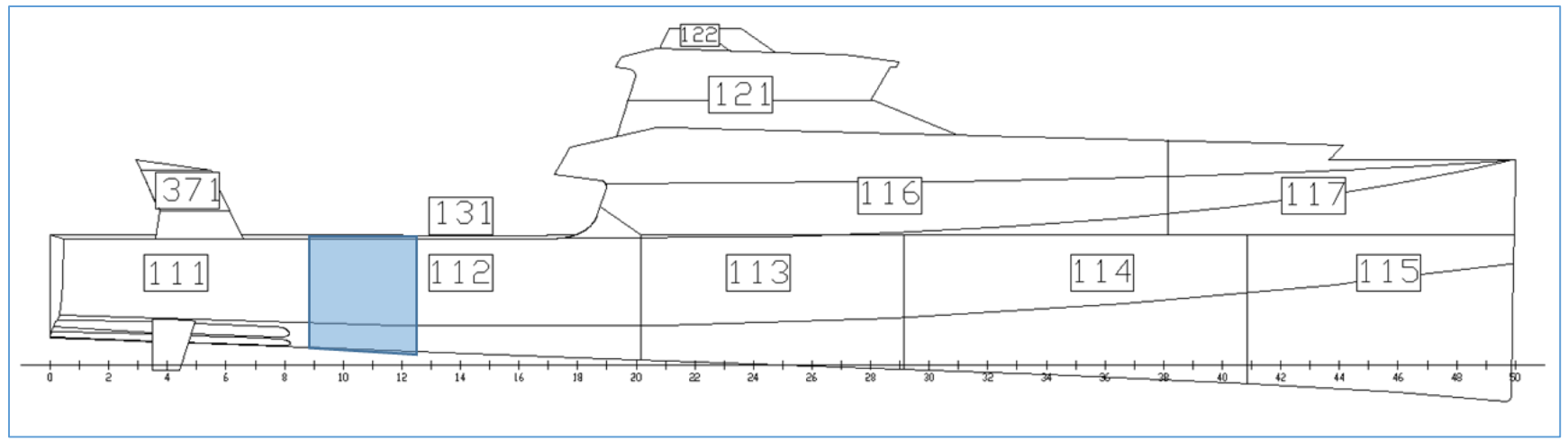
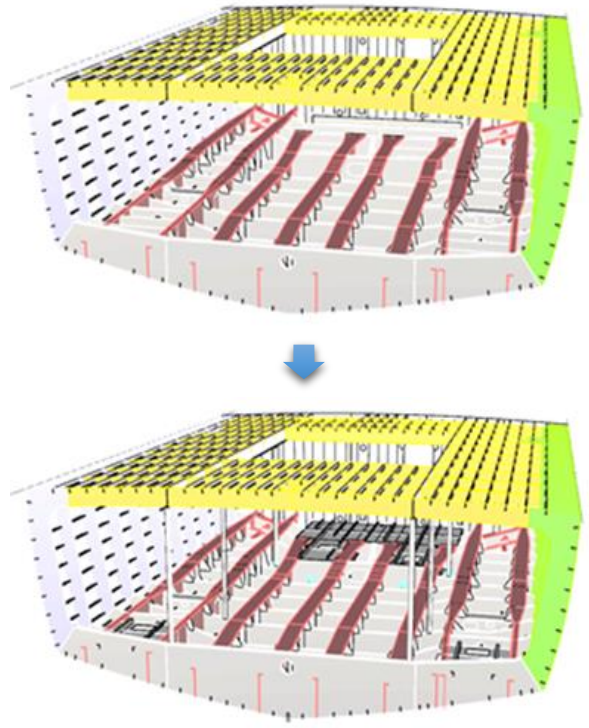


Acople Sección A – B del bloque

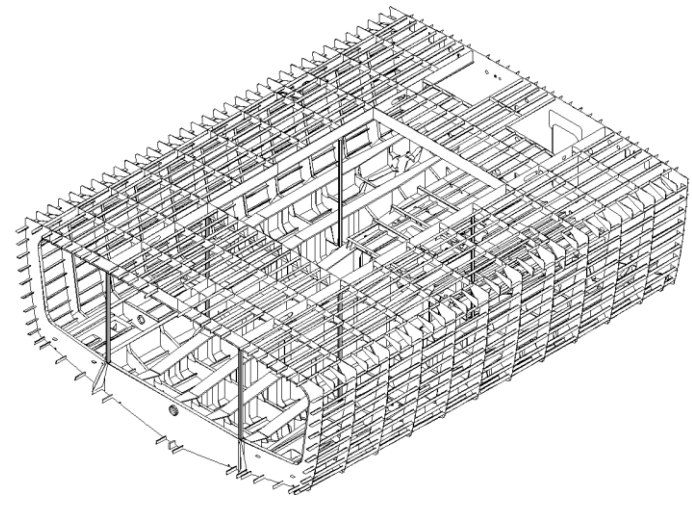


# Block 112

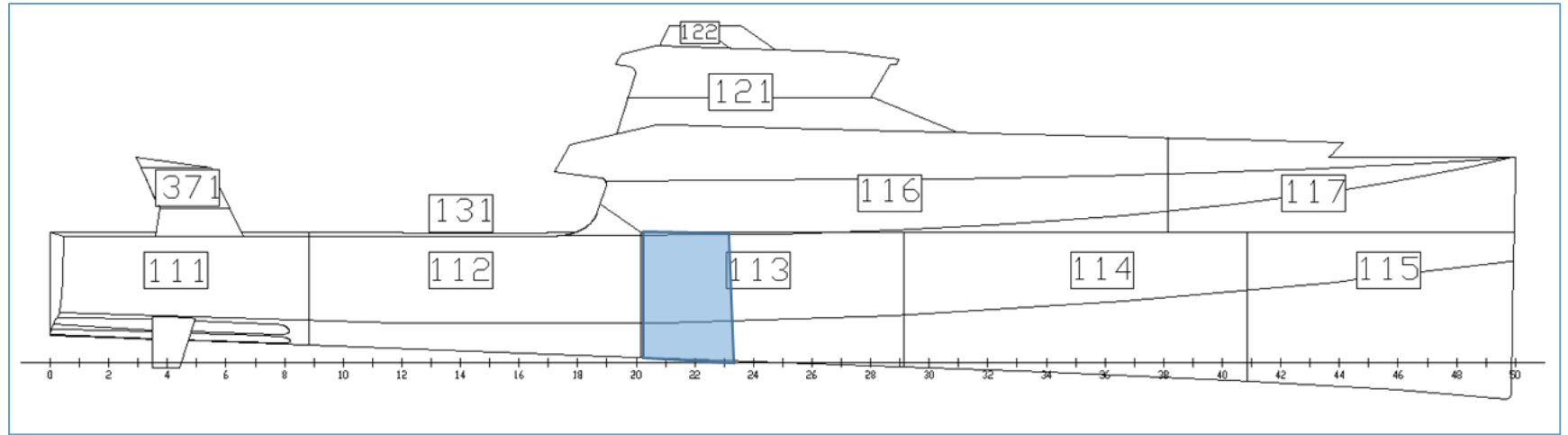
União dos sub-blocos para conformar o bloco 112



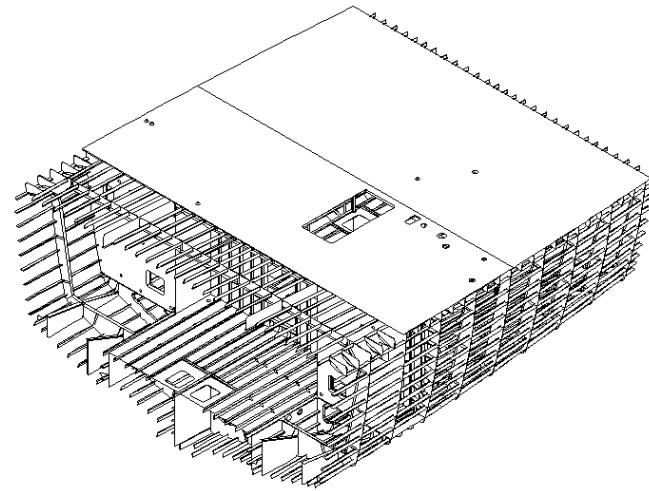
Acople Sección A – B del bloque



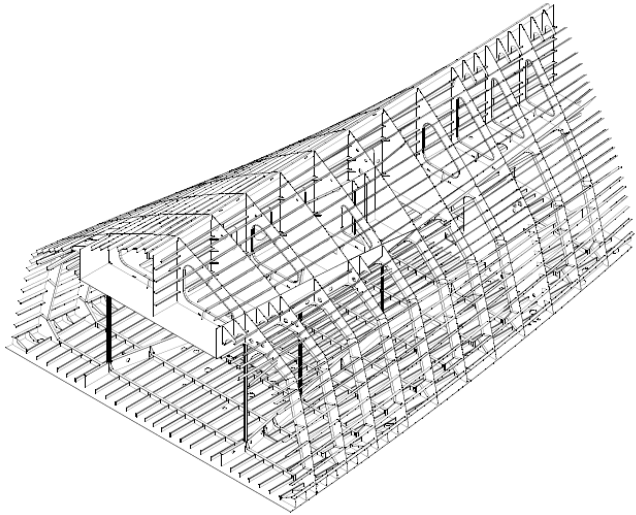
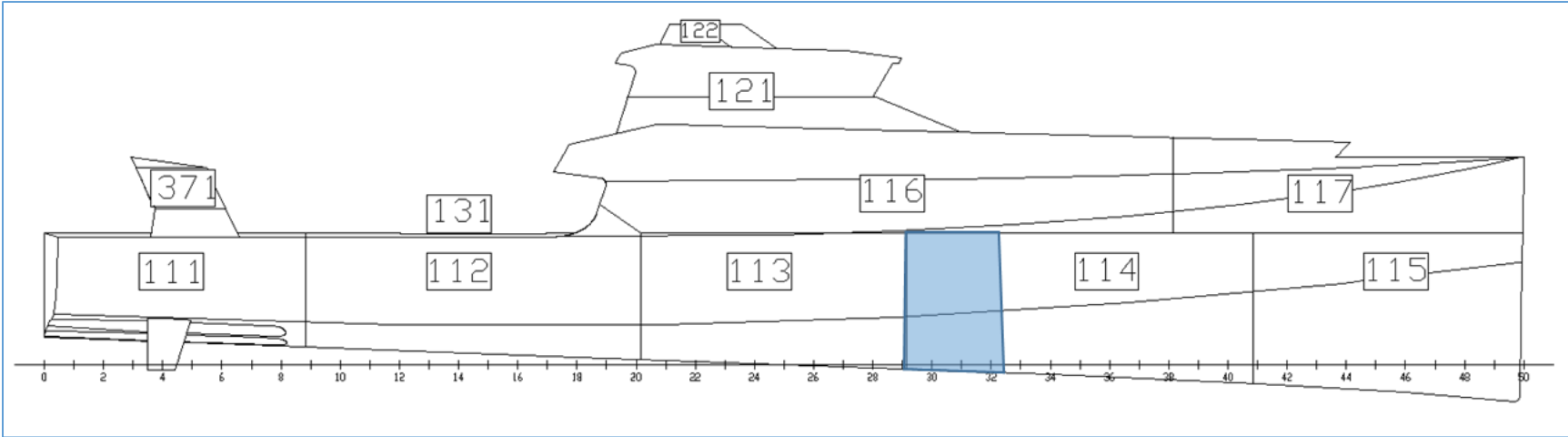
# Block 113



Junta de Secciones A – B del Bloque

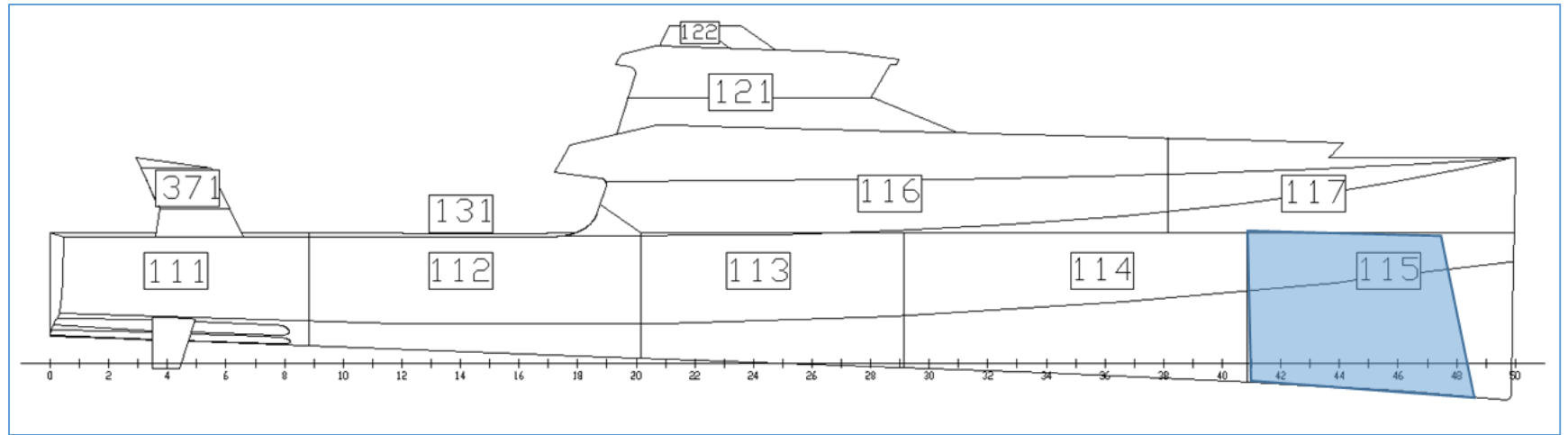


# Block 114

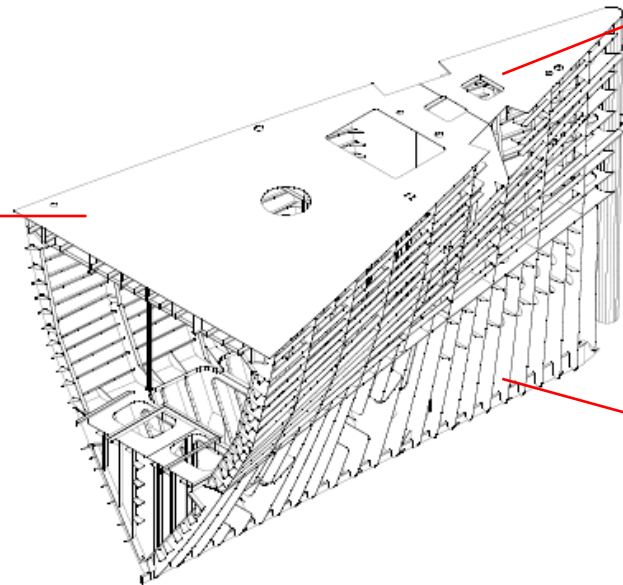


Armado Cubierta 4300

# Block 114



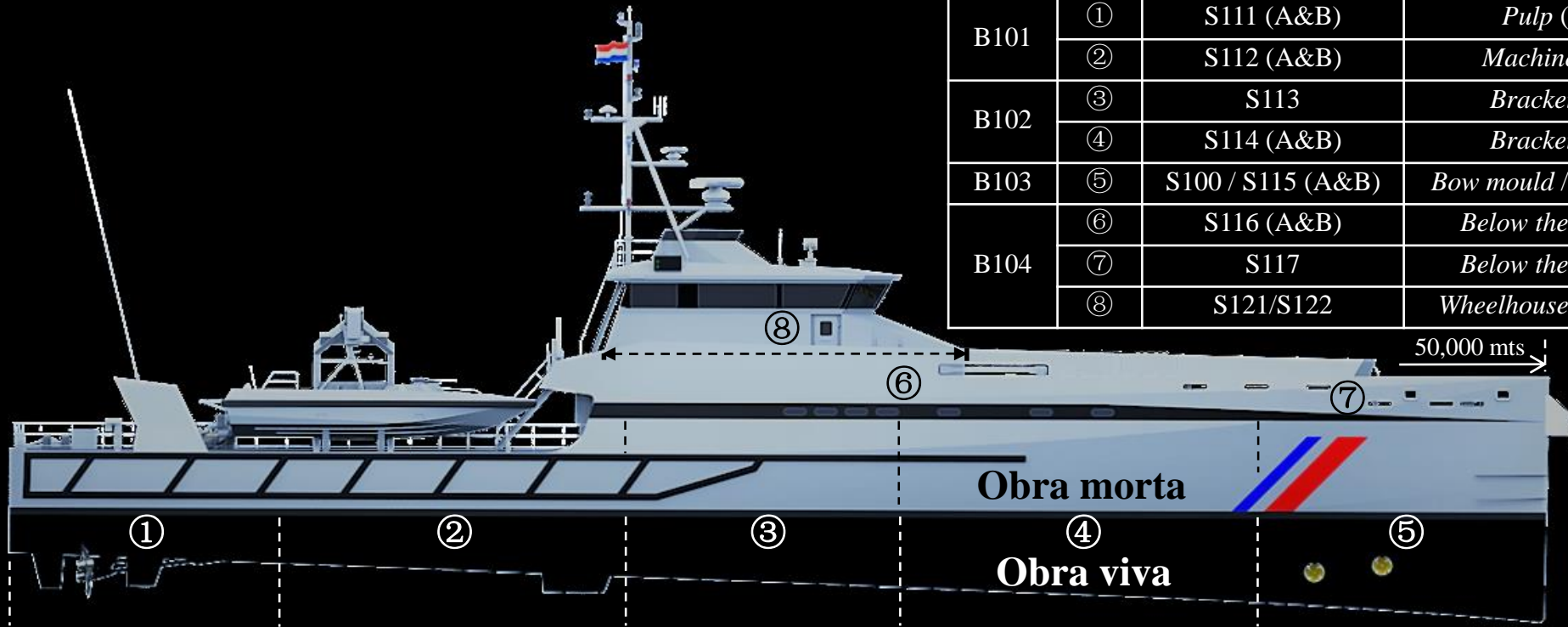
**Terminación de soldadura Sección 115B**



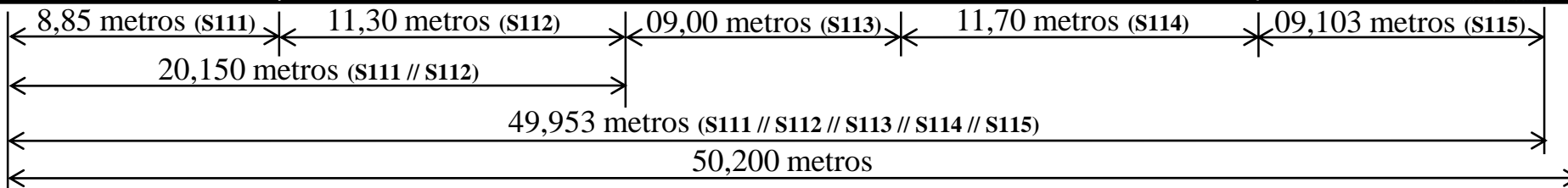
**Terminación de Armado y Soldadura Interna Sección 115 A**

**Volteo y posicionamiento Sección 115 A**



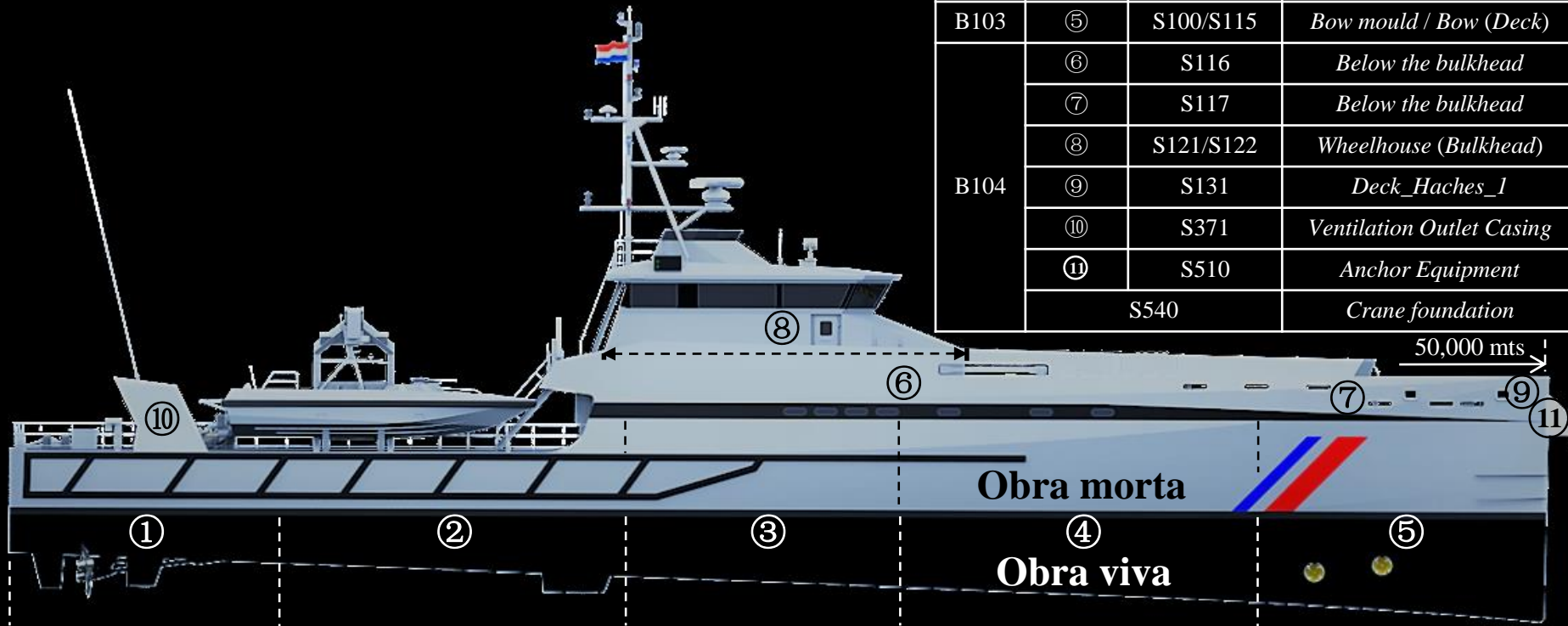


Block	Part	Section	Description
B101	①	S111 (A&B)	Pulp (Deck)
	②	S112 (A&B)	Machine House
B102	③	S113	Bracket / deck
	④	S114 (A&B)	Bracket / deck
B103	⑤	S100 / S115 (A&B)	Bow mould / Bow (Deck)
B104	⑥	S116 (A&B)	Below the bulkhead
	⑦	S117	Below the bulkhead
	⑧	S121/S122	Wheelhouse (Bulkhead)

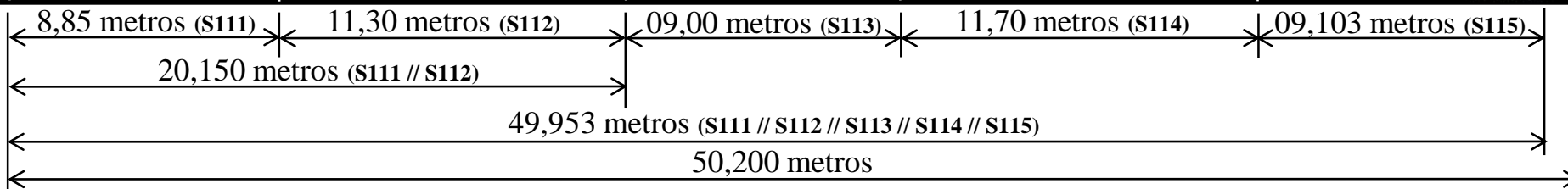


Section	Length	Weight	Weight (with solder)	Total hours	Section	Length	Weight	Weight (with solder)	Total hours
<b>Section 100 (Bow mould)</b>	<b>09,103 mts</b>	<b>08,41 ton.</b>		<b>240 hours</b>	<b>Section 115</b>	<b>09,103 mts</b>	<b>11,00 ton.</b>		<b>2.400 hours</b>
<b>Section 111</b>	08,85 mts	25,75 ton.	28,88 ton.	3.648 hours	<b>Section 116</b>	18,150 mts	21,22 ton.		2.592 hours
<b>Section 112</b>	11,30 mts	38,21 ton.	41,81 ton.	4.080 hours	<b>Section 117</b>	12,000 mts	07,98 ton.		2.304 hours
<b>Section 113</b>	09,00 mts	24,95 ton.	25,44 ton.	3.264 hours	<b>Section S121/S122</b>	11,800 mts	04,26 ton.		1.440 hours
<b>Section 114</b>	11,70 mts	22,47 ton.	22,89 ton.	3.216 hours	<b>Section 105 (Outfitting)</b>	-----	05,64 ton.		-----





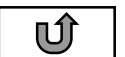
Block	Part	Section	Description
B103	⑤	S100/S115	Bow mould / Bow (Deck)
B104	⑥	S116	Below the bulkhead
	⑦	S117	Below the bulkhead
	⑧	S121/S122	Wheelhouse (Bulkhead)
	⑨	S131	Deck_Haches_1
	⑩	S371	Ventilation Outlet Casing
	⑪	S510	Anchor Equipment
		S540	Crane foundation



Section	Length	Weight	Weight (with solder)	Total hours	Section	Length	Weight	Weight (with solder)	Total hours
Section 100 (Bow mould)	09,103 mts	08,41 ton.		240 hours	Section 115	09,103 mts	11,00 ton.		2.400 hours
Section 131	-----	00,80 ton.		-----	Section 116	18,150 mts	21,22 ton.		2.592 hours
Section 371	-----	02,30 ton.		-----	Section 117	12,000 mts	07,98 ton.		2.304 hours
Section 510	-----	01,10 ton.		-----	Section S121/S122	11,800 mts	04,26 ton.		1.440 hours
Section 540	-----	00,20 ton.		-----	Section 105 (Outfitting)	-----	05,64 ton.		-----









<i>Block</i>	<i>Block name</i>	<i>Weight [tonnes]</i>	<i>Weight [tonnes] Block</i>
B101	<i>Aft Ship</i>	25,31	63,37
B101	<i>Aft Ship</i>	22,97	
B101	<i>Aft Ship</i>	15,09	
B102	<i>Mid Ship</i>	25,43	48,35
B102	<i>Mid Ship</i>	22,92	
B103	<i>Fore Ship</i>	11,07	11,07
B104	<i>SuperStructure</i>	22,03	34,04
B104	<i>SuperStructure</i>	8,01	
B104	<i>SuperStructure</i>	4,00	
<b><i>Total Weight</i></b>		156,83	

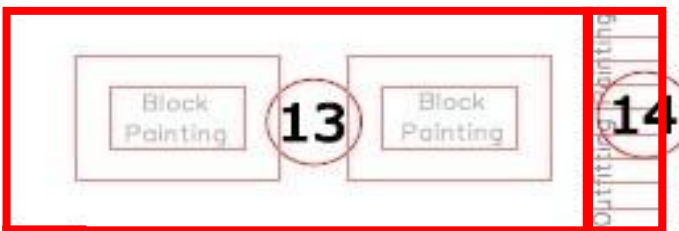
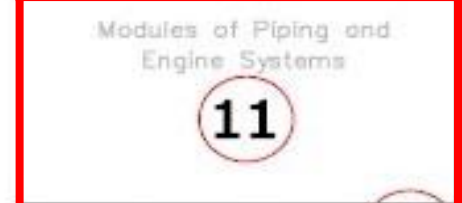
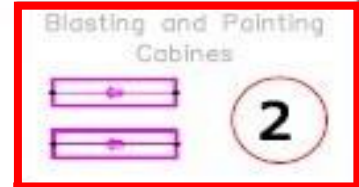
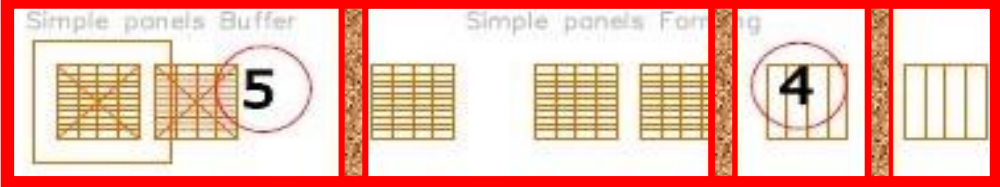
*Model* – 5009



# *Layout Astinave*









*Layout - .pdf*

<i>Layout – Astinave (2017)</i>		
<i>Layout – Astinave (2018) – versão 0.0</i>		   
<i>Layout – Astinave (2018) – versão 1.0</i>		
<i>Bill of Material</i>		

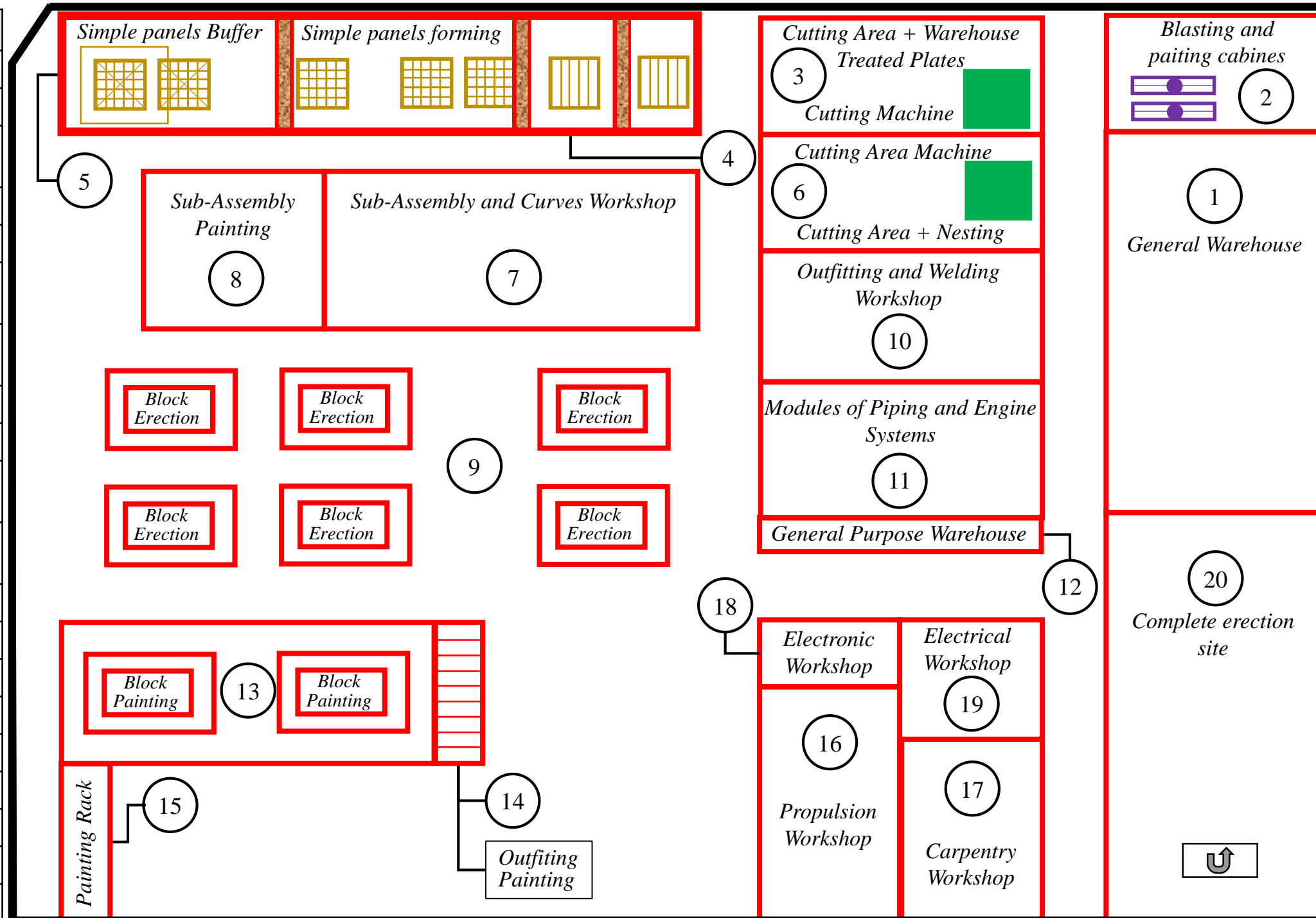


# *Layout* Astinave

*Layout* – .pptx (2017)

														Quantity
From	to	Section 111			Section 117	Section 112			Section 113	Section 114	Section 115	Section 116	Section 121	5009
		Section 111A	Section 111B	Section 111		Section 112A	Section 112B	Section 112						
1	2	14,8338 t	13,4904 t	<b>28,3242 t</b>	<b>8,3641 t</b>	22,7425 t	14,4820 t	<b>37,225 t</b>	<b>24,944 t</b>	<b>22,4487 t</b>	<b>11,2103 t</b>	<b>22,8636 t</b>	<b>3,9724 t</b>	<b>159,3523 t</b>
2	3	8,9745 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	8,2404 t	11,2580 t	<b>19,498 t</b>	<b>13,6128 t</b>	<b>12,10602 t</b>	<b>6,6073 t</b>	<b>15,8828 t</b>	<b>1,3236 t</b>	<b>91,94412 t</b>
2	6	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>67,40718 t</b>
3	4	1,2963 t	2,9657 t	<b>4,262 t</b>	<b>1,2910 t</b>	1,6274 t	11,2580 t	<b>12,885 t</b>	<b>5,5693 t</b>	<b>5,4338 t</b>	<b>2,0756 t</b>	<b>3,8516 t</b>	<b>0,8689 t</b>	<b>36,2372 t</b>
3/4	5	8,9745 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	8,2404 t	11,2580 t	<b>19,498 t</b>	<b>13,6128 t</b>	<b>12,10602 t</b>	<b>6,6073 t</b>	<b>15,8828 t</b>	<b>1,3236 t</b>	<b>91,94412 t</b>
5	9	8,9745 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	8,2404 t	11,2580 t	<b>19,498 t</b>	<b>13,6128 t</b>	<b>12,10602 t</b>	<b>6,6073 t</b>	<b>15,8828 t</b>	<b>1,3236 t</b>	<b>91,94412 t</b>
6	7	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>67,40718 t</b>
7	8	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>67,40718 t</b>
8	9	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>67,40718 t</b>
9	13	14,8338 t	13,4904 t	<b>28,3242 t</b>	<b>8,3641 t</b>	22,7425 t	14,4820 t	<b>37,225 t</b>	<b>24,944 t</b>	<b>22,4487 t</b>	<b>11,2103 t</b>	<b>22,8636 t</b>	<b>3,9724 t</b>	<b>159,3523 t</b>
Σ Planilha⇒ % diferença		14,8338 t	13,4904 t	<b>28,3242 t</b>	<b>8,3641 t</b>	22,7425 t	14,4820 t	<b>37,225 t</b>	<b>24,944 t</b>	<b>22,4487 t</b>	<b>11,2103 t</b>	<b>22,8636 t</b>	<b>3,9724 t</b>	<b>159,3523 t</b>
		Block 101			Block 104	Block 101			Block 102	Block 102	Block 103	Block 104	Block 104	4 block (b)
		25,31 t			8,01 t	22,97 t + 15,09 t = 38,06 t			25,43 t	22,92 t	11,07 t	22,03 t	4,0 t	156,83 t
	$\frac{(28,3242 t - 25,31 t)}{25,31 t} = 11,91 \% \uparrow$			4,42 % $\uparrow$	$\frac{(37,225 t - 38,06 t)}{38,06 t} = -2,20 \% \downarrow$			-1,91 % $\downarrow$	-2,06 % $\downarrow$	1,27 % $\uparrow$	3,8 % $\uparrow$	-0,69 % $\downarrow$	1,87 % $\uparrow$	

Legenda	
1	General Warehouse
2	Blasting and painting cabins
3	Cutting Area and Warehouse Treated Plates
4	Simple Panels Forming
5	Simple Panels Buffer
6	Cutting Area Machine and Cutting Area and Nesting
7	Sub-Assembly and Curves Workshop
8	Sub-Assembly Painting
9	Block Erection
10	Outfitting and Welding Workshop
11	Modules of Piping and Engine Systems
12	General Purpose Warehouse
13	Block Painting
14	Outfitting Painting
15	Painting Rack
16	Propulsion Workshop
17	Carpentry Workshop
18	Electronic Workshop
19	Electrical Workshop
20	Complete erection site



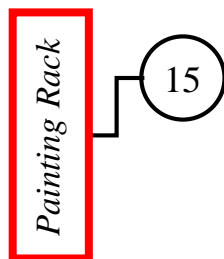
<b>Legenda (2017)</b>	
1	<i>General Warehouse</i>
2	<i>Blasting and painting cabins</i>
3	<i>Cutting Area and Warehouse Treated Plates</i>
4	<i>Simple Panels Forming</i>
5	<i>Simple Panels Buffer</i>
6	<i>Cutting Area Machine and Cutting Area and Nesting</i>
7	<i>Sub-Assembly and Curves Workshop</i>
8	<i>Sub-Assembly Painting</i>
9	<i>Block Erection</i>
10	<i>Outfitting and Welding Workshop</i>
11	<i>Modules of Piping and Engine Systems</i>
12	<i>General Purpose Warehouse</i>
13	<i>Block Painting</i>
14	<i>Outfitting Painting</i>
15	<i>Painting Rack</i>
16	<i>Propulsion Workshop</i>
17	<i>Carpentry Workshop</i>
18	<i>Electronic Workshop</i>
19	<i>Electrical Workshop</i>
20	<i>Complete erection site</i>

# Layout Astinave

Layout – .pptx (2018)









**Versão 0.0**

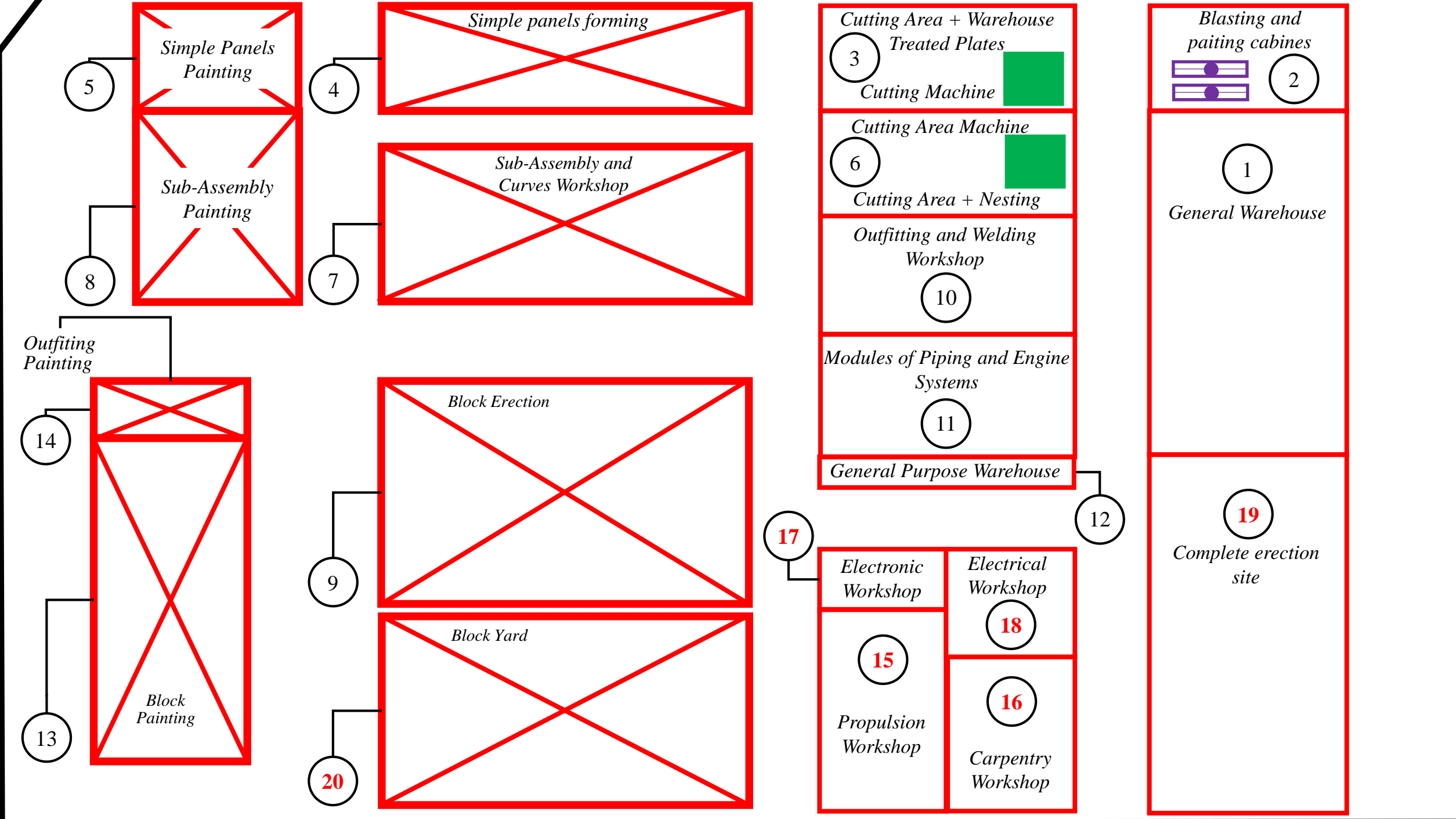
**Excluído**

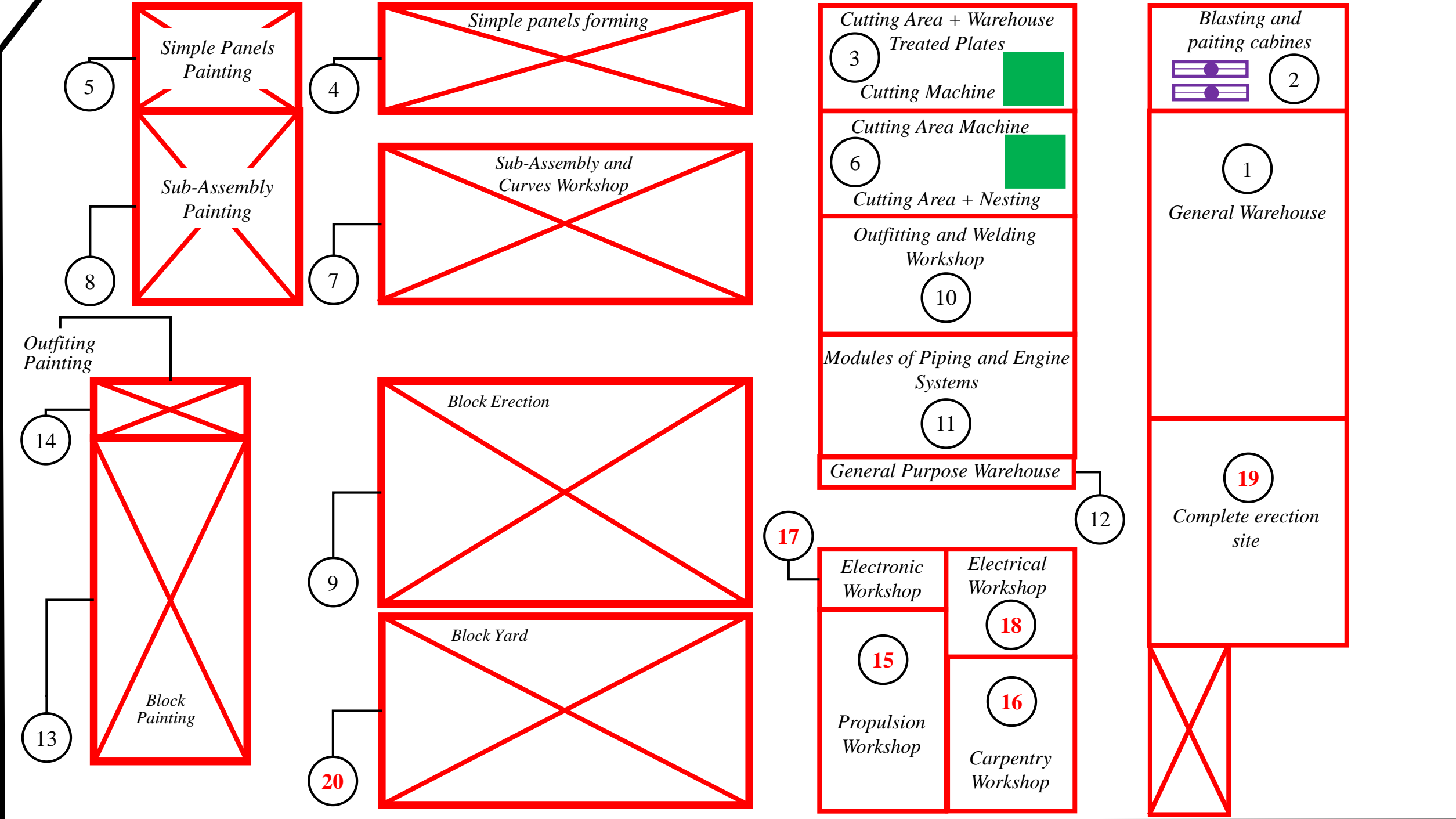


<b>Legenda (2018)</b>	
1	<i>General Warehouse</i>
2	<i>Blasting and painting cabins</i>
3	<i>Cutting Area and Warehouse Treated Plates</i>
4	<i>Simple Panels Forming</i>
5	<b><i>Simple Panels Painting</i></b>
6	<i>Cutting Area Machine and Cutting Area and Nesting</i>
7	<i>Sub-Assembly and Curves Workshop</i>
8	<i>Sub-Assembly Painting</i>
9	<i>Block Erection</i>
10	<i>Outfitting and Welding Workshop</i>
11	<i>Modules of Piping and Engine Systems</i>
12	<i>General Purpose Warehouse</i>
13	<i>Block Painting</i>
14	<i>Outfitting Painting</i>
15	<i>Propulsion Workshop</i>
16	<i>Carpentry Workshop</i>
17	<i>Electronic Workshop</i>
18	<i>Electrical Workshop</i>
19	<i>Complete erection site</i>
20	<i>Black Yard</i>



														Quantity
From	to	Section 111			Section 117	Section 112			Section 113	Section 114	Section 115	Section 116	Section 121	5009
		Section 111A	Section 111B	Section 111		Section 112A	Section 112B	Section 112						
1	2	14,8338 t	13,4904 t	<b>28,3242 t</b>	<b>8,3641 t</b>	22,7425 t	14,4820 t	<b>37,225 t</b>	<b>24,944 t</b>	<b>22,4487 t</b>	<b>11,2103 t</b>	<b>22,8636 t</b>	<b>3,9724 t</b>	<b>159,3523 t</b>
2	3	8,9745 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	8,2404 t	11,2580 t	<b>19,498 t</b>	<b>13,6128 t</b>	<b>12,10602 t</b>	<b>6,6073 t</b>	<b>15,8828 t</b>	<b>1,3236 t</b>	<b>91,94412 t</b>
2	6	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>67,40718 t</b>
3	4	1,2963 t	2,9657 t	<b>4,262 t</b>	<b>1,2910 t</b>	1,6274 t	11,2580 t	<b>12,885 t</b>	<b>5,5693 t</b>	<b>5,4338 t</b>	<b>2,0756 t</b>	<b>3,8516 t</b>	<b>0,8689 t</b>	<b>36,2372 t</b>
3/4	5	8,9745 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	8,2404 t	11,2580 t	<b>19,498 t</b>	<b>13,6128 t</b>	<b>12,10602 t</b>	<b>6,6073 t</b>	<b>15,8828 t</b>	<b>1,3236 t</b>	<b>91,94412 t</b>
5	9	8,9745 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	8,2404 t	11,2580 t	<b>19,498 t</b>	<b>13,6128 t</b>	<b>12,10602 t</b>	<b>6,6073 t</b>	<b>15,8828 t</b>	<b>1,3236 t</b>	<b>91,94412 t</b>
6	7	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>67,40718 t</b>
7	8	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>67,40718 t</b>
8	9	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>67,40718 t</b>
9	13	14,8338 t	13,4904 t	<b>28,3242 t</b>	<b>8,3641 t</b>	22,7425 t	14,4820 t	<b>37,225 t</b>	<b>24,944 t</b>	<b>22,4487 t</b>	<b>11,2103 t</b>	<b>22,8636 t</b>	<b>3,9724 t</b>	<b>159,3523 t</b>
Σ Planilha⇒ % diferença		14,8338 t	13,4904 t	<b>28,3242 t</b>	<b>8,3641 t</b>	22,7425 t	14,4820 t	<b>37,225 t</b>	<b>24,944 t</b>	<b>22,4487 t</b>	<b>11,2103 t</b>	<b>22,8636 t</b>	<b>3,9724 t</b>	<b>159,3523 t</b>
		Block 101			Block 104	Block 101			Block 102	Block 102	Block 103	Block 104	Block 104	4 block (b)
		25,31 t			8,01 t	22,97 t + 15,09 t = 38,06 t			25,43 t	22,92 t	11,07 t	22,03 t	4,0 t	156,83 t
	$\frac{(28,3242 t - 25,31 t)}{25,31 t} = 11,91 \% \uparrow$			4,42 % $\uparrow$	$\frac{(37,225 t - 38,06 t)}{38,06 t} = -2,20 \% \downarrow$			-1,91 % $\downarrow$	-2,06 % $\downarrow$	1,27 % $\uparrow$	3,8 % $\uparrow$	-0,69 % $\downarrow$	1,87 % $\uparrow$	





5

Simple Panels Painting

8

Sub-Assembly Painting

4

Simple panels forming

7

Sub-Assembly and Curves Workshop

3

Cutting Area + Warehouse Treated Plates

Cutting Machine

6

Cutting Area Machine

Cutting Area + Nesting

10

Outfitting and Welding Workshop

11

Modules of Piping and Engine Systems

12

General Purpose Warehouse

2

Blasting and painting cabins

1

General Warehouse

19

Complete erection site

14

Outfitting Painting

13

Block Painting

9

Block Erection

20

Block Yard

17

Electronic Workshop

15

Propulsion Workshop

18

Electrical Workshop

16

Carpentry Workshop

<i>Area</i>	<i>Process</i>	<i>Capacity calculation</i>	<i>Comments</i>
1	Storage	<i>Directly proportional to the demand and design of the product (unit of load)</i>	<i>Unidirectional dimension change and location or position in the layout (ideally: located at the ends of the area around the layout)</i>
2	Blasting and painting	<i>Directly proportional to the demand and design of the product (unit of load)</i>	<i>Unidirectional dimension change and location or position in the layout (ideally: located at the ends of the area around the layout)</i>
3	Cutting	<i>Directly proportional to the demand and design of the product (unit of load)</i>	<i>Unidirectional dimension change and location or position in the layout (ideally: located at the ends of the area around the layout)</i>
6	Cutting	<i>Directly proportional to the demand and design of the product (unit of load)</i>	<i>Unidirectional dimension change and location or position in the layout (ideally: located at the ends of the area around the layout)</i>
10	Outfitting and Welding	<i>Directly proportional to the demand and design of the product (unit of load)</i>	<i>Unidirectional dimension change and location or position in the layout (ideally: located at the ends of the area around the layout)</i>
11	Piping and Engine System	<i>Directly proportional to the demand and design of the product (unit of load)</i>	<i>Unidirectional dimension change and location or position in the layout (ideally: located at the ends of the area around the layout)</i>
12	Storage	<i>Directly proportional to the demand and design of the product (unit of load)</i>	<i>Unidirectional dimension change and location or position in the layout (ideally: located at the ends of the area around the layout)</i>









<i>Area</i>	<i>Process</i>	<i>Capacity calculation</i>	<i>Comments</i>
4	<i>Simple panels forming</i>	<i>Directly proportional to the demand and design of the product (unit of load)</i>	<i>Unidirectional dimension change and location or position in the layout (ideally: located at the ends of the area around the layout)</i>
5	<i>Simple panels Buffer</i>	<i>Directly proportional to the demand and design of the product (unit of load)</i>	<i>Unidirectional dimension change and location or position in the layout (ideally: located at the ends of the area around the layout)</i>
7	<i>Sub-Assembly and Curves Workshop</i>	<i>It depends directly on the product design and design of the manufacturing processes</i>	<i>requires detailed study of the area as to the space required for movement and assembly, flow restriction.</i>
8	<i>Sub-Assembly Painting</i>	<i>It depends directly on the product design and design of the manufacturing processes</i>	<i>requires detailed study of the area as to the space required for movement and assembly, flow restriction.</i>
9	<i>Block Erection</i>	<i>It depends directly on the product design and design of the manufacturing processes</i>	<i>requires detailed study of the area as to the space required for movement and assembly, flow restriction.</i>
13	<i>Block Painting</i>	<i>Directly proportional to the demand and design of the product (unit of load)</i>	<i>Unidirectional dimension change and location or position in the layout (ideally: located at the ends of the area around the layout)</i>
14	<i>Outfitting Painting</i>	<i>Directly proportional to the demand and design of the product (unit of load)</i>	<i>Unidirectional dimension change and location or position in the layout (ideally: located at the ends of the area around the layout)</i>
15 <b>Workshop</b>	<i>Painting Block</i>	<i>Directly proportional to the demand and design of the product (unit of load)</i>	<i>Unidirectional dimension change and location or position in the layout (ideally: located at the ends of the area around the layout)</i>

<i>Area</i>	<i>Process</i>	<i>Capacity calculation</i>	<i>Comments</i>
16 <b>Workshop</b>	<i>Carpentry Workshop</i>	<i>Directly proportional to the demand and design of the product (unit of load)</i>	<i>Unidirectional dimension change and location or position in the layout (ideally: located at the ends of the area around the layout)</i>
17 <b>Workshop</b>	<i>Electronic Workshop</i>	<i>Directly proportional to the demand and design of the product (unit of load)</i>	<i>Unidirectional dimension change and location or position in the layout (ideally: located at the ends of the area around the layout)</i>
18 <b>Workshop</b>	<i>Electrical Workshop</i>	<i>Directly proportional to the demand and design of the product (unit of load)</i>	<i>Unidirectional dimension change and location or position in the layout (ideally: located at the ends of the area around the layout)</i>
19	<i>Complete Block Erection Site</i>	<i>Directly proportional to the demand and design of the product (unit of load)</i>	<i>Unidirectional dimension change and location or position in the layout (ideally: located at the ends of the area around the layout)</i>
20	<i>Block Yard</i>	<i>Directly proportional to the demand and design of the product (unit of load)</i>	<i>Unidirectional dimension change and location or position in the layout (ideally: located at the ends of the area around the layout)</i>

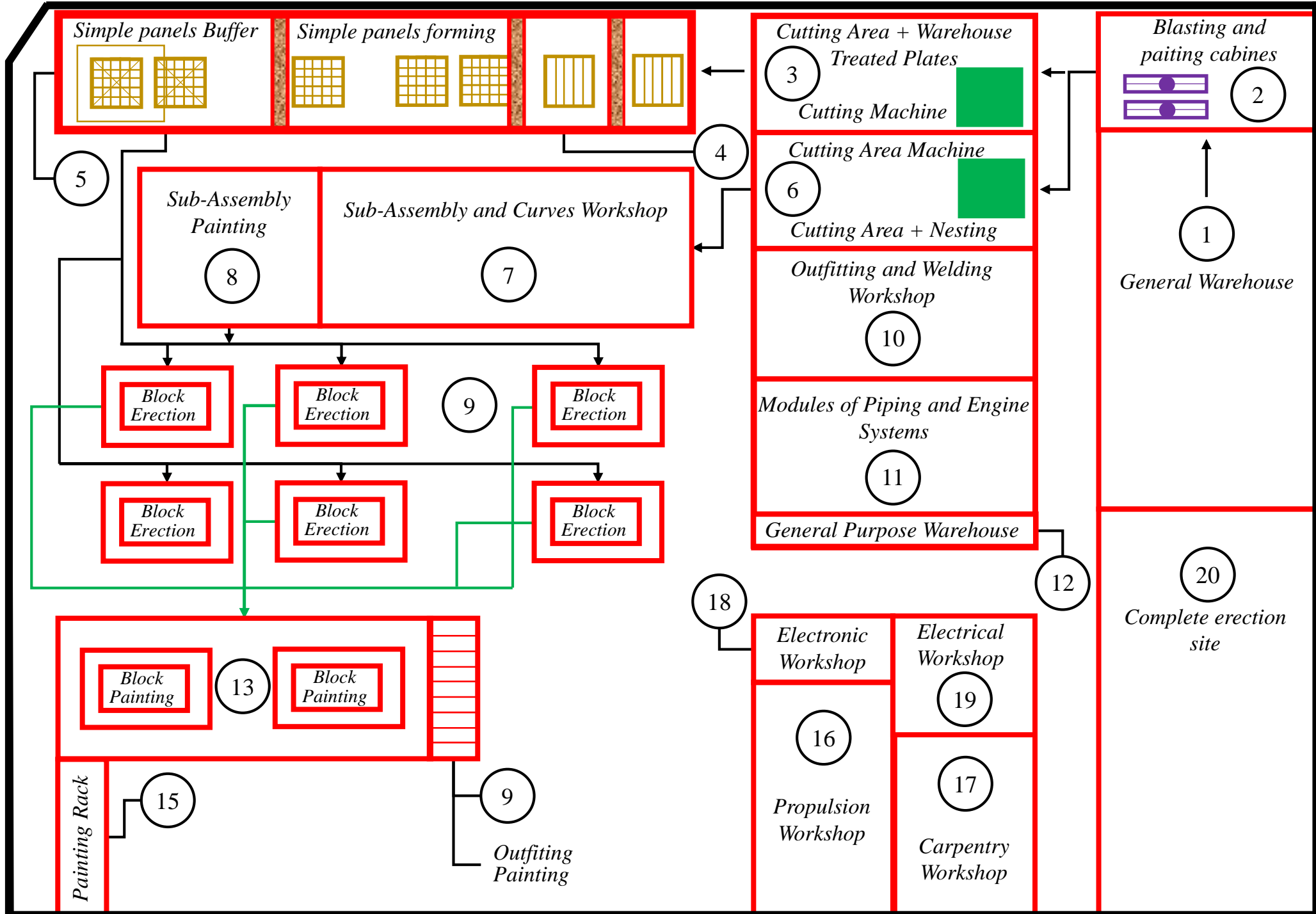
# *Layout* Astinave

*Layout* - .pptx (2017)

Fluxo

														Quantity
From	to	Section 111			Section 117	Section 112			Section 113	Section 114	Section 115	Section 116	Section 121	5009
		Section 111A	Section 111B	Section 111		Section 112A	Section 112B	Section 112						
1	2	14,8338 t	13,4904 t	<b>28,3242 t</b>	<b>8,3641 t</b>	22,7425 t	14,4820 t	<b>37,225 t</b>	<b>24,944 t</b>	<b>22,4487 t</b>	<b>11,2103 t</b>	<b>22,8636 t</b>	<b>3,9724 t</b>	<b>159,3523 t</b>
2	3	8,9745 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	8,2404 t	11,2580 t	<b>19,498 t</b>	<b>13,6128 t</b>	<b>12,10602 t</b>	<b>6,6073 t</b>	<b>15,8828 t</b>	<b>1,3236 t</b>	<b>91,94412 t</b>
2	6	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>67,40718 t</b>
3	4	1,2963 t	2,9657 t	<b>4,262 t</b>	<b>1,2910 t</b>	1,6274 t	11,2580 t	<b>12,885 t</b>	<b>5,5693 t</b>	<b>5,4338 t</b>	<b>2,0756 t</b>	<b>3,8516 t</b>	<b>0,8689 t</b>	<b>36,2372 t</b>
3/4	5	8,9745 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	8,2404 t	11,2580 t	<b>19,498 t</b>	<b>13,6128 t</b>	<b>12,10602 t</b>	<b>6,6073 t</b>	<b>15,8828 t</b>	<b>1,3236 t</b>	<b>91,94412 t</b>
5	9	8,9745 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	8,2404 t	11,2580 t	<b>19,498 t</b>	<b>13,6128 t</b>	<b>12,10602 t</b>	<b>6,6073 t</b>	<b>15,8828 t</b>	<b>1,3236 t</b>	<b>91,94412 t</b>
6	7	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>67,40718 t</b>
7	8	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>67,40718 t</b>
8	9	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>67,40718 t</b>
9	13	14,8338 t	13,4904 t	<b>28,3242 t</b>	<b>8,3641 t</b>	22,7425 t	14,4820 t	<b>37,225 t</b>	<b>24,944 t</b>	<b>22,4487 t</b>	<b>11,2103 t</b>	<b>22,8636 t</b>	<b>3,9724 t</b>	<b>159,3523 t</b>
Σ Planilha⇒ % diferença		14,8338 t	13,4904 t	<b>28,3242 t</b>	<b>8,3641 t</b>	22,7425 t	14,4820 t	<b>37,225 t</b>	<b>24,944 t</b>	<b>22,4487 t</b>	<b>11,2103 t</b>	<b>22,8636 t</b>	<b>3,9724 t</b>	<b>159,3523 t</b>
		Block 101			Block 104	Block 101			Block 102	Block 102	Block 103	Block 104	Block 104	4 block (b)
		25,31 t			8,01 t	22,97 t + 15,09 t = 38,06 t			25,43 t	22,92 t	11,07 t	22,03 t	4,0 t	156,83 t
	$\frac{(28,3242 t - 25,31 t)}{25,31 t} = 11,91 \% \uparrow$			4,42 % $\uparrow$	$\frac{(37,225 t - 38,06 t)}{38,06 t} = -2,20 \% \downarrow$			-1,91 % $\downarrow$	-2,06 % $\downarrow$	1,27 % $\uparrow$	3,8 % $\uparrow$	-0,69 % $\downarrow$	1,87 % $\uparrow$	













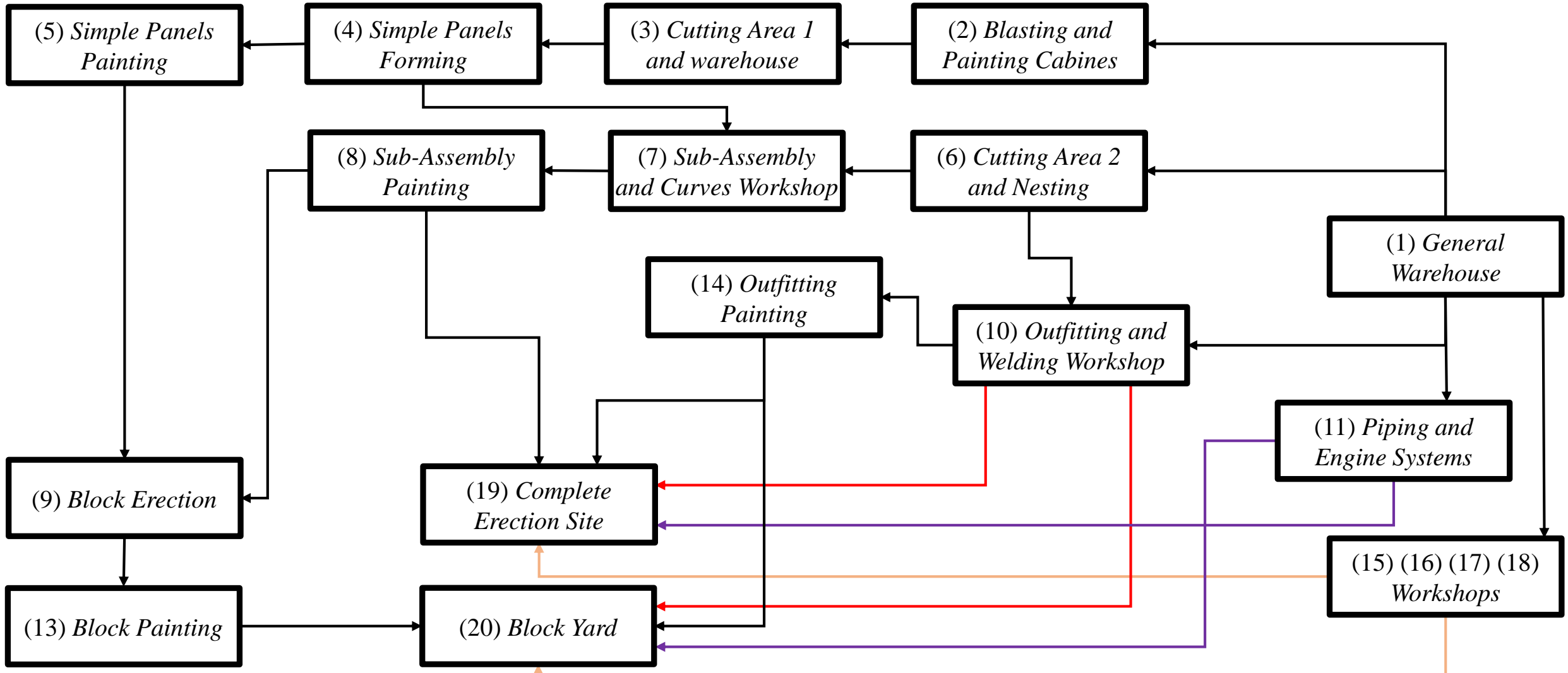
# *Layout* Astinave

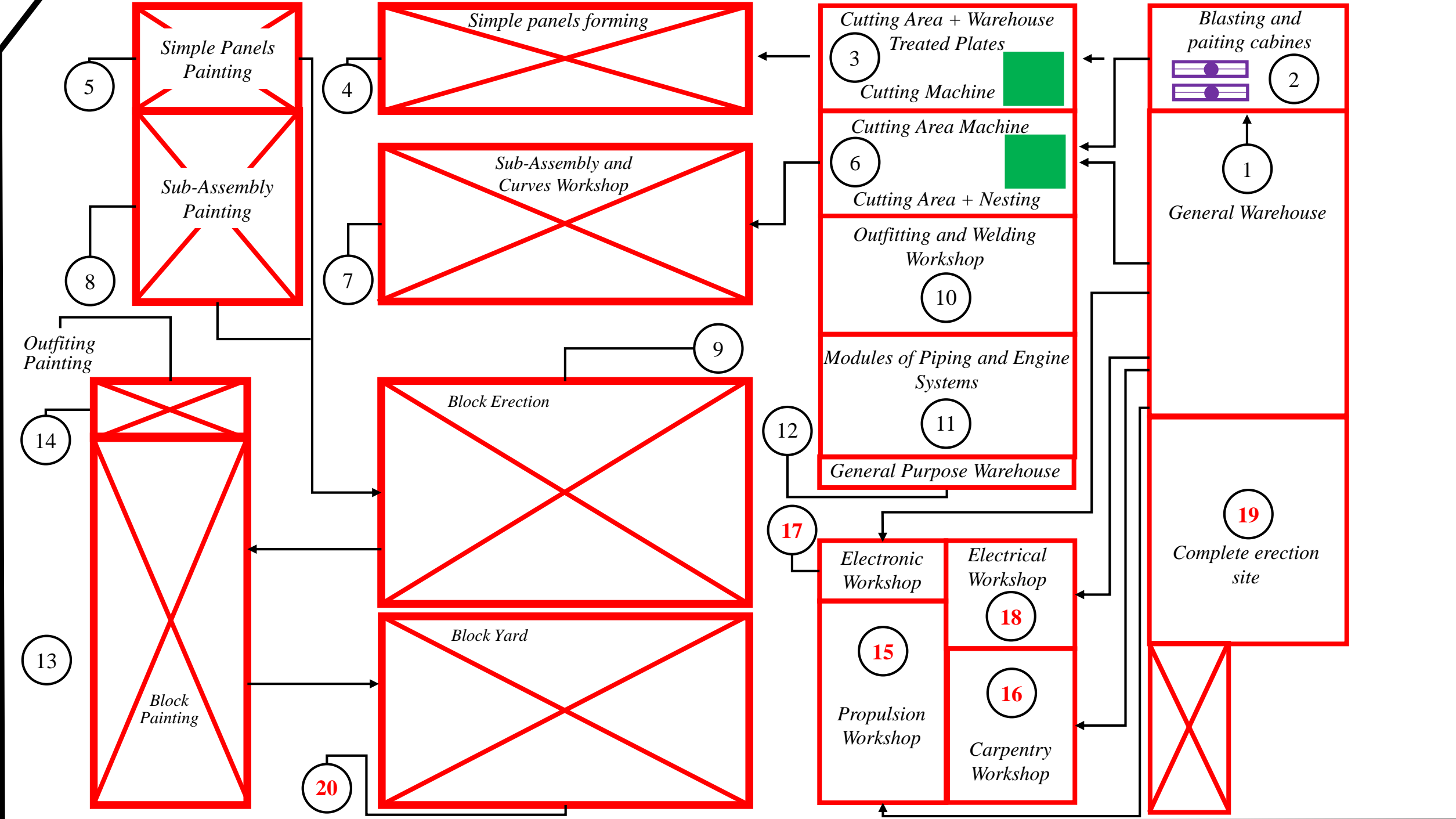
*Layout* - .pptx (2018)

**Versão 0.0**

Fluxo

														Quantity
From	to	Section 111			Section 117	Section 112			Section 113	Section 114	Section 115	Section 116	Section 121	5009
		Section 111A	Section 111B	Section 111		Section 112A	Section 112B	Section 112						
1	2	14,8338 t	13,4904 t	<b>28,3242 t</b>	<b>8,3641 t</b>	22,7425 t	14,4820 t	<b>37,225 t</b>	<b>24,944 t</b>	<b>22,4487 t</b>	<b>11,2103 t</b>	<b>22,8636 t</b>	<b>3,9724 t</b>	<b>159,3523 t</b>
2	3	8,9745 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	8,2404 t	11,2580 t	<b>19,498 t</b>	<b>13,6128 t</b>	<b>12,10602 t</b>	<b>6,6073 t</b>	<b>15,8828 t</b>	<b>1,3236 t</b>	<b>91,94412 t</b>
2	6	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>67,40718 t</b>
3	4	1,2963 t	2,9657 t	<b>4,262 t</b>	<b>1,2910 t</b>	1,6274 t	11,2580 t	<b>12,885 t</b>	<b>5,5693 t</b>	<b>5,4338 t</b>	<b>2,0756 t</b>	<b>3,8516 t</b>	<b>0,8689 t</b>	<b>36,2372 t</b>
3/4	5	8,9745 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	8,2404 t	11,2580 t	<b>19,498 t</b>	<b>13,6128 t</b>	<b>12,10602 t</b>	<b>6,6073 t</b>	<b>15,8828 t</b>	<b>1,3236 t</b>	<b>91,94412 t</b>
5	9	8,9745 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	8,2404 t	11,2580 t	<b>19,498 t</b>	<b>13,6128 t</b>	<b>12,10602 t</b>	<b>6,6073 t</b>	<b>15,8828 t</b>	<b>1,3236 t</b>	<b>91,94412 t</b>
6	7	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>67,40718 t</b>
7	8	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>67,40718 t</b>
8	9	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>67,40718 t</b>
9	13	14,8338 t	13,4904 t	<b>28,3242 t</b>	<b>8,3641 t</b>	22,7425 t	14,4820 t	<b>37,225 t</b>	<b>24,944 t</b>	<b>22,4487 t</b>	<b>11,2103 t</b>	<b>22,8636 t</b>	<b>3,9724 t</b>	<b>159,3523 t</b>
Σ Planilha⇒ % diferença		14,8338 t	13,4904 t	<b>28,3242 t</b>	<b>8,3641 t</b>	22,7425 t	14,4820 t	<b>37,225 t</b>	<b>24,944 t</b>	<b>22,4487 t</b>	<b>11,2103 t</b>	<b>22,8636 t</b>	<b>3,9724 t</b>	<b>159,3523 t</b>
		Block 101			Block 104	Block 101			Block 102	Block 102	Block 103	Block 104	Block 104	4 block (b)
		25,31 t			8,01 t	22,97 t + 15,09 t = 38,06 t			25,43 t	22,92 t	11,07 t	22,03 t	4,0 t	156,83 t
	$\frac{(28,3242 t - 25,31 t)}{25,31 t} = 11,91 \% \uparrow$			4,42 % $\uparrow$	$\frac{(37,225 t - 38,06 t)}{38,06 t} = -2,20 \% \downarrow$			-1,91 % $\downarrow$	-2,06 % $\downarrow$	1,27 % $\uparrow$	3,8 % $\uparrow$	-0,69 % $\downarrow$	1,87 % $\uparrow$	

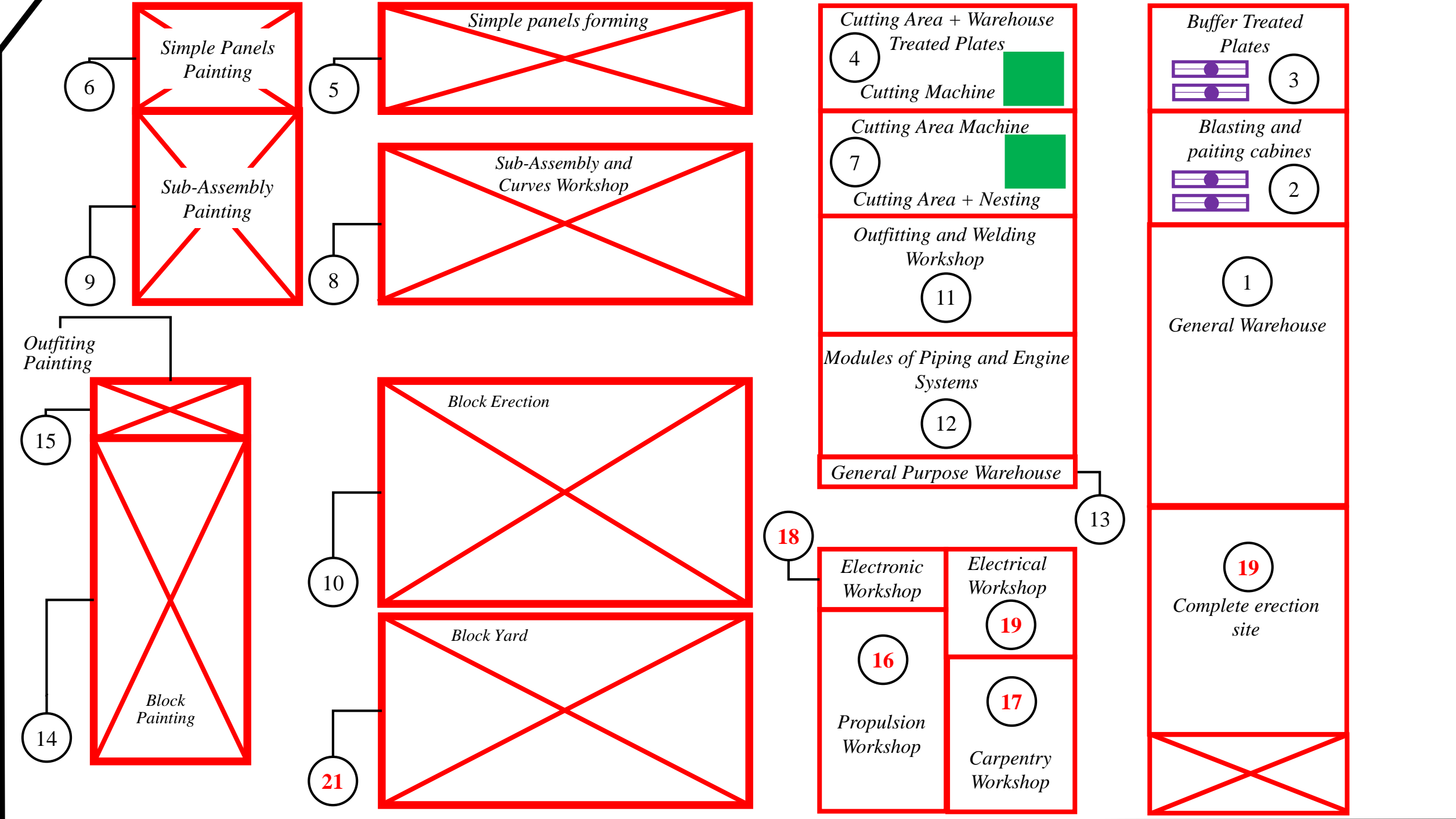


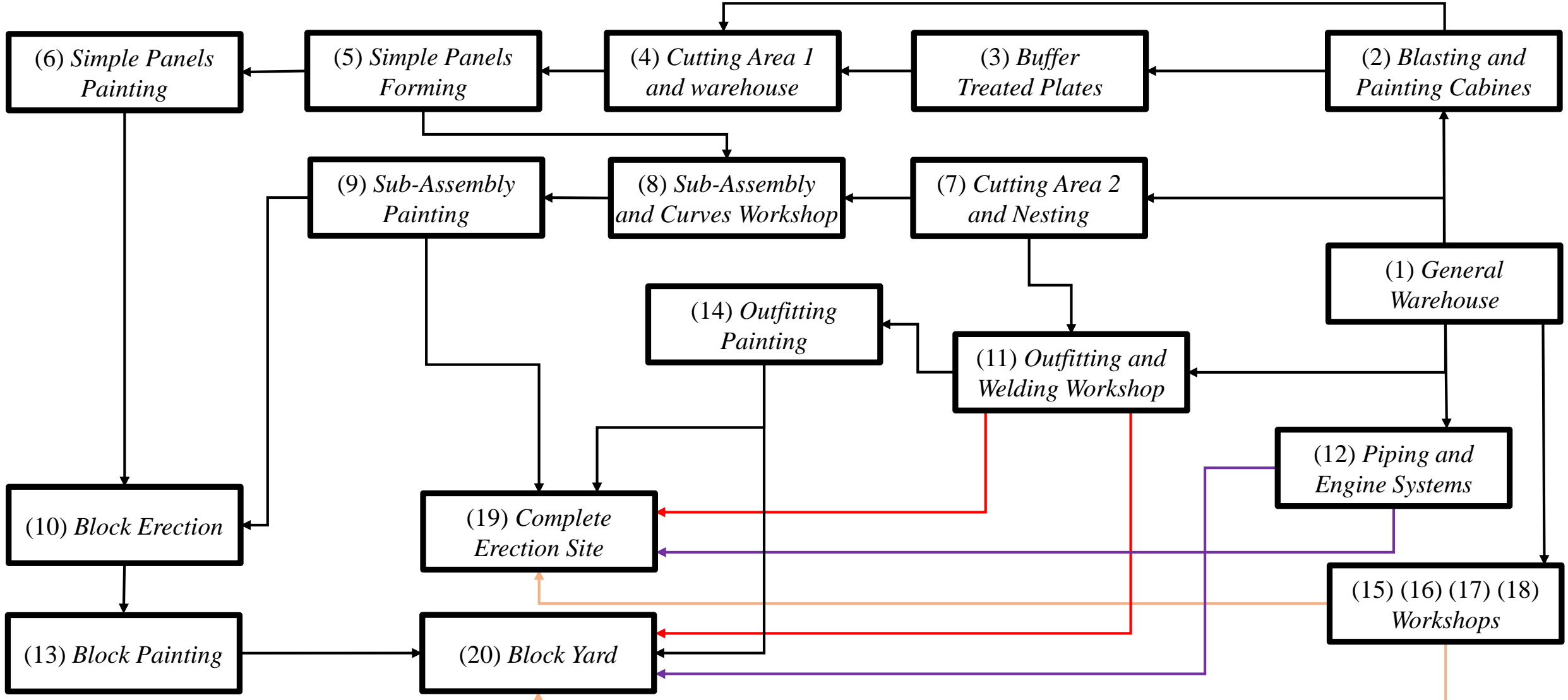


# *Layout* Astinave

*Layout* – .pptx (2018)

**Versão 0.0**





(6) *Simple Panels Painting*

(5) *Simple Panels Forming*

(4) *Cutting Area 1 and warehouse*

(3) *Buffer Treated Plates*

(2) *Blasting and Painting Cabines*

(9) *Sub-Assembly Painting*

(8) *Sub-Assembly and Curves Workshop*

(7) *Cutting Area 2 and Nesting*

(1) *General Warehouse*

(14) *Outfitting Painting*

(11) *Outfitting and Welding Workshop*

(10) *Block Erection*

(19) *Complete Erection Site*

(12) *Piping and Engine Systems*

(13) *Block Painting*

(20) *Block Yard*

(15) (16) (17) (18) *Workshops*



# Planejamento do *Layout*

Sistema: *Systematic Layout Planning* (SLP) – para arranjo por processo

Richard Muther

Editora Edgard Blucher Ltda. (1978)

*Flow Shop* – os produtos fabricados em uma célula de manufatura têm a mesma sequência de operações nas máquinas (Exemplo: fábricas de embreagens) – **Diagramas de Precedência**

*Job Shop* – os produtos têm diferentes sequências de operações nas máquinas – processo por tarefas – pequenos lotes de uma grande variedade de produtos com variados roteiros de fabricação (exemplo: fábrica de móveis de cozinha por encomenda, ferramentaria, fábrica de máquinas especiais, estaleiros). Arranjo físico por processo ou funcional – Carta **Multi-processo & Diagrama de relacionamento**.

*Intermitente ou descontínua* – natureza do fluxo de materiais – (função processo)

*Discreta* – natureza dos produtos

RIZIEBOS (2010) – fluxo intermitente significa que o produto não se move enquanto está sendo produzido, mas move-se somente no momento de sincronização do sistema de produção. Quando o momento da sincronização é idêntico para todas as estações de trabalho, uma linha intermitente pode ser considerada como uma linha cadenciada (Wild 1972).

# SISTEMAS DE PRODUÇÃO

Classificação e definição dos principais tipos de sistemas de Produção

- O *layout* por fluxo atende às necessidades de produção repetitiva em lotes, com maiores volumes. Exemplo: fabricação de automóveis.
- A Tabela do *slide* seguinte apresenta uma comparação entre esses dois tipos de *layout* (funcional e fluxo). Observa-se que o projeto do *layout* é, portanto, **função do tipo de sistema de produção**: inerente à demanda, variedade ou padronização dos produtos, quantidades a serem produzidas etc.

# MÉTODO SLP (*Systematic Layout Planning*) para Arranjo por Processo

- Nos anos 50, R. Muther (1961) propôs um método sistemático de análise e projeto de arranjo físico funcional que se tornou bastante popular, chamado método SLP. Embora o método não contemple tendências modernas como o arranjo físico celular, pode ser útil em determinadas situações, principalmente quando se desenha o arranjo físico de operações que processam clientes.

<b>Passos de planejamento de arranjo físico funcional (SLP)</b>	
<b>Passos</b>	<b>Possíveis Ferramentas</b>
1. Análise de fluxos de produtos ou recursos	Diagrama de fluxo ou diagrama de – para ( <b>Matriz de Fluxo</b> )
2. Identificação e inclusão de fatores qualitativos	Diagrama de relacionamento de atividades
3. Avaliação dos dados e arranjo de áreas de trabalho	Diagrama de arranjo de atividades
4. Determinação de um plano de arranjo dos espaços	Diagrama de relações de espaço
5. Ajuste do arranjo no espaço disponível	Planta do local e modelos ( <i>templates</i> )

# EXEMPLO – CENTRO DE DISTRIBUIÇÃO

<b>ÁREAS DE TRABALHO PRINCIPAIS DO CENTRO DE DISTRIBUIÇÃO</b>	
<b>Atividades</b>	<b>Requisitos de espaço (m<sup>2</sup>)</b>
<b>1. Programação de materiais</b>	<b>100</b>
<b>2. Embalagem</b>	<b>150</b>
<b>3. Supervisor de materiais</b>	<b>50</b>
<b>4. Recebimento e despacho</b>	<b>300</b>
<b>5. Armazém</b>	<b>600</b>

- SLP, Passo 1, Análise de fluxos – os fluxos de materiais de e para os vários departamentos são então explicitados e analisados num diagrama de – para. Os totais de fluxos entre setores – somando-se os fluxos em ambas direções – são calculados e aparecem na sequência. A partir de então, com base nos fluxos, estabelecem-se as prioridades para proximidade entre setores, levando em conta os critérios de Muther (1961), que relacionam as prioridades com valores a serem usados nas etapas subsequentes.

## EXEMPLO – CENTRO DE DISTRIBUIÇÃO

- Critérios de Muther (1961) para definição de prioridade de proximidade:
  - 1) *A* → Proximidade absolutamente necessária, valor 4;
  - 2) *E* → Proximidade especialmente necessária, valor 3;
  - 3) *I* → Proximidade importante, valor 2;
  - 4) *O* → Proximidade regular, valor 1;
  - 5) *U* → Proximidade não importante, valor 0;
  - 6) *X* → Proximidade indesejável, valor -1.

# EXEMPLO – CENTRO DE DISTRIBUIÇÃO

## SLP – Passo 2 – Diagrama de relacionamento

- **SLP, Passo 2**, Análise e inclusão de fatores qualitativos levando em conta uma avaliação de prioridades para proximidade entre setores. Faz-se isso utilizando um diagrama de relacionamento de atividades (que inclui os fatores quantificados de fluxo tratados).
- **SLP, Passo 3**, Avaliação dos dados e arranjo das áreas de trabalho – Com base nos resultados do Passo 2, é elaborado um diagrama de arranjo de atividades. Graficamente, representa-se a relação entre os setores com uma linha de ligação para representar o valor 1 (critérios de Muther), duas linhas de ligação para representar o valor 2, e assim por diante. Sugere-se que primeiro os setores que tenham em suas relações outros setores o maior valor somado sejam os primeiros a serem desenhados, no centro do diagrama. No caso de nosso centro de distribuição, os setores 1 – programação de materiais – e 4 – recebimento e despacho – são aqueles cujo valor total (13) é máximo. Evidentemente, a idéia é deixar os setores com maior número de linhas de ligação mais próximos entre si.
- **SLP, Passo 4**, Determinação de um plano de arranjo de espaços – Este passo é similar ao anterior, com a diferença de que as áreas agora são levadas em conta na representação, com retângulos proporcionais às áreas requeridas representando cada setor.

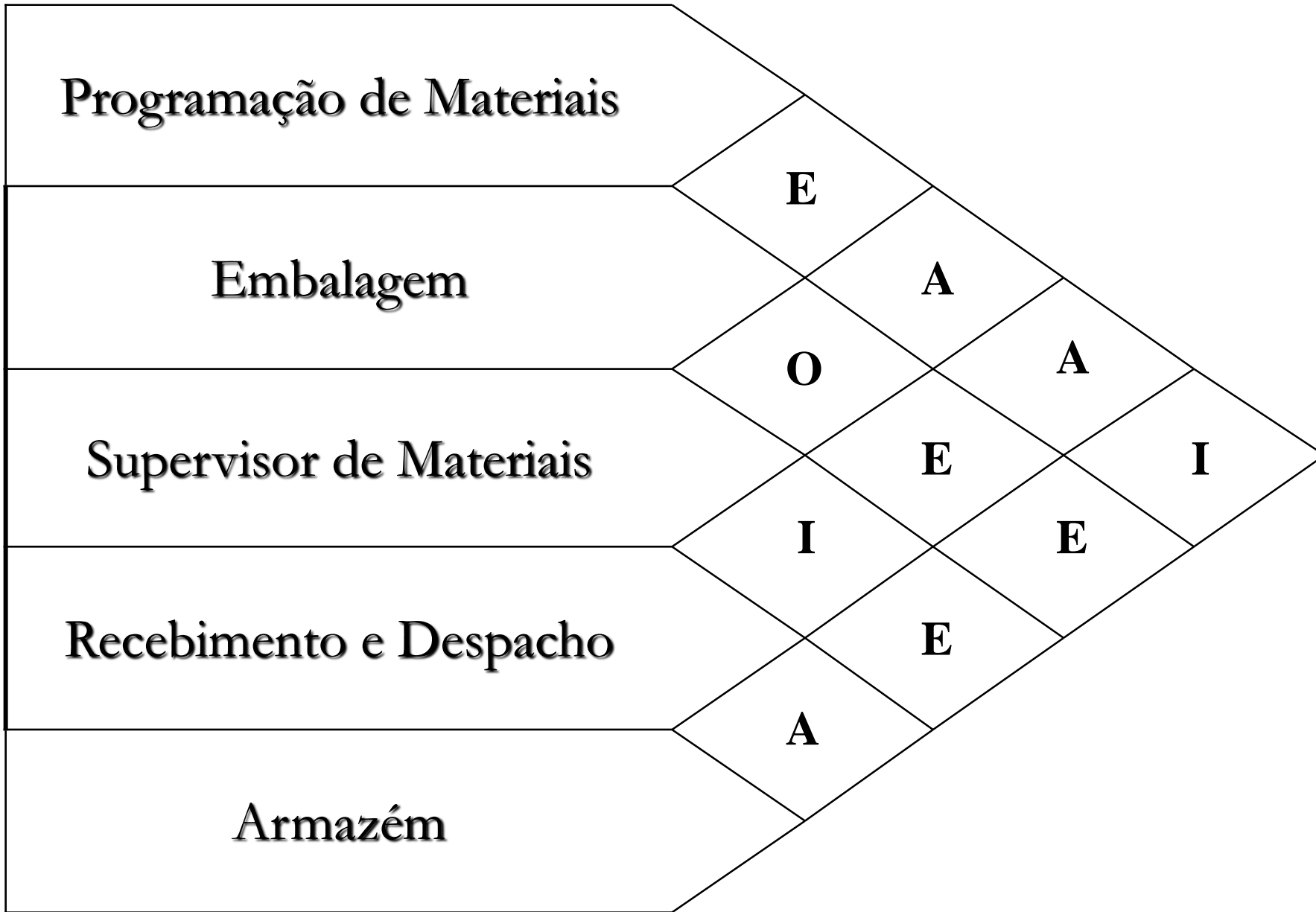
# EXEMPLO – CENTRO DE DISTRIBUIÇÃO

<b>Diagrama de – para</b>				
<b>Volumes de materiais movimentados (Kg por dia)</b>				
<b>De \ Para</b>	<b>Embalagem</b>	<b>Recebimento Despacho</b>	<b>Armazém</b>	<b>Totais</b>
Embalagem	0	400	0	400
Recebimento/Despacho	0	0	2000	2000
Armazém	400	1600	0	2000
<b>Totais</b>	<b>400</b>	<b>2000</b>	<b>2000</b>	

<b>Total de fluxo entre</b>		
<b>Volumes de materiais movimentados (Kg por dia)</b>		
<b>Pares de Setores</b>	<b>Fluxo</b>	<b>Prioridade de proximidade</b>
Embalagem e recebimento/despacho	400	E
Embalagem e armazém	400	E
Armazém e recebimento/despacho	3600	A
<b>Baseada em Shonberger e Knodd (1994).</b>		

*Passo 1*





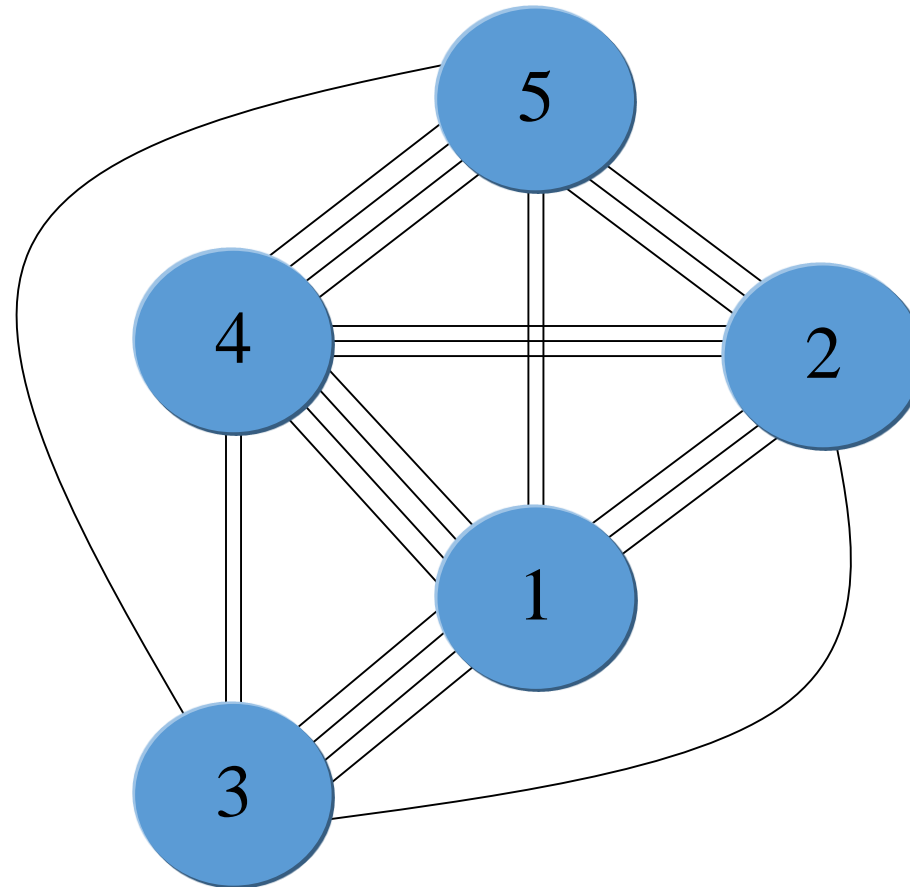
## *Passo 2*

- 1) **A** → Proximidade absolutamente necessária, valor 4;
- 2) **E** → Proximidade especialmente necessária, valor 3;
- 3) **I** → Proximidade importante, valor 2;
- 4) **O** → Proximidade regular, valor 1;
- 5) **U** → Proximidade não importante, valor 0;
- 6) **X** → Proximidade indesejável, valor -1.

***ATIVIDADES***

# Diagrama de arranjo de atividades

*Passo 3*



# Diagrama de relações de espaço

*Passo 4*

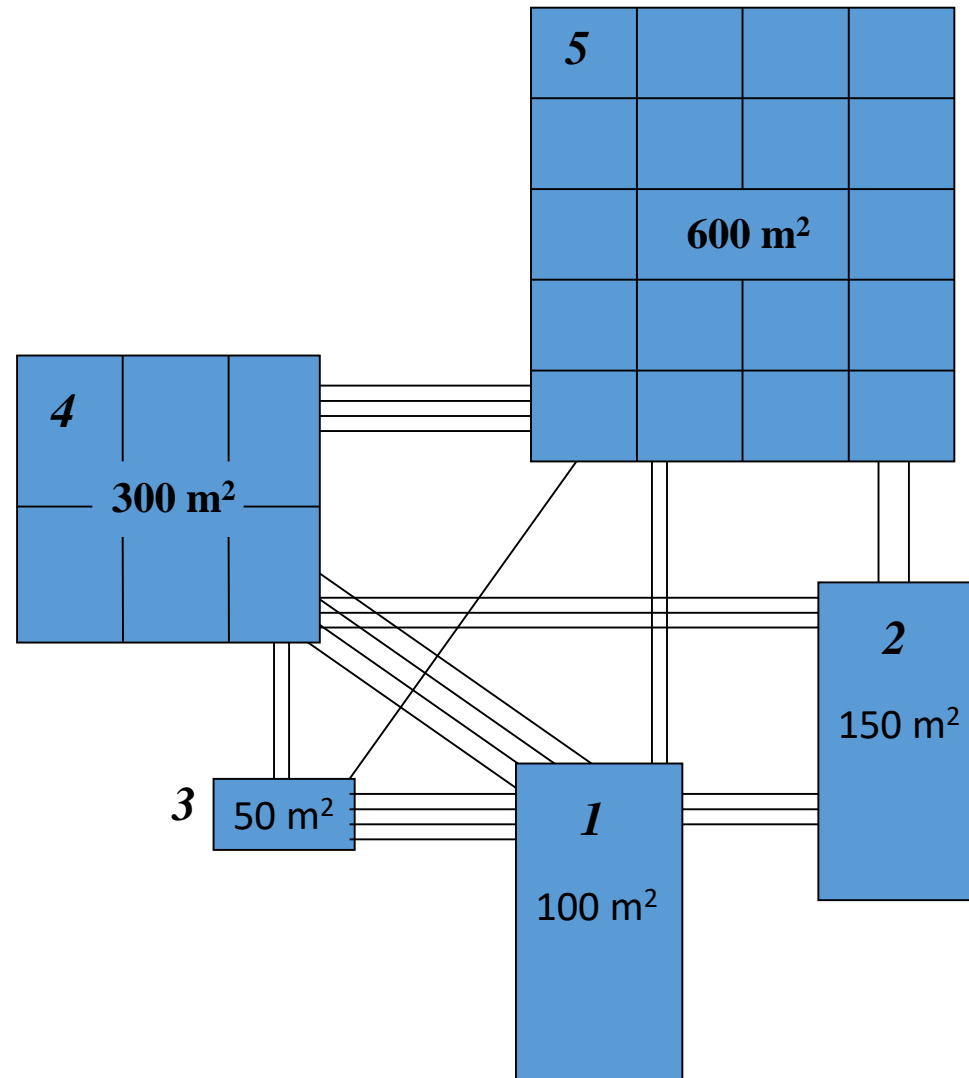
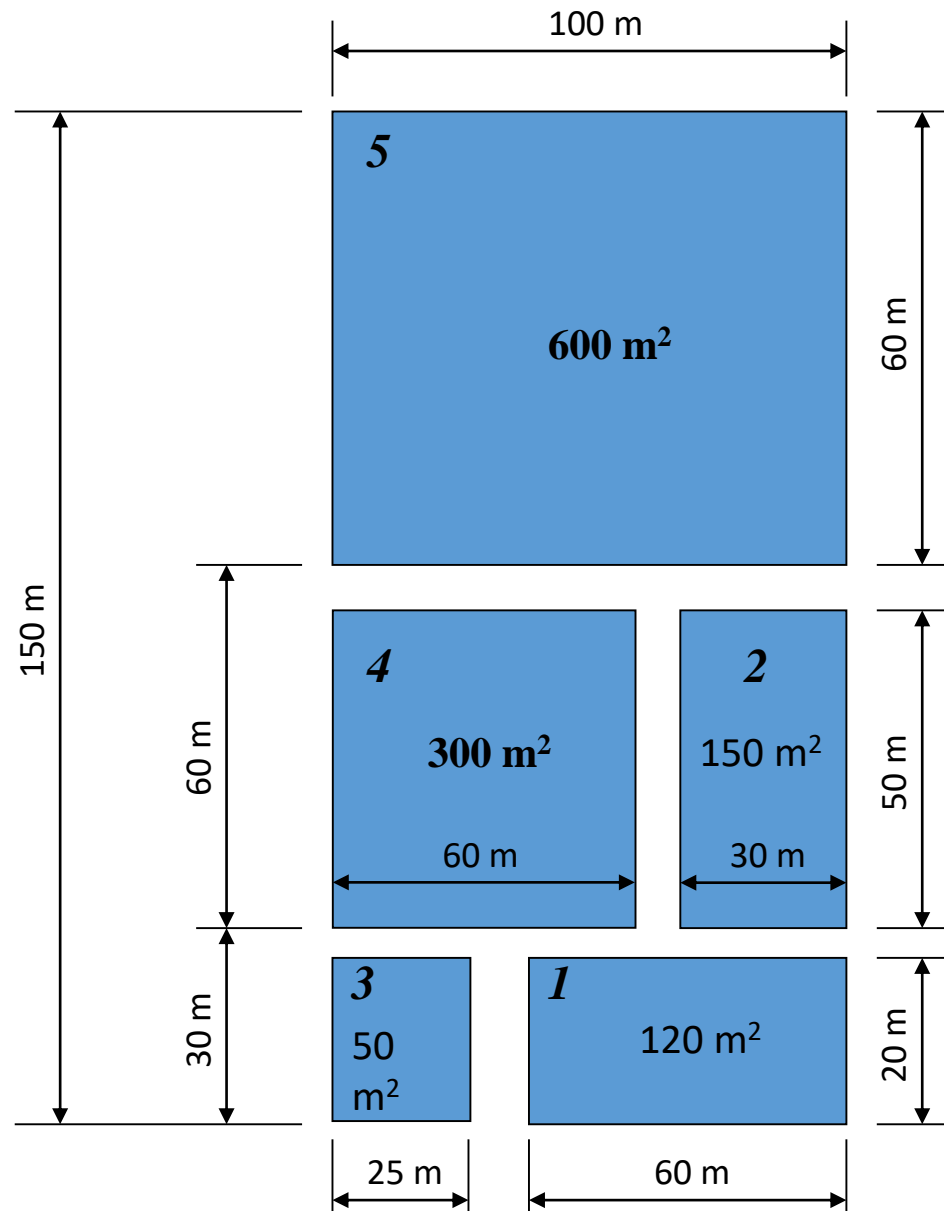


Ilustração de ajuste do arranjo no espaço disponível para o centro de distribuição

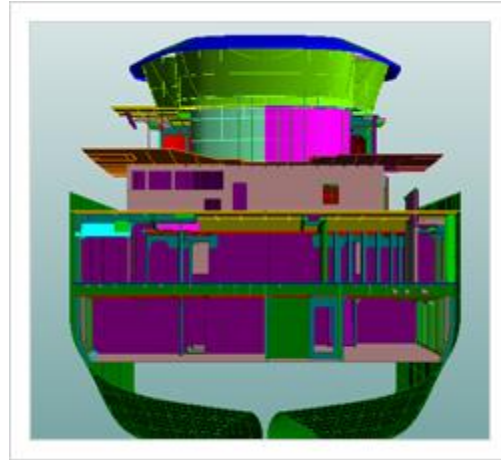
## Passo 5



### EXEMPLO – CENTRO DE DISTRIBUIÇÃO

- **SLP, Passo 5**, Ajuste do arranjo no espaço disponível – Neste ponto do método SLP, tenta-se, a partir das análises anteriores, acomodar da melhor forma possível os setores, respeitando suas áreas e as prioridades de proximidade, na área disponível.

## *Cemre Workshop*



*efficient increase of the steel processing capacity of the shipyard from day to day*

Cemre Workshop is located about 500 meters to the shipyard area. Small scale block production and production is also realized in this area where pre-production is performed. This center which also includes office floors is started to be used as the health and safety training center. Various training programs and seminars are provided in this section.

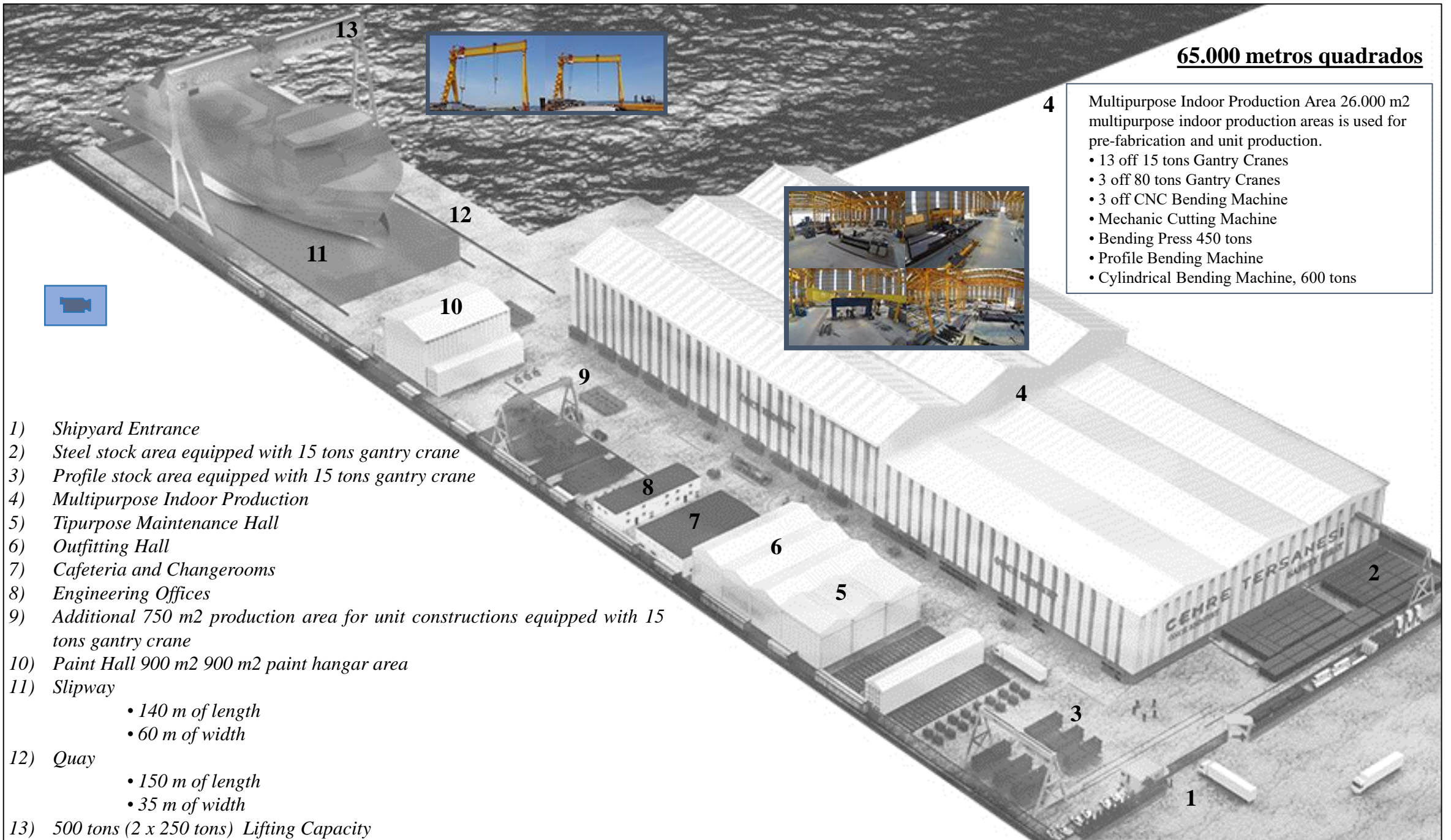
<http://cemreshipyard.com/en/theshipyard-workshop-area.html#cnctezgah>

**65.000 metros cuadrados**



- 4** Multipurpose Indoor Production Area 26.000 m<sup>2</sup> multipurpose indoor production areas is used for pre-fabrication and unit production.
- 13 off 15 tons Gantry Cranes
  - 3 off 80 tons Gantry Cranes
  - 3 off CNC Bending Machine
  - Mechanic Cutting Machine
  - Bending Press 450 tons
  - Profile Bending Machine
  - Cylindrical Bending Machine, 600 tons

- 1) Shipyard Entrance
- 2) Steel stock area equipped with 15 tons gantry crane
- 3) Profile stock area equipped with 15 tons gantry crane
- 4) Multipurpose Indoor Production
- 5) Tipurpose Maintenance Hall
- 6) Outfitting Hall
- 7) Cafeteria and Changerooms
- 8) Engineering Offices
- 9) Additional 750 m<sup>2</sup> production area for unit constructions equipped with 15 tons gantry crane
- 10) Paint Hall 900 m<sup>2</sup> 900 m<sup>2</sup> paint hangar area
- 11) Slipway
- 140 m of length
  - 60 m of width
- 12) Quay
- 150 m of length
  - 35 m of width
- 13) 500 tons (2 x 250 tons) Lifting Capacity



# CEMRE *SHIPYARD II FACILITIES*

- Cemre Workshop is located about 500 meters to the shipyard area. Small scale block production and production is also realized in this area where pre-production is performed. This center which also includes office floors is started to be used as the health and safety training center. Various training programs and seminars are provided in this section.
- *Cutting and Bending Area*
- This section spread over an approximate area of 1.800 m<sup>2</sup> is a very important section on the production line. This section which has a different management and personnel is vital for the shipyard. It is the starting stage of the quality production through the latest technology devices and trained operators.
- *CNC Bench*
- We are able to process the marked data on the sheet metal by the help of laser cutting with 2 units of CNC bench in a problem-free way. Consequently we end up with sheet metal which is appropriate for the production.



**260 HPR CNC benches 2 units (6-40 mm plasma cut, able to cut o2 between 0-150 mm.)**



**260 HPR CNC benches 2 units (6-40 mm plasma cut, able to cut o2 between 0-150 mm.)**



# Guillotine

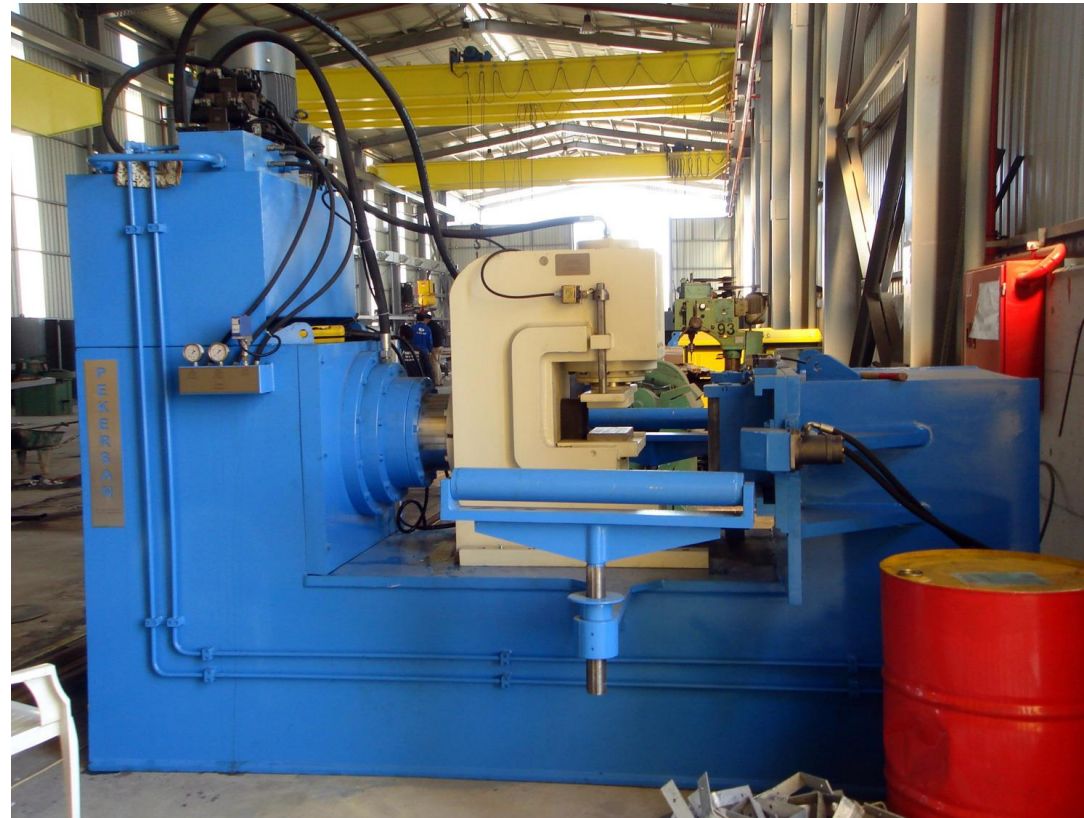
The remaining parts of the sheet metal excess materials are cut by the help of a 16mm mechanical guillotine and are made ready for the production.



**Press: 400 tons press 1 unit. With the help of the press which has a pressing capacity of 450 tons, the sheet metal is made ready for the production by application of the pressing data required for the production.**



**Profile Bending Machine: 400 tons profile bending machine 1 unit. Thanks to his equipment, required and special production profiles are produced and made appropriate for production. This device which has a capacity of about 400 tons is used for special Dutch profiles.**



**Cylindrical Bending Machine: 4 ball cyliner machine (can bend between 0-35 mm) 1 unit: This device has a bending power of 600 tons and is used for bending all the metal sheets and making them appropriate for production. This way, all the bent sheets are made appropriate for the required installation.**



Welding process is realized by welding machinery with adjustable calibration.



**Level I, II and III system pipes can be produced within the structure of the shipyard. At the same time, stainless steel, aluminum and copper alloy pipe production is also in quality nature.**





# *Painting*



# *Piping and Outfitting Sections*

- <https://www.marineinsight.com/naval-architecture/advanced-outfitting-in-shipbuilding/>



# *Ongoing current design works at Cemre Shipyard*

- All the steel modeling of the ship,
- Preparation of the workshop, nesting, detailed parts list, profile list, bending sketches, template sketches to be given to the production.
- Lifting eye arrangement and calculation for units.
- Preparation of all the pipe modeling and isometrics, (including below DN50 pipes and hydraulic pipes).
- Preparation of all the supports drawings for pipes.
- Preparation of all the foundation drawings.
- Preparation of lay-out drawings of all the spaces as 2D and 3D.
- Presentation of all the spaces to the customer down to the last detail (equipment, cableways, pipes, furniture, panels, insulation) by Nupas e-browser program which can be viewed as 3D.
- Preparation of all the equipment drawings down to the last detail and production.
- Calculation of the launching process.

### Legenda (Proposta – Walther)

- 1) **Armazém de chapas e vigas**
- 2) **Jateamento e pintura**
- 3) Área de corte de chapas
- 4) Oficina de Sub-partes
- 5) Oficina de peças curvas
- 6) Oficina de painéis simples
- 7) Oficina de painéis intermediários
- 8) Oficina de matrizes
- 9) Pintura de matrizes
- 10) Armazém geral
- 11) Oficina de tubulações
- 12) **Fabricação modular de tubulações**
- 13) Oficinas de acabamento (*outfitting*)
- 14) Pintura de tubulações (*outfitting*)
- 15) **Edificação de blocos**
- 16) Estoque de blocos
- 17) Pintura de blocos
- 18) Oficina de propulsão
- 19) **União de blocos**
- 20) **Acabamento final**
- 21) **Setor da marinha (Fixo)**
- 22) Outros departamentos:
  - \_ Elétrica,
  - \_ Eletrônica
- 23) Carpintaria
- 24) **Ferramentaria (Moldes/Dispositivos)**



### Legenda ASTINAVE (SLP) – Especialistas

- 1) **Armazém de chapas e vigas (*Buffer Treating Plates*) (03)**
- 2) **Jateamento e pintura (*Blasting and Painting*) (02)**
- 3) Área de corte de chapas
- 4) Oficina de Sub-partes
- 5) Oficina de peças curvas
- 6) Oficina de painéis simples
- 7) Oficina de painéis intermediários
- 8) Oficina de matrizes
- 9) Pintura de matrizes
- 10) Armazém geral
- 11) Oficina de tubulações
- 12) **Oficina de tubulações (*piping workshop*) (08)**
- 13) Oficinas de acabamento (*outfitting*)
- 14) Pintura de tubulações (*outfitting*)
- 15) **Oficina de Conformado de blocos (05)**
- 16) Estoque de blocos
- 17) Pintura de blocos
- 18) Oficina de propulsão
- 19) **União de blocos (12 – 16 – 17 – 18)**
- 20) **Acabamento final (12 – 16 – 17 – 18)**
- 21) **Setor da marinha (Fixo)**
- 22) Outros departamentos:
  - \_ Elétrica,
  - \_ Eletrônica
- 23) Carpintaria
- 24) **Ferramentaria (Moldes/Dispositivos)**



ASTINAVE  
SLP

# Incidência de proximidade

⇒ *Headquarters Workshop of a Shipyard*

<http://cemreshipyard.com/en/theshipyard-workshop-area.html#cnctezgah>

<http://www.labuanship.com/assets-facilities-equipment/>  
<https://www.marineinsight.com/naval-architecture/ship-construction-plate-machining-assembly-hull-units-block-erection/>

Proposta – Walther		ASTINAVE SLP/Especialistas	Departamento ⇒			Especialistas							
Departamentos	↓		SLP/slide	SLP Especialistas		SLP (slide)	1	2	3	4	5	6	7
Armazém de chapas e vigas	01	03	03	<b>03</b>	<i>Buffer Treating Plates (03)</i>								
Jateamento e pintura	02	02	02	<b>02</b>	<i>Blasting and Painting (02)</i>								
Área de corte de chapas	03	06	04	<b>06</b>	<i>Cutting Area 1 (Chapas grandes (fundos, costados) (06)</i>								
Oficina de Sub-partes	04												
Oficina de peças curvas	05	07	08	<b>07</b>	<i>Sub-Assembly and Curves Workshop (07)</i>								
Oficina de painéis simples	06	04	05	<b>04</b>	<i>Simple Panels Forming (chapa + reforço) (04)</i>								
Oficina de painéis intermediários	07												
Oficina de matrizes	08												
Pintura de matrizes	09												
Armazém Geral ( <i>General Warehouse</i> )	10	01	01	<b>01</b>	<i>General Warehouse (01)</i>								
Oficina de tubulações	11	08	12	<b>08</b>	<i>Piping and Engine Systems (08)</i>								
Fabricação modular de tubulações	12	16	12	<b>08</b>	<i>Piping and Engine Systems (08)</i>								
Oficinas de acabamento ( <i>outfitting</i> )	13	13	11	<b>13</b>	<i>Outfitting and Welding Workshop (13)</i>								
Pintura de tubulações ( <i>outfitting</i> )	14	11	15	<b>11</b>	<i>Outfitting Painting (11)</i>								
Edificação de blocos	15	05	10	<b>05</b>	<i>Block Erection (site – construção dos blocos) (05)</i>								
Estoque de blocos	16												
Pintura de blocos	17	10	14	<b>10</b>	<i>Block Painting (10)</i>								
Oficina de propulsão	18	19	16	<b>19</b>	<i>Propulsion Workshop (19)</i>								
União de blocos	19	12/16/17/18	20	<b>12</b>	<i>Complete Erection Site (Navios completos) (12)</i>								
Acabamento final	20	12/16/17/18	20	<b>12</b>	<i>Complete Erection Site (Navios completos) (12)</i>								
Setor da marinha (Fixo)	21	-----	-----	-----	-----								
Outros departamentos: Elétrica & Eletrônica	22	14	18 / 19	<b>14</b>	<i>Electronic Workshop (14) &amp; Electrical Workshop (14)</i>								
Carpintaria	23	15	17	<b>15</b>	<i>Carpentry Workshop (15)</i>								
Ferramentaria (Moldes/Dispositivos)	24	-----	-----	-----	-----								

Elaborado por:

Walther Azzolini Junior

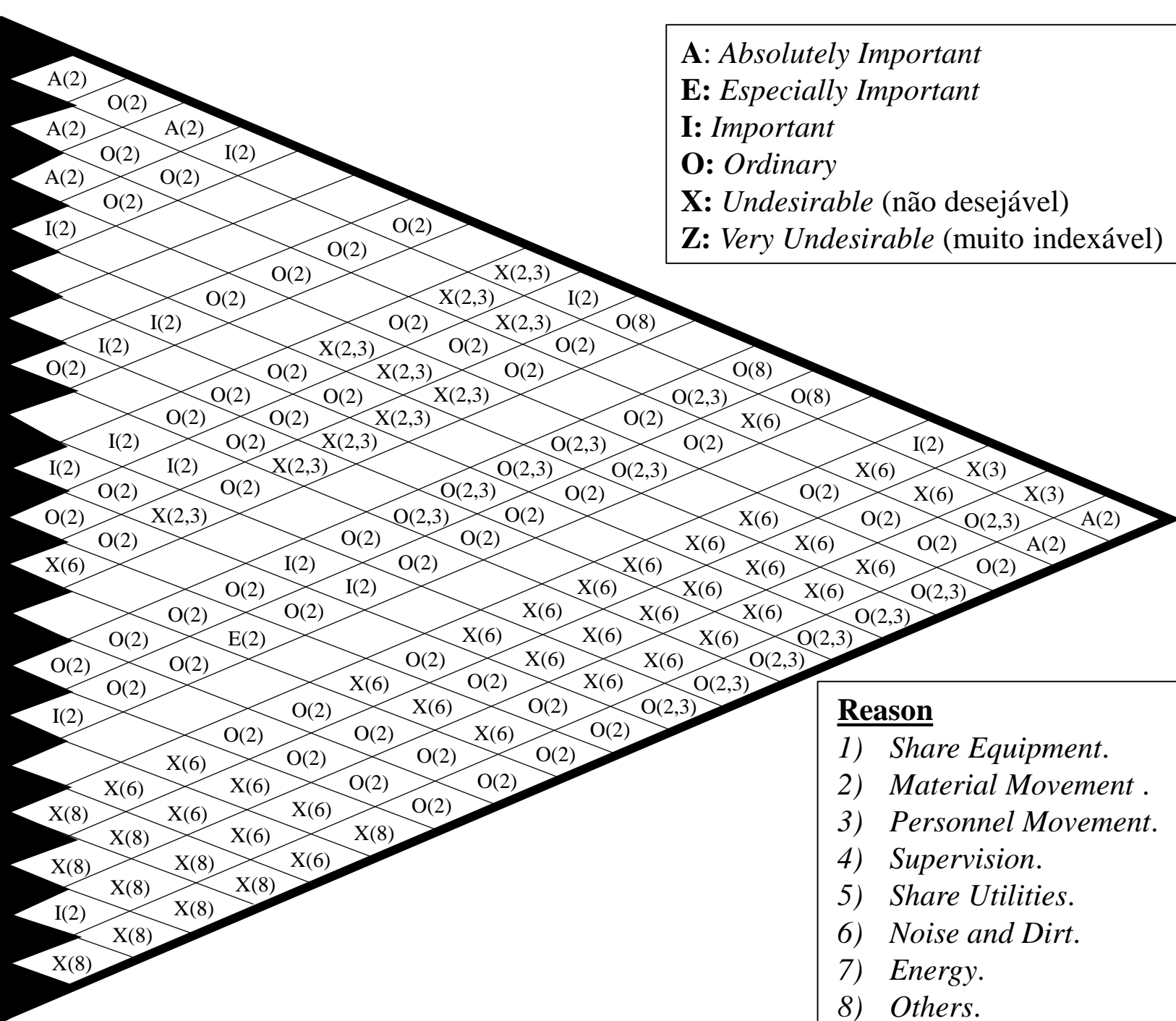
01	<i>General Warehouse (01)</i>	
02	<i>Blasting and Painting (02)</i>	A(2)
03	<i>Buffer Treating Plates (03)</i>	A(2) O(2) A(2)
04	<i>Cutting Area 1 (Chapas grandes (fundos, costados) (06)</i>	A(2) O(2) O(2) I(2) X(2,3)
05	<i>Simple Panels Forming (chapa + reforço) (04)</i>	I(2) O(2) O(2) O(2) O(2) X(2,3)
06	<i>Simple Panels Painting</i>	I(2) E(2) O(2) O(2) O(2) X(2,3) X(2,3) I(2)
07	<i>Cutting Area 2 "Nesting" peças menores</i>	I(2) I(2) O(2) O(2) O(2) X(2,3) O(2) X(2,3) O(8)
08	<i>Sub-Assembly and Curves Workshop (07)</i>	O(2) O(2) O(2) O(2) X(2,3) X(2,3) O(2) O(2,3) O(8)
09	<i>Sub-Assembly Painting</i>	I(2) O(2) O(2) O(2) X(2,3) X(2,3) O(2) O(2) X(6) I(2)
10	<i>Block Erection (site – construção dos blocos) (05)</i>	I(2) I(2) O(2) X(2,3) O(2) O(2,3) O(2,3) O(2) X(6) O(2) X(6) X(3)
11	<i>Outfitting and Welding Workshop (13)</i>	O(2) O(2) O(2) O(2) O(2,3) O(2) X(6) X(6) X(6) O(2) O(2,3) A(2)
12	<i>Piping and Engine Systems (08)</i>	X(6) O(2) O(2) I(2) O(2) X(6) X(6) X(6) X(6) X(6) O(2)
13	<i>General Purpose Warehouse</i>	I(2) O(2) O(2) O(2) X(6) X(6) X(6) X(6) O(2,3)
14	<i>Block Painting (10)</i>	O(2) O(2) I(2) X(6) O(2) X(6) X(6) O(2,3)
15	<i>Outfitting Painting (11)</i>	I(2) O(2) O(2) O(2) X(6) O(2) O(2,3)
16	<i>Propulsion Workshop</i>	X(6) X(6) X(6) O(2) O(2) O(2)
17	<i>Carpentry Workshop (15)</i>	X(8) X(6) X(6) X(6) X(8)
18	<i>Electronic Workshop (14)</i>	X(8) X(8) X(8)
19	<i>Electrical Workshop (14)</i>	I(2) X(8)
20	<i>Complete Erection Site (Navios pequenos - completos) (12)</i>	X(8)

**A:** Absolutely Important  
**E:** Especially Important  
**I:** Important  
**O:** Ordinary  
**X:** Undesirable (não desejável)  
**Z:** Very Undesirable (muito indexável)

- Reason**
- 1) Share Equipment.
  - 2) Material Movement .
  - 3) Personnel Movement.
  - 4) Supervision.
  - 5) Share Utilities.
  - 6) Noise and Dirt.
  - 7) Energy.
  - 8) Others.



01	<i>General Warehouse (01)</i>
02	<i>Blasting and Painting (02)</i>
03	<i>Buffer Treating Plates (03)</i>
04	<i>Cutting Area 1 (Chapas grandes (fundos, costados) (06)</i>
05	<i>Simple Panels Forming (chapa + reforço) (04)</i>
06	
07	
08	<i>Sub-Assembly and Curves Workshop (07)</i>
09	
10	<i>Block Erection (site – construção dos blocos) (05)</i>
11	<i>Outfitting and Welding Workshop (13)</i>
12	<i>Piping and Engine Systems (08)</i>
13	
14	<i>Block Painting (10)</i>
15	<i>Outfitting Painting (11)</i>
16	
17	<i>Carpentry Workshop (15)</i>
18	<i>Electronic Workshop (14)</i>
19	<i>Electrical Workshop (14)</i>
20	<i>Complete Erection Site (Navios pequenos - completos) (12)</i>



**A:** Absolutely Important  
**E:** Especially Important  
**I:** Important  
**O:** Ordinary  
**X:** Undesirable (não desejável)  
**Z:** Very Undesirable (muito indexável)

- Reason**
- 1) Share Equipment.
  - 2) Material Movement .
  - 3) Personnel Movement.
  - 4) Supervision.
  - 5) Share Utilities.
  - 6) Noise and Dirt.
  - 7) Energy.
  - 8) Others.

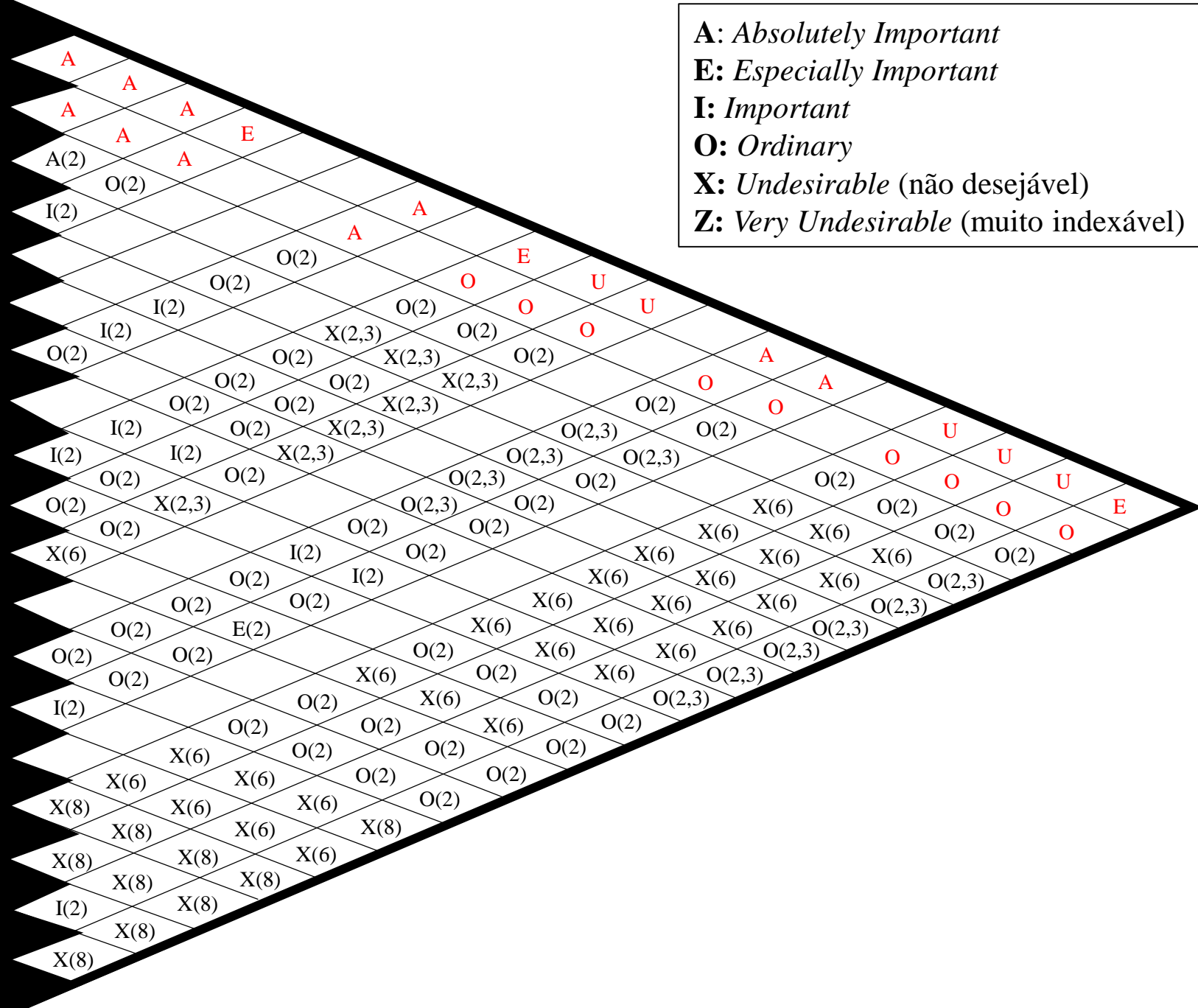
Elaborado por:

Lilia Sedeño M.

Especialista 01

**A:** Absolutely Important  
**E:** Especially Important  
**I:** Important  
**O:** Ordinary  
**X:** Undesirable (não desejável)  
**Z:** Very Undesirable (muito indexável)

01	<i>General Warehouse (01)</i>
02	<i>Blasting and Painting (02)</i>
03	<i>Buffer Treating Plates (03)</i>
04	<i>Cutting Area 1 (Chapas grandes (fundos, costados) (06)</i>
05	<i>Simple Panels Forming (chapa + reforço) (04)</i>
06	
07	
08	<i>Sub-Assembly and Curves Workshop (7)</i>
09	
10	<i>Block Erection (site – construção dos blocos) (05)</i>
11	<i>Outfitting and Welding Workshop (13)</i>
12	<i>Piping and Engine Systems (08)</i>
13	
14	<i>Block Painting (10)</i>
15	<i>Outfitting Painting (11)</i>
16	<i>Maquinado (19)</i>
17	<i>Carpentry Workshop (15)</i>
18	<i>Electronic Workshop (14)</i>
19	<i>Electrical Workshop (14)</i>
20	<i>Complete Erection Site (Navios pequenos - completos) (12)</i>



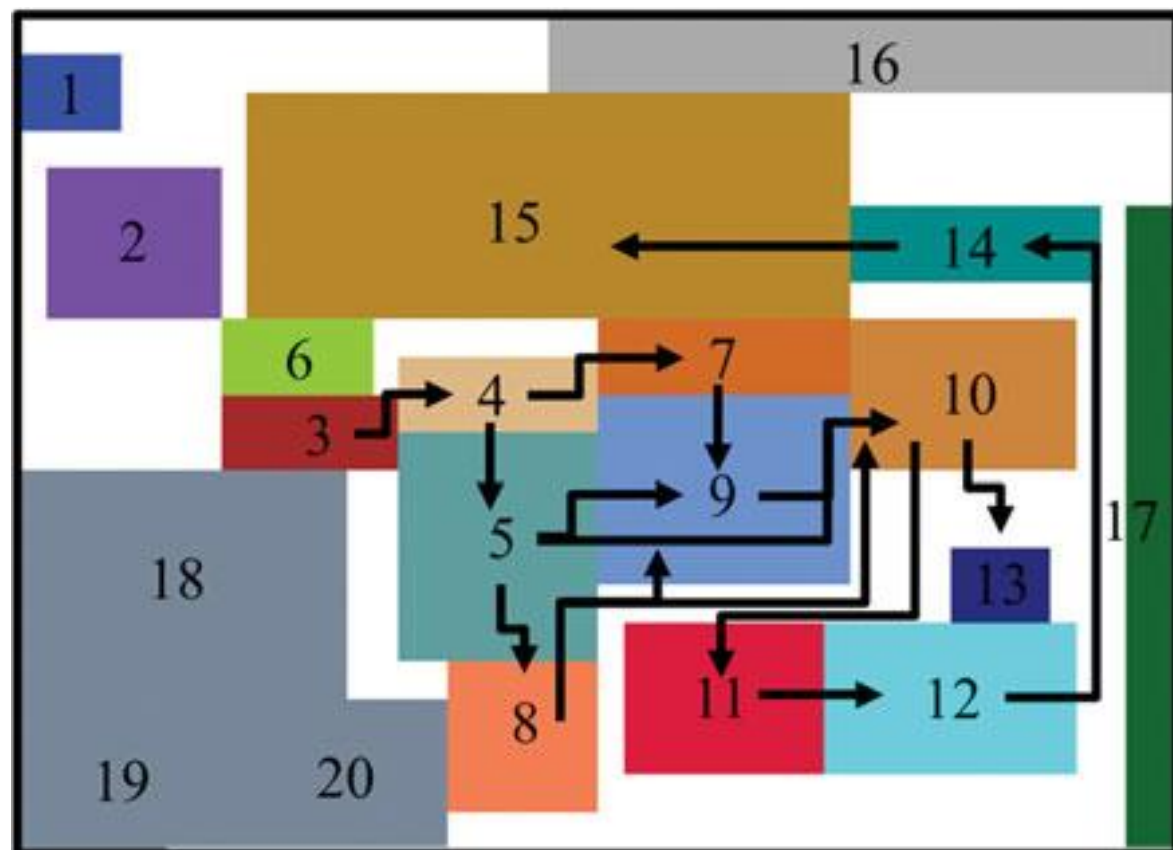


# *Layout* Astinave

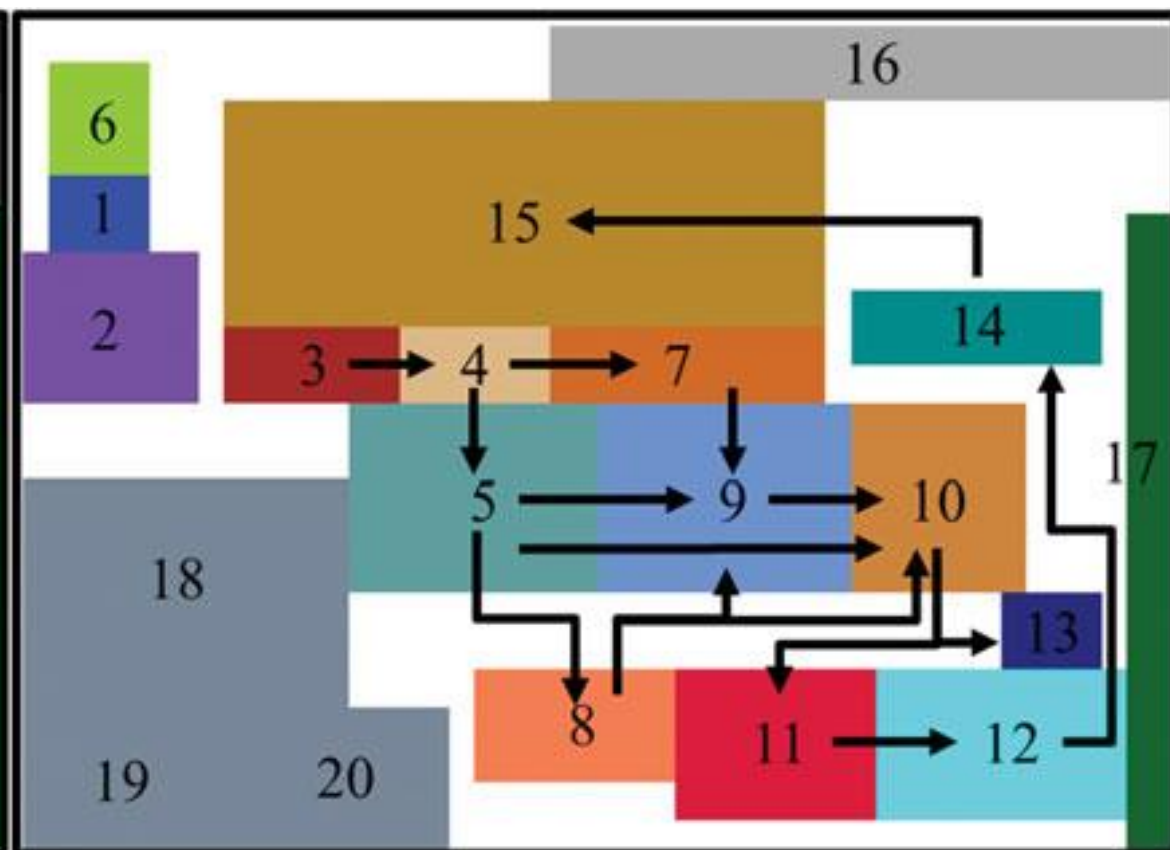
*Layout* – .pptx (2018)

**Versão 1.0**

*Layout Paper*



Without alignment



With alignment

# **LAYOUT**

Tabela de conversão – mudança dos departamentos na nova versão do *layout*



Legenda (2018) Versão 0.0	
1	General Warehouse
2	Blasting and painting cabins
3	Cutting Area and Warehouse Treated Plates
4	Simple Panels Forming
5	Simple Panels Painting
6	Cutting Area Machine and Cutting Area and Nesting
7	Sub-Assembly and Curves Workshop
8	Sub-Assembly Painting
9	Block Erection
10	Outfitting and Welding Workshop
11	Modules of Piping and Engine Systems
12	General Purpose Warehouse
13	Block Painting
14	Outfitting Painting
15	Propulsion Workshop
16	Carpentry Workshop
17	Electronic Workshop
18	Electrical Workshop
19	Complete erection site
20	Black Yard

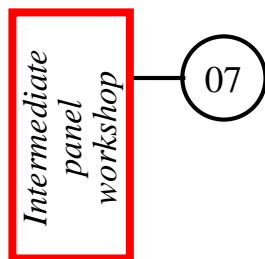


# Layout Astinave

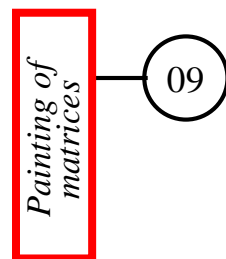
Layout – .pptx (2018)

Versão 1.0

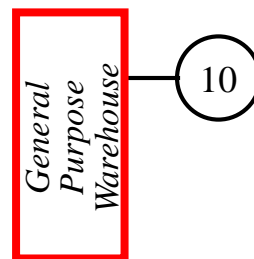
Inclusão



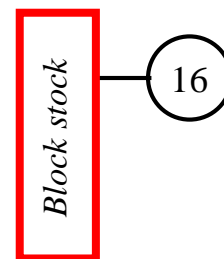
Inclusão



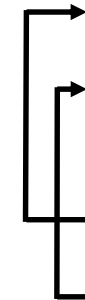
Inclusão



Inclusão



Legenda (2018) Versão 1.0		
1	✓	General Warehouse
2	✓	Blasting and painting cabins
3	✓	Cutting Area and Warehouse Treated Plates
4	⇒ 6	Simple Panels Forming
5	⇒ 2	Simple Panels Painting
6	⇒ 3	Cutting Area Machine and Cutting Area and Nesting
7	⇒ 4	Sub-Assembly Workshop
	⇒ 5	Curves Workshop
8	⇒	Matrices Workshop
9	⇒ 15	Block Erection
10	⇒ 13	Outfitting and Welding Workshop
11	⇒ 12	Modules of Piping and Engine Systems
12	⇒ 11	Pipe Workshop
13	⇒ 17	Block Painting
14	✓	Outfitting Painting
15	⇒ 18	Propulsion Workshop
	Outros ⇑	Carpentry Workshop
		Electronic Workshop
		Electrical Workshop
19	✓	Complete erection site
20	✓	Black Yard



# ***LAYOUT***

Versão 1.0 do *layout*

**Legenda (2018) Versão 0.0**

1	<i>General Warehouse</i>
2	<i>Blasting and painting cabins</i>
3	<i>Cutting Area and Warehouse Treated Plates</i>
4	<i>Simple Panels Forming</i>
5	<i>Simple Panels Painting</i>
6	<i>Cutting Area Machine and Cutting Area and Nesting</i>
7	<i>Sub-Assembly and Curves Workshop</i>
8	<i>Sub-Assembly Painting</i>
9	<i>Block Erection</i>
10	<i>Outfitting and Welding Workshop</i>
11	<i>Modules of Piping and Engine Systems</i>
12	<i>General Purpose Warehouse</i>
13	<i>Block Painting</i>
14	<i>Outfitting Painting</i>
15	<i>Propulsion Workshop</i>
16	<i>Carpentry Workshop</i>
17	<i>Electronic Workshop</i>
18	<i>Electrical Workshop</i>
19	<i>Complete erection site</i>
20	<i>Black Yard</i>



# Layout Astinave

Layout – .pptx (2018)

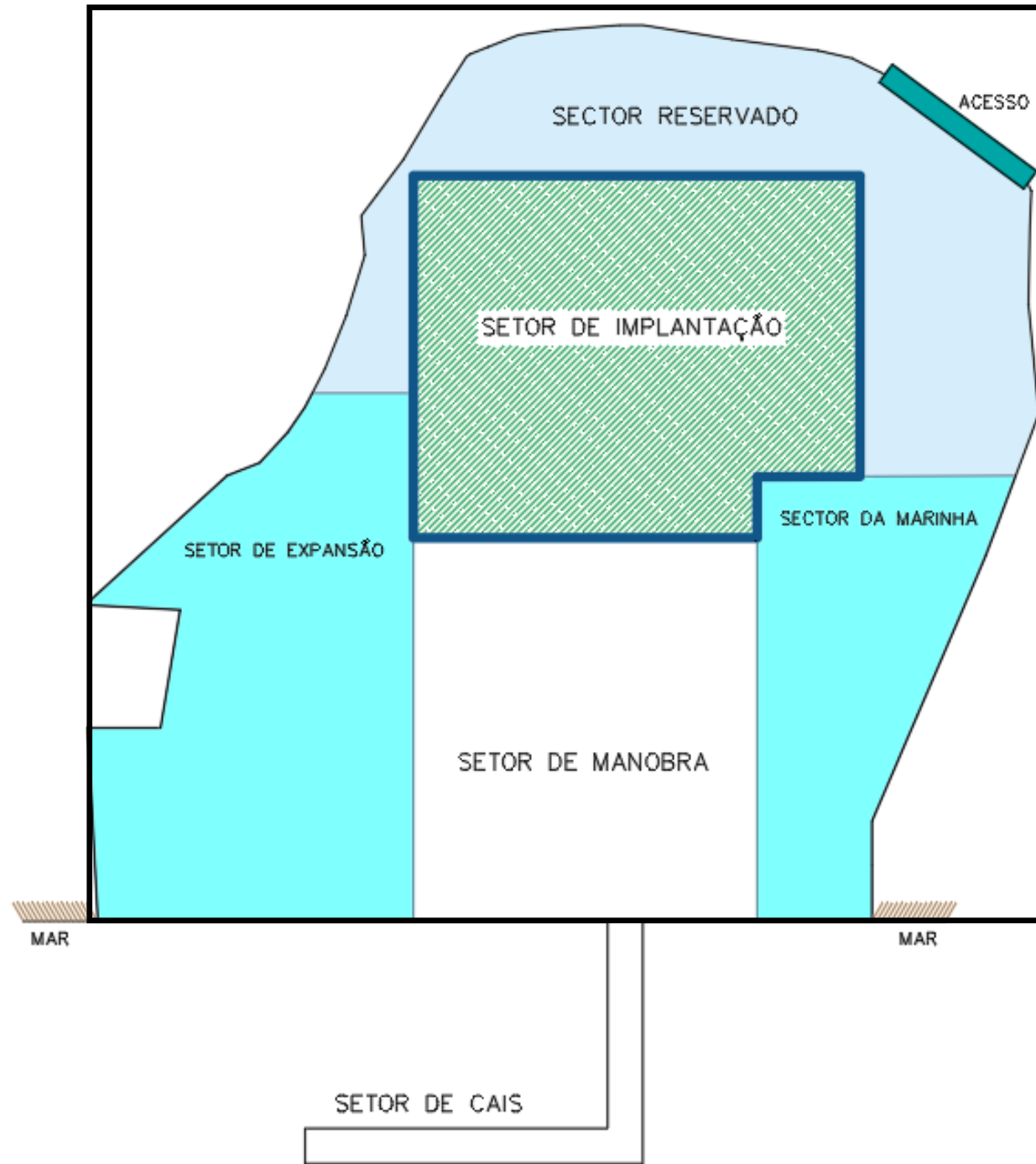
**Versão 1.0**

**Legenda (2018) Versão 1.0**

1	<i>General Warehouse</i>
2	<i>Blasting and painting cabins Simple Panels Painting</i>
3	<i>Cutting Area Machine and Cutting Area and Nesting and Warehouse Treated Plates</i>
4	<i>Sub-Assembly Workshop</i>
5	<i>Curves Workshop</i>
6	<i>Simple Panels Forming (Workshop)</i>
7	<i>Intermediate panel Workshop</i>
8	<i>Matrices Workshop</i>
9	<i>Painting of matrices</i>
10	<i>General Purpose Warehouse</i>
11	<i>Piping Workshop</i>
12	<i>Modules of Piping and Engine Systems</i>
13	<i>Outfitting and Welding Workshop</i>
14	<i>Outfitting and Piping Painting</i>
15	<i>Block Erection</i>
16	<i>Block Stock</i>
17	<i>Block Painting</i>
18	<i>Propulsion Workshop</i>
	<i>Carpentry Workshop</i>
	<i>Electronic Workshop</i>
	<i>Electrical Workshop</i>
19	<i>Complete erection site</i>
20	<i>Black Yard</i>

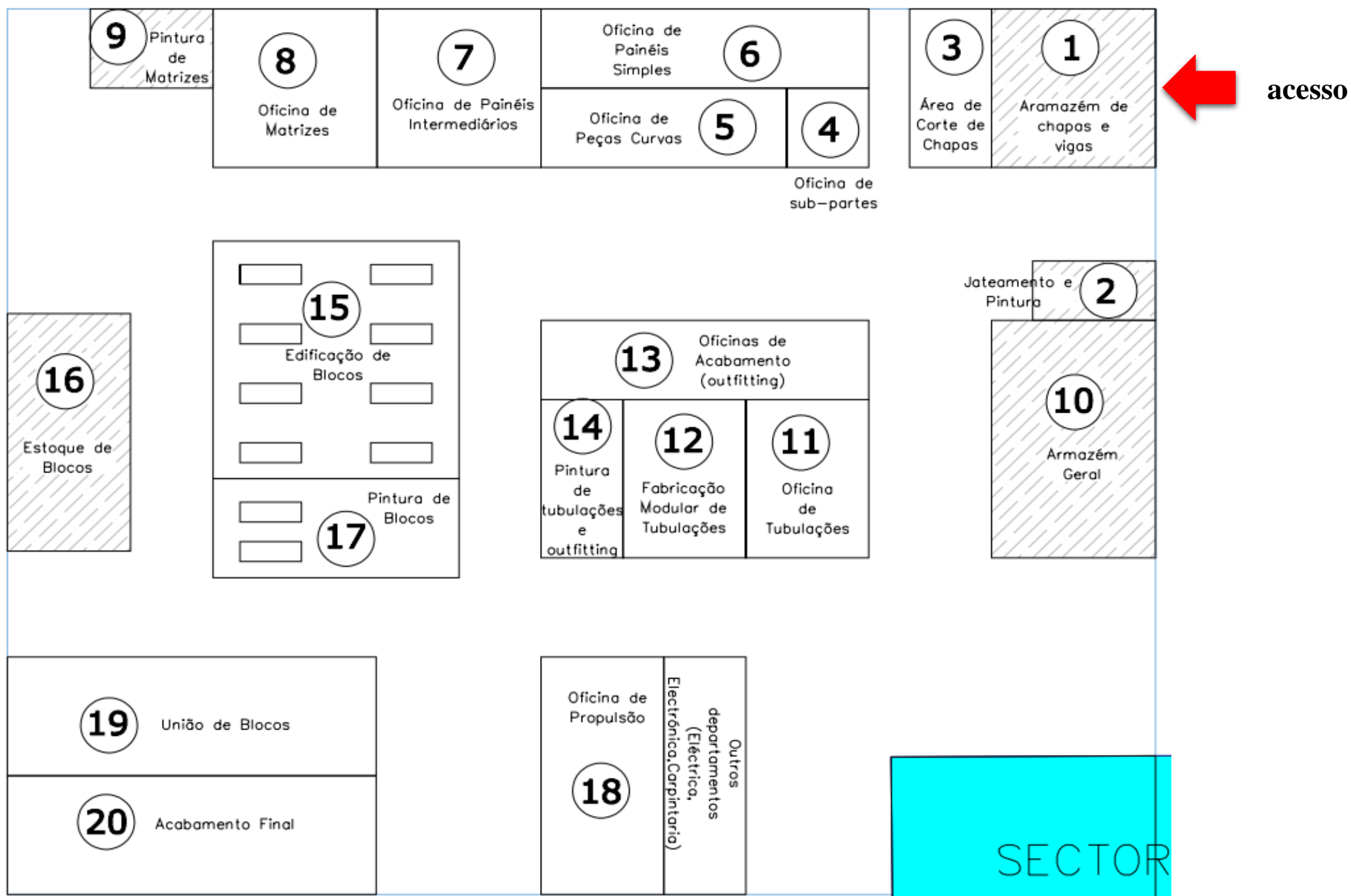
# Terreno

Estaleiro ASTINAVE



# *Layout* – Proposto sem otimização

Estaleiro ASTINAVE



# *Layout* – Proposto sem otimização

Matriz da *Grid* topológica ( $n = 3 \times m = 7$ ) – Estaleiro ASTINAVE



9	8	7	6	4	3	1
16	13	5	12	11	10	2
14	15	17	18	19	20	21

1 cenário – com base no layout

9	8	7	6	4	3	1
16	5	17	15	13	10	2
20	19	18	14	12	11	21

2 cenário – com base no layout

5000 indivíduos

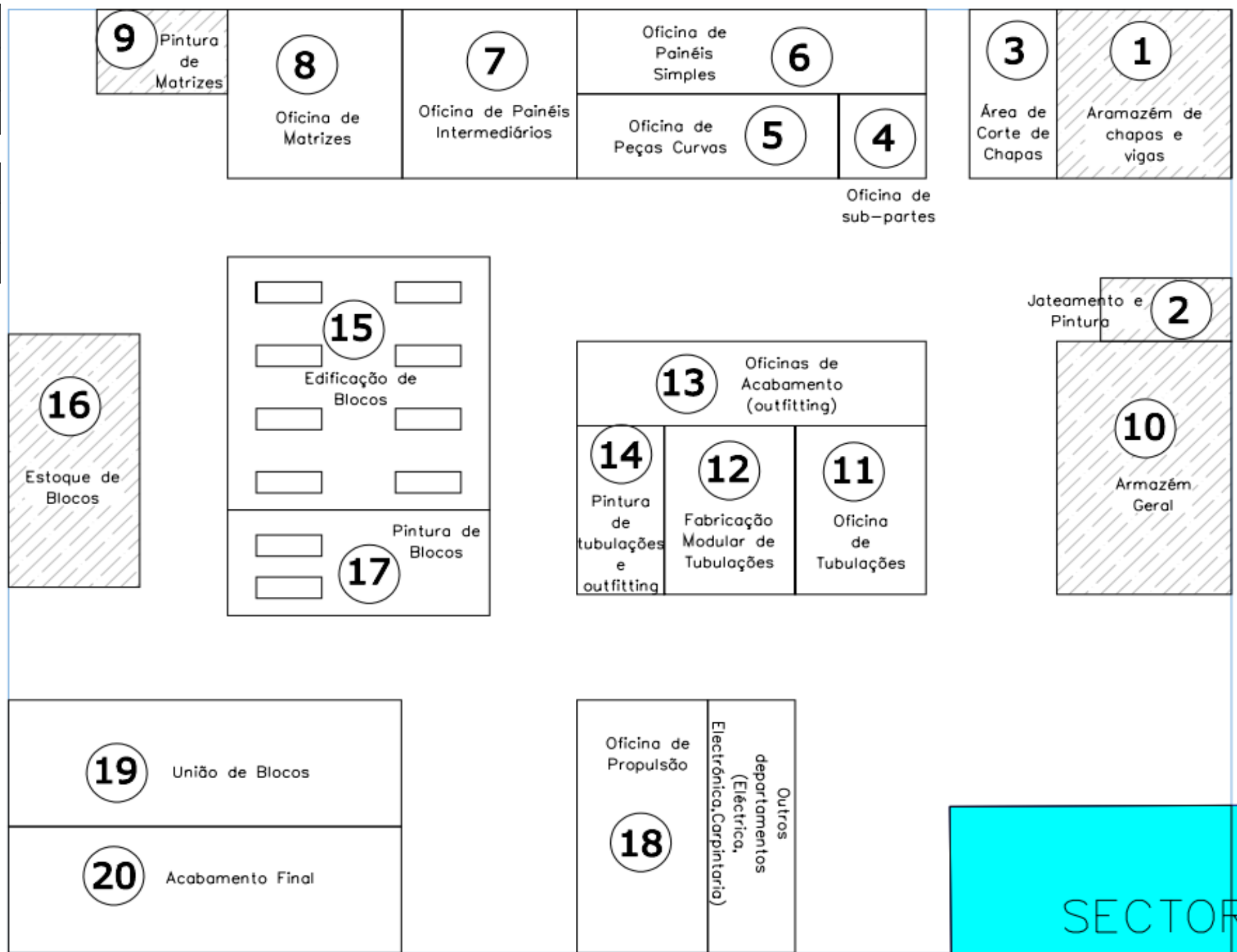
Custo – 112266,50

9	8	7	6	4	3	1
16	5	14	15	17	10	2
18	13	12	11	20	19	21

3 cenário – com base no layout

10000 indivíduos

Custo – 109250,70



9	8	7	6	4	3	1
16	13	5	12	11	10	2
14	15	17	18	19	20	21

1 cenário – com base no layout

9	8	7	6	4	3	1
16	5	14	15	13	10	2
18	20	19	17	12	11	21

2 cenário – com base no layout

5000 indivíduos (Departamento 20 fixo/pos. 2)  
Custo – 103080 // Tempo – 2.886,5 segundos

9	8	7	6	4	3	1
16	5	14	15	13	10	2
18	20	19	17	12	11	21

3 cenário – com base no layout

10000 indivíduos (Departamento 20 fixo/pos. 2)  
Custo – 103080 // Tempo – 5.489,6 segundos

9	8	7	6	4	3	1
16	5	14	15	13	10	2
18	20	19	17	12	11	21

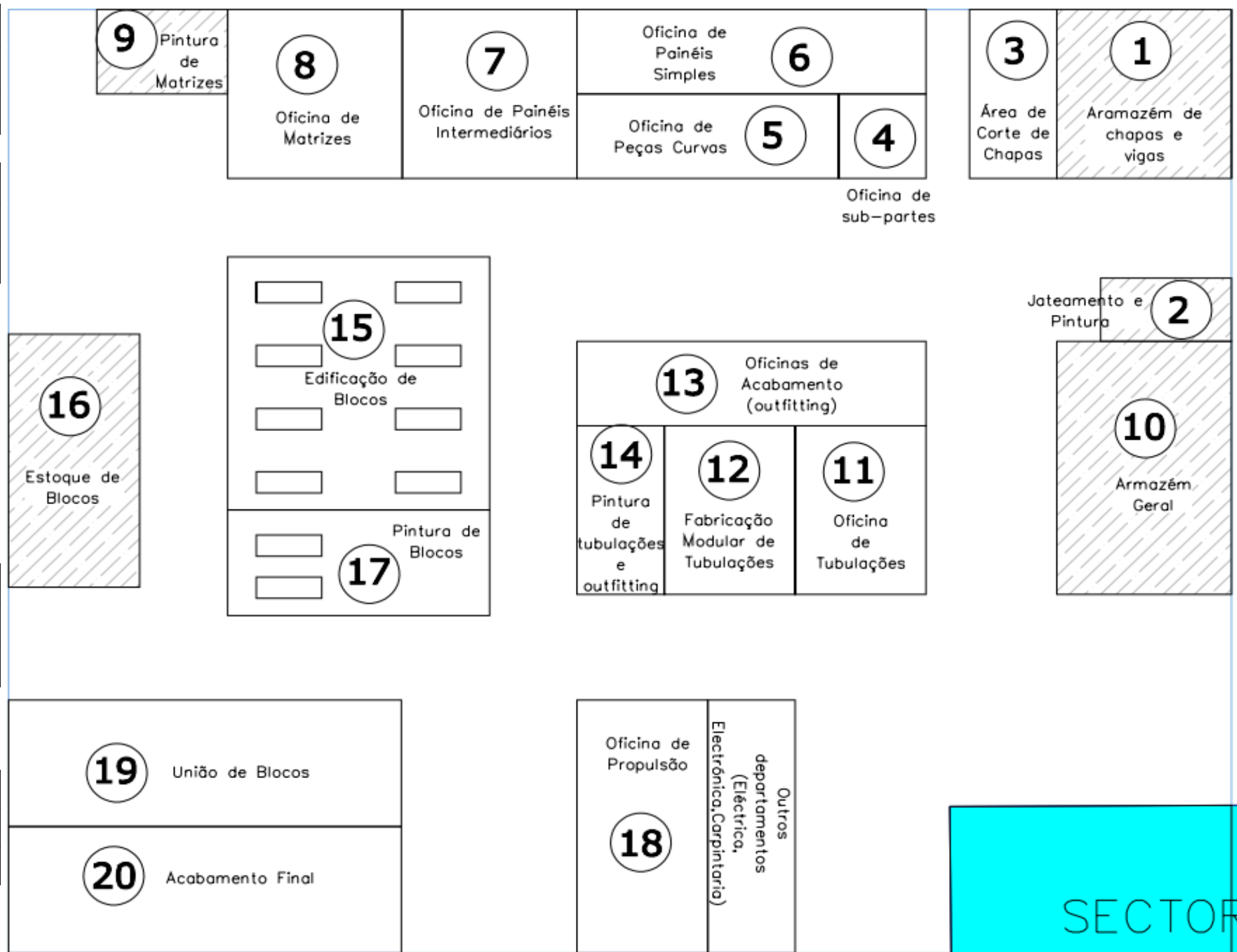
4 cenário – com base no layout

20000 indivíduos (Departamento 20 fixo/pos. 2)  
Custo – 103080 // Tempo – 11.587 segundos

9	8	7	6	4	3	1
16	5	14	15	13	10	2
18	20	19	17	12	11	21

5 cenário – com base no layout

40000 indivíduos (Departamento 20 fixo/pos. 2)  
Custo – 103080 // Tempo – 22.066 segundos



SECTOR

9	8	7	6	4	3	1
16	14	15	17	13	10	2
5	18	20	19	12	11	21

6 cenário – com base no *layout*

5000 indivíduos (Departamento 20 fixo/pos. 3)

Custo – 101220 // Tempo – 2.767,4 segundos

mp – // cp –

9	8	7	6	4	3	1
16	14	15	17	13	10	2
5	18	20	19	12	11	21

7 cenário – com base no *layout*

10000 indivíduos (Departamento 20 fixo/pos. 3)

Custo – 101020 // Tempo – 5.210,5 segundos

mp – // cp –

9	8	7	6	4	3	1
16	14	15	17	13	10	2
5	18	20	19	12	11	21

8 cenário – com base no *layout*

20000 indivíduos (Departamento 20 fixo/pos. 3)

Custo – 101220 // Tempo – 10.852 segundos

mp – // cp –

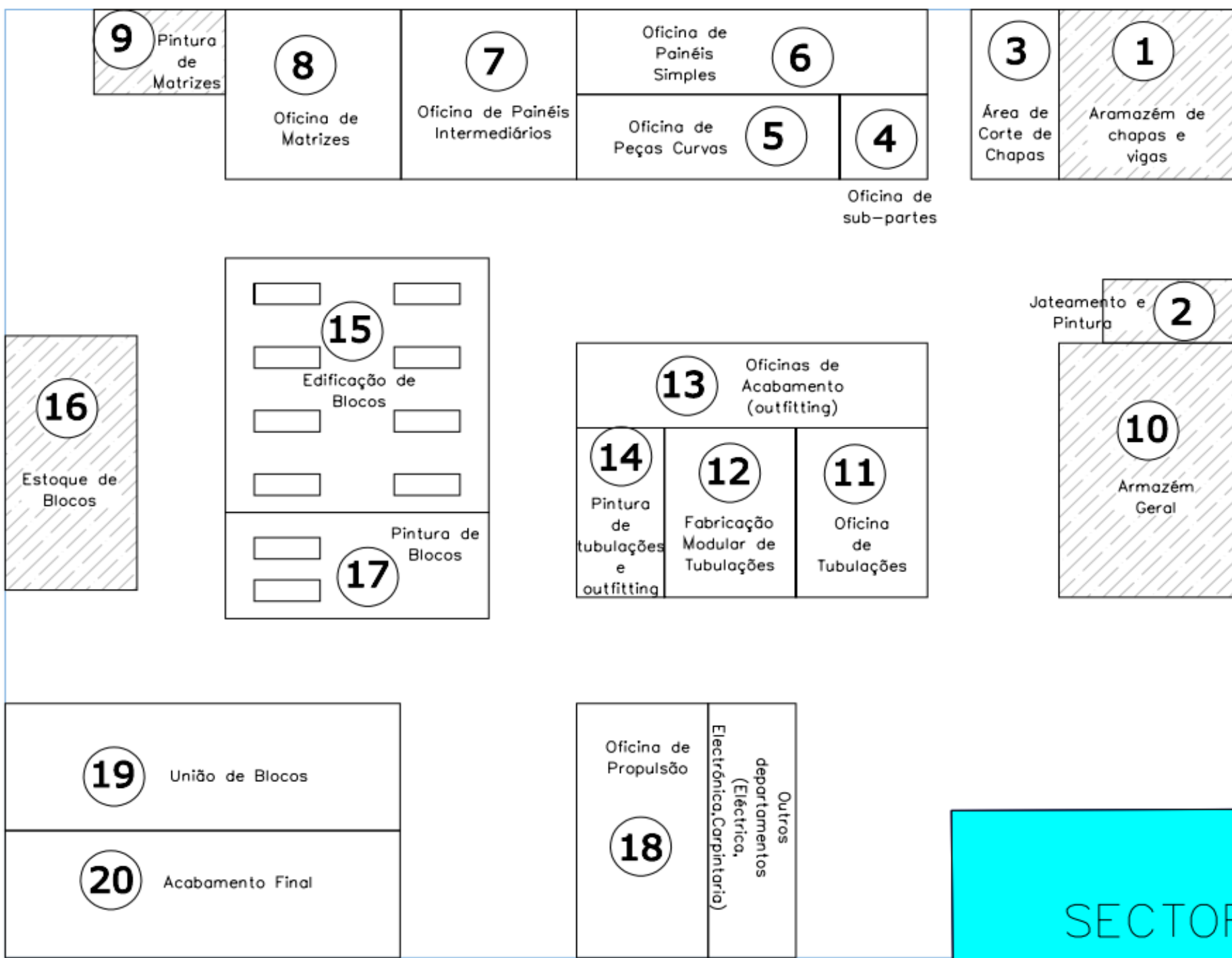
9	8	7	6	4	3	1
16	14	15	17	13	10	2
5	18	20	19	12	11	21

9 cenário – com base no *layout*

40000 indivíduos (Departamento 20 fixo/pos. 3)

Custo – 101220 // Tempo – 19.788 segundos

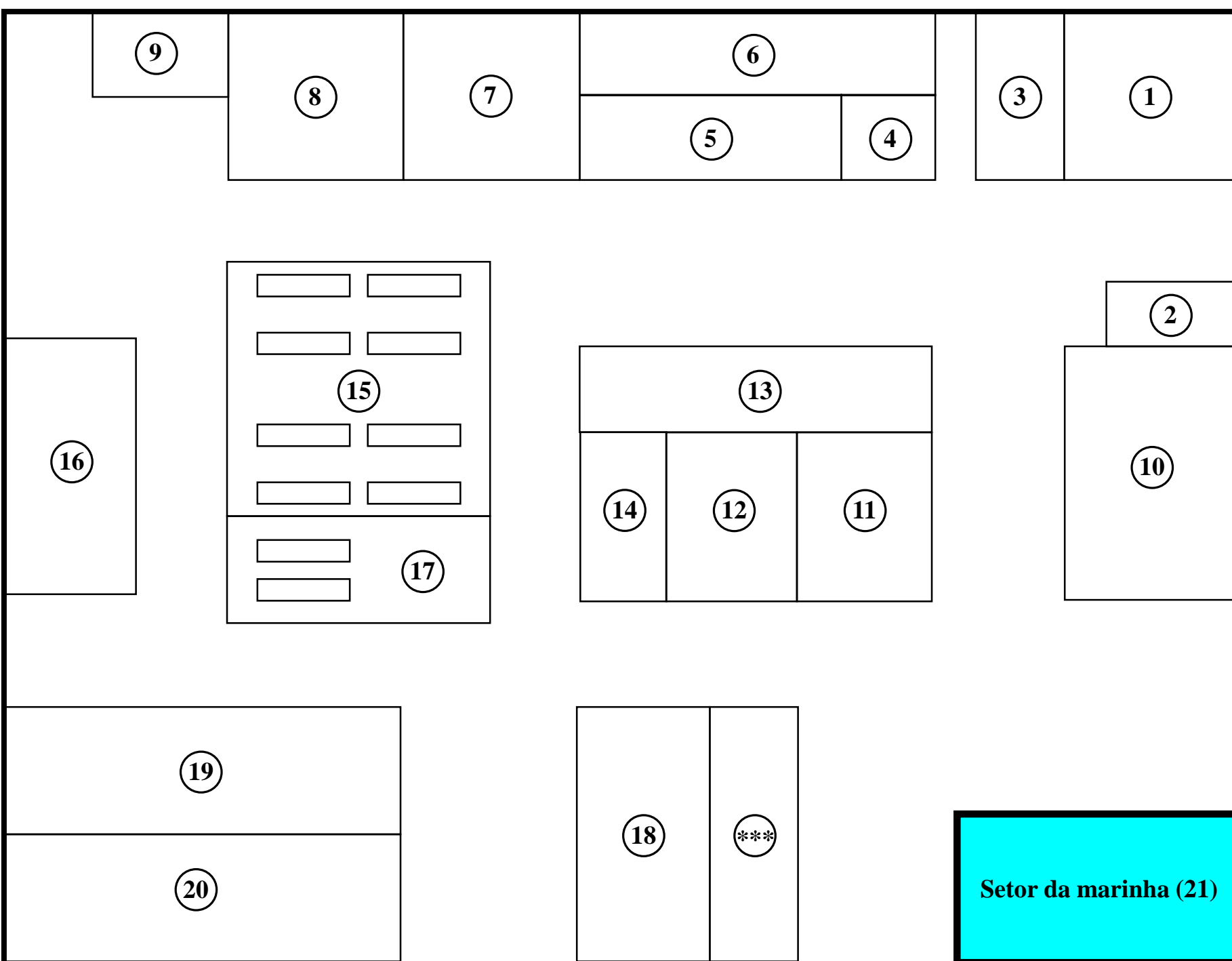
mp – 0,0788 // cp – 0,7638



SECTOR

# *Layout* – Departamentos

Estaleiro ASTINAVE



**Legenda**

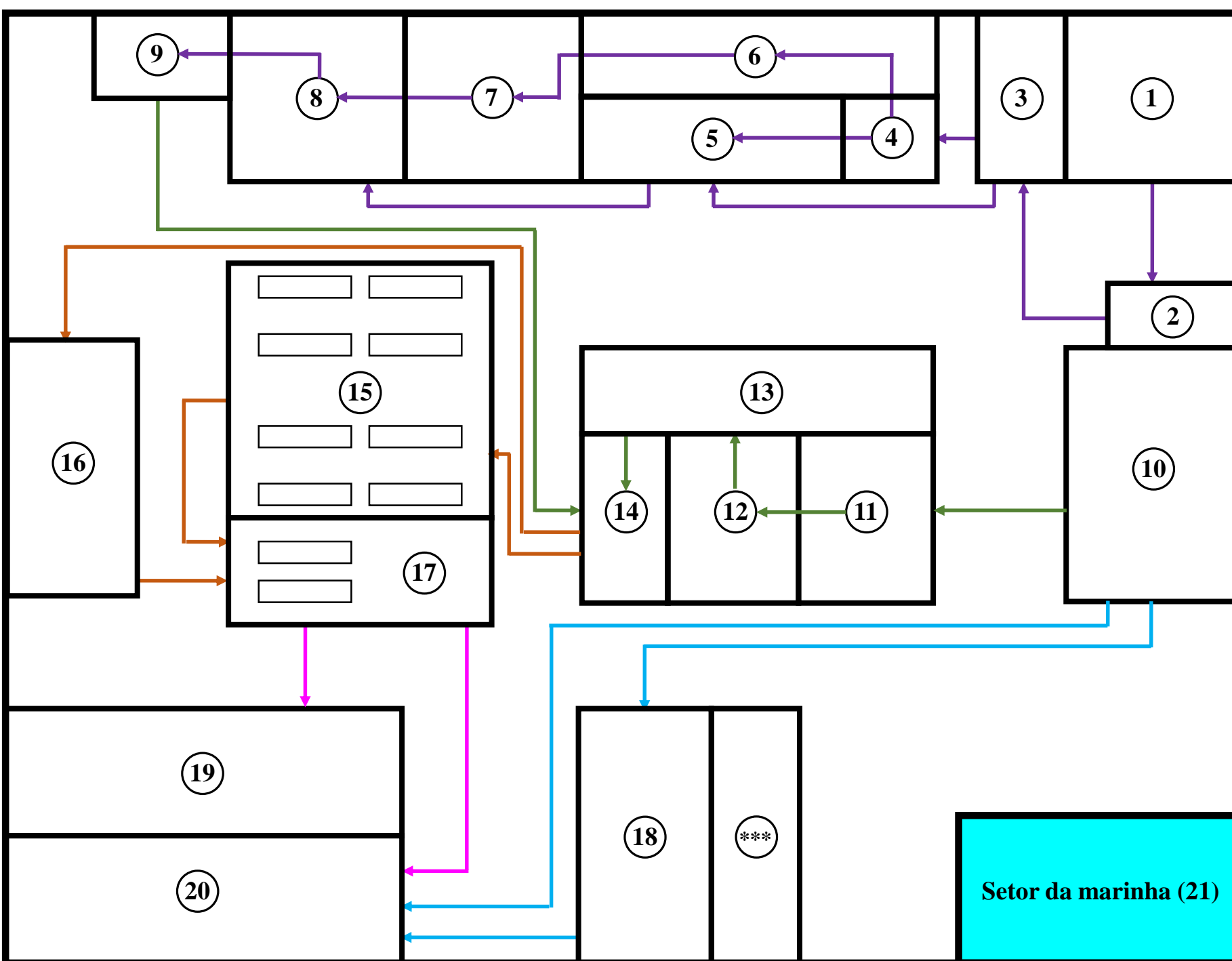
- 1) Armazém de chapas e vigas
- 2) Jateamento e pintura
- 3) Área de corte de chapas
- 4) Oficina de Sub-partes
- 5) Oficina de peças curvas
- 6) Oficina de painéis simples
- 7) Oficina de painéis intermediários
- 8) Oficina de matrizes
- 9) Pintura de matrizes
- 10) Armazém geral
- 11) Oficina de tubulações
- 12) Fabricação modular de tubulações
- 13) Oficinas de acabamento (*outftting*)
- 14) Pintura de tubulações (*outftting*)
- 15) Edificação de blocos
- 16) Estoque de blocos
- 17) Pintura de blocos
- 18) Oficina de propulsão
- 19) União de blocos
- 20) Acabamento final
- 21) Setor da marinha (fixo)

\*\*\* ⇒ outros departamentos: elétrica, eletrônica e carpintaria.

**Setor da marinha (21)**

# *Layout* – Departamentos

Estaleiro ASTINAVE – Fluxo de Fabricação

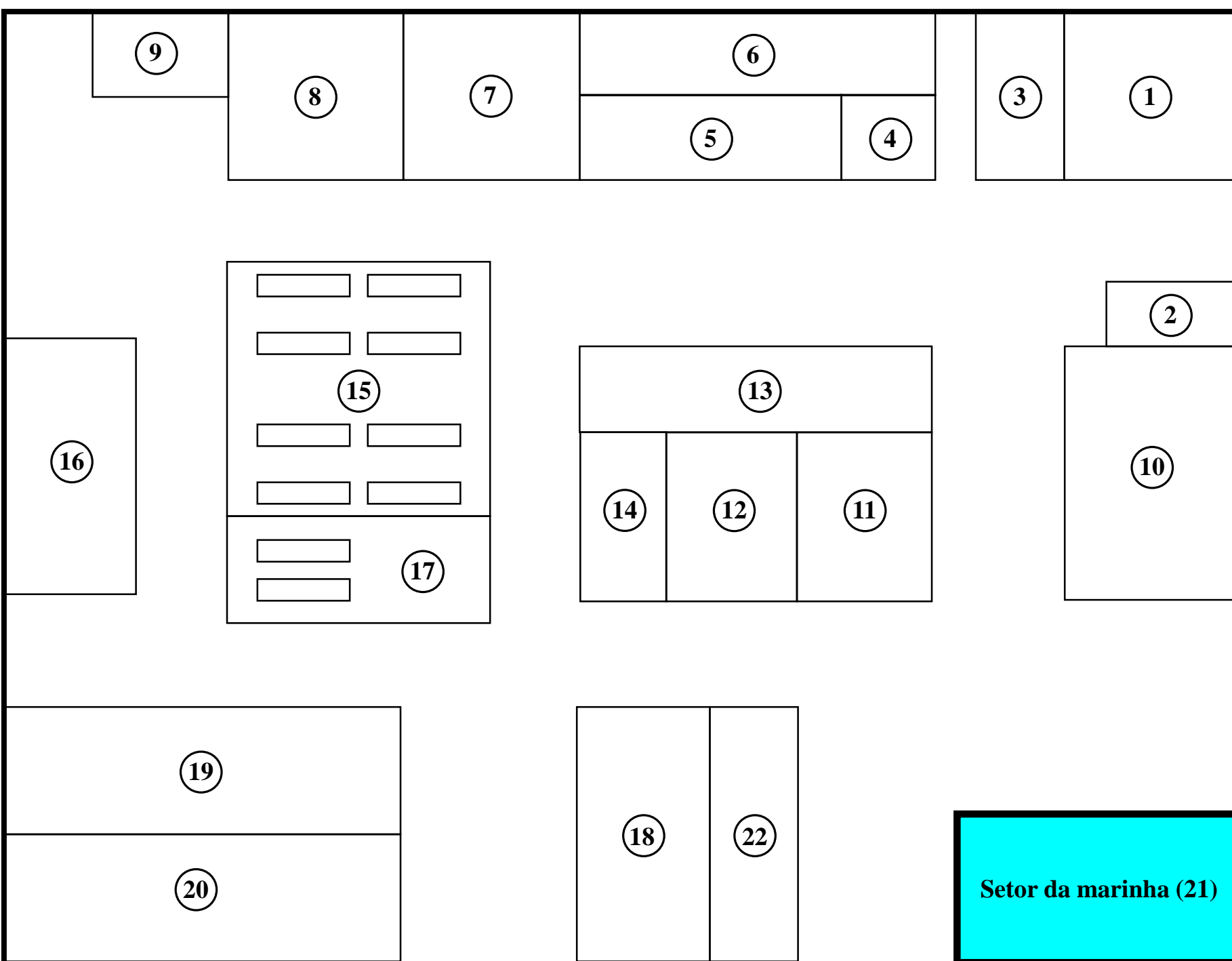


**Legenda**

- 1) Armazém de chapas e vigas
- 2) Jateamento e pintura
- 3) Área de corte de chapas
- 4) Oficina de Sub-partes
- 5) Oficina de peças curvas
- 6) Oficina de painéis simples
- 7) Oficina de painéis intermediários
- 8) Oficina de matrizes
- 9) Pintura de matrizes
- 10) Armazém geral
- 11) Oficina de tubulações
- 12) Fabricação modular de tubulações
- 13) Oficinas de acabamento (*outfitting*)
- 14) Pintura de tubulações (*outfitting*)
- 15) Edificação de blocos
- 16) Estoque de blocos
- 17) Pintura de blocos
- 18) Oficina de propulsão
- 19) União de blocos
- 20) Acabamento final
- 21) Setor da marinha (Fixo)

\*\*\* ⇒ outros departamentos: elétrica, eletrônica e carpintaria.

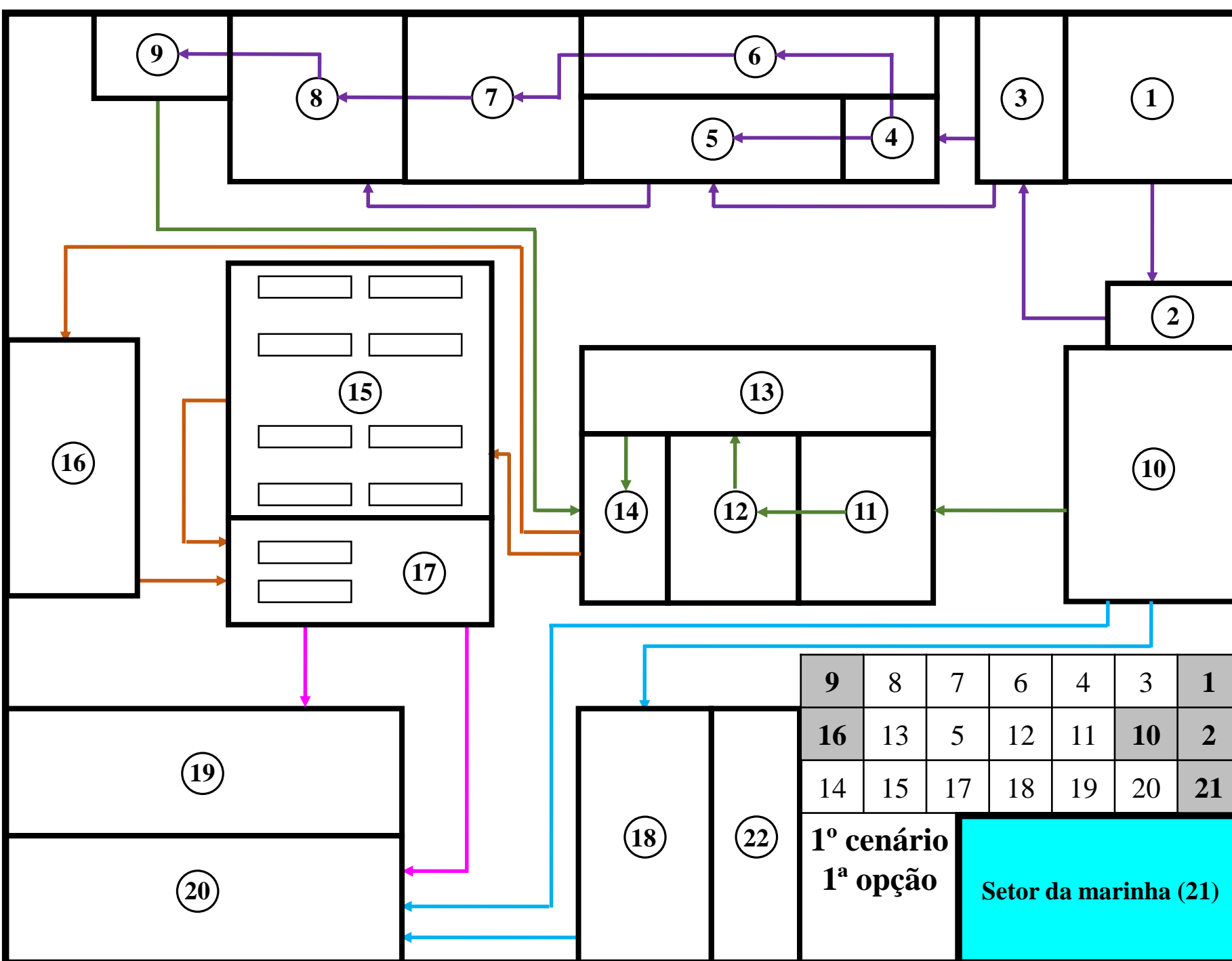
**Setor da marinha (21)**



**Legenda**

- 1) Armazém de chapas e vigas
- 2) Jateamento e pintura
- 3) Área de corte de chapas
- 4) Oficina de Sub-partes
- 5) Oficina de peças curvas
- 6) Oficina de painéis simples
- 7) Oficina de painéis intermediários
- 8) Oficina de matrizes
- 9) Pintura de matrizes
- 10) Armazém geral
- 11) Oficina de tubulações
- 12) Fabricação modular de tubulações
- 13) Oficinas de acabamento (*outfitting*)
- 14) Pintura de tubulações (*outfitting*)
- 15) Edificação de blocos
- 16) Estoque de blocos
- 17) Pintura de blocos
- 18) Oficina de propulsão
- 19) União de blocos
- 20) Acabamento final
- 21) Setor da marinha (fixo)
- 22) Outros departamentos:
  - \_ Elétrica
  - \_ Eletrônica
  - \_ Carpintaria.





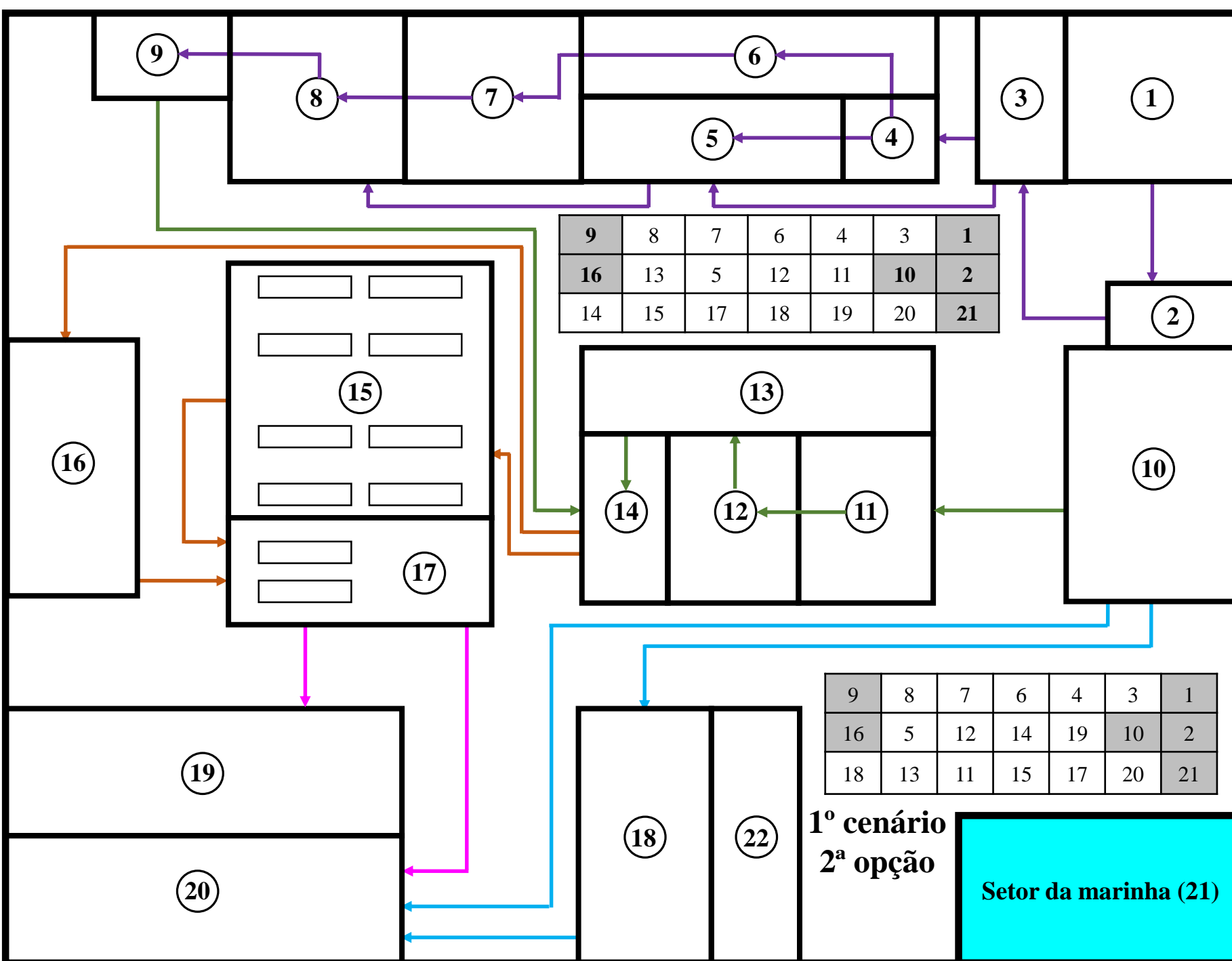
**Legenda**

- 1) Armazém de chapas e vigas
- 2) Jateamento e pintura
- 3) Área de corte de chapas
- 4) Oficina de Sub-partes
- 5) Oficina de peças curvas
- 6) Oficina de painéis simples
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- 8) Oficina de matrizes
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- 14) Pintura de tubulações (*outfitting*)
- 15) Edificação de blocos
- 16) Estoque de blocos
- 17) Pintura de blocos
- 18) Oficina de propulsão
- 19) União de blocos
- 20) Acabamento final
- 21) Setor da marinha (Fixo)
- 22) Outros departamentos:
  - \_ Elétrica,
  - \_ Eletrônica
  - \_ Carpintaria.

9	8	7	6	4	3	1
16	13	5	12	11	10	2
14	15	17	18	19	20	21

**1º cenário**  
**1ª opção**

**Setor da marinha (21)**



### Legenda

- 1) Armazém de chapas e vigas
- 2) Jateamento e pintura
- 3) Área de corte de chapas
- 4) Oficina de Sub-partes
- 5) Oficina de peças curvas
- 6) Oficina de painéis simples
- 7) Oficina de painéis intermediários
- 8) Oficina de matrizes
- 9) Pintura de matrizes
- 10) Armazém geral
- 11) Oficina de tubulações
- 12) Fabricação modular de tubulações
- 13) Oficinas de acabamento (*outfitting*)
- 14) Pintura de tubulações (*outfitting*)
- 15) Edificação de blocos
- 16) Estoque de blocos
- 17) Pintura de blocos
- 18) Oficina de propulsão
- 19) União de blocos
- 20) Acabamento final
- 21) Setor da marinha (Fixo)
- 22) Outros departamentos:
  - \_ Elétrica,
  - \_ Eletrônica
  - \_ Carpintaria.

Área ASTINAVE: 66.871,378998 metros quadrados

# Proposta de *Layout*

Walther (06/06/2018)

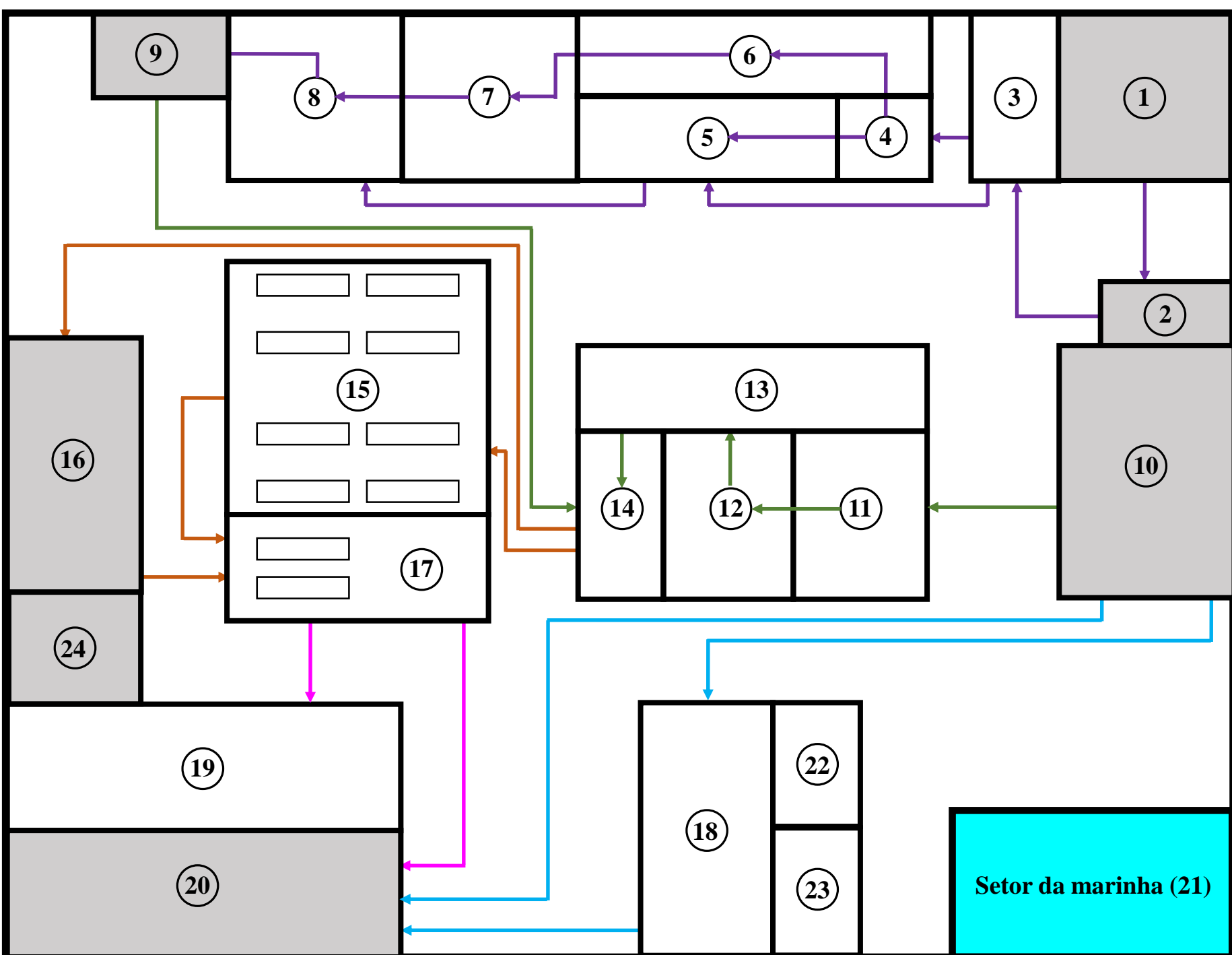
**Matriz – 4 × 6**

Run : problem = estaleiro\_initialize(costs,materials)

1) [p,s] = GA(problem)

2) [population, stats, settings] = GA(problem)

<u>Departamentos Fixos</u>	<u>Adjacência</u>
01 – posição 24 (L4 ⇒ C6)	1 – 3 4 – 6
02 – posição 18 (L3 ⇒ C6)	6 – 7 7 – 8
10 – posição 12 (L2 ⇒ C6)	8 – 9 11 – 12
16 – posição 13 (L3 ⇒ C1)	12 – 13 13 – 14
20 – posição 03 (L1 ⇒ C3)	15 – 17 19 – 20
21 – posição 06 (L1 ⇒ C6)	18 – 22 18 – 23
24 – posição 07 (L2 ⇒ C1)	



**Legenda (Alterado em 16\_12\_2018)**

- 1) Armazém de chapas, tubos e perfis
- 2) Jateamento e Pintura de chapas, tubos e perfis
- 3) Área de corte de chapas
- 4) Oficina de Subconjuntos
- 5) Oficina de peças curvas
- 6) Oficina de painéis simples
- 7) Oficina de painéis intermediários
- 8) Oficina de secções
- 9) Pintura de secções
- 10) Armazém geral
- 11) Oficina de tubulações
- 12) Fabricação modular de tubulações
- 13) Oficinas de acabamento (*outfitting*)
- 14) Pintura de tubulações (*outfitting*)
- 15) Edificação de blocos
- 16) Estoque de blocos
- 17) Pintura de blocos
- 18) Oficina de propulsão
- 19) União de blocos
- 20) Acabamento final
- 21) Setor da marinha (Fixo)
- 22) Departamentos: \_ Elétrica e \_ Eletrônica
- 23) Carpintaria
- 24) Ferramentaria (**Matrizes jig**)  
 ⇒ gabarito ou dispositivo para a montagem autônoma das secções e blocos

Fabricação dos anteparos  
*(Bulkhead (BHD) fabrication)*

### 3) Área de corte de chapas



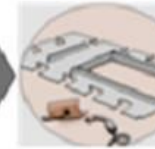
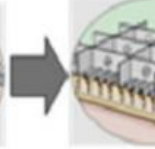
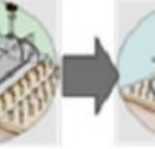
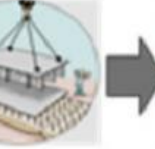

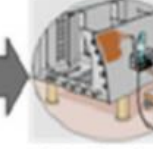



Este setor de corte possui 2 eletroímãs com capacidade de içamento para 7 t, na entrada e, 16 t na saída do galpão. Ambos estão conectados em pontes rolantes que se movem sobre trilhos por todo o galpão, sendo capazes de realizar a interligação com o galpão de montagem de perfis e sub painéis no fundo do galpão de corte de chapas.

Os **aninhamentos** – em inglês designados por *nestings* – não são mais do que o arranjo das peças a ser cortadas numa chapa com uma dada espessura. Quanto melhor for esse arranjo das peças melhor serão aproveitadas as chapas

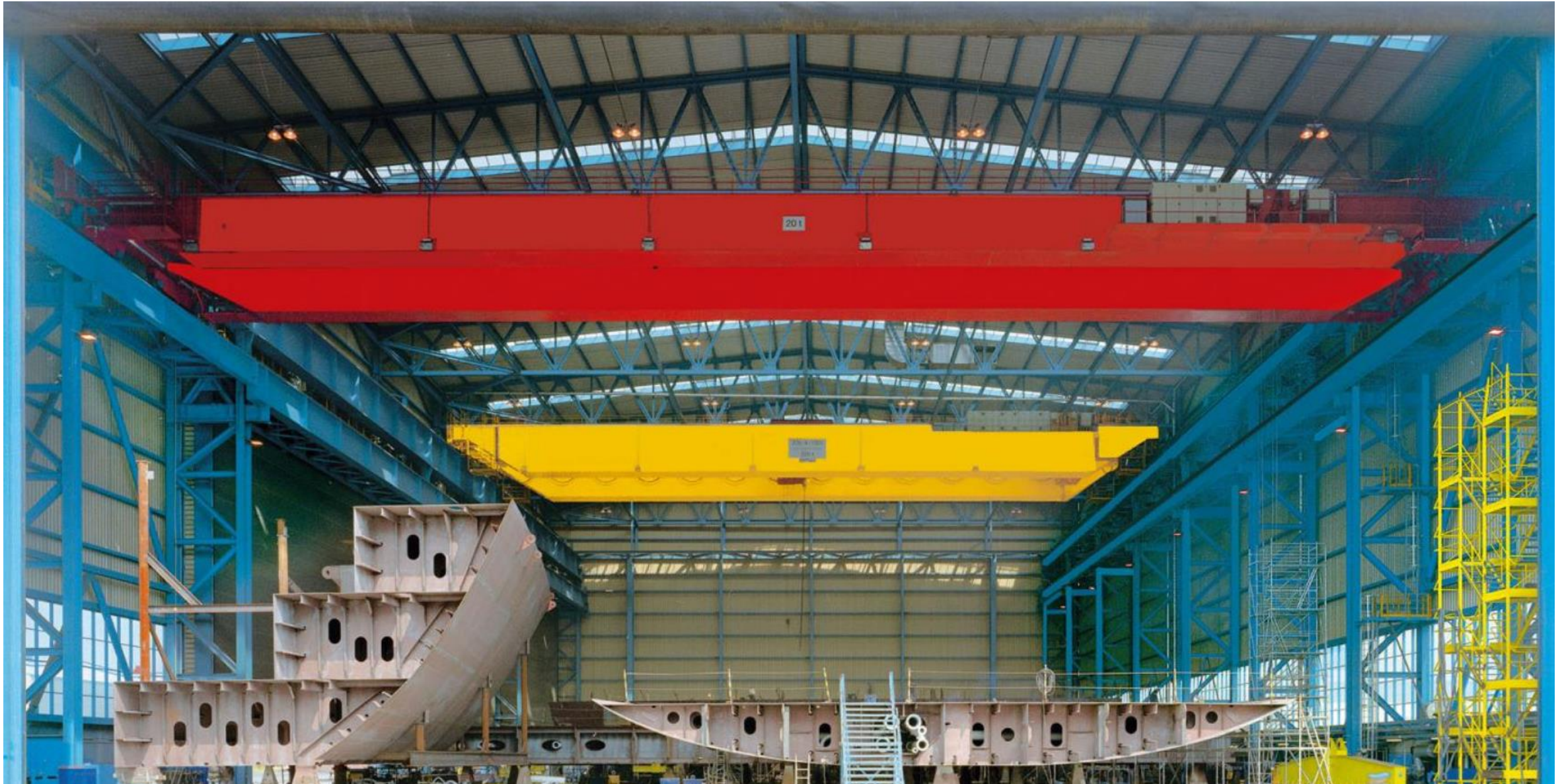


# PROCESSOS

		Indoor				Outdoor				
Shipbuilding process										
		Indoor area				Outdoor area			Dry dock	
Area capacity		Stock area (Plate&Part)	Stock area (Plate&Part)	Assembly zone (cell)		(Outfitting zone)	(Painting zone)	PE zone		
				Assembly line						
Facility	Main	Cutting mc.	Press mc.	Welding facilities (considered as a critical resource only when the line type)			Nothing special (Capa. Is mainly dependent on the area.)			
	Sub	Overhead crane (Weight capacity is dependent on the block weight)				Jib crane, Tower crane		Jib crane, Goliath crane		
	MHS	Transporter, Folk-lift								

# Elevada força de elevação na fabricação de secções

<https://www.demagcranes.com/pt-br/industrias/construcao-de-navios-e-barcos>



# Grupo de *Grids*

**4 x 6**



					<b>1</b>
<b>16</b>					<b>2</b>
<b>24</b>					<b>10</b>
	<b>20</b>				<b>21</b>

					<b>1</b>
<b>16</b>					<b>2</b>
<b>24</b>					<b>10</b>
		<b>20</b>			<b>21</b>

Área ASTINAVE: 66.871,378998 metros quadrados

# Proposta de *Layout*

Walther (06/06/2018)

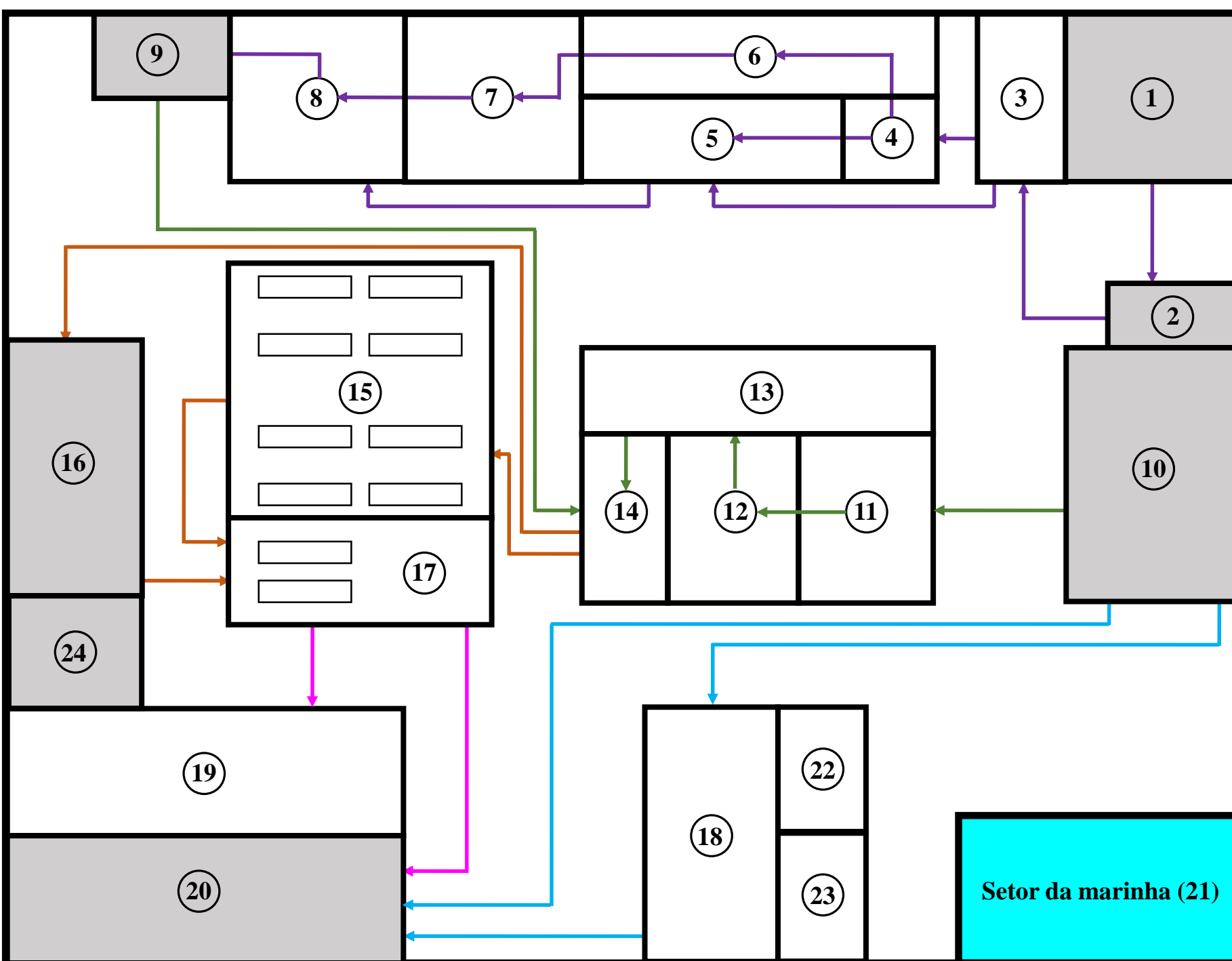
**Matriz – 4 × 6**

Run : problem = estaleiro\_initialize(costs,materials)

1) [p,s] = GA(problem)

2) [population, stats, settings] = GA(problem)

<u>Departamentos Fixos</u>	<u>Adjacência</u>
01 – posição 24 (L4 ⇒ C6)	1 – 3 4 – 6
02 – posição 18 (L3 ⇒ C6)	6 – 7 7 – 8
09 – posição 19 (L4 ⇒ C1)	8 – 9 11 – 12
10 – posição 12 (L2 ⇒ C6)	12 – 13 13 – 14
16 – posição 13 (L3 ⇒ C1)	15 – 17 19 – 20
20 – posição 03 (L1 ⇒ C3)	18 – 22 18 – 23
21 – posição 06 (L1 ⇒ C6)	
24 – posição 07 (L2 ⇒ C1)	



## Legenda

- 1) Armazém de chapas, tubos e perfis
- 2) Jateamento e Pintura de chapas, tubos e perfis
- 3) Área de corte de chapas
- 4) Oficina de Subconjuntos
- 5) Oficina de peças curvas
- 6) Oficina de painéis simples
- 7) Oficina de painéis intermediários
- 8) Oficina de secções
- 9) Pintura de secções
- 10) Armazém geral
- 11) Oficina de tubulações
- 12) Fabricação modular de tubulações
- 13) Oficinas de acabamento (*outfitting*)
- 14) Pintura de tubulações (*outfitting*)
- 15) Edificação de blocos
- 16) Estoque de blocos
- 17) Pintura de blocos
- 18) Oficina de propulsão
- 19) União de blocos
- 20) Acabamento final
- 21) Setor da marinha (Fixo)
- 22) Departamentos: \_ Elétrica e \_ Eletrônica
- 23) Carpintaria
- 24) Ferramentaria (**Matrizes jig**)  
 ⇒ gabarito ou dispositivo para a montagem autônoma das secções e blocos

**Setor da marinha (21)**

# Grupo de *Grids*

**4 x 6**

**09F**

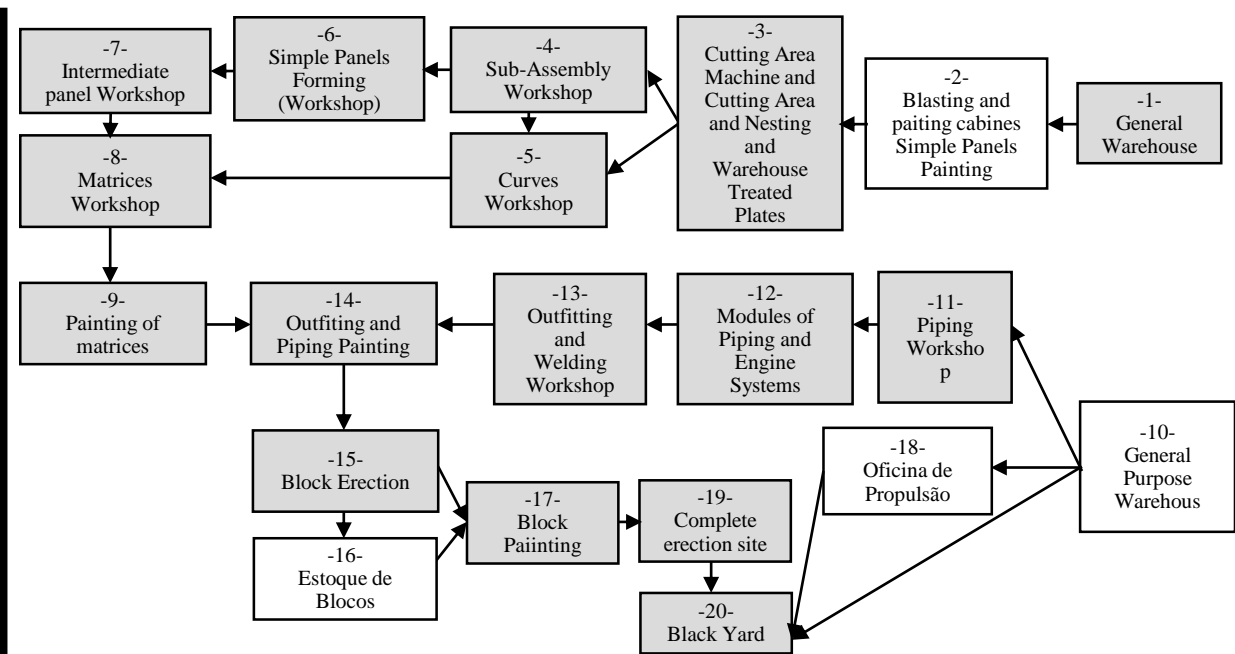
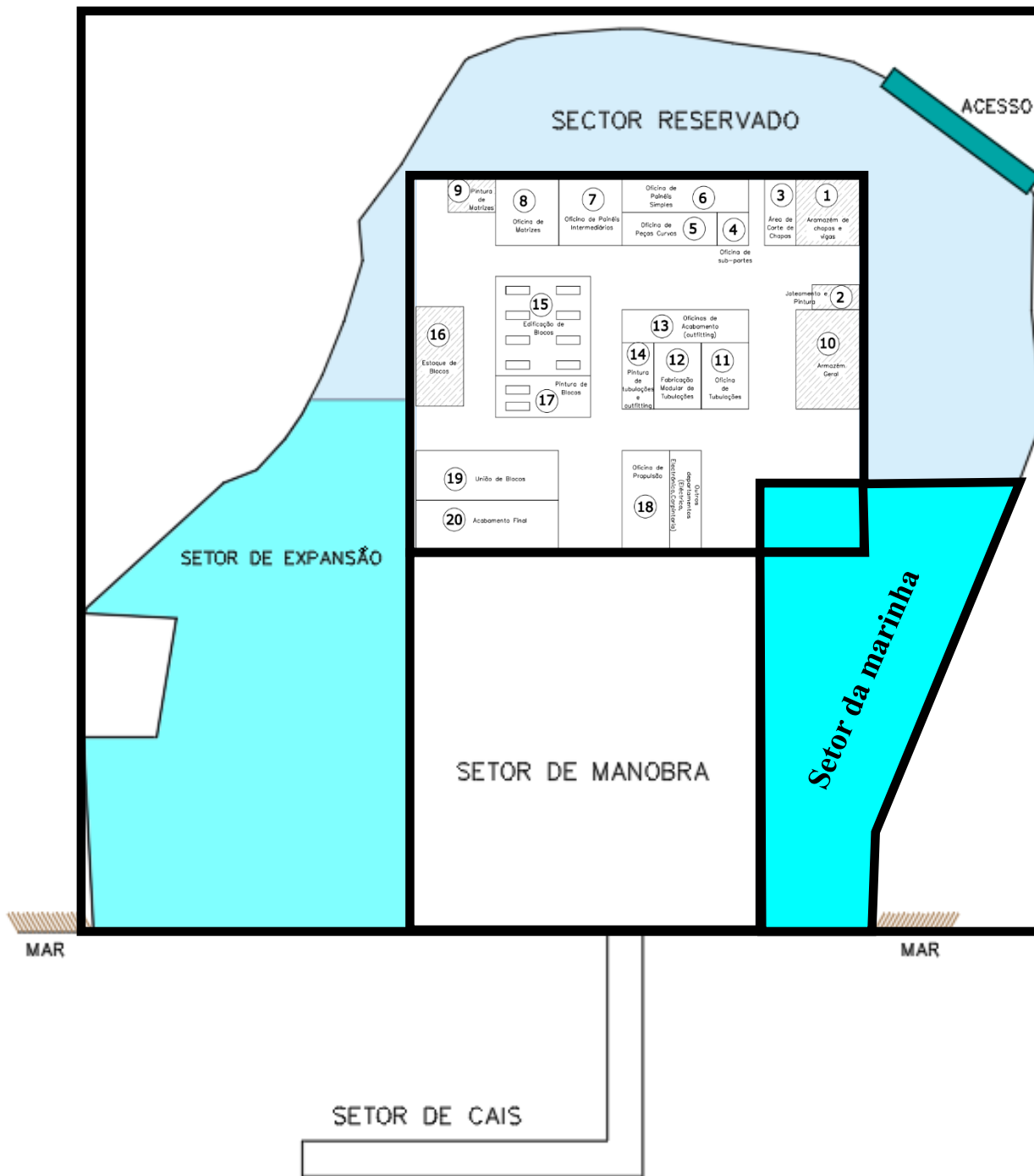
<b>9</b>					<b>1</b>
<b>16</b>					<b>2</b>
<b>24</b>					<b>10</b>
	<b>20</b>				<b>21</b>

<b>9</b>					<b>1</b>
<b>16</b>					<b>2</b>
<b>24</b>					<b>10</b>
		<b>20</b>			<b>21</b>

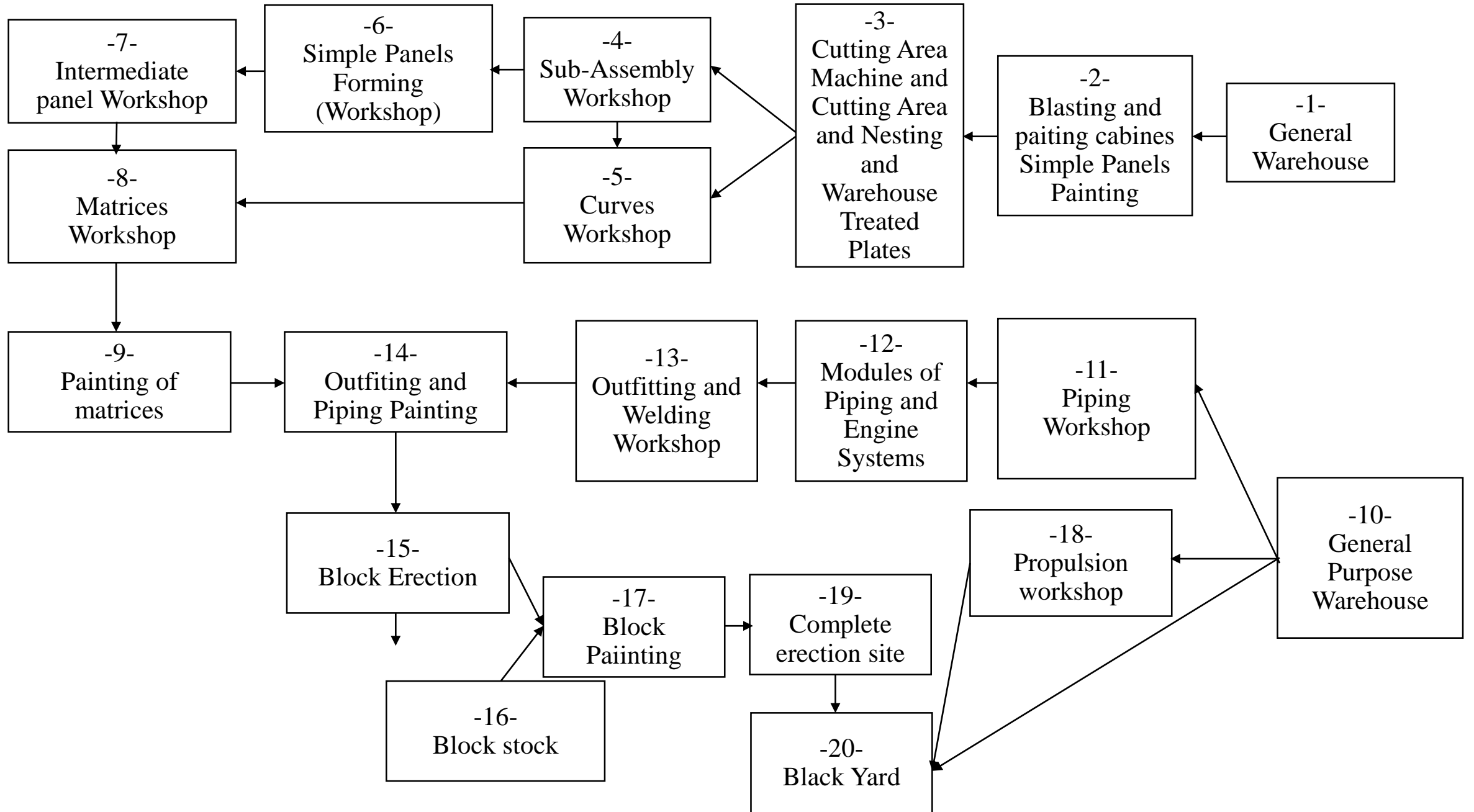
# ASTINAVE

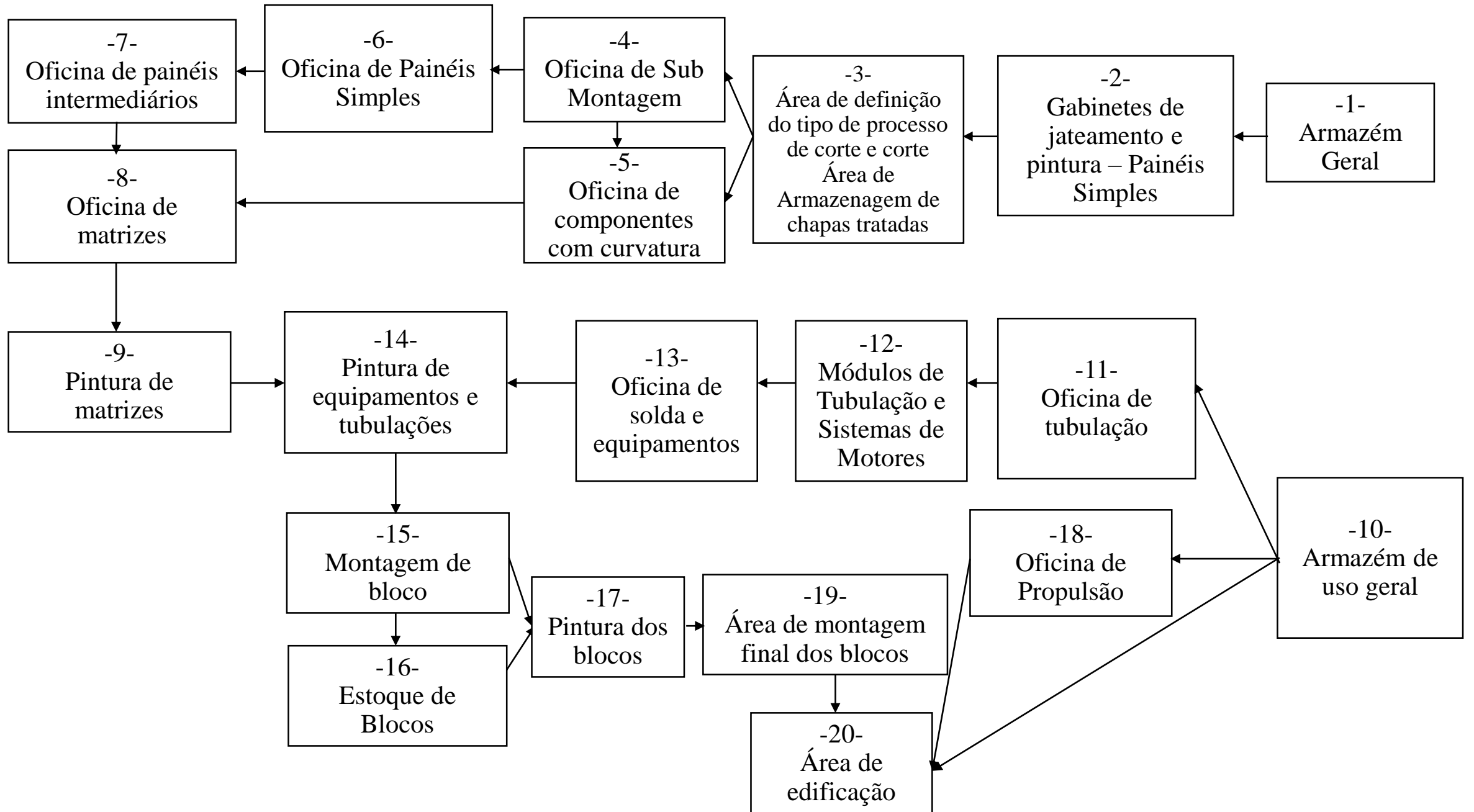
TERRENO COM O *LAYOUT* PROPOSTO E O FLUXO DE FABRICAÇÃO

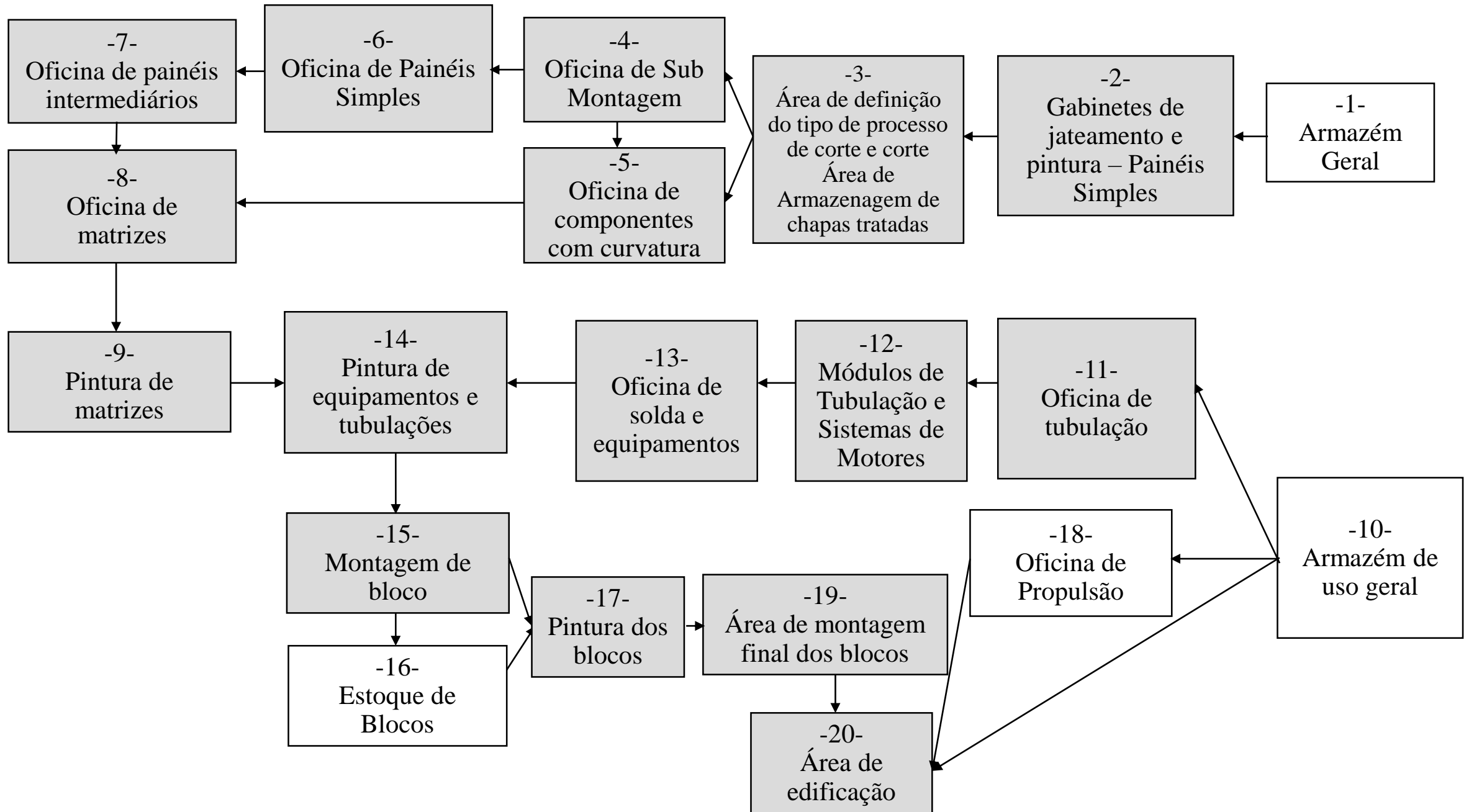












De	Para	Adjacência	Alinhamento
1	3	yes	yes
1	2	yes	yes
3	4	yes	yes
4	6	yes	yes
6	7	yes	yes
5	8	yes	yes
7	8	yes	yes
8	9	yes	yes
11	12	yes	yes
12	13	yes	yes
13	14	yes	yes
14	15	yes	yes
15	17	yes	yes
17	19	yes	yes
19	20	yes	yes















# **Matriz de Fluxo – *Layout* (2018) Versão 0.0**

														Quantity
From	to	Section 111			Section 117	Section 112			Section 113	Section 114	Section 115	Section 116	Section 121	5009
		Section 111A	Section 111B	Section 111		Section 112A	Section 112B	Section 112						
1	2	14,8338 t	13,4904 t	<b>28,3242 t</b>	<b>8,3641 t</b>	22,7425 t	14,4820 t	<b>37,225 t</b>	<b>24,944 t</b>	<b>22,4487 t</b>	<b>11,2103 t</b>	<b>22,8636 t</b>	<b>3,9724 t</b>	<b>159,3523 t</b>
2	3	8,9745 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	8,2404 t	11,2580 t	<b>19,498 t</b>	<b>13,6128 t</b>	<b>12,10602 t</b>	<b>6,6073 t</b>	<b>15,8828 t</b>	<b>1,3236 t</b>	<b>91,94412 t</b>
2	6	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>67,40718 t</b>
3	4	1,2963 t	2,9657 t	<b>4,262 t</b>	<b>1,2910 t</b>	1,6274 t	11,2580 t	<b>12,885 t</b>	<b>5,5693 t</b>	<b>5,4338 t</b>	<b>2,0756 t</b>	<b>3,8516 t</b>	<b>0,8689 t</b>	<b>36,2372 t</b>
3/4	5	8,9745 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	8,2404 t	11,2580 t	<b>19,498 t</b>	<b>13,6128 t</b>	<b>12,10602 t</b>	<b>6,6073 t</b>	<b>15,8828 t</b>	<b>1,3236 t</b>	<b>91,94412 t</b>
5	9	8,9745 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	8,2404 t	11,2580 t	<b>19,498 t</b>	<b>13,6128 t</b>	<b>12,10602 t</b>	<b>6,6073 t</b>	<b>15,8828 t</b>	<b>1,3236 t</b>	<b>91,94412 t</b>
6	7	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>67,40718 t</b>
7	8	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>67,40718 t</b>
8	9	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>67,40718 t</b>
9	13	14,8338 t	13,4904 t	<b>28,3242 t</b>	<b>8,3641 t</b>	22,7425 t	14,4820 t	<b>37,225 t</b>	<b>24,944 t</b>	<b>22,4487 t</b>	<b>11,2103 t</b>	<b>22,8636 t</b>	<b>3,9724 t</b>	<b>159,3523 t</b>
Σ Planilha⇒ % diferença		14,8338 t	13,4904 t	<b>28,3242 t</b>	<b>8,3641 t</b>	22,7425 t	14,4820 t	<b>37,225 t</b>	<b>24,944 t</b>	<b>22,4487 t</b>	<b>11,2103 t</b>	<b>22,8636 t</b>	<b>3,9724 t</b>	<b>159,3523 t</b>
		Block 101			Block 104	Block 101			Block 102	Block 102	Block 103	Block 104	Block 104	4 block (b)
		25,31 t			8,01 t	22,97 t + 15,09 t = 38,06 t			25,43 t	22,92 t	11,07 t	22,03 t	4,0 t	156,83 t
		$\frac{(28,3242 t - 25,31 t)}{25,31 t} = 11,91 \% \uparrow$			4,42 % $\uparrow$	$\frac{(37,225 t - 38,06 t)}{38,06 t} = -2,20 \% \downarrow$			-1,91 % $\downarrow$	-2,06 % $\downarrow$	1,27 % $\uparrow$	3,8 % $\uparrow$	-0,69 % $\downarrow$	1,87 % $\uparrow$

# **Matriz de Fluxo (2018) Versão 1.0**

From	to													Quantity
		Section 111			Section 117	Section 112			Section 113	Section 114	Section 115	Section 116	Section 121	5009
		Section 111A	Section 111B	Section 111		Section 112A	Section 112B	Section 112						
1	2	14,8338 t	13,4904 t	<b>28,3242 t</b>	<b>8,3641 t</b>	22,7425 t	14,4820 t	<b>37,225 t</b>	<b>24,944 t</b>	<b>22,4487 t</b>	<b>11,2103 t</b>	<b>22,8636 t</b>	<b>3,9724 t</b>	<b>159,3523 t</b>
2	3	8,9745 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	8,2404 t	11,2580 t	<b>19,498 t</b>	<b>13,6128 t</b>	<b>12,10602 t</b>	<b>6,6073 t</b>	<b>15,8828 t</b>	<b>1,3236 t</b>	<b>91,94412 t</b>
2	6	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>67,40718 t</b>
3	4	1,2963 t	2,9657 t	<b>4,262 t</b>	<b>1,2910 t</b>	1,6274 t	11,2580 t	<b>12,885 t</b>	<b>5,5693 t</b>	<b>5,4338 t</b>	<b>2,0756 t</b>	<b>3,8516 t</b>	<b>0,8689 t</b>	<b>36,2372 t</b>
3/4	5	8,9745 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	8,2404 t	11,2580 t	<b>19,498 t</b>	<b>13,6128 t</b>	<b>12,10602 t</b>	<b>6,6073 t</b>	<b>15,8828 t</b>	<b>1,3236 t</b>	<b>91,94412 t</b>
5	9	8,9745 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	8,2404 t	11,2580 t	<b>19,498 t</b>	<b>13,6128 t</b>	<b>12,10602 t</b>	<b>6,6073 t</b>	<b>15,8828 t</b>	<b>1,3236 t</b>	<b>91,94412 t</b>
6	7	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>67,40718 t</b>
7	8	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>67,40718 t</b>
8	9	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>67,40718 t</b>
9	13	14,8338 t	13,4904 t	<b>28,3242 t</b>	<b>8,3641 t</b>	22,7425 t	14,4820 t	<b>37,225 t</b>	<b>24,944 t</b>	<b>22,4487 t</b>	<b>11,2103 t</b>	<b>22,8636 t</b>	<b>3,9724 t</b>	<b>159,3523 t</b>
Σ Planilha⇒ % diferença		14,8338 t	13,4904 t	<b>28,3242 t</b>	<b>8,3641 t</b>	22,7425 t	14,4820 t	<b>37,225 t</b>	<b>24,944 t</b>	<b>22,4487 t</b>	<b>11,2103 t</b>	<b>22,8636 t</b>	<b>3,9724 t</b>	<b>159,3523 t</b>
		Block 101			Block 104	Block 101			Block 102	Block 102	Block 103	Block 104	Block 104	4 block (b)
		25,31 t			8,01 t	22,97 t + 15,09 t = 38,06 t			25,43 t	22,92 t	11,07 t	22,03 t	4,0 t	156,83 t
		$\frac{(28,3242 t - 25,31 t)}{25,31 t} = 11,91 \% \uparrow$			4,42 % $\uparrow$	$\frac{(37,225 t - 38,06 t)}{38,06 t} = -2,20 \% \downarrow$			-1,91 % $\downarrow$	-2,06 % $\downarrow$	1,27 % $\uparrow$	3,8 % $\uparrow$	-0,69 % $\downarrow$	1,87 % $\uparrow$



# Parâmetros de Cálculo – seção 112


Parâmetros	%
As tubulações são em torno de 30% do peso total de aço produzido	30
Os acabamentos ( <i>outfitting</i> ) em torno de 5% do peso total de aço produzido	5
Propulsão em torno de 1% do peso total de aço produzido	1
	36


Run : **problem = estaleiro\_initialize(costs,materials)**

**1) [p,s] = GA(problem)**

**2) [population, stats, settings] = GA(problem)**

O bloco 112 é o maior bloco da embarcação 5009. Tem 9,32 metros de comprimento.

<i>From</i>	<i>to</i>	<i>Quantity</i>	<i>From</i>	<i>to</i>	<i>Quantity</i>
1	2	17,871 t ( <i>shell plates</i> ) + 1,6274 t ( <i>shell stifenner</i> ) + 17,7261 t = 37,2245 t	10	11	(30%) de (37,2245 t / (1 - 36%) ≈ 17,448984375 t
2	3	17,871 t ( <i>shell plates</i> ) + 1,6274 t ( <i>shell stifenner</i> ) + 17,7261 t = 37,2245 t	10	18	(5%) de (37,2245 t / (1 - 36%) ≈ 2,908165 t
3	4	17,871 t ( <i>shell plates</i> ) + 1,6274 t ( <i>shell stifenner</i> ) + 17,7261 t = 37,2245 t	10	20	(1%) de (37,2245 t / (1 - 36%) ≈ 0,581633 t
4	5	1,6274 t	<b>Sub-total</b>		20,939 t
4	6	(17,871+17,7261) t = 35,5971 t	11	12	(30%) de (37,2245 t + 20,939 t) ≈ 17,449 t
5	8	1,6274 t	12	13	(30%) de 58,1633 t ≈ 17,449 t
6	7	35,5971 t	13	14	(30%) de 58,1633 t ≈ 17,449 t
7	8	35,5971 t	14	15	(30%) de 58,1633 t ≈ 17,449 t
8	9	37,2245 t	14	15	37,2245 t + 17,449 t = 54,6735 t
9	14	37,2245 t	15	17	54,6735 t
14	15	37,2245 t	17	19	54,6735 t
15	16	37,2245 t * (30%) = 11,16735 t ( <b>estoque</b> )	(10 ⇒ 18 ⇒ 20) (10 ⇒ 20)	20	(2,908165 t + 0,581633 t) ≈ 3,489798 t
15	17	37,2245 t	19	20	54,6735 t
<b>Section 112</b> 			Produção de 1 bloco		54,6735 t + 3,489798 t = 58,16328125 t
			Total		58,1633 toneladas
<b><u>Buffer de blocos a ser controlado a fim de manter o fluxo contínuo</u></b>				<b>∑</b>	<b>1 block (b)</b>

<i>From</i>	<i>to</i>	<i>Quantity</i>	<i>From</i>	<i>to</i>	<i>Quantity</i>
1	2	19,4984 t * 150 = 2.924,76 t 17,7261 t * 150 = 2.658,915 t ⇒ 5.583,675 t	10	11	(30%) de (5.583,75 t / (1 - 36%) ≈ 2.617,382812 t
2	3	19,4984 t * 150 = 2.924,76 t 17,7261 t * 150 = 2.658,915 t ⇒ 5.583,675 t	10	18	(5%) de (5.583,75 t / (1 - 36%) ≈ 436,22475 t
3	4	19,4984 t * 150 = 2.924,76 t 17,7261 t * 150 = 26.58,915 t ⇒ 5.583,675 t	10	20	(1%) de (5.583,75 t / (1 - 36%) ≈ 87,2461 t
4	5	1,6274 t * 150 = 244,11 t	<b>Sub-total</b>		3.140,85 t
4	6	35,5971 t * 150 = 5.339,565 t	11	12	(30%) de 8.724,525 t ≈ 2.617,3575 t
5	8	1,6274 t * 150 = 244,11 t	12	13	(30%) de 8.724,525 t ≈ 2.617,3575 t
6	7	35,5971 t * 150 = 5.339,565 t	13	14	(30%) de 8.724,525 t ≈ 2.617,3575 t
7	8	35,5971 t * 150 = 5.339,565 t	14	15	(30%) de 8.724,525 t ≈ 2.617,3575 t
8	9	37,2245 t * 150 = 5.583,675 t	14	15	5.583,675 t + 2.617,3828 t = 8.201,0578 t
9	14	37,2245 t * 150 = 5.583,675 t	15	17	5.583,675 t + 2.617,3828 t = 8.201,0578 t
14	15	37,2245 t * 150 = 5.583,675 t	17	19	5.583,675 t + 2.617,3828 t = 8.201,0578 t
15	16	5.583,675 t * (30%) = 1.675,1025 t ( <b>estoque</b> )	(10 ⇒ 18 ⇒ 20) (10 ⇒ 20)	20	(436,22475 t + 87,2461 t) = 523,47085
15	17	5.583,675 t	19	20	5.583,675 t + 2.617,3828 t = 8.201,0578 t
<b>Section 112</b> 			Produção de 150 blocos		8.201,0578 t + 523,47085 t = 8.724,52865 t
			Total		8.724,52865 toneladas / ano

**Buffer de blocos a ser controlado a fim de manter o fluxo contínuo**

∑

**150 blocks (b)**

**Anotações:**

1) Departamento fornecedor do Departamento 7 é o Departamento 6 que foi alterado para o Departamento 3. Departamento 7 alterado para os Departamentos 4 e 5. Total em toneladas transferido para o Departamento 7: 14521 t + 3,2240 t = 17,7261 t. Divisão deste total para os Departamentos 4 e 5: toneladas.

De	Para	Fluxo Matriz (por unidade) toneladas	Número de blocos	Fluxo Matriz (total de blocos)	Fluxo (toneladas) B112
1	2	22,7425 t (Seção A) + 14,482 t (Seção B) = 37,225 t	150	23.902,695 toneladas	5.583,75 toneladas
2	3	22,7425 t (Seção A) + 14,482 t (Seção B) = 37,225 t	150	23.902,695 toneladas	5.583,75 toneladas
3	4	22,7425 t (Seção A) + 14,482 t (Seção B) = 37,225 t	150	23.902,695 toneladas	5.583,75 toneladas
4	5	1,6274 t ( <i>shell stifenner</i> )	150	5.434,50 t ( <i>shell stifenner</i> )	214,11 t ( <i>shell stifenner</i> )
4	6	17,871 t ( <i>shell plates</i> ) + 17,7261 t = 35,5971 t	150	18.468,195 toneladas	5.339,565 toneladas
5	8	1,6274 t ( <i>shell stifenner</i> )	150	5.434,50 t ( <i>shell stifenner</i> )	214,11 t ( <i>shell stifenner</i> )
6	7	17,871 t ( <i>shell plates</i> ) + 17,7261 t = 35,5971 t	150	18.468,195 toneladas	5.339,565 toneladas
7	8	17,871 t ( <i>shell plates</i> ) + 17,7261 t = 35,5971 t	150	18.468,195 toneladas	5.339,565 toneladas
8	9	1,6274 t + 35,5971 t = 37,2245 t	150	23.902,845 toneladas	5.583,675 toneladas
9	14	1,6274 t + 35,5971 t = 37,2245 t	150	23.902,845 toneladas	5.583,675 toneladas
14	15	1,6274 t + 35,5971 t = 37,2245 t	150	23.902,845 toneladas	5.583,675 toneladas
15	16	<b>37,2245 t * (30%) = 11,16735 t (estoque)</b>	<b>150</b>	<b>7.170,853 toneladas</b>	<b>1.675,1025 t</b>
15	17	1,6274 t + 35,5971 t = 37,2245 t	150	23.902,845 toneladas	5.583,675 toneladas
10	11	(30%) de (37,2245 t / (1 - 36%) = 17,448984375 t	150	11.204,4586 toneladas	2617,3828125 toneladas
10	18	(5%) de (37,2245 t / (1 - 36%) = 2,908165 t	150	1.867,41 toneladas	436,22475 toneladas
10	20	(1%) de (37,2245 t / (1 - 36%) = 0,581633 t	150	373,482 toneladas	87,2461 toneladas
11	12	(30%) de 58,1633 t ≈ 17,449 t	150	11.204,46 toneladas	2617,3828 toneladas
12	13	(30%) de 58,1633 t ≈ 17,449 t	150	11.204,46 toneladas	2617,3828 toneladas
13	14	(30%) de 58,1633 t ≈ 17,449 t	150	11.204,46 toneladas	2617,3828 toneladas
14	15	37,2245 t + 17,449 t = 54,6735 t	150	11.204,46 toneladas	2617,3828 toneladas
15	17	37,2245 t + 17,449 t = 54,6735 t	150	11.204,46 toneladas	2617,3828 toneladas
17	19	37,2245 t + 17,449 t = 54,6735 t	150	35.107,3035 toneladas	8201,0578 toneladas
10/18	20	2,908165 t + 0,581633 t = 3,489798 t	150	<b>2.240,892 t</b>	<b>523,4697 t</b>
19	20	37,2245 t + 17,449 t = 54,6735 t	150	<b>35.107,3035 t</b>	<b>8201,0578 t</b>
				<b>37.348,1955 t</b>	<b>8.724,5275 t</b>

# Parâmetros de Cálculo – todas as seções

Parâmetros	%
As tubulações são em torno de 30% do peso total de aço produzido	30
Os acabamentos ( <i>outfitting</i> ) em torno de 5% do peso total de aço produzido	5
Propulsão em torno de 1% do peso total de aço produzido	1
	36

Run : **problem = estaleiro\_initialize(costs,materials)**

**1) [p,s] = GA(problem)**


**2) [population, stats, settings] = GA(problem)**

<i>From</i>	<i>to</i>	<i>Quantity</i>	<i>From</i>	<i>to</i>	<i>Quantity</i>
1	2	55,71412 t ( <i>shell plates</i> ) + 36,23t ( <i>shell stifenner</i> ) + 67,40718 t = 159,3523 t	10	11	(30%) de (159,3523 t / (1 - 36%) ≈ 47,16569 t
2	3	55,71412 t ( <i>shell plates</i> ) + 36,23 t ( <i>shell stifenner</i> ) + 67,40718 t = 159,3523 t	10	18	(5%) de (159,3523 t / (1 - 36%) ≈ 12,4494 t
3	4	55,71412 t ( <i>shell plates</i> ) + 36,23 t ( <i>shell stifenner</i> ) + 67,40718 t = 159,3523 t	10	20	(1%) de (159,3523 t / (1 - 36%) ≈ 2,4899 t
4	5	36,23 t	<b>Sub-total</b>		62,10469 t
4	6	(55,71412+67,40718) t = 123,1213 t	11	12	(30%) de (159,35 t + 62,1047 t) ≈ 66,4371 t
5	8	36,23 t	12	13	(30%) de 221,457 t ≈ 66,4371 t
6	7	123,1213 t	13	14	(30%) de 221,457 t ≈ 66,4371 t
7	8	123,1213 t	14	15	(30%) de 221,457 t ≈ 66,4371 t
8	9	159,3523 t	14	15	159,3523 t + 66,4371 t = 225,7894 t
9	14	159,3523 t	15	17	225,7894 t
14	15	159,3523 t	17	19	225,7894 t
15	16	159,3523 t * (30%) = 47,80569 t ( <b>estoque</b> )	(10 ⇒ 18 ⇒ 20) (10 ⇒ 20)	20	(12,4494 t + 2,4899 t) ≈ 14,9393 t
15	17	159,3523 t	19	20	225,7894 t
<b>Sections</b>			Produção de 1 bloco		225,7894 t + 14,9393 t = 240,7287 t
			Total		240,7287 toneladas



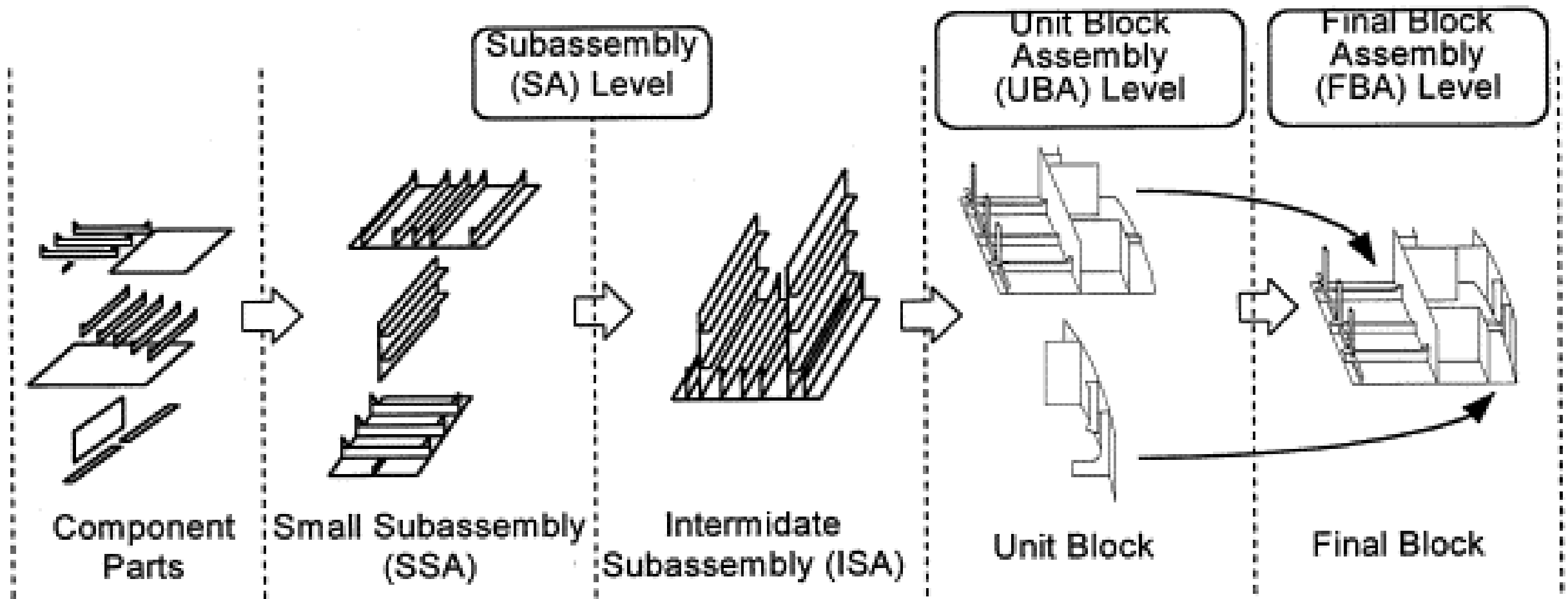
**Buffer de blocos a ser controlado a fim de manter o fluxo contínuo**

**∑ 1 embarcação ⇒ 5009**

<i>From</i>	<i>to</i>	<i>Quantity</i>	<i>From</i>	<i>to</i>	<i>Quantity</i>		
1	2	91,94412 t * 150 = 13.791,62 t 67,40718 t * 150 = 10.111,08 t	⇒ 23.902,695 t	10	11	(30%) de (23.902,845 t / (1 - 36%) ≈ 11.204,4586 t	
2	3	91,94412 t * 150 = 13.791,62 t 67,40718 t * 150 = 10.111,08 t	⇒ 23.902,695 t	10	18	(5%) de (23.902,845 t / (1 - 36%) ≈ 1.867,41 t	
3	4	91,94412 t * 150 = 13.791,62 t 67,40718 t * 150 = 10.111,08 t	⇒ 23.902,695 t	10	20	(1%) de (23.902,845 t / (1 - 36%) ≈ 373,482 t	
4	5	36,23 t * 150 = 5.434,50 t		<b>Sub-total</b>		13.445,35 t	
4	6	123,1213 t * 150 = 18.468,195 t		11	12	(30%) de (23.902,85 t + 13.445,35 t) ≈ 11.204,46 t	
5	8	36,23 t * 150 = 5.434,50 t		12	13	(30%) de 37.348,195 t ≈ 11.204,4585 t	
6	7	123,1213 t * 150 = 18.468,195 t		13	14	(30%) de 37.348,195 t ≈ 11.204,4585 t	
7	8	123,1213 t * 150 = 18.468,195 t		14	15	(30%) de 37.348,195 t ≈ 11.204,4585 t	
8	9	159,3523 t * 150 = 23.902,845 t		14	15	(23.902,845 t + 11.204,4585 t) = 35.107,3035 t	
9	14	159,3523 t * 150 = 23.902,845 t		15	17	35.107,3035 t	
14	15	159,3523 t * 150 = 23.902,845 t		17	19	35.107,3035 t	
15	16	23.902,845 t * (30%) = 7.170,853 t (estoque)	(10 ⇒ 18 ⇒ 20) (10 ⇒ 20)	20		(1.867,41 t + 373,482 t) = 2.240,892	
15	17	23.902,845 t		19	20	35.107,3035 t	
<b>Sections</b> 			Produção de 150 embarcações/ano	35.107,3035 t + 2.240,892 t = 37.348,1955 t			
				Total	37.348,1955 t toneladas / ano		
<b><u>Buffer de blocos a ser controlado a fim de manter o fluxo contínuo</u></b>					<b>Σ</b>	<b>150 embarcações ⇒ 5009 por ano</b>	

# Engenharia do Produto





**Final Block  
Assembly  
Level**



**Unit Block  
Assembly  
Level**



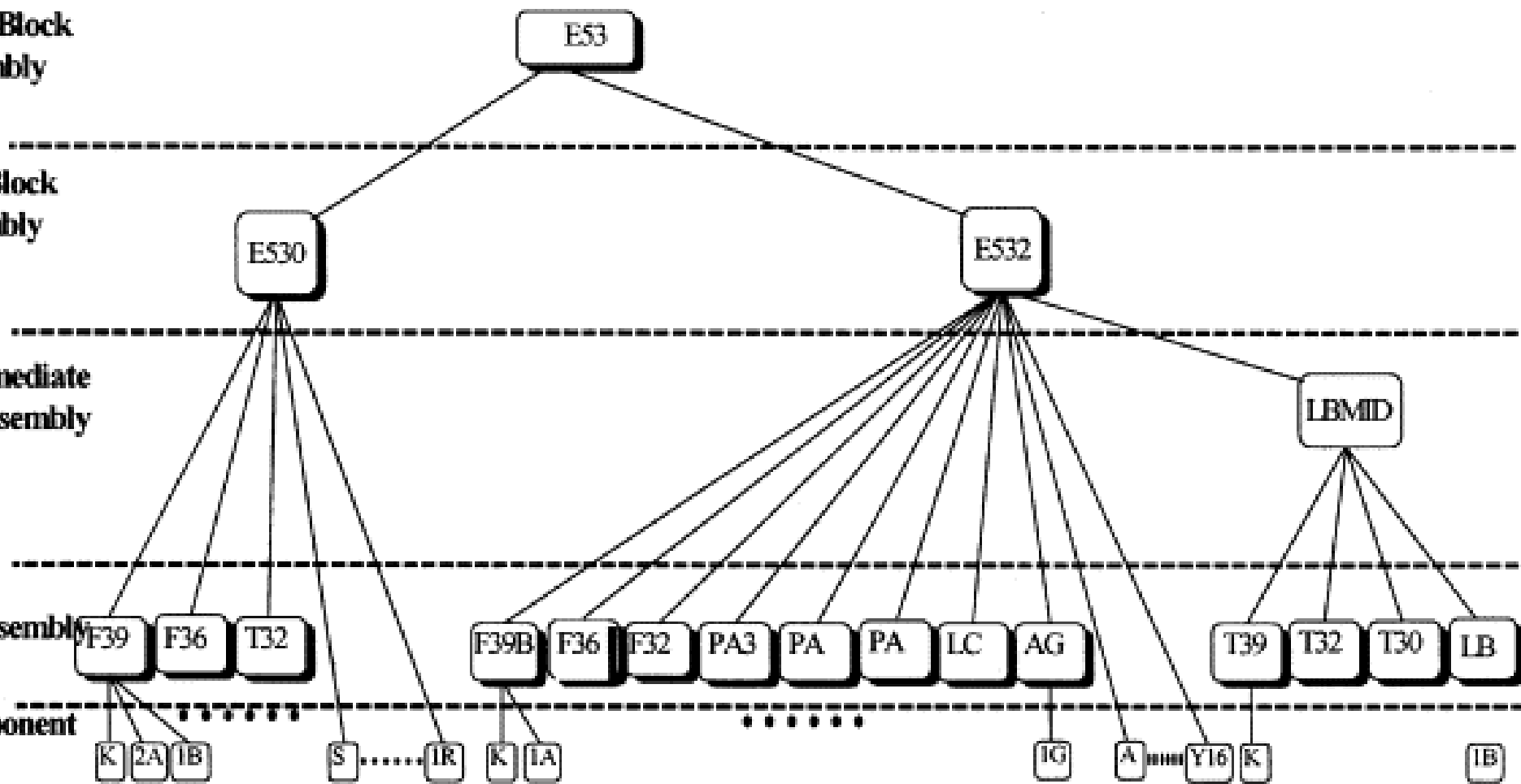
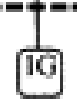
**Intermediate  
Subassembly  
Level**



**Small  
Subassembly  
Level**

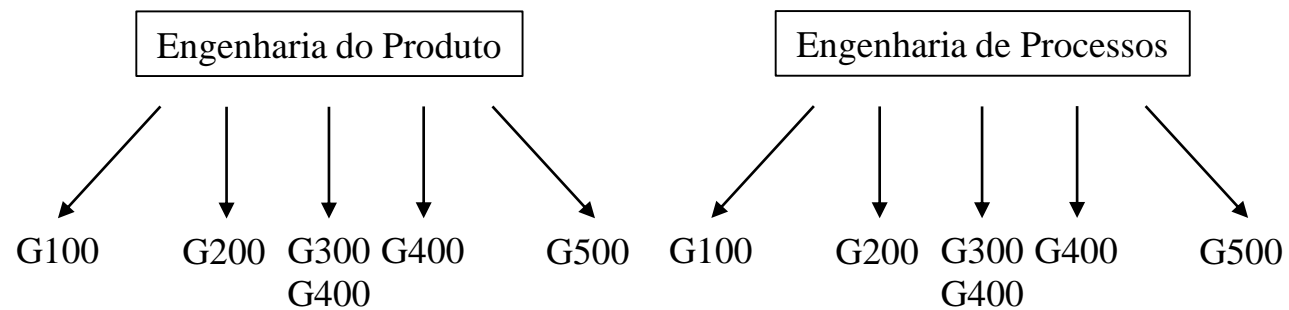


**Component  
Level**


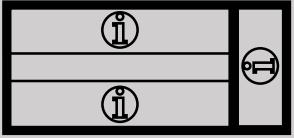

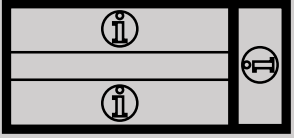


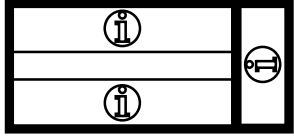

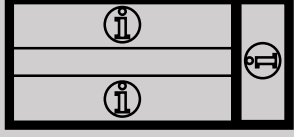

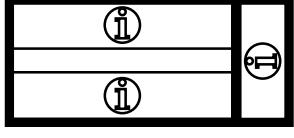







# MATRIZ DE PARA (VOLUME)

\*\* Fluxos esperados de materiais

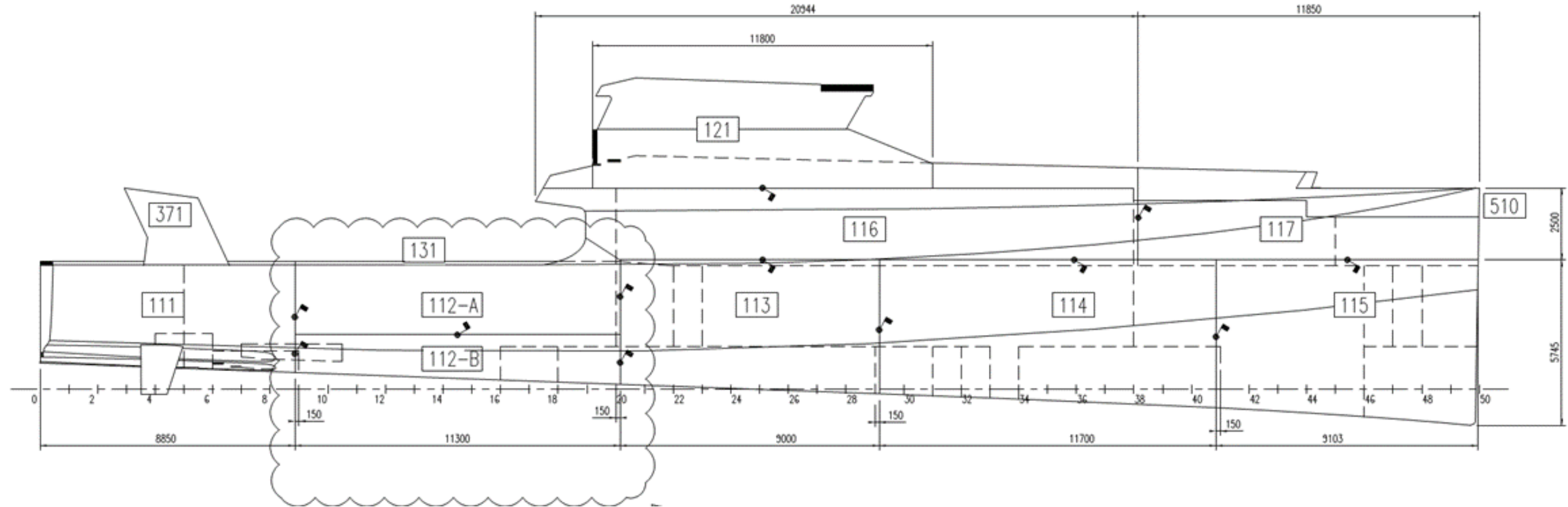


# Sections – 5009

<i>Section</i>	<i>Link</i>	<i>Block</i>	<i>Material Requirement</i>
<i>General Items</i> (131_371_372_510_540)		-----	-----
<i>Section 111A</i>		<b>101</b>	
<i>Section 111B</i>			
<i>Section 112A</i>		<b>101</b>	
<i>Section 112B</i>			
<i>Section 113</i>		<b>102</b>	
<i>Section 114A</i>		<b>102</b>	
<i>Section 114B</i>			
<i>Section 115A</i> ( <a href="#">100 (dispositivo de montagem) 8,3954 t</a> ) 		<b>103</b>	
<i>Section 115B</i>			
<i>Section 116A</i>		<b>104</b>	
<i>Section 116B</i>			
<i>Section 117</i>		<b>104</b>	
<i>Section 121</i>		<b>104</b>	
<i>Section 122</i>		<b>104</b>	
<b>5009 ** (Tabela 2)</b>		-----	-----

# MATRIZ DE PARA (VOLUME)

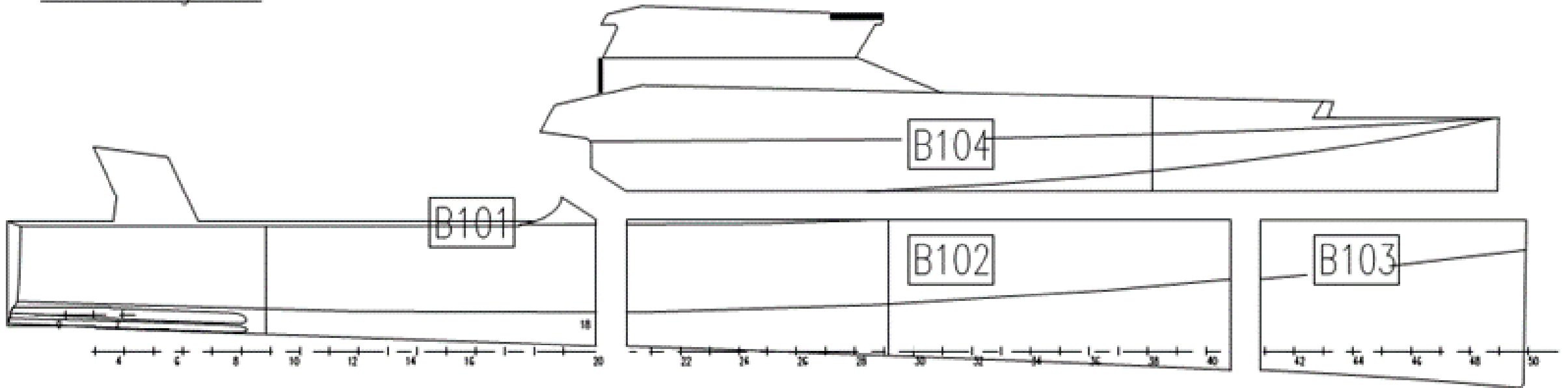
\*\* Fluxos esperados de materiais



# MATRIZ DE PARA (VOLUME)

\*\* Fluxos esperados de materiais

Block arrangement



# MATRIZ DE VOLUME (\*\* Fluxos esperados de materiais)

<i>Block</i>	<i>Block name</i>	<i>Section</i>	<i>Section name</i>	<i>Weight [tonnes]</i>	<i>VCG [m]</i>	<i>LCG [m]</i>	<i>TCG [m]</i>
B101	<i>Aft Ship</i>	111–A&B	<i>Aft peak</i>	25,31	2,4	4,2	0,0
B101	<i>Aft Ship</i>	112–A	<i>Engine Room (below tanktop)</i>	22,97	1,2	14,9	0,0
B101	<i>Aft Ship</i>	112–B	<i>Engine Room (below tanktop)</i>	15,09	3,9	14,9	0,0
B102	<i>Mid Ship</i>	113	<i>Accomodation BMD Aft</i>	25,43	2,3	24,3	0,0
B102	<i>Mid Ship</i>	114–A&B	<i>Accomodation BMD fore</i>	22,92	2,1	34,7	0,0
B103	<i>Fore Ship</i>	115–A&B	<i>Bowthruster room</i>	11,07	2,1	45,3	0,0
B104	<i>SuperStructure</i>	116–A&B	<i>Accomodation MD Aft</i>	22,03	6,4	26,3	0,0
B104	<i>SuperStructure</i>	117	<i>Accomodation MD Aft</i>	8,01	6,0	43,2	0,0
B104	<i>SuperStructure</i>	121	<i>Wheelhouse</i>	4,00	8,7	24,5	0,0
			<i>Total Weight</i>	156,83			
-----	-----	100	<i>Bow mould</i>	8,40	-----	-----	-----
-----	-----	131	<i>ER hatch</i>	0,80	4,4	14,3	0,0
-----	-----	371	<i>Ventlation outlet casing</i>	2,30	5,8	6,6	0,0
-----	-----	510	<i>Anchor Packet</i>	1,10	4,7	46,6	0,0
-----	-----	540	<i>Crane foundation</i>	0,20	7,1	17,8	0,0
			<i>Total Weight</i>	4,4			

*Total*

*Plates / Thickness*



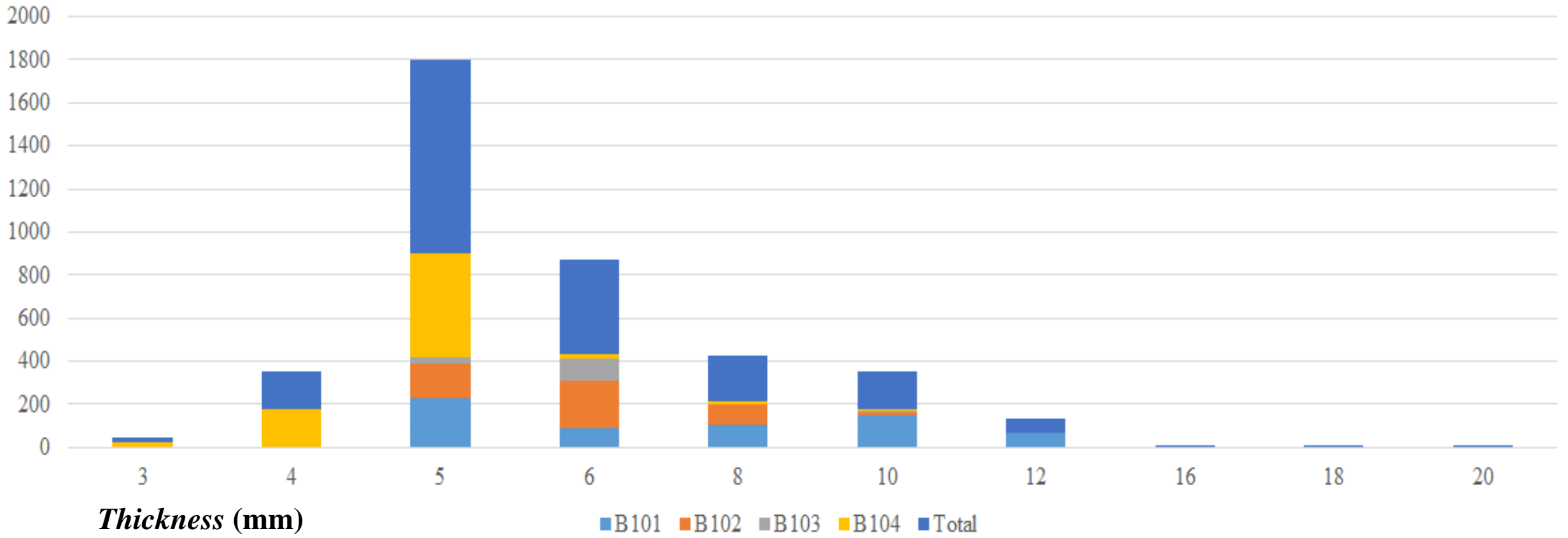
Area

Items	<i>Thickness (mm)</i>	<i>Area (m<sup>2</sup>)</i>					<i>%</i>				
		<b>B101</b>	<b>B102</b>	<b>B103</b>	<b>B104</b>	<b>Total</b>	<b>B101</b>	<b>B102</b>	<b>B103</b>	<b>B104</b>	<b>Total</b>
(1)	3	-----	-----	-----	22,839	22,839	-----	-----	-----	3,121%	1,144%
(2)	4	0,325	-----	-----	174,5142	174,8392	0,051%	-----	-----	23,845%	8,756%
(3)	5	228,27	158,384	31,35	482,3588	900,3628	35,783%	32,50%	22,46%	65,908%	45,091%
(4)	6	90,291	218,5	102,523	25,5625	436,8765	14,154%	44,83%	73,45%	3,493%	21,879%
(5)	8	104,04	94,2164	0,34	16,2574	214,8538	16,309%	19,33%	0,24%	2,221%	10,760%
(6)	10	146,65	16,277	4,6121	8,0102	175,5493	22,989%	3,34%	3,30%	1,094%	8,792%
(7)	12	66,271	-----	-----	-----	66,271	10,388%	-----	-----	-----	3,319%
(8)	16	-----	-----	-----	2,321	2,321	-----	-----	-----	0,317%	0,116%
(9)	18	2,080	-----	-----	-----	2,08	0,326%	-----	-----	-----	0,104%
(10)	20	-----	-----	0,766	-----	0,766	-----	-----	0,55%	-----	0,038%
	<b>Total</b>	637,93	487,3761	139,591	731,863	1996,759	100,000%	100,000%	100,000%	100,000%	100,000%

\*\* Fluxos esperados de materiais



### Area



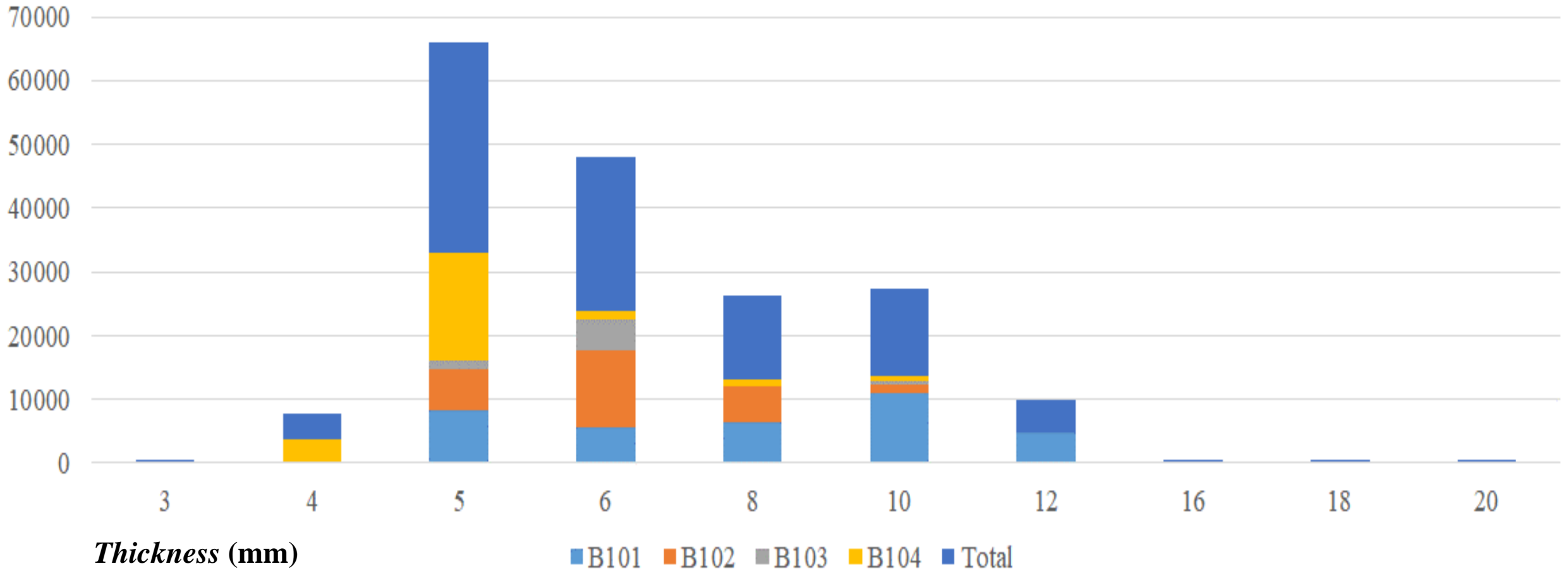
Weight

Items	Thickness (mm)	Weight (kg)					%				
		B101	B102	B103	B104	Total	B101	B102	B103	B104	Total
(1)	3	-----	-----	-----	276,1	276,1	-----	-----	-----	1,114%	0,295%
(2)	4	15,2	-----	-----	3834,751	3849,951	0,042%	-----	-----	15,475%	4,118%
(3)	5	8233,1	6616,6	1107,2	17057,46	33014,36	22,655%	25,68%	16,76%	68,835%	35,311%
(4)	6	5505,5	12154,5	4744,8	1548,3	23953,1	15,150%	47,17%	71,81%	6,248%	25,619%
(5)	8	6401,2	5724,4	21,2	989,6	13136,4	17,614%	22,21%	0,32%	3,994%	14,050%
(6)	10	10985	1273,3	613,6	779,9	13651,8	30,228%	4,94%	9,29%	3,147%	14,601%
(7)	12	4907,0	-----	-----	-----	4907	13,503%	-----	-----	-----	5,248%
(8)	16	-----	-----	-----	294	294	-----	-----	-----	1,186%	0,314%
(9)	18	293,6	-----	-----	-----	293,6	0,808%	-----	-----	-----	0,314%
(10)	20	-----	-----	120,2	-----	120,2	-----	-----	1,82%	-----	0,129%
	<b>Total</b>	36341	25768,8	6607	24780,1	93496,51	100,000%	100,000%	100,000%	100,000%	100,000%

\*\* Fluxos esperados de materiais



# Weight



# *Material Requirement Planning*

*Block 101 – Plates*

Items	<i>Thickness (mm)</i>	<i>Area (m<sup>2</sup>)</i>	<i>%</i>	<i>Weight (kg)</i>	<i>%</i>
(1)	4	0,32472	0,061%	15,2	0,042%
(2)	5	228,272294	42,757%	8233,1	22,655%
(3)	6	90,29104	16,912%	5505,5	15,150%
(4)	8	104,04172	19,488%	6401,2	17,614%
(5)	10	146,64725	27,468%	10985,2	30,228%
(6)	12	66,270638	12,413%	4907,0	13,503%
(7)	18	2,0801	0,390%	293,6	0,808%
	<b>Total</b>	533,886042	100,000%	36340,8	100,000%





# *Section* 111

*Section* 111A

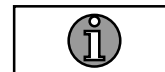
*Section* 111B

# *Section 111*

*Section 111A – Painéis (Shell Plate)*

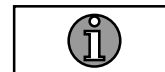
**Section 111A – Painéis (Shell Plate)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>SHELLPLATE</i>	<i>Grade A 235</i>	1718	1496	8	128,6
<i>SHELLPLATE</i>	<i>Grade A 235</i>	1718	1496	8	128,6
<i>SHELLPLATE</i>	<i>Grade A 235</i>	836	366	8	15,6
<i>SHELLPLATE</i>	<i>Grade A 235</i>	836	366	8	15,6
<i>SHELLPLATE</i>	<i>Grade A 235</i>	869	506	8	23,8
<i>SHELLPLATE</i>	<i>Grade A 235</i>	869	506	8	23,8
<i>SHELLPLATE</i>	<i>Grade A 235</i>	895	413	8	19,5
<i>SHELLPLATE</i>	<i>Grade A 235</i>	895	413	8	19,5
<i>SHELLPLATE</i>	<i>Grade A 235</i>	936	497	8	24,9
<i>SHELLPLATE</i>	<i>Grade A 235</i>	936	497	8	24,9
<i>SHELLPLATE</i>	<i>Grade A 235</i>	949	396	8	19,3
<i>SHELLPLATE</i>	<i>Grade A 235</i>	949	396	8	19,3
<i>SHELLPLATE</i>	<i>Grade A 235</i>	952	467	8	23,4
<i>SHELLPLATE</i>	<i>Grade A 235</i>	952	467	8	23,4

**Σ****510,2**

**Section 111A – Painéis (Shell Plate)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3112	832	10	188,9
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3112	832	10	188,9
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3108	848	10	181,2
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3108	848	10	181,2
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3073	869	10	196
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3073	869	10	196
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3066	856	10	184,7
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3066	856	10	184,7
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2967	1780	10	404,8
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2967	1780	10	404,8
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2959	1247	10	280,8
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2959	1247	10	280,8
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2952	1170	10	101,7
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2952	1170	10	101,7

**Σ****3076,2**

**Section 111A – Painéis (Shell Plate)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5904	387	12	119,6
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5904	387	12	119,6
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5832	965	12	259,4
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5689	591	12	239,1
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5688	591	12	239,1
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5101	1132	12	496,5
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5101	1132	12	496,5
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5087	588	12	224
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5087	588	12	224
<i>SHELLPLATE</i>	<i>Grade A 235</i>	4991	1011	12	415,1
<i>SHELLPLATE</i>	<i>Grade A 235</i>	4991	1011	12	415,1
<i>SHELLPLATE</i>	<i>Grade A 235</i>	4934	744	12	292,2
<i>SHELLPLATE</i>	<i>Grade A 235</i>	4934	744	12	292,2
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5832	965	12	259,4



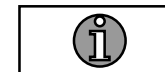
$\Sigma$  4091,8

$\Sigma$  *Peso (Kg)*  
*Total* 7678,2

***Section 111A – Painéis (Shell Stifenner – Longitudinais)***

**Section 111A – Painéis (Shell Stifenner – Longitudinais)**

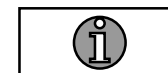
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif.</i> HP80X6 1044/1056	<i>Grade A 235</i>	4986	80	6	24,5
<i>Shell stif.</i> HP80X6 1055 from CL	<i>Grade A 235</i>	1018	80	6	4,9
<i>Shell stif.</i> HP80X6 -1055 from CL	<i>Grade A 235</i>	1018	80	6	4,9
<i>Shell stif.</i> HP80X6 -1057/-1045	<i>Grade A 235</i>	4986	80	6	24,5
<i>Shell stif.</i> HP80X6 1230 from CL	<i>Grade A 235</i>	975	80	6	4,7
<i>Shell stif.</i> HP80X6 -1230 from CL	<i>Grade A 235</i>	974	80	6	4,7
<i>Shell stif.</i> HP80X6 1321/1336	<i>Grade A 235</i>	3003	80	6	14,8
<i>Shell stif.</i> HP80X6 -1337/-1322	<i>Grade A 235</i>	3013	80	6	14,8
<i>Shell stif.</i> HP80X6 1503/1623	<i>Grade A 235</i>	3004	80	6	14,8
<i>Shell stif.</i> HP80X6 158/297	<i>Grade A 235</i>	1508	80	6	7,5
<i>Shell stif.</i> HP80X6 -1624/-1504	<i>Grade A 235</i>	3004	80	6	14,8
<i>Shell stif.</i> HP80X6 1680 from CL	<i>Grade A 235</i>	941	80	6	4,6
<i>Shell stif.</i> HP80X6 -1680 from CL	<i>Grade A 235</i>	941	80	6	4,6
<i>Shell stif.</i> HP80X6 1858/1874	<i>Grade A 235</i>	2929	80	6	14,4

**Σ****158,5**



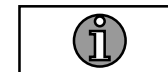
**Section 111A – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif.</i> HP80X6 1859/1874	<i>Grade A 235</i>	3701	80	6	18,2
<i>Shell stif.</i> HP80X6 1859/1874	<i>Grade A 235</i>	999	80	6	5
<i>Shell stif.</i> HP80X6 -1875/-1859	<i>Grade A 235</i>	2929	80	6	14,4
<i>Shell stif.</i> HP80X6 -1875/-1860	<i>Grade A 235</i>	3701	80	6	18,2
<i>Shell stif.</i> HP80X6 -1875/-1860	<i>Grade A 235</i>	999	80	6	5
<i>Shell stif.</i> HP80X6 1989/2100	<i>Grade A 235</i>	1911	80	6	9,5
<i>Shell stif.</i> HP80X6 200/250	<i>Grade A 235</i>	1003	80	6	5,1
<i>Shell stif.</i> HP80X6 200/278	<i>Grade A 235</i>	1000	80	6	5,1
<i>Shell stif.</i> HP80X6 -2101/-1990	<i>Grade A 235</i>	1911	80	6	9,5
<i>Shell stif.</i> HP80X6 2133/2192	<i>Grade A 235</i>	1001	80	6	5,1
<i>Shell stif.</i> HP80X6 2137/2185	<i>Grade A 235</i>	3711	80	6	18,2
<i>Shell stif.</i> HP80X6 2167/2449	<i>Grade A 235</i>	2877	80	6	14,2
<i>Shell stif.</i> HP80X6 217/250	<i>Grade A 235</i>	2703	80	6	13,3
<i>Shell stif.</i> HP80X6 -2186/-2138	<i>Grade A 235</i>	3711	80	6	18,2

**Σ****159,0**

**Section 111A – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif.</i> HP80X6 -2193/-2134	<i>Grade A 235</i>	1001	80	6	5,1
<i>Shell stif.</i> HP80X6 2303/2476	<i>Grade A 235</i>	3737	80	6	18,3
<i>Shell stif.</i> HP80X6 2442/2623	<i>Grade A 235</i>	4860	80	6	23,9
<i>Shell stif.</i> HP80X6 -2450/-2168	<i>Grade A 235</i>	2877	80	6	14,2
<i>Shell stif.</i> HP80X6 -2477/-2445	<i>Grade A 235</i>	1349	80	6	6,7
<i>Shell stif.</i> HP80X6 -251/-201	<i>Grade A 235</i>	1003	80	6	5,1
<i>Shell stif.</i> HP80X6 -251/-218	<i>Grade A 235</i>	2703	80	6	13,3
<i>Shell stif.</i> HP80X6 -2624/-2443	<i>Grade A 235</i>	4860	80	6	23,9
<i>Shell stif.</i> HP80X6 2681/2699	<i>Grade A 235</i>	1707	80	6	8,5
<i>Shell stif.</i> HP80X6 -2700/-2681	<i>Grade A 235</i>	679	80	6	3,4
<i>Shell stif.</i> HP80X6 -2700/-2682	<i>Grade A 235</i>	1707	80	6	8,5
<i>Shell stif.</i> HP80X6 -279/-201	<i>Grade A 235</i>	1000	80	6	5,1
<i>Shell stif.</i> HP80X6 2979/2995	<i>Grade A 235</i>	2023	80	6	10
<i>Shell stif.</i> HP80X6 -298/-159	<i>Grade A 235</i>	1508	80	6	7,5

 $\Sigma$ 

153,5

**Section 111A – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif.</i> HP80X6 2981/3295	<i>Grade A 235</i>	4820	80	6	23,7
<i>Shell stif.</i> HP80X6 2990/2995	<i>Grade A 235</i>	2000	80	6	9,9
<i>Shell stif.</i> HP80X6 -2996/-2980	<i>Grade A 235</i>	2023	80	6	10
<i>Shell stif.</i> HP80X6 -2996/-2991	<i>Grade A 235</i>	2001	80	6	10
<i>Shell stif.</i> HP80X6 3181/3555	<i>Grade A 235</i>	4790	80	6	23,5
<i>Shell stif.</i> HP80X6 3261/3280	<i>Grade A 235</i>	1704	80	6	8,4
<i>Shell stif.</i> HP80X6 3267/3290	<i>Grade A 235</i>	2014	80	6	10
<i>Shell stif.</i> HP80X6 -3281/-3262	<i>Grade A 235</i>	1704	80	6	8,4
<i>Shell stif.</i> HP80X6 -3291/-3268	<i>Grade A 235</i>	2014	80	6	10
<i>Shell stif.</i> HP80X6 -3296/-2982	<i>Grade A 235</i>	4820	80	6	23,7
<i>Shell stif.</i> HP80X6 3378/3644	<i>Grade A 235</i>	2762	80	6	13,6
<i>Shell stif.</i> HP80X6 -3556/-3182	<i>Grade A 235</i>	4790	80	6	23,5
<i>Shell stif.</i> HP80X6 -3645/-3379	<i>Grade A 235</i>	2762	80	6	13,6
<i>Shell stif.</i> HP80X6 3673/3715	<i>Grade A 235</i>	999	80	6	5

**Σ****193,3**

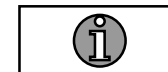
**Section 111A – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif.</i> HP80X6 3694/3761	<i>Grade A 235</i>	3701	80	6	18,2
<i>Shell stif.</i> HP80X6 3700/3852	<i>Grade A 235</i>	4704	80	6	23,1
<i>Shell stif.</i> HP80X6 -3716/-3674	<i>Grade A 235</i>	999	80	6	5
<i>Shell stif.</i> HP80X6 -3762/-3695	<i>Grade A 235</i>	3701	80	6	18,2
<i>Shell stif.</i> HP80X6 3831/3927	<i>Grade A 235</i>	3701	80	6	18,2
<i>Shell stif.</i> HP80X6 -3853/-3701	<i>Grade A 235</i>	4704	80	6	23,1
<i>Shell stif.</i> HP80X6 -3928/-3832	<i>Grade A 235</i>	3701	80	6	18,2
<i>Shell stif.</i> HP80X6 508/615	<i>Grade A 235</i>	4003	80	6	19,7
<i>Shell stif.</i> HP80X6 -562/-265	<i>Grade A 235</i>	3002	80	6	14,8
<i>Shell stif.</i> HP80X6 -616/-509	<i>Grade A 235</i>	4003	80	6	19,7
<i>Shell stif.</i> HP80X6 754/775	<i>Grade A 235</i>	5002	80	6	24,6
<i>Shell stif.</i> HP80X6 754/775	<i>Grade A 235</i>	1019	80	6	5,1
<i>Shell stif.</i> HP80X6 757/775	<i>Grade A 235</i>	3019	80	6	14,8
<i>Shell stif.</i> HP80X6 -775/-755	<i>Grade A 235</i>	5002	80	6	24,6

**Σ****247,3**


**Section 111A – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif. HP80X6 -775/-755</i>	<i>Grade A 235</i>	1019	80	6	5,1
<i>Shell stif. HP80X6 -775/-758</i>	<i>Grade A 235</i>	3019	80	6	14,8
<i>Shell stif. HP80X6 981/1097</i>	<i>Grade A 235</i>	3002	80	6	14,8
<i>Shell stif. HP80X6 FR. 6+250</i>	<i>Grade A 235</i>	342	80	6	1,7
<i>Shell stif. HP80X6 FR. 6+330</i>	<i>Grade A 235</i>	444	80	6	2,2
<i>Shell stif. HP80X6 FR. 6+330</i>	<i>Grade A 235</i>	414	80	6	1,9
<i>Shell stif. HP80X6 FR. 6+500</i>	<i>Grade A 235</i>	370	80	6	1,8
<i>Shell stif. HP80X6 FR. 7-250</i>	<i>Grade A 235</i>	399	80	6	2
<i>Stif. AE50X8 1050 from CL at</i>	<i>Grade A 235</i>	400	50	8	2,3
<i>Stif. AE50X8 1350 from CL at</i>	<i>Grade A 235</i>	1490	50	8	8,6
<i>Stif. AE50X8 1350 from CL at</i>	<i>Grade A 235</i>	400	50	8	2,3
<i>Stif. AE50X8 -1350 from CL at</i>	<i>Grade A 235</i>	3000	50	8	17,3
<i>Stif. AE50X8 950 from CL at</i>	<i>Grade A 235</i>	1490	50	8	8,6
<i>Stif. AE50X8 -950 from CL at</i>	<i>Grade A 235</i>	3000	50	8	17,3

 $\Sigma$ 

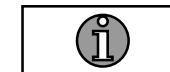
100,7

**Section 111A – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. AE50X8 FR 6+350 at</i>	<i>Grade A 235</i>	400	50	8	2,3
<i>Stif. AE50X8 FR 6+500 at</i>	<i>Grade A 235</i>	400	50	8	2,3
<i>Stif. AE50X8 FR 6+650 at</i>	<i>Grade A 235</i>	400	50	8	2,3
<i>Stif. AE50X8 FR 6+800 at</i>	<i>Grade A 235</i>	400	50	8	2,3
<i>Stif. AE50X8 FR 7+130 at</i>	<i>Grade A 235</i>	400	50	8	2,3
<i>Stif. AE50X8 FR 7+350 at</i>	<i>Grade A 235</i>	400	50	8	2,3
<i>Stif. AE50X8 FR 7+430 at</i>	<i>Grade A 235</i>	400	50	8	2,3
<i>Stif. AE50X8 FR 7+650 at</i>	<i>Grade A 235</i>	400	50	8	2,3
<i>Stif. AE50X8 FR 8+350 at</i>	<i>Grade A 235</i>	400	50	8	2,3
<i>Stif. AE50X8 FR 8+470 at</i>	<i>Grade A 235</i>	420	50	8	2,4
<i>Stif. AE50X8 FR 8+650 at</i>	<i>Grade A 235</i>	400	50	8	2,3
<i>Stif. AE50X8 FR 8+70 at</i>	<i>Grade A 235</i>	420	50	8	2,4
<i>Stif. AU75X50X5 2700 from CL at</i>	<i>Grade A 235</i>	2000	75	5	9,4
<i>Stif. AU75X50X5 -2700 from CL at</i>	<i>Grade A 235</i>	2000	75	5	9,4
				$\Sigma$	46,6


**Section 111A – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. AU75X50X5 3300 from CL at</i>	<i>Grade A 235</i>	2000	75	5	9,4
<i>Stif. AU75X50X5 -3300 from CL at</i>	<i>Grade A 235</i>	2000	75	5	9,4
<i>Stif. FB50X5 -3 from CL at Bulkhead FR 7</i>	<i>Grade A 235</i>	280	50	5	0,5
<i>Stif. FB50X5 -3 from CL at Bulkhead FR 8</i>	<i>Grade A 235</i>	317	50	5	0,6
<i>Stif. FB50X5 from CL at Bulkhead FR 1</i>	<i>Grade A 235</i>	209	50	5	0,4
<i>Stif. FB50X5 from CL at Bulkhead FR 1</i>	<i>Grade A 235</i>	209	50	5	0,4
<i>Stif. FB50X5 from CL at Bulkhead FR 2</i>	<i>Grade A 235</i>	281	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 2</i>	<i>Grade A 235</i>	281	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 6</i>	<i>Grade A 235</i>	239	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 6</i>	<i>Grade A 235</i>	237	50	5	0,5
<i>Stif. FB80X8 -20000/820000 a.b. at</i>	<i>Grade A 235</i>	478	80	8	2,3
<i>Stif. FB80X8 -20000/820000 a.b. at</i>	<i>Grade A 235</i>	478	80	8	2,3
<i>Stif. FB80X8 -20000/820000 a.b. at</i>	<i>Grade A 235</i>	478	80	8	2,3
<i>Stif. FB80X8 -20000/820000 a.b. at</i>	<i>Grade A 235</i>	478	80	8	2,3

 $\Sigma$ 


31,9

**Section 111A – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. HP60X4 -690 from CL at Deck 1335 above base</i>	<i>Grade A 235</i>	1995	60	4	5,6
<i>Stif. HP60X4 755 from CL at Deck 1335 above base</i>	<i>Grade A 235</i>	1995	60	4	5,6
<i>Stif. HP60X4 940 from CL at Deck 1335 above base</i>	<i>Grade A 235</i>	1422	60	4	4
<i>Stif. HP80X6 1055 from CL at Bulkhead FR 6</i>	<i>Grade A 235</i>	930	80	6	4,5
<i>Stif. HP80X6 -1055 from CL at Bulkhead FR 6</i>	<i>Grade A 235</i>	935	80	6	4,5
<i>Stif. HP80X6 1230 from CL at Bulkhead FR 1</i>	<i>Grade A 235</i>	307	80	6	1,3
<i>Stif. HP80X6 -1230 from CL at Bulkhead FR 1</i>	<i>Grade A 235</i>	308	80	6	1,3
<i>Stif. HP80X6 1230 from CL at Deck 2000 above base</i>	<i>Grade A 235</i>	996	80	6	4,8
<i>Stif. HP80X6 -1230 from CL at Deck 2000 above base</i>	<i>Grade A 235</i>	996	80	6	4,8
<i>Stif. HP80X6 250 from CL at Deck 2000 above base</i>	<i>Grade A 235</i>	996	80	6	4,8
<i>Stif. HP80X6 -250 from CL at Deck 2000 above base</i>	<i>Grade A 235</i>	996	80	6	4,8
<i>Stif. HP80X6 -3 from CL at Bulkhead FR 1</i>	<i>Grade A 235</i>	695	80	6	3,4
<i>Stif. HP80X6 -3 from CL at Bulkhead FR 2</i>	<i>Grade A 235</i>	955	80	6	4,6
<i>Stif. HP80X6 -3 from CL at Bulkhead FR 3</i>	<i>Grade A 235</i>	1256	80	6	6
				$\Sigma$	60,0



**Section 111A – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. HP80X6 500 from CL at Deck 2000 above base</i>	<i>Grade A 235</i>	996	80	6	4,8
<i>Stif. HP80X6 -500 from CL at Deck 2000 above base</i>	<i>Grade A 235</i>	996	80	6	4,8
<i>Stif. HP80X6 760 from CL at Bulkhead FR 6</i>	<i>Grade A 235</i>	983	80	6	4,7
<i>Stif. HP80X6 -760 from CL at Bulkhead FR 6</i>	<i>Grade A 235</i>	983	80	6	4,7
<i>Stif. HP80X6 FR 1400/1615 at Long. frame from CL</i>	<i>Grade A 235</i>	903	80	6	4,3
<i>Stif. HP80X6 FR 1400/1615 at Long. frame from CL</i>	<i>Grade A 235</i>	855	80	6	4,1
<i>Stif. HP80X6 FR -1615/-1401 at Long. frame from CL</i>	<i>Grade A 235</i>	903	80	6	4,3
<i>Stif. HP80X6 FR -1615/-1401 at Long. frame from CL</i>	<i>Grade A 235</i>	855	80	6	4,1
<i>Stif. HP80X6 FR 5+255 at Deck 2000 above base</i>	<i>Grade A 235</i>	724	80	6	3,5
<i>Stif. HP80X6 FR 5+255 at Deck 2000 above base</i>	<i>Grade A 235</i>	724	80	6	3,5
<i>Stif. HP80X6 FR 5+745 at Deck 2000 above base</i>	<i>Grade A 235</i>	724	80	6	3,5
<i>Stif. HP80X6 FR 5+745 at Deck 2000 above base</i>	<i>Grade A 235</i>	724	80	6	3,5
<i>Stif. HP80X6 frame 5+330 at Bulkhead -4 from CL</i>	<i>Grade A 235</i>	1141	80	6	5,4
<i>Stif. HP80X6 frame 5+670 at Bulkhead -4 from CL</i>	<i>Grade A 235</i>	1154	80	6	5,5
				$\Sigma$	60,7


**Section 111A – Painéis (Shell Stifenner – Longitudinais)**



<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. HP80X6 from CL at Bulkhead FR 2</i>	<i>Grade A 235</i>	436	80	6	2
<i>Stif. HP80X6 from CL at Bulkhead FR 2</i>	<i>Grade A 235</i>	436	80	6	2
<i>Stif. HP80X6 from CL at Bulkhead FR 2</i>	<i>Grade A 235</i>	410	80	6	1,8
<i>Stif. HP80X6 from CL at Bulkhead FR 2</i>	<i>Grade A 235</i>	410	80	6	1,8
<i>Stif. HP80X6 from CL at Bulkhead FR 6</i>	<i>Grade A 235</i>	1090	80	6	5,3
<i>Stif. HP80X6 from CL at Bulkhead FR 6</i>	<i>Grade A 235</i>	1090	80	6	5,3
<i>Stif. HP80X6 from CL at Bulkhead FR 6</i>	<i>Grade A 235</i>	905	80	6	4,3
<i>Stif. HP80X6 from CL at Bulkhead FR 6</i>	<i>Grade A 235</i>	905	80	6	4,3
<i>Stif. HP80X6 from CL at Bulkhead FR 6</i>	<i>Grade A 235</i>	579	80	6	2,8
<i>Stif. HP80X6 from CL at Bulkhead FR 6</i>	<i>Grade A 235</i>	579	80	6	2,8
<i>Stif. HP80X6 from CL at Bulkhead FR 7</i>	<i>Grade A 235</i>	399	80	6	1,9
<i>Stif. HP80X6 from CL at Bulkhead FR 7</i>	<i>Grade A 235</i>	392	80	6	1,9
<i>Stif. HP80X6 from CL at Bulkhead FR 7</i>	<i>Grade A 235</i>	367	80	6	1,8
<i>Stif. HP80X6 from CL at Bulkhead FR 7</i>	<i>Grade A 235</i>	367	80	6	1,8

 $\Sigma$ 

39,8

## Section 111A – Painéis (Shell Stifenner – Longitudinais)

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
<i>Stif. HP80X6 from CL at Bulkhead FR 8</i>	<i>Grade A 235</i>	475	80	6	2,3
<i>Stif. HP80X6 from CL at Bulkhead FR 8</i>	<i>GradeA 235</i>	467	80	6	2,3
<i>Stif. HP80X6 from CL at Bulkhead FR 8</i>	<i>GradeA 235</i>	436	80	6	2,1
<i>Stif. HP80X6 from CL at Bulkhead FR 8</i>	<i>GradeA 235</i>	432	80	6	2,1
<i>Stif. PI88.9X5 FR -20000/820000 at</i>	<i>GradeA 235</i>	1773	89	5	18,1
<i>Stif. PI88.9X5 FR -20000/820000 at</i>	<i>GradeA 235</i>	1773	89	5	18,1
				Σ	45,0
				Σ <i>Peso (Kg)</i> <i>Total</i>	1296,35

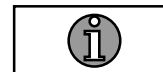
<i>From</i>	<i>to</i>	<i>Quantity</i>	<i>From</i>	<i>to</i>	<i>Quantity</i>
1	2	14,8338 t	9	13	14,8338 t
2	 3	7,6782 t ( <i>shell plates</i> ) 1,2963 t ( <i>shell stifenner</i> )	-----	-----	-----
2	6	4,4665 t + 1,3928t	-----	-----	-----
3	 4	1,2963 t	-----	-----	-----
3/4	5	(7,6782 + 1,2963) t 8,9745 t	-----	-----	-----
5	9	8,9745 t	-----	-----	-----
6	7	4,4665 t + 1,3928t	-----	-----	-----
7	8	4,4665 t + 1,3928t	-----	-----	-----
8	9	4,4665 t + 1,3928t	-----	-----	-----
<b>Section 111A</b>				<b>Σ</b>	<b>14,8338 t</b>

# *Section 111*


*Section 111B – Painéis (Shell Plate)*

**Section 111B – Painéis (Shell Plate)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2845	1185	5	128,2
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2845	1185	5	128,2
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2758	1929	5	197,1
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2758	1929	5	197,1
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5850	2581	5	320,5
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5850	2581	5	320,5
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5850	1922	5	441,2
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5850	1922	5	441,2
<i>SHELLPLATE</i>	<i>Grade A 235</i>	4130	1567	5	187,1
<i>SHELLPLATE</i>	<i>Grade A 235</i>	4332	1580	5	199,5
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2930	1931	5	207,4
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2930	1931	5	207,4
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2620	1030	5	100,6
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2620	1030	5	100,6

**Σ****3176,6**

## Section 111B – Painéis (Shell Plate)

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2554	1789	5	176,3	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2554	1789	5	176,3	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5903	1082	5	233,5	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5903	1082	5	233,5	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5903	1881	5	434,1	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5903	1881	5	434,1	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	540	450	10	19,1	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	540	450	10	19,1	
					$\Sigma$	1726
					$\Sigma$ <i>Peso (Kg)</i>	4902,6
					<i>Total</i>	

***Section 111B – Painéis (Shell Stifenner – Longitudinais)***



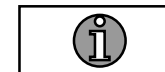
**Section 111B – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif. HP80X6 1000/1061</i>	<i>Grade A 235</i>	601	80	6	3
<i>Shell stif. HP80X6 -1061/-1002</i>	<i>Grade A 235</i>	596	80	6	3
<i>Shell stif. HP80X6 1100 from CL</i>	<i>Grade A 235</i>	1194	80	6	5,8
<i>Shell stif. HP80X6 -1100 from CL</i>	<i>Grade A 235</i>	1194	80	6	5,8
<i>Shell stif. HP80X6 1230 from CL</i>	<i>Grade A 235</i>	676	80	6	3,2
<i>Shell stif. HP80X6 -1230 from CL</i>	<i>Grade A 235</i>	675	80	6	3,2
<i>Shell stif. HP80X6 1400 from CL</i>	<i>Grade A 235</i>	1994	80	6	9,7
<i>Shell stif. HP80X6 -1400 from CL</i>	<i>Grade A 235</i>	1994	80	6	9,7
<i>Shell stif. HP80X6 1510/1669</i>	<i>Grade A 235</i>	1256	80	6	6,1
<i>Shell stif. HP80X6 1510/1669</i>	<i>Grade A 235</i>	1256	80	6	6,1
<i>Shell stif. HP80X6 1569/1699</i>	<i>Grade A 235</i>	3701	80	6	18,2
<i>Shell stif. HP80X6 1569/1699</i>	<i>Grade A 235</i>	3701	80	6	18,2
<i>Shell stif. HP80X6 1672/1865</i>	<i>Grade A 235</i>	4677	80	6	22,9
<i>Shell stif. HP80X6 1672/1865</i>	<i>Grade A 235</i>	4677	80	6	22,9

**Σ****137,8**

**Section 111B – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif. HP80X6 1700 from CL</i>	<i>Grade A 235</i>	3696	80	6	18
<i>Shell stif. HP80X6 1700 from CL</i>	<i>Grade A 235</i>	2189	80	6	10,7
<i>Shell stif. HP80X6 1700 from CL</i>	<i>Grade A 235</i>	1936	80	6	9,4
<i>Shell stif. HP80X6 -1700 from CL</i>	<i>Grade A 235</i>	2189	80	6	10,7
<i>Shell stif. HP80X6 -1700 from CL</i>	<i>Grade A 235</i>	1936	80	6	9,4
<i>Shell stif. HP80X6 -1700 from CL</i>	<i>Grade A 235</i>	1696	80	6	8,3
<i>Shell stif. HP80X6 -1700 from CL</i>	<i>Grade A 235</i>	1190	80	6	5,8
<i>Shell stif. HP80X6 1804/1893</i>	<i>Grade A 235</i>	3699	80	6	18,2
<i>Shell stif. HP80X6 1804/1893</i>	<i>Grade A 235</i>	3699	80	6	18,2
<i>Shell stif. HP80X6 1865 a.b.</i>	<i>Grade A 235</i>	2241	80	6	10,7
<i>Shell stif. HP80X6 1865 a.b.</i>	<i>Grade A 235</i>	2241	80	6	10,7
<i>Shell stif. HP80X6 1868/1995</i>	<i>Grade A 235</i>	4000	80	6	19,6
<i>Shell stif. HP80X6 1868/1995</i>	<i>Grade A 235</i>	4000	80	6	19,6
<i>Shell stif. HP80X6 2000 from CL</i>	<i>Grade A 235</i>	2496	80	6	12,1

 $\Sigma$ 

181,4

**Section 111B – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif. HP80X6 2000 from CL</i>	<i>Grade A 235</i>	2189	80	6	10,7
<i>Shell stif. HP80X6 2000 from CL</i>	<i>Grade A 235</i>	1911	80	6	9,3
<i>Shell stif. HP80X6 -2000 from CL</i>	<i>Grade A 235</i>	2189	80	6	10,7
<i>Shell stif. HP80X6 -2000 from CL</i>	<i>Grade A 235</i>	1911	80	6	9,3
<i>Shell stif. HP80X6 -2000 from CL</i>	<i>Grade A 235</i>	1190	80	6	5,8
<i>Shell stif. HP80X6 -2000 from CL</i>	<i>Grade A 235</i>	496	80	6	2,4
<i>Shell stif. HP80X6 2100/2121</i>	<i>Grade A 235</i>	3698	80	6	18,2
<i>Shell stif. HP80X6 2100/2121</i>	<i>Grade A 235</i>	3698	80	6	18,2
<i>Shell stif. HP80X6 2100/2130</i>	<i>Grade A 235</i>	4653	80	6	22,8
<i>Shell stif. HP80X6 2100/2130</i>	<i>Grade A 235</i>	4653	80	6	22,8
<i>Shell stif. HP80X6 2130 a.b.</i>	<i>Grade A 235</i>	2361	80	6	11,3
<i>Shell stif. HP80X6 2130 a.b.</i>	<i>Grade A 235</i>	2361	80	6	11,3
<i>Shell stif. HP80X6 2275 from CL</i>	<i>Grade A 235</i>	4885	80	6	23,8
<i>Shell stif. HP80X6 2275 from CL</i>	<i>Grade A 235</i>	1496	80	6	7,3

**Σ****183,9**

**Section 111B – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif. HP80X6 2275 from CL</i>	<i>Grade A 235</i>	1194	80	6	5,8
<i>Shell stif. HP80X6 -2275 from CL</i>	<i>Grade A 235</i>	4885	80	6	23,8
<i>Shell stif. HP80X6 -2275 from CL</i>	<i>Grade A 235</i>	1194	80	6	5,8
<i>Shell stif. HP80X6 -2275 from CL</i>	<i>Grade A 235</i>	1190	80	6	5,8
<i>Shell stif. HP80X6 2429/2454</i>	<i>Grade A 235</i>	4630	80	6	22,6
<i>Shell stif. HP80X6 2429/2454</i>	<i>Grade A 235</i>	4630	80	6	22,6
<i>Shell stif. HP80X6 2430/2447</i>	<i>Grade A 235</i>	3698	80	6	18,2
<i>Shell stif. HP80X6 2430/2447</i>	<i>Grade A 235</i>	3698	80	6	18,2
<i>Shell stif. HP80X6 2455 a.b.</i>	<i>Grade A 235</i>	2481	80	6	11,8
<i>Shell stif. HP80X6 2455 a.b.</i>	<i>Grade A 235</i>	2481	80	6	11,9
<i>Shell stif. HP80X6 249/292</i>	<i>Grade A 235</i>	448	80	6	2,3
<i>Shell stif. HP80X6 2530 from CL</i>	<i>Grade A 235</i>	4858	80	6	23,6
<i>Shell stif. HP80X6 2530 from CL</i>	<i>Grade A 235</i>	2194	80	6	10,7
<i>Shell stif. HP80X6 2530 from CL</i>	<i>Grade A 235</i>	496	80	6	2,4

 $\Sigma$ 

185,5

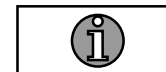
**Section 111B – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif. HP80X6 -2530 from CL</i>	<i>Grade A 235</i>	4858	80	6	23,6
<i>Shell stif. HP80X6 -2530 from CL</i>	<i>Grade A 235</i>	2500	80	6	12,2
<i>Shell stif. HP80X6 -2530 from CL</i>	<i>Grade A 235</i>	496	80	6	2,4
<i>Shell stif. HP80X6 2760/2774</i>	<i>Grade A 235</i>	3697	80	6	18,2
<i>Shell stif. HP80X6 2760/2774</i>	<i>Grade A 235</i>	3697	80	6	18,2
<i>Shell stif. HP80X6 2760/2780</i>	<i>Grade A 235</i>	4611	80	6	22,6
<i>Shell stif. HP80X6 2760/2780</i>	<i>Grade A 235</i>	4611	80	6	22,6
<i>Shell stif. HP80X6 2780 a.b.</i>	<i>Grade A 235</i>	2578	80	6	12,3
<i>Shell stif. HP80X6 2780 a.b.</i>	<i>Grade A 235</i>	2578	80	6	12,3
<i>Shell stif. HP80X6 2800 from CL</i>	<i>Grade A 235</i>	3194	80	6	15,5
<i>Shell stif. HP80X6 -2800 from CL</i>	<i>Grade A 235</i>	3194	80	6	15,5
<i>Shell stif. HP80X6 -293/-250</i>	<i>Grade A 235</i>	449	80	6	2,3
<i>Shell stif. HP80X6 3090/3101</i>	<i>Grade A 235</i>	3697	80	6	18,2
<i>Shell stif. HP80X6 3090/3101</i>	<i>Grade A 235</i>	3697	80	6	18,2

**Σ****214,1**

**Section 111B – Painéis (Shell Stifenner – Longitudinais)**

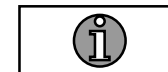
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif. HP80X6 3090/3106</i>	<i>Grade A 235</i>	4596	80	6	22,5
<i>Shell stif. HP80X6 3090/3106</i>	<i>Grade A 235</i>	4596	80	6	22,5
<i>Shell stif. HP80X6 3100 from CL</i>	<i>Grade A 235</i>	4786	80	6	23,3
<i>Shell stif. HP80X6 3100 from CL</i>	<i>Grade A 235</i>	3696	80	6	18
<i>Shell stif. HP80X6 -3100 from CL</i>	<i>Grade A 235</i>	4786	80	6	23,3
<i>Shell stif. HP80X6 -3100 from CL</i>	<i>Grade A 235</i>	3696	80	6	18
<i>Shell stif. HP80X6 3106 a.b.</i>	<i>Grade A 235</i>	2655	80	6	12,7
<i>Shell stif. HP80X6 3106 a.b.</i>	<i>Grade A 235</i>	2655	80	6	12,7
<i>Shell stif. HP80X6 3400 from CL</i>	<i>Grade A 235</i>	4743	80	6	23,1
<i>Shell stif. HP80X6 3400 from CL</i>	<i>Grade A 235</i>	3696	80	6	18
<i>Shell stif. HP80X6 -3400 from CL</i>	<i>Grade A 235</i>	4743	80	6	23,1
<i>Shell stif. HP80X6 -3400 from CL</i>	<i>Grade A 235</i>	3696	80	6	18
<i>Shell stif. HP80X6 3420/3428</i>	<i>Grade A 235</i>	3696	80	6	18,2
<i>Shell stif. HP80X6 3420/3428</i>	<i>Grade A 235</i>	3696	80	6	18,2

 $\Sigma$ 

271,6

**Section 111B – Painéis (Shell Stifenner – Longitudinais)**

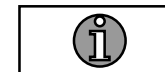
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif.</i> HP80X6 3420/3432	<i>Grade A 235</i>	4584	80	6	22,4
<i>Shell stif.</i> HP80X6 3420/3432	<i>Grade A 235</i>	4584	80	6	22,4
<i>Shell stif.</i> HP80X6 3432 a.b.	<i>Grade A 235</i>	2714	80	6	13
<i>Shell stif.</i> HP80X6 3432 a.b.	<i>Grade A 235</i>	2714	80	6	13
<i>Shell stif.</i> HP80X6 3700 from CL	<i>Grade A 235</i>	4696	80	6	22,9
<i>Shell stif.</i> HP80X6 3700 from CL	<i>Grade A 235</i>	3696	80	6	18
<i>Shell stif.</i> HP80X6 -3700 from CL	<i>Grade A 235</i>	4696	80	6	22,9
<i>Shell stif.</i> HP80X6 -3700 from CL	<i>Grade A 235</i>	3696	80	6	18
<i>Shell stif.</i> HP80X6 3750/3756	<i>Grade A 235</i>	3696	80	6	18,2
<i>Shell stif.</i> HP80X6 3750/3756	<i>Grade A 235</i>	3696	80	6	18,2
<i>Shell stif.</i> HP80X6 3750/3759	<i>Grade A 235</i>	4575	80	6	22,4
<i>Shell stif.</i> HP80X6 3750/3759	<i>Grade A 235</i>	4575	80	6	22,4
<i>Shell stif.</i> HP80X6 3759 a.b.	<i>Grade A 235</i>	2759	80	6	13,2
<i>Shell stif.</i> HP80X6 3759 a.b.	<i>Grade A 235</i>	2759	80	6	13,2

 $\Sigma$ 

260,2

**Section 111B – Painéis (Shell Stifenner – Longitudinais)**

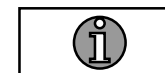
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif. HP80X6 4000 from CL</i>	<i>Grade A 235</i>	4644	80	6	22,6
<i>Shell stif. HP80X6 4000 from CL</i>	<i>Grade A 235</i>	3696	80	6	18
<i>Shell stif. HP80X6 -4000 from CL</i>	<i>Grade A 235</i>	4644	80	6	22,6
<i>Shell stif. HP80X6 -4000 from CL</i>	<i>Grade A 235</i>	3696	80	6	18
<i>Shell stif. HP80X6 4080 a.b.</i>	<i>Grade A 235</i>	4569	80	6	22,2
<i>Shell stif. HP80X6 4080 a.b.</i>	<i>Grade A 235</i>	4569	80	6	22,3
<i>Shell stif. HP80X6 4080 a.b.</i>	<i>Grade A 235</i>	3696	80	6	18
<i>Shell stif. HP80X6 4080 a.b.</i>	<i>Grade A 235</i>	3696	80	6	18
<i>Shell stif. HP80X6 4080 a.b.</i>	<i>Grade A 235</i>	2790	80	6	13,4
<i>Shell stif. HP80X6 4080 a.b.</i>	<i>Grade A 235</i>	2790	80	6	13,4
<i>Shell stif. HP80X6 499/552</i>	<i>Grade A 235</i>	460	80	6	2,3
<i>Shell stif. HP80X6 -552/-500</i>	<i>Grade A 235</i>	459	80	6	2,3
<i>Shell stif. HP80X6 767/799</i>	<i>Grade A 235</i>	553	80	6	2,8
<i>Shell stif. HP80X6 800 from CL</i>	<i>Grade A 235</i>	696	80	6	3,4

**Σ****199,3**




**Section 111B – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif. HP80X6 -800 from CL</i>	<i>Grade A 235</i>	696	80	6	3,4
<i>Shell stif. HP80X6 -800/-768</i>	<i>Grade A 235</i>	553	80	6	2,8
<i>Shell stif. HP80X6 FR. 3-195</i>	<i>Grade A 235</i>	872	80	6	4,2
<i>Shell stif. HP80X6 FR. 3-195</i>	<i>Grade A 235</i>	872	80	6	4,2
<i>Shell stif. HP80X6 FR. 3-195</i>	<i>Grade A 235</i>	252	80	6	1,2
<i>Shell stif. HP80X6 FR. 3-195</i>	<i>Grade A 235</i>	252	80	6	1,2
<i>Shell stif. HP80X6 FR. 5+500</i>	<i>Grade A 235</i>	433	80	6	2,1
<i>Shell stif. HP80X6 FR. 5+500</i>	<i>Grade A 235</i>	433	80	6	2,1
<i>Shell stif. HP80X6 FR. 5+500</i>	<i>Grade A 235</i>	387	80	6	1,9
<i>Shell stif. HP80X6 FR. 5+500</i>	<i>Grade A 235</i>	387	80	6	1,9
<i>Shell stif. HP80X6 FR. 5+500</i>	<i>Grade A 235</i>	296	80	6	1,4
<i>Shell stif. HP80X6 FR. 6+200</i>	<i>Grade A 235</i>	1074	80	6	5,2
<i>Shell stif. HP80X6 FR. 6+200</i>	<i>Grade A 235</i>	321	80	6	1,5
<i>Shell stif. HP80X6 FR. 6+500</i>	<i>Grade A 235</i>	404	80	6	1,9

 $\Sigma$ 

35,0

**Section 111B – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif.</i> HP80X6 FR. 6+500	<i>Grade A 235</i>	391	80	6	1,9
<i>Shell stif.</i> HP80X6 FR. 7+500	<i>Grade A 235</i>	424	80	6	2,1
<i>Shell stif.</i> HP80X6 FR. 7+500	<i>Grade A 235</i>	424	80	6	2,1
<i>Shell stif.</i> HP80X6 FR. 7+500	<i>Grade A 235</i>	419	80	6	2
<i>Shell stif.</i> HP80X6 FR. 7+500	<i>Grade A 235</i>	419	80	6	2
<i>Shell stif.</i> HP80X6 FR. 7+500	<i>Grade A 235</i>	405	80	6	2
<i>Shell stif.</i> HP80X6 FR. 7+500	<i>Grade A 235</i>	405	80	6	2
<i>Shell stif.</i> HP80X6 FR. 9-400	<i>Grade A 235</i>	368	80	6	1,8
<i>Shell stif.</i> HP80X6 FR. 9-400	<i>Grade A 235</i>	368	80	6	1,8
<i>Stif.</i> FB50X5 2800 from CL at Bulkhead FR 8	<i>Grade A 235</i>	87	50	5	0,2
<i>Stif.</i> FB50X5 -2800 from CL at Bulkhead FR 8	<i>Grade A 235</i>	87	50	5	0,2
<i>Stif.</i> FB50X5 3100 from CL at Bulkhead FR 7	<i>Grade A 235</i>	85	50	5	0,2
<i>Stif.</i> FB50X5 -3100 from CL at Bulkhead FR 7	<i>Grade A 235</i>	85	50	5	0,2
<i>Stif.</i> FB50X5 3550 from CL at Bulkhead FR 1	<i>Grade A 235</i>	136	50	5	0,2
				Σ	18,7


**Section 111B – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. FB50X5 -3550 from CL at Bulkhead FR 1</i>	<i>Grade A 235</i>	136	50	5	0,2
<i>Stif. FB50X5 3850 from CL at Bulkhead FR 2</i>	<i>Grade A 235</i>	136	50	5	0,2
<i>Stif. FB50X5 -3850 from CL at Bulkhead FR 2</i>	<i>Grade A 235</i>	136	50	5	0,2
<i>Stif. FB50X5 3850 from CL at Bulkhead FR 3</i>	<i>Grade A 235</i>	136	50	5	0,2
<i>Stif. FB50X5 -3850 from CL at Bulkhead FR 3</i>	<i>Grade A 235</i>	136	50	5	0,2
<i>Stif. FB50X5 3850 from CL at Bulkhead FR 4</i>	<i>Grade A 235</i>	136	50	5	0,2
<i>Stif. FB50X5 -3850 from CL at Bulkhead FR 4</i>	<i>Grade A 235</i>	136	50	5	0,2
<i>Stif. FB50X5 3850 from CL at Bulkhead FR 6</i>	<i>Grade A 235</i>	136	50	5	0,2
<i>Stif. FB50X5 -3850 from CL at Bulkhead FR 6</i>	<i>Grade A 235</i>	136	50	5	0,2
<i>Stif. FB50X5 3850 from CL at Bulkhead FR 7</i>	<i>Grade A 235</i>	136	50	5	0,2
<i>Stif. FB50X5 -3850 from CL at Bulkhead FR 7</i>	<i>Grade A 235</i>	136	50	5	0,2
<i>Stif. FB50X5 3850 from CL at Bulkhead FR 8</i>	<i>Grade A 235</i>	136	50	5	0,2
<i>Stif. FB50X5 -3850 from CL at Bulkhead FR 8</i>	<i>Grade A 235</i>	136	50	5	0,2
<i>Stif. FB50X5 4080 a.b. at Bulkhead FR 1</i>	<i>Grade A 235</i>	80	50	5	0,2


 $\Sigma$ 

2,8

**Section 111B – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. FB50X5 4080 a.b. at Bulkhead FR 1</i>	<i>Grade A 235</i>	80	50	5	0,2
<i>Stif. FB50X5 4080 a.b. at Bulkhead FR 2</i>	<i>Grade A 235</i>	80	50	5	0,2
<i>Stif. FB50X5 4080 a.b. at Bulkhead FR 2</i>	<i>Grade A 235</i>	80	50	5	0,2
<i>Stif. FB50X5 4080 a.b. at Bulkhead FR 3</i>	<i>Grade A 235</i>	80	50	5	0,2
<i>Stif. FB50X5 4080 a.b. at Bulkhead FR 3</i>	<i>Grade A 235</i>	80	50	5	0,2
<i>Stif. FB50X5 4080 a.b. at Bulkhead FR 4</i>	<i>Grade A 235</i>	80	50	5	0,2
<i>Stif. FB50X5 4080 a.b. at Bulkhead FR 4</i>	<i>Grade A 235</i>	80	50	5	0,2
<i>Stif. FB50X5 4080 a.b. at Bulkhead FR 8</i>	<i>Grade A 235</i>	179	50	5	0,3
<i>Stif. FB50X5 4080 a.b. at Bulkhead FR 8</i>	<i>Grade A 235</i>	179	50	5	0,3
<i>Stif. FB50X5 a.b. at Bulkhead FR 1</i>	<i>Grade A 235</i>	233	50	5	0,5
<i>Stif. FB50X5 a.b. at Bulkhead FR 1</i>	<i>Grade A 235</i>	233	50	5	0,5
<i>Stif. FB50X5 a.b. at Bulkhead FR 1</i>	<i>Grade A 235</i>	187	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 1</i>	<i>Grade A 235</i>	187	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 1</i>	<i>Grade A 235</i>	181	50	5	0,4
				$\Sigma$	4,2

**Section 111B – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>	
<i>Stif. FB50X5 a.b. at Bulkhead FR 1</i>	<i>Grade A 235</i>	181	50	5	0,4	
<i>Stif. FB50X5 a.b. at Bulkhead FR 2</i>	<i>Grade A 235</i>	229	50	5	0,4	
<i>Stif. FB50X5 a.b. at Bulkhead FR 2</i>	<i>Grade A 235</i>	229	50	5	0,4	
<i>Stif. FB50X5 a.b. at Bulkhead FR 2</i>	<i>Grade A 235</i>	188	50	5	0,4	
<i>Stif. FB50X5 a.b. at Bulkhead FR 2</i>	<i>Grade A 235</i>	188	50	5	0,4	
<i>Stif. FB50X5 a.b. at Bulkhead FR 2</i>	<i>Grade A 235</i>	182	50	5	0,4	
<i>Stif. FB50X5 a.b. at Bulkhead FR 2</i>	<i>Grade A 235</i>	182	50	5	0,4	
<i>Stif. FB50X5 a.b. at Bulkhead FR 3</i>	<i>Grade A 235</i>	229	50	5	0,4	
<i>Stif. FB50X5 a.b. at Bulkhead FR 3</i>	<i>Grade A 235</i>	229	50	5	0,4	
<i>Stif. FB50X5 a.b. at Bulkhead FR 3</i>	<i>Grade A 235</i>	181	50	5	0,4	
<i>Stif. FB50X5 a.b. at Bulkhead FR 3</i>	<i>Grade A 235</i>	181	50	5	0,4	
<i>Stif. FB50X5 a.b. at Bulkhead FR 4</i>	<i>Grade A 235</i>	225	50	5	0,4	
<i>Stif. FB50X5 a.b. at Bulkhead FR 4</i>	<i>Grade A 235</i>	225	50	5	0,4	
<i>Stif. FB50X5 a.b. at Bulkhead FR 4</i>	<i>Grade A 235</i>	186	50	5	0,4	
					$\Sigma$	5,6

**Section 111B – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. FB50X5 a.b. at Bulkhead FR 4</i>	<i>Grade A 235</i>	186	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 4</i>	<i>Grade A 235</i>	182	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 4</i>	<i>Grade A 235</i>	182	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 6</i>	<i>Grade A 235</i>	234	50	5	0,5
<i>Stif. FB50X5 a.b. at Bulkhead FR 6</i>	<i>Grade A 235</i>	234	50	5	0,5
<i>Stif. FB50X5 a.b. at Bulkhead FR 6</i>	<i>Grade A 235</i>	187	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 6</i>	<i>Grade A 235</i>	187	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 6</i>	<i>Grade A 235</i>	181	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 6</i>	<i>Grade A 235</i>	181	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 7</i>	<i>Grade A 235</i>	236	50	5	0,5
<i>Stif. FB50X5 a.b. at Bulkhead FR 7</i>	<i>Grade A 235</i>	231	50	5	0,5
<i>Stif. FB50X5 a.b. at Bulkhead FR 7</i>	<i>Grade A 235</i>	187	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 7</i>	<i>Grade A 235</i>	187	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 7</i>	<i>Grade A 235</i>	180	50	5	0,4

 $\Sigma$ 

6,0

**Section 111B – Painéis (Shell Stifenner – Longitudinais)**

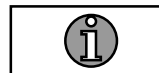
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. FB50X5 a.b. at Bulkhead FR 7</i>	<i>Grade A 235</i>	180	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 8</i>	<i>Grade A 235</i>	229	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 8</i>	<i>Grade A 235</i>	229	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 8</i>	<i>Grade A 235</i>	186	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 8</i>	<i>Grade A 235</i>	186	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 8</i>	<i>Grade A 235</i>	181	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 8</i>	<i>Grade A 235</i>	181	50	5	0,4
<i>Stif. FB50X5 from CL at Bulkhead FR 8</i>	<i>Grade A 235</i>	253	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 8</i>	<i>Grade A 235</i>	253	50	5	0,5
<i>Stif. HP80X6 1000 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	1202	80	6	5,9
<i>Stif. HP80X6 1000 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	535	80	6	2,5
<i>Stif. HP80X6 -1000 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	1203	80	6	5,9
<i>Stif. HP80X6 -1000 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	535	80	6	2,5
<i>Stif. HP80X6 1230 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	1303	80	6	6,3

 $\Sigma$ 

26,9

**Section 111B – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. HP80X6 1230 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	406	80	6	1,9
<i>Stif. HP80X6 -1230 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	1303	80	6	6,3
<i>Stif. HP80X6 -1230 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	399	80	6	1,9
<i>Stif. HP80X6 -1400/-417 a.b. at Long. frame from CL</i>	<i>Grade A 235</i>	1533	80	6	7,3
<i>Stif. HP80X6 1405/1596 a.b. at Long. frame from CL</i>	<i>Grade A 235</i>	541	80	6	2,6
<i>Stif. HP80X6 1405/1596 a.b. at Long. frame from CL</i>	<i>Grade A 235</i>	541	80	6	2,6
<i>Stif. HP80X6 1405/1596 a.b. at Long. frame from CL</i>	<i>Grade A 235</i>	541	80	6	2,6
<i>Stif. HP80X6 1405/1596 a.b. at Long. frame from CL</i>	<i>Grade A 235</i>	541	80	6	2,6
<i>Stif. HP80X6 1405/1596 a.b. at Long. frame from CL</i>	<i>Grade A 235</i>	541	80	6	2,6
<i>Stif. HP80X6 1405/1596 a.b. at Long. frame from CL</i>	<i>Grade A 235</i>	541	80	6	2,6
<i>Stif. HP80X6 1405/1596 a.b. at Long. frame from CL</i>	<i>Grade A 235</i>	541	80	6	2,6
<i>Stif. HP80X6 1405/1596 a.b. at Long. frame from CL</i>	<i>Grade A 235</i>	541	80	6	2,6
<i>Stif. HP80X6 1405/1596 a.b. at Long. frame from CL</i>	<i>Grade A 235</i>	541	80	6	2,6
<i>Stif. HP80X6 1405/1596 a.b. at Long. frame from CL</i>	<i>Grade A 235</i>	456	80	6	2,2

 $\Sigma$ 

43,0



**Section 111B – Painéis (Shell Stifenner – Longitudinais)**

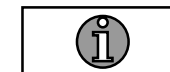
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. HP80X6 1484 a.b. at Bulkhead 1400 from CL</i>	<i>Grade A 235</i>	4470	80	6	21,7
<i>Stif. HP80X6 1484 a.b. at Bulkhead -1400 from CL</i>	<i>Grade A 235</i>	4468	80	6	21,7
<i>Stif. HP80X6 1546/1952 from CL at Deck above base</i>	<i>Grade A 235</i>	2061	80	6	9,9
<i>Stif. HP80X6 1546/1952 from CL at Deck above base</i>	<i>Grade A 235</i>	756	80	6	3,7
<i>Stif. HP80X6 1546/1952 from CL at Deck above base</i>	<i>Grade A 235</i>	754	80	6	3,7
<i>Stif. HP80X6 -1597/-1406 a.b. at Long. frame from CL</i>	<i>Grade A 235</i>	541	80	6	2,6
<i>Stif. HP80X6 -1597/-1406 a.b. at Long. frame from CL</i>	<i>Grade A 235</i>	541	80	6	2,6
<i>Stif. HP80X6 -1597/-1406 a.b. at Long. frame from CL</i>	<i>Grade A 235</i>	541	80	6	2,6
<i>Stif. HP80X6 -1597/-1406 a.b. at Long. frame from CL</i>	<i>Grade A 235</i>	541	80	6	2,6
<i>Stif. HP80X6 -1597/-1406 a.b. at Long. frame from CL</i>	<i>Grade A 235</i>	541	80	6	2,6
<i>Stif. HP80X6 -1597/-1406 a.b. at Long. frame from CL</i>	<i>Grade A 235</i>	541	80	6	2,6
<i>Stif. HP80X6 -1597/-1406 a.b. at Long. frame from CL</i>	<i>Grade A 235</i>	541	80	6	2,6
<i>Stif. HP80X6 -1597/-1406 a.b. at Long. frame from CL</i>	<i>Grade A 235</i>	541	80	6	2,6

 $\Sigma$ 

84,1

**Section 111B – Painéis (Shell Stifenner – Longitudinais)**


Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
<i>Stif. HP80X6 -1597/-1406 a.b. at Long. frame from CL</i>	<i>Grade A 235</i>	541	80	6	2,6
<i>Stif. HP80X6 -1597/-1406 a.b. at Long. frame from CL</i>	<i>Grade A 235</i>	541	80	6	2,6
<i>Stif. HP80X6 -1597/-1406 a.b. at Long. frame from CL</i>	<i>Grade A 235</i>	458	80	6	2,2
<i>Stif. HP80X6 -1597/-1406 a.b. at Long. frame from CL</i>	<i>Grade A 235</i>	458	80	6	2,2
<i>Stif. HP80X6 1600 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	522	80	6	2,4
<i>Stif. HP80X6 -1600 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	522	80	6	2,4
<i>Stif. HP80X6 1700 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	2710	80	6	13,1
<i>Stif. HP80X6 -1700 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	2711	80	6	13,1
<i>Stif. HP80X6 1869 a.b. at Bulkhead 1400 from CL</i>	<i>Grade A 235</i>	4468	80	6	21,7
<i>Stif. HP80X6 1869 a.b. at Bulkhead -1400 from CL</i>	<i>Grade A 235</i>	4468	80	6	21,7
<i>Stif. HP80X6 1952/4042 from CL at Deck above base</i>	<i>Grade A 235</i>	5222	80	6	25,3
<i>Stif. HP80X6 1952/4042 from CL at Deck above base</i>	<i>Grade A 235</i>	5213	80	6	25,3
<i>Stif. HP80X6 1952/4042 from CL at Deck above base</i>	<i>Grade A 235</i>	5199	80	6	25,2
<i>Stif. HP80X6 1952/4042 from CL at Deck above base</i>	<i>Grade A 235</i>	5192	80	6	25,2




Σ

185,0


**Section 111B – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>	
<i>Stif. HP80X6 1952/4042 from CL at Deck above base</i>	<i>Grade A 235</i>	4451	80	6	21,6	
<i>Stif. HP80X6 1952/4042 from CL at Deck above base</i>	<i>Grade A 235</i>	3145	80	6	15,2	
<i>Stif. HP80X6 1952/4042 from CL at Deck above base</i>	<i>Grade A 235</i>	3145	80	6	15,2	
<i>Stif. HP80X6 1952/4042 from CL at Deck above base</i>	<i>Grade A 235</i>	3143	80	6	15,2	
<i>Stif. HP80X6 1952/4042 from CL at Deck above base</i>	<i>Grade A 235</i>	2973	80	6	14,2	
<i>Stif. HP80X6 1952/4042 from CL at Deck above base</i>	<i>Grade A 235</i>	2558	80	6	12,2	
<i>Stif. HP80X6 1952/4042 from CL at Deck above base</i>	<i>Grade A 235</i>	2101	80	6	10,1	
<i>Stif. HP80X6 1952/4042 from CL at Deck above base</i>	<i>Grade A 235</i>	2083	80	6	9,9	
<i>Stif. HP80X6 1952/4042 from CL at Deck above base</i>	<i>Grade A 235</i>	1059	80	6	5	
<i>Stif. HP80X6 1952/4042 from CL at Deck above base</i>	<i>Grade A 235</i>	5222	80	6	25,3	
<i>Stif. HP80X6 1952/4042 from CL at Deck above base</i>	<i>Grade A 235</i>	5213	80	6	25,3	
<i>Stif. HP80X6 1952/4042 from CL at Deck above base</i>	<i>Grade A 235</i>	5203	80	6	25,2	
<i>Stif. HP80X6 1952/4042 from CL at Deck above base</i>	<i>Grade A 235</i>	5192	80	6	25,2	
<i>Stif. HP80X6 1952/4042 from CL at Deck above base</i>	<i>Grade A 235</i>	4453	80	6	21,6	
					$\Sigma$	241,2


**Section 111B – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. HP80X6 1995/4042 from CL at Deck above base</i>	<i>Grade A 235</i>	3145	80	6	15,2
<i>Stif. HP80X6 1995/4042 from CL at Deck above base</i>	<i>Grade A 235</i>	3145	80	6	15,2
<i>Stif. HP80X6 1995/4042 from CL at Deck above base</i>	<i>Grade A 235</i>	2973	80	6	14,2
<i>Stif. HP80X6 1995/4042 from CL at Deck above base</i>	<i>Grade A 235</i>	2546	80	6	12,2
<i>Stif. HP80X6 1995/4042 from CL at Deck above base</i>	<i>Grade A 235</i>	2083	80	6	9,9
<i>Stif. HP80X6 2000 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	2625	80	6	12,7
<i>Stif. HP80X6 -2000 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	2625	80	6	12,7
<i>Stif. HP80X6 2134 a.b. at Bulkhead 1400 from CL</i>	<i>Grade A 235</i>	4468	80	6	21,7
<i>Stif. HP80X6 2134 a.b. at Bulkhead -1400 from CL</i>	<i>Grade A 235</i>	4468	80	6	21,7
<i>Stif. HP80X6 2275 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	2546	80	6	12,3
<i>Stif. HP80X6 -2275 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	2546	80	6	12,3
<i>Stif. HP80X6 2459 a.b. at Bulkhead 1400 from CL</i>	<i>Grade A 235</i>	2468	80	6	11,9
<i>Stif. HP80X6 2459 a.b. at Bulkhead 1400 from CL</i>	<i>Grade A 235</i>	996	80	6	4,8
<i>Stif. HP80X6 2459 a.b. at Bulkhead -1400 from CL</i>	<i>Grade A 235</i>	2468	80	6	11,9
				$\Sigma$	188,7

**Section 111B – Painéis (Shell Stifenner – Longitudinais)**

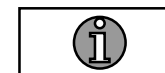
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. HP80X6 2459 a.b. at Bulkhead -1400 from CL</i>	<i>Grade A 235</i>	996	80	6	4,8
<i>Stif. HP80X6 250 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	877	80	6	4,3
<i>Stif. HP80X6 250 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	639	80	6	3
<i>Stif. HP80X6 -250 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	877	80	6	4,3
<i>Stif. HP80X6 -250 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	639	80	6	3
<i>Stif. HP80X6 2530 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	2472	80	6	12
<i>Stif. HP80X6 -2530 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	2472	80	6	12
<i>Stif. HP80X6 2786 a.b. at Bulkhead 1400 from CL</i>	<i>Grade A 235</i>	4468	80	6	21,7
<i>Stif. HP80X6 2786 a.b. at Bulkhead -1400 from CL</i>	<i>Grade A 235</i>	4468	80	6	21,7
<i>Stif. HP80X6 2800 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	2218	80	6	10,8
<i>Stif. HP80X6 -2800 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	2218	80	6	10,8
<i>Stif. HP80X6 -3 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	777	80	6	3,8
<i>Stif. HP80X6 3100 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	2446	80	6	11,8
<i>Stif. HP80X6 -3100 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	2446	80	6	11,8
				Σ	135,8

**Section 111B – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. HP80X6 3112 a.b. at Bulkhead 1400 from CL</i>	<i>Grade A 235</i>	4468	80	6	21,7
<i>Stif. HP80X6 3112 a.b. at Bulkhead -1400 from CL</i>	<i>Grade A 235</i>	4468	80	6	21,7
<i>Stif. HP80X6 3400 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	1632	80	6	7,8
<i>Stif. HP80X6 -3400 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	2482	80	6	12
<i>Stif. HP80X6 3438 a.b. at Bulkhead 1400 from CL</i>	<i>Grade A 235</i>	4468	80	6	21,7
<i>Stif. HP80X6 3438 a.b. at Bulkhead -1400 from CL</i>	<i>Grade A 235</i>	4468	80	6	21,7
<i>Stif. HP80X6 3440 a.b. at Bulkhead FR 5</i>	<i>Grade A 235</i>	594	80	6	2,8
<i>Stif. HP80X6 3700 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	2517	80	6	12,2
<i>Stif. HP80X6 -3700 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	2517	80	6	12,2
<i>Stif. HP80X6 3765 a.b. at Bulkhead 1400 from CL</i>	<i>Grade A 235</i>	4468	80	6	21,7
<i>Stif. HP80X6 3765 a.b. at Bulkhead 1400 from CL</i>	<i>Grade A 235</i>	982	80	6	4,5
<i>Stif. HP80X6 3765 a.b. at Bulkhead -1400 from CL</i>	<i>Grade A 235</i>	4468	80	6	21,7
<i>Stif. HP80X6 3765 a.b. at Bulkhead -1400 from CL</i>	<i>Grade A 235</i>	982	80	6	4,5
<i>Stif. HP80X6 3810 a.b. at Bulkhead FR 5</i>	<i>Grade A 235</i>	594	80	6	2,8
				$\Sigma$	189,0

**Section 111B – Painéis (Shell Stifenner – Longitudinais)**

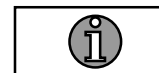
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. HP80X6 4000 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	2338	80	6	11,3
<i>Stif. HP80X6 -4000 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	2338	80	6	11,3
<i>Stif. HP80X6 4080 a.b. at Bulkhead 1400 from CL</i>	<i>Grade A 235</i>	4468	80	6	21,7
<i>Stif. HP80X6 4080 a.b. at Bulkhead 1400 from CL</i>	<i>Grade A 235</i>	1665	80	6	8,1
<i>Stif. HP80X6 4080 a.b. at Bulkhead -1400 from CL</i>	<i>Grade A 235</i>	4468	80	6	21,7
<i>Stif. HP80X6 4080 a.b. at Bulkhead -1400 from CL</i>	<i>Grade A 235</i>	1663	80	6	8,1
<i>Stif. HP80X6 416/1400 a.b. at Long. frame from CL</i>	<i>Grade A 235</i>	1531	80	6	7,3
<i>Stif. HP80X6 4180 a.b. at Bulkhead FR 5</i>	<i>Grade A 235</i>	594	80	6	2,8
<i>Stif. HP80X6 500 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	985	80	6	4,8
<i>Stif. HP80X6 500 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	578	80	6	2,7
<i>Stif. HP80X6 -500 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	985	80	6	4,8
<i>Stif. HP80X6 -500 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	578	80	6	2,7
<i>Stif. HP80X6 800 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	1115	80	6	5,4
<i>Stif. HP80X6 800 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	584	80	6	2,8

 $\Sigma$ 

115,5

## ***Section 111B – Painéis (Shell Stifenner – Longitudinais)***

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. HP80X6 -800 from CL at Bulkhead FR 5</i>	<i>Grade A 235</i>	1116	80	6	5,4
<i>Stif. HP80X6 -800 from CL at Bulkhead FR 5</i>	<i>GradeA 235</i>	584	80	6	2,8
<i>Stif. HP80X6 a.b. at Bulkhead FR 5</i>	<i>GradeA 235</i>	1447	80	6	7
<i>Stif. HP80X6 a.b. at Bulkhead FR 5</i>	<i>GradeA 235</i>	1447	80	6	7
<i>Stif. HP80X6 a.b. at Bulkhead FR 5</i>	<i>GradeA 235</i>	1370	80	6	6,5
<i>Stif. HP80X6 a.b. at Bulkhead FR 5</i>	<i>GradeA 235</i>	1370	80	6	6,5
<i>Stif. HP80X6 a.b. at Bulkhead FR 5</i>	<i>GradeA 235</i>	1198	80	6	5,8
<i>Stif. HP80X6 a.b. at Bulkhead FR 5</i>	<i>GradeA 235</i>	1198	80	6	5,8
<i>Stif. HP80X6 a.b. at Bulkhead FR 5</i>	<i>GradeA 235</i>	362	80	6	1,8
<i>Stif. HP80X6 a.b. at Bulkhead FR 5</i>	<i>GradeA 235</i>	362	80	6	1,8



$\Sigma$



50,4

$\Sigma$  *Peso (Kg)*

*Total*




2965,7





<i>From</i>	<i>to</i>	<i>Quantity</i>	<i>From</i>	<i>to</i>	<i>Quantity</i>
1	2	13,4904 t	9	13	13,4904 t
2		3 4,9026 t ( <i>shell plates</i> ) 2,9657 t ( <i>shell stifenner</i> )	-----	-----	-----
2	6	5,5189 t + 0,1032 t	-----	-----	-----
3		4 2,9657 t	-----	-----	-----
3/4	5	(4,9026 + 2,9657) t 7,8683 t	-----	-----	-----
5	9	7,8683 t	-----	-----	-----
6	7	5,5189 t + 0,1032 t	-----	-----	-----
7	8	5,5189 t + 0,1032 t	-----	-----	-----
8	9	5,5189 t + 0,1032 t	-----	-----	-----
<b>Section 111B</b>				<b>Σ</b>	13,4904 t

*Expected material flows  
between departments*

*Table 2 – Sections 111A & 111B*

<i>From</i>	<i>to</i>	<i>Quantity (A)</i>	 <i>Quantity (B)</i>	<i>From</i>	<i>to</i>	<i>Quantity (A)</i>	<i>Quantity (B)</i>
1	2	14,8338 t	13,4904 t	9	13	14,8338 t	13,4904 t
	2	7,6782 t <i>(shell plates)</i> 1,2963 t <i>(shell stifenner)</i>	4,9026 t <i>(shell plates)</i> 2,9657 t <i>(shell stifenner)</i>	-----	----	-----	-----
2	6	4,4665 t + 1,3928t	5,5189 t + 0,1032 t	-----	----	-----	-----
	3	1,2963 t	2,9657 t	-----	----	-----	-----
3/4	5	(7,6782 + 1,2963) t 8,9745 t	(4,9026 + 2,9657) t 7,8683 t	-----	----	-----	-----
5	9	8,9745 t	7,8683 t	-----	----	-----	-----
6	7	4,4665 t + 1,3928t	5,5189 t + 0,1032 t	-----	----	-----	-----
7	8	4,4665 t + 1,3928t	5,5189 t + 0,1032 t	-----	----	-----	-----
8	9	4,4665 t + 1,3928t	5,5189 t + 0,1032 t	-----	----	-----	-----
<b>Section 111 – A &amp; B</b>			$\sum$ <i>Peso (t)</i> <i>Total</i>	28,33 t	$\Sigma$	14,8338 t	13,4904 t

<i>From</i>	<i>to</i>	<i>Quantity</i>	<i>From</i>	<i>to</i>	<i>Quantity</i>
1	2	28,3242 t	9	13	28,3242 t
2	 3	12,1686 t ( <i>shell plates</i> ) 4,262 t ( <i>shell stifenner</i> )	-----	-----	-----
2	6	11,8936 t	-----	-----	-----
3	 4	4,262 t	-----	-----	-----
3/4	5	(12,1686 + 4,262) t 16,4306 t	-----	-----	-----
5	9	16,4306 t	-----	-----	-----
6	7	11,8936 t	-----	-----	-----
7	8	11,8936 t	-----	-----	-----
8	9	11,8936 t	-----	-----	-----
<b>Section 111</b>				<b>Σ</b>	<b>1 block (b)</b>

# *Section* 112

*Section* 112A

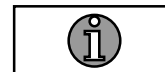
*Section* 112B

# *Section 112 – A*

*Section 112A – Painéis (Shell Plate)*

**Section 112A – Painéis (Shell Plate)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5413	1659	8	561,8
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5413	1659	8	561,8
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5415	1804	8	609,6
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5415	1804	8	609,6
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5402	764	8	251,4
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5402	764	8	251,4
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5913	1781	8	656
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5913	1781	8	656
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5910	1832	8	672,1
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5910	1832	8	672,1
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3602	659	8	147,9
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3602	659	8	147,9
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2302	1902	12	407,6
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2302	1902	12	407,6

**Σ****6612,8**

***Section 112A – Painéis (Shell Stifenner – Longitudinais)***



**Section 112A – Painéis (Shell Stifenner – Longitudinais)**

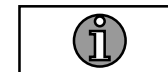
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif.</i> HP80X6 1036/1056	<i>Grade A 235</i>	2298	80	6	11,4
<i>Shell stif.</i> HP80X6 1038/1056	<i>Grade A 235</i>	1998	80	6	9,9
<i>Shell stif.</i> HP80X6 1040/1056	<i>Grade A 235</i>	1153	80	6	5,8
<i>Shell stif.</i> HP80X6 1040/1056	<i>Grade A 235</i>	5848	80	6	28,6
<i>Shell stif.</i> HP80X6 1057/1037	<i>Grade A 235</i>	2298	80	6	11,4
<i>Shell stif.</i> HP80X6 1057/1039	<i>Grade A 235</i>	1998	80	6	9,9
<i>Shell stif.</i> HP80X6 1057/1041	<i>Grade A 235</i>	1153	80	6	5,8
<i>Shell stif.</i> HP80X6 1057/1041	<i>Grade A 235</i>	5848	80	6	28,6
<i>Shell stif.</i> HP80X6 1315/1335	<i>Grade A 235</i>	2297	80	6	11,4
<i>Shell stif.</i> HP80X6 1317/1335	<i>Grade A 235</i>	1998	80	6	9,9
<i>Shell stif.</i> HP80X6 1319/1335	<i>Grade A 235</i>	1153	80	6	5,8
<i>Shell stif.</i> HP80X6 1319/1335	<i>Grade A 235</i>	5847	80	6	28,6
<i>Shell stif.</i> HP80X6 1336/1316	<i>Grade A 235</i>	2297	80	6	11,4
<i>Shell stif.</i> HP80X6 1336/1318	<i>Grade A 235</i>	1998	80	6	9,9

 $\Sigma$ 

188,4

**Section 112A – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif.</i> HP80X6 1336/1320	<i>Grade A 235</i>	1153	80	6	5,8
<i>Shell stif.</i> HP80X6 1336/1320	<i>Grade A 235</i>	5847	80	6	28,6
<i>Shell stif.</i> HP80X6 1539/1560	<i>Grade A 235</i>	2297	80	6	11,4
<i>Shell stif.</i> HP80X6 1541/1560	<i>Grade A 235</i>	997	80	6	5
<i>Shell stif.</i> HP80X6 1560/1540	<i>Grade A 235</i>	2297	80	6	11,4
<i>Shell stif.</i> HP80X6 1560/1542	<i>Grade A 235</i>	997	80	6	5
<i>Shell stif.</i> HP80X6 1786/1807	<i>Grade A 235</i>	2297	80	6	11,4
<i>Shell stif.</i> HP80X6 1808/1787	<i>Grade A 235</i>	2297	80	6	11,4
<i>Shell stif.</i> HP80X6 1856/1874	<i>Grade A 235</i>	2573	80	6	12,7
<i>Shell stif.</i> HP80X6 1857/1874	<i>Grade A 235</i>	5405	80	6	26,5
<i>Shell stif.</i> HP80X6 1875/1857	<i>Grade A 235</i>	2573	80	6	12,7
<i>Shell stif.</i> HP80X6 1875/1858	<i>Grade A 235</i>	5405	80	6	26,5
<i>Shell stif.</i> HP80X6 2163/2185	<i>Grade A 235</i>	5899	80	6	28,9
<i>Shell stif.</i> HP80X6 2167/2185	<i>Grade A 235</i>	5405	80	6	26,5

 $\Sigma$ 

223,8

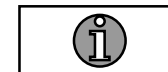
**Section 112A – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif.</i> HP80X6 2186/2164	<i>Grade A 235</i>	5899	80	6	28,9
<i>Shell stif.</i> HP80X6 2186/2168	<i>Grade A 235</i>	5405	80	6	26,5
<i>Shell stif.</i> HP80X6 2302/2320	<i>Grade A 235</i>	2304	80	6	11,4
<i>Shell stif.</i> HP80X6 232/250	<i>Grade A 235</i>	5656	80	6	27,7
<i>Shell stif.</i> HP80X6 237/250	<i>Grade A 235</i>	5957	80	6	29,2
<i>Shell stif.</i> HP80X6 250/233	<i>Grade A 235</i>	5656	80	6	27,7
<i>Shell stif.</i> HP80X6 250/238	<i>Grade A 235</i>	5957	80	6	29,2
<i>Shell stif.</i> HP80X6 2676/2699	<i>Grade A 235</i>	5898	80	6	28,9
<i>Shell stif.</i> HP80X6 2680/2699	<i>Grade A 235</i>	3598	80	6	17,7
<i>Shell stif.</i> HP80X6 2681/2699	<i>Grade A 235</i>	1803	80	6	9
<i>Shell stif.</i> HP80X6 2700/2677	<i>Grade A 235</i>	5898	80	6	28,9
<i>Shell stif.</i> HP80X6 2700/2681	<i>Grade A 235</i>	3598	80	6	17,7
<i>Shell stif.</i> HP80X6 2700/2682	<i>Grade A 235</i>	1803	80	6	9
<i>Shell stif.</i> HP80X6 2877/2995	<i>Grade A 235</i>	1006	80	6	5,1

**Σ****296,9**

**Section 112A – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif.</i> HP80X6 2973/2995	<i>Grade A 235</i>	3902	80	6	19,2
<i>Shell stif.</i> HP80X6 2975/2995	<i>Grade A 235</i>	3098	80	6	15,3
<i>Shell stif.</i> HP80X6 2996/2878	<i>Grade A 235</i>	1006	80	6	5,1
<i>Shell stif.</i> HP80X6 2996/2974	<i>Grade A 235</i>	3902	80	6	19,2
<i>Shell stif.</i> HP80X6 2996/2976	<i>Grade A 235</i>	3098	80	6	15,3
<i>Shell stif.</i> HP80X6 3257/3280	<i>Grade A 235</i>	3902	80	6	19,2
<i>Shell stif.</i> HP80X6 3259/3280	<i>Grade A 235</i>	3598	80	6	17,7
<i>Shell stif.</i> HP80X6 3261/3280	<i>Grade A 235</i>	1803	80	6	9
<i>Shell stif.</i> HP80X6 3281/3258	<i>Grade A 235</i>	3902	80	6	19,2
<i>Shell stif.</i> HP80X6 3281/3260	<i>Grade A 235</i>	3598	80	6	17,7
<i>Shell stif.</i> HP80X6 3281/3262	<i>Grade A 235</i>	1803	80	6	9
<i>Shell stif.</i> HP80X6 3704/3793	<i>Grade A 235</i>	5899	80	6	28,9
<i>Shell stif.</i> HP80X6 3741/3793	<i>Grade A 235</i>	5404	80	6	26,5
<i>Shell stif.</i> HP80X6 3794/3705	<i>Grade A 235</i>	5899	80	6	28,9

 $\Sigma$ 

250,2

**Section 112A – Painéis (Shell Stifenner – Longitudinais)**

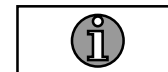
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif.</i> HP80X6 3794/3742	<i>Grade A 235</i>	5404	80	6	26,5
<i>Shell stif.</i> HP80X6 3900/3981	<i>Grade A 235</i>	5899	80	6	28,9
<i>Shell stif.</i> HP80X6 3906/3980	<i>Grade A 235</i>	5404	80	6	26,5
<i>Shell stif.</i> HP80X6 3981/3907	<i>Grade A 235</i>	5404	80	6	26,5
<i>Shell stif.</i> HP80X6 3982/3901	<i>Grade A 235</i>	5899	80	6	28,9
<i>Shell stif.</i> HP80X6 756/775	<i>Grade A 235</i>	2298	80	6	11,4
<i>Shell stif.</i> HP80X6 758/775	<i>Grade A 235</i>	1998	80	6	9,9
<i>Shell stif.</i> HP80X6 760/775	<i>Grade A 235</i>	1153	80	6	5,8
<i>Shell stif.</i> HP80X6 760/775	<i>Grade A 235</i>	5848	80	6	28,6
<i>Shell stif.</i> HP80X6 775/757	<i>Grade A 235</i>	2298	80	6	11,4
<i>Shell stif.</i> HP80X6 775/759	<i>Grade A 235</i>	1998	80	6	9,9
<i>Shell stif.</i> HP80X6 775/761	<i>Grade A 235</i>	1153	80	6	5,8
<i>Shell stif.</i> HP80X6 775/761	<i>Grade A 235</i>	5848	80	6	28,6
<i>Shell stif.</i> HP80X6 FR. 12+400	<i>Grade A 235</i>	312	80	6	1,5

 $\Sigma$ 

250,2

**Section 112A – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif.</i> HP80X6 FR. 12+400	<i>Grade A 235</i>	312	80	6	1,5
<i>Shell stif.</i> HP80X6 FR. 15+500	<i>Grade A 235</i>	286	80	6	1,3
<i>Shell stif.</i> HP80X6 FR. 15+500	<i>Grade A 235</i>	286	80	6	1,3
<i>Shell stif.</i> HP80X6 FR. 17-330	<i>Grade A 235</i>	460	80	6	2,2
<i>Shell stif.</i> HP80X6 FR. 17-330	<i>Grade A 235</i>	460	80	6	2,2
<i>Stif.</i> AU75X50X5 1100 from CL at	<i>Grade A 235</i>	1488	75	5	7
<i>Stif.</i> AU75X50X5 1100 from CL at	<i>Grade A 235</i>	1492	75	5	7
<i>Stif.</i> AU75X50X5 1100 from CL at	<i>Grade A 235</i>	800	75	5	3,8
<i>Stif.</i> AU75X50X5 1100 from CL at	<i>Grade A 235</i>	800	75	5	3,8
<i>Stif.</i> AU75X50X5 1100 from CL at	<i>Grade A 235</i>	1655	75	5	7,8
<i>Stif.</i> AU75X50X5 1395 from CL at	<i>Grade A 235</i>	1488	75	5	7
<i>Stif.</i> AU75X50X5 1395 from CL at	<i>Grade A 235</i>	1492	75	5	7
<i>Stif.</i> AU75X50X5 1395 from CL at	<i>Grade A 235</i>	1000	75	5	4,7
<i>Stif.</i> AU75X50X5 1395 from CL at	<i>Grade A 235</i>	800	75	5	3,8

 $\Sigma$ 


60,4

**Section 112A – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. AU75X50X5 1395 from CL at</i>	<i>Grade A 235</i>	1655	75	5	7,8
<i>Stif. AU75X50X5 1395 from CL at</i>	<i>Grade A 235</i>	709	75	5	3,3
<i>Stif. AU75X50X5 1395 from CL at</i>	<i>Grade A 235</i>	800	75	5	3,8
<i>Stif. AU75X50X5 1695 from CL at</i>	<i>Grade A 235</i>	1630	75	5	7,6
<i>Stif. AU75X50X5 250 from CL at</i>	<i>Grade A 235</i>	1996	75	5	9,4
<i>Stif. AU75X50X5 250 from CL at</i>	<i>Grade A 235</i>	1655	75	5	7,8
<i>Stif. AU75X50X5 250 from CL at</i>	<i>Grade A 235</i>	333	75	5	1,5
<i>Stif. AU75X50X5 2700 from CL at</i>	<i>Grade A 235</i>	1497	75	5	7
<i>Stif. AU75X50X5 2700 from CL at</i>	<i>Grade A 235</i>	1497	75	5	7
<i>Stif. AU75X50X5 3300 from CL at</i>	<i>Grade A 235</i>	1497	75	5	7
<i>Stif. AU75X50X5 3300 from CL at</i>	<i>Grade A 235</i>	1497	75	5	7
<i>Stif. AU75X50X5 800 from CL at</i>	<i>Grade A 235</i>	3996	75	5	18,8
<i>Stif. AU75X50X5 800 from CL at</i>	<i>Grade A 235</i>	1655	75	5	7,8
<i>Stif. AU75X50X5 800 from CL at</i>	<i>Grade A 235</i>	800	75	5	3,8

**Σ****99,6**

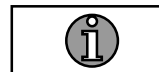
**Section 112A – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. AU75X50X5 800 from CL at</i>	<i>Grade A 235</i>	800	75	5	3,8
<i>Stif. AU75X50X5 from CL at</i>	<i>Grade A 235</i>	1407	75	5	6,6
<i>Stif. FB50X5 from CL at Bulkhead FR 11</i>	<i>Grade A 235</i>	386	50	5	0,8
<i>Stif. FB50X5 from CL at Bulkhead FR 17</i>	<i>Grade A 235</i>	260	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 17</i>	<i>Grade A 235</i>	260	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 18</i>	<i>Grade A 235</i>	375	50	5	0,7
<i>Stif. FB50X5 from CL at Bulkhead FR 18</i>	<i>Grade A 235</i>	375	50	5	0,7
<i>Stif. FB50X5 from CL at Bulkhead FR 19</i>	<i>Grade A 235</i>	255	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 19</i>	<i>Grade A 235</i>	256	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 19</i>	<i>Grade A 235</i>	276	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 19</i>	<i>Grade A 235</i>	276	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 20</i>	<i>Grade A 235</i>	256	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 20</i>	<i>Grade A 235</i>	256	50	5	0,5
<i>Stif. FB75X5 FR 18 at Deck 1494 above base</i>	<i>Grade A 235</i>	75	75	5	0,1
				$\Sigma$	16,7



**Section 112A – Painéis (Shell Stifenner – Longitudinais)**

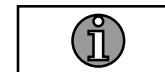
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. FB75X5 FR 18 at Deck 1494 above base</i>	<i>Grade A 235</i>	<i>75</i>	<i>75</i>	<i>5</i>	<i>0,1</i>
<i>Stif. FB75X5 FR 18 at Deck 1494 above base</i>	<i>Grade A 235</i>	<i>75</i>	<i>75</i>	<i>5</i>	<i>0,1</i>
<i>Stif. FB75X5 FR 18 at Deck 1494 above base</i>	<i>Grade A 235</i>	<i>75</i>	<i>75</i>	<i>5</i>	<i>0,1</i>
<i>Stif. FB75X5 FR 18 at Deck 1494 above base</i>	<i>Grade A 235</i>	<i>75</i>	<i>75</i>	<i>5</i>	<i>0,1</i>
<i>Stif. FB75X5 FR 18 at Deck 1494 above base</i>	<i>Grade A 235</i>	<i>75</i>	<i>75</i>	<i>5</i>	<i>0,1</i>
<i>Stif. FB75X5 FR 18 at Deck 1494 above base</i>	<i>Grade A 235</i>	<i>75</i>	<i>75</i>	<i>5</i>	<i>0,1</i>
<i>Stif. FB75X5 FR 18 at Deck 1494 above base</i>	<i>Grade A 235</i>	<i>75</i>	<i>75</i>	<i>5</i>	<i>0,1</i>
<i>Stif. FB75X5 FR 18 at Deck 1494 above base</i>	<i>Grade A 235</i>	<i>75</i>	<i>75</i>	<i>5</i>	<i>0,1</i>
<i>Stif. FB75X5 FR 18 at Deck 1494 above base</i>	<i>Grade A 235</i>	<i>75</i>	<i>75</i>	<i>5</i>	<i>0,1</i>
<i>Stif. FB75X5 FR 18 at Deck 1494 above base</i>	<i>Grade A 235</i>	<i>75</i>	<i>75</i>	<i>5</i>	<i>0,1</i>
<i>Stif. FB75X5 FR 18 at Deck 1494 above base</i>	<i>Grade A 235</i>	<i>75</i>	<i>75</i>	<i>5</i>	<i>0,1</i>
<i>Stif. FB75X5 FR 18 at Deck 1494 above base</i>	<i>Grade A 235</i>	<i>75</i>	<i>75</i>	<i>5</i>	<i>0,1</i>
<i>Stif. FB75X5 FR 18 at Deck 1494 above base</i>	<i>Grade A 235</i>	<i>75</i>	<i>75</i>	<i>5</i>	<i>0,1</i>
<i>Stif. FB75X5 FR 18 at Deck 1494 above base</i>	<i>Grade A 235</i>	<i>75</i>	<i>75</i>	<i>5</i>	<i>0,1</i>



$\Sigma$	1,4
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**Section 112A – Painéis (Shell Stifenner – Longitudinais)**

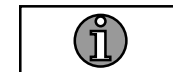
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
<i>Stif. FB75X5 FR 20+80 at</i>	<i>Grade A 235</i>	793	75	5	2,3
<i>Stif. FB75X5 FR 20+80 at</i>	<i>Grade A 235</i>	793	75	5	2,3
<i>Stif. HP80X6 1040 from CL at Bulkhead FR 16</i>	<i>Grade A 235</i>	874	80	6	4,1
<i>Stif. HP80X6 1040 from CL at Bulkhead FR 16</i>	<i>Grade A 235</i>	874	80	6	4,1
<i>Stif. HP80X6 1200 a.b. at Bulkhead 2000 from CL</i>	<i>Grade A 235</i>	1991	80	6	9,7
<i>Stif. HP80X6 1200 a.b. at Bulkhead 2000 from CL</i>	<i>Grade A 235</i>	1991	80	6	9,7
<i>Stif. HP80X6 1200 a.b. at Bulkhead 4 from CL</i>	<i>Grade A 235</i>	1990	80	6	9,7
<i>Stif. HP80X6 1200 a.b. at Bulkhead 495 from CL</i>	<i>Grade A 235</i>	1970	80	6	9,5
<i>Stif. HP80X6 1200 a.b. at Bulkhead 495 from CL</i>	<i>Grade A 235</i>	1970	80	6	9,5
<i>Stif. HP80X6 1200 a.b. at Bulkhead FR 18</i>	<i>Grade A 235</i>	330	80	6	1,4
<i>Stif. HP80X6 1200 a.b. at Bulkhead FR 18</i>	<i>Grade A 235</i>	330	80	6	1,4
<i>Stif. HP80X6 1319 from CL at Bulkhead FR 16</i>	<i>Grade A 235</i>	816	80	6	3,9
<i>Stif. HP80X6 1320 from CL at Bulkhead FR 16</i>	<i>Grade A 235</i>	816	80	6	3,9
<i>Stif. HP80X6 1615/1999 a.b. at Long. frame from CL</i>	<i>Grade A 235</i>	1978	80	6	9,4

 $\Sigma$ 

80,9

**Section 112A – Painéis (Shell Stifenner – Longitudinais)**

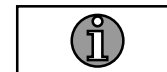
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. HP80X6 1615/1999 a.b. at Long. frame from CL</i>	<i>Grade A 235</i>	1978	80	6	9,4
<i>Stif. HP80X6 2000/1615 a.b. at Long. frame from CL</i>	<i>Grade A 235</i>	1978	80	6	9,4
<i>Stif. HP80X6 2000/1615 a.b. at Long. frame from CL</i>	<i>Grade A 235</i>	1978	80	6	9,4
<i>Stif. HP80X6 2682 from CL at Bulkhead FR 10+500</i>	<i>Grade A 235</i>	440	80	6	2
<i>Stif. HP80X6 2682 from CL at Bulkhead FR 10+500</i>	<i>Grade A 235</i>	440	80	6	2
<i>Stif. HP80X6 3261 from CL at Bulkhead FR 10+500</i>	<i>Grade A 235</i>	298	80	6	1,3
<i>Stif. HP80X6 3261 from CL at Bulkhead FR 10+500</i>	<i>Grade A 235</i>	297	80	6	1,3
<i>Stif. HP80X6 600 a.b. at Bulkhead 4 from CL</i>	<i>Grade A 235</i>	1990	80	6	9,7
<i>Stif. HP80X6 760 from CL at Bulkhead FR 16</i>	<i>Grade A 235</i>	929	80	6	4,4
<i>Stif. HP80X6 761 from CL at Bulkhead FR 16</i>	<i>Grade A 235</i>	929	80	6	4,4
<i>Stif. HP80X6 900 a.b. at Bulkhead 2000 from CL</i>	<i>Grade A 235</i>	1991	80	6	9,7
<i>Stif. HP80X6 900 a.b. at Bulkhead 2000 from CL</i>	<i>Grade A 235</i>	1991	80	6	9,7
<i>Stif. HP80X6 900 a.b. at Bulkhead 4 from CL</i>	<i>Grade A 235</i>	1990	80	6	9,7
<i>Stif. HP80X6 900 a.b. at Bulkhead 495 from CL</i>	<i>Grade A 235</i>	1970	80	6	9,5

 $\Sigma$ 

91,9

**Section 112A – Painéis (Shell Stifenner – Longitudinais)**



<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. HP80X6 900 a.b. at Bulkhead 495 from CL</i>	<i>Grade A 235</i>	1970	80	6	9,5
<i>Stif. HP80X6 a.b. at Bulkhead FR 18</i>	<i>Grade A 235</i>	342	80	6	1,5
<i>Stif. HP80X6 a.b. at Bulkhead FR 18</i>	<i>Grade A 235</i>	342	80	6	1,5
<i>Stif. HP80X6 a.b. at Bulkhead FR 18</i>	<i>Grade A 235</i>	439	80	6	2,1
<i>Stif. HP80X6 a.b. at Bulkhead FR 18</i>	<i>Grade A 235</i>	439	80	6	2,1
<i>Stif. HP80X6 FR 16+860 at Deck 1500 above base</i>	<i>Grade A 235</i>	958	80	6	4,7
<i>Stif. HP80X6 from CL at Bulkhead FR 18</i>	<i>Grade A 235</i>	759	80	6	3,7
<i>Stif. HP80X6 from CL at Bulkhead FR 18</i>	<i>Grade A 235</i>	759	80	6	3,7
<i>Stif. HP80X6 from CL at Bulkhead FR 18</i>	<i>Grade A 235</i>	889	80	6	4,3
<i>Stif. HP80X6 from CL at Bulkhead FR 18</i>	<i>Grade A 235</i>	889	80	6	4,3
<i>Stif. HP80X6 from CL at Bulkhead FR 18</i>	<i>Grade A 235</i>	950	80	6	4,6
<i>Stif. HP80X6 from CL at Bulkhead FR 18</i>	<i>Grade A 235</i>	950	80	6	4,6
<i>Stif. HP80X6 from CL at Bulkhead FR 18</i>	<i>Grade A 235</i>	1009	80	6	4,9
<i>Stif. HP80X6 from CL at Bulkhead FR 18</i>	<i>Grade A 235</i>	1009	80	6	4,9

 $\Sigma$ 

56,4

**Section 112A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
<i>Stif. HP80X6 from CL at Bulkhead FR 18</i>	<i>Grade A 235</i>	1091	80	6	5,3
<i>Stif. HP80X6 from CL at Bulkhead FR 18</i>	<i>GradeA 235</i>	1093	80	6	5,3
			i	Σ	10,6
				Σ <i>Peso (Kg)</i> <i>Total</i> 1627,4	

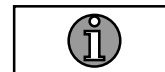
<i>From</i>	<i>to</i>	<i>Quantity</i>	<i>From</i>	<i>to</i>	<i>Quantity</i>
1	2	22,7425 t	9	13	22,7425 t
2	 3	6,6130 t ( <i>shell plates</i> ) 1,6274 t ( <i>shell stifenner</i> )	-----	-----	-----
2	6	14,5021 t	-----	-----	-----
3	 4	1,6274 t	-----	-----	-----
3/4	5	(6,6130 + 1,6274) t 8,2404 t	-----	-----	-----
5	9	8,2404 t	-----	-----	-----
6	7	14,5021 t	-----	-----	-----
7	8	14,5021 t	-----	-----	-----
8	9	14,5021 t	-----	-----	-----
<b>Section 112A</b>				$\Sigma$	22,7425 t

# *Section* 112 – B

*Section* 112B – Painéis (*Shell Plate*)

**Section 112B – Painéis (Shell Plate)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5951	1279	5	289
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5951	1279	5	289
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5951	1768	5	412,6
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5951	1768	5	412,6
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5356	1199	5	249,3
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5356	1199	5	249,3
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5351	1871	5	392,3
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5351	1871	5	392,3
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3850	742	10	224,1
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3850	742	10	224,1
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3050	341	18	146,8
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3050	341	18	146,8
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3527	1470	5	203,5
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3527	1470	5	203,5

**Σ****3835,2**





**Section 112B – Painéis (Shell Plate)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3930	1951	10	601,9
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3930	1951	10	601,9
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3930	1576	10	486,3
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3930	1576	10	486,3
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5950	1951	10	911,3
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5950	1951	10	911,3
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5950	1576	10	736,1
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5950	1576	10	736,1
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3930	1950	10	601,6
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3126	1951	10	478,4
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2850	1866	10	417,5
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3100	1866	10	454,1






$\Sigma$  7422,8



$\Sigma$  *Peso (Kg)*  
*Total* 11258,0

<i>From</i>	<i>to</i>	<i>Quantity</i>	<i>From</i>	<i>to</i>	<i>Quantity</i>	
1	2	14,4820 t	9	13	14,4820 t	
2		3	11,2580 t ( <i>shell plates</i> )	-----	-----	-----
2	6	3,2240 t	-----	-----	-----	
3		4	11,2580 t	-----	-----	-----
4	5	11,2580 t	-----	-----	-----	
5	9	11,2580 t	-----	-----	-----	
6	7	3,2240 t	-----	-----	-----	
7	8	3,2240 t	-----	-----	-----	
8	9	3,2240 t	-----	-----	-----	
<b>Section 112B</b>				$\Sigma$	14,4820 t	

*Expected material flows  
between departments*

*Table 2 – Sections 112A & 112B*

<i>From</i>	<i>to</i>	<i>Quantity (A)</i> 	<i>Quantity (B)</i>	<i>From</i>	<i>to</i>	<i>Quantity (A)</i>	<i>Quantity (B)</i>
1	2	22,7425 t	14,4820 t	9	13	22,7425 t	14,4820 t
	2	6,6130 t ( <i>shell plates</i> ) 1,6274 t ( <i>shell stifenner</i> )	11,2580 t ( <i>shell plates</i> )	-----	----	-----	-----
2	6	14,5021 t	3,2240 t	-----	----	-----	-----
	3	1,6274 t	-----	-----	----	-----	-----
3/4	5	(6,6130+1,6274) t 8,2404 t	11,2580 t	-----	----	-----	-----
5	9	8,2404 t	11,2580 t	-----	----	-----	-----
6	7	14,5021 t	3,2240 t	-----	----	-----	-----
7	8	14,5021 t	3,2240 t	-----	----	-----	-----
8	9	14,5021 t	3,2240 t	-----	----	-----	-----
<i>Section 112 – A &amp; B</i>			$\sum$ <i>Peso (t)</i> <i>Total</i>	37,22 t	$\Sigma$	22,7425 t	14,4820 t

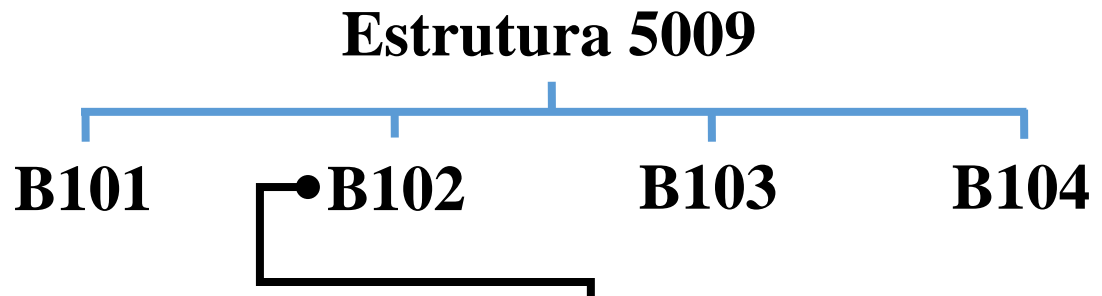
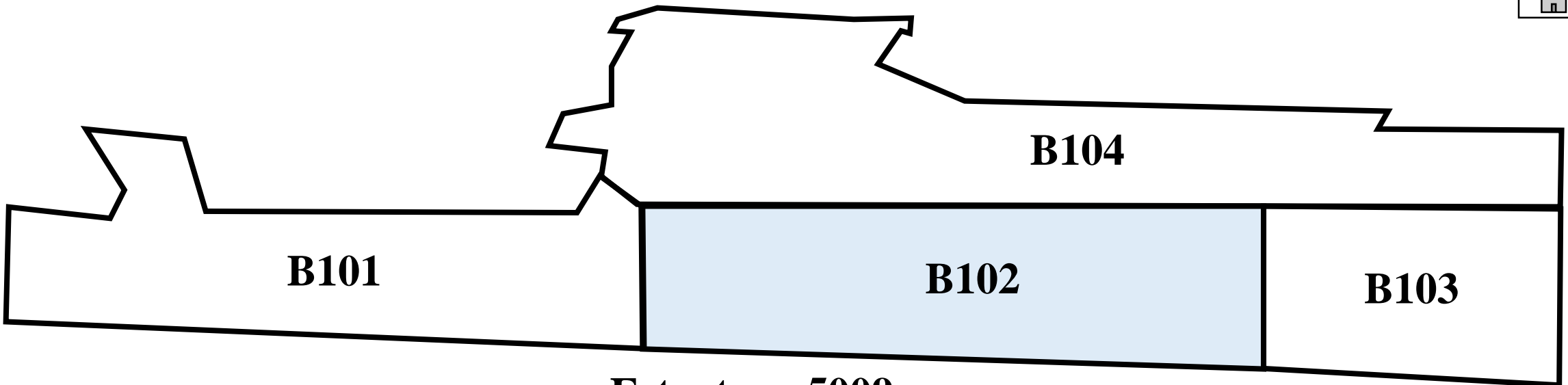
<i>From</i>	<i>to</i>	<i>Quantity</i>	<i>From</i>	<i>to</i>	<i>Quantity</i>
1	2	37,2245 t	9	13	37,2245 t
2		3 17,871 t ( <i>shell plates</i> ) 1,6274 t ( <i>shell stifenner</i> )	-----	-----	-----
2	6	17,7261 t	-----	-----	-----
3		4 1,6274 t	-----	-----	-----
4	5	(17,871+1,6274) t 19,3535 t	-----	-----	-----
5	9	19,3535 t	-----	-----	-----
6	7	17,7261 t	-----	-----	-----
7	8	17,7261 t	-----	-----	-----
8	9	17,7261 t	-----	-----	-----
<b>Section 112</b>				<b>Σ</b>	<b>1 block (b)</b>

# *Material Requirement Planning*

*Block 102 – Plates*

Items	<i>Thickness (mm)</i>	<i>Area (m<sup>2</sup>)</i>	<i>%</i>	<i>Weight (kg)</i>	<i>%</i>
(1)	5	158,384	32,50%	6616,6	25,68%
(2)	6	218,5	44,83%	12154,5	47,17%
(3)	8	94,2164	19,33%	5724,4	22,21%
(4)	10	16,277	3,34%	1273,3	4,94%
-----	-----	-----	-----	-----	-----
-----	-----	-----	-----	-----	-----
-----	-----	-----	-----	-----	-----
	<b>Total</b>	487,3761	100,00%	25768,8	100,00%

**MATRIZ DE VOLUME** \*\* Fluxos esperados de materiais



Block	Sections	Description	Thickness (mm)	Area (m <sup>2</sup> )	Weight (kg)	Thickness (mm)	Area (m <sup>2</sup> )	Weight (kg)	Thickness (mm)	Area (m <sup>2</sup> )	Weight (kg)
102	113	Painéis (Shell Plate)	5	59,597	2135,2	8	76,5294	4635	10	16,277	1273,3
		Painéis (Shell Stifenner)	5	18,0507	1135,5	6	72,107	4404,3	8	0,470	29,5
	114-A	Painéis (Shell Plate)	6	75,314	3408,8	8	15,535	955,4	-----	-----	-----
		Painéis (Shell Stifenner)	5	13,574	836,1	6	32,694	2004,3	8	1,682	104,5
	114-B	Painéis (Shell Plate)	5	65,167	2358	-----	-----	-----	-----	-----	-----
		Painéis (Shell Stifenner)	5	1,995	151,8	6	38,384	2337,1	-----	-----	-----




# *Section* 113


# *Section 113*

*Section 113 – Painéis (Shell Plate)*

**Section 113 – Painéis (Shell Plate)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5909	1282	5	284,7	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5909	1282	5	284,7	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5907	1857	5	416,5	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5907	1857	5	416,5	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3114	1251	5	145,2	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3114	1251	5	145,2	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3116	1880	5	221,2	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3116	1880	5	221,2	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3061	1698	8	323,2	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3061	1698	8	323,2	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5956	1893	8	687,7	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5956	1893	8	687,7	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3058	1494	8	283,7	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3058	1494	8	283,7	
					<b>Σ</b>	4724,4

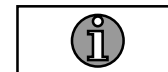
### Section 113 – Painéis (*Shell Plate*)

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3065	1041	8	194,9	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3065	1041	8	194,9	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5956	1503	8	522,6	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5956	1503	8	522,6	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5992	848	8	305,4	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5992	848	8	305,4	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5952	1810	10	842,2	
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3051	1804	10	431,1	
					$\Sigma$	3319,1
					$\Sigma$ <i>Peso (Kg)</i>	8043,5
					<i>Total</i>	

***Section 113 – Painéis (Shell Stifenner – Longitudinais)***

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. AE50X5 FR 27 at</i>	S235JR	220	50	5	0,8
<i>Stif. AE50X5 FR 27 at</i>	S235JR	205	50	5	0,8
<i>Stif. AE50X5 FR 27 at</i>	S235JR	205	50	5	0,8
<i>Stif. AE50X5 FR 27 at</i>	S235JR	220	50	5	0,8
<i>Stif. AE50X5 frame 26 at</i>	S235JR	359	50	5	1,3
<i>Stif. AE50X5 frame 26 at</i>	S235JR	359	50	5	1,3
<i>Stif. AE50X5 frame 26 at</i>	S235JR	476	50	5	1,8
<i>Stif. AE50X5 frame 26 at</i>	S235JR	476	50	5	1,8
<i>Stif. AE50X5 frame 26 at</i>	S235JR	587	50	5	2,2
<i>Stif. AE50X5 frame 26 at</i>	S235JR	587	50	5	2,2
<i>Stif. AE50X5 frame 27 at</i>	S235JR	359	50	5	1,3
<i>Stif. AE50X5 frame 27 at</i>	S235JR	359	50	5	1,3
<i>Stif. AE50X5 frame 27 at</i>	S235JR	476	50	5	1,8
<i>Stif. AE50X5 frame 27 at</i>	S235JR	476	50	5	1,8



$\Sigma$	20,0
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**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

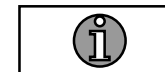
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. AE50X5 frame 27 at</i>	AE50X5	587	50	5	2,2
<i>Stif. AE50X5 frame 27 at</i>	AE50X5	587	50	5	2,2
<i>Stif. AE50X5 frame 28 at</i>	AE50X5	476	50	5	1,8
<i>Stif. AE50X5 frame 28 at</i>	AE50X5	476	50	5	1,8
<i>Stif. AE50X5 frame 28 at</i>	AE50X5	587	50	5	2,2
<i>Stif. AE50X5 frame 28 at</i>	AE50X5	587	50	5	2,2
<i>Stif. AU75X50X5 1100 from CL at</i>	AU75X50X5	450	75	5	2,1
<i>Stif. AU75X50X5 1100 from CL at</i>	AU75X50X5	5850	75	5	27,6
<i>Stif. AU75X50X5 1100 from CL at</i>	AU75X50X5	2995	75	5	14,1
<i>Stif. AU75X50X5 1100 from CL at</i>	AU75X50X5	450	75	5	2,1
<i>Stif. AU75X50X5 1100 from CL at</i>	AU75X50X5	2995	75	5	14,1
<i>Stif. AU75X50X5 1100 from CL at</i>	AU75X50X5	5850	75	5	27,6
<i>Stif. AU75X50X5 1300 from CL at</i>	AU75X50X5	1995	75	5	9,4
<i>Stif. AU75X50X5 1300 from CL at</i>	AU75X50X5	845	75	5	4

 $\Sigma$ 

113,4

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. AU75X50X5 1300 from CL at</i>	S235JR	995	75	5	4,7
<i>Stif. AU75X50X5 1400 from CL at</i>	S235JR	3300	75	5	15,5
<i>Stif. AU75X50X5 1400 from CL at</i>	S235JR	2995	75	5	14,1
<i>Stif. AU75X50X5 1400 from CL at</i>	S235JR	995	75	5	4,7
<i>Stif. AU75X50X5 1400 from CL at</i>	S235JR	2995	75	5	14,1
<i>Stif. AU75X50X5 1400 from CL at</i>	S235JR	995	75	5	4,7
<i>Stif. AU75X50X5 1400 from CL at</i>	S235JR	1345	75	5	6,3
<i>Stif. AU75X50X5 1400 from CL at</i>	S235JR	2100	75	5	9,9
<i>Stif. AU75X50X5 1700 from CL at</i>	S235JR	2995	75	5	14,1
<i>Stif. AU75X50X5 1700 from CL at</i>	S235JR	3300	75	5	15,5
<i>Stif. AU75X50X5 1700 from CL at</i>	S235JR	995	75	5	4,7
<i>Stif. AU75X50X5 1700 from CL at</i>	S235JR	995	75	5	4,7
<i>Stif. AU75X50X5 1700 from CL at</i>	S235JR	2995	75	5	14,1
<i>Stif. AU75X50X5 1700 from CL at</i>	S235JR	2100	75	5	9,9

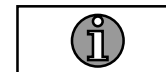
 $\Sigma$ 

137,0



**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

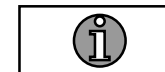
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. AU75X50X5 1700 from CL at</i>	S235JR	1345	75	5	6,3
<i>Stif. AU75X50X5 2000 from CL at</i>	S235JR	1996	75	5	9,4
<i>Stif. AU75X50X5 2000 from CL at</i>	S235JR	1960	75	5	9,2
<i>Stif. AU75X50X5 2000 from CL at</i>	S235JR	2264	75	5	10,7
<i>Stif. AU75X50X5 2000 from CL at</i>	S235JR	1924	75	5	9,1
<i>Stif. AU75X50X5 2000 from CL at</i>	S235JR	1996	75	5	9,4
<i>Stif. AU75X50X5 2000 from CL at</i>	S235JR	1960	75	5	9,2
<i>Stif. AU75X50X5 2000 from CL at</i>	S235JR	2264	75	5	10,7
<i>Stif. AU75X50X5 2000 from CL at</i>	S235JR	1924	75	5	9,1
<i>Stif. AU75X50X5 2275 from CL at</i>	S235JR	5850	75	5	27,6
<i>Stif. AU75X50X5 2275 from CL at</i>	S235JR	450	75	5	2,1
<i>Stif. AU75X50X5 2275 from CL at</i>	S235JR	5850	75	5	27,6
<i>Stif. AU75X50X5 2275 from CL at</i>	S235JR	450	75	5	2,1
<i>Stif. AU75X50X5 250 from CL at</i>	S235JR	450	75	5	2,1

 $\Sigma$ 

144,6

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. AU75X50X5 250 from CL at</i>	S235JR	1995	75	5	9,4
<i>Stif. AU75X50X5 250 from CL at</i>	S235JR	5850	75	5	27,6
<i>Stif. AU75X50X5 250 from CL at</i>	S235JR	450	75	5	2,1
<i>Stif. AU75X50X5 250 from CL at</i>	S235JR	1995	75	5	9,4
<i>Stif. AU75X50X5 250 from CL at</i>	S235JR	5850	75	5	27,6
<i>Stif. AU75X50X5 2530 from CL at</i>	S235JR	5850	75	5	27,6
<i>Stif. AU75X50X5 2530 from CL at</i>	S235JR	450	75	5	2,1
<i>Stif. AU75X50X5 2530 from CL at</i>	S235JR	5850	75	5	27,6
<i>Stif. AU75X50X5 2530 from CL at</i>	S235JR	450	75	5	2,1
<i>Stif. AU75X50X5 2800 from CL at</i>	S235JR	5995	75	5	28,1
<i>Stif. AU75X50X5 2800 from CL at</i>	S235JR	5995	75	5	28,1
<i>Stif. AU75X50X5 3 from CL at</i>	S235JR	450	75	5	2,1
<i>Stif. AU75X50X5 3 from CL at</i>	S235JR	5850	75	5	27,6
<i>Stif. AU75X50X5 3 from CL at</i>	S235JR	2995	75	5	14,1

 $\Sigma$ 

235,5

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. AU75X50X5 3100 from CL at</i>	S235JR	3995	75	5	18,7
<i>Stif. AU75X50X5 3100 from CL at</i>	S235JR	995	75	5	4,7
<i>Stif. AU75X50X5 3100 from CL at</i>	S235JR	995	75	5	4,7
<i>Stif. AU75X50X5 3100 from CL at</i>	S235JR	995	75	5	4,7
<i>Stif. AU75X50X5 3100 from CL at</i>	S235JR	3995	75	5	18,7
<i>Stif. AU75X50X5 3100 from CL at</i>	S235JR	995	75	5	4,7
<i>Stif. AU75X50X5 3400 from CL at</i>	S235JR	995	75	5	4,7
<i>Stif. AU75X50X5 3400 from CL at</i>	S235JR	995	75	5	4,7
<i>Stif. AU75X50X5 3400 from CL at</i>	S235JR	995	75	5	4,7
<i>Stif. AU75X50X5 3400 from CL at</i>	S235JR	995	75	5	4,7
<i>Stif. AU75X50X5 3400 from CL at</i>	S235JR	995	75	5	4,7
<i>Stif. AU75X50X5 3400 from CL at</i>	S235JR	995	75	5	4,7
<i>Stif. AU75X50X5 3400 from CL at</i>	S235JR	995	75	5	4,6

 $\Sigma$ 

93,7

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. AU75X50X5 500 from CL at</i>	S235JR	450	75	5	2,1
<i>Stif. AU75X50X5 500 from CL at</i>	S235JR	5850	75	5	27,6
<i>Stif. AU75X50X5 500 from CL at</i>	S235JR	1995	75	5	9,4
<i>Stif. AU75X50X5 500 from CL at</i>	S235JR	450	75	5	2,1
<i>Stif. AU75X50X5 500 from CL at</i>	S235JR	1995	75	5	9,4
<i>Stif. AU75X50X5 500 from CL at</i>	S235JR	5850	75	5	27,6
<i>Stif. AU75X50X5 800 from CL at</i>	S235JR	450	75	5	2,1
<i>Stif. AU75X50X5 800 from CL at</i>	S235JR	2995	75	5	14,1
<i>Stif. AU75X50X5 800 from CL at</i>	S235JR	5850	75	5	27,6
<i>Stif. AU75X50X5 800 from CL at</i>	S235JR	2995	75	5	14,1
<i>Stif. AU75X50X5 800 from CL at</i>	S235JR	450	75	5	2,1
<i>Stif. AU75X50X5 800 from CL at</i>	S235JR	5850	75	5	27,6
<i>Stif. AU75X50X5 FR 21 at</i>	S235JR	793	75	5	3,7
<i>Stif. AU75X50X5 FR 21 at</i>	S235JR	793	75	5	3,7

 $\Sigma$ 

173,2


**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. AU75X50X5 FR 24 at</i>	S235JR	895	75	5	4,1
<i>Stif. AU75X50X5 FR 24 at</i>	S235JR	895	75	5	4,1
<i>Stif. AU75X50X5 FR 25 at</i>	S235JR	860	75	5	4,1
<i>Stif. AU75X50X5 FR 25 at</i>	S235JR	660	75	5	3,1
<i>Stif. AU75X50X5 FR 26 at</i>	S235JR	895	75	5	4,2
<i>Stif. AU75X50X5 FR 26+350 at</i>	S235JR	895	75	5	4,2
<i>Stif. AU75X50X5 FR 27+200 at</i>	S235JR	895	75	5	4,2
<i>Stif. AU75X50X5 from CL at</i>	S235JR	997	75	5	4,7
<i>Stif. AU75X50X5 from CL at</i>	S235JR	997	75	5	4,7
<i>Stif. AU75X50X5 from CL at</i>	S235JR	1006	75	5	4,7
<i>Stif. AU75X50X5 from CL at</i>	S235JR	1006	75	5	4,7
<i>Stif. AU75X50X5 from CL at</i>	S235JR	997	75	5	4,7
<i>Stif. AU75X50X5 from CL at</i>	S235JR	997	75	5	4,7
<i>Stif. AU75X50X5 from CL at</i>	S235JR	997	75	5	4,7




$\Sigma$  60,9


**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. AU75X50X5 from CL at</i>	S235JR	997	75	5	4,7
<i>Stif. FB100X8 a.b. at Bulkhead FR 25</i>	S235JR	2003	100	8	12,5
<i>Stif. FB100X8 a.b. at Bulkhead FR 25</i>	S235JR	2079	100	8	13
<i>Stif. FB50X5 2445 from CL at Bulkhead FR 22</i>	S235JR	206	50	5	0,4
<i>Stif. FB50X5 2445 from CL at Bulkhead FR 22</i>	S235JR	206	50	5	0,4
<i>Stif. FB50X5 2800 from CL at Bulkhead FR 21</i>	S235JR	83	50	5	0,2
<i>Stif. FB50X5 2800 from CL at Bulkhead FR 21</i>	S235JR	86	50	5	0,2
<i>Stif. FB50X5 2800 from CL at Bulkhead FR 24</i>	S235JR	80	50	5	0,2
<i>Stif. FB50X5 2800 from CL at Bulkhead FR 24</i>	S235JR	80	50	5	0,2
<i>Stif. FB50X5 2800 from CL at Bulkhead FR 25</i>	S235JR	79	50	5	0,2
<i>Stif. FB50X5 2800 from CL at Bulkhead FR 25</i>	S235JR	79	50	5	0,2
<i>Stif. FB50X5 2800 from CL at Bulkhead FR 26</i>	S235JR	80	50	5	0,2
<i>Stif. FB50X5 2800 from CL at Bulkhead FR 26</i>	S235JR	80	50	5	0,2
<i>Stif. FB50X5 2800 from CL at Bulkhead FR 27</i>	S235JR	80	50	5	0,2
				$\Sigma$	32,8

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. FB50X5 2800 from CL at Bulkhead FR 27</i>	S235JR	80	50	5	0,2
<i>Stif. FB50X5 2800 from CL at Bulkhead FR 28</i>	S235JR	80	50	5	0,2
<i>Stif. FB50X5 2800 from CL at Bulkhead FR 28</i>	S235JR	80	50	5	0,2
<i>Stif. FB50X5 2800 from CL at Bulkhead FR 29</i>	S235JR	80	50	5	0,2
<i>Stif. FB50X5 2800 from CL at Bulkhead FR 29</i>	S235JR	80	50	5	0,2
<i>Stif. FB50X5 3550 from CL at Bulkhead FR 28</i>	S235JR	135	50	5	0,2
<i>Stif. FB50X5 3550 from CL at Bulkhead FR 28</i>	S235JR	135	50	5	0,2
<i>Stif. FB50X5 3550 from CL at Bulkhead FR 29</i>	S235JR	135	50	5	0,2
<i>Stif. FB50X5 3550 from CL at Bulkhead FR 29</i>	S235JR	135	50	5	0,2
<i>Stif. FB50X5 3700 from CL at Bulkhead FR 26</i>	S235JR	80	50	5	0,2
<i>Stif. FB50X5 3700 from CL at Bulkhead FR 26</i>	S235JR	80	50	5	0,2
<i>Stif. FB50X5 3700 from CL at Bulkhead FR 27</i>	S235JR	80	50	5	0,2
<i>Stif. FB50X5 3700 from CL at Bulkhead FR 27</i>	S235JR	80	50	5	0,2
<i>Stif. FB50X5 3840 from CL at Bulkhead FR 24</i>	S235JR	135	50	5	0,2
				$\Sigma$	2,8

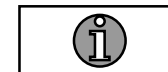
**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. FB50X5 3840 from CL at Bulkhead FR 24</i>	S235JR	135	50	5	0,2
<i>Stif. FB50X5 3840 from CL at Bulkhead FR 25</i>	S235JR	135	50	5	0,2
<i>Stif. FB50X5 3840 from CL at Bulkhead FR 25</i>	S235JR	135	50	5	0,2
<i>Stif. FB50X5 3840 from CL at Bulkhead FR 21</i>	S235JR	136	50	5	0,2
<i>Stif. FB50X5 3850 from CL at Bulkhead FR 21</i>	S235JR	136	50	5	0,2
<i>Stif. FB50X5 500 from CL at Bulkhead FR 27</i>	S235JR	80	50	5	0,2
<i>Stif. FB50X5 800 from CL at Bulkhead FR 21</i>	S235JR	139	50	5	0,3
<i>Stif. FB50X5 800 from CL at Bulkhead FR 21</i>	S235JR	137	50	5	0,3
<i>Stif. FB50X5 800 from CL at Bulkhead FR 22</i>	S235JR	80	50	5	0,2
<i>Stif. FB50X5 800 from CL at Bulkhead FR 22</i>	S235JR	80	50	5	0,2
<i>Stif. FB50X5 800 from CL at Bulkhead FR 24</i>	S235JR	80	50	5	0,2
<i>Stif. FB50X5 800 from CL at Bulkhead FR 25</i>	S235JR	79	50	5	0,2
<i>Stif. FB50X5 800 from CL at Bulkhead FR 26</i>	S235JR	80	50	5	0,2
<i>Stif. FB50X5 800 from CL at Bulkhead FR 27</i>	S235JR	80	50	5	0,2
				$\Sigma$	3,0



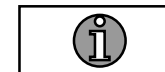
**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. FB50X5 800 from CL at Bulkhead FR 26</i>	S235JR	80	50	5	0,2
<i>Stif. FB50X5 800 from CL at Bulkhead FR 28</i>	S235JR	80	50	5	0,2
<i>Stif. FB50X5 800 from CL at Bulkhead FR 28</i>	S235JR	80	50	5	0,2
<i>Stif. FB50X5 800 from CL at Bulkhead FR 29</i>	S235JR	80	50	5	0,2
<i>Stif. FB50X5 800 from CL at Bulkhead FR 29</i>	S235JR	80	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 21</i>	S235JR	186	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 21</i>	S235JR	182	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 21</i>	S235JR	236	50	5	0,5
<i>Stif. FB50X5 a.b. at Bulkhead FR 21</i>	S235JR	236	50	5	0,5
<i>Stif. FB50X5 a.b. at Bulkhead FR 21</i>	S235JR	221	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 21</i>	S235JR	215	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 22</i>	S235JR	155	50	5	0,3
<i>Stif. FB50X5 a.b. at Bulkhead FR 24</i>	S235JR	189	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 24</i>	S235JR	183	50	5	0,4

**Σ****4,7**

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. FB50X5 a.b. at Bulkhead FR 24</i>	S235JR	240	50	5	0,5
<i>Stif. FB50X5 a.b. at Bulkhead FR 24</i>	S235JR	240	50	5	0,5
<i>Stif. FB50X5 a.b. at Bulkhead FR 24</i>	S235JR	220	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 24</i>	S235JR	220	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 25</i>	S235JR	188	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 25</i>	S235JR	182	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 25</i>	S235JR	238	50	5	0,5
<i>Stif. FB50X5 a.b. at Bulkhead FR 25</i>	S235JR	238	50	5	0,5
<i>Stif. FB50X5 a.b. at Bulkhead FR 25</i>	S235JR	217	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 25</i>	S235JR	217	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 26</i>	S235JR	192	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 26</i>	S235JR	184	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 26</i>	S235JR	240	50	5	0,5
<i>Stif. FB50X5 a.b. at Bulkhead FR 26</i>	S235JR	240	50	5	0,5

 $\Sigma$ 

6,2


**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. FB50X5 a.b. at Bulkhead FR 26</i>	S235JR	218	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 26</i>	S235JR	218	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 26</i>	S235JR	256	50	5	0,5
<i>Stif. FB50X5 a.b. at Bulkhead FR 26</i>	S235JR	256	50	5	0,5
<i>Stif. FB50X5 a.b. at Bulkhead FR 27</i>	S235JR	193	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 27</i>	S235JR	185	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 27</i>	S235JR	239	50	5	0,5
<i>Stif. FB50X5 a.b. at Bulkhead FR 27</i>	S235JR	239	50	5	0,5
<i>Stif. FB50X5 a.b. at Bulkhead FR 27</i>	S235JR	217	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 27</i>	S235JR	217	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 28</i>	S235JR	343	50	5	0,7
<i>Stif. FB50X5 a.b. at Bulkhead FR 28</i>	S235JR	343	50	5	0,7
<i>Stif. FB50X5 a.b. at Bulkhead FR 28</i>	S235JR	194	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 28</i>	S235JR	185	50	5	0,4


 $\Sigma$ 

6,6

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. FB50X5 a.b. at Bulkhead FR 28</i>	S235JR	238	50	5	0,5
<i>Stif. FB50X5 a.b. at Bulkhead FR 28</i>	S235JR	238	50	5	0,5
<i>Stif. FB50X5 a.b. at Bulkhead FR 28</i>	S235JR	216	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 28</i>	S235JR	216	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 29</i>	S235JR	196	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 29</i>	S235JR	186	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 29</i>	S235JR	237	50	5	0,5
<i>Stif. FB50X5 a.b. at Bulkhead FR 29</i>	S235JR	237	50	5	0,5
<i>Stif. FB50X5 a.b. at Bulkhead FR 29</i>	S235JR	215	50	5	0,4
<i>Stif. FB50X5 a.b. at Bulkhead FR 29</i>	S235JR	215	50	5	0,4
<i>Stif. FB50X5 from CL at Bulkhead FR 21</i>	S235JR	386	50	5	0,8
<i>Stif. FB50X5 from CL at Bulkhead FR 21</i>	S235JR	386	50	5	0,8
<i>Stif. FB50X5 from CL at Bulkhead FR 21</i>	S235JR	255	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 21</i>	S235JR	257	50	5	0,5
				$\Sigma$	7,0

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. FB50X5 800 from CL at Bulkhead FR 22</i>	S235JR	131	50	5	0,2
<i>Stif. FB50X5 800 from CL at Bulkhead FR 22</i>	S235JR	131	50	5	0,2
<i>Stif. FB50X5 from CL at Bulkhead FR 22</i>	S235JR	195	50	5	0,4
<i>Stif. FB50X5 from CL at Bulkhead FR 22</i>	S235JR	195	50	5	0,4
<i>Stif. FB50X5 from CL at Bulkhead FR 22</i>	S235JR	257	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 22</i>	S235JR	256	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 23</i>	S235JR	255	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 23</i>	S235JR	255	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 24</i>	S235JR	286	50	5	0,6
<i>Stif. FB50X5 from CL at Bulkhead FR 24</i>	S235JR	287	50	5	0,6
<i>Stif. FB50X5 from CL at Bulkhead FR 24</i>	S235JR	255	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 24</i>	S235JR	254	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 25</i>	S235JR	262	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 25</i>	S235JR	262	50	5	0,5
				Σ	6,4


**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. FB50X5 from CL at Bulkhead FR 26</i>	S235JR	265	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 26</i>	S235JR	265	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 26</i>	S235JR	274	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 26</i>	S235JR	274	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 26</i>	S235JR	255	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 26</i>	S235JR	255	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 27</i>	S235JR	268	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 27</i>	S235JR	268	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 27</i>	S235JR	273	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 27</i>	S235JR	273	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 27</i>	S235JR	255	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 27</i>	S235JR	255	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 28</i>	S235JR	271	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 28</i>	S235JR	271	50	5	0,5

 $\Sigma$ 

7,0

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. FB50X5 from CL at Bulkhead FR 28</i>	S235JR	276	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 28</i>	S235JR	276	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 28</i>	S235JR	255	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 28</i>	S235JR	255	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 29</i>	S235JR	258	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 29</i>	S235JR	258	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 29</i>	S235JR	255	50	5	0,5
<i>Stif. FB50X5 from CL at Bulkhead FR 29</i>	S235JR	255	50	5	0,5
<i>Stif. FB75X5 FR 21 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 21 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 21 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 21 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 21 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 21 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
				$\Sigma$	5,2

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. FB75X5 FR 22 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 22 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 22 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 22 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 22 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 22 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 22 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 22 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 22 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 22 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 22 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 22 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 24 at Deck 1500 above base</i>	S235JR	80	75	5	0,2

 $\Sigma$ 

2,8



**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. FB75X5 FR 24 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 24 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 24 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 24 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 24 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 24 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 25 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 25 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 25 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 25 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 25 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 25 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 25 at Deck 1500 above base</i>	S235JR	80	75	5	0,2

 $\Sigma$ 

2,8

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

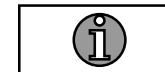
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. FB75X5 FR 26 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 26 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 26 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 26 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 26 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 26 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 26 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 27 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 27 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 27 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 27 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 27 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 27 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 27 at Deck 1500 above base</i>	S235JR	80	75	5	0,2

 $\Sigma$ 

2,8

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

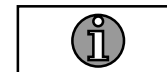
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. FB75X5 FR 27 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 27 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 27 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 28 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 28 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 28 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 28 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 28 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 28 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 28 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 28 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 28 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 28 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 28 at Deck 1500 above base</i>	S235JR	80	75	5	0,2

 $\Sigma$ 

3,0

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. FB75X5 FR 28 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 29 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 29 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 29 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 29 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 29 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 29 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 29 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 29 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 29 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 29 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 29 at Deck 1500 above base</i>	S235JR	80	75	5	0,2
<i>Stif. FB75X5 FR 29 at Deck 1500 above base</i>	S235JR	80	75	5	0,2



$\Sigma$	2,8
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**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. HP100X6 1800 a.b. at Bulkhead FR 22</i>	Grade A 235	519	100	6	3,1
<i>Stif. HP100X6 1800 a.b. at Bulkhead FR 22</i>	Grade A 235	519	100	6	3,1
<i>Stif. HP100X6 2200 a.b. at Bulkhead FR 22</i>	Grade A 235	519	100	6	3,1
<i>Stif. HP100X6 2200 a.b. at Bulkhead FR 22</i>	Grade A 235	519	100	6	3,1
<i>Stif. HP100X6 2275 from CL at Bulkhead FR 22</i>	Grade A 235	2636	100	6	16
<i>Stif. HP100X6 2275 from CL at Bulkhead FR 22</i>	Grade A 235	2636	100	6	16
<i>Stif. HP100X6 2275 from CL at Bulkhead FR 23</i>	Grade A 235	2636	100	6	16
<i>Stif. HP100X6 2275 from CL at Bulkhead FR 23</i>	Grade A 235	2636	100	6	16
<i>Stif. HP100X6 2530 from CL at Bulkhead FR 22</i>	Grade A 235	2014	100	6	12,1
<i>Stif. HP100X6 2530 from CL at Bulkhead FR 22</i>	Grade A 235	2014	100	6	12,1
<i>Stif. HP100X6 2530 from CL at Bulkhead FR 23</i>	Grade A 235	2636	100	6	16
<i>Stif. HP100X6 2530 from CL at Bulkhead FR 23</i>	Grade A 235	2636	100	6	16
<i>Stif. HP100X6 2800 from CL at Bulkhead FR 22</i>	Grade A 235	2636	100	6	16
<i>Stif. HP100X6 2800 from CL at Bulkhead FR 22</i>	Grade A 235	2636	100	6	16

 $\Sigma$ 

164,6

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

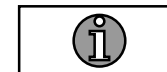
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. HP100X6 2800 from CL at Bulkhead FR 23</i>	Grade A 235	2636	100	6	16
<i>Stif. HP100X6 2800 from CL at Bulkhead FR 23</i>	Grade A 235	2636	100	6	16
<i>Stif. HP100X6 3100 from CL at Bulkhead FR 22</i>	Grade A 235	2636	100	6	16
<i>Stif. HP100X6 3100 from CL at Bulkhead FR 22</i>	Grade A 235	2636	100	6	16
<i>Stif. HP100X6 3100 from CL at Bulkhead FR 23</i>	Grade A 235	2636	100	6	16
<i>Stif. HP100X6 3100 from CL at Bulkhead FR 23</i>	Grade A 235	2636	100	6	16
<i>Stif. HP100X6 3101 a.b. at Bulkhead FR 22</i>	Grade A 235	289	100	6	1,7
<i>Stif. HP100X6 3101 a.b. at Bulkhead FR 22</i>	Grade A 235	289	100	6	1,7
<i>Stif. HP100X6 3101 a.b. at Bulkhead FR 23</i>	Grade A 235	265	100	6	1,6
<i>Stif. HP100X6 3101 a.b. at Bulkhead FR 23</i>	Grade A 235	265	100	6	1,6
<i>Stif. HP100X6 3400 from CL at Bulkhead FR 22</i>	Grade A 235	2636	100	6	16
<i>Stif. HP100X6 3400 from CL at Bulkhead FR 22</i>	Grade A 235	2636	100	6	16
<i>Stif. HP100X6 3400 from CL at Bulkhead FR 23</i>	Grade A 235	2636	100	6	16
<i>Stif. HP100X6 3400 from CL at Bulkhead FR 23</i>	Grade A 235	2636	100	6	16

 $\Sigma$ 

166,6

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. HP100X6 3429 a.b. at Bulkhead FR 22</i>	Grade A 235	330	100	6	2
<i>Stif. HP100X6 3429 a.b. at Bulkhead FR 22</i>	Grade A 235	330	100	6	2
<i>Stif. HP100X6 3430 a.b. at Bulkhead FR 23</i>	Grade A 235	310	100	6	1,9
<i>Stif. HP100X6 3430 a.b. at Bulkhead FR 23</i>	Grade A 235	310	100	6	1,9
<i>Stif. HP100X6 3700 from CL at Bulkhead FR 22</i>	Grade A 235	2636	100	6	16
<i>Stif. HP100X6 3700 from CL at Bulkhead FR 22</i>	Grade A 235	2636	100	6	16
<i>Stif. HP100X6 3700 from CL at Bulkhead FR 23</i>	Grade A 235	2636	100	6	16
<i>Stif. HP100X6 3700 from CL at Bulkhead FR 23</i>	Grade A 235	2636	100	6	16
<i>Stif. HP100X6 3758 a.b. at Bulkhead FR 22</i>	Grade A 235	366	100	6	2,2
<i>Stif. HP100X6 3758 a.b. at Bulkhead FR 22</i>	Grade A 235	366	100	6	2,2
<i>Stif. HP100X6 3758 a.b. at Bulkhead FR 23</i>	Grade A 235	348	100	6	2,1
<i>Stif. HP100X6 3758 a.b. at Bulkhead FR 23</i>	Grade A 235	348	100	6	2,1
<i>Stif. HP100X6 4000 from CL at Bulkhead FR 22</i>	Grade A 235	2415	100	6	14,6
<i>Stif. HP100X6 4000 from CL at Bulkhead FR 22</i>	Grade A 235	2414	100	6	14,6

 $\Sigma$ 

109,6

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. HP100X6 4000 from CL at Bulkhead FR 23</i>	Grade A 235	2078	100	6	12,5
<i>Stif. HP100X6 4000 from CL at Bulkhead FR 23</i>	Grade A 235	2078	100	6	12,5
<i>Stif. HP100X6 4080 a.b. at Bulkhead FR 22</i>	Grade A 235	395	100	6	2,4
<i>Stif. HP100X6 4080 a.b. at Bulkhead FR 22</i>	Grade A 235	395	100	6	2,4
<i>Stif. HP100X6 4080 a.b. at Bulkhead FR 23</i>	Grade A 235	380	100	6	2,3
<i>Stif. HP100X6 4080 a.b. at Bulkhead FR 23</i>	Grade A 235	380	100	6	2,3
<i>Stif. HP100X6 a.b. at Bulkhead FR 22</i>	Grade A 235	351	100	6	2,1
<i>Stif. HP100X6 a.b. at Bulkhead FR 22</i>	Grade A 235	351	100	6	2,1
<i>Stif. HP100X6 a.b. at Bulkhead FR 23</i>	Grade A 235	393	100	6	2,4
<i>Stif. HP100X6 a.b. at Bulkhead FR 23</i>	Grade A 235	393	100	6	2,4
<i>Stif. HP100X6 a.b. at Bulkhead FR 23</i>	Grade A 235	313	100	6	1,9
<i>Stif. HP100X6 a.b. at Bulkhead FR 23</i>	Grade A 235	313	100	6	1,9
<i>Stif. HP100X6 frame 22+330 at Bulkhead 2000 from CL</i>	Grade A 235	2796	100	6	17
<i>Stif. HP100X6 frame 22+330 at Bulkhead 2000 from CL</i>	Grade A 235	2796	100	6	17

 $\Sigma$ 

81,2



**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

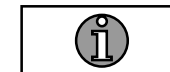
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. HP100X6 frame 22+670 at Bulkhead 2000 from CL</i>	Grade A 235	2796	100	6	17
<i>Stif. HP100X6 frame 22+670 at Bulkhead 2000 from CL</i>	Grade A 235	2796	100	6	17
<i>Stif. HP80X6 1100 from CL at Bulkhead FR 23</i>	Grade A 235	2641	80	6	12,9
<i>Stif. HP80X6 1100 from CL at Bulkhead FR 23</i>	Grade A 235	2641	80	6	12,9
<i>Stif. HP80X6 1100 from CL at Bulkhead FR 25</i>	Grade A 235	870	80	6	4,2
<i>Stif. HP80X6 1100 from CL at Bulkhead FR 25</i>	Grade A 235	881	80	6	4,3
<i>Stif. HP80X6 1100 from CL at Deck 4300 above base</i>	Grade A 235	1095	80	6	5,3
<i>Stif. HP80X6 1100 from CL at Deck 4300 above base</i>	Grade A 235	4300	80	6	20,9
<i>Stif. HP80X6 1100 from CL at Deck 4300 above base</i>	Grade A 235	1095	80	6	5,3
<i>Stif. HP80X6 1100 from CL at Deck 4300 above base</i>	Grade A 235	5850	80	6	28,5
<i>Stif. HP80X6 1100 from CL at Deck 4300 above base</i>	Grade A 235	450	80	6	2,2
<i>Stif. HP80X6 1200 a.b. at Bulkhead 2000 from CL</i>	Grade A 235	2995	80	6	14,6
<i>Stif. HP80X6 1200 a.b. at Bulkhead 2000 from CL</i>	Grade A 235	5850	80	6	28,5
<i>Stif. HP80X6 1200 a.b. at Bulkhead 2000 from CL</i>	Grade A 235	450	80	6	2,2

 $\Sigma$ 

175,8

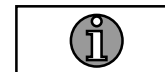
**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. HP80X6 1200 a.b. at Bulkhead 2000 from CL</i>	Grade A 235	2995	80	6	14,6
<i>Stif. HP80X6 1200 a.b. at Bulkhead 2000 from CL</i>	Grade A 235	5850	80	6	28,5
<i>Stif. HP80X6 1200 a.b. at Bulkhead 2000 from CL</i>	Grade A 235	450	80	6	2,2
<i>Stif. HP80X6 1200 a.b. at Bulkhead 4 from CL</i>	Grade A 235	4995	80	6	24,3
<i>Stif. HP80X6 1200 a.b. at Bulkhead 4 from CL</i>	Grade A 235	4300	80	6	20,9
<i>Stif. HP80X6 1400 from CL at Bulkhead FR 23</i>	Grade A 235	2641	80	6	12,9
<i>Stif. HP80X6 1400 from CL at Bulkhead FR 23</i>	Grade A 235	2641	80	6	12,9
<i>Stif. HP80X6 1400 from CL at Bulkhead FR 25</i>	Grade A 235	754	80	6	3,5
<i>Stif. HP80X6 1400 from CL at Bulkhead FR 25</i>	Grade A 235	770	80	6	3,6
<i>Stif. HP80X6 1400 from CL at Deck 4300 above base</i>	Grade A 235	1095	80	6	5,3
<i>Stif. HP80X6 1400 from CL at Deck 4300 above base</i>	Grade A 235	4300	80	6	20,9
<i>Stif. HP80X6 1400 from CL at Deck 4300 above base</i>	Grade A 235	1095	80	6	5,3
<i>Stif. HP80X6 1400 from CL at Deck 4300 above base</i>	Grade A 235	5850	80	6	28,5
<i>Stif. HP80X6 1400 from CL at Deck 4300 above base</i>	Grade A 235	450	80	6	2,2

**Σ****185,6**

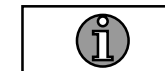
**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. HP80X6 1700 from CL at Bulkhead FR 23</i>	Grade A 235	2641	80	6	12,9
<i>Stif. HP80X6 1700 from CL at Bulkhead FR 23</i>	Grade A 235	2641	80	6	12,9
<i>Stif. HP80X6 1700 from CL at Bulkhead FR 25</i>	Grade A 235	664	80	6	3,1
<i>Stif. HP80X6 1700 from CL at Bulkhead FR 25</i>	Grade A 235	676	80	6	3,2
<i>Stif. HP80X6 1700 from CL at Deck 4300 above base</i>	Grade A 235	1095	80	6	5,3
<i>Stif. HP80X6 1700 from CL at Deck 4300 above base</i>	Grade A 235	5850	80	6	28,5
<i>Stif. HP80X6 1700 from CL at Deck 4300 above base</i>	Grade A 235	450	80	6	2,2
<i>Stif. HP80X6 1700 from CL at Deck 4300 above base</i>	Grade A 235	1095	80	6	5,3
<i>Stif. HP80X6 1700 from CL at Deck 4300 above base</i>	Grade A 235	5850	80	6	28,5
<i>Stif. HP80X6 1700 from CL at Deck 4300 above base</i>	Grade A 235	450	80	6	2,2
<i>Stif. HP80X6 1775 a.b. at Bulkhead FR 23</i>	Grade A 235	988	80	6	4,7
<i>Stif. HP80X6 2275 from CL at Deck 1500 above base</i>	Grade A 235	995	80	6	4,8
<i>Stif. HP80X6 2275 from CL at Deck 1500 above base</i>	Grade A 235	995	80	6	4,8
<i>Stif. HP80X6 2275 from CL at Deck 4300 above base</i>	Grade A 235	995	80	6	4,8

**Σ****123,2**

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. HP80X6 2275 from CL at Deck 4300 above base</i>	Grade A 235	5850	80	6	28,5
<i>Stif. HP80X6 2275 from CL at Deck 4300 above base</i>	Grade A 235	450	80	6	2,2
<i>Stif. HP80X6 2275 from CL at Deck 4300 above base</i>	Grade A 235	995	80	6	4,8
<i>Stif. HP80X6 2275 from CL at Deck 4300 above base</i>	Grade A 235	5850	80	6	28,5
<i>Stif. HP80X6 2275 from CL at Deck 4300 above base</i>	Grade A 235	450	80	6	2,2
<i>Stif. HP80X6 250 from CL at Bulkhead FR 25</i>	Grade A 235	1126	80	6	5,5
<i>Stif. HP80X6 250 from CL at Bulkhead FR 25</i>	Grade A 235	1148	80	6	5,6
<i>Stif. HP80X6 250 from CL at Deck 4300 above base</i>	Grade A 235	1095	80	6	5,3
<i>Stif. HP80X6 250 from CL at Deck 4300 above base</i>	Grade A 235	4300	80	6	20,9
<i>Stif. HP80X6 250 from CL at Deck 4300 above base</i>	Grade A 235	1095	80	6	5,3
<i>Stif. HP80X6 250 from CL at Deck 4300 above base</i>	Grade A 235	5850	80	6	28,5
<i>Stif. HP80X6 250 from CL at Deck 4300 above base</i>	Grade A 235	450	80	6	2,2
<i>Stif. HP80X6 250 from CL at Deck 2530 above base</i>	Grade A 235	995	80	6	4,8
<i>Stif. HP80X6 250 from CL at Deck 2530 above base</i>	Grade A 235	995	80	6	4,8

 $\Sigma$ 


149,1

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. HP80X6 2530 from CL at Deck 4300 above base</i>	Grade A 235	995	80	6	4,8
<i>Stif. HP80X6 2530 from CL at Deck 4300 above base</i>	Grade A 235	5850	80	6	28,5
<i>Stif. HP80X6 2530 from CL at Deck 4300 above base</i>	Grade A 235	450	80	6	2,2
<i>Stif. HP80X6 2530 from CL at Deck 4300 above base</i>	Grade A 235	995	80	6	4,8
<i>Stif. HP80X6 2530 from CL at Deck 4300 above base</i>	Grade A 235	5850	80	6	28,5
<i>Stif. HP80X6 2530 from CL at Deck 4300 above base</i>	Grade A 235	450	80	6	2,2
<i>Stif. HP80X6 2800 from CL at Deck 1500 above base</i>	Grade A 235	995	80	6	4,8
<i>Stif. HP80X6 2800 from CL at Deck 1500 above base</i>	Grade A 235	995	80	6	4,8
<i>Stif. HP80X6 2800 from CL at Deck 4300 above base</i>	Grade A 235	995	80	6	4,8
<i>Stif. HP80X6 2800 from CL at Deck 4300 above base</i>	Grade A 235	5850	80	6	28,5
<i>Stif. HP80X6 2800 from CL at Deck 4300 above base</i>	Grade A 235	450	80	6	2,2
<i>Stif. HP80X6 2800 from CL at Deck 4300 above base</i>	Grade A 235	995	80	6	4,8
<i>Stif. HP80X6 2800 from CL at Deck 4300 above base</i>	Grade A 235	5850	80	6	28,5
<i>Stif. HP80X6 2800 from CL at Deck 4300 above base</i>	Grade A 235	450	80	6	2,2

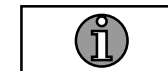
**Σ****151,6**

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. HP80X6 3 from CL at Deck 4300 above base</i>	Grade A 235	1095	80	6	5,3
<i>Stif. HP80X6 3 from CL at Deck 4300 above base</i>	Grade A 235	5850	80	6	28,5
<i>Stif. HP80X6 3 from CL at Deck 4300 above base</i>	Grade A 235	450	80	6	2,2
<i>Stif. HP80X6 300 a.b. at Bulkhead 4 from CL</i>	Grade A 235	2995	80	6	14,6
<i>Stif. HP80X6 300 a.b. at Bulkhead 4 from CL</i>	Grade A 235	4300	80	6	20,9
<i>Stif. HP80X6 3100 from CL at Deck 1500 above base</i>	Grade A 235	995	80	6	4,8
<i>Stif. HP80X6 3100 from CL at Deck 1500 above base</i>	Grade A 235	995	80	6	4,8
<i>Stif. HP80X6 3100 from CL at Deck 4300 above base</i>	Grade A 235	995	80	6	4,8
<i>Stif. HP80X6 3100 from CL at Deck 4300 above base</i>	Grade A 235	5850	80	6	28,5
<i>Stif. HP80X6 3100 from CL at Deck 4300 above base</i>	Grade A 235	450	80	6	2,2
<i>Stif. HP80X6 3100 from CL at Deck 4300 above base</i>	Grade A 235	995	80	6	4,8
<i>Stif. HP80X6 3100 from CL at Deck 4300 above base</i>	Grade A 235	5850	80	6	28,5
<i>Stif. HP80X6 3100 from CL at Deck 4300 above base</i>	Grade A 235	450	80	6	2,2
<i>Stif. HP80X6 3400 from CL at Deck 1500 above base</i>	Grade A 235	995	80	6	4,8
				$\Sigma$	156,9


**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. HP80X6 3400 from CL at Deck 1500 above base</i>	Grade A 235	995	80	6	4,8
<i>Stif. HP80X6 3400 from CL at Deck 4300 above base</i>	Grade A 235	995	80	6	4,8
<i>Stif. HP80X6 3400 from CL at Deck 4300 above base</i>	Grade A 235	5850	80	6	28,5
<i>Stif. HP80X6 3400 from CL at Deck 4300 above base</i>	Grade A 235	450	80	6	2,2
<i>Stif. HP80X6 3400 from CL at Deck 4300 above base</i>	Grade A 235	995	80	6	4,8
<i>Stif. HP80X6 3400 from CL at Deck 4300 above base</i>	Grade A 235	5850	80	6	28,5
<i>Stif. HP80X6 3400 from CL at Deck 4300 above base</i>	Grade A 235	450	80	6	2,2
<i>Stif. HP80X6 3700 from CL at Deck 1500 above base</i>	Grade A 235	995	80	6	4,8
<i>Stif. HP80X6 3700 from CL at Deck 1500 above base</i>	Grade A 235	995	80	6	4,8
<i>Stif. HP80X6 3700 from CL at Deck 4300 above base</i>	Grade A 235	995	80	6	4,8
<i>Stif. HP80X6 3700 from CL at Deck 4300 above base</i>	Grade A 235	5850	80	6	28,5
<i>Stif. HP80X6 3700 from CL at Deck 4300 above base</i>	Grade A 235	450	80	6	2,2
<i>Stif. HP80X6 3700 from CL at Deck 4300 above base</i>	Grade A 235	995	80	6	4,8
<i>Stif. HP80X6 3700 from CL at Deck 4300 above base</i>	Grade A 235	5850	80	6	28,5

 $\Sigma$ 

154,2

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. HP80X6 3700 from CL at Deck 4300 above base</i>	Grade A 235	450	80	6	2,2
<i>Stif. HP80X6 3740 a.b. at Bulkhead FR 23</i>	Grade A 235	988	80	6	4,7
<i>Stif. HP80X6 3700 from CL at Deck 1500 above base</i>	Grade A 235	995	80	6	4,8
<i>Stif. HP80X6 4000 from CL at Deck 4300 above base</i>	Grade A 235	4995	80	6	24,3
<i>Stif. HP80X6 3700 from CL at Deck 1500 above base</i>	Grade A 235	995	80	6	4,8
<i>Stif. HP80X6 4000 from CL at Deck 4300 above base</i>	Grade A 235	4995	80	6	24,3
<i>Stif. HP80X6 4050 a.b. at Bulkhead FR 23</i>	Grade A 235	988	80	6	4,7
<i>Stif. HP80X6 500 from CL at Bulkhead FR 23</i>	Grade A 235	2641	80	6	12,9
<i>Stif. HP80X6 500 from CL at Bulkhead FR 23</i>	Grade A 235	2641	80	6	12,9
<i>Stif. HP80X6 500 from CL at Bulkhead FR 25</i>	Grade A 235	1051	80	6	5,1
<i>Stif. HP80X6 500 from CL at Bulkhead FR 25</i>	Grade A 235	1069	80	6	5,2
<i>Stif. HP80X6 500 from CL at Deck 4300 above base</i>	Grade A 235	1095	80	6	5,3
<i>Stif. HP80X6 500 from CL at Deck 4300 above base</i>	Grade A 235	4300	80	6	20,9
<i>Stif. HP80X6 500 from CL at Deck 4300 above base</i>	Grade A 235	1095	80	6	5,3
				$\Sigma$	137,4



**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

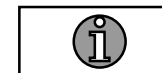
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. HP80X6 500 from CL at Deck 4300 above base</i>	Grade A 235	5850	80	6	28,5
<i>Stif. HP80X6 500 from CL at Deck 4300 above base</i>	Grade A 235	450	80	6	2,2
<i>Stif. HP80X6 600 a.b. at Bulkhead 4 from CL</i>	Grade A 235	4995	80	6	24,3
<i>Stif. HP80X6 600 a.b. at Bulkhead 4 from CL</i>	Grade A 235	4300	80	6	20,9
<i>Stif. HP80X6 800 from CL at Bulkhead FR 23</i>	Grade A 235	2641	80	6	12,9
<i>Stif. HP80X6 800 from CL at Bulkhead FR 23</i>	Grade A 235	2641	80	6	12,9
<i>Stif. HP80X6 800 from CL at Bulkhead FR 25</i>	Grade A 235	960	80	6	4,7
<i>Stif. HP80X6 800 from CL at Bulkhead FR 25</i>	Grade A 235	975	80	6	4,7
<i>Stif. HP80X6 800 from CL at Deck 4300 above base</i>	Grade A 235	1095	80	6	5,3
<i>Stif. HP80X6 800 from CL at Deck 4300 above base</i>	Grade A 235	4300	80	6	20,9
<i>Stif. HP80X6 800 from CL at Deck 4300 above base</i>	Grade A 235	1095	80	6	5,3
<i>Stif. HP80X6 800 from CL at Deck 4300 above base</i>	Grade A 235	5850	80	6	28,5
<i>Stif. HP80X6 800 from CL at Deck 4300 above base</i>	Grade A 235	450	80	6	2,2
<i>Stif. HP80X6 900 a.b. at Bulkhead 2000 from CL</i>	Grade A 235	2995	80	6	14,6

 $\Sigma$ 

187,9

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

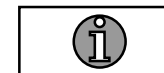
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. HP80X6 900 a.b. at Bulkhead 2000 from CL</i>	Grade A 235	2995	80	6	14,6
<i>Stif. HP80X6 900 a.b. at Bulkhead 2000 from CL</i>	Grade A 235	2995	80	6	14,6
<i>Stif. HP80X6 900 a.b. at Bulkhead 2000 from CL</i>	Grade A 235	2995	80	6	14,6
<i>Stif. HP80X6 900 a.b. at Bulkhead 4 from CL</i>	Grade A 235	4995	80	6	24,3
<i>Stif. HP80X6 900 a.b. at Bulkhead 4 from CL</i>	Grade A 235	4300	80	6	20,9
<i>Stif. HP80X6 900 a.b. at Bulkhead FR 23</i>	Grade A 235	343	80	6	1,6
<i>Stif. HP80X6 900 a.b. at Bulkhead FR 23</i>	Grade A 235	343	80	6	1,6
<i>Stif. HP80X6 from CL at Bulkhead FR 22</i>	Grade A 235	297	80	6	1,4
<i>Stif. HP80X6 from CL at Bulkhead FR 22</i>	Grade A 235	297	80	6	1,4
<i>Stif. HP80X6 from CL at Bulkhead FR 23</i>	Grade A 235	290	80	6	1,4
<i>Stif. HP80X6 from CL at Bulkhead FR 23</i>	Grade A 235	290	80	6	1,4
<i>Stif. HP80X6 from CL at Bulkhead FR 23</i>	Grade A 235	359	80	6	1,7
<i>Stif. HP80X6 from CL at Bulkhead FR 23</i>	Grade A 235	359	80	6	1,7
<i>Stif. HP80X6 from CL at Bulkhead FR 23</i>	Grade A 235	464	80	6	2,3

 $\Sigma$ 

103,5

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

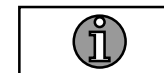
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell stif. HP80X6 1020/1056	Grade A 235	4301	80	6	21,1
Shell stif. HP80X6 1031/1056	Grade A 235	4697	80	6	23
Shell stif. HP80X6 -1057/-1021	Grade A 235	4301	80	6	21,1
Shell stif. HP80X6 -1057/-1032	Grade A 235	4697	80	6	23
Shell stif. HP80X6 1100 from CL	Grade A 235	1912	80	6	9,3
Shell stif. HP80X6 -1100 from CL	Grade A 235	1912	80	6	9,3
Shell stif. HP80X6 1293/1335	Grade A 235	4301	80	6	21,1
Shell stif. HP80X6 1310/1335	Grade A 235	4697	80	6	23
Shell stif. HP80X6 -1336/-1294	Grade A 235	4301	80	6	21,1
Shell stif. HP80X6 -1336/-1311	Grade A 235	4697	80	6	23
Shell stif. HP80X6 1400 from CL	Grade A 235	1911	80	6	9,3
Shell stif. HP80X6 -1400 from CL	Grade A 235	1911	80	6	9,3
Shell stif. HP80X6 1451/1500	Grade A 235	2000	80	6	9,9
Shell stif. HP80X6 1451/1500	Grade A 235	2004	80	6	9,9

 $\Sigma$ 

233,4

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

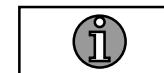
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell stif. HP80X6 1477/1513	Grade A 235	505	80	6	2,6
Shell stif. HP80X6 1477/1513	Grade A 235	505	80	6	2,6
Shell stif. HP80X6 1490/1741	Grade A 235	5828	80	6	28,5
Shell stif. HP80X6 1490/1741	Grade A 235	5828	80	6	28,5
Shell stif. HP80X6 1525/1560	Grade A 235	4301	80	6	21,1
Shell stif. HP80X6 1533/1560	Grade A 235	4696	80	6	23
Shell stif. HP80X6 -1560/-1534	Grade A 235	4696	80	6	23
Shell stif. HP80X6 -1561/-1526	Grade A 235	4301	80	6	21,1
Shell stif. HP80X6 1700 from CL	Grade A 235	1910	80	6	9,3
Shell stif. HP80X6 -1700 from CL	Grade A 235	1910	80	6	9,3
Shell stif. HP80X6 1769/1789	Grade A 235	2000	80	6	9,9
Shell stif. HP80X6 1769/1789	Grade A 235	2000	80	6	9,9
Shell stif. HP80X6 1769/1790	Grade A 235	1000	80	6	5
Shell stif. HP80X6 1769/1790	Grade A 235	1000	80	6	5

 $\Sigma$ 

198,8

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

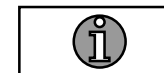
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell stif. HP80X6 1769/1790	Grade A 235	505	80	6	2,6
Shell stif. HP80X6 1769/1790	Grade A 235	505	80	6	2,6
Shell stif. HP80X6 1769/1930	Grade A 235	5826	80	6	28,5
Shell stif. HP80X6 1769/1930	Grade A 235	5826	80	6	28,5
Shell stif. HP80X6 1771/1807	Grade A 235	4302	80	6	21,1
Shell stif. HP80X6 1780/1807	Grade A 235	4696	80	6	23
Shell stif. HP80X6 -1808/-1772	Grade A 235	4302	80	6	21,1
Shell stif. HP80X6 -1808/-1781	Grade A 235	4696	80	6	23
Shell stif. HP80X6 2099/2155	Grade A 235	5826	80	6	28,5
Shell stif. HP80X6 2099/2155	Grade A 235	5826	80	6	28,5
Shell stif. HP80X6 2100/2116	Grade A 235	1999	80	6	9,9
Shell stif. HP80X6 2100/2116	Grade A 235	1999	80	6	9,9
Shell stif. HP80X6 2100/2117	Grade A 235	999	80	6	5
Shell stif. HP80X6 2100/2117	Grade A 235	999	80	6	5

 $\Sigma$ 

237,2

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

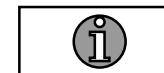
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell stif. HP80X6 2100/2118	Grade A 235	504	80	6	2,6
Shell stif. HP80X6 2100/2118	Grade A 235	504	80	6	2,6
Shell stif. HP80X6 2155/2185	Grade A 235	2997	80	6	14,8
Shell stif. HP80X6 2159/2185	Grade A 235	2996	80	6	14,8
Shell stif. HP80X6 217/249	Grade A 235	4304	80	6	21,1
Shell stif. HP80X6 -2186/-2156	Grade A 235	2997	80	6	14,8
Shell stif. HP80X6 -2186/-2160	Grade A 235	2996	80	6	14,8
Shell stif. HP80X6 2216/2454	Grade A 235	5999	80	6	29,4
Shell stif. HP80X6 227/250	Grade A 235	4700	80	6	23,1
Shell stif. HP80X6 2275 from CL	Grade A 235	2005	80	6	9,7
Shell stif. HP80X6 -2275 from CL	Grade A 235	2005	80	6	9,7
Shell stif. HP80X6 2369/2651	Grade A 235	5810	80	6	28,4
Shell stif. HP80X6 2428/2467	Grade A 235	995	80	6	5
Shell stif. HP80X6 2429/2444	Grade A 235	1999	80	6	9,9

 $\Sigma$ 

200,7

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

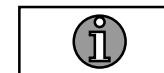
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell stif. HP80X6 2429/2444	Grade A 235	1999	80	6	9,9
Shell stif. HP80X6 2429/2450	Grade A 235	5824	80	6	28,5
Shell stif. HP80X6 2429/2450	Grade A 235	5824	80	6	28,5
Shell stif. HP80X6 2430/2445	Grade A 235	999	80	6	5
Shell stif. HP80X6 2430/2445	Grade A 235	999	80	6	5
Shell stif. HP80X6 2430/2446	Grade A 235	504	80	6	2,6
Shell stif. HP80X6 2430/2446	Grade A 235	504	80	6	2,6
Shell stif. HP80X6 -2455/-2217	Grade A 235	5999	80	6	29,4
Shell stif. HP80X6 -2468/-2429	Grade A 235	995	80	6	5
Shell stif. HP80X6 250 from CL	Grade A 235	1913	80	6	9,3
Shell stif. HP80X6 -250 from CL	Grade A 235	1913	80	6	9,3
Shell stif. HP80X6 -250/-218	Grade A 235	4304	80	6	21,1
Shell stif. HP80X6 -250/-228	Grade A 235	4700	80	6	23,1
Shell stif. HP80X6 2530 from CL	Grade A 235	2004	80	6	9,7

 $\Sigma$ 

189

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell stif. HP80X6 -2530 from CL	Grade A 235	2004	80	6	9,7
Shell stif. HP80X6 2623/2662	Grade A 235	501	80	6	2,6
Shell stif. HP80X6 2628/2938	Grade A 235	5812	80	6	28,5
Shell stif. HP80X6 2635/2699	Grade A 235	2996	80	6	14,8
Shell stif. HP80X6 -2652/-2370	Grade A 235	5810	80	6	28,4
Shell stif. HP80X6 -2663/-2624	Grade A 235	502	80	6	2,6
Shell stif. HP80X6 -2700/-2636	Grade A 235	2996	80	6	14,8
Shell stif. HP80X6 2760/2772	Grade A 235	1998	80	6	9,9
Shell stif. HP80X6 2760/2772	Grade A 235	1998	80	6	9,9
Shell stif. HP80X6 2760/2773	Grade A 235	998	80	6	5
Shell stif. HP80X6 2760/2773	Grade A 235	998	80	6	5
Shell stif. HP80X6 2760/2773	Grade A 235	503	80	6	2,6
Shell stif. HP80X6 2760/2773	Grade A 235	503	80	6	2,6
Shell stif. HP80X6 2760/2778	Grade A 235	5823	80	6	28,5

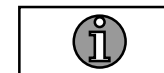
 $\Sigma$ 

164,9



**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell stif. HP80X6 2760/2778	Grade A 235	5823	80	6	28,5
Shell stif. HP80X6 2800 from CL	Grade A 235	2003	80	6	9,7
Shell stif. HP80X6 -2800 from CL	Grade A 235	2003	80	6	9,7
Shell stif. HP80X6 2855/3204	Grade A 235	5816	80	6	28,5
Shell stif. HP80X6 2909/2951	Grade A 235	503	80	6	2,6
Shell stif. HP80X6 2923/2995	Grade A 235	2997	80	6	14,8
Shell stif. HP80X6 -2939/-2629	Grade A 235	5812	80	6	28,5
Shell stif. HP80X6 -2952/-2910	Grade A 235	503	80	6	2,6
Shell stif. HP80X6 -2996/-2924	Grade A 235	2997	80	6	14,8
Shell stif. HP80X6 -3 from CL	Grade A 235	1913	80	6	9,3
Shell stif. HP80X6 3004/3365	Grade A 235	5818	80	6	28,5
Shell stif. HP80X6 3089/3101	Grade A 235	1998	80	6	9,9
Shell stif. HP80X6 3089/3101	Grade A 235	1998	80	6	9,9
Shell stif. HP80X6 3089/3101	Grade A 235	998	80	6	5

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202,3

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

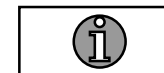
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell stif. HP80X6 3089/3101	Grade A 235	998	80	6	5
Shell stif. HP80X6 3089/3102	Grade A 235	503	80	6	2,6
Shell stif. HP80X6 3089/3102	Grade A 235	503	80	6	2,6
Shell stif. HP80X6 3089/3106	Grade A 235	5821	80	6	28,5
Shell stif. HP80X6 3089/3106	Grade A 235	5821	80	6	28,5
Shell stif. HP80X6 3100 from CL	Grade A 235	2001	80	6	9,7
Shell stif. HP80X6 -3100 from CL	Grade A 235	2001	80	6	9,7
Shell stif. HP80X6 3175/3220	Grade A 235	502	80	6	2,6
Shell stif. HP80X6 3192/3280	Grade A 235	2998	80	6	14,8
Shell stif. HP80X6 3203/3607	Grade A 235	5821	80	6	28,5
Shell stif. HP80X6 -3205/-2856	Grade A 235	5816	80	6	28,5
Shell stif. HP80X6 -3221/-3176	Grade A 235	508	80	6	2,7
Shell stif. HP80X6 -3281/-3193	Grade A 235	2998	80	6	14,8
Shell stif. HP80X6 3335/3381	Grade A 235	503	80	6	2,6

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181,1

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

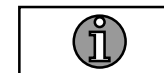
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell stif. HP80X6 3352/3408	Grade A 235	998	80	6	5
Shell stif. HP80X6 -3366/-3005	Grade A 235	5818	80	6	28,5
Shell stif. HP80X6 3366/3806	Grade A 235	5825	80	6	28,5
Shell stif. HP80X6 -3382/-3336	Grade A 235	503	80	6	2,6
Shell stif. HP80X6 3400 from CL	Grade A 235	2000	80	6	9,7
Shell stif. HP80X6 -3400 from CL	Grade A 235	2000	80	6	9,7
Shell stif. HP80X6 -3409/-3353	Grade A 235	998	80	6	5
Shell stif. HP80X6 3420/3429	Grade A 235	1998	80	6	9,9
Shell stif. HP80X6 3420/3429	Grade A 235	1998	80	6	9,9
Shell stif. HP80X6 3420/3430	Grade A 235	997	80	6	5
Shell stif. HP80X6 3420/3430	Grade A 235	997	80	6	5
Shell stif. HP80X6 3420/3430	Grade A 235	503	80	6	2,6
Shell stif. HP80X6 3420/3430	Grade A 235	503	80	6	2,6
Shell stif. HP80X6 3420/3434	Grade A 235	5819	80	6	28,5

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152,5

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

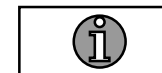
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell stif. HP80X6 3420/3434	Grade A 235	5819	80	6	28,5
Shell stif. HP80X6 3577/3627	Grade A 235	503	80	6	2,6
Shell stif. HP80X6 3598/3730	Grade A 235	3000	80	6	14,8
Shell stif. HP80X6 -3608/-3204	Grade A 235	5821	80	6	28,5
Shell stif. HP80X6 -3628/-3578	Grade A 235	503	80	6	2,6
Shell stif. HP80X6 3700 from CL	Grade A 235	1999	80	6	9,7
Shell stif. HP80X6 -3700 from CL	Grade A 235	1999	80	6	9,7
Shell stif. HP80X6 -3731/-3599	Grade A 235	3000	80	6	14,8
Shell stif. HP80X6 3750/3757	Grade A 235	1997	80	6	9,9
Shell stif. HP80X6 3750/3757	Grade A 235	1997	80	6	9,9
Shell stif. HP80X6 3750/3758	Grade A 235	997	80	6	5
Shell stif. HP80X6 3750/3758	Grade A 235	997	80	6	5
Shell stif. HP80X6 3750/3758	Grade A 235	503	80	6	2,6
Shell stif. HP80X6 3750/3758	Grade A 235	503	80	6	2,6

 $\Sigma$ 

146,2

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

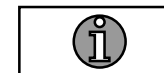
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell stif. HP80X6 3750/3763	Grade A 235	5818	80	6	28,5
Shell stif. HP80X6 3750/3763	Grade A 235	5818	80	6	28,5
Shell stif. HP80X6 3775/3829	Grade A 235	504	80	6	2,6
Shell stif. HP80X6 -3807/-3367	Grade A 235	5825	80	6	28,5
Shell stif. HP80X6 -3830/-3776	Grade A 235	504	80	6	2,6
Shell stif. HP80X6 3840/3927	Grade A 235	1999	80	6	9,9
Shell stif. HP80X6 -3928/-3841	Grade A 235	1999	80	6	9,9
Shell stif. HP80X6 4000 from CL	Grade A 235	1998	80	6	9,7
Shell stif. HP80X6 -4000 from CL	Grade A 235	1998	80	6	9,7
Shell stif. HP80X6 4080 a.b.	Grade A 235	1997	80	6	9,7
Shell stif. HP80X6 4080 a.b.	Grade A 235	1997	80	6	9,7
Shell stif. HP80X6 4080 a.b.	Grade A 235	997	80	6	4,8
Shell stif. HP80X6 4080 a.b.	Grade A 235	997	80	6	4,8
Shell stif. HP80X6 4080 a.b.	Grade A 235	502	80	6	2,4

 $\Sigma$ 

161,3

**Section 113 – Painéis (Shell Stifenner – Longitudinais)**

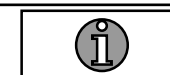
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell stif. HP80X6 4080 a.b.	Grade A 235	502	80	6	2,4
Shell stif. HP80X6 4080 a.b.	Grade A 235	5817	80	6	28,3
Shell stif. HP80X6 4080 a.b.	Grade A 235	5817	80	6	28,3
Shell stif. HP80X6 463/495	Grade A 235	4303	80	6	21,1
Shell stif. HP80X6 471/495	Grade A 235	4999	80	6	24,5
Shell stif. HP80X6 -495/-464	Grade A 235	4303	80	6	21,1
Shell stif. HP80X6 -495/-472	Grade A 235	4999	80	6	24,5
Shell stif. HP80X6 500 from CL	Grade A 235	1913	80	6	9,3
Shell stif. HP80X6 -500 from CL	Grade A 235	1913	80	6	9,3
Shell stif. HP80X6 741/775	Grade A 235	4302	80	6	21,1
Shell stif. HP80X6 750/775	Grade A 235	4698	80	6	23,1
Shell stif. HP80X6 -775/-742	Grade A 235	4302	80	6	21,1
Shell stif. HP80X6 -775/-751	Grade A 235	4698	80	6	23,1
Shell stif. HP80X6 800 from CL	Grade A 235	1912	80	6	9,3

 $\Sigma$ 

266,5



## Section 113 – Painéis (*Shell Stifenner – Longitudinais*)

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
<i>Stif. HP80X6 from CL at Bulkhead FR 23</i>	Grade A 235	464	80	6	2,3
<i>Stif. HP80X6 from CL at Bulkhead FR 23</i>	Grade A 235	562	80	6	2,7
<i>Stif. HP80X6 from CL at Bulkhead FR 23</i>	Grade A 235	562	80	6	2,7
<i>Stif. HP80X6 from CL at Bulkhead FR 23</i>	Grade A 235	643	80	6	3,1
<i>Stif. HP80X6 from CL at Bulkhead FR 23</i>	Grade A 235	643	80	6	3,1
<i>Stif. PI76.1X5 frame 25 at</i>	S235JR	2470	76	5	21,7
<i>Stif. PI76.1X5 frame 25 at</i>	S235JR	2470	76	5	21,7
<i>Stif. PI76.1X5 frame 27 at</i>	S235JR	2480	76	5	21,7
<i>Stif. PI76.1X5 frame 27 at</i>	S235JR	2480	76	5	21,7
<i>Shell stif. HP80X6 -800 from CL</i>	Grade A 235	1912	80	6	9,3
<i>Shell stif. FB80X8 FR. 28+330</i>	S235JR	193	80	8	1,0
<i>Shell stif. FB80X8 FR. 28+330</i>	S235JR	192	80	8	1,0
<i>Shell stif. FB80X8 FR. 29-330</i>	S235JR	192	80	8	1,0
<i>Shell stif. FB80X8 FR. 29-330</i>	S235JR	191	80	8	1,0



Σ 104,7

Σ **Peso (Kg)** 5569,3  
*Total*

<i>From</i>	<i>to</i>	<i>Quantity</i>	<i>From</i>	<i>to</i>	<i>Quantity</i>
1	2	24,944 t	9	13	24,944 t
2	 3	8,0435 t ( <i>shell plates</i> ) 5,5693 t ( <i>shell stifenner</i> )	-----	-----	-----
2	6	11,3312 t	-----	-----	-----
3	 4	5,5693 t	-----	-----	-----
3/4	5	(8,0435 + 5,5693) t 13,6128 t	-----	-----	-----
5	9	13,6128 t	-----	-----	-----
6	7	11,3312 t	-----	-----	-----
7	8	11,3312 t	-----	-----	-----
8	9	11,3312 t	-----	-----	-----
<b>Section 113</b>				<b><math>\Sigma</math> 1 block (b)</b>	



# *Section* 114


*Section* 114A

*Section* 114B

# *Section 114*

*Section 114A – Painéis (Shell Plate)*

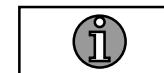
### Section 114A – Painéis (Shell Plate)

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)	
<i>SHELLPLATE</i>	Grade A 235	5897	1949	6	528,4	
<i>SHELLPLATE</i>	Grade A 235	5897	1949	6	528,4	
<i>SHELLPLATE</i>	Grade A 235	5938	1910	6	504,5	
<i>SHELLPLATE</i>	Grade A 235	5938	1910	6	504,5	
<i>SHELLPLATE</i>	Grade A 235	3969	1964	6	354,3	
<i>SHELLPLATE</i>	Grade A 235	3969	1964	6	354,3	
<i>SHELLPLATE</i>	Grade A 235	3979	1766	6	317,2	
<i>SHELLPLATE</i>	Grade A 235	3979	1766	6	317,2	
<i>SHELLPLATE</i>	Grade A 235	3967	1958	8	477,7	
<i>SHELLPLATE</i>	Grade A 235	3967	1958	8	477,7	
					$\Sigma$	4364,2
					$\Sigma$ <i>Peso (Kg)</i>	4364,2
					<i>Total</i>	

***Section 114A – Painéis (Shell Stifenner – Longitudinais)***

**Section 114A – Painéis (Shell Stifenner – Longitudinais)**

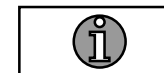
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell stif. HP80X6 1479/1684	Grade A 235	2883	80	6	14,2
Shell stif. HP80X6 1755/1999	Grade A 235	2892	80	6	14,2
Shell stif. HP80X6 1311/1494	Grade A 235	2877	80	6	14,1
Shell stif. HP80X6 2098/2381	Grade A 235	3057	80	6	15
Shell stif. HP80X6 1951/2217	Grade A 235	3051	80	6	15
Shell stif. HP80X6 1635/1854	Grade A 235	3040	80	6	14,9
Shell stif. HP80X6 1444/1638	Grade A 235	3033	80	6	14,9
Shell stif. HP80X6 1885/2144	Grade A 235	2896	80	6	14,2
Shell stif. HP80X6 1605/1832	Grade A 235	2887	80	6	14,2
Shell stif. HP80X6 1784/2032	Grade A 235	3045	80	6	14,9
Shell stif. HP80X6 1352/1499	Grade A 235	3031	80	6	14,9
Shell stif. HP80X6 -2668/-2114	Grade A 235	5884	80	6	28,8
Shell stif. HP80X6 -2896/-2292	Grade A 235	5890	80	6	28,8
Shell stif. HP80X6 -3046/-2422	Grade A 235	5895	80	6	28,8

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246,9

**Section 114A – Painéis (Shell Stifenner – Longitudinais)**

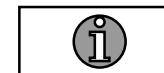
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell stif. HP80X6 1345/1486	Grade A 235	2001	80	6	9,9
Shell stif. HP80X6 2097/2407	Grade A 235	3711	80	6	18,2
Shell stif. HP80X6 2113/2667	Grade A 235	5884	80	6	28,8
Shell stif. HP80X6 2291/2895	Grade A 235	5890	80	6	28,8
Shell stif. HP80X6 2421/3045	Grade A 235	5895	80	6	28,8
Shell stif. HP80X6 39/150	Grade A 235	4999	80	6	24,5
Shell stif. HP80X6 1352/1499	Grade A 235	3031	80	6	14,9
Shell stif. HP80X6 1311/1494	Grade A 235	2877	80	6	14,1
Shell stif. HP80X6 1444/1638	Grade A 235	3033	80	6	14,9
Shell stif. HP80X6 1441/1811	Grade A 235	5902	80	6	28,9
Shell stif. HP80X6 1441/1811	Grade A 235	5902	80	6	28,9
Shell stif. HP80X6 1479/1684	Grade A 235	2883	80	6	14,2
Shell stif. HP80X6 1635/1854	Grade A 235	3040	80	6	14,9
Shell stif. HP80X6 1544/1940	Grade A 235	5908	80	6	28,9

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298,7

**Section 114A – Painéis (Shell Stifenner – Longitudinais)**

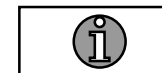
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. HP80X6 1544/1940	Grade A 235	5908	80	6	28,9
Shell stif. HP80X6 1605/1832	Grade A 235	2886	80	6	14,2
Shell stif. HP80X6 1784/2032	Grade A 235	3045	80	6	14,9
Shell stif. HP80X6 1755/1999	Grade A 235	2892	80	6	14,2
Shell stif. HP80X6 1951/2217	Grade A 235	3051	80	6	15
Shell stif. HP80X6 1885/2144	Grade A 235	2896	80	6	14,2
Shell stif. HP80X6 2098/2381	Grade A 235	3057	80	6	15
Shell stif. HP80X6 -796/-701	Grade A 235	1004	80	6	5,1
Shell stif. HP80X6 -796/-640	Grade A 235	1009	80	6	5,1
Shell stif. HP80X6 1025/1108	Grade A 235	5032	80	6	24,7
Shell stif. HP80X6 1024/1108	Grade A 235	5045	80	6	24,7
Shell stif. HP80X6 -1240/-1116	Grade A 235	1999	80	6	9,9
Shell stif. HP80X6 -1296/-1197	Grade A 235	1998	80	6	9,9
Shell stif. HP80X6 -1487/-1346	Grade A 235	2001	80	6	9,9

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205,7

**Section 114A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. HP80X6 -1544/-1443	Grade A 235	1999	80	6	9,9
Shell stif. HP80X6 -1561/-1505	Grade A 235	1697	80	6	8,4
Shell stif. HP80X6 -1789/-1667	Grade A 235	2001	80	6	9,9
Shell stif. HP80X6 1666/1788	Grade A 235	2001	80	6	9,9
Shell stif. HP80X6 1749/1807	Grade A 235	1700	80	6	8,5
Shell stif. HP80X6 -1808/-1750	Grade A 235	1699	80	6	8,4
Shell stif. HP80X6 -2408/-2098	Grade A 235	3711	80	6	18,2
Shell stif. HP80X6 2097/2407	Grade A 235	3711	80	6	18,2
Shell stif. HP80X6 -495/-452	Grade A 235	1997	80	6	9,9
Shell stif. HP80X6 -773/-725	Grade A 235	1696	80	6	8,4
Shell stif. HP80X6 -761/-695	Grade A 235	1996	80	6	9,9
Shell stif. HP80X6 -1003/-904	Grade A 235	1997	80	6	9,9
Shell stif. HP80X6 -1037/-961	Grade A 235	1996	80	6	9,9
Shell stif. HP80X6 1115/1239	Grade A 235	1999	80	6	9,9

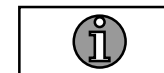
 $\Sigma$ 

149,3



**Section 114A – Painéis (Shell Stifenner – Longitudinais)**

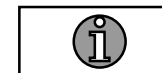
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell stif. HP80X6 1196/1295	Grade A 235	1998	80	6	9,9
Shell stif. HP80X6 1442/1543	Grade A 235	1999	80	6	9,9
Shell stif. HP80X6 1504/1560	Grade A 235	1697	80	6	8,4
Shell stif. HP80X6 433/491	Grade A 235	1996	80	6	9,9
Shell stif. HP80X6 451/494	Grade A 235	1997	80	6	9,9
Shell stif. HP80X6 652/735	Grade A 235	1996	80	6	9,9
Shell stif. HP80X6 694/760	Grade A 235	1996	80	6	9,9
Shell stif. HP80X6 724/772	Grade A 235	1696	80	6	8,4
Shell stif. HP80X6 903/1002	Grade A 235	1997	80	6	9,9
Shell stif. HP80X6 960/1036	Grade A 235	1996	80	6	9,9
Shell stif. HP80X6 -164/-13	Grade A 235	4997	80	6	24,5
Shell stif. HP80X6 -164/-13	Grade A 235	4997	80	6	24,5
Shell stif. HP80X6 39/150	Grade A 235	4999	80	6	24,5
Shell stif. HP80X6 287/361	Grade A 235	5003	80	6	24,5

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194

**Section 114A – Painéis (Shell Stifenner – Longitudinais)**

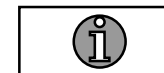
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. HP80X6 287/361	Grade A 235	5003	80	6	24,5
Shell stif. HP80X6 457/571	Grade A 235	5008	80	6	24,5
Shell stif. HP80X6 457/571	Grade A 235	5008	80	6	24,5
Shell stif. HP80X6 648/782	Grade A 235	5016	80	6	24,6
Shell stif. HP80X6 648/782	Grade A 235	5016	80	6	24,6
Shell stif. HP80X6 -1712/-1542	Grade A 235	2004	80	6	9,9
Shell stif. HP80X6 1541/1711	Grade A 235	2004	80	6	9,9
Shell stif. HP80X6 811/923	Grade A 235	5024	80	6	24,6
Shell stif. HP80X6 811/923	Grade A 235	5024	80	6	24,6
Stif. FB50X5 from CL at Bulkhead FR 30	S235JR	252	50	5	0,5
Stif. FB50X5 from CL at Bulkhead FR 30	S235JR	252	50	5	0,5
Stif. FB50X5 from CL at Bulkhead FR 30	S235JR	255	50	5	0,5
Stif. FB50X5 from CL at Bulkhead FR 31	S235JR	253	50	5	0,5
Stif. FB50X5 from CL at Bulkhead FR 31	S235JR	249	50	5	0,5

 $\Sigma$ 

194,2

**Section 114A – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. FB50X5 from CL at Bulkhead FR 32	S235JR	232	50	5	0,5
Stif. FB50X5 from CL at Bulkhead FR 32	S235JR	265	50	5	0,5
Stif. FB50X5 from CL at Bulkhead FR 32	S235JR	255	50	5	0,5
Stif. FB50X5 from CL at Bulkhead FR 33	S235JR	231	50	5	0,4
Stif. FB50X5 from CL at Bulkhead FR 33	S235JR	72	50	5	0,1
Stif. FB50X5 from CL at Bulkhead FR 33	S235JR	72	50	5	0,1
Stif. FB50X5 from CL at Bulkhead FR 34	S235JR	189	50	5	0,4
Stif. FB50X5 from CL at Bulkhead FR 34	S235JR	189	50	5	0,4
Stif. FB50X5 from CL at Bulkhead FR 35	S235JR	191	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 36	S235JR	187	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 36	S235JR	187	50	5	0,4
Stif. FB50X5 from CL at Bulkhead FR 37	S235JR	166	50	5	0,3
Stif. FB50X5 from CL at Bulkhead FR 37	S235JR	166	50	5	0,3
Stif. FB50X5 from CL at Bulkhead FR 37	S235JR	182	50	5	0,3

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5

**Section 114A – Painéis (Shell Stifenner – Longitudinais)**

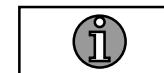
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. FB50X5 from CL at Bulkhead FR 37	S235JR	182	50	5	0,3
Stif. FB50X5 a.b. at Bulkhead FR 38	S235JR	180	50	5	0,3
Stif. FB50X5 a.b. at Bulkhead FR 38	S235JR	180	50	5	0,3
Stif. FB50X5 a.b. at Bulkhead FR 39	S235JR	187	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 39	S235JR	187	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 39	S235JR	183	50	5	0,3
Stif. FB50X5 a.b. at Bulkhead FR 39	S235JR	183	50	5	0,3
Stif. FB50X5 a.b. at Bulkhead FR 40	S235JR	188	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 40	S235JR	188	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 40	S235JR	183	50	5	0,3
Stif. FB50X5 a.b. at Bulkhead FR 40	S235JR	183	50	5	0,3
Stif. AU75X50X5 from CL at	S235JR	1009	75	5	4,8
Stif. AU75X50X5 -2800 from CL at	S235JR	995	75	5	4,7
Stif. AU75X50X5 from CL at	S235JR	996	75	5	4,7

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17,9

**Section 114A – Painéis (Shell Stifenner – Longitudinais)**

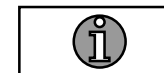
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. AU75X50X5 -2530 from CL at	S235JR	995	75	5	4,7
Stif. AU75X50X5 -2530 from CL at	S235JR	1695	75	5	8
Stif. AU75X50X5 from CL at	S235JR	1000	75	5	4,7
Stif. AU75X50X5 -2275 from CL at	S235JR	995	75	5	4,7
Stif. AU75X50X5 -2275 from CL at	S235JR	3695	75	5	17,4
Stif. AU75X50X5 from CL at	S235JR	1001	75	5	4,7
Stif. AU75X50X5 from CL at	S235JR	1001	75	5	4,7
Stif. AU75X50X5 2275 from CL at	S235JR	995	75	5	4,7
Stif. AU75X50X5 2275 from CL at	S235JR	3695	75	5	17,4
Stif. AU75X50X5 from CL at	S235JR	1000	75	5	4,7
Stif. AU75X50X5 2530 from CL at	S235JR	995	75	5	4,7
Stif. AU75X50X5 2530 from CL at	S235JR	1695	75	5	8
Stif. AU75X50X5 from CL at	S235JR	996	75	5	4,7
Stif. AU75X50X5 2800 from CL at	S235JR	995	75	5	4,7

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98,8

**Section 114A – Painéis (Shell Stifenner – Longitudinais)**

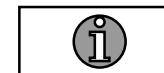
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. AU75X50X5 from CL at	S235JR	1009	75	5	4,8
Stif. AU75X50X5 -2000 from CL at	S235JR	662	75	5	3,1
Stif. AU75X50X5 -1700 from CL at	S235JR	2051	75	5	9,7
Stif. AU75X50X5 FR 35 at	S235JR	1590	75	5	7,5
Stif. AU75X50X5 -500 from CL at	S235JR	700	75	5	3,3
Stif. AU75X50X5 FR 39 at	S235JR	793	75	5	3,7
Stif. AU75X50X5 -250 from CL at	S235JR	996	75	5	4,7
Stif. AU75X50X5 FR 40+295 at	S235JR	1000	75	5	4,7
Stif. AU75X50X5 FR 40+595 at	S235JR	1000	75	5	4,7
Stif. AU75X50X5 FR 39 at	S235JR	1093	75	5	5,1
Stif. AU75X50X5 2000 from CL at	S235JR	5957	75	5	28,1
Stif. AU75X50X5 2000 from CL at	S235JR	662	75	5	3,1
Stif. FB75X5 FR 30 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB75X5 FR 30 at Deck 1500 above base	S235JR	80	75	5	0,2

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82,9

**Section 114A – Painéis (Shell Stifenner – Longitudinais)**

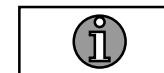
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. FB75X5 FR 30 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB75X5 FR 30 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB75X5 FR 30 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB75X5 FR 31 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB75X5 FR 31 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB75X5 FR 31 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB75X5 FR 31 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB75X5 FR 31 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB75X5 FR 36 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB75X5 FR 36 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB75X5 FR 36 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB75X5 FR 36 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB75X5 FR 37 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB75X5 FR 37 at Deck 1500 above base	S235JR	80	75	5	0,2

 $\Sigma$ 

2,8

**Section 114A – Painéis (Shell Stifenner – Longitudinais)**


Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. FB75X5 FR 37 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB75X5 FR 37 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB75X5 FR 39 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB75X5 FR 33 at Deck 1500 above base	S235JR	83	75	5	0,2
Stif. FB75X5 FR 32 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB75X5 FR 32 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB75X5 FR 32 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB50X5 from CL at Bulkhead FR 30	S235JR	255	50	5	0,5
Stif. AU75X50X5 -550 from CL at	S235JR	995	75	5	4,7
Stif. FB50X5 from CL at Bulkhead FR 32	S235JR	255	50	5	0,5
Stif. FB50X5 from CL at Bulkhead FR 34	S235JR	195	50	5	0,4
Stif. FB50X5 from CL at Bulkhead FR 34	S235JR	255	50	5	0,5
Stif. AU75X50X5 -2000 from CL at	S235JR	5957	75	5	28,1
Stif. AU75X50X5 -1700 from CL at	S235JR	5650	75	5	26,6

 $\Sigma$ 

62,7

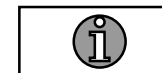


**Section 114A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. AU75X50X5 -1400 from CL at	S235JR	945	75	5	4,5
Stif. AU75X50X5 -1400 from CL at	S235JR	1915	75	5	9
Stif. AU75X50X5 -1400 from CL at	S235JR	3150	75	5	14,8
Stif. AU75X50X5 -1400 from CL at	S235JR	3046	75	5	14,3
Stif. AU75X50X5 FR 30+250 at	S235JR	895	75	5	4,1
Stif. AU75X50X5 FR 31 at	S235JR	895	75	5	4,1
Stif. AU75X50X5 FR 31+800 at	S235JR	895	75	5	4,2
Stif. AU75X50X5 -1100 from CL at	S235JR	2700	75	5	12,7
Stif. AU75X50X5 -1100 from CL at	S235JR	1195	75	5	5,6
Stif. AU75X50X5 -1100 from CL at	S235JR	4186	75	5	19,7
Stif. AU75X50X5 -1100 from CL at	S235JR	945	75	5	4,5
Stif. AU75X50X5 FR 33 at	S235JR	1145	75	5	5,3
Stif. AU75X50X5 FR 33+810 at	S235JR	1145	75	5	5,3
Stif. AU75X50X5 -800 from CL at	S235JR	4186	75	5	19,7
				Σ	127,8

**Section 114A – Painéis (Shell Stifenner – Longitudinais)**

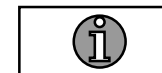
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. AU75X50X5 -800 from CL at	S235JR	3695	75	5	17,4
Stif. AU75X50X5 -800 from CL at	S235JR	3000	75	5	14
Stif. AU75X50X5 -500 from CL at	S235JR	3695	75	5	17,4
Stif. AU75X50X5 -500 from CL at	S235JR	996	75	5	4,7
Stif. AU75X50X5 -500 from CL at	S235JR	995	75	5	4,6
Stif. AU75X50X5 FR 36 at	S235JR	791	75	5	3,7
Stif. AU75X50X5 FR 37 at	S235JR	791	75	5	3,7
Stif. AU75X50X5 FR 34 at	S235JR	1040	75	5	4,9
Stif. AU75X50X5 -250 from CL at	S235JR	995	75	5	4,6
Stif. AU75X50X5 -250 from CL at	S235JR	4695	75	5	22,1
Stif. AU75X50X5 -250 from CL at	S235JR	995	75	5	4,7
Stif. AU75X50X5 -3 from CL at	S235JR	2996	75	5	14,1
Stif. AU75X50X5 -3 from CL at	S235JR	1995	75	5	9,4
Stif. AU75X50X5 -3 from CL at	S235JR	4695	75	5	22,1

 $\Sigma$ 

147,4

**Section 114A – Painéis (Shell Stifenner – Longitudinais)**

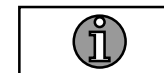
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. AU75X50X5 FR 40 at	S235JR	1590	75	5	7,5
Stif. AU75X50X5 250 from CL at	S235JR	996	75	5	4,7
Stif. AU75X50X5 250 from CL at	S235JR	995	75	5	4,6
Stif. AU75X50X5 250 from CL at	S235JR	2850	75	5	13,4
Stif. AU75X50X5 250 from CL at	S235JR	2845	75	5	13,4
Stif. AU75X50X5 250 from CL at	S235JR	995	75	5	4,7
Stif. AU75X50X5 FR 37 at	S235JR	791	75	5	3,7
Stif. AU75X50X5 500 from CL at	S235JR	995	75	5	4,6
Stif. AU75X50X5 500 from CL at	S235JR	3695	75	5	17,4
Stif. AU75X50X5 500 from CL at	S235JR	1185	75	5	5,6
Stif. AU75X50X5 500 from CL at	S235JR	996	75	5	4,7
Stif. AU75X50X5 500 from CL at	S235JR	700	75	5	3,3
Stif. AU75X50X5 FR 38+300 at	S235JR	595	75	5	2,8
Stif. AU75X50X5 800 from CL at	S235JR	3695	75	5	17,4

 $\Sigma$ 

107,8

**Section 114A – Painéis (Shell Stifenner – Longitudinais)**

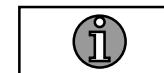
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. AU75X50X5 800 from CL at	S235JR	300	75	5	1,4
Stif. AU75X50X5 800 from CL at	S235JR	4186	75	5	19,7
Stif. AU75X50X5 800 from CL at	S235JR	2000	75	5	9,4
Stif. AU75X50X5 FR 33+810 at	S235JR	1145	75	5	5,3
Stif. AU75X50X5 FR 33 at	S235JR	1145	75	5	5,3
Stif. AU75X50X5 1100 from CL at	S235JR	945	75	5	4,5
Stif. AU75X50X5 1100 from CL at	S235JR	2700	75	5	12,7
Stif. AU75X50X5 1100 from CL at	S235JR	4186	75	5	19,7
Stif. AU75X50X5 1100 from CL at	S235JR	1195	75	5	5,6
Stif. AU75X50X5 FR 30+250 at	S235JR	895	75	5	4,1
Stif. AU75X50X5 FR 31 at	S235JR	895	75	5	4,1
Stif. AU75X50X5 FR 31+800 at	S235JR	895	75	5	4,2
Stif. AU75X50X5 1400 from CL at	S235JR	945	75	5	4,5
Stif. AU75X50X5 1400 from CL at	S235JR	3046	75	5	14,3

 $\Sigma$ 

114,8


**Section 114A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. AU75X50X5 1400 from CL at	S235JR	3150	75	5	14,8
Stif. AU75X50X5 1400 from CL at	S235JR	1915	75	5	9
Stif. AU75X50X5 1700 from CL at	S235JR	5650	75	5	26,6
Stif. AU75X50X5 1700 from CL at	S235JR	2045	75	5	9,6
Stif. FB75X5 FR 32 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB75X5 FR 33 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB75X5 FR 33 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB75X5 FR 34 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB75X5 FR 34 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB75X5 FR 35 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB75X5 FR 35 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB75X5 FR 35 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB75X5 FR 35 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB75X5 FR 35 at Deck 1500 above base	S235JR	80	75	5	0,2

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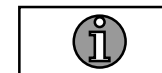
62

**Section 114A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. FB75X5 FR 35 at Deck 1500 above base	S235JR	80	75	5	0,2
Stif. FB50X5 from CL at Bulkhead FR 33	S235JR	231	50	5	0,4
Stif. FB50X5 from CL at Bulkhead FR 35	S235JR	191	50	5	0,4
Stif. AU75X50X5 FR 36 at	S235JR	791	75	5	3,7
Stif. HP80X6 1200 a.b. at Bulkhead -2000 from CL	Grade A 235	3695	80	6	18
Stif. HP80X6 1200 a.b. at Bulkhead 2000 from CL	Grade A 235	3695	80	6	18
Stif. HP80X6 1700 from CL at Bulkhead FR 31	Grade A 235	435	80	6	2,1
Stif. HP80X6 -1700 from CL at Bulkhead FR 31	Grade A 235	440	80	6	2,1
Stif. HP80X6 1400 from CL at Bulkhead FR 31	Grade A 235	549	80	6	2,6
Stif. HP80X6 -1400 from CL at Bulkhead FR 31	Grade A 235	561	80	6	2,6
Stif. HP80X6 1100 from CL at Bulkhead FR 31	Grade A 235	689	80	6	3,2
Stif. HP80X6 -1100 from CL at Bulkhead FR 31	Grade A 235	706	80	6	3,3
Stif. HP80X6 800 from CL at Bulkhead FR 31	Grade A 235	853	80	6	4,2
Stif. HP80X6 -800 from CL at Bulkhead FR 31	Grade A 235	877	80	6	4,3
				Σ	65,1

**Section 114A – Painéis (Shell Stifenner – Longitudinais)**

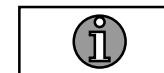
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. HP80X6 500 from CL at Bulkhead FR 31	Grade A 235	993	80	6	4,8
Stif. HP80X6 -500 from CL at Bulkhead FR 31	Grade A 235	1022	80	6	5
Stif. HP80X6 250 from CL at Bulkhead FR 31	Grade A 235	1110	80	6	5,4
Stif. HP80X6 -250 from CL at Bulkhead FR 31	Grade A 235	1144	80	6	5,6
Stif. HP80X6 from CL at Bulkhead FR 32	Grade A 235	726	80	6	3,5
Stif. HP80X6 from CL at Bulkhead FR 32	Grade A 235	726	80	6	3,5
Stif. HP80X6 -1400 from CL at Bulkhead FR 33	Grade A 235	653	80	6	3,2
Stif. HP80X6 1400 from CL at Bulkhead FR 33	Grade A 235	653	80	6	3,2
Stif. HP80X6 from CL at Bulkhead FR 33	Grade A 235	689	80	6	3,3
Stif. HP80X6 from CL at Bulkhead FR 33	Grade A 235	689	80	6	3,3
Stif. HP80X6 -1100 from CL at Bulkhead FR 33	Grade A 235	808	80	6	3,8
Stif. HP80X6 1100 from CL at Bulkhead FR 33	Grade A 235	808	80	6	3,8
Stif. HP80X6 -800 from CL at Bulkhead FR 33	Grade A 235	988	80	6	4,7
Stif. HP80X6 800 from CL at Bulkhead FR 33	Grade A 235	988	80	6	4,7

 $\Sigma$ 

57,8

**Section 114A – Painéis (Shell Stifenner – Longitudinais)**


Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. HP80X6 -500 from CL at Bulkhead FR 33	Grade A 235	1168	80	6	5,6
Stif. HP80X6 500 from CL at Bulkhead FR 33	Grade A 235	1168	80	6	5,6
Stif. HP80X6 -250 from CL at Bulkhead FR 33	Grade A 235	1343	80	6	6,5
Stif. HP80X6 250 from CL at Bulkhead FR 33	Grade A 235	1343	80	6	6,5
Stif. HP80X6 from CL at Bulkhead FR 38	Grade A 235	309	80	6	1,5
Stif. HP80X6 from CL at Bulkhead FR 38	Grade A 235	266	80	6	1,3
Shell stif. HP80X6 1317/1402	Grade A 235	1013	80	6	5,1
Shell stif. HP80X6 -222/-157	Grade A 235	1998	80	6	9,9
Shell stif. HP80X6 1317/1402	Grade A 235	1013	80	6	5,1
Stif. HP80X6 frame 34+330 at Bulkhead -800 from CL	Grade A 235	1070	80	6	5,2
Stif. HP80X6 1200 a.b. at Bulkhead -4 from CL	Grade A 235	1695	80	6	8,2
Stif. HP80X6 1200 a.b. at Bulkhead -4 from CL	Grade A 235	1995	80	6	9,7
Stif. HP80X6 1200 a.b. at Bulkhead -4 from CL	Grade A 235	995	80	6	4,8
Stif. HP80X6 1200 a.b. at Bulkhead -4 from CL	Grade A 235	995	80	6	4,8

 $\Sigma$ 


79,8




**Section 114A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. HP80X6 1200 a.b. at Bulkhead -4 from CL	Grade A 235	995	80	6	4,8
Stif. HP80X6 1200 a.b. at Bulkhead -4 from CL	Grade A 235	4995	80	6	24,3
Stif. HP80X6 900 a.b. at Bulkhead -4 from CL	Grade A 235	1695	80	6	8,2
Stif. HP80X6 900 a.b. at Bulkhead -4 from CL	Grade A 235	995	80	6	4,8
Stif. HP80X6 900 a.b. at Bulkhead -4 from CL	Grade A 235	4995	80	6	24,3
Stif. HP80X6 600 a.b. at Bulkhead -4 from CL	Grade A 235	1695	80	6	8,2
Stif. HP80X6 600 a.b. at Bulkhead -4 from CL	Grade A 235	995	80	6	4,8
Stif. HP80X6 600 a.b. at Bulkhead -4 from CL	Grade A 235	4995	80	6	24,3
Stif. HP80X6 300 a.b. at Bulkhead -4 from CL	Grade A 235	1695	80	6	8,2
Stif. HP80X6 300 a.b. at Bulkhead -4 from CL	Grade A 235	1995	80	6	9,7
Stif. HP80X6 300 a.b. at Bulkhead -4 from CL	Grade A 235	995	80	6	4,8
Stif. HP80X6 300 a.b. at Bulkhead -4 from CL	Grade A 235	995	80	6	4,8
Stif. HP80X6 300 a.b. at Bulkhead -4 from CL	Grade A 235	995	80	6	4,8
Stif. HP80X6 300 a.b. at Bulkhead -4 from CL	Grade A 235	4995	80	6	24,3
				Σ	160,3

**Section 114A – Painéis (Shell Stifenner – Longitudinais)**

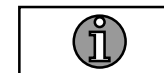
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. HP80X6 0 a.b. at Bulkhead -4 from CL	Grade A 235	995	80	6	4,8
Stif. HP80X6 0 a.b. at Bulkhead -4 from CL	Grade A 235	995	80	6	4,8
Stif. HP80X6 0 a.b. at Bulkhead -4 from CL	Grade A 235	4995	80	6	24,3
Shell stif. HP80X6 -492/-444	Grade A 235	996	80	6	5
Stif. HP80X6 from CL at Bulkhead FR 34	Grade A 235	495	80	6	2,4
Stif. HP80X6 from CL at Bulkhead FR 34	Grade A 235	495	80	6	2,4
Stif. HP80X6 -550 from CL at Bulkhead FR 34	Grade A 235	1172	80	6	5,7
Stif. HP80X6 -250 from CL at Bulkhead FR 34	Grade A 235	1356	80	6	6,5
Stif. HP80X6 from CL at Bulkhead FR 35	Grade A 235	447	80	6	2,2
Stif. HP80X6 from CL at Bulkhead FR 35	Grade A 235	449	80	6	2,2
Stif. HP80X6 -1400 from CL at Bulkhead FR 35	Grade A 235	543	80	6	2,6
Stif. HP80X6 1400 from CL at Bulkhead FR 35	Grade A 235	542	80	6	2,6
Stif. HP80X6 998 from CL at Bulkhead FR 35	Grade A 235	762	80	6	3,7
Stif. HP80X6 -998 from CL at Bulkhead FR 35	Grade A 235	834	80	6	4,1
				Σ	73,3

**Section 114A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. HP80X6 800 from CL at Bulkhead FR 35	Grade A 235	963	80	6	4,7
Stif. HP80X6 500 from CL at Bulkhead FR 35	Grade A 235	1129	80	6	5,4
Stif. HP80X6 -500 from CL at Bulkhead FR 35	Grade A 235	1170	80	6	5,6
Stif. HP80X6 250 from CL at Bulkhead FR 35	Grade A 235	1326	80	6	6,5
Stif. HP80X6 -250 from CL at Bulkhead FR 35	Grade A 235	1376	80	6	6,7
Stif. HP80X6 from CL at Bulkhead FR 36	Grade A 235	633	80	6	3,1
Stif. HP80X6 from CL at Bulkhead FR 36	Grade A 235	632	80	6	3,1
Stif. HP80X6 1100 from CL at Bulkhead FR 36	Grade A 235	670	80	6	3,3
Stif. HP80X6 -1100 from CL at Bulkhead FR 36	Grade A 235	683	80	6	3,3
Stif. HP80X6 800 from CL at Bulkhead FR 36	Grade A 235	896	80	6	4,4
Stif. HP80X6 -800 from CL at Bulkhead FR 36	Grade A 235	922	80	6	4,5
Stif. HP80X6 500 from CL at Bulkhead FR 36	Grade A 235	1097	80	6	5,2
Stif. HP80X6 -500 from CL at Bulkhead FR 36	Grade A 235	1136	80	6	5,4
Stif. HP80X6 250 from CL at Bulkhead FR 36	Grade A 235	1286	80	6	6,1
				Σ	67,3

**Section 114A – Painéis (Shell Stifenner – Longitudinais)**

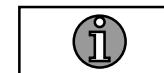
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. HP80X6 -250 from CL at Bulkhead FR 36	Grade A 235	1335	80	6	6,4
Shell stif. HP80X6 -1845/-1693	Grade A 235	1006	80	6	5,1
Shell stif. HP80X6 1692/1844	Grade A 235	1006	80	6	5,1
Shell stif. HP80X6 1284/1395	Grade A 235	1001	80	6	5
Shell stif. HP80X6 1066/1164	Grade A 235	999	80	6	5
Shell stif. HP80X6 626/699	Grade A 235	996	80	6	5
Shell stif. HP80X6 867/951	Grade A 235	998	80	6	5
Shell stif. HP80X6 420/479	Grade A 235	996	80	6	5
Shell stif. HP80X6 156/221	Grade A 235	1998	80	6	9,9
Shell stif. HP80X6 -1053/-1001	Grade A 235	1696	80	6	8,4
Shell stif. HP80X6 -1165/-1067	Grade A 235	999	80	6	5
Shell stif. HP80X6 -1328/-1258	Grade A 235	1698	80	6	8,5
Shell stif. HP80X6 -235/-189	Grade A 235	998	80	6	5
Shell stif. HP80X6 -243/-196	Grade A 235	1998	80	6	9,9

 $\Sigma$ 

88,3

**Section 114A – Painéis (Shell Stifenner – Longitudinais)**

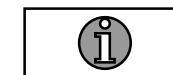
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell stif. HP80X6 -249/-209	Grade A 235	1698	80	6	8,4
Shell stif. HP80X6 -495/-461	Grade A 235	1697	80	6	8,4
Shell stif. HP80X6 1000/1052	Grade A 235	1696	80	6	8,4
Shell stif. HP80X6 1257/1327	Grade A 235	1696	80	6	8,4
Shell stif. HP80X6 181/234	Grade A 235	1998	80	6	9,9
Shell stif. HP80X6 195/242	Grade A 235	1998	80	6	9,9
Shell stif. HP80X6 208/248	Grade A 235	1698	80	6	8,4
Shell stif. HP80X6 460/495	Grade A 235	1697	80	6	8,4
Shell stif. HP80X6 -231/-182	Grade A 235	998	80	6	5
Shell stif. HP80X6 -226/-174	Grade A 235	997	80	6	5
Shell stif. HP80X6 173/225	Grade A 235	997	80	6	5
Shell stif. HP80X6 -487/-434	Grade A 235	996	80	6	5
Shell stif. HP80X6 -480/-421	Grade A 235	996	80	6	5
Shell stif. HP80X6 -1930/-1794	Grade A 235	1005	80	6	5,1



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100,3

**Section 114A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. HP80X6 1793/1929	Grade A 235	1005	80	6	5,1
Shell stif. HP80X6 -952/-868	Grade A 235	998	80	6	5
Shell stif. HP80X6 -1396/-1285	Grade A 235	1001	80	6	5
Shell stif. HP80X6 -1592/-1464	Grade A 235	1004	80	6	5,1
Shell stif. HP80X6 1463/1591	Grade A 235	1004	80	6	5,1
Stif. HP80X6 frame 34+670 at Bulkhead -800 from CL	Grade A 235	1070	80	6	5,2
Stif. FB100X8 a.b. at Bulkhead FR 31	S235JR	2119	100	8	13,2
Stif. FB100X8 a.b. at Bulkhead FR 31	S235JR	2192	100	8	13,7
Stif. FB100X8 a.b. at Bulkhead FR 33	S235JR	1946	100	8	12,1
Stif. FB100X8 a.b. at Bulkhead FR 33	S235JR	1946	100	8	12,1
Stif. FB100X8 a.b. at Bulkhead FR 34	S235JR	868	100	8	5,4
Stif. FB100X8 a.b. at Bulkhead FR 35	S235JR	2073	100	8	12,8
Stif. FB100X8 a.b. at Bulkhead FR 35	S235JR	2139	100	8	13,2
Stif. FB100X8 a.b. at Bulkhead FR 36	S235JR	1736	100	8	10,8
Stif. FB100X8 a.b. at Bulkhead FR 36	S235JR	1798	100	8	11,2

**Σ 135****Σ *Peso (Kg)* 2944,9**  
*Total*

<i>From</i>	<i>to</i>	<i>Quantity</i>	<i>From</i>	<i>to</i>	<i>Quantity</i>
1	2	12,6342 t	9	13	12,6342 t
2	 3	4,3642 t ( <i>shell plates</i> ) 2,9449 t ( <i>shell stifenner</i> )	-----	-----	-----
2	6	5,3251 t	-----	-----	-----
3	 4	2,9449 t	-----	-----	-----
3/4	5	(4,3642 + 2,9449) t 7,3091 t	-----	-----	-----
5	9	7,3091 t	-----	-----	-----
6	7	5,3251 t	-----	-----	-----
7	8	5,3251 t	-----	-----	-----
8	9	5,3251 t	-----	-----	-----
<b>Section 114A</b>				<b>Σ</b>	12,6342 t

# *Section 114*

*Section 114B – Painéis (Shell Plate)*




## Section 114B – Painéis (Shell Plate)

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
<i>SHELLPLATE</i>	Grade A 235	5949	961	5	192,9
<i>SHELLPLATE</i>	Grade A 235	5949	961	5	192,9
<i>SHELLPLATE</i>	Grade A 235	5982	1963	5	449,8
<i>SHELLPLATE</i>	Grade A 235	5982	1963	5	449,8
<i>SHELLPLATE</i>	Grade A 235	5890	925	5	180,5
<i>SHELLPLATE</i>	Grade A 235	5890	925	5	180,5
<i>SHELLPLATE</i>	Grade A 235	5907	1638	5	355,8
<i>SHELLPLATE</i>	Grade A 235	5907	1638	5	355,8
				Σ	2358
				Σ <i>Peso (Kg)</i> <i>Total</i>	2358

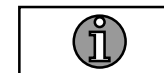
***Section 114B – Painéis (Shell Stifenner – Longitudinais)***

**Section 114B – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. HP80X6 1715/2111	Grade A 235	5913	80	6	28,9
Shell stif. HP80X6 1715/2111	Grade A 235	5913	80	6	28,9
Shell stif. HP80X6 1905/2001	Grade A 235	1715	80	6	8,5
Shell stif. HP80X6 1905/2001	Grade A 235	1715	80	6	8,5
Shell stif. HP80X6 2132/2352	Grade A 235	5911	80	6	28,9
Shell stif. HP80X6 2132/2352	Grade A 235	5911	80	6	28,9
Shell stif. HP80X6 2085/2606	Grade A 235	5952	80	6	29,1
Shell stif. HP80X6 2085/2606	Grade A 235	5952	80	6	29,1
Shell stif. HP80X6 2327/2496	Grade A 235	2899	80	6	14,2
Shell stif. HP80X6 2327/2496	Grade A 235	2899	80	6	14,2
Shell stif. HP80X6 2429/2576	Grade A 235	5911	80	6	28,9
Shell stif. HP80X6 2429/2576	Grade A 235	5911	80	6	28,9
Shell stif. HP80X6 2553/2836	Grade A 235	5951	80	6	29,1
Shell stif. HP80X6 2553/2836	Grade A 235	5951	80	6	29,1
				Σ	335,2


**Section 114B – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell stif. HP80X6 2759/2830	Grade A 235	5911	80	6	28,9
Shell stif. HP80X6 2759/2830	Grade A 235	5911	80	6	28,9
Shell stif. HP80X6 2808/3043	Grade A 235	5952	80	6	29,1
Shell stif. HP80X6 2808/3043	Grade A 235	5952	80	6	29,1
Shell stif. HP80X6 3089/3122	Grade A 235	5910	80	6	28,9
Shell stif. HP80X6 3089/3122	Grade A 235	5910	80	6	28,9
Shell stif. HP80X6 3102/3256	Grade A 235	5954	80	6	29,1
Shell stif. HP80X6 3102/3256	Grade A 235	5954	80	6	29,1
Shell stif. HP80X6 3420/3438	Grade A 235	5908	80	6	28,9
Shell stif. HP80X6 3420/3438	Grade A 235	5908	80	6	28,9
Shell stif. HP80X6 3419/3487	Grade A 235	5958	80	6	29,1
Shell stif. HP80X6 3419/3487	Grade A 235	5958	80	6	29,1
Shell stif. HP80X6 3750/3767	Grade A 235	5906	80	6	28,9
Shell stif. HP80X6 3750/3767	Grade A 235	5906	80	6	28,9

 $\Sigma$ 

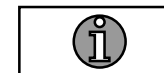
405,8

**Section 114B – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>	
Shell stif. HP80X6 3750/3768	Grade A 235	5959	80	6	29,1	
Shell stif. HP80X6 3750/3768	Grade A 235	5959	80	6	29,1	
Shell stif. HP80X6 4080 a.b.	Grade A 235	5904	80	6	28,7	
Shell stif. HP80X6 4080 a.b.	Grade A 235	5904	80	6	28,7	
Shell stif. HP80X6 4080 a.b.	Grade A 235	5959	80	6	28,9	
Shell stif. HP80X6 4080 a.b.	Grade A 235	5959	80	6	28,9	
Stif. PI76.1X5 -1998 from CL at	S235JR	2470	76	5	21,7	
Stif. PI60.3X5 -1600 from CL at	S235JR	2470	60	5	16,8	
Stif. PI60.3X5 -998 from CL at	S235JR	2470	60	5	16,8	
Stif. PI76.1X5 1998 from CL at	S235JR	2470	76	5	21,7	
Stif. PI60.3X5 1600 from CL at	S235JR	2470	60	5	16,8	
Stif. PI60.3X5 998 from CL at	S235JR	2470	60	5	16,8	
Stif. FB50X5 -3400 from CL at Bulkhead FR 30	S235JR	80	50	5	0,2	
Stif. FB50X5 -800 from CL at Bulkhead FR 30	S235JR	80	50	5	0,2	
					$\Sigma$	284,4

**Section 114B – Painéis (Shell Stifenner – Longitudinais)**

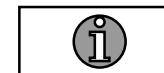
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. FB50X5 800 from CL at Bulkhead FR 30	S235JR	80	50	5	0,2
Stif. FB50X5 3400 from CL at Bulkhead FR 30	S235JR	80	50	5	0,2
Stif. FB50X5 a.b. at Bulkhead FR 30	S235JR	186	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 30	S235JR	186	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 30	S235JR	229	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 30	S235JR	229	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 30	S235JR	202	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 30	S235JR	202	50	5	0,4
Stif. FB50X5 -3275 from CL at Bulkhead FR 31	S235JR	135	50	5	0,2
Stif. FB50X5 3275 from CL at Bulkhead FR 31	S235JR	135	50	5	0,2
Stif. FB50X5 -500 from CL at Bulkhead FR 31	S235JR	80	50	5	0,2
Stif. FB50X5 500 from CL at Bulkhead FR 31	S235JR	80	50	5	0,2
Stif. FB50X5 a.b. at Bulkhead FR 31	S235JR	324	50	5	0,6
Stif. FB50X5 a.b. at Bulkhead FR 31	S235JR	324	50	5	0,6

 $\Sigma$ 

4,8

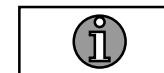
**Section 114B – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. FB50X5 a.b. at Bulkhead FR 31	S235JR	186	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 31	S235JR	186	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 31	S235JR	225	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 31	S235JR	227	50	5	0,4
Stif. FB50X5 -3250 from CL at Bulkhead FR 32	S235JR	135	50	5	0,2
Stif. FB50X5 3250 from CL at Bulkhead FR 32	S235JR	135	50	5	0,2
Stif. FB50X5 -500 from CL at Bulkhead FR 32	S235JR	80	50	5	0,2
Stif. FB50X5 500 from CL at Bulkhead FR 32	S235JR	80	50	5	0,2
Stif. FB50X5 a.b. at Bulkhead FR 32	S235JR	187	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 32	S235JR	187	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 32	S235JR	218	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 32	S235JR	218	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 32	S235JR	211	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 32	S235JR	211	50	5	0,4

**Σ****4,8**

**Section 114B – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. FB50X5 -3100 from CL at Bulkhead FR 33	S235JR	80	50	5	0,2
Stif. FB50X5 -2275 from CL at Bulkhead FR 33	S235JR	80	50	5	0,2
Stif. FB50X5 -500 from CL at Bulkhead FR 33	S235JR	80	50	5	0,2
Stif. FB50X5 500 from CL at Bulkhead FR 33	S235JR	80	50	5	0,2
Stif. FB50X5 2275 from CL at Bulkhead FR 33	S235JR	80	50	5	0,2
Stif. FB50X5 3100 from CL at Bulkhead FR 33	S235JR	80	50	5	0,2
Stif. FB50X5 a.b. at Bulkhead FR 33	S235JR	187	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 33	S235JR	187	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 33	S235JR	221	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 33	S235JR	221	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 33	S235JR	209	50	5	0,4
Stif. FB50X5 -2950 from CL at Bulkhead FR 34	S235JR	135	50	5	0,2
Stif. FB50X5 2 from CL at Bulkhead FR 34	S235JR	80	50	5	0,2
Stif. FB50X5 2950 from CL at Bulkhead FR 34	S235JR	135	50	5	0,2

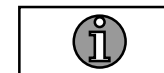
 $\Sigma$ 

3,8



**Section 114B – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. FB50X5 -2275 from CL at Bulkhead FR 34	S235JR	80	50	5	0,2
Stif. FB50X5 2275 from CL at Bulkhead FR 34	S235JR	80	50	5	0,2
Stif. FB50X5 a.b. at Bulkhead FR 34	S235JR	354	50	5	0,7
Stif. FB50X5 a.b. at Bulkhead FR 34	S235JR	354	50	5	0,7
Stif. FB50X5 a.b. at Bulkhead FR 34	S235JR	188	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 34	S235JR	188	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 34	S235JR	218	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 34	S235JR	218	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 34	S235JR	190	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 34	S235JR	190	50	5	0,4
Stif. FB50X5 -2800 from CL at Bulkhead FR 35	S235JR	80	50	5	0,2
Stif. FB50X5 -2000 from CL at Bulkhead FR 35	S235JR	80	50	5	0,2
Stif. FB50X5 -3 from CL at Bulkhead FR 35	S235JR	80	50	5	0,2
Stif. FB50X5 2000 from CL at Bulkhead FR 35	S235JR	80	50	5	0,2

 $\Sigma$ 

5

**Section 114B – Painéis (Shell Stifenner – Longitudinais)**

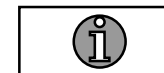
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. FB50X5 2800 from CL at Bulkhead FR 35	S235JR	80	50	5	0,2
Stif. FB50X5 a.b. at Bulkhead FR 35	S235JR	352	50	5	0,6
Stif. FB50X5 a.b. at Bulkhead FR 35	S235JR	352	50	5	0,6
Stif. FB50X5 a.b. at Bulkhead FR 35	S235JR	188	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 35	S235JR	188	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 35	S235JR	215	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 35	S235JR	215	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 35	S235JR	191	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 35	S235JR	191	50	5	0,4
Stif. FB50X5 -2650 from CL at Bulkhead FR 36	S235JR	135	50	5	0,2
Stif. FB50X5 2650 from CL at Bulkhead FR 36	S235JR	135	50	5	0,2
Stif. FB50X5 -2000 from CL at Bulkhead FR 36	S235JR	80	50	5	0,2
Stif. FB50X5 -3 from CL at Bulkhead FR 36	S235JR	80	50	5	0,2
Stif. FB50X5 2000 from CL at Bulkhead FR 36	S235JR	80	50	5	0,2

 $\Sigma$ 

4,8

**Section 114B – Painéis (Shell Stifenner – Longitudinais)**

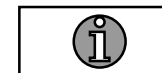
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. FB50X5 a.b. at Bulkhead FR 36	S235JR	356	50	5	0,7
Stif. FB50X5 a.b. at Bulkhead FR 36	S235JR	356	50	5	0,7
Stif. FB50X5 a.b. at Bulkhead FR 36	S235JR	188	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 36	S235JR	188	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 36	S235JR	212	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 36	S235JR	212	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 36	S235JR	191	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 36	S235JR	191	50	5	0,4
Stif. FB50X5 -2530 from CL at Bulkhead FR 37	S235JR	80	50	5	0,2
Stif. FB50X5 -1700 from CL at Bulkhead FR 37	S235JR	80	50	5	0,2
Stif. FB50X5 -3 from CL at Bulkhead FR 37	S235JR	80	50	5	0,2
Stif. FB50X5 1700 from CL at Bulkhead FR 37	S235JR	80	50	5	0,2
Stif. FB50X5 2530 from CL at Bulkhead FR 37	S235JR	80	50	5	0,2
Stif. FB50X5 a.b. at Bulkhead FR 37	S235JR	346	50	5	0,7

 $\Sigma$ 

5,5

**Section 114B – Painéis (Shell Stifenner – Longitudinais)**

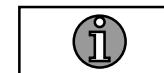
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. FB50X5 a.b. at Bulkhead FR 37	S235JR	346	50	5	0,7
Stif. FB50X5 a.b. at Bulkhead FR 37	S235JR	189	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 37	S235JR	189	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 37	S235JR	209	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 37	S235JR	209	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 37	S235JR	192	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 37	S235JR	192	50	5	0,4
Stif. FB50X5 -2125 from CL at Bulkhead FR 39	S235JR	135	50	5	0,2
Stif. FB50X5 2125 from CL at Bulkhead FR 39	S235JR	135	50	5	0,2
Stif. FB50X5 -3 from CL at Bulkhead FR 39	S235JR	80	50	5	0,2
Stif. FB50X5 a.b. at Bulkhead FR 39	S235JR	324	50	5	0,6
Stif. FB50X5 a.b. at Bulkhead FR 39	S235JR	324	50	5	0,6
Stif. FB50X5 a.b. at Bulkhead FR 39	S235JR	189	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 39	S235JR	189	50	5	0,4

 $\Sigma$ 

5,7

**Section 114B – Painéis (Shell Stifenner – Longitudinais)**

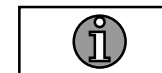
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. FB50X5 a.b. at Bulkhead FR 39	S235JR	203	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 39	S235JR	203	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 39	S235JR	192	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 39	S235JR	192	50	5	0,4
Stif. FB50X5 -2000 from CL at Bulkhead FR 40	S235JR	80	50	5	0,2
Stif. FB50X5 -3 from CL at Bulkhead FR 40	S235JR	80	50	5	0,2
Stif. FB50X5 2000 from CL at Bulkhead FR 40	S235JR	80	50	5	0,2
Stif. FB50X5 a.b. at Bulkhead FR 40	S235JR	381	50	5	0,7
Stif. FB50X5 a.b. at Bulkhead FR 40	S235JR	381	50	5	0,7
Stif. FB50X5 a.b. at Bulkhead FR 40	S235JR	190	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 40	S235JR	190	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 40	S235JR	201	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 40	S235JR	201	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 40	S235JR	192	50	5	0,4

 $\Sigma$ 

5,6


**Section 114B – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. FB50X5 a.b. at Bulkhead FR 40	S235JR	192	50	5	0,4
Stif. FB50X5 a.b. at Bulkhead FR 33	S235JR	209	50	5	0,4
Stif. HP80X6 4080 a.b. at Bulkhead FR 38	Grade A 235	350	80	6	1,6
Stif. HP80X6 4080 a.b. at Bulkhead FR 38	Grade A 235	355	80	6	1,7
Stif. HP80X6 4049 a.b. at Bulkhead FR 38	Grade A 235	488	80	6	2,2
Stif. HP80X6 -250 from CL at Bulkhead FR 38	Grade A 235	483	80	6	2,3
Stif. HP80X6 250 from CL at Bulkhead FR 38	Grade A 235	483	80	6	2,3
Stif. HP80X6 a.b. at Bulkhead FR 38	Grade A 235	297	80	6	1,4
Stif. HP80X6 a.b. at Bulkhead FR 38	Grade A 235	297	80	6	1,4
Stif. HP80X6 3737 a.b. at Bulkhead FR 38	Grade A 235	988	80	6	4,7
Stif. HP80X6 from CL at Bulkhead FR 38	Grade A 235	986	80	6	4,7
Stif. HP80X6 from CL at Bulkhead FR 38	Grade A 235	986	80	6	4,7
Stif. HP80X6 a.b. at Bulkhead FR 38	Grade A 235	240	80	6	1,1
Stif. HP80X6 a.b. at Bulkhead FR 38	Grade A 235	240	80	6	1,1

 $\Sigma$ 

30

**Section 114B – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. HP80X6 a.b. at Bulkhead FR 38	Grade A 235	377	80	6	1,8
Stif. HP80X6 a.b. at Bulkhead FR 38	Grade A 235	377	80	6	1,8
Stif. HP80X6 from CL at Bulkhead FR 38	Grade A 235	2066	80	6	10,1
Stif. HP80X6 from CL at Bulkhead FR 38	Grade A 235	2066	80	6	10,1
Stif. HP80X6 -2000 from CL at Bulkhead FR 38	Grade A 235	2112	80	6	10,2
Stif. HP80X6 2000 from CL at Bulkhead FR 38	Grade A 235	2111	80	6	10,2
Stif. HP80X6 1700 from CL at Bulkhead FR 38	Grade A 235	2406	80	6	11,6
Stif. HP80X6 -1700 from CL at Bulkhead FR 38	Grade A 235	2409	80	6	11,7
Stif. HP80X6 a.b. at Bulkhead FR 38	Grade A 235	302	80	6	1,4
Stif. HP80X6 a.b. at Bulkhead FR 38	Grade A 235	302	80	6	1,4
Stif. HP80X6 -800 from CL at Bulkhead FR 38	Grade A 235	2641	80	6	12,9
Stif. HP80X6 -500 from CL at Bulkhead FR 38	Grade A 235	2641	80	6	12,9
Stif. HP80X6 500 from CL at Bulkhead FR 38	Grade A 235	2641	80	6	12,9
Stif. HP80X6 800 from CL at Bulkhead FR 38	Grade A 235	2641	80	6	12,9
				Σ	121,9

**Section 114B – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. HP80X6 1400 from CL at Bulkhead FR 38	Grade A 235	2703	80	6	13,1
Stif. HP80X6 -1400 from CL at Bulkhead FR 38	Grade A 235	2706	80	6	13,1
Stif. HP80X6 from CL at Bulkhead FR 38	Grade A 235	2417	80	6	11,8
Stif. HP80X6 from CL at Bulkhead FR 38	Grade A 235	2417	80	6	11,8
Stif. HP80X6 a.b. at Bulkhead FR 38	Grade A 235	1249	80	6	6
Stif. HP80X6 a.b. at Bulkhead FR 38	Grade A 235	1252	80	6	6
Stif. HP80X6 1762 a.b. at Bulkhead FR 38	Grade A 235	988	80	6	4,8
Stif. HP80X6 -3700 from CL at Deck 4300 above base	Grade A 235	1695	80	6	8,2
Stif. HP80X6 -1700 from CL at Deck 4300 above base	Grade A 235	1696	80	6	8,3
Stif. HP80X6 1700 from CL at Deck 4300 above base	Grade A 235	1696	80	6	8,3
Stif. HP80X6 3700 from CL at Deck 4300 above base	Grade A 235	1695	80	6	8,2
Stif. HP80X6 FR 30+670 at Deck 4300 above base	Grade A 235	396	80	6	1,9
Stif. HP80X6 FR 30+670 at Deck 4300 above base	Grade A 235	396	80	6	1,9
Stif. HP80X6 -2800 from CL at Deck 4300 above base	Grade A 235	2850	80	6	13,9

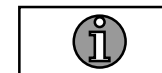
 $\Sigma$ 

117,3



**Section 114B – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. HP80X6 -2530 from CL at Deck 4300 above base	Grade A 235	2850	80	6	13,9
Stif. HP80X6 -2275 from CL at Deck 4300 above base	Grade A 235	2850	80	6	13,9
Stif. HP80X6 -800 from CL at Deck 4300 above base	Grade A 235	2850	80	6	13,9
Stif. HP80X6 -500 from CL at Deck 4300 above base	Grade A 235	2850	80	6	13,9
Stif. HP80X6 500 from CL at Deck 4300 above base	Grade A 235	2850	80	6	13,9
Stif. HP80X6 800 from CL at Deck 4300 above base	Grade A 235	2850	80	6	13,9
Stif. HP80X6 2275 from CL at Deck 4300 above base	Grade A 235	2850	80	6	13,9
Stif. HP80X6 2530 from CL at Deck 4300 above base	Grade A 235	2850	80	6	13,9
Stif. HP80X6 2800 from CL at Deck 4300 above base	Grade A 235	2850	80	6	13,9
Stif. HP80X6 -1400 from CL at Deck 4300 above base	Grade A 235	3200	80	6	15,6
Stif. HP80X6 1400 from CL at Deck 4300 above base	Grade A 235	3200	80	6	15,6
Stif. HP80X6 -250 from CL at Deck 4300 above base	Grade A 235	2914	80	6	14,1
Stif. HP80X6 -3 from CL at Deck 4300 above base	Grade A 235	2914	80	6	14,1
Stif. HP80X6 250 from CL at Deck 4300 above base	Grade A 235	2914	80	6	14,1

**Σ****198,6**

**Section 114B – Painéis (Shell Stifenner – Longitudinais)**

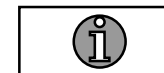
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. HP80X6 -2000 from CL at Deck 4300 above base	Grade A 235	1480	80	6	7,2
Stif. HP80X6 2000 from CL at Deck 4300 above base	Grade A 235	1480	80	6	7,2
Stif. HP80X6 -3400 from CL at Deck 4300 above base	Grade A 235	4695	80	6	22,9
Stif. HP80X6 -1100 from CL at Deck 4300 above base	Grade A 235	4696	80	6	22,9
Stif. HP80X6 1100 from CL at Deck 4300 above base	Grade A 235	4696	80	6	22,9
Stif. HP80X6 3400 from CL at Deck 4300 above base	Grade A 235	4695	80	6	22,9
Stif. HP80X6 -3100 from CL at Deck 4300 above base	Grade A 235	5994	80	6	29,1
Stif. HP80X6 3100 from CL at Deck 4300 above base	Grade A 235	5994	80	6	29,1
Stif. HP80X6 FR 32+500 at Deck 4300 above base	Grade A 235	396	80	6	1,9
Stif. HP80X6 FR 32+500 at Deck 4300 above base	Grade A 235	396	80	6	1,9
Stif. HP80X6 FR 32+220 at Deck 4300 above base	Grade A 235	988	80	6	4,7
Stif. HP80X6 FR 33+500 at Deck 4300 above base	Grade A 235	398	80	6	1,9
Stif. HP80X6 FR 33+500 at Deck 4300 above base	Grade A 235	398	80	6	1,9
Stif. HP80X6 -1700 from CL at Deck 4300 above base	Grade A 235	5996	80	6	29,2

 $\Sigma$ 

205,7

**Section 114B – Painéis (Shell Stifenner – Longitudinais)**

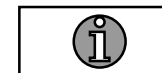
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. HP80X6 1700 from CL at Deck 4300 above base	Grade A 235	5996	80	6	29,2
Stif. HP80X6 -2800 from CL at Deck 4300 above base	Grade A 235	5846	80	6	28,5
Stif. HP80X6 -2530 from CL at Deck 4300 above base	Grade A 235	5846	80	6	28,5
Stif. HP80X6 -2275 from CL at Deck 4300 above base	Grade A 235	5846	80	6	28,5
Stif. HP80X6 -2000 from CL at Deck 4300 above base	Grade A 235	5846	80	6	28,5
Stif. HP80X6 -800 from CL at Deck 4300 above base	Grade A 235	5846	80	6	28,5
Stif. HP80X6 -500 from CL at Deck 4300 above base	Grade A 235	5846	80	6	28,5
Stif. HP80X6 500 from CL at Deck 4300 above base	Grade A 235	5846	80	6	28,5
Stif. HP80X6 800 from CL at Deck 4300 above base	Grade A 235	5846	80	6	28,5
Stif. HP80X6 2000 from CL at Deck 4300 above base	Grade A 235	5846	80	6	28,5
Stif. HP80X6 2275 from CL at Deck 4300 above base	Grade A 235	5846	80	6	28,5
Stif. HP80X6 2530 from CL at Deck 4300 above base	Grade A 235	5846	80	6	28,5
Stif. HP80X6 2800 from CL at Deck 4300 above base	Grade A 235	5846	80	6	28,5
Stif. HP80X6 FR 35+300 at Deck 4300 above base	Grade A 235	399	80	6	1,9

 $\Sigma$ 

373,1

**Section 114B – Painéis (Shell Stifenner – Longitudinais)**

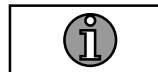
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. HP80X6 FR 35+300 at Deck 4300 above base	Grade A 235	399	80	6	1,9
Stif. HP80X6 from CL at Deck 4300 above base	Grade A 235	3029	80	6	14,7
Stif. HP80X6 from CL at Deck 4300 above base	Grade A 235	3029	80	6	14,7
Stif. HP80X6 -1400 from CL at Deck 4300 above base	Grade A 235	4496	80	6	21,9
Stif. HP80X6 1400 from CL at Deck 4300 above base	Grade A 235	4496	80	6	21,9
Stif. HP80X6 -250 from CL at Deck 4300 above base	Grade A 235	4996	80	6	24,3
Stif. HP80X6 -3 from CL at Deck 4300 above base	Grade A 235	4996	80	6	24,3
Stif. HP80X6 250 from CL at Deck 4300 above base	Grade A 235	4996	80	6	24,3
Stif. HP80X6 -2530 from CL at Deck 4300 above base	Grade A 235	995	80	6	4,8
Stif. HP80X6 2530 from CL at Deck 4300 above base	Grade A 235	995	80	6	4,8
Stif. HP80X6 from CL at Deck 4300 above base	Grade A 235	2025	80	6	9,9
Stif. HP80X6 from CL at Deck 4300 above base	Grade A 235	2025	80	6	9,9
Stif. HP80X6 -2000 from CL at Deck 4300 above base	Grade A 235	2700	80	6	13,1
Stif. HP80X6 -1700 from CL at Deck 4300 above base	Grade A 235	2700	80	6	13,1

 $\Sigma$ 

203,6

**Section 114B – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. HP80X6 -1400 from CL at Deck 4300 above base	Grade A 235	2700	80	6	13,1
Stif. HP80X6 -800 from CL at Deck 4300 above base	Grade A 235	2700	80	6	13,1
Stif. HP80X6 -500 from CL at Deck 4300 above base	Grade A 235	2700	80	6	13,1
Stif. HP80X6 -250 from CL at Deck 4300 above base	Grade A 235	2700	80	6	13,1
Stif. HP80X6 -3 from CL at Deck 4300 above base	Grade A 235	2700	80	6	13,1
Stif. HP80X6 250 from CL at Deck 4300 above base	Grade A 235	2700	80	6	13,1
Stif. HP80X6 500 from CL at Deck 4300 above base	Grade A 235	2700	80	6	13,1
Stif. HP80X6 800 from CL at Deck 4300 above base	Grade A 235	2700	80	6	13,1
Stif. HP80X6 1400 from CL at Deck 4300 above base	Grade A 235	2700	80	6	13,1
Stif. HP80X6 1700 from CL at Deck 4300 above base	Grade A 235	2700	80	6	13,1
Stif. HP80X6 2000 from CL at Deck 4300 above base	Grade A 235	2700	80	6	13,1
Stif. HP80X6 -2275 from CL at Deck 4300 above base	Grade A 235	2995	80	6	14,6
Stif. HP80X6 2275 from CL at Deck 4300 above base	Grade A 235	2995	80	6	14,6



 $\Sigma$ 

173,3

 $\Sigma$  **Peso (Kg)**




2488,9

**Total**



<i>From</i>	<i>to</i>	<i>Quantity</i>	<i>From</i>	<i>to</i>	<i>Quantity</i>
1	2	9,8145 t	9	13	9,8145 t
2		3 2,358 t ( <i>shell plates</i> ) 2,4889 t ( <i>shell stifenner</i> )	-----	-----	-----
2	6	4,9676 t	-----	-----	-----
3		4 2,4889 t	-----	-----	-----
3/4	5	(2,358 + 2,4889) t 4,8469 t	-----	-----	-----
5	9	4,8469 t	-----	-----	-----
6	7	4,9676 t	-----	-----	-----
7	8	4,9676 t	-----	-----	-----
8	9	4,9676 t	-----	-----	-----
<b>Section 114B</b>				$\Sigma$	9,8145 t

*Expected material flows  
between departments*

*Table 2 – Sections 114A & 114B*

<i>From</i>	<i>to</i>	<i>Quantity (A)</i>	 <i>Quantity (B)</i>	<i>From</i>	<i>to</i>	<i>Quantity (A)</i>	<i>Quantity (B)</i>
1	2	12,6342 t	9,8145 t	9	13	12,6342 t	9,8145 t
 2	3	4,3642 t ( <i>shell plates</i> ) 2,9449 t ( <i>shell stifenner</i> )	2,358 t ( <i>shell plates</i> ) 2,4889 t ( <i>shell stifenner</i> )	-----	----	-----	-----
2	6	5,3251 t	4,9676 t	-----	----	-----	-----
 3	4	2,9449 t	2,4889 t	-----	----	-----	-----
3/4	5	(4,3642 + 2,9449) t 7,3091 t	(2,358 + 2,4889) t 4,8469 t	-----	----	-----	-----
5	9	7,3091 t	4,8469 t	-----	----	-----	-----
6	7	5,3251 t	4,9676 t	-----	----	-----	-----
7	8	5,3251 t	4,9676 t	-----	----	-----	-----
8	9	5,3251 t	4,9676 t	-----	----	-----	-----
<b>Section 114 – A &amp; B</b>			$\sum$ <i>Peso (t)</i> <i>Total</i>	22,4487	$\Sigma$	12,6342	9,8145



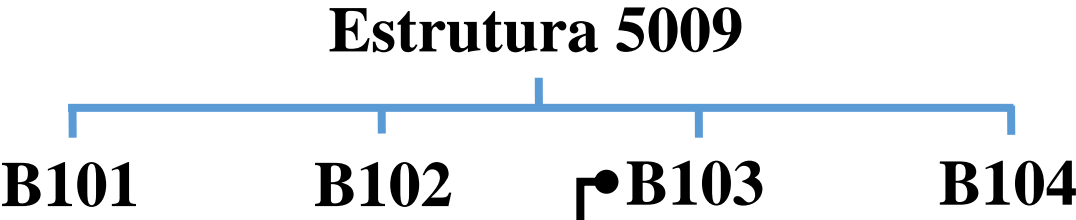
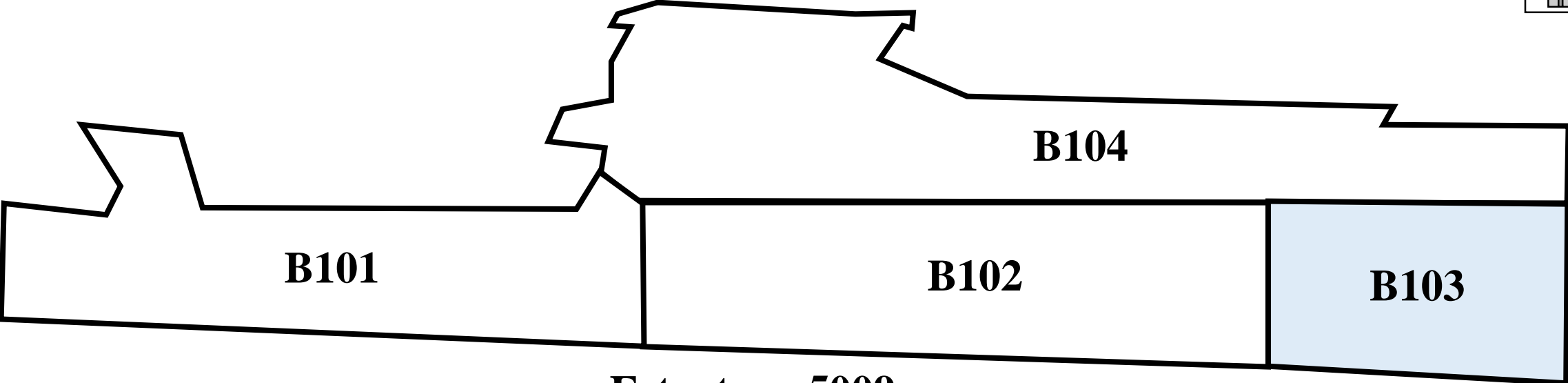
<i>From</i>	<i>to</i>	<i>Quantity</i>	<i>From</i>	<i>to</i>	<i>Quantity</i>
1	2	22,4487 t	9	13	22,4487 t
2	 3	6,67222 t ( <i>shell plates</i> ) 5,4338 t ( <i>shell stifenner</i> )	-----	-----	-----
2	6	10,34268 t	-----	-----	-----
3	 4	5,4338 t	-----	-----	-----
3/4	5	(6,67222 + 5,4338) t 12,10602 t	-----	-----	-----
5	9	12,10602 t	-----	-----	-----
6	7	10,34268 t	-----	-----	-----
7	8	10,34268 t	-----	-----	-----
8	9	10,34268 t	-----	-----	-----
<b>Section 114</b>				<b>Σ</b>	<b>1 block (b)</b>

# *Material Requirement Planning*

*Block 103 – Plates*

Items	<i>Thickness (mm)</i>	<i>Area (m<sup>2</sup>)</i>	<i>%</i>	<i>Weight (kg)</i>	<i>%</i>
(1)	5	31,35	22,46%	1107,2	16,76%
(2)	6	102,523	73,45%	4744,8	71,81%
(3)	8	0,34	0,24%	21,2	0,32%
(4)	10	4,6121	3,30%	613,6	9,29%
(5)	20	0,766	0,55%	120,2	1,82%
(6)	-----	-----	-----	-----	-----
(7)	-----	-----	-----	-----	-----
	<b>Total</b>	139,5911	100,00%	6607	100,00%

**MATRIZ DE PARA (VOLUME)** \*\* Fluxos esperados de materiais



Block	Sections	Description	Thickness (mm)	Area (m <sup>2</sup> )	Weight (kg)	Thickness (mm)	Area (m <sup>2</sup> )	Weight (kg)	Thickness (mm)	Area (m <sup>2</sup> )	Weight (kg)
103	115-A	Painéis (Shell Plate)	6	53,085	2298,5	-----	-----	-----	-----	-----	-----
		Painéis (Shell Stifenner)	5	0,442	27,2	6	2,273	125,1	8	0,34	21,2
			10	1,6051	383	-----	-----	-----	-----	-----	-----
	115-B	Painéis (Shell Plate)	5	30,154	1013,8	6	24,741	988,8	10	3,007	230,6
		Painéis (Shell Stifenner)	5	0,754	66,2	6	22,424	1332,4	20	0,766	120,2

# *Section* 115

*Section* 115A

*Section* 115B

*Bow Mould* (100)

# *Section 115*

*Section 115A – Painéis (Shell Plate)*

## Section 115A – Painéis (Shell Plate)

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
<i>SHELLPLATE</i>	Grade A 235	5928	1080	6	261,5
<i>SHELLPLATE</i>	Grade A 235	5928	1080	6	261,5
<i>SHELLPLATE</i>	Grade A 235	5961	1639	6	421,4
<i>SHELLPLATE</i>	Grade A 235	5961	1639	6	421,4
<i>SHELLPLATE</i>	Grade A 235	2945	1165	6	147,4
<i>SHELLPLATE</i>	Grade A 235	2945	1165	6	147,4
<i>SHELLPLATE</i>	Grade A 235	3013	1523	6	211,6
<i>SHELLPLATE</i>	Grade A 235	3013	1523	6	211,6
<i>SHELLPLATE</i>	Grade A 235	5771	555	6	146
<i>SHELLPLATE</i>	Grade A 235	2671	561	6	68,7
				Σ	2298,5 t
				Σ <i>Peso (Kg)</i> <i>Total</i>	2298,5 t

***Section 115A – Painéis (Shell Stifenner – Longitudinais)***



**Section 115A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. HP80X6 FR 47+205 at Deck 1500 above base	Grade A 235	985	80	6	4,8
Stiffemer FR 41+795 at	S235JR	1100	75	5	5,2
Stiffener 1100 from CL at	S235JR	1100	75	5	5,2
Stiffener -1100 from CL at	S235JR	1100	75	5	5,2
Stiffener 1200 above base at Bulkhead FR 46+330	S235JR	1090	60	6	2,9
Stiffener 1200 above base at Bulkhead FR 47	S235JR	926	60	6	2,5
Stiffener 1200 above base at Bulkhead FR 47+330	S235JR	845	60	6	2,2
Stiffener 1200 above base at Bulkhead FR 47-330	S235JR	1007	60	6	2,7
Stiffener 1200 above base at Bulkhead FR 48	S235JR	681	60	6	1,8
Stiffener 1200 above base at Bulkhead FR 48+330	S235JR	600	60	6	1,5
Stiffener 1200 above base at Bulkhead FR 48-330	S235JR	762	60	6	2
Stiffener 1200 above base at Bulkhead FR 49	S235JR	433	60	6	1,1
Stiffener 1200 above base at Bulkhead FR 49-330	S235JR	515	60	6	1,3
Stiffener 250 from CL at Bulkhead FR 41	Grade A 235	1438	80	6	7

**Σ****45,4 t**

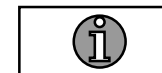
**Section 115A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stiffener -250 from CL at Bulkhead FR 41	Grade A 235	1539	80	6	7,5
Stiffener 250 from CL at Bulkhead FR 46	Grade A 235	2081	80	6	10,1
Stiffener -250 from CL at Bulkhead FR 46	Grade A 235	2081	80	6	10,1
Stiffener -3 from CL at Bulkhead FR 42-200	Grade A 235	1814	100	6	10,7
Stiffener -3 from CL at Bulkhead FR 46	Grade A 235	2534	80	6	12,3
Stiffener -4 from CL at Bulkhead FR 45+200	S235JR	200	50	5	0,4
Stiffener 500 above base at Bulkhead FR 46	Grade A 235	247	80	6	1,2
Stiffener 500 from CL at	S235JR	1095	75	5	5,2
Stiffener -500 from CL at	S235JR	1095	75	5	5,2
Stiffener 500 from CL at Bulkhead FR 41	Grade A 235	1080	80	6	5,3
Stiffener -500 from CL at Bulkhead FR 41	Grade A 235	1146	80	6	5,6
Stiffener 500 from CL at Bulkhead FR 42-200	S235JR	150	50	5	0,3
Stiffener -500 from CL at Bulkhead FR 42-200	S235JR	150	50	5	0,3
Stiffener 500 from CL at Bulkhead FR 46	Grade A 235	924	80	6	4,5


**Σ****78,7 t**

**Section 115A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stiffener -500 from CL at Bulkhead FR 46	Grade A 235	924	80	6	4,5
Stiffener 550 above base at Bulkhead FR 46+330	S235JR	822	60	6	2,2
Stiffener 550 above base at Bulkhead FR 47	S235JR	714	60	6	1,9
Stiffener 550 above base at Bulkhead FR 47+330	S235JR	660	60	6	1,7
Stiffener 550 above base at Bulkhead FR 47-330	S235JR	768	60	6	2
Stiffener 550 above base at Bulkhead FR 48	S235JR	549	60	6	1,4
Stiffener 550 above base at Bulkhead FR 48+330	S235JR	493	60	6	1,2
Stiffener 550 above base at Bulkhead FR 48-330	S235JR	604	60	6	1,5
Stiffener 550 above base at Bulkhead FR 49	S235JR	377	60	6	0,9
Stiffener 550 above base at Bulkhead FR 49-330	S235JR	434	60	6	1,1
Stiffener 799 from CL at Bulkhead FR 41	Grade A 235	650	80	6	3,2
Stiffener -800 from CL at Bulkhead FR 41	Grade A 235	675	80	6	3,3
Stiffener above base at Bulkhead FR 41	Grade A 235	322	80	6	1,6
Stiffener above base at Bulkhead FR 41	Grade A 235	313	80	6	1,5

**Σ****28 t**

**Section 115A – Painéis (Shell Stifener – Longitudinais)**

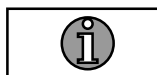
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stiffener frame at	S235JR	4954	324	10	383,3
Stiffener from CL at Bulkhead FR 41	S235JR	1719	100	8	10,7
Stiffener from CL at Bulkhead FR 41	S235JR	1682	100	8	10,5
Stiffener from CL at Bulkhead FR 41	S235JR	102	50	5	0,2
				Σ	404,7 t
				Σ <i>Peso (Kg)</i> <i>Total</i>	556,8 t

# *Section 115*

*Section 115B – Painéis (Shell Plate)*

**Section 115B – Painéis (Shell Plate)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>SHELLPLATE</i>	Grade A 235	5601	1397	6	302,1
<i>SHELLPLATE</i>	Grade A 235	5601	1397	6	302,1
<i>SHELLPLATE</i>	Grade A 235	2531	1796	6	192,3
<i>SHELLPLATE</i>	Grade A 235	2531	1796	6	192,3
<i>SHELLPLATE</i>	X2CrNiMo17-12-2	1499	1003	10	115,3
<i>SHELLPLATE</i>	X2CrNiMo17-12-2	1499	1003	10	115,3
<i>SHELLPLATE</i>	Grade A 235	5617	529	5	80,2
<i>SHELLPLATE</i>	Grade A 235	5617	529	5	80,2
<i>SHELLPLATE</i>	Grade A 235	5696	1523	5	309,2
<i>SHELLPLATE</i>	Grade A 235	5696	1523	5	309,2
<i>SHELLPLATE</i>	Grade A 235	2591	1323	5	117,4
<i>SHELLPLATE</i>	Grade A 235	2595	1323	5	117,6

 $\Sigma$ 

2233,2

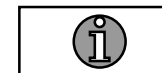
 $\Sigma$  *Peso (Kg)**Total*

2233,2

***Section 115B – Painéis (Shell Stifenner – Longitudinais)***

**Section 115B – Painéis (Shell Stifenner – Longitudinais)**

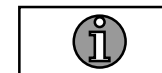
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell frame 1599/1847	Grade A 235	3956	80	6	19,4
Shell frame 1599/1847	Grade A 235	3956	80	6	19,4
Shell frame 1816/2172	Grade A 235	5077	80	6	24,8
Shell frame 1816/2172	Grade A 235	5077	80	6	24,8
Shell frame 1826/1838	Grade A 235	2034	80	6	10
Shell frame 1826/1843	Grade A 235	1021	80	6	5,1
Shell frame 1826/1847	Grade A 235	1121	80	6	5,6
Shell frame 1826/1847	Grade A 235	1121	80	6	5,6
Shell frame 1994/2412	Grade A 235	5090	80	6	24,9
Shell frame 1994/2412	Grade A 235	5090	80	6	24,9
Shell frame 2156/2168	Grade A 235	2042	80	6	10,1
Shell frame 2156/2172	Grade A 235	1026	80	6	5,1
Shell frame 2180/2638	Grade A 235	5102	80	6	24,9
Shell frame 2180/2638	Grade A 235	5102	80	6	24,9

**Σ****229,5**



**Section 115B – Painéis (Shell Stifenner – Longitudinais)**

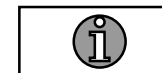
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell frame 2345/2836	Grade A 235	5114	80	6	25
Shell frame 2345/2836	Grade A 235	5114	80	6	25
Shell frame 2396/2497	Grade A 235	1032	80	6	5,1
Shell frame 2396/2497	Grade A 235	1032	80	6	5,1
Shell frame 2490 above base	Grade A 235	2050	80	6	9,9
Shell frame 2490 above base	Grade A 235	2050	80	6	9,9
Shell frame 2584/3004	Grade A 235	4100	80	6	20,1
Shell frame 2584/3004	Grade A 235	4100	80	6	20,1
Shell frame 2622/2733	Grade A 235	1036	80	6	5,2
Shell frame 2815/2934	Grade A 235	2051	80	6	10,1
Shell frame 2815/2934	Grade A 235	2051	80	6	10,1
Shell frame 2816/2824	Grade A 235	1138	80	6	5,7
Shell frame 2816/2824	Grade A 235	1138	80	6	5,7
Shell frame 2820/2939	Grade A 235	1039	80	6	5,2

 $\Sigma$ 


162,2

**Section 115B – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell frame 2927/3171	Grade A 235	2076	80	6	10,2
Shell frame 3022/3208	Grade A 235	4100	80	6	20,1
Shell frame 3022/3208	Grade A 235	4100	80	6	20,1
Shell frame 3056/3113	Grade A 235	423	80	6	2,2
Shell frame 3056/3113	Grade A 235	423	80	6	2,2
Shell frame 3101/3228	Grade A 235	1044	80	6	5,2
Shell frame 3194/3251	Grade A 235	1038	80	6	5,2
Shell frame 3194/3251	Grade A 235	1038	80	6	5,2
Shell frame 3218/3468	Grade A 235	2083	80	6	10,2
Shell frame 3236/3362	Grade A 235	4104	80	6	20,1
Shell frame 3236/3362	Grade A 235	4104	80	6	20,1
Shell frame 3348/3389	Grade A 235	1039	80	6	5,2
Shell frame 3348/3389	Grade A 235	1039	80	6	5,2
Shell frame 3468/3551	Grade A 235	4108	80	6	20,1

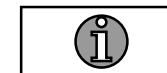
**Σ****151,3**

**Section 115B – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell frame 3468/3551	Grade A 235	4108	80	6	20,1
Shell frame 3537/3566	Grade A 235	1041	80	6	5,2
Shell frame 3537/3566	Grade A 235	1041	80	6	5,2
Shell frame 3554/3571	Grade A 235	356	80	6	1,9
Shell frame 3554/3571	Grade A 235	356	80	6	1,9
Shell frame 3575/3603	Grade A 235	1732	80	6	8,5
Shell frame 3575/3603	Grade A 235	1732	80	6	8,5
Shell frame 3750/3758	Grade A 235	1731	80	6	8,5
Shell frame 3750/3758	Grade A 235	1731	80	6	8,5
Shell frame 3750/3763	Grade A 235	1043	80	6	5,2
Shell frame 3750/3763	Grade A 235	1043	80	6	5,2
Shell frame 3750/3768	Grade A 235	4114	80	6	20,1
Shell frame 3750/3768	Grade A 235	4114	80	6	20,1
Shell frame 4080 above base	Grade A 235	4120	80	6	20
				$\Sigma$	138,9

**Section 115B – Painéis (Shell Stifenner – Longitudinais)**

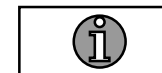
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell frame 4080 above base	Grade A 235	4120	80	6	20
Shell frame 4080 above base	Grade A 235	1046	80	6	5
Shell frame 4080 above base	Grade A 235	1046	80	6	5
Shell frame 4080 above base	Grade A 235	1727	80	6	8,3
Shell frame 4080 above base	Grade A 235	1727	80	6	8,3
Shell frame FR. 46+200	Grade A 235	432	80	6	2,1
Shell frame FR. 46+200	Grade A 235	432	80	6	2,1
Shell frame FR. 46-400	Grade A 235	276	80	6	1,2
Shell frame FR. 46-400	Grade A 235	276	80	6	1,2
Shell stif. FB100X20 2500 a.b.	S235JR	1901	100	20	29,8
Shell stif. FB100X20 2500 a.b.	S235JR	1901	100	20	29,8
Shell stif. FB100X20 3760 a.b.	S235JR	1927	100	20	30,3
Shell stif. FB100X20 3760 a.b.	S235JR	1927	100	20	30,3
Shell stif. HP80X6 1826/1838	Grade A 235	2034	80	6	10

 $\Sigma$ 

183,4

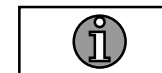
**Section 115B – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell stif. HP80X6 1826/1843	Grade A 235	1021	80	6	5,1
Shell stif. HP80X6 2156/2168	Grade A 235	2042	80	6	10,1
Shell stif. HP80X6 2156/2172	Grade A 235	1026	80	6	5,1
Shell stif. HP80X6 2622/2733	Grade A 235	1036	80	6	5,2
Shell stif. HP80X6 2721/2824	Grade A 235	938	80	6	4,7
Shell stif. HP80X6 2721/2824	Grade A 235	940	80	6	4,7
Shell stif. HP80X6 2820/2939	Grade A 235	1039	80	6	5,2
Shell stif. HP80X6 2927/3171	Grade A 235	2076	80	6	10,2
Shell stif. HP80X6 3101/3218	Grade A 235	1043	80	6	5,2
Shell stif. HP80X6 3218/3472	Grade A 235	2084	80	6	10,2
Stif. HP80X6 250 from CL at Bulkhead FR 47	Grade A 235	1094	80	6	5,3
Stif. HP80X6 250 from CL at Bulkhead FR 47	Grade A 235	1059	80	6	5,1
Stif. HP80X6 -250 from CL at Bulkhead FR 47	Grade A 235	2716	80	6	13,2
Stif. HP80X6 3120 a.b. at Bulkhead FR 47	Grade A 235	442	80	6	2

**Σ****91,3**

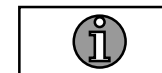
**Section 115B – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. HP80X6 -4 from CL at Bulkhead FR 47	Grade A 235	2796	80	6	13,6
Stif. HP80X6 450 from CL at Bulkhead FR 47	Grade A 235	1740	80	6	8,3
Stif. HP80X6 -450 from CL at Bulkhead FR 47	Grade A 235	1740	80	6	8,3
Stif. HP80X6 a.b. at Bulkhead FR 47	Grade A 235	379	80	6	1,8
Stif. HP80X6 a.b. at Bulkhead FR 47	Grade A 235	631	80	6	3
Stiffemer FR 43+220 at Deck 4300 above base	Grade A 235	988	80	6	4,7
Stiffemer FR 46+446 at Deck 4300 above base	Grade A 235	500	80	6	2,4
Stiffemer FR 47+550 at Deck 4300 above base	Grade A 235	488	80	6	2,4
Stiffener 0 from CL at	S235JR	1075	60	5	7,3
Stiffener 1000 from CL at Bulkhead FR 45	Grade A 235	1595	80	6	7,6
Stiffener -1000 from CL at Bulkhead FR 45	Grade A 235	1595	80	6	7,6
Stiffener 1400 from CL at Deck 4300 above base	Grade A 235	3350	80	6	16,3
Stiffener -1400 from CL at Deck 4300 above base	Grade A 235	3350	80	6	16,3
Stiffener 1700 from CL at Deck 4300 above base	Grade A 235	2350	80	6	11,4

**Σ****111**

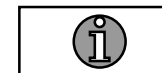
**Section 115B – Painéis (Shell Stifener – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stiffener -1700 from CL at Deck 4300 above base	Grade A 235	2350	80	6	11,4
Stiffener 1999 from CL at Bulkhead FR 41	S235JR	264	50	5	0,5
Stiffener -20/820 from CL at	S235JR	141	50	5	0,3
Stiffener -2000 from CL at Bulkhead FR 41	S235JR	264	50	5	0,5
Stiffener 2000 from CL at Deck 4300 above base	Grade A 235	1550	80	6	7,5
Stiffener -2000 from CL at Deck 4300 above base	Grade A 235	1550	80	6	7,5
Stiffener 250 from CL at Bulkhead FR 45	Grade A 235	1620	80	6	7,8
Stiffener -250 from CL at Bulkhead FR 45	Grade A 235	1620	80	6	7,8
Stiffener 250 from CL at Bulkhead FR 46	Grade A 235	2515	80	6	12,2
Stiffener -250 from CL at Bulkhead FR 46	Grade A 235	2515	80	6	12,2
Stiffener 250 from CL at Deck 4300 above base	Grade A 235	2514	80	6	12,2
Stiffener 250 from CL at Deck 4300 above base	Grade A 235	994	80	6	4,8
Stiffener 250 from CL at Deck 4300 above base	Grade A 235	1996	80	6	9,7
Stiffener 250 from CL at Deck 4300 above base	Grade A 235	996	80	6	4,8

**Σ****99,2**

**Section 115B – Painéis (Shell Stiffener – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stiffener -250 from CL at Deck 4300 above base	Grade A 235	2514	80	6	12,2
Stiffener -250 from CL at Deck 4300 above base	Grade A 235	994	80	6	4,8
Stiffener -250 from CL at Deck 4300 above base	Grade A 235	1996	80	6	9,7
Stiffener -250 from CL at Deck 4300 above base	Grade A 235	996	80	6	4,8
Stiffener 2900 above base at Bulkhead FR 45	S235JR	497	80	6	1,9
Stiffener 2900 above base at Bulkhead FR 45	S235JR	497	80	6	1,9
Stiffener 2900 above base at Bulkhead FR 46	S235JR	497	80	6	1,9
Stiffener 2900 above base at Bulkhead FR 46	S235JR	497	80	6	1,9
Stiffener -3 from CL at Bulkhead FR 41	S235JR	220	50	5	0,4
Stiffener -3 from CL at Bulkhead FR 42	S235JR	80	50	5	0,2
Stiffener -250 from CL at Deck 4300 above base	Grade A 235	2514	80	6	0,2
Stiffener -250 from CL at Deck 4300 above base	Grade A 235	994	80	6	0,2
Stiffener -250 from CL at Deck 4300 above base	Grade A 235	1996	80	6	7,8
Stiffener -250 from CL at Deck 4300 above base	Grade A 235	996	80	6	12,2

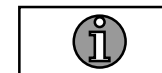
 $\Sigma$ 

60,1



**Section 115B – Painéis (Shell Stiffener – Longitudinais)**

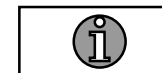
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stiffener -3 from CL at Bulkhead FR 43	S235JR	80	50	5	0,2
Stiffener -3 from CL at Bulkhead FR 44	S235JR	135	50	5	12,2
Stiffener -3 from CL at Bulkhead FR 45	Grade A 235	1620	80	6	4,8
Stiffener -3 from CL at Bulkhead FR 46	Grade A 235	2515	80	6	10
Stiffener -3 from CL at Bulkhead FR 48	S235JR	80	50	5	2,1
Stiffener -3 from CL at Deck 4300 above base	Grade A 235	2514	80	6	1,8
Stiffener -3 from CL at Deck 4300 above base	Grade A 235	994	80	6	1,8
Stiffener -3 from CL at Deck 4300 above base	Grade A 235	2073	80	6	0,4
Stiffener -3 from CL at Deck 4300 above base	Grade A 235	440	80	6	0,4
Stiffener 4080 above base at Bulkhead FR 45	Grade A 235	373	80	6	7,8
Stiffener 4080 above base at Bulkhead FR 45	Grade A 235	373	80	6	7,8
Stiffener 497 from CL at Bulkhead FR 41	S235JR	220	50	5	12,2
Stiffener -497 from CL at Bulkhead FR 41	S235JR	220	50	5	12,2
Stiffener 500 from CL at Bulkhead FR 45	Grade A 235	1620	80	6	20,9

 $\Sigma$ 

94,6

**Section 115B – Painéis (Shell Stifener – Longitudinais)**

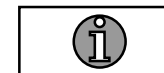
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stiffener -500 from CL at Bulkhead FR 45	Grade A 235	1620	80	6	20,9
Stiffener 500 from CL at Bulkhead FR 46	Grade A 235	2515	80	6	9
Stiffener -500 from CL at Bulkhead FR 46	Grade A 235	2515	80	6	9
Stiffener 500 from CL at Deck 4300 above base	Grade A 235	4294	80	6	10
Stiffener -500 from CL at Deck 4300 above base	Grade A 235	4294	80	6	10
Stiffener 800 from CL at Bulkhead FR 45	Grade A 235	1875	80	6	20,9
Stiffener -800 from CL at Bulkhead FR 45	Grade A 235	1875	80	6	4,8
Stiffener 800 from CL at Bulkhead FR 46	Grade A 235	2051	80	6	1,4
Stiffener -800 from CL at Bulkhead FR 46	Grade A 235	2049	80	6	20,9
Stiffener 800 from CL at Deck 4300 above base	Grade A 235	4294	80	6	4,8
Stiffener 800 from CL at Deck 4300 above base	Grade A 235	994	80	6	1,4
Stiffener 800 from CL at Deck 4300 above base	Grade A 235	286	80	6	16,8
Stiffener -800 from CL at Deck 4300 above base	Grade A 235	4294	80	6	16,8
Stiffener -800 from CL at Deck 4300 above base	Grade A 235	994	80	6	0,8

 $\Sigma$ 

147,5

**Section 115B – Painéis (Shell Stifenner – Longitudinais)**

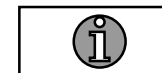
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stiffener -800 from CL at Deck 4300 above base	Grade A 235	286	80	6	0,8
Stiffener 998 from CL at	S235JR	2470	60	5	0,4
Stiffener -998 from CL at	S235JR	2470	60	5	0,4
Stiffener above base at Bulkhead FR 41	S235JR	403	50	5	0,4
Stiffener above base at Bulkhead FR 41	S235JR	403	50	5	0,4
Stiffener above base at Bulkhead FR 42	S235JR	190	50	5	0,4
Stiffener above base at Bulkhead FR 42	S235JR	190	50	5	0,4
Stiffener above base at Bulkhead FR 42	S235JR	192	50	5	0,4
Stiffener above base at Bulkhead FR 42	S235JR	192	50	5	0,4
Stiffener above base at Bulkhead FR 43	S235JR	191	50	5	0,4
Stiffener above base at Bulkhead FR 43	S235JR	191	50	5	0,4
Stiffener above base at Bulkhead FR 44	S235JR	191	50	5	0,6
Stiffener above base at Bulkhead FR 44	S235JR	191	50	5	0,6
Stiffener above base at Bulkhead FR 44	S235JR	192	50	5	0,4

 $\Sigma$ 

6,4


**Section 115B – Painéis (Shell Stifenner – Longitudinais)**



Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stiffener above base at Bulkhead FR 44	S235JR	192	50	5	0,4
Stiffener above base at Bulkhead FR 48	S235JR	313	50	5	0,4
Stiffener above base at Bulkhead FR 48	S235JR	313	50	5	0,4
Stiffener above base at Bulkhead FR 48	S235JR	193	50	5	0,4
Stiffener above base at Bulkhead FR 48	S235JR	193	50	5	0,4
Stiffener above base at Bulkhead FR 48	S235JR	197	50	5	0,3
Stiffener above base at Bulkhead FR 48	S235JR	197	50	5	0,3
Stiffener above base at Bulkhead FR 48	S235JR	191	50	5	0,9
Stiffener above base at Bulkhead FR 48	S235JR	191	50	5	0,9
Stiffener from CL at Bulkhead FR 41	S235JR	173	50	5	0,8
Stiffener from CL at Bulkhead FR 41	S235JR	173	50	5	0,8
Stiffener from CL at Bulkhead FR 42	S235JR	439	50	5	0,9
Stiffener from CL at Bulkhead FR 42	S235JR	439	50	5	0,9
Stiffener from CL at Bulkhead FR 43	S235JR	430	50	5	4,7

 $\Sigma$ 

12,5




**Section 115B – Painéis (Shell Stifener – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stiffener from CL at Deck 4300 above base	Grade A 235	962	80	6	4,7
Stiffener from CL at Deck 4300 above base	Grade A 235	956	80	6	4,7
Stiffener from CL at Deck 4300 above base	Grade A 235	957	80	6	4,7
Stiffener from CL at Deck 4300 above base	Grade A 235	997	80	6	4,9
Stiffener from CL at Deck 4300 above base	Grade A 235	997	80	6	4,9
Stiffener from CL at Deck 4300 above base	Grade A 235	723	80	6	3,5
Stiffener from CL at Deck 4300 above base	Grade A 235	723	80	6	3,5
				$\Sigma$	30,9
				$\Sigma$ <i>Peso (Kg)</i>	1518,8
				<i>Total</i>	



<i>From</i>	<i>to</i>	<i>Quantity</i>	<i>From</i>	<i>to</i>	<i>Quantity</i>
1	2	6,3535 t	9	13	6,3535 t
2		3 2,2332 t ( <i>shell plates</i> ) 1,5188 t ( <i>shell stifenner</i> )	-----	-----	-----
2	6	2,6015 t	-----	-----	-----
3		4 1,5188 t	-----	-----	-----
3/4	5	(2,2332 t + 1,5188 t) t 3,752 t	-----	-----	-----
5	9	3,752 t	-----	-----	-----
6	7	2,6015 t	-----	-----	-----
7	8	2,6015 t	-----	-----	-----
8	9	2,6015 t	-----	-----	-----
<b>Section 115B</b>				<b>Σ</b>	<b>6,3535 t</b>

*Expected material flows  
between departments*

*Table 2 – Sections 115A & 115B*

<i>From</i>	<i>to</i>	<i>Quantity (A)</i>	 <i>Quantity (B)</i>	<i>From</i>	<i>to</i>	<i>Quantity (A)</i>	<i>Quantity (B)</i>
1	2	4,8568 t	6,3535 t	9	13	4,8568 t	6,3535 t
 2	3	2,2985 t ( <i>shell plates</i> ) 0,5568 t ( <i>shell stifenner</i> )	2,2332 t ( <i>shell plates</i> ) 1,5188 t ( <i>shell stifenner</i> )	-----	----	-----	-----
2	6	2,0015 t	2,6015 t	-----	----	-----	-----
 3	4	0,5568 t	1,5188 t	-----	----	-----	-----
3/4	5	(2,2985 t + 0,5568 t) t 2,8553 t	(2,2332 t + 1,5188 t) t 3,752 t	-----	----	-----	-----
5	9	2,8553 t	3,752 t	-----	----	-----	-----
6	7	2,0015 t	2,6015 t	-----	----	-----	-----
7	8	2,0015 t	2,6015 t	-----	----	-----	-----
8	9	2,0015 t	2,6015 t	-----	----	-----	-----
<b>Section 115 – A &amp; B</b>			$\sum$ <i>Peso (t)</i> <i>Total</i>	11,2103	$\Sigma$	4,8568 t	6,3535 t



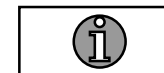
<i>From</i>	<i>to</i>	<i>Quantity</i>	<i>From</i>	<i>to</i>	<i>Quantity</i>
1	2	11,2103 t	9	13	11,2103 t
2	 3	4,5317 t ( <i>shell plates</i> ) 2,0756 t ( <i>shell stifenner</i> )	-----	-----	-----
2	6	4,603 t	-----	-----	-----
3	 4	2,0756 t	-----	-----	-----
3/4	5	(4,5317 t + 2,0756 t) t 6,6073 t	-----	-----	-----
5	9	6,6073 t	-----	-----	-----
6	7	4,603 t	-----	-----	-----
7	8	4,603 t	-----	-----	-----
8	9	4,603 t	-----	-----	-----
<b>Section 115</b>				<b>Σ</b>	<b>1 block (b)</b>

# *Section* 115

*Bow Mould* (100)

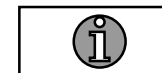
**Section 115 – Bow Mould (100)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Bulkhead -3 from CL	Grade A 235	2640	1019	5	97,7
Bulkhead -3 from CL	Grade A 235	4000	863	5	113,6
Bulkhead -3 from CL	Grade A 235	3800	1960	5	95,7
Bulkhead FR 42-200	Grade A 235	3800	1748	5	164,8
Bulkhead FR 42-200	Grade A 235	3800	1748	5	164,8
Bulkhead FR 43	Grade A 235	3800	1748	5	175,4
Bulkhead FR 43	Grade A 235	3800	1748	5	175,4
Bulkhead FR 44	Grade A 235	3800	1748	5	184,2
Bulkhead FR 44	Grade A 235	3800	1748	5	184,2
Bulkhead FR 45+200	Grade A 235	3800	1748	5	194,9
Bulkhead FR 45+200	Grade A 235	3800	1748	5	194,9
Bulkhead FR 46	Grade A 235	3800	1748	5	202,1
Bulkhead FR 46	Grade A 235	3800	1748	5	202,1
Bulkhead FR 47	Grade A 235	3800	1748	5	211,3


**Σ****2361,1**

**Section 115 – Bow Mould (100)**


<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Bulkhead FR 47	Grade A 235	3800	1748	5	211,3
Bulkhead FR 48	Grade A 235	3800	1748	5	220,7
Bulkhead FR 48	Grade A 235	3800	1748	5	220,7
Bulkhead FR 49	Grade A 235	3800	1748	5	230,4
Bulkhead FR 49	Grade A 235	3800	1748	5	230,4
Deck -500 above base	Grade A 235	2640	1559	5	158,1
Deck -500 above base	Grade A 235	2640	1559	5	158,1
Deck -500 above base	Grade A 235	5960	1748	5	361,5
Deck -500 above base	Grade A 235	5960	1748	5	361,5
Deck 0 above base	Grade A 235	2640	1328	5	114,2
Deck 0 above base	Grade A 235	2640	1328	5	114,2
Deck 0 above base	Grade A 235	5960	1748	5	334,5
Deck 0 above base	Grade A 235	5960	1748	5	334,5
Deck 1000 above base	Grade A 235	2640	987	5	86,9



**Σ****3137**

**Section 115 – Bow Mould (100)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Deck 1000 above base	Grade A 235	2640	987	5	86,9
Deck 1000 above base	Grade A 235	5960	1748	5	308,7
Deck 1000 above base	Grade A 235	5960	1748	5	308,7
Deck 1500 above base	Grade A 235	2640	820	5	64,8
Deck 1500 above base	Grade A 235	2640	820	5	64,8
Deck 1500 above base	Grade A 235	5960	1748	5	291,4
Deck 1500 above base	Grade A 235	5960	1748	5	291,4
Deck 2000 above base	Grade A 235	2640	656	5	43,4
Deck 2000 above base	Grade A 235	2640	656	5	43,4
Deck 2000 above base	Grade A 235	5960	1748	5	274,4
Deck 2000 above base	Grade A 235	5960	1748	5	274,4
Deck 500 above base	Grade A 235	2640	1144	5	101
Deck 500 above base	Grade A 235	2640	1144	5	101
Deck 500 above base	Grade A 235	5960	1748	5	321,5
				$\Sigma$	2575,8

**Section 115 – Bow Mould (100)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Deck 500 above base	Grade A 235	5960	1748	5	321,5
				Σ	321,5
				<b>Σ <i>Peso (Kg)</i></b> <i>Total</i>	<b>8395,4</b>

<i>From</i>		<i>to</i>	<i>Quantity</i>	<i>From</i>	<i>to</i>	<i>Quantity</i>
1		2	8,3954 t	-----	-----	-----
2		3	8,3954 t ( <i>shell plates</i> )	-----	-----	-----
3		4	8,3954 t	-----	-----	-----
3/4		5	8,3954 t	-----	-----	-----
5		9	8,3954 t	-----	-----	-----
-----		-----	-----	-----	-----	-----
-----		-----	-----	-----	-----	-----
-----		-----	-----	-----	-----	-----
<i>Section 115 – Bow Mould (100)</i>					$\Sigma$	8,3954 t

# *Bow mould*

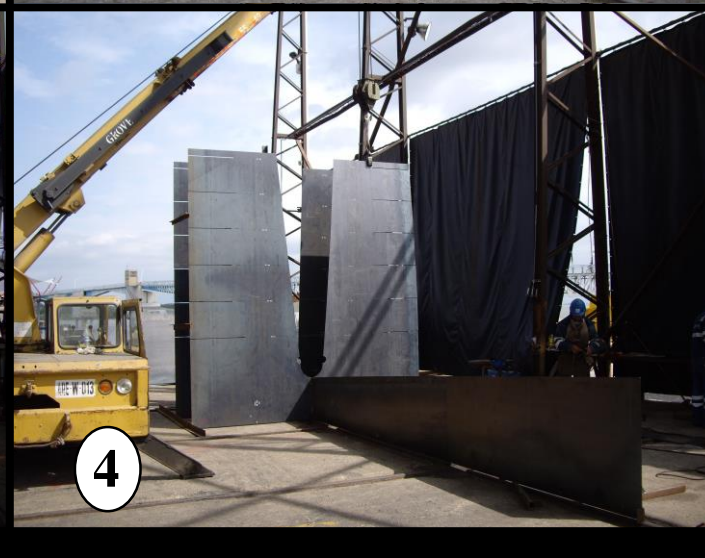
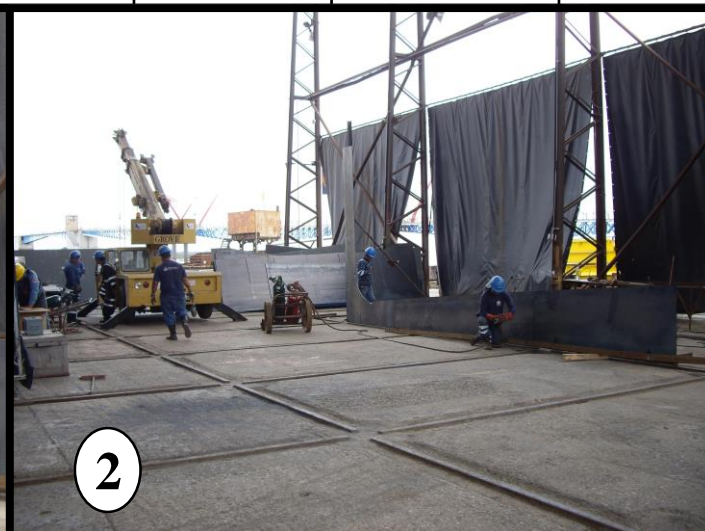
Processo de fabricação



# Bow Mould

Período (8 dias)

<i>Workers</i>	Quinta	Sexta	Sábado	Segunda	Terça	Quarta	Quinta	Sexta	Total	Total de horas
<i>Fitters (Armadores)</i>	2	2	2	2	3	4	4	0	19	$19 * 8 = 152$
<i>Welders (Soldadores)</i>	1	2	2	2	3	2	4	2	18	$18 * 8 = 144$



## Processo

**Descrição**

**Dado**

*Total hours*

$152 + 144 = 296$

*Bow Mould weight*

8,40 ton.

CGT = *Compensated Gross Tonnage* (tonelada bruta compensada)  
HH = *Homem-Hora* = uma hora de trabalho realizada por um homem

## Calendário

**Descrição**

**Dado**

Jornada diária (horas)

8

Dias úteis (por semana)

6

Dias úteis (por mês)

24

Total de horas (por semana)

48

Total de Horas (por mês)

192

**Produtividade [CGT/HH]**

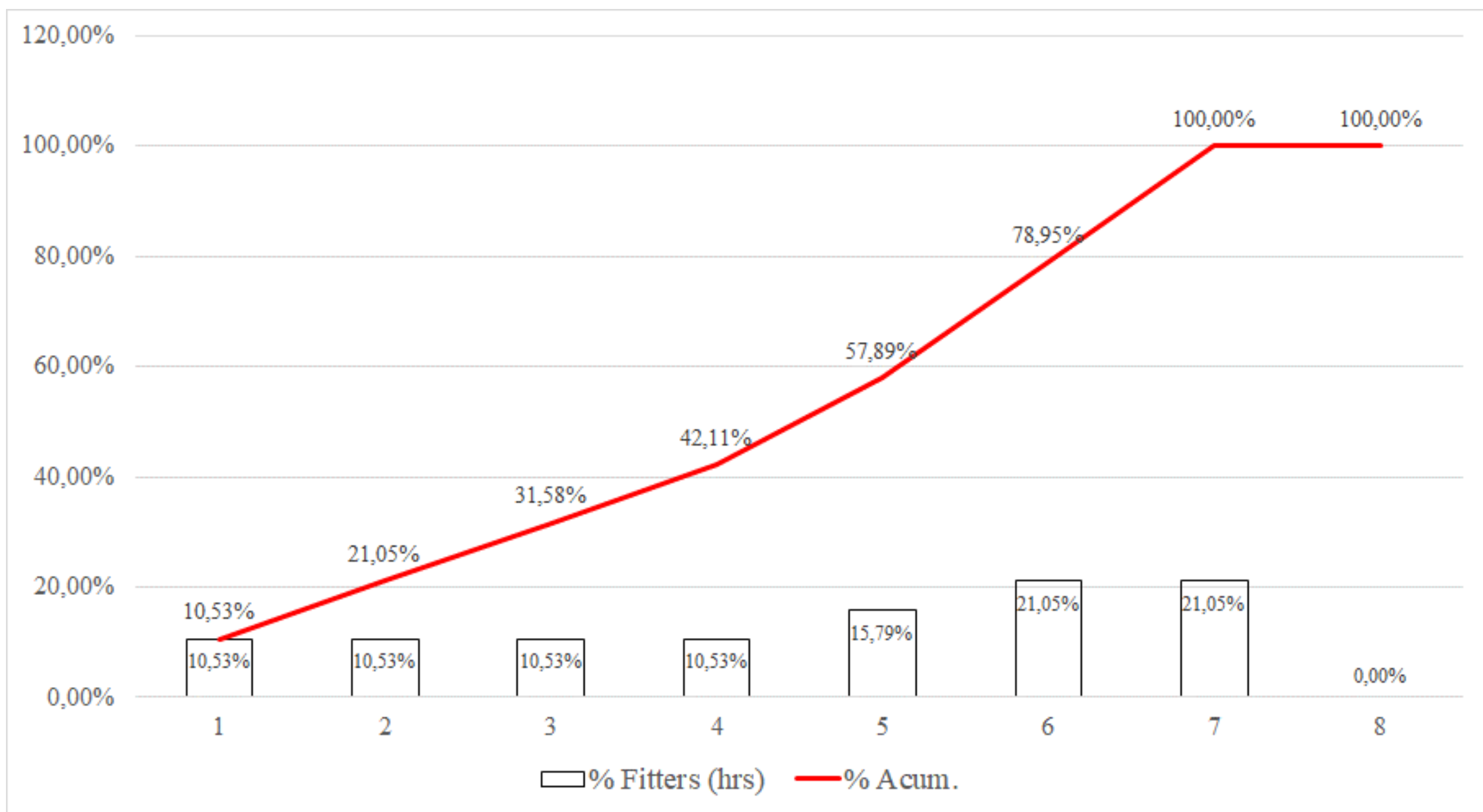
$(8,4/296) = 0,0284$  (t/h)

**Esforço produtivo [HH/CGT]**

$(296/8,40) = 35,24$  (h/t)

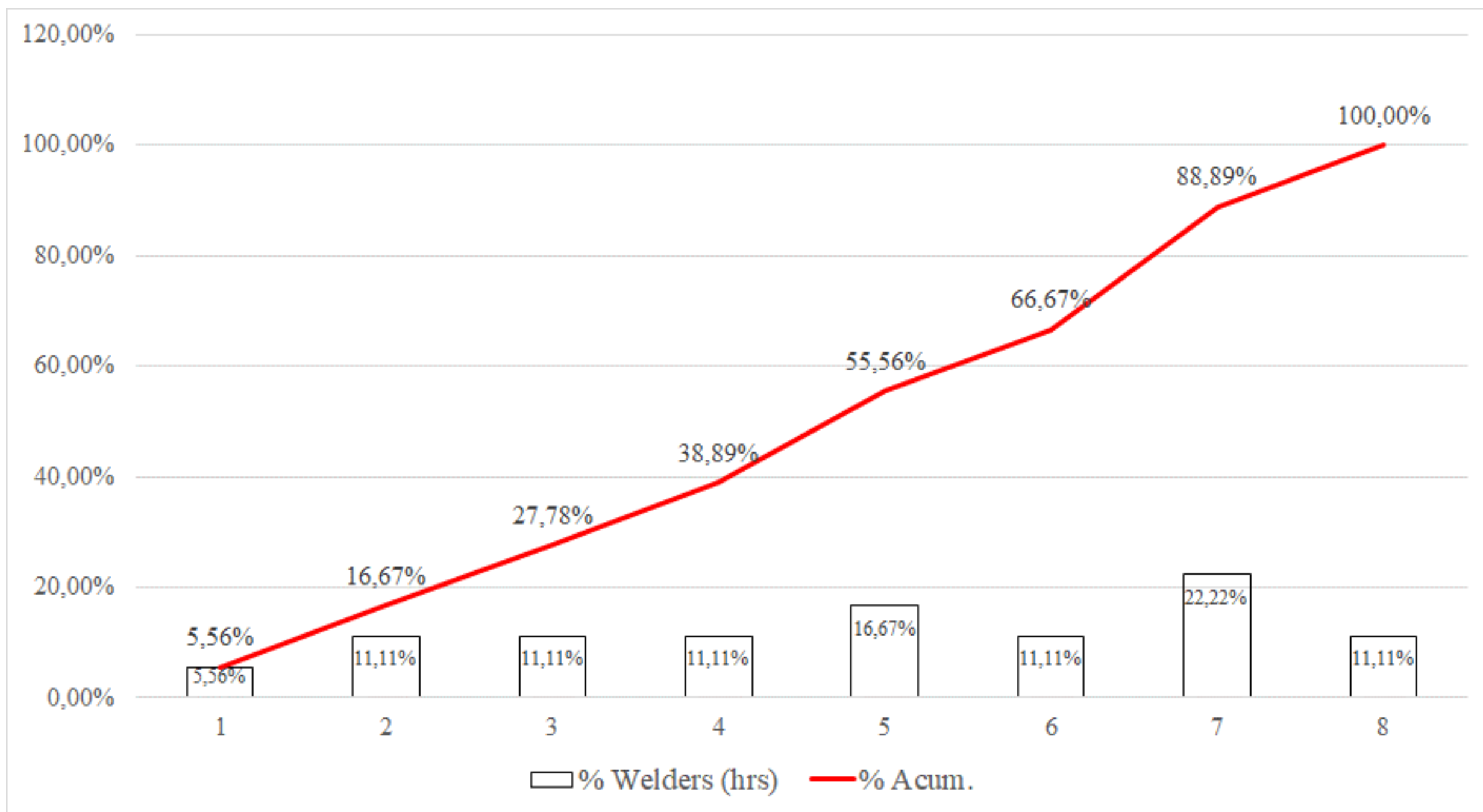
*HOURS*

*Fitters*

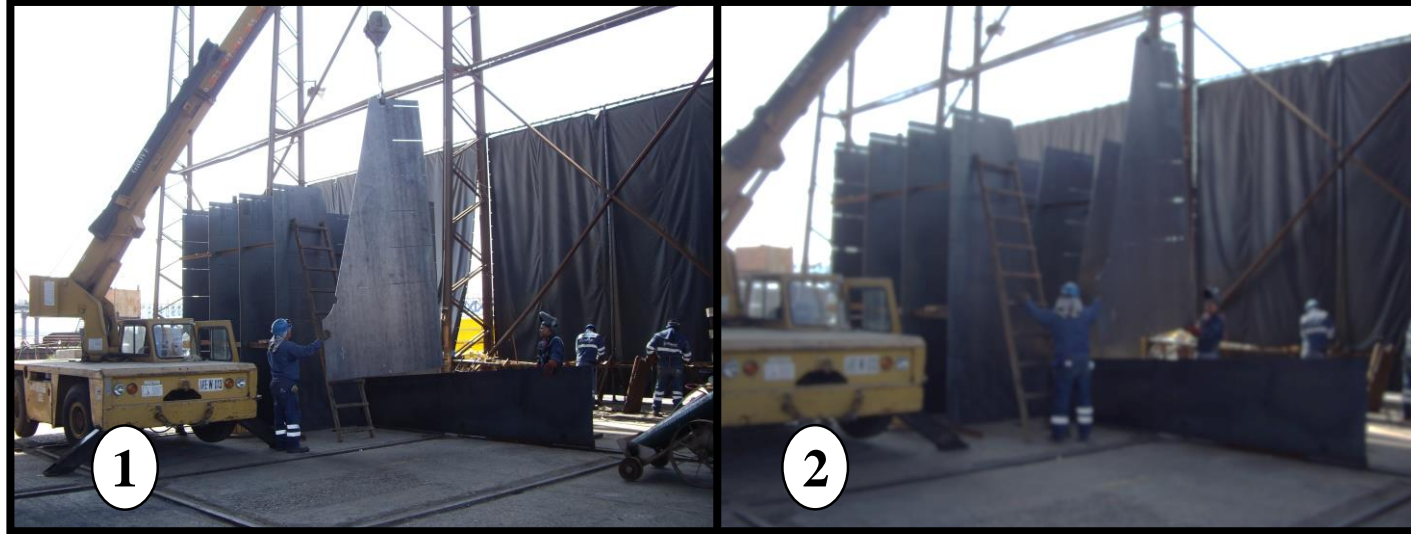


***HOURS***

*Welders*



# *Bow Mould*



# *Bow Mould*

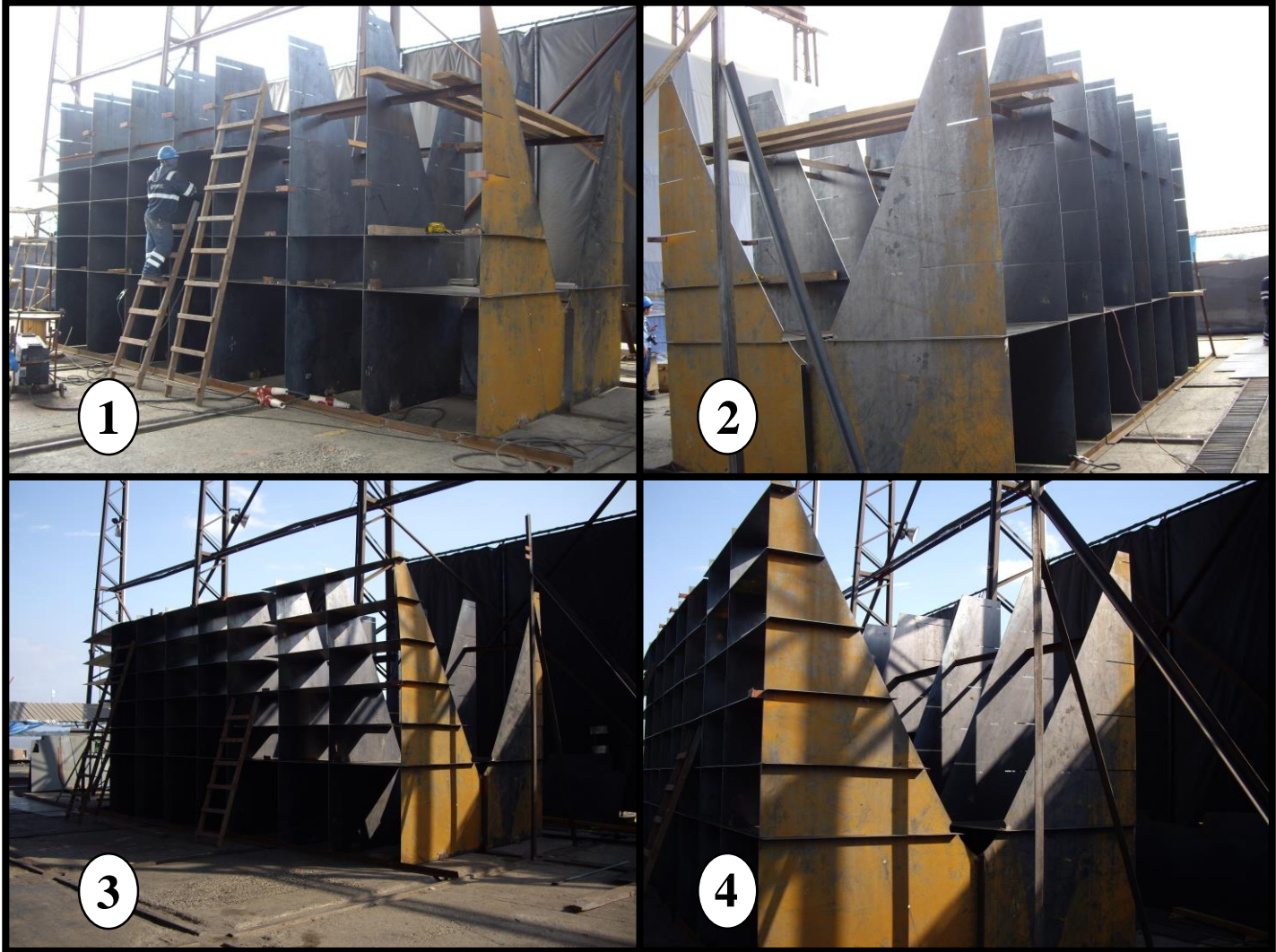


# *Bow Mould*

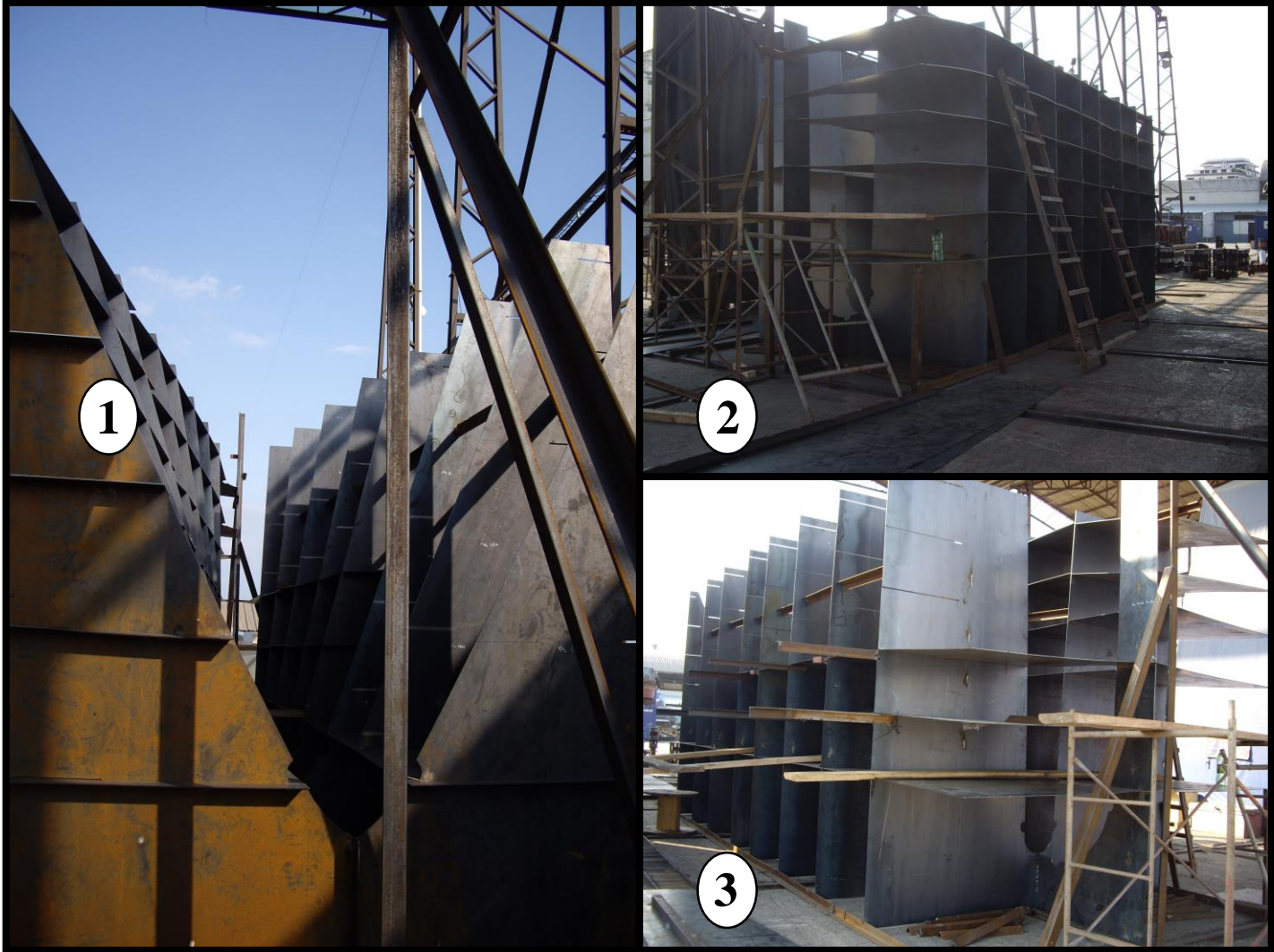




# *Bow Mould*



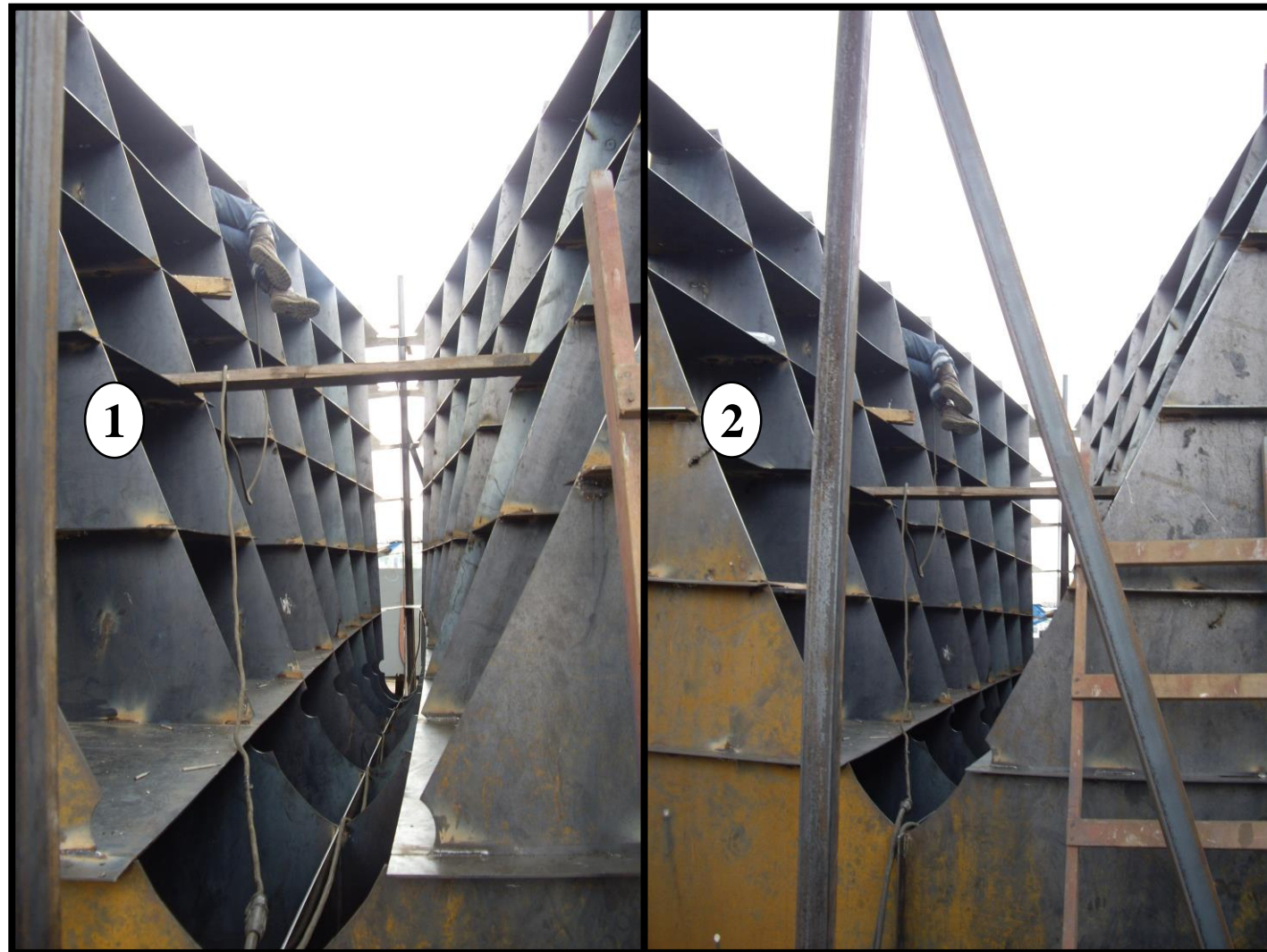
# *Bow Mould*



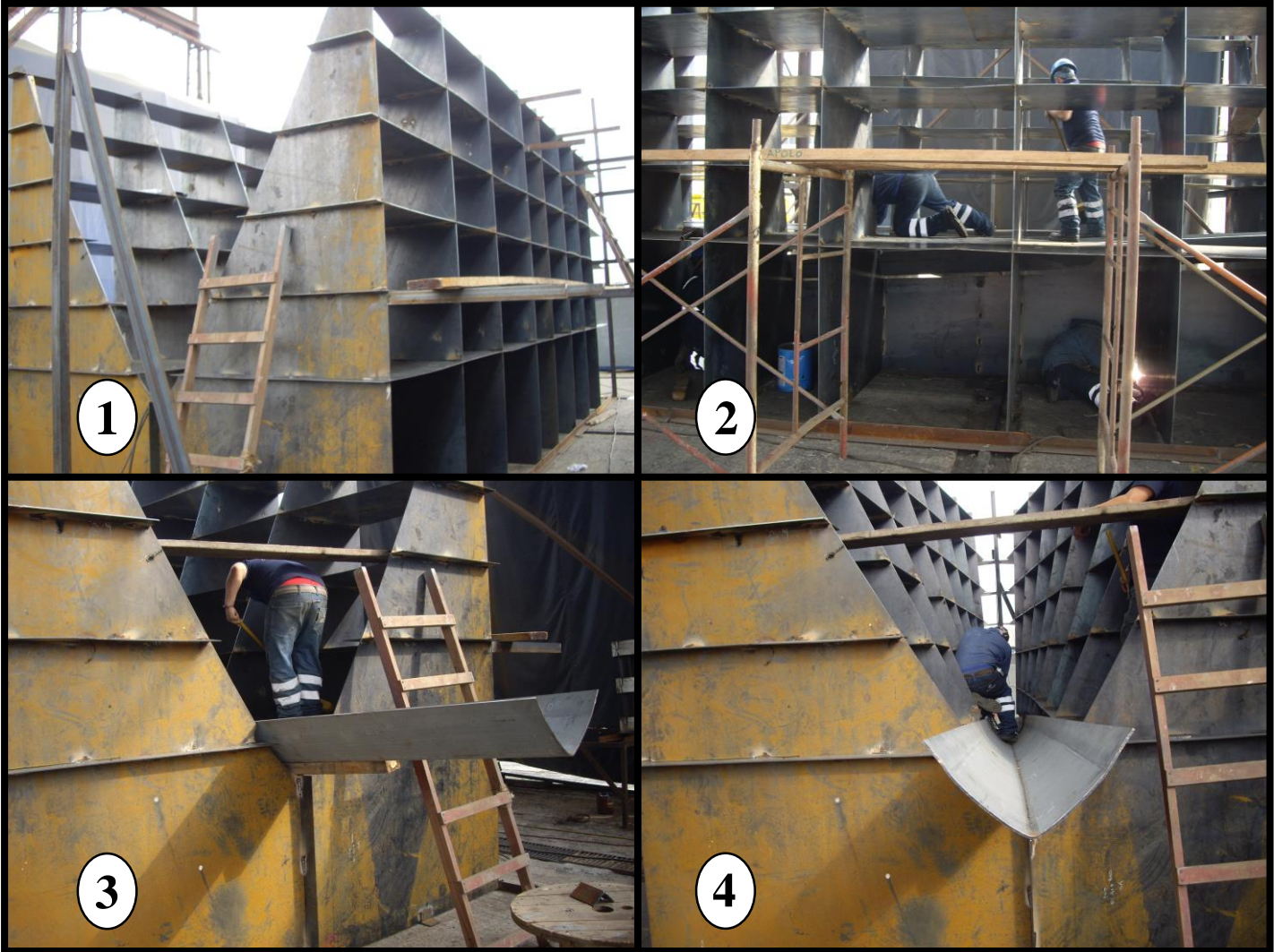
# *Bow Mould*



# *Bow Mould*



# *Bow Mould*



# *Material Requirement Planning*

*Block 104 – Plates*

Items	<i>Thickness (mm)</i>	<i>Area (m<sup>2</sup>)</i>	<i>%</i>	<i>Weight (kg)</i>	<i>%</i>
(1)	3	22,839	3,121%	276,1	1,114%
(2)	4	174,5142	23,845%	3834,751	15,475%
(3)	5	482,3588	65,908%	17057,46	68,835%
(4)	6	25,5625	3,493%	1548,3	6,248%
(5)	8	16,2574	2,221%	989,6	3,994%
(6)	10	8,0102	1,094%	779,9	3,147%
(7)	16	2,321	0,317%	294	1,186%
	<b>Total</b>	731,8631	100,000%	24780,11	100,000%







# *Section* 116

*Section* 116A

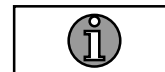
*Section* 116B

# *Section 116*

*Section 116A – Painéis (Shell Plate)*

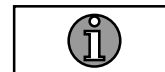
**Section 116A – Painéis (Shell Plate)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5617	1872	5	411,1
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5617	1872	5	411,1
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5878	1860	5	415,7
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5892	1858	5	415,7
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5974	1738	5	377,3
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5974	1738	5	377,3
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3395	1482	5	180,9
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3395	1482	5	180,9
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5938	455	5	58,4
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5938	455	5	58,4
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3141	735	5	72,7
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3141	735	5	72,7
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2550	1951	5	194,5
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2550	1951	5	194,5


**Σ****3421,2**

**Section 116A – Painéis (Shell Plate)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5566	1251	5	272,1
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2571	1251	5	125,7
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5945	1951	5	455,2
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5945	1951	5	455,2
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5952	1230	5	262,2
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5945	1251	5	283,7
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5955	1951	5	456
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5955	1951	5	456
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2956	967	5	98,8
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5961	1137	5	223
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5960	1950	5	456,3
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5960	1950	5	456,2
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5967	1601	5	296,9
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5968	1801	5	343,7


**Σ****4641**

### ***Section 116A – Painéis (Shell Plate)***

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>SHELLPLATE</i>	Grade A 235	1957	1015	10	154,3
<i>SHELLPLATE</i>	Grade A 235	2532	1950	5	193,7
<i>SHELLPLATE</i>	Grade A 235	5945	1950	5	455
<i>SHELLPLATE</i>	Grade A 235	5955	1950	5	455,8
					$\Sigma$ 1258,8
					$\Sigma$ <i>Peso (Kg)</i> <i>Total</i> 9321

***Section 116A – Painéis (Shell Stifenner – Longitudinais)***

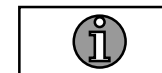
**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. AU45X30X4 1100 from CL	S235JR	1996	45	4	4,4
Shell stif. AU45X30X4 1100 from CL	S235JR	495	45	4	1,1
Shell stif. AU45X30X4 1100 from CL	S235JR	1488	45	4	3,3
Shell stif. AU45X30X4 1100 from CL	S235JR	5900	45	4	13,2
Shell stif. AU45X30X4 1100 from CL	S235JR	3095	45	4	6,9
Shell stif. AU45X30X4 -1100 from CL	S235JR	767	45	4	1,7
Shell stif. AU45X30X4 -1100 from CL	S235JR	1488	45	4	3,3
Shell stif. AU45X30X4 -1100 from CL	S235JR	4996	45	4	11,1
Shell stif. AU45X30X4 -1100 from CL	S235JR	5900	45	4	13,2
Shell stif. AU45X30X4 -1100 from CL	S235JR	3095	45	4	6,9
Shell stif. AU45X30X4 1350 from CL	S235JR	3996	45	4	8,9
Shell stif. AU45X30X4 -1350 from CL	S235JR	3996	45	4	8,9
Shell stif. AU45X30X4 1400 from CL	S235JR	495	45	4	1,1
Shell stif. AU45X30X4 1400 from CL	S235JR	1488	45	4	3,3
				Σ	87,3



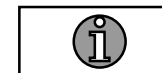
**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. AU45X30X4 1400 from CL	S235JR	1996	45	4	4,4
Shell stif. AU45X30X4 1400 from CL	S235JR	5900	45	4	13,2
Shell stif. AU45X30X4 1400 from CL	S235JR	1095	45	4	2,4
Shell stif. AU45X30X4 -1400 from CL	S235JR	1488	45	4	3,3
Shell stif. AU45X30X4 -1400 from CL	S235JR	4996	45	4	11,1
Shell stif. AU45X30X4 -1400 from CL	S235JR	5900	45	4	13,2
Shell stif. AU45X30X4 -1400 from CL	S235JR	1095	45	4	2,4
Shell stif. AU45X30X4 1700 from CL	S235JR	5995	45	4	13,4
Shell stif. AU45X30X4 1700 from CL	S235JR	5700	45	4	12,7
Shell stif. AU45X30X4 1700 from CL	S235JR	495	45	4	1,1
Shell stif. AU45X30X4 1700 from CL	S235JR	1488	45	4	3,3
Shell stif. AU45X30X4 1700 from CL	S235JR	1996	45	4	4,4
Shell stif. AU45X30X4 1700 from CL	S235JR	2996	45	4	6,7
Shell stif. AU45X30X4 1700 from CL	S235JR	296	45	4	0,7

**Σ****92,3**

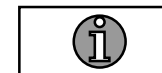
**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. AU45X30X4 -1700 from CL	S235JR	767	45	4	1,7
Shell stif. AU45X30X4 -1700 from CL	S235JR	5995	45	4	13,4
Shell stif. AU45X30X4 -1700 from CL	S235JR	5700	45	4	12,7
Shell stif. AU45X30X4 -1700 from CL	S235JR	1488	45	4	3,3
Shell stif. AU45X30X4 -1700 from CL	S235JR	4996	45	4	11,1
Shell stif. AU45X30X4 -1700 from CL	S235JR	296	45	4	0,7
Shell stif. AU45X30X4 -2 from CL	S235JR	5000	45	4	11,1
Shell stif. AU45X30X4 -2 from CL	S235JR	5950	45	4	13,3
Shell stif. AU45X30X4 -2 from CL	S235JR	2380	45	4	5,3
Shell stif. AU45X30X4 -2 from CL	S235JR	5900	45	4	13,2
Shell stif. AU45X30X4 -2 from CL	S235JR	646	45	4	1,4
Shell stif. AU45X30X4 2000 from CL	S235JR	1696	45	4	3,8
Shell stif. AU45X30X4 2000 from CL	S235JR	5896	45	4	13,1
Shell stif. AU45X30X4 -2000 from CL	S235JR	1696	45	4	3,8

**Σ****107,9**

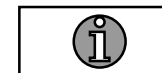
**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. AU45X30X4 -2000 from CL	S235JR	5896	45	4	13,1
Shell stif. AU45X30X4 2275 from CL	S235JR	2392	45	4	5,3
Shell stif. AU45X30X4 2275 from CL	S235JR	1996	45	4	4,4
Shell stif. AU45X30X4 2275 from CL	S235JR	2996	45	4	6,7
Shell stif. AU45X30X4 2275 from CL	S235JR	5900	45	4	13,2
Shell stif. AU45X30X4 2275 from CL	S235JR	5950	45	4	13,3
Shell stif. AU45X30X4 2275 from CL	S235JR	1146	45	4	2,6
Shell stif. AU45X30X4 -2275 from CL	S235JR	2392	45	4	5,3
Shell stif. AU45X30X4 -2275 from CL	S235JR	4996	45	4	11,1
Shell stif. AU45X30X4 -2275 from CL	S235JR	5900	45	4	13,2
Shell stif. AU45X30X4 -2275 from CL	S235JR	5950	45	4	13,3
Shell stif. AU45X30X4 -2275 from CL	S235JR	1146	45	4	2,6
Shell stif. AU45X30X4 250 from CL	S235JR	2380	45	4	5,3
Shell stif. AU45X30X4 250 from CL	S235JR	1995	45	4	4,4

**Σ****113,8**

**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

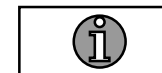
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. AU45X30X4 250 from CL	S235JR	5900	45	4	13,2
Shell stif. AU45X30X4 250 from CL	S235JR	5950	45	4	13,3
Shell stif. AU45X30X4 250 from CL	S235JR	1146	45	4	2,6
Shell stif. AU45X30X4 -250 from CL	S235JR	5000	45	4	11,1
Shell stif. AU45X30X4 -250 from CL	S235JR	5950	45	4	13,3
Shell stif. AU45X30X4 -250 from CL	S235JR	2380	45	4	5,3
Shell stif. AU45X30X4 -250 from CL	S235JR	5900	45	4	13,2
Shell stif. AU45X30X4 -250 from CL	S235JR	1146	45	4	2,6
Shell stif. AU45X30X4 2530 from CL	S235JR	2395	45	4	5,3
Shell stif. AU45X30X4 2530 from CL	S235JR	1996	45	4	4,4
Shell stif. AU45X30X4 2530 from CL	S235JR	2996	45	4	6,7
Shell stif. AU45X30X4 2530 from CL	S235JR	5900	45	4	13,2
Shell stif. AU45X30X4 2530 from CL	S235JR	5950	45	4	13,3
Shell stif. AU45X30X4 2530 from CL	S235JR	1146	45	4	2,6

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120,1

**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

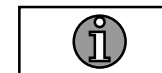
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. AU45X30X4 -2530 from CL	S235JR	2395	45	4	5,3
Shell stif. AU45X30X4 -2530 from CL	S235JR	4996	45	4	11,1
Shell stif. AU45X30X4 -2530 from CL	S235JR	5900	45	4	13,2
Shell stif. AU45X30X4 -2530 from CL	S235JR	5950	45	4	13,3
Shell stif. AU45X30X4 -2530 from CL	S235JR	1146	45	4	2,6
Shell stif. AU45X30X4 2800 from CL	S235JR	2399	45	4	5,3
Shell stif. AU45X30X4 2800 from CL	S235JR	1996	45	4	4,4
Shell stif. AU45X30X4 2800 from CL	S235JR	2996	45	4	6,7
Shell stif. AU45X30X4 2800 from CL	S235JR	5950	45	4	13,3
Shell stif. AU45X30X4 2800 from CL	S235JR	1146	45	4	2,6
Shell stif. AU45X30X4 2800 from CL	S235JR	5900	45	4	13,2
Shell stif. AU45X30X4 -2800 from CL	S235JR	2399	45	4	5,3
Shell stif. AU45X30X4 -2800 from CL	S235JR	4996	45	4	11,1
Shell stif. AU45X30X4 -2800 from CL	S235JR	5900	45	4	13,2

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120,6

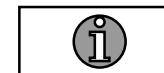
**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. AU45X30X4 -2800 from CL	S235JR	5950	45	4	13,3
Shell stif. AU45X30X4 -2800 from CL	S235JR	1146	45	4	2,6
Shell stif. AU45X30X4 3100 from CL	S235JR	1407	45	4	3,1
Shell stif. AU45X30X4 3100 from CL	S235JR	2996	45	4	6,7
Shell stif. AU45X30X4 3100 from CL	S235JR	5900	45	4	13,2
Shell stif. AU45X30X4 3100 from CL	S235JR	5095	45	4	11,4
Shell stif. AU45X30X4 -3100 from CL	S235JR	1407	45	4	3,1
Shell stif. AU45X30X4 -3100 from CL	S235JR	4996	45	4	11,1
Shell stif. AU45X30X4 -3100 from CL	S235JR	5900	45	4	13,2
Shell stif. AU45X30X4 -3100 from CL	S235JR	5095	45	4	11,4
Shell stif. AU45X30X4 3400 from CL	S235JR	1996	45	4	4,4
Shell stif. AU45X30X4 3400 from CL	S235JR	1412	45	4	3,1
Shell stif. AU45X30X4 3400 from CL	S235JR	988	45	4	2,2
Shell stif. AU45X30X4 3400 from CL	S235JR	2996	45	4	6,7

**Σ****105,5**

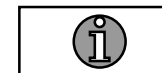
**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. AU45X30X4 3400 from CL	S235JR	5900	45	4	13,2
Shell stif. AU45X30X4 3400 from CL	S235JR	2095	45	4	4,7
Shell stif. AU45X30X4 -3400 from CL	S235JR	1412	45	4	3,1
Shell stif. AU45X30X4 -3400 from CL	S235JR	992	45	4	2,2
Shell stif. AU45X30X4 -3400 from CL	S235JR	4996	45	4	11,1
Shell stif. AU45X30X4 -3400 from CL	S235JR	5900	45	4	13,2
Shell stif. AU45X30X4 -3400 from CL	S235JR	2095	45	4	4,7
Shell stif. AU45X30X4 3700 from CL	S235JR	1996	45	4	4,4
Shell stif. AU45X30X4 3700 from CL	S235JR	1417	45	4	3,1
Shell stif. AU45X30X4 3700 from CL	S235JR	988	45	4	2,2
Shell stif. AU45X30X4 3700 from CL	S235JR	2996	45	4	6,7
Shell stif. AU45X30X4 3700 from CL	S235JR	4995	45	4	11,1
Shell stif. AU45X30X4 -3700 from CL	S235JR	1417	45	4	3,1
Shell stif. AU45X30X4 -3700 from CL	S235JR	992	45	4	2,2

**Σ****85**

**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

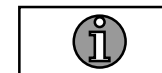
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. AU45X30X4 -3700 from CL	S235JR	4996	45	4	11,1
Shell stif. AU45X30X4 -3700 from CL	S235JR	4995	45	4	11,1
Shell stif. AU45X30X4 3950/4000	S235JR	997	45	4	2,3
Shell stif. AU45X30X4 4000 from CL	S235JR	1996	45	4	4,4
Shell stif. AU45X30X4 4000 from CL	S235JR	1422	45	4	3,1
Shell stif. AU45X30X4 4000 from CL	S235JR	988	45	4	2,2
Shell stif. AU45X30X4 4000 from CL	S235JR	2996	45	4	6,7
Shell stif. AU45X30X4 -4000 from CL	S235JR	1422	45	4	3,1
Shell stif. AU45X30X4 -4000 from CL	S235JR	992	45	4	2,2
Shell stif. AU45X30X4 -4000 from CL	S235JR	4996	45	4	11,1
Shell stif. AU45X30X4 -4001/-3951	S235JR	996	45	4	2,3
Shell stif. AU45X30X4 500 from CL	S235JR	884	45	4	1,9
Shell stif. AU45X30X4 500 from CL	S235JR	5900	45	4	13,2
Shell stif. AU45X30X4 500 from CL	S235JR	5950	45	4	13,3

**Σ****88**



**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. AU45X30X4 500 from CL	S235JR	1146	45	4	2,6
Shell stif. AU45X30X4 -500 from CL	S235JR	4996	45	4	11,1
Shell stif. AU45X30X4 -500 from CL	S235JR	5900	45	4	13,2
Shell stif. AU45X30X4 -500 from CL	S235JR	5950	45	4	13,3
Shell stif. AU45X30X4 -500 from CL	S235JR	1146	45	4	2,6
Shell stif. AU45X30X4 800 from CL	S235JR	1996	45	4	4,4
Shell stif. AU45X30X4 800 from CL	S235JR	885	45	4	1,9
Shell stif. AU45X30X4 800 from CL	S235JR	1488	45	4	3,3
Shell stif. AU45X30X4 800 from CL	S235JR	5900	45	4	13,2
Shell stif. AU45X30X4 800 from CL	S235JR	5950	45	4	13,3
Shell stif. AU45X30X4 800 from CL	S235JR	1146	45	4	2,6
Shell stif. AU45X30X4 -800 from CL	S235JR	767	45	4	1,7
Shell stif. AU45X30X4 -800 from CL	S235JR	1488	45	4	3,3
Shell stif. AU45X30X4 -800 from CL	S235JR	5900	45	4	13,2

**Σ****99,7**

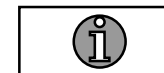
**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell stif. AU45X30X4 -800 from CL	S235JR	5950	45	4	13,3
Shell stif. AU45X30X4 -800 from CL	S235JR	1146	45	4	2,6
Shell stif. AU45X30X4 FR. 28+330	S235JR	246	45	4	0,5
Shell stif. AU45X30X4 FR. 29+330	S235JR	246	45	4	0,5
Shell stif. AU45X30X4 FR. 29-330	S235JR	246	45	4	0,5
Shell stif. AU45X30X4 FR. 30+280	S235JR	253	45	4	0,6
Shell stif. AU45X30X4 FR. 30+280	S235JR	253	45	4	0,6
Shell stif. AU45X30X4 FR. 30+330	S235JR	246	45	4	0,5
Shell stif. AU45X30X4 FR. 30+400	S235JR	345	45	4	0,8
Shell stif. AU45X30X4 FR. 30+400	S235JR	345	45	4	0,8
Shell stif. AU45X30X4 FR. 30-330	S235JR	246	45	4	0,5
Shell stif. AU45X30X4 FR. 31+330	S235JR	335	45	4	0,7
Shell stif. AU45X30X4 FR. 31+330	S235JR	335	45	4	0,7
Shell stif. AU45X30X4 FR. 31-185	S235JR	297	45	4	0,7

**Σ****23,3**

**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

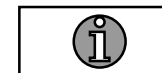
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. AU45X30X4 FR. 31-185	S235JR	297	45	4	0,7
Shell stif. AU45X30X4 FR. 31-330	S235JR	246	45	4	0,5
Shell stif. AU45X30X4 FR. 32+330	S235JR	431	45	4	1
Shell stif. AU45X30X4 FR. 32+330	S235JR	431	45	4	1
Shell stif. AU45X30X4 FR. 32-330	S235JR	328	45	4	0,7
Shell stif. AU45X30X4 FR. 32-330	S235JR	328	45	4	0,7
Shell stif. AU45X30X4 FR. 33+330	S235JR	367	45	4	0,8
Shell stif. AU45X30X4 FR. 33+330	S235JR	367	45	4	0,8
Shell stif. AU45X30X4 FR. 33-331	S235JR	361	45	4	0,8
Shell stif. AU45X30X4 FR. 33-331	S235JR	361	45	4	0,8
Shell stif. AU45X30X4 FR. 34+330	S235JR	322	45	4	0,7
Shell stif. AU45X30X4 FR. 34+330	S235JR	322	45	4	0,7
Shell stif. AU45X30X4 FR. 34-330	S235JR	436	45	4	1
Shell stif. AU45X30X4 FR. 34-330	S235JR	436	45	4	1

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11,2

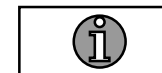
**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. AU45X30X4 FR. 35-300	S235JR	272	45	4	0,6
Shell stif. AU45X30X4 FR. 35-300	S235JR	272	45	4	0,6
Shell stif. AU45X30X4 FR. 36-445	S235JR	272	45	4	0,6
Shell stif. AU45X30X4 FR. 36-445	S235JR	253	45	4	0,6
Shell stif. AU45X30X4 FR. 36-445	S235JR	253	45	4	0,6
Shell stif. AU45X30X4 FR. 36-445	S235JR	272	45	4	0,6
Shell stif. AU45X30X4 FR. 37+370	S235JR	253	45	4	0,6
Shell stif. AU45X30X4 FR. 37+370	S235JR	272	45	4	0,6
Shell stif. AU45X30X4 FR. 37+370	S235JR	272	45	4	0,6
Shell stif. AU45X30X4 FR. 37+370	S235JR	253	45	4	0,6
Shell stif. AU45X30X4 FR. 37+500	S235JR	492	45	4	1,1
Shell stif. AU45X30X4 FR. 37-485	S235JR	253	45	4	0,6
Shell stif. AU45X30X4 FR. 37-485	S235JR	253	45	4	0,6
Shell stif. FB40X4 17+621/17+985	S235JR	865	40	4	2

**Σ****10,3**

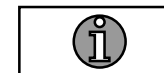
**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell stif. HP60X4 4605/4610	Grade A 235	1504	60	4	4,3
Shell stif. HP60X4 4605/4610	Grade A 235	1996	60	4	5,7
Shell stif. HP60X4 4605/4610	Grade A 235	992	60	4	2,9
Shell stif. HP60X4 4605/4610	Grade A 235	992	60	4	2,9
Shell stif. HP60X4 4605/4610	Grade A 235	4998	60	4	14,1
Shell stif. HP60X4 4605/4610	Grade A 235	2999	60	4	8,5
Shell stif. HP60X4 4605/4610	Grade A 235	1504	60	4	4,3
Shell stif. HP60X4 4605/4618	Grade A 235	5924	60	4	16,7
Shell stif. HP60X4 4605/4618	Grade A 235	5924	60	4	16,7
Shell stif. HP60X4 4610/4621	Grade A 235	5974	60	4	16,8
Shell stif. HP60X4 4610/4621	Grade A 235	5974	60	4	16,8
Shell stif. HP60X4 4915/4920	Grade A 235	1504	60	4	4,3
Shell stif. HP60X4 4915/4920	Grade A 235	1996	60	4	5,7
Shell stif. HP60X4 4915/4920	Grade A 235	5921	60	4	16,7

**Σ****136,4**

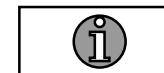
**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. HP60X4 4915/4920	Grade A 235	5921	60	4	16,7
Shell stif. HP60X4 4915/4920	Grade A 235	992	60	4	2,9
Shell stif. HP60X4 4915/4920	Grade A 235	992	60	4	2,9
Shell stif. HP60X4 4915/4920	Grade A 235	4998	60	4	14,1
Shell stif. HP60X4 4915/4920	Grade A 235	2999	60	4	8,5
Shell stif. HP60X4 4915/4920	Grade A 235	1504	60	4	4,3
Shell stif. HP60X4 4915/4930	Grade A 235	5966	60	4	16,8
Shell stif. HP60X4 4915/4930	Grade A 235	5966	60	4	16,8
Shell stif. HP60X4 5225/5230	Grade A 235	1504	60	4	4,3
Shell stif. HP60X4 5225/5230	Grade A 235	5921	60	4	16,7
Shell stif. HP60X4 5225/5230	Grade A 235	1996	60	4	5,7
Shell stif. HP60X4 5225/5230	Grade A 235	992	60	4	2,9
Shell stif. HP60X4 5225/5230	Grade A 235	992	60	4	2,9
Shell stif. HP60X4 5225/5230	Grade A 235	4998	60	4	14,1

**Σ****129,6**

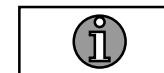
**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. HP60X4 5225/5230	Grade A 235	2998	60	4	8,5
Shell stif. HP60X4 5225/5230	Grade A 235	1504	60	4	4,3
Shell stif. HP60X4 5225/5230	Grade A 235	5921	60	4	16,7
Shell stif. HP60X4 5225/5230	Grade A 235	5955	60	4	16,8
Shell stif. HP60X4 5225/5230	Grade A 235	5955	60	4	16,8
Shell stif. HP60X4 5535/5540	Grade A 235	1504	60	4	4,3
Shell stif. HP60X4 5535/5540	Grade A 235	5921	60	4	16,7
Shell stif. HP60X4 5535/5540	Grade A 235	5921	60	4	16,7
Shell stif. HP60X4 5535/5540	Grade A 235	1996	60	4	5,7
Shell stif. HP60X4 5535/5540	Grade A 235	992	60	4	2,9
Shell stif. HP60X4 5535/5540	Grade A 235	992	60	4	2,9
Shell stif. HP60X4 5535/5540	Grade A 235	4998	60	4	14,1
Shell stif. HP60X4 5535/5540	Grade A 235	2998	60	4	8,5
Shell stif. HP60X4 5535/5540	Grade A 235	1504	60	4	4,3

**Σ****139,2**

**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

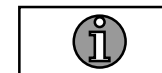
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. HP60X4 5535/5540	Grade A 235	5955	60	4	16,8
Shell stif. HP60X4 5535/5540	Grade A 235	5955	60	4	16,8
Shell stif. HP60X4 5955/5960	Grade A 235	5921	60	4	16,7
Shell stif. HP60X4 5955/5960	Grade A 235	5921	60	4	16,7
Shell stif. HP60X4 5955/5960	Grade A 235	1504	60	4	4,3
Shell stif. HP60X4 5955/5960	Grade A 235	1996	60	4	5,7
Shell stif. HP60X4 5955/5960	Grade A 235	992	60	4	2,9
Shell stif. HP60X4 5955/5960	Grade A 235	992	60	4	2,9
Shell stif. HP60X4 5955/5960	Grade A 235	4998	60	4	14,1
Shell stif. HP60X4 5955/5960	Grade A 235	2998	60	4	8,5
Shell stif. HP60X4 5955/5960	Grade A 235	1504	60	4	4,3
Shell stif. HP60X4 5955/5960	Grade A 235	5955	60	4	16,8
Shell stif. HP60X4 5955/5960	Grade A 235	5955	60	4	16,8
Shell stif. HP60X4 6180/6185	Grade A 235	1504	60	4	4,3

**Σ****147,6**



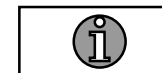
**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. HP60X4 6180/6185	Grade A 235	5921	60	4	16,7
Shell stif. HP60X4 6180/6185	Grade A 235	5955	60	4	16,8
Shell stif. HP60X4 6180/6185	Grade A 235	5921	60	4	16,7
Shell stif. HP60X4 6180/6185	Grade A 235	1996	60	4	5,7
Shell stif. HP60X4 6180/6185	Grade A 235	992	60	4	2,9
Shell stif. HP60X4 6180/6185	Grade A 235	992	60	4	2,9
Shell stif. HP60X4 6180/6185	Grade A 235	4998	60	4	14,1
Shell stif. HP60X4 6180/6185	Grade A 235	2998	60	4	8,5
Shell stif. HP60X4 6180/6185	Grade A 235	1504	60	4	4,3
Shell stif. HP60X4 6180/6185	Grade A 235	5955	60	4	16,8
Shell stif. HP60X4 6375/6580	Grade A 235	1471	60	4	4,2
Shell stif. HP60X4 6375/6580	Grade A 235	1471	60	4	4,2
Shell stif. HP60X4 6464/6480	Grade A 235	5920	60	4	16,7
Shell stif. HP60X4 6464/6480	Grade A 235	5643	60	4	15,9

**Σ****146,4**

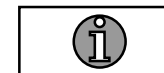
**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. HP60X4 6464/6480	Grade A 235	1504	60	4	4,3
Shell stif. HP60X4 6464/6480	Grade A 235	5643	60	4	15,9
Shell stif. HP60X4 6464/6480	Grade A 235	1504	60	4	4,3
Shell stif. HP60X4 6464/6480	Grade A 235	5920	60	4	16,7
Shell stif. HP60X4 6464/6480	Grade A 235	992	60	4	2,9
Shell stif. HP60X4 6464/6480	Grade A 235	963	60	4	2,8
Shell stif. HP60X4 6464/6480	Grade A 235	4998	60	4	14,1
Shell stif. HP60X4 6464/6480	Grade A 235	2998	60	4	8,5
Shell stif. HP60X4 FR. 20+330	Grade A 235	728	60	4	2
Shell stif. HP60X4 FR. 21+330	Grade A 235	729	60	4	2
Shell stif. HP60X4 FR. 21-330	Grade A 235	728	60	4	2
Shell stif. HP60X4 FR. 22-330	Grade A 235	728	60	4	2
Stif. AU45X30X4 3400 from CL at Deck 6460 above base	S235JR	1996	45	4	4,4
Stif. AU45X30X4 3700 from CL at Deck 6460 above base	S235JR	1996	45	4	4,4

**Σ****86,3**

**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. AU45X30X4 4000 from CL at Deck 6460 above base	S235JR	92	40	4	4,4
Stif. FB40X4 1100 from CL at Bulkhead FR 34	S235JR	92	40	4	0,1
Stif. FB40X4 -1100 from CL at Bulkhead FR 34	S235JR	92	40	4	0,1
Stif. FB40X4 1350 from CL at Bulkhead FR 34	S235JR	92	40	4	0,1
Stif. FB40X4 -1350 from CL at Bulkhead FR 34	S235JR	94	40	4	0,1
Stif. FB40X4 1400 from CL at Bulkhead FR 19	S235JR	94	40	4	0,1
Stif. FB40X4 -1400 from CL at Bulkhead FR 19	S235JR	89	40	4	0,1
Stif. FB40X4 1400 from CL at Bulkhead FR 32	S235JR	94	40	4	0,1
Stif. FB40X4 -1400 from CL at Bulkhead FR 32	S235JR	278	40	4	0,1
Stif. FB40X4 17+490/17+636 from CL at Bulkhead FR	S235JR	278	40	4	0,3
Stif. FB40X4 17+490/17+636 from CL at Bulkhead FR	S235JR	277	40	4	0,3
Stif. FB40X4 17+490/17+636 from CL at Bulkhead FR	S235JR	278	40	4	0,3
Stif. FB40X4 17+490/17+636 from CL at Bulkhead FR	S235JR	278	40	4	0,3
Stif. FB40X4 17+490/17+636 from CL at Bulkhead FR	S235JR	278	40	4	0,3

**Σ****6,7**

**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

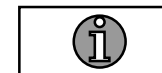
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. FB40X4 17+490/17+636 from CL at Bulkhead FR	S235JR	278	40	4	0,3
Stif. FB40X4 17+490/17+636 from CL at Bulkhead FR	S235JR	278	40	4	0,3
Stif. FB40X4 17+490/17+645 from CL at Bulkhead FR	S235JR	277	40	4	0,3
Stif. FB40X4 17+490/17+645 from CL at Bulkhead FR	S235JR	277	40	4	0,3
Stif. FB40X4 17+490/17+645 from CL at Bulkhead FR	S235JR	277	40	4	0,3
Stif. FB40X4 17+490/17+645 from CL at Bulkhead FR	S235JR	277	40	4	0,3
Stif. FB40X4 17+490/17+645 from CL at Bulkhead FR	S235JR	277	40	4	0,3
Stif. FB40X4 17+490/17+645 from CL at Bulkhead FR	S235JR	278	40	4	0,3
Stif. FB40X4 17+490/17+645 from CL at Bulkhead FR	S235JR	278	40	4	0,3
Stif. FB40X4 17+490/17+645 from CL at Bulkhead FR	S235JR	277	40	4	0,3
Stif. FB40X4 17+490/17+645 from CL at Bulkhead FR	S235JR	278	40	4	0,3
Stif. FB40X4 17+490/17+645 from CL at Bulkhead FR	S235JR	278	40	4	0,3
Stif. FB40X4 17+490/17+645 from CL at Bulkhead FR	S235JR	278	40	4	0,3
Stif. FB40X4 17+490/17+645 from CL at Bulkhead FR	S235JR	278	40	4	0,3



Σ 4,2

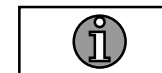
**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. FB40X4 1700 from CL at Bulkhead FR 31	S235JR	93	40	4	0,1
Stif. FB40X4 -1700 from CL at Bulkhead FR 31	S235JR	93	40	4	0,1
Stif. FB40X4 1700 from CL at Bulkhead FR 32	S235JR	91	40	4	0,1
Stif. FB40X4 -1700 from CL at Bulkhead FR 32	S235JR	91	40	4	0,1
Stif. FB40X4 -2 from CL at Bulkhead FR 23	S235JR	120	40	4	0,1
Stif. FB40X4 -2 from CL at Bulkhead FR 24	S235JR	120	40	4	0,1
Stif. FB40X4 -2 from CL at Bulkhead FR 25	S235JR	119	40	4	0,1
Stif. FB40X4 2000 from CL at Bulkhead FR 34	S235JR	96	40	4	0,1
Stif. FB40X4 -2000 from CL at Bulkhead FR 34	S235JR	96	40	4	0,1
Stif. FB40X4 2000 from CL at Bulkhead FR 35	S235JR	97	40	4	0,1
Stif. FB40X4 -2000 from CL at Bulkhead FR 35	S235JR	97	40	4	0,1
Stif. FB40X4 2000 from CL at Bulkhead FR 36	S235JR	96	40	4	0,1
Stif. FB40X4 -2000 from CL at Bulkhead FR 36	S235JR	96	40	4	0,1
Stif. FB40X4 2000 from CL at Bulkhead FR 37	S235JR	95	40	4	0,1

**Σ****1,4**

**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

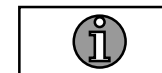
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. FB40X4 -2000 from CL at Bulkhead FR 37	S235JR	95	40	4	0,1
Stif. FB40X4 2275 from CL at Bulkhead FR 33	S235JR	96	40	4	0,1
Stif. FB40X4 -2275 from CL at Bulkhead FR 33	S235JR	96	40	4	0,1
Stif. FB40X4 2530 from CL at Bulkhead FR 19	S235JR	93	40	4	0,1
Stif. FB40X4 -2530 from CL at Bulkhead FR 19	S235JR	93	40	4	0,1
Stif. FB40X4 2530 from CL at Bulkhead FR 31	S235JR	95	40	4	0,1
Stif. FB40X4 -2530 from CL at Bulkhead FR 31	S235JR	95	40	4	0,1
Stif. FB40X4 2530 from CL at Bulkhead FR 32	S235JR	96	40	4	0,1
Stif. FB40X4 -2530 from CL at Bulkhead FR 32	S235JR	96	40	4	0,1
Stif. FB40X4 2530 from CL at Bulkhead FR 37	S235JR	92	40	4	0,1
Stif. FB40X4 -2530 from CL at Bulkhead FR 37	S235JR	92	40	4	0,1
Stif. FB40X4 2800 from CL at Bulkhead FR 18	S235JR	97	40	4	0,1
Stif. FB40X4 -2800 from CL at Bulkhead FR 18	S235JR	97	40	4	0,1
Stif. FB40X4 -2800 from CL at Bulkhead FR 21	S235JR	96	40	4	0,1

 $\Sigma$ 

1,4

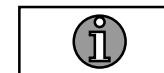
**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. FB40X4 -2800 from CL at Bulkhead FR 22	S235JR	146	40	4	0,2
Stif. FB40X4 2800 from CL at Bulkhead FR 23	S235JR	96	40	4	0,1
Stif. FB40X4 -2800 from CL at Bulkhead FR 23	S235JR	96	40	4	0,1
Stif. FB40X4 2800 from CL at Bulkhead FR 24	S235JR	96	40	4	0,1
Stif. FB40X4 -2800 from CL at Bulkhead FR 24	S235JR	96	40	4	0,1
Stif. FB40X4 2800 from CL at Bulkhead FR 26	S235JR	95	40	4	0,1
Stif. FB40X4 -2800 from CL at Bulkhead FR 26	S235JR	96	40	4	0,1
Stif. FB40X4 2800 from CL at Bulkhead FR 27	S235JR	144	40	4	0,2
Stif. FB40X4 -2800 from CL at Bulkhead FR 27	S235JR	145	40	4	0,2
Stif. FB40X4 2800 from CL at Bulkhead FR 28	S235JR	94	40	4	0,1
Stif. FB40X4 -2800 from CL at Bulkhead FR 28	S235JR	95	40	4	0,1
Stif. FB40X4 2800 from CL at Bulkhead FR 29	S235JR	94	40	4	0,1
Stif. FB40X4 -2800 from CL at Bulkhead FR 29	S235JR	95	40	4	0,1
Stif. FB40X4 2800 from CL at Bulkhead FR 30	S235JR	93	40	4	0,1

**Σ****1,7**

**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

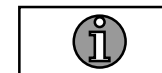
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. FB40X4 -2800 from CL at Bulkhead FR 30	S235JR	94	40	4	0,1
Stif. FB40X4 2800 from CL at Bulkhead FR 34	S235JR	94	40	4	0,1
Stif. FB40X4 -2800 from CL at Bulkhead FR 34	S235JR	94	40	4	0,1
Stif. FB40X4 2800 from CL at Bulkhead FR 35	S235JR	94	40	4	0,1
Stif. FB40X4 -2800 from CL at Bulkhead FR 35	S235JR	94	40	4	0,1
Stif. FB40X4 2800 from CL at Bulkhead FR 36	S235JR	91	40	4	0,1
Stif. FB40X4 -2800 from CL at Bulkhead FR 36	S235JR	91	40	4	0,1
Stif. FB40X4 3100 from CL at Bulkhead FR 31	S235JR	93	40	4	0,1
Stif. FB40X4 -3100 from CL at Bulkhead FR 31	S235JR	93	40	4	0,1
Stif. FB40X4 3100 from CL at Bulkhead FR 32	S235JR	93	40	4	0,1
Stif. FB40X4 -3100 from CL at Bulkhead FR 32	S235JR	93	40	4	0,1
Stif. FB40X4 3100 from CL at Bulkhead FR 33	S235JR	93	40	4	0,1
Stif. FB40X4 -3100 from CL at Bulkhead FR 33	S235JR	93	40	4	0,1
Stif. FB40X4 3400 from CL at Bulkhead FR 27	S235JR	143	40	4	0,2

**Σ****1,5**



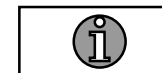
**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. FB40X4 -3400 from CL at Bulkhead FR 27	S235JR	143	40	4	0,2
Stif. FB40X4 3400 from CL at Bulkhead FR 28	S235JR	92	40	4	0,1
Stif. FB40X4 -3400 from CL at Bulkhead FR 28	S235JR	92	40	4	0,1
Stif. FB40X4 3400 from CL at Bulkhead FR 29	S235JR	92	40	4	0,1
Stif. FB40X4 -3400 from CL at Bulkhead FR 29	S235JR	92	40	4	0,1
Stif. FB40X4 3400 from CL at Bulkhead FR 30	S235JR	91	40	4	0,1
Stif. FB40X4 -3400 from CL at Bulkhead FR 30	S235JR	91	40	4	0,1
Stif. FB40X4 3700 from CL at Bulkhead FR 18	S235JR	97	40	4	0,1
Stif. FB40X4 -3700 from CL at Bulkhead FR 18	S235JR	93	40	4	0,1
Stif. FB40X4 3700 from CL at Bulkhead FR 21	S235JR	92	40	4	0,1
Stif. FB40X4 -3700 from CL at Bulkhead FR 21	S235JR	92	40	4	0,1
Stif. FB40X4 -3700 from CL at Bulkhead FR 22	S235JR	142	40	4	0,2
Stif. FB40X4 3700 from CL at Bulkhead FR 23	S235JR	92	40	4	0,1
Stif. FB40X4 -3700 from CL at Bulkhead FR 23	S235JR	92	40	4	0,1

**Σ****1,6**

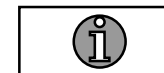
**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. FB40X4 3700 from CL at Bulkhead FR 24	S235JR	91	40	4	0,1
Stif. FB40X4 -3700 from CL at Bulkhead FR 24	S235JR	91	40	4	0,1
Stif. FB40X4 3700 from CL at Bulkhead FR 26	S235JR	91	40	4	0,1
Stif. FB40X4 -3700 from CL at Bulkhead FR 26	S235JR	91	40	4	0,1
Stif. FB40X4 500 from CL at Bulkhead FR 34	S235JR	99	40	4	0,1
Stif. FB40X4 -500 from CL at Bulkhead FR 34	S235JR	99	40	4	0,1
Stif. FB40X4 500 from CL at Bulkhead FR 35	S235JR	95	40	4	0,1
Stif. FB40X4 -500 from CL at Bulkhead FR 35	S235JR	95	40	4	0,1
Stif. FB40X4 500 from CL at Bulkhead FR 36	S235JR	95	40	4	0,1
Stif. FB40X4 -500 from CL at Bulkhead FR 36	S235JR	95	40	4	0,1
Stif. FB40X4 500 from CL at Bulkhead FR 37	S235JR	95	40	4	0,1
Stif. FB40X4 -500 from CL at Bulkhead FR 37	S235JR	95	40	4	0,1
Stif. FB40X4 800 from CL at Bulkhead FR 18	S235JR	114	40	4	0,1
Stif. FB40X4 800 from CL at Bulkhead FR 26	S235JR	115	40	4	0,1

**Σ****1,4**

**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

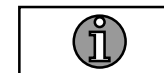
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. FB40X4 -800 from CL at Bulkhead FR 26	S235JR	115	40	4	0,1
Stif. FB40X4 800 from CL at Bulkhead FR 27	S235JR	115	40	4	0,1
Stif. FB40X4 -800 from CL at Bulkhead FR 27	S235JR	115	40	4	0,1
Stif. FB40X4 800 from CL at Bulkhead FR 28	S235JR	115	40	4	0,1
Stif. FB40X4 -800 from CL at Bulkhead FR 28	S235JR	115	40	4	0,1
Stif. FB40X4 800 from CL at Bulkhead FR 29	S235JR	115	40	4	0,1
Stif. FB40X4 -800 from CL at Bulkhead FR 29	S235JR	115	40	4	0,1
Stif. FB40X4 800 from CL at Bulkhead FR 30	S235JR	115	40	4	0,1
Stif. FB40X4 -800 from CL at Bulkhead FR 30	S235JR	115	40	4	0,1
Stif. FB40X4 800 from CL at Bulkhead FR 31	S235JR	109	40	4	0,1
Stif. FB40X4 -800 from CL at Bulkhead FR 31	S235JR	109	40	4	0,1
Stif. FB40X4 800 from CL at Bulkhead FR 32	S235JR	104	40	4	0,1
Stif. FB40X4 -800 from CL at Bulkhead FR 32	S235JR	104	40	4	0,1
Stif. FB40X4 800 from CL at Bulkhead FR 33	S235JR	99	40	4	0,1

 $\Sigma$ 

1,4

**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

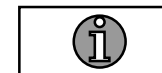
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. FB40X4 -800 from CL at Bulkhead FR 33	S235JR	99	40	4	0,1
Stif. FB40X4 a.b. at Bulkhead FR 21	S235JR	133	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 21	S235JR	154	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 21	S235JR	153	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 22	S235JR	133	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 22	S235JR	155	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 22	S235JR	138	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 23	S235JR	133	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 23	S235JR	133	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 23	S235JR	155	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 23	S235JR	155	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 24	S235JR	134	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 24	S235JR	132	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 24	S235JR	155	40	4	0,2

 $\Sigma$ 

2,7

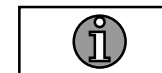
**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. FB40X4 a.b. at Bulkhead FR 24	S235JR	155	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 26	S235JR	134	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 26	S235JR	134	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 26	S235JR	154	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 26	S235JR	154	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 27	S235JR	135	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 27	S235JR	135	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 27	S235JR	154	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 27	S235JR	154	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 28	S235JR	135	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 28	S235JR	135	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 28	S235JR	153	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 28	S235JR	153	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 29	S235JR	136	40	4	0,2

**Σ****2,8**

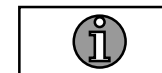
**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. FB40X4 a.b. at Bulkhead FR 29	S235JR	136	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 29	S235JR	152	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 29	S235JR	152	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 30	S235JR	136	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 30	S235JR	136	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 30	S235JR	155	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 30	S235JR	155	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 31	S235JR	137	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 31	S235JR	137	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 31	S235JR	159	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 31	S235JR	159	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 32	S235JR	138	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 32	S235JR	138	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 32	S235JR	165	40	4	0,2

**Σ****2,8**

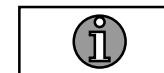
**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. FB40X4 a.b. at Bulkhead FR 32	S235JR	165	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 33	S235JR	139	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 33	S235JR	139	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 33	S235JR	171	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 33	S235JR	171	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 34	S235JR	140	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 34	S235JR	140	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 34	S235JR	178	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 34	S235JR	178	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 35	S235JR	141	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 35	S235JR	141	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 35	S235JR	186	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 35	S235JR	186	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 36	S235JR	142	40	4	0,2

**Σ****2,8**

**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. FB40X4 a.b. at Bulkhead FR 36	S235JR	142	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 36	S235JR	196	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 36	S235JR	196	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 37	S235JR	144	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 37	S235JR	144	40	4	0,2
Stif. FB40X4 a.b. at Bulkhead FR 37	S235JR	206	40	4	0,3
Stif. FB40X4 a.b. at Bulkhead FR 37	S235JR	205	40	4	0,3
Stif. FB40X4 from CL at Bulkhead FR 26	S235JR	246	40	4	0,3
Stif. FB40X4 from CL at Bulkhead FR 26	S235JR	246	40	4	0,3
Stif. FB40X4 from CL at Bulkhead FR 30	S235JR	243	40	4	0,3
Stif. FB40X4 from CL at Bulkhead FR 30	S235JR	243	40	4	0,3
Stif. FB40X4 from CL at Bulkhead FR 33	S235JR	237	40	4	0,3
Stif. FB40X4 from CL at Bulkhead FR 33	S235JR	237	40	4	0,3
Stif. FB40X4 from CL at Bulkhead FR 36	S235JR	261	40	4	0,3

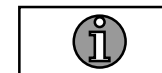
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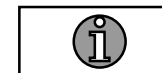
**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. FB40X4 from CL at Bulkhead FR 36	S235JR	261	40	4	0,3
Stif. FB50X5 3400 from CL at Deck 6335 above base	S235JR	938	50	5	1,8
Stif. FB50X5 3700 from CL at Deck 6335 above base	S235JR	938	50	5	1,8
Stif. FB50X5 4000 from CL at Deck 6335 above base	S235JR	938	50	5	1,8
Stif. FB50X5 FR -2000/-1000 at Long. frame from CL	S235JR	256	50	5	0,5
Stif. FB50X5 FR -2000/-1000 at Long. frame from CL	S235JR	256	50	5	0,5
Stif. FB50X5 FR -2000/-1000 at Long. frame from CL	S235JR	255	50	5	0,5
Stif. FB50X5 FR -2000/-1000 at Long. frame from CL	S235JR	258	50	5	0,5
Stif. FB50X5 FR -2000/-1000 at Long. frame from CL	S235JR	256	50	5	0,5
Stif. FB50X5 FR -2000/-1000 at Long. frame from CL	S235JR	255	50	5	0,5
Stif. FB50X5 FR -2000/-1000 at Long. frame from CL	S235JR	256	50	5	0,5
Stif. FB50X5 FR 999/1999 at Long. frame from CL	S235JR	256	50	5	0,5
Stif. FB50X5 FR 999/1999 at Long. frame from CL	S235JR	256	50	5	0,5
Stif. FB50X5 FR 999/1999 at Long. frame from CL	S235JR	255	50	5	0,5

**Σ****10,7**

**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

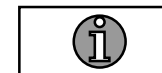
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. FB50X5 FR 999/1999 at Long. frame from CL	S235JR	258	50	5	0,5
Stif. FB50X5 FR 999/1999 at Long. frame from CL	S235JR	256	50	5	0,5
Stif. FB50X5 FR 999/1999 at Long. frame from CL	S235JR	255	50	5	0,5
Stif. FB50X5 FR 999/1999 at Long. frame from CL	S235JR	256	50	5	0,5
Stif. FB80X8 -20000/820000 from CL at	S235JR	1592	80	8	8
Stif. FB80X8 -20000/820000 from CL at	S235JR	704	80	8	3,5
Stif. FB80X8 -720 from CL at	S235JR	1110	80	8	5,6
Stif. FB80X8 -720 from CL at	S235JR	686	80	8	3,4
Stif. FB80X8 FR 21+916 at	S235JR	3204	80	8	16,1
Stif. FB80X8 FR 25+80 at	S235JR	3210	80	8	16,1
Stif. FB80X8 FR 25+80 at	S235JR	2310	80	8	11,6
Stif. FB80X8 FR 37+928 at	S235JR	2304	80	8	11,6
Stif. FB80X8 FR 37+928 at	S235JR	2304	80	8	11,6
Stif. HP60X4 1000 from CL at Bulkhead FR 38	Grade A 235	2247	60	4	6,3

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95,8

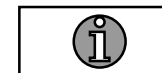
**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. HP60X4 -1000 from CL at Bulkhead FR 38	Grade A 235	2247	60	4	6,3
Stif. HP60X4 1350 from CL at Bulkhead FR 38	Grade A 235	2636	60	4	7,4
Stif. HP60X4 -1350 from CL at Bulkhead FR 38	Grade A 235	0	60	4	0,2
Stif. HP60X4 -1350 from CL at Bulkhead FR 38	Grade A 235	2636	60	4	7,4
Stif. HP60X4 1700 from CL at Bulkhead FR 38	Grade A 235	2629	60	4	7,4
Stif. HP60X4 -1700 from CL at Bulkhead FR 38	Grade A 235	0	60	4	0,2
Stif. HP60X4 -1700 from CL at Bulkhead FR 38	Grade A 235	2629	60	4	7,4
Stif. HP60X4 -2 from CL at Bulkhead FR 38	Grade A 235	735	60	4	2
Stif. HP60X4 2000 from CL at Bulkhead FR 38	Grade A 235	2620	60	4	7,4
Stif. HP60X4 -2000 from CL at Bulkhead FR 38	Grade A 235	0	60	4	0,2
Stif. HP60X4 -2000 from CL at Bulkhead FR 38	Grade A 235	2620	60	4	7,4
Stif. HP60X4 2275 from CL at Bulkhead FR 38	Grade A 235	2612	60	4	7,3
Stif. HP60X4 -2275 from CL at Bulkhead FR 38	Grade A 235	0	60	4	0,2
Stif. HP60X4 -2275 from CL at Bulkhead FR 38	Grade A 235	2612	60	4	7,3

**Σ****68,1**

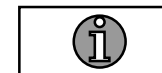
**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. HP60X4 250 from CL at Bulkhead FR 38	Grade A 235	715	60	4	2
Stif. HP60X4 -250 from CL at Bulkhead FR 38	Grade A 235	715	60	4	2
Stif. HP60X4 2530 from CL at Bulkhead FR 38	Grade A 235	2603	60	4	7,3
Stif. HP60X4 -2530 from CL at Bulkhead FR 38	Grade A 235	0	60	4	0,2
Stif. HP60X4 -2530 from CL at Bulkhead FR 38	Grade A 235	2603	60	4	7,3
Stif. HP60X4 2800 from CL at Bulkhead FR 38	Grade A 235	2592	60	4	7,3
Stif. HP60X4 -2800 from CL at Bulkhead FR 38	Grade A 235	2592	60	4	7,3
Stif. HP60X4 500 from CL at Bulkhead FR 38	Grade A 235	2648	60	4	7,4
Stif. HP60X4 -500 from CL at Bulkhead FR 38	Grade A 235	2648	60	4	7,4
Stif. HP60X4 -500 from CL at Bulkhead FR 38	Grade A 235	45	60	4	0,1
Stif. HP60X4 6240 a.b. at Bulkhead FR 38	Grade A 235	992	60	4	2,8
Stif. HP60X4 800 from CL at Bulkhead FR 38	Grade A 235	2645	60	4	7,4
Stif. HP60X4 -800 from CL at Bulkhead FR 38	Grade A 235	0	60	4	0,2
Stif. HP60X4 -800 from CL at Bulkhead FR 38	Grade A 235	2645	60	4	7,4

**Σ****66,1**

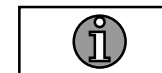
**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. HP80X6 1100 from CL at Bulkhead FR 20	Grade A 235	2495	80	6	12,1
Stif. HP80X6 -1100 from CL at Bulkhead FR 20	Grade A 235	2495	80	6	12,1
Stif. HP80X6 1100 from CL at Bulkhead FR 22	Grade A 235	2636	80	6	12,8
Stif. HP80X6 -1100 from CL at Bulkhead FR 25	Grade A 235	2636	80	6	12,8
Stif. HP80X6 1400 from CL at Bulkhead FR 20	Grade A 235	2495	80	6	12,1
Stif. HP80X6 -1400 from CL at Bulkhead FR 20	Grade A 235	2495	80	6	12,1
Stif. HP80X6 -1400 from CL at Bulkhead FR 25	Grade A 235	2630	80	6	12,8
Stif. HP80X6 1700 from CL at Bulkhead FR 20	Grade A 235	2495	80	6	12,1
Stif. HP80X6 -1700 from CL at Bulkhead FR 20	Grade A 235	2495	80	6	12,1
Stif. HP80X6 1700 from CL at Bulkhead FR 22	Grade A 235	2624	80	6	12,8
Stif. HP80X6 1700 from CL at Bulkhead FR 25	Grade A 235	2624	80	6	12,8
Stif. HP80X6 -1700 from CL at Bulkhead FR 25	Grade A 235	2624	80	6	12,8
Stif. HP80X6 2000 from CL at Bulkhead FR 22	Grade A 235	2355	80	6	11,5
Stif. HP80X6 2000 from CL at Bulkhead FR 25	Grade A 235	2355	80	6	11,5

**Σ****172,4**

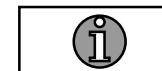
**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. HP80X6 -2000 from CL at Bulkhead FR 25	Grade A 235	2355	80	6	11,5
Stif. HP80X6 -2275 from CL at Bulkhead FR 20	Grade A 235	2495	80	6	12,1
Stif. HP80X6 2275 from CL at Bulkhead FR 22	Grade A 235	2607	80	6	12,7
Stif. HP80X6 2275 from CL at Bulkhead FR 25	Grade A 235	2607	80	6	12,7
Stif. HP80X6 -2275 from CL at Bulkhead FR 25	Grade A 235	2607	80	6	12,7
Stif. HP80X6 -2530 from CL at Bulkhead FR 20	Grade A 235	2495	80	6	12,1
Stif. HP80X6 2530 from CL at Bulkhead FR 22	Grade A 235	2598	80	6	12,6
Stif. HP80X6 2530 from CL at Bulkhead FR 25	Grade A 235	2598	80	6	12,6
Stif. HP80X6 -2530 from CL at Bulkhead FR 25	Grade A 235	2598	80	6	12,6
Stif. HP80X6 3100 from CL at Bulkhead FR 22	Grade A 235	2135	80	6	10,4
Stif. HP80X6 3100 from CL at Bulkhead FR 25	Grade A 235	2574	80	6	12,5
Stif. HP80X6 -3100 from CL at Bulkhead FR 25	Grade A 235	2574	80	6	12,5
Stif. HP80X6 3400 from CL at Bulkhead FR 20	Grade A 235	2041	80	6	9,9
Stif. HP80X6 -3400 from CL at Bulkhead FR 20	Grade A 235	2495	80	6	12,1

**Σ****169**

**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

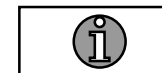
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. HP80X6 3400 from CL at Bulkhead FR 22	Grade A 235	2105	80	6	10,2
Stif. HP80X6 3400 from CL at Bulkhead FR 25	Grade A 235	2559	80	6	12,5
Stif. HP80X6 -3400 from CL at Bulkhead FR 25	Grade A 235	2559	80	6	12,5
Stif. HP80X6 3700 from CL at Bulkhead FR 20	Grade A 235	2056	80	6	10
Stif. HP80X6 -3700 from CL at Bulkhead FR 20	Grade A 235	2495	80	6	12,1
Stif. HP80X6 3700 from CL at Bulkhead FR 22	Grade A 235	2105	80	6	10,2
Stif. HP80X6 3700 from CL at Bulkhead FR 25	Grade A 235	2544	80	6	12,4
Stif. HP80X6 -3700 from CL at Bulkhead FR 25	Grade A 235	2544	80	6	12,4
Stif. HP80X6 4000 from CL at Bulkhead FR 20	Grade A 235	2074	80	6	10,1
Stif. HP80X6 -4000 from CL at Bulkhead FR 20	Grade A 235	2495	80	6	12,1
Stif. HP80X6 4000 from CL at Bulkhead FR 22	Grade A 235	2105	80	6	10,2
Stif. HP80X6 4000 from CL at Bulkhead FR 25	Grade A 235	2527	80	6	12,3
Stif. HP80X6 -4000 from CL at Bulkhead FR 25	Grade A 235	2527	80	6	12,3
Stif. HP80X6 4187 from CL at Bulkhead FR 19	Grade A 235	1990	80	6	9,7

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**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. HP80X6 -4188 from CL at Bulkhead FR 19	Grade A 235	2114	80	6	10,2
Stif. HP80X6 4438 a.b. at Bulkhead -800 from CL	Grade A 235	994	80	6	4,8
Stif. HP80X6 4480 a.b. at Bulkhead 500 from CL	Grade A 235	971	80	6	4,6
Stif. HP80X6 4690 a.b. at Bulkhead FR 20	Grade A 235	942	80	6	4,6
Stif. HP80X6 4690 a.b. at Bulkhead FR 20	Grade A 235	1046	80	6	5,1
Stif. HP80X6 4910 a.b. at Bulkhead FR 18+500	Grade A 235	1496	80	6	7,3
Stif. HP80X6 4910 a.b. at Bulkhead FR 18+500	Grade A 235	1496	80	6	7,3
Stif. HP80X6 5260 a.b. at Bulkhead FR 18+500	Grade A 235	1496	80	6	7,3
Stif. HP80X6 5260 a.b. at Bulkhead FR 18+500	Grade A 235	1496	80	6	7,3
Stif. HP80X6 5535 a.b. at Bulkhead FR 25	Grade A 235	271	80	6	1,3
Stif. HP80X6 5535 a.b. at Bulkhead FR 25	Grade A 235	271	80	6	1,3
Stif. HP80X6 5955 a.b. at Bulkhead FR 25	Grade A 235	237	80	6	1,1
Stif. HP80X6 5955 a.b. at Bulkhead FR 25	Grade A 235	237	80	6	1,1
Stif. HP80X6 6465 a.b. at Bulkhead FR 19	Grade A 235	1119	80	6	5,4

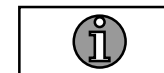
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68,7



**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. HP80X6 6480 a.b. at Bulkhead 1400 from CL	Grade A 235	969	80	6	4,6
Stif. HP80X6 6580 a.b. at Bulkhead 500 from CL	Grade A 235	971	80	6	4,6
Stif. HP80X6 6650 a.b. at Bulkhead -800 from CL	Grade A 235	994	80	6	4,8
Stif. HP80X6 6765 a.b. at Bulkhead FR 20	Grade A 235	942	80	6	4,6
Stif. HP80X6 6765 a.b. at Bulkhead FR 20	Grade A 235	1046	80	6	5,1
Stif. HP80X6 6770 a.b. at Bulkhead FR 18+500	Grade A 235	1446	80	6	7
Stif. HP80X6 6770 a.b. at Bulkhead FR 18+500	Grade A 235	1446	80	6	7
Stif. HP80X6 6770 a.b. at Bulkhead FR 19	Grade A 235	1065	80	6	5,2
Stif. HP80X6 6775 a.b. at Bulkhead FR 20	Grade A 235	1038	80	6	5,1
Stif. HP80X6 6775 a.b. at Bulkhead FR 22	Grade A 235	1033	80	6	5
Stif. HP80X6 800 from CL at Bulkhead FR 20	Grade A 235	2495	80	6	12,1
Stif. HP80X6 800 from CL at Bulkhead FR 22	Grade A 235	2640	80	6	12,9
Stif. HP80X6 -800 from CL at Bulkhead FR 25	Grade A 235	2640	80	6	12,9
Stif. HP80X6 frame 18+750 at Bulkhead 2000 from CL	Grade A 235	2413	80	6	11,7

**Σ****102,6**

**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

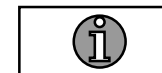
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. HP80X6 frame 18+750 at Bulkhead -2000 from CL	Grade A 235	2413	80	6	11,7
Stif. HP80X6 frame 18+750 at Bulkhead 500 from CL	Grade A 235	2438	80	6	11,9
Stif. HP80X6 frame 18+750 at Bulkhead -500 from CL	Grade A 235	2438	80	6	11,9
Stif. HP80X6 frame 19 at Bulkhead 2000 from CL	Grade A 235	2272	80	6	11,1
Stif. HP80X6 frame 19 at Bulkhead -2000 from CL	Grade A 235	2272	80	6	11,1
Stif. HP80X6 frame 19 at Bulkhead 500 from CL	Grade A 235	2298	80	6	11,2
Stif. HP80X6 frame 19 at Bulkhead -500 from CL	Grade A 235	2298	80	6	11,2
Stif. HP80X6 frame 19+330 at Bulkhead 2000 from CL	Grade A 235	2413	80	6	11,7
Stif. HP80X6 frame 19+330 at Bulkhead -2000 from CL	Grade A 235	2413	80	6	11,7
Stif. HP80X6 frame 19+330 at Bulkhead 3100 from CL	Grade A 235	590	80	6	2,9
Stif. HP80X6 frame 19+330 at Bulkhead 3100 from CL	Grade A 235	1921	80	6	9,2
Stif. HP80X6 frame 19+330 at Bulkhead -3100 from CL	Grade A 235	2520	80	6	12,1
Stif. HP80X6 frame 19+330 at Bulkhead 500 from CL	Grade A 235	2438	80	6	11,9
Stif. HP80X6 frame 19+330 at Bulkhead -500 from CL	Grade A 235	2438	80	6	11,9

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151,5

**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

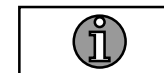
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. HP80X6 frame 19+670 at Bulkhead 2000 from CL	Grade A 235	2413	80	6	11,7
Stif. HP80X6 frame 19+670 at Bulkhead -2000 from CL	Grade A 235	2413	80	6	11,7
Stif. HP80X6 frame 19+670 at Bulkhead 3100 from CL	Grade A 235	590	80	6	2,9
Stif. HP80X6 frame 19+670 at Bulkhead 3100 from CL	Grade A 235	1921	80	6	9,2
Stif. HP80X6 frame 19+670 at Bulkhead -3100 from CL	Grade A 235	2515	80	6	12,1
Stif. HP80X6 frame 19+670 at Bulkhead 500 from CL	Grade A 235	2438	80	6	11,9
Stif. HP80X6 frame 19+670 at Bulkhead -500 from CL	Grade A 235	2438	80	6	11,9
Stif. HP80X6 frame 20+330 at Bulkhead 3100 from CL	Grade A 235	473	80	6	2,2
Stif. HP80X6 frame 20+330 at Bulkhead 500 from CL	Grade A 235	2559	80	6	12,5
Stif. HP80X6 frame 20+330 at Bulkhead -800 from CL	Grade A 235	2559	80	6	12,5
Stif. HP80X6 frame 20+670 at Bulkhead 3100 from CL	Grade A 235	473	80	6	2,2
Stif. HP80X6 frame 20+670 at Bulkhead 500 from CL	Grade A 235	2587	80	6	12,6
Stif. HP80X6 frame 20+670 at Bulkhead -800 from CL	Grade A 235	2587	80	6	12,6
Stif. HP80X6 frame 21 at Bulkhead 3100 from CL	Grade A 235	326	80	6	1,4

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127,4

**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

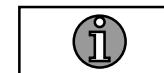
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. HP80X6 frame 21 at Bulkhead 500 from CL	Grade A 235	2446	80	6	11,9
Stif. HP80X6 frame 21 at Bulkhead -800 from CL	Grade A 235	2448	80	6	11,9
Stif. HP80X6 frame 21+330 at Bulkhead 3100 from CL	Grade A 235	473	80	6	2,2
Stif. HP80X6 frame 21+330 at Bulkhead 500 from CL	Grade A 235	418	80	6	2
Stif. HP80X6 frame 21+330 at Bulkhead -800 from CL	Grade A 235	2640	80	6	12,8
Stif. HP80X6 frame 21+670 at Bulkhead 3100 from CL	Grade A 235	473	80	6	2,2
Stif. HP80X6 frame 21+670 at Bulkhead 500 from CL	Grade A 235	418	80	6	2
Stif. HP80X6 frame 21+670 at Bulkhead -800 from CL	Grade A 235	2668	80	6	13
Stif. HP80X6 frame 22 at Bulkhead -800 from CL	Grade A 235	2520	80	6	12,3
Stif. HP80X6 frame 22+330 at Bulkhead 1400 from CL	Grade A 235	505	80	6	2,5
Stif. HP80X6 frame 22+330 at Bulkhead -800 from CL	Grade A 235	2686	80	6	13,1
Stif. HP80X6 frame 22+670 at Bulkhead 1400 from CL	Grade A 235	505	80	6	2,5
Stif. HP80X6 frame 22+670 at Bulkhead -800 from CL	Grade A 235	2686	80	6	13,1
Stif. HP80X6 frame 23 at Bulkhead 1400 from CL	Grade A 235	2495	80	6	12

 $\Sigma$ 

113,5

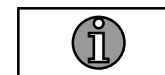
**Section 116A – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. HP80X6 frame 23 at Bulkhead -800 from CL	Grade A 235	2520	80	6	12,3
Stif. HP80X6 frame 23+330 at Bulkhead 1400 from CL	Grade A 235	2650	80	6	12,8
Stif. HP80X6 frame 23+330 at Bulkhead -800 from CL	Grade A 235	346	80	6	1,7
Stif. HP80X6 frame 23+670 at Bulkhead 1400 from CL	Grade A 235	2650	80	6	12,8
Stif. HP80X6 frame 23+670 at Bulkhead -800 from CL	Grade A 235	346	80	6	1,7
Stif. HP80X6 frame 24 at Bulkhead 1400 from CL	Grade A 235	2495	80	6	12
Stif. HP80X6 frame 24 at Bulkhead -800 from CL	Grade A 235	2520	80	6	12,3
Stif. HP80X6 frame 24+330 at Bulkhead 1400 from CL	Grade A 235	2650	80	6	12,8
Stif. HP80X6 frame 24+330 at Bulkhead -800 from CL	Grade A 235	2686	80	6	13,1
Stif. HP80X6 frame 24+670 at Bulkhead 1400 from CL	Grade A 235	2650	80	6	12,8
Stif. HP80X6 frame 24+670 at Bulkhead -800 from CL	Grade A 235	2686	80	6	13,1
Stif. HP80X6 from CL at Bulkhead FR 20	Grade A 235	2495	80	6	12,1
Stif. HP80X6 from CL at Bulkhead FR 22	Grade A 235	2587	80	6	12,6
Stif. HP80X6 from CL at Bulkhead FR 25	Grade A 235	2587	80	6	12,6

**Σ****154,7**

## Section 116A – Painéis (Shell Plate)

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. HP80X6 from CL at Bulkhead FR 25	Grade A 235	2586	80	6	12,6
Stif. PI60.3X5 1597 from CL at	S235JR	2349	60	5	16
Stif. PI60.3X5 -1598 from CL at	S235JR	2349	60	5	16
Stif. PI60.3X5 1997 from CL at	S235JR	2340	60	5	16
Stif. PI60.3X5 1997 from CL at	S235JR	2340	60	5	16
Stif. PI60.3X5 -1998 from CL at	S235JR	2335	60	5	15,9
Stif. PI60.3X5 -1998 from CL at	S235JR	2340	60	5	16
Stif. PI60.3X5 -1998 from CL at	S235JR	2340	60	5	16
Stif. PI60.3X5 997 from CL at	S235JR	2363	60	5	16,1
Stif. PI60.3X5 -998 from CL at	S235JR	2363	60	5	16,1





Σ

156,7

Σ *Peso (Kg)*

*Total*

3502,8


<i>From</i>	<i>to</i>	<i>Quantity</i>	<i>From</i>	<i>to</i>	<i>Quantity</i>
1	2	19,545 t	9	13	19,545 t
2	 3	9,9321 t ( <i>shell plates</i> ) 3,5028 t ( <i>shell stifenner</i> )	-----	-----	-----
2	6	6,1101 t	-----	-----	-----
3	 4	3,5028 t	-----	-----	-----
3/4	5	(9,9321 t + 3,5028 t) t 13,4349 t	-----	-----	-----
5	9	13,4349 t	-----	-----	-----
6	7	6,1101 t	-----	-----	-----
7	8	6,1101 t	-----	-----	-----
8	9	6,1101 t	-----	-----	-----
<b>Section 116A</b>				<b>Σ</b>	<b>19,545 t</b>

# *Section 116*

*Section 116B – Painéis (Shell Plate)*



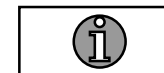
### Section 116B – Painéis (Shell Plate)

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)	
<i>SHELLPLATE</i>	Grade A 235	5618	1980	5	381,6	
<i>SHELLPLATE</i>	Grade A 235	5618	1980	5	381,6	
<i>SHELLPLATE</i>	Grade A 235	5863	1923	5	420,4	
<i>SHELLPLATE</i>	Grade A 235	5863	1923	5	420,4	
<i>SHELLPLATE</i>	Grade A 235	5929	1726	5	372,4	
<i>SHELLPLATE</i>	Grade A 235	5929	1726	5	372,4	
<i>SHELLPLATE</i>	Grade A 235	3344	1468	5	180,7	
<i>SHELLPLATE</i>	Grade A 235	3344	1468	5	180,7	
					$\Sigma$	2710,2
					$\Sigma$ <i>Peso (Kg)</i>	2710,2
					<i>Total</i>	

***Section 116B – Painéis (Shell Stifenner – Longitudinais)***

**Section 116B – Painéis (Shell Stifenner – Longitudinais)**

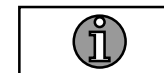
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. FB50X5 7157/7170	S235JR	5904	50	5	11,6
Shell stif. FB50X5 7157/7170	S235JR	2042	50	5	4
Shell stif. FB50X5 7157/7170	S235JR	2917	50	5	5,8
Shell stif. FB50X5 7157/7170	S235JR	5819	50	5	11,5
Shell stif. FB50X5 7157/7170	S235JR	2917	50	5	5,8
Shell stif. FB50X5 7157/7170	S235JR	5904	50	5	11,6
Shell stif. FB50X5 7157/7170	S235JR	5819	50	5	11,5
Shell stif. FB50X5 7157/7170	S235JR	2042	50	5	4
Shell stif. FB50X5 7447/7460	S235JR	5904	50	5	11,6
Shell stif. FB50X5 7447/7460	S235JR	5819	50	5	11,5
Shell stif. FB50X5 7447/7460	S235JR	5904	50	5	11,6
Shell stif. FB50X5 7447/7460	S235JR	2596	50	5	5,1
Shell stif. FB50X5 7447/7460	S235JR	2042	50	5	4
Shell stif. FB50X5 7447/7460	S235JR	2596	50	5	5,1

 $\Sigma$ 

114,7

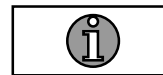
**Section 116B – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. FB50X5 7447/7460	S235JR	5819	50	5	11,5
Shell stif. FB50X5 7447/7460	S235JR	2042	50	5	4
Shell stif. FB50X5 7737/7750	S235JR	5110	50	5	10,1
Shell stif. FB50X5 7737/7750	S235JR	5110	50	5	10,1
Shell stif. FB50X5 7737/7750	S235JR	5903	50	5	11,6
Shell stif. FB50X5 7737/7750	S235JR	5903	50	5	11,6
Shell stif. FB80X6 7747/7749	S235JR	85	80	6	0,4
Shell stif. FB80X6 7747/7749	S235JR	85	80	6	0,4
Shell stif. HP80X6 17+599/17+768	Grade A 235	579	80	6	2,9
Shell stif. HP80X6 17+599/17+768	Grade A 235	579	80	6	2,9
Shell stif. HP80X6 7444/8122	Grade A 235	3007	80	6	14,8
Shell stif. HP80X6 7444/8122	Grade A 235	3007	80	6	14,8
Shell stif. HP80X6 7696/7705	Grade A 235	399	80	6	2,1
Shell stif. HP80X6 7696/7705	Grade A 235	399	80	6	2,1



**Σ****99,3**

**Section 116B – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. HP80X6 7791/7839	Grade A 235	1989	80	6	9,8
Shell stif. HP80X6 7791/7839	Grade A 235	1989	80	6	9,8
Shell stif. HP80X6 7839/7981	Grade A 235	5922	80	6	29
Shell stif. HP80X6 7839/7981	Grade A 235	5922	80	6	29
Shell stif. HP80X6 7981/8122	Grade A 235	5817	80	6	28,5
Shell stif. HP80X6 7981/8122	Grade A 235	5817	80	6	28,5
Stif. FB40X4 a.b. at Bulkhead FR 18	S235JR	40	40	4	0,062
Stif. FB40X4 a.b. at Bulkhead FR 18	S235JR	40	40	4	0,062
Stif. FB40X4 a.b. at Bulkhead FR 20	S235JR	65	40	4	0,1
Stif. FB40X4 a.b. at Bulkhead FR 20	S235JR	65	40	4	0,1






$\Sigma$	134,923
$\Sigma$ <i>Peso (Kg)</i> <i>Total</i>	214,123



<i>From</i>	<i>to</i>	<i>Quantity</i>	<i>From</i>	<i>to</i>	<i>Quantity</i>
1	2	3,3183 t	9	13	3,3183 t
2	 3	2,7102 t ( <i>shell plates</i> ) 0,214 t ( <i>shell stifenner</i> )	-----	-----	-----
2	6	0,3941 t	-----	-----	-----
3	 4	0,214 t	-----	-----	-----
3/4	5	(2,7102 t + 0,214 t) t 2,9242 t	-----	-----	-----
5	9	2,9242 t	-----	-----	-----
6	7	0,3941 t	-----	-----	-----
7	8	0,3941 t	-----	-----	-----
8	9	0,3941 t	-----	-----	-----
<b>Section 116B</b>				<b>Σ</b>	<b>3,3183 t</b>

*Expected material flows  
between departments*

*Table 2 – Sections 116A & 116B*

<i>From</i>	<i>to</i>	<i>Quantity (A)</i>	 <i>Quantity (B)</i>	<i>From</i>	<i>to</i>	<i>Quantity (A)</i>	<i>Quantity (B)</i>
1	2	19,545 t	3,3183 t	9	13	19,545 t	3,3183 t
 2	3	9,9321 t ( <i>shell plates</i> ) 3,5028 t ( <i>shell stifenner</i> )	2,7102 t ( <i>shell plates</i> ) 0,214 t ( <i>shell stifenner</i> )	-----	----	-----	-----
2	6	6,1101 t	0,3941 t	-----	----	-----	-----
 3	4	3,5028 t	0,214 t	-----	----	-----	-----
3/4	5	(9,9321 t + 3,5028 t) t 13,4349 t	(2,7102 t + 0,214 t) t 2,9242 t	-----	----	-----	-----
5	9	13,4349 t	2,9242 t	-----	----	-----	-----
6	7	6,1101 t	0,3941 t	-----	----	-----	-----
7	8	6,1101 t	0,3941 t	-----	----	-----	-----
8	9	6,1101 t	0,3941 t	-----	----	-----	-----
<b>Section 116 – A &amp; B</b>			$\sum$ <i>Peso (t)</i> <i>Total</i>	22,8633t	$\Sigma$	19,545 t	3,3183 t



<i>From</i>	<i>to</i>	<i>Quantity</i>	<i>From</i>	<i>to</i>	<i>Quantity</i>
1	2	22,8633 t	9	13	22,8633 t
2		3 12,6423 t ( <i>shell plates</i> ) 3,7168 t ( <i>shell stifenner</i> )	-----	-----	-----
2	6	6,5042 t	-----	-----	-----
3		4 3,7168 t	-----	-----	-----
3/4	5	(12,6423 t + 3,7168 t) t 16,3591 t	-----	-----	-----
5	9	16,3591	-----	-----	-----
6	7	6,5042 t	-----	-----	-----
7	8	6,5042 t	-----	-----	-----
8	9	6,5042 t	-----	-----	-----
<b>Section 116A &amp; 116B (116)</b>				<b>Σ</b>	<b>22,8633</b>

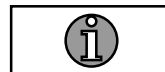
# *Section 117*

# *Section 117*

*Section 117 – Painéis (Shell Plate)*

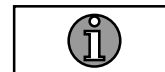
**Section 117 – Painéis (Shell Plate)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5886	1440	5	246,2
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5886	1440	5	246,2
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5934	1277	5	241
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5934	1277	5	241
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5947	1296	5	259,9
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5947	1296	5	259,9
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2914	1895	5	189,3
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2914	1895	5	189,3
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5336	670	5	73,8
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5336	670	5	73,8
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5234	306	5	33,2
<i>SHELLPLATE</i>	<i>Grade A 235</i>	5234	306	5	33,2
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2605	603	5	61,3
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2608	602	5	61,3

**Σ****2209,4**

**Section 117 – Painéis (Shell Plate)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3382	1952	5	210,7
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3382	1952	5	210,7
<i>SHELLPLATE</i>	<i>Grade A 235</i>	4100	1950	5	313,9
<i>SHELLPLATE</i>	<i>Grade A 235</i>	4100	1950	5	313,9
<i>SHELLPLATE</i>	<i>Grade A 235</i>	4105	1011	5	108,3
<i>SHELLPLATE</i>	<i>Grade A 235</i>	4106	1211	5	140,5
<i>SHELLPLATE</i>	<i>Grade A 235</i>	4689	1915	5	321,6
<i>SHELLPLATE</i>	<i>Grade A 235</i>	3929	1950	5	261,6
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2866	1950	5	173,5
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2081	1649	5	75,1
<i>SHELLPLATE</i>	<i>Grade A 235</i>	1076	790	5	29,6
<i>SHELLPLATE</i>	<i>Grade A 235</i>	1076	790	5	29,6
<i>SHELLPLATE</i>	<i>Grade A 235</i>	1049	355	5	13,3
<i>SHELLPLATE</i>	<i>Grade A 235</i>	1049	355	5	13,3

**Σ****2215,6**


### ***Section 117 – Painéis (Shell Plate)***

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>SHELLPLATE</i>	<i>Grade A 235</i>	2200	1400	10	241,8
<i>SHELLPLATE</i>	<i>Grade A 235</i>	1200	1200	10	113,0
				$\Sigma$	354,8
				$\Sigma$ <i>Peso (Kg)</i> <i>Total</i>	4779,8

***Section 117 – Painéis (Shell Stifenner – Longitudinais)***

**1º Grupo**

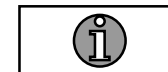
**Section 117 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif. AU45X30X4 1195/1350</i>	<i>Grade A 235</i>	1005	45	4	2,3
<i>Shell stif. AU45X30X4 1350 from CL</i>	<i>Grade A 235</i>	995	45	4	2,2
<i>Shell stif. AU45X30X4 1350 from CL</i>	<i>Grade A 235</i>	5996	45	4	13,4
<i>Shell stif. AU45X30X4 -1350 from CL</i>	<i>Grade A 235</i>	5996	45	4	13,4
<i>Shell stif. AU45X30X4 -1350 from CL</i>	<i>Grade A 235</i>	995	45	4	2,2
<i>Shell stif. AU45X30X4 -1350/-1196</i>	<i>Grade A 235</i>	1012	45	4	2,3
<i>Shell stif. AU45X30X4 1471 from CL</i>	<i>Grade A 235</i>	800	45	4	1,8
<i>Shell stif. AU45X30X4 1528/1699</i>	<i>Grade A 235</i>	1015	45	4	2,3
<i>Shell stif. AU45X30X4 1700 from CL</i>	<i>Grade A 235</i>	3996	45	4	8,9
<i>Shell stif. AU45X30X4 1700 from CL</i>	<i>Grade A 235</i>	1192	45	4	2,7
<i>Shell stif. AU45X30X4 -1700 from CL</i>	<i>Grade A 235</i>	5996	45	4	13,4
<i>Shell stif. AU45X30X4 -1700/-1529</i>	<i>Grade A 235</i>	1015	45	4	2,3
<i>Shell stif. AU45X30X4 -2 from CL</i>	<i>Grade A 235</i>	271	45	4	0,6
<i>Shell stif. AU45X30X4 -2 from CL</i>	<i>Grade A 235</i>	5996	45	4	13,4
				Σ	81,2



**Section 117 – Painéis (Shell Stifenner – Longitudinais)**

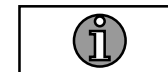
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif. AU45X30X4 -2 from CL</i>	<i>Grade A 235</i>	995	45	4	2,2
<i>Shell stif. AU45X30X4 -2 from CL</i>	<i>Grade A 235</i>	659	45	4	1,5
<i>Shell stif. AU45X30X4 -2 from CL</i>	<i>Grade A 235</i>	1442	45	4	3,2
<i>Shell stif. AU45X30X4 2000 from CL</i>	<i>Grade A 235</i>	2996	45	4	6,7
<i>Shell stif. AU45X30X4 2000 from CL</i>	<i>Grade A 235</i>	1192	45	4	2,7
<i>Shell stif. AU45X30X4 -2000 from CL</i>	<i>Grade A 235</i>	4996	45	4	11,1
<i>Shell stif. AU45X30X4 2180/2275</i>	<i>Grade A 235</i>	1998	45	4	4,5
<i>Shell stif. AU45X30X4 2275 from CL</i>	<i>Grade A 235</i>	1996	45	4	4,4
<i>Shell stif. AU45X30X4 -2275 from CL</i>	<i>Grade A 235</i>	1996	45	4	4,4
<i>Shell stif. AU45X30X4 -2276/-2181</i>	<i>Grade A 235</i>	1998	45	4	4,5
<i>Shell stif. AU45X30X4 250 from CL</i>	<i>Grade A 235</i>	5996	45	4	13,4
<i>Shell stif. AU45X30X4 250 from CL</i>	<i>Grade A 235</i>	995	45	4	2,2
<i>Shell stif. AU45X30X4 250 from CL</i>	<i>Grade A 235</i>	271	45	4	0,6
<i>Shell stif. AU45X30X4 250 from CL</i>	<i>Grade A 235</i>	326	45	4	0,7

 $\Sigma$ 

62,1

**Section 117 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif. AU45X30X4 -250 from CL</i>	<i>Grade A 235</i>	271	45	4	0,6
<i>Shell stif. AU45X30X4 -250 from CL</i>	<i>Grade A 235</i>	5996	45	4	13,4
<i>Shell stif. AU45X30X4 -250 from CL</i>	<i>Grade A 235</i>	995	45	4	2,2
<i>Shell stif. AU45X30X4 -250 from CL</i>	<i>Grade A 235</i>	326	45	4	0,7
<i>Shell stif. AU45X30X4 2530 from CL</i>	<i>Grade A 235</i>	996	45	4	2,2
<i>Shell stif. AU45X30X4 -2530 from CL</i>	<i>Grade A 235</i>	996	45	4	2,2
<i>Shell stif. AU45X30X4 2560/2799</i>	<i>Grade A 235</i>	2011	45	4	4,5
<i>Shell stif. AU45X30X4 -2800/-2561</i>	<i>Grade A 235</i>	2011	45	4	4,5
<i>Shell stif. AU45X30X4 374/499</i>	<i>Grade A 235</i>	2004	45	4	4,5
<i>Shell stif. AU45X30X4 500 from CL</i>	<i>Grade A 235</i>	5996	45	4	13,4
<i>Shell stif. AU45X30X4 500 from CL</i>	<i>Grade A 235</i>	995	45	4	2,2
<i>Shell stif. AU45X30X4 500 from CL</i>	<i>Grade A 235</i>	1996	45	4	4,4
<i>Shell stif. AU45X30X4 -500 from CL</i>	<i>Grade A 235</i>	5996	45	4	13,4
<i>Shell stif. AU45X30X4 -500 from CL</i>	<i>Grade A 235</i>	995	45	4	2,2

**Σ****70,4**


**Section 117 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif. AU45X30X4 -500 from CL</i>	<i>Grade A 235</i>	1996	45	4	4,4
<i>Shell stif. AU45X30X4 -500/-375</i>	<i>Grade A 235</i>	2004	45	4	4,5
<i>Shell stif. AU45X30X4 645/799</i>	<i>Grade A 235</i>	2002	45	4	4,5
<i>Shell stif. AU45X30X4 800 from CL</i>	<i>Grade A 235</i>	5996	45	4	13,4
<i>Shell stif. AU45X30X4 800 from CL</i>	<i>Grade A 235</i>	995	45	4	2,2
<i>Shell stif. AU45X30X4 800 from CL</i>	<i>Grade A 235</i>	996	45	4	2,2
<i>Shell stif. AU45X30X4 -800 from CL</i>	<i>Grade A 235</i>	5996	45	4	13,4
<i>Shell stif. AU45X30X4 -800 from CL</i>	<i>Grade A 235</i>	995	45	4	2,2
<i>Shell stif. AU45X30X4 -800 from CL</i>	<i>Grade A 235</i>	994	45	4	2,2
<i>Shell stif. AU45X30X4 -800/-646</i>	<i>Grade A 235</i>	2002	45	4	4,5
<i>Shell stif. AU45X30X4 FR. 39+196</i>	<i>Grade A 235</i>	923	45	4	2,1
<i>Shell stif. AU45X30X4 FR. 47+330</i>	<i>Grade A 235</i>	951	45	4	2,1
<i>Shell stif. AU45X30X4 FR. 48+275</i>	<i>Grade A 235</i>	820	45	4	1,8
<i>Shell stif. AU45X30X4 FR. 49+250</i>	<i>Grade A 235</i>	367	45	4	0,8

 $\Sigma$ 

60,3

**Section 117 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>	
<i>Shell stif.</i> AU45X30X4 FR. 49+250	<i>Grade A 235</i>	367	45	4	0,8	
<i>Shell stif.</i> AU45X30X4 FR. 49+250	<i>Grade A 235</i>	410	45	4	0,9	
<i>Shell stif.</i> AU45X30X4 FR. 49+250	<i>Grade A 235</i>	411	45	4	0,9	
<i>Shell stif.</i> FB50X5 6185/6193	<i>Grade A 235</i>	5972	50	5	11,7	
<i>Shell stif.</i> FB50X5 6185/6193	<i>Grade A 235</i>	5972	50	5	11,7	
<i>Shell stif.</i> FB50X5 6527 a.b.	<i>Grade A 235</i>	5951	50	5	11,6	
<i>Shell stif.</i> FB50X5 6527 a.b.	<i>Grade A 235</i>	5951	50	5	11,6	
<i>Shell stif.</i> FB50X5 6777/6790	<i>Grade A 235</i>	5635	50	5	11	
<i>Shell stif.</i> FB50X5 6777/6790	<i>Grade A 235</i>	610	50	5	1,2	
<i>Shell stif.</i> FB50X5 6777/6790	<i>Grade A 235</i>	610	50	5	1,2	
<i>Shell stif.</i> FB50X5 6777/6790	<i>Grade A 235</i>	5635	50	5	11	
<i>Shell stif.</i> FB50X5 6777/6791	<i>Grade A 235</i>	5851	50	5	11,5	
<i>Shell stif.</i> FB50X5 6777/6791	<i>Grade A 235</i>	5851	50	5	11,5	
<i>Shell stif.</i> FB50X5 7157/7170	<i>Grade A 235</i>	5565	50	5	10,9	
					$\Sigma$	107,5

**Section 117 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif.</i> FB50X5 7157/7170	<i>Grade A 235</i>	5565	50	5	10,9
<i>Shell stif.</i> FB50X5 7447/7460	<i>Grade A 235</i>	5743	50	5	11,2
<i>Shell stif.</i> FB50X5 7447/7460	<i>Grade A 235</i>	5743	50	5	11,2
<i>Shell stif.</i> HP60X4 4610/4615	<i>Grade A 235</i>	1717	60	4	4,9
<i>Shell stif.</i> HP60X4 4610/4615	<i>Grade A 235</i>	1717	60	4	4,9
<i>Shell stif.</i> HP60X4 4610/4618	<i>Grade A 235</i>	1429	60	4	4,1
<i>Shell stif.</i> HP60X4 4610/4618	<i>Grade A 235</i>	1429	60	4	4,1
<i>Shell stif.</i> HP60X4 4610/4619	<i>Grade A 235</i>	939	60	4	2,7
<i>Shell stif.</i> HP60X4 4610/4619	<i>Grade A 235</i>	939	60	4	2,7
<i>Shell stif.</i> HP60X4 4610/4621	<i>Grade A 235</i>	5949	60	4	16,8
<i>Shell stif.</i> HP60X4 4610/4621	<i>Grade A 235</i>	5949	60	4	16,8
<i>Shell stif.</i> HP60X4 4920/4925	<i>Grade A 235</i>	1714	60	4	4,8
<i>Shell stif.</i> HP60X4 4920/4925	<i>Grade A 235</i>	1714	60	4	4,8
<i>Shell stif.</i> HP60X4 4920/4928	<i>Grade A 235</i>	1441	60	4	4,1

 $\Sigma$ 

104,0

**Section 117 – Painéis (Shell Stifenner – Longitudinais)**

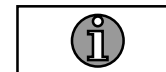
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif.</i> HP60X4 4920/4928	<i>Grade A 235</i>	1441	60	4	4,1
<i>Shell stif.</i> HP60X4 4920/4929	<i>Grade A 235</i>	941	60	4	2,7
<i>Shell stif.</i> HP60X4 4920/4929	<i>Grade A 235</i>	941	60	4	2,7
<i>Shell stif.</i> HP60X4 4920/4930	<i>Grade A 235</i>	5951	60	4	16,8
<i>Shell stif.</i> HP60X4 4920/4930	<i>Grade A 235</i>	5951	60	4	16,8
<i>Shell stif.</i> HP60X4 5225/5240	<i>Grade A 235</i>	5951	60	4	16,8
<i>Shell stif.</i> HP60X4 5225/5240	<i>Grade A 235</i>	5951	60	4	16,8
<i>Shell stif.</i> HP60X4 5230/5237	<i>Grade A 235</i>	4184	60	4	11,8
<i>Shell stif.</i> HP60X4 5230/5237	<i>Grade A 235</i>	4184	60	4	11,8
<i>Shell stif.</i> HP60X4 5230/5238	<i>Grade A 235</i>	942	60	4	2,7
<i>Shell stif.</i> HP60X4 5230/5238	<i>Grade A 235</i>	942	60	4	2,7
<i>Shell stif.</i> HP60X4 5535/5549	<i>Grade A 235</i>	5628	60	4	15,9
<i>Shell stif.</i> HP60X4 5535/5549	<i>Grade A 235</i>	5938	60	4	16,7
<i>Shell stif.</i> HP60X4 5540/5547	<i>Grade A 235</i>	4193	60	4	11,8

 $\Sigma$ 

150,1


**Section 117 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif.</i> HP60X4 5540/5547	<i>Grade A 235</i>	4193	60	4	11,8
<i>Shell stif.</i> HP60X4 5540/5548	<i>Grade A 235</i>	1253	60	4	3,6
<i>Shell stif.</i> HP60X4 5540/5548	<i>Grade A 235</i>	943	60	4	2,7
<i>Shell stif.</i> HP60X4 5955/5960	<i>Grade A 235</i>	5813	60	4	16,4
<i>Shell stif.</i> HP60X4 5955/5960	<i>Grade A 235</i>	5813	60	4	16,4
<i>Shell stif.</i> HP60X4 6184/6189	<i>Grade A 235</i>	5813	60	4	16,4
<i>Shell stif.</i> HP60X4 6184/6189	<i>Grade A 235</i>	5813	60	4	16,4
<i>Shell stif.</i> HP60X4 FR. 47+330	<i>Grade A 235</i>	454	60	4	1,3
<i>Shell stif.</i> HP60X4 FR. 47+330	<i>Grade A 235</i>	454	60	4	1,3
<i>Shell stif.</i> HP60X4 FR. 48+330	<i>Grade A 235</i>	454	60	4	1,3
<i>Shell stif.</i> HP60X4 FR. 48+330	<i>Grade A 235</i>	454	60	4	1,3
<i>Shell stif.</i> HP60X4 FR. 49-330	<i>Grade A 235</i>	454	60	4	1,3
<i>Shell stif.</i> HP60X4 FR. 49-330	<i>Grade A 235</i>	454	60	4	1,3
<i>Shell stif.</i> HP80X6 7001/7001	<i>Grade A 235</i>	5633	80	6	27,5

 $\Sigma$ 

119,0

**Section 117 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Shell stif. HP80X6 7001/7001</i>	<i>Grade A 235</i>	5633	80	6	27,5
<i>Shell stif. HP80X6 7559/7696</i>	<i>GradeA 235</i>	5834	80	6	28,2
<i>Shell stif. HP80X6 7559/7696</i>	<i>GradeA 235</i>	5833	80	6	28,2
				$\Sigma$	83,9
				$\Sigma$ <i>Peso (Kg)</i> <i>Total</i>	838,5

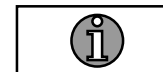


***Section 117 – Painéis (Shell Stifenner – Longitudinais)***


**2º Grupo**

**Section 117 – Painéis (Shell Stifenner – Longitudinais)**


<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. AU45X30X4 1195 from CL at Bulkhead FR 46</i>	<i>Grade A 235</i>	394	45	4	0,9
<i>Stif. AU45X30X4 -1195 from CL at Bulkhead FR 46</i>	<i>Grade A 235</i>	394	45	4	0,9
<i>Stif. AU75X50X5 43+385/44+373 from CL at Bulkhead FR</i>	<i>Grade A 235</i>	1094	75	5	5
<i>Stif. AU75X50X5 43+385/44+373 from CL at Bulkhead FR</i>	<i>Grade A 235</i>	1104	75	5	5,1
<i>Stif. FB40X4 1471 from CL at Bulkhead FR 40</i>	<i>Grade A 235</i>	58	40	4	0,1
<i>Stif. FB40X4 1700 from CL at Bulkhead FR 40</i>	<i>Grade A 235</i>	78	40	4	0,1
<i>Stif. FB40X4 -1700 from CL at Bulkhead FR 40</i>	<i>Grade A 235</i>	55	40	4	0,1
<i>Stif. FB40X4 1700 from CL at Bulkhead FR 43</i>	<i>Grade A 235</i>	55	40	4	0,1
<i>Stif. FB40X4 -1700 from CL at Bulkhead FR 43</i>	<i>Grade A 235</i>	55	40	4	0,1
<i>Stif. FB40X4 1875 from CL at Bulkhead FR 42</i>	<i>Grade A 235</i>	75	40	4	0,1
<i>Stif. FB40X4 -1875 from CL at Bulkhead FR 42</i>	<i>Grade A 235</i>	75	40	4	0,1
<i>Stif. FB40X4 -2 from CL at Bulkhead FR 49</i>	<i>Grade A 235</i>	75	40	4	0,1
<i>Stif. FB40X4 2000 from CL at Bulkhead FR 39</i>	<i>Grade A 235</i>	55	40	4	0,1
<i>Stif. FB40X4 -2000 from CL at Bulkhead FR 39</i>	<i>Grade A 235</i>	55	40	4	0,1

**Σ****12,9**

**Section 117 – Painéis (Shell Stifenner – Longitudinais)**

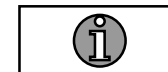
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. FB40X4 2000 from CL at Bulkhead FR 40</i>	<i>Grade A 235</i>	78	40	4	0,1
<i>Stif. FB40X4 2102 from CL at Bulkhead FR 41</i>	<i>Grade A 235</i>	75	40	4	0,1
<i>Stif. FB40X4 -2103 from CL at Bulkhead FR 41</i>	<i>Grade A 235</i>	75	40	4	0,1
<i>Stif. FB40X4 4 from CL at Bulkhead FR 47</i>	<i>Grade A 235</i>	79	40	4	0,1
<i>Stif. FB40X4 495 from CL at Bulkhead FR 48</i>	<i>Grade A 235</i>	75	40	4	0,1
<i>Stif. FB40X4 -495 from CL at Bulkhead FR 48</i>	<i>Grade A 235</i>	75	40	4	0,1
<i>Stif. FB40X4 a.b. at Bulkhead FR 48</i>	<i>Grade A 235</i>	73	40	4	0,1
<i>Stif. FB40X4 a.b. at Bulkhead FR 48</i>	<i>Grade A 235</i>	73	40	4	0,1
<i>Stif. FB40X4 a.b. at Bulkhead FR 49</i>	<i>Grade A 235</i>	69	40	4	0,1
<i>Stif. FB40X4 a.b. at Bulkhead FR 49</i>	<i>Grade A 235</i>	72	40	4	0,1
<i>Stif. FB40X4 a.b. at Bulkhead FR 49</i>	<i>Grade A 235</i>	69	40	4	0,1
<i>Stif. FB40X4 a.b. at Bulkhead FR 49</i>	<i>Grade A 235</i>	71	40	4	0,1
<i>Stif. FB40X4 a.b. at Bulkhead FR 49</i>	<i>Grade A 235</i>	69	40	4	0,1
<i>Stif. FB40X4 a.b. at Bulkhead FR 49</i>	<i>Grade A 235</i>	71	40	4	0,1
				$\Sigma$	1,4

**Section 117 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. FB40X4 a.b. at Bulkhead FR 49</i>	<i>Grade A 235</i>	71	40	4	0,1
<i>Stif. FB40X4 a.b. at Bulkhead FR 49</i>	<i>Grade A 235</i>	71	40	4	0,1
<i>Stif. FB50X5 500 from CL at Bulkhead FR 41</i>	<i>Grade A 235</i>	259	50	5	0,5
<i>Stif. FB50X5 -500 from CL at Bulkhead FR 41</i>	<i>Grade A 235</i>	259	50	5	0,5
<i>Stif. FB50X5 a.b. at Bulkhead FR 39</i>	<i>Grade A 235</i>	118	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 39</i>	<i>Grade A 235</i>	118	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 39</i>	<i>Grade A 235</i>	119	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 39</i>	<i>Grade A 235</i>	119	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 39</i>	<i>Grade A 235</i>	119	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 39</i>	<i>Grade A 235</i>	119	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 40</i>	<i>Grade A 235</i>	119	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 40</i>	<i>Grade A 235</i>	119	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 40</i>	<i>Grade A 235</i>	120	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 40</i>	<i>Grade A 235</i>	120	50	5	0,2
				Σ	3,2

**Section 117 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. FB50X5 a.b. at Bulkhead FR 40</i>	<i>Grade A 235</i>	120	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 40</i>	<i>Grade A 235</i>	120	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 41</i>	<i>Grade A 235</i>	119	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 41</i>	<i>Grade A 235</i>	119	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 41</i>	<i>Grade A 235</i>	120	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 41</i>	<i>Grade A 235</i>	120	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 41</i>	<i>Grade A 235</i>	120	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 41</i>	<i>Grade A 235</i>	120	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 42</i>	<i>Grade A 235</i>	120	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 42</i>	<i>Grade A 235</i>	120	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 42</i>	<i>Grade A 235</i>	121	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 42</i>	<i>Grade A 235</i>	121	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 42</i>	<i>Grade A 235</i>	121	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 42</i>	<i>Grade A 235</i>	121	50	5	0,2


**Σ****2,8**

**Section 117 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. FB50X5 a.b. at Bulkhead FR 43</i>	<i>Grade A 235</i>	121	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 43</i>	<i>Grade A 235</i>	121	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 43</i>	<i>Grade A 235</i>	122	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 43</i>	<i>Grade A 235</i>	122	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 43</i>	<i>Grade A 235</i>	121	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 43</i>	<i>Grade A 235</i>	121	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 44</i>	<i>Grade A 235</i>	122	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 44</i>	<i>Grade A 235</i>	122	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 44</i>	<i>Grade A 235</i>	122	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 44</i>	<i>Grade A 235</i>	122	50	5	0,2
<i>Stif. FB50X5 a.b. at Bulkhead FR 47</i>	<i>Grade A 235</i>	74	50	5	0,1
<i>Stif. FB50X5 a.b. at Bulkhead FR 47</i>	<i>Grade A 235</i>	74	50	5	0,1
<i>Stif. HP60X4 1000 from CL at Bulkhead FR 45</i>	<i>Grade A 235</i>	1383	60	4	3,9
<i>Stif. HP60X4 -1000 from CL at Bulkhead FR 45</i>	<i>Grade A 235</i>	1383	60	4	3,9

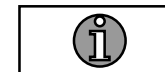
**Σ****10,0**

**Section 117 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>	
<i>Stif. HP60X4 1350 from CL at Bulkhead FR 44</i>	<i>Grade A 235</i>	605	60	4	1,7	
<i>Stif. HP60X4 -1350 from CL at Bulkhead FR 44</i>	<i>Grade A 235</i>	605	60	4	1,7	
<i>Stif. HP60X4 1700 from CL at Bulkhead FR 44</i>	<i>Grade A 235</i>	689	60	4	1,9	
<i>Stif. HP60X4 -1700 from CL at Bulkhead FR 44</i>	<i>Grade A 235</i>	684	60	4	1,9	
<i>Stif. HP60X4 -2 from CL at Bulkhead FR 42</i>	<i>Grade A 235</i>	2200	60	4	6,2	
<i>Stif. HP60X4 -2 from CL at Bulkhead FR 44</i>	<i>Grade A 235</i>	605	60	4	1,7	
<i>Stif. HP60X4 -2 from CL at Bulkhead FR 45</i>	<i>Grade A 235</i>	1650	60	4	4,6	
<i>Stif. HP60X4 250 from CL at Bulkhead FR 42</i>	<i>Grade A 235</i>	2200	60	4	6,2	
<i>Stif. HP60X4 -250 from CL at Bulkhead FR 42</i>	<i>Grade A 235</i>	2200	60	4	6,2	
<i>Stif. HP60X4 250 from CL at Bulkhead FR 44</i>	<i>Grade A 235</i>	605	60	4	1,7	
<i>Stif. HP60X4 -250 from CL at Bulkhead FR 44</i>	<i>Grade A 235</i>	605	60	4	1,7	
<i>Stif. HP60X4 250 from CL at Bulkhead FR 45</i>	<i>Grade A 235</i>	1650	60	4	4,6	
<i>Stif. HP60X4 -250 from CL at Bulkhead FR 45</i>	<i>Grade A 235</i>	1650	60	4	4,6	
<i>Stif. HP60X4 500 from CL at Bulkhead FR 40</i>	<i>Grade A 235</i>	2198	60	4	6,2	
					<b>Σ</b>	<b>50,9</b>

**Section 117 – Painéis (Shell Stifenner – Longitudinais)**


<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
<i>Stif. HP60X4 -500 from CL at Bulkhead FR 40</i>	<i>Grade A 235</i>	2198	60	4	6,2
<i>Stif. HP60X4 500 from CL at Bulkhead FR 42</i>	<i>Grade A 235</i>	2198	60	4	6,2
<i>Stif. HP60X4 -500 from CL at Bulkhead FR 42</i>	<i>Grade A 235</i>	2198	60	4	6,2
<i>Stif. HP60X4 500 from CL at Bulkhead FR 44</i>	<i>Grade A 235</i>	605	60	4	1,7
<i>Stif. HP60X4 -500 from CL at Bulkhead FR 44</i>	<i>Grade A 235</i>	605	60	4	1,7
<i>Stif. HP60X4 500 from CL at Bulkhead FR 45</i>	<i>Grade A 235</i>	1648	60	4	4,6
<i>Stif. HP60X4 -500 from CL at Bulkhead FR 45</i>	<i>Grade A 235</i>	1648	60	4	4,6
<i>Stif. HP60X4 800 from CL at Bulkhead FR 40</i>	<i>Grade A 235</i>	2195	60	4	6,2
<i>Stif. HP60X4 -800 from CL at Bulkhead FR 40</i>	<i>Grade A 235</i>	2195	60	4	6,2
<i>Stif. HP60X4 800 from CL at Bulkhead FR 42</i>	<i>Grade A 235</i>	2195	60	4	6,2
<i>Stif. HP60X4 -800 from CL at Bulkhead FR 42</i>	<i>Grade A 235</i>	2195	60	4	6,2
<i>Stif. HP60X4 800 from CL at Bulkhead FR 44</i>	<i>Grade A 235</i>	635	60	4	1,8
<i>Stif. HP60X4 -800 from CL at Bulkhead FR 44</i>	<i>Grade A 235</i>	635	60	4	1,8
<i>Stif. HP60X4 800 from CL at Bulkhead FR 45</i>	<i>Grade A 235</i>	1645	60	4	4,6

 $\Sigma$ 

64,2

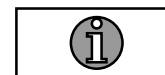


**Section 117 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>	
<i>Stif. HP60X4 -800 from CL at Bulkhead FR 45</i>	<i>Grade A 235</i>	1640	60	4	4,6	
<i>Stif. HP60X4 a.b. at Bulkhead FR 45</i>	<i>Grade A 235</i>	281	60	4	0,8	
<i>Stif. HP60X4 a.b. at Bulkhead FR 45</i>	<i>Grade A 235</i>	281	60	4	0,8	
<i>Stif. HP60X4 a.b. at Bulkhead FR 45</i>	<i>Grade A 235</i>	259	60	4	0,7	
<i>Stif. HP60X4 a.b. at Bulkhead FR 45</i>	<i>Grade A 235</i>	259	60	4	0,7	
<i>Stif. HP60X4 frame 40+330 at Bulkhead 1000 from CL</i>	<i>Grade A 235</i>	2238	60	4	6,3	
<i>Stif. HP60X4 frame 40+330 at Bulkhead -1000 from CL</i>	<i>Grade A 235</i>	2238	60	4	6,3	
<i>Stif. HP60X4 frame 40+670 at Bulkhead 1000 from CL</i>	<i>Grade A 235</i>	2238	60	4	6,3	
<i>Stif. HP60X4 frame 40+670 at Bulkhead -1000 from CL</i>	<i>Grade A 235</i>	2238	60	4	6,3	
<i>Stif. HP60X4 frame 41+330 at Bulkhead 1000 from CL</i>	<i>Grade A 235</i>	2238	60	4	6,3	
<i>Stif. HP60X4 frame 41+330 at Bulkhead -1000 from CL</i>	<i>Grade A 235</i>	2238	60	4	6,3	
<i>Stif. HP60X4 frame 41+670 at Bulkhead 1000 from CL</i>	<i>Grade A 235</i>	2238	60	4	6,3	
<i>Stif. HP60X4 frame 41+670 at Bulkhead -1000 from CL</i>	<i>Grade A 235</i>	2238	60	4	6,3	
<i>Stif. HP60X4 from CL at Bulkhead FR 45</i>	<i>Grade A 235</i>	371	60	4	1	
					<b>Σ</b>	<b>59,0</b>

## Section 117 – Painéis (Shell Stifenner – Longitudinais)

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
<i>Stif. HP60X4 from CL at Bulkhead FR 45</i>	<i>Grade A 235</i>	375	60	4	1,1
<i>Stif. HP60X4 from CL at Bulkhead FR 45</i>	<i>GradeA 235</i>	1640	60	4	4,6
<i>Stif. HP60X4 from CL at Bulkhead FR 45</i>	<i>GradeA 235</i>	1640	60	4	4,6
<i>Stif. HP80X6 43+385/44+373 a.b. at Bulkhead FR</i>	<i>GradeA 235</i>	761	80	6	3,5
<i>Stif. HP80X6 43+385/44+373 a.b. at Bulkhead FR</i>	<i>GradeA 235</i>	761	80	6	3,5
<i>Stif. HP80X6 43+385/44+373 from CL at Bulkhead FR</i>	<i>GradeA 235</i>	1141	80	6	5,4
<i>Stif. HP80X6 43+385/44+373 from CL at Bulkhead FR</i>	<i>GradeA 235</i>	1141	80	6	5,4
<i>Stif. HP80X6 43+385/44+373 from CL at Bulkhead FR</i>	<i>GradeA 235</i>	1207	80	6	5,7
<i>Stif. HP80X6 43+385/44+373 from CL at Bulkhead FR</i>	<i>GradeA 235</i>	1206	80	6	5,6
<i>Stif. PI323.9X10 frame at</i>	<i>GradeA 235</i>	2695	324	10	208,7



Σ



248,1

**1º Grupo = 838,5 Kg**  
**2º Grupo = 452,5 Kg**  
**Total = 1291 Kg**

Σ *Peso (Kg)*

*Total*

452,5


<i>From</i>	<i>to</i>	<i>Quantity</i>	<i>From</i>	<i>to</i>	<i>Quantity</i>
1	2	8,3641 t	9	13	8,3641 t
2	 3	4,7798 t ( <i>shell plates</i> ) 1,2910 t ( <i>shell stifenner</i> )	-----	-----	-----
2	6	2,2933 t	-----	-----	-----
3	 4	1,2910 t	-----	-----	-----
3/4	5	(4,7798 + 1,2910) t 6,0708 t	-----	-----	-----
5	9	6,0708 t	-----	-----	-----
6	7	2,2933 t	-----	-----	-----
7	8	2,2933 t	-----	-----	-----
8	9	2,2933 t	-----	-----	-----
<b>Section 117</b>				<b>Σ</b>	<b>8,3641 t</b>

# *Section* 121

# *Section 121*

*Section 121 – Painéis (Shell Plate)*

**Section 121 – Painéis (Shell Plate)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Long. frame 1399/2882 from CL	EN AW-5083 H111	2105	173	4	2,3
Long. frame 1700/1778 from CL	EN AW-5083 H111	928	300	5	1,8
Long. frame 1700/1778 from CL	EN AW-5083 H111	924	312	5	1,8
Long. frame -1779/-1700 from CL	EN AW-5083 H111	928	300	5	1,8
Long. frame -1779/-1700 from CL	EN AW-5083 H111	924	312	5	1,8
Long. frame 2408/2561 from CL	EN AW-5083 H111	1329	1229	4	14,5
Long. frame 2517/2607 from CL	EN AW-5083 H111	1711	1000	4	9,3
Long. frame -2562/-2408 from CL	EN AW-5083 H111	1329	1229	4	14,5
Long. frame 2580/2990 from CL	EN AW-5083 H111	5960	627	4	31,9
Long. frame 2580/2990 from CL	EN AW-5083 H111	2421	412	4	6
Long. frame -2608/-2518 from CL	EN AW-5083 H111	1711	1000	4	9,3
Long. frame 2608/2800 from CL	EN AW-5083 H111	2067	912	4	18,5
Long. frame 2689/2799 from CL	EN AW-5083 H111	3239	1035	4	26,2
Long. frame 2689/2799 from CL	EN AW-5083 H111	2067	100	4	2,2
				<b>Σ</b>	141,9

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Long. frame 2690/2890 from CL	EN AW-5083 H111	5710	1288	4	35,5
Long. frame 2700/2799 from CL	EN AW-5083 H111	5690	1951	4	117,9
Long. frame -2800/-2609 from CL	EN AW-5083 H111	2067	917	4	18,5
Long. frame -2800/-2690 from CL	EN AW-5083 H111	2067	100	4	2,2
Long. frame -2800/-2690 from CL	EN AW-5083 H111	3239	1035	4	26,2
Long. frame -2800/-2701 from CL	EN AW-5083 H111	5690	1951	4	117,9
Long. frame -2883/-1400 from CL	EN AW-5083 H111	2105	173	4	2,3
Long. frame -2890/-2690 from CL	EN AW-5083 H111	5710	1288	4	35,5
Long. frame -2991/-2581 from CL	EN AW-5083 H111	5960	627	4	31,9
Long. frame -2991/-2581 from CL	EN AW-5083 H111	2421	412	4	6
SHELLPLATE	EN AW-5083 H111	5958	1961	4	126
SHELLPLATE	EN AW-5083 H111	6013	1955	4	124,7
SHELLPLATE	EN AW-5083 H111	6013	1955	4	124,7
SHELLPLATE	EN AW-5083 H111	5778	1657	4	79,3



Σ 848,6

**Section 121 – Painéis (Shell Plate)**

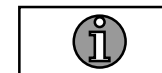
Σ <i>Peso (Kg)</i>	990,5
<i>Total</i>	

***Section 121 – Painéis (Shell Stifenner – Longitudinais)***



**Section 121 – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. AU50X25X3 1100 from CL	EN AW-6082 T6	4961	50	3	2,9
Shell stif. AU50X25X3 1100 from CL	EN AW-6082 T6	1136	50	3	0,7
Shell stif. AU50X25X3 -1100 from CL	EN AW-6082 T6	4961	50	3	2,9
Shell stif. AU50X25X3 -1100 from CL	EN AW-6082 T6	1136	50	3	0,7
Shell stif. AU50X25X3 1369/1400	EN AW-6082 T6	1098	50	3	0,7
Shell stif. AU50X25X3 1400 from CL	EN AW-6082 T6	5997	50	3	3,5
Shell stif. AU50X25X3 -1400 from CL	EN AW-6082 T6	5997	50	3	3,5
Shell stif. AU50X25X3 -1401/-1370	EN AW-6082 T6	1098	50	3	0,7
Shell stif. AU50X25X3 1700 from CL	EN AW-6082 T6	996	50	3	0,6
Shell stif. AU50X25X3 1700 from CL	EN AW-6082 T6	2961	50	3	1,7
Shell stif. AU50X25X3 1700 from CL	EN AW-6082 T6	838	50	3	0,5
Shell stif. AU50X25X3 -1700 from CL	EN AW-6082 T6	996	50	3	0,6
Shell stif. AU50X25X3 -1700 from CL	EN AW-6082 T6	2961	50	3	1,7
Shell stif. AU50X25X3 -1700 from CL	EN AW-6082 T6	838	50	3	0,5

 $\Sigma$ 

21,2

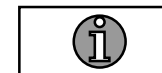
**Section 121 – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. AU50X25X3 -2 from CL	EN AW-6082 T6	5711	50	3	3,3
Shell stif. AU50X25X3 -2 from CL	EN AW-6082 T6	1136	50	3	0,7
Shell stif. AU50X25X3 2000 from CL	EN AW-6082 T6	5961	50	3	3,5
Shell stif. AU50X25X3 2000 from CL	EN AW-6082 T6	535	50	3	0,3
Shell stif. AU50X25X3 -2000 from CL	EN AW-6082 T6	5961	50	3	3,5
Shell stif. AU50X25X3 -2000 from CL	EN AW-6082 T6	535	50	3	0,3
Shell stif. AU50X25X3 2275 from CL	EN AW-6082 T6	5761	50	3	3,4
Shell stif. AU50X25X3 2275 from CL	EN AW-6082 T6	461	50	3	0,3
Shell stif. AU50X25X3 -2275 from CL	EN AW-6082 T6	5761	50	3	3,4
Shell stif. AU50X25X3 -2275 from CL	EN AW-6082 T6	461	50	3	0,3
Shell stif. AU50X25X3 250 from CL	EN AW-6082 T6	5711	50	3	3,3
Shell stif. AU50X25X3 250 from CL	EN AW-6082 T6	1136	50	3	0,7
Shell stif. AU50X25X3 -250 from CL	EN AW-6082 T6	5961	50	3	3,5
Shell stif. AU50X25X3 -250 from CL	EN AW-6082 T6	1136	50	3	0,7

**Σ****27,2**

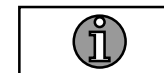
**Section 121 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell stif. AU50X25X3 2530 from CL	EN AW-6082 T6	5997	50	3	3,5
Shell stif. AU50X25X3 -2530 from CL	EN AW-6082 T6	5997	50	3	3,5
Shell stif. AU50X25X3 500 from CL	EN AW-6082 T6	5711	50	3	3,3
Shell stif. AU50X25X3 500 from CL	EN AW-6082 T6	1136	50	3	0,7
Shell stif. AU50X25X3 -500 from CL	EN AW-6082 T6	5961	50	3	3,5
Shell stif. AU50X25X3 -500 from CL	EN AW-6082 T6	1136	50	3	0,7
Shell stif. AU50X25X3 800 from CL	EN AW-6082 T6	5961	50	3	3,5
Shell stif. AU50X25X3 800 from CL	EN AW-6082 T6	1136	50	3	0,7
Shell stif. AU50X25X3 -800 from CL	EN AW-6082 T6	5961	50	3	3,5
Shell stif. AU50X25X3 -800 from CL	EN AW-6082 T6	1136	50	3	0,7
Shell stif. AU50X25X3 FR. 21+330	EN AW-6082 T6	325	50	3	0,2
Shell stif. AU50X25X3 FR. 21+330	EN AW-6082 T6	325	50	3	0,2
Shell stif. AU50X25X3 FR. 22+330	EN AW-6082 T6	354	50	3	0,2
Shell stif. AU50X25X3 FR. 22+330	EN AW-6082 T6	354	50	3	0,2

**Σ****24,4**

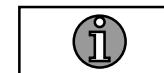
**Section 121 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell stif. AU50X25X3 FR. 22-330	EN AW-6082 T6	354	50	3	0,2
Shell stif. AU50X25X3 FR. 22-330	EN AW-6082 T6	354	50	3	0,2
Shell stif. AU50X25X3 FR. 23-330	EN AW-6082 T6	325	50	3	0,2
Shell stif. AU50X25X3 FR. 23-330	EN AW-6082 T6	325	50	3	0,2
Shell stif. FB32X16 1100 from CL	Triplate	164	32	16	0,7
Shell stif. FB32X16 1100 from CL	Triplate	164	32	16	0,7
Shell stif. FB32X16 -1100 from CL	Triplate	164	32	16	0,7
Shell stif. FB32X16 -1100 from CL	Triplate	164	32	16	0,7
Shell stif. FB32X16 1105 from CL	Triplate	259	32	16	1
Shell stif. FB32X16 -1106 from CL	Triplate	1009	32	16	4,1
Shell stif. FB32X16 1370 from CL	Triplate	164	32	16	0,7
Shell stif. FB32X16 -1370 from CL	Triplate	164	32	16	0,7
Shell stif. FB32X16 1400 from CL	Triplate	164	32	16	0,7
Shell stif. FB32X16 -1400 from CL	Triplate	164	32	16	0,7

**Σ****11,5**

**Section 121 – Painéis (Shell Stifenner – Longitudinais)**

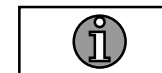
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell stif. FB32X16 1406 from CL	Triplate	2816	32	16	11,3
Shell stif. FB32X16 1700 from CL	Triplate	164	32	16	0,7
Shell stif. FB32X16 1700 from CL	Triplate	179	32	16	0,7
Shell stif. FB32X16 -1700 from CL	Triplate	164	32	16	0,7
Shell stif. FB32X16 -1700 from CL	Triplate	163	32	16	0,7
Shell stif. FB32X16 1926 from CL	Triplate	1984	32	16	8
Shell stif. FB32X16 -1926 from CL	Triplate	1984	32	16	8
Shell stif. FB32X16 -2 from CL	Triplate	164	32	16	0,7
Shell stif. FB32X16 -2 from CL	Triplate	164	32	16	0,7
Shell stif. FB32X16 2000 from CL	Triplate	170	32	16	0,7
Shell stif. FB32X16 -2000 from CL	Triplate	163	32	16	0,7
Shell stif. FB32X16 2275 from CL	Triplate	164	32	16	0,7
Shell stif. FB32X16 2275 from CL	Triplate	164	32	16	0,7
Shell stif. FB32X16 2275 from CL	Triplate	164	32	16	0,7

 $\Sigma$ 

35

**Section 121 – Painéis (Shell Stifenner – Longitudinais)**

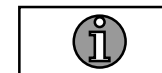
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. FB32X16 -2275 from CL	Triplate	164	32	16	0,7
Shell stif. FB32X16 -2275 from CL	Triplate	164	32	16	0,7
Shell stif. FB32X16 -2275 from CL	Triplate	164	32	16	0,7
Shell stif. FB32X16 2401/2556	Triplate	1241	32	16	5,1
Shell stif. FB32X16 250 from CL	Triplate	164	32	16	0,7
Shell stif. FB32X16 250 from CL	Triplate	164	32	16	0,7
Shell stif. FB32X16 2527/2617	Triplate	988	32	16	4
Shell stif. FB32X16 -2557/-2402	Triplate	1241	32	16	5,1
Shell stif. FB32X16 256 from CL	Triplate	2816	32	16	11,3
Shell stif. FB32X16 -256 from CL	Triplate	1009	32	16	4,1
Shell stif. FB32X16 -256 from CL	Triplate	2988	32	16	12
Shell stif. FB32X16 -2618/-2528	Triplate	988	32	16	4
Shell stif. FB32X16 2680/2793	Triplate	913	32	16	3,7
Shell stif. FB32X16 2696 from CL	Triplate	984	32	16	4

 $\Sigma$ 

56,8

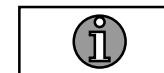
**Section 121 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell stif. FB32X16 -2696 from CL	Triplate	984	32	16	4
Shell stif. FB32X16 2794 from CL	Triplate	5009	32	16	20,1
Shell stif. FB32X16 2794 from CL	Triplate	650	32	16	2,6
Shell stif. FB32X16 2794 from CL	Triplate	975	32	16	3,9
Shell stif. FB32X16 2794 from CL	Triplate	94	32	16	0,4
Shell stif. FB32X16 -2794 from CL	Triplate	5009	32	16	20,1
Shell stif. FB32X16 -2794 from CL	Triplate	650	32	16	2,6
Shell stif. FB32X16 -2794 from CL	Triplate	991	32	16	4
Shell stif. FB32X16 -2794 from CL	Triplate	110	32	16	0,4
Shell stif. FB32X16 -2794/-2681	Triplate	911	32	16	3,7
Shell stif. FB32X16 30+214/31	Triplate	1274	32	16	5,2
Shell stif. FB32X16 30+218/31	Triplate	1276	32	16	5,2
Shell stif. FB32X16 500 from CL	Triplate	164	32	16	0,7
Shell stif. FB32X16 500 from CL	Triplate	164	32	16	0,7

**Σ****73,6**

**Section 121 – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. FB32X16 -500 from CL	Triplate	164	32	16	0,7
Shell stif. FB32X16 -500 from CL	Triplate	164	32	16	0,7
Shell stif. FB32X16 800 from CL	Triplate	164	32	16	0,7
Shell stif. FB32X16 800 from CL	Triplate	164	32	16	0,7
Shell stif. FB32X16 -800 from CL	Triplate	164	32	16	0,7
Shell stif. FB32X16 -800 from CL	Triplate	164	32	16	0,7
Shell stif. FB32X16 FR. 20	Triplate	5609	32	16	22,6
Shell stif. FB32X16 FR. 21	Triplate	164	32	16	0,7
Shell stif. FB32X16 FR. 21	Triplate	165	32	16	0,7
Shell stif. FB32X16 FR. 21	Triplate	265	32	16	1,1
Shell stif. FB32X16 FR. 21	Triplate	265	32	16	1,1
Shell stif. FB32X16 FR. 21-344	Triplate	834	32	16	3,4
Shell stif. FB32X16 FR. 22	Triplate	1494	32	16	6
Shell stif. FB32X16 FR. 22	Triplate	265	32	16	1,1

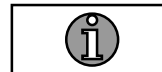
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40,9



**Section 121 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell stif. FB32X16 FR. 22	Triplate	265	32	16	1,1
Shell stif. FB32X16 FR. 23	Triplate	164	32	16	0,7
Shell stif. FB32X16 FR. 23	Triplate	165	32	16	0,7
Shell stif. FB32X16 FR. 23	Triplate	265	32	16	1,1
Shell stif. FB32X16 FR. 23	Triplate	265	32	16	1,1
Shell stif. FB32X16 FR. 24	Triplate	164	32	16	0,7
Shell stif. FB32X16 FR. 24	Triplate	165	32	16	0,7
Shell stif. FB32X16 FR. 24	Triplate	265	32	16	1,1
Shell stif. FB32X16 FR. 24	Triplate	265	32	16	1,1
Shell stif. FB32X16 FR. 25	Triplate	789	32	16	3,2
Shell stif. FB32X16 FR. 25	Triplate	520	32	16	2,1
Shell stif. FB32X16 FR. 25-162	Triplate	1166	32	16	4,7
Shell stif. FB32X16 FR. 26	Triplate	1099	32	16	4,4
Shell stif. FB32X16 FR. 26	Triplate	1099	32	16	4,4

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27,1

**Section 121 – Painéis (Shell Stifenner – Longitudinais)**

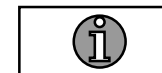
Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. FB32X16 FR. 27	Triplate	215	32	16	0,9
Shell stif. FB32X16 FR. 27	Triplate	215	32	16	0,9
Shell stif. FB32X16 FR. 27	Triplate	265	32	16	1,1
Shell stif. FB32X16 FR. 27	Triplate	265	32	16	1,1
Shell stif. FB32X16 FR. 28	Triplate	5362	32	16	21,6
Shell stif. FB32X16 FR. 28+330	Triplate	154	32	16	0,6
Shell stif. FB32X16 FR. 29	Triplate	154	32	16	0,6
Shell stif. FB32X16 FR. 29	Triplate	569	32	16	2,3
Shell stif. FB32X16 FR. 29	Triplate	569	32	16	2,3
Shell stif. FB32X16 FR. 29+330	Triplate	154	32	16	0,6
Shell stif. FB32X16 FR. 29-330	Triplate	154	32	16	0,6
Shell stif. FB32X16 FR. 30	Triplate	154	32	16	0,6
Shell stif. FB32X16 FR. 30	Triplate	444	32	16	1,8
Shell stif. FB32X16 FR. 30	Triplate	444	32	16	1,8

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16,8

**Section 121 – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. FB32X16 FR. 30+330	Triplate	154	32	16	0,6
Shell stif. FB32X16 FR. 30-330	Triplate	154	32	16	0,6
Shell stif. FB32X16 FR. 31+10	Triplate	2800	32	16	11,3
Shell stif. FB32X16 FR. 31-330	Triplate	154	32	16	0,6
Stif. AE75X5 FR 2690/2890 at Long. frame from CL	EN AW-6082 T6	1277	75	5	2,5
Stif. AE75X5 FR -2890/-2690 at Long. frame from CL	EN AW-6082 T6	1277	75	5	2,5
Stif. AE75X5 from CL at Bulkhead FR 20	EN AW-6082 T6	1169	75	5	2,3
Stif. AE75X5 from CL at Bulkhead FR 20	EN AW-6082 T6	1169	75	5	2,3
Stif. AU50X25X3 10350/10600 from CL at Deck above base	EN AW-6082 T6	1110	50	3	0,6
Stif. AU50X25X3 10350/10600 from CL at Deck above base	EN AW-6082 T6	1110	50	3	0,6
Stif. AU50X25X3 10350/10600 from CL at Deck above base	EN AW-6082 T6	1110	50	3	0,6
Stif. AU50X25X3 10350/10600 from CL at Deck above base	EN AW-6082 T6	1110	50	3	0,6
Stif. AU50X25X3 10350/10600 from CL at Deck above base	EN AW-6082 T6	1110	50	3	0,6
Stif. AU50X25X3 10350/10600 from CL at Deck above base	EN AW-6082 T6	1110	50	3	0,6

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26,3

## Section 121 – Painéis (Shell Stifenner – Longitudinais)

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. AU50X25X3 10350/10600 from CL at Deck above base	EN AW-6082 T6	1110	50	3	0,6
Stif. AU50X25X3 10350/10600 from CL at Deck above base	EN AW-6082 T6	1110	50	3	0,6
Stif. AU50X25X3 10350/10600 from CL at Deck above base	EN AW-6082 T6	1110	50	3	0,6
Stif. AU50X25X3 10350/10600 from CL at Deck above base	EN AW-6082 T6	1074	50	3	0,6
Stif. AU50X25X3 10350/10600 from CL at Deck above base	EN AW-6082 T6	1074	50	3	0,6
Stif. AU50X25X3 10350/10647 from CL at Deck above base	EN AW-6082 T6	1413	50	3	0,8
Stif. AU50X25X3 10350/10647 from CL at Deck above base	EN AW-6082 T6	1413	50	3	0,8
Stif. AU50X25X3 10350/10647 from CL at Deck above base	EN AW-6082 T6	1355	50	3	0,8
Stif. AU50X25X3 10350/10647 from CL at Deck above base	EN AW-6082 T6	1355	50	3	0,8
Stif. AU50X25X3 10350/10647 from CL at Deck above base	EN AW-6082 T6	1264	50	3	0,7
Stif. AU50X25X3 10350/10647 from CL at Deck above base	EN AW-6082 T6	1264	50	3	0,7
Stif. AU50X25X3 10350/10647 from CL at Deck above base	EN AW-6082 T6	1168	50	3	0,7
Stif. AU50X25X3 10350/10647 from CL at Deck above base	EN AW-6082 T6	1168	50	3	0,7
Stif. AU50X25X3 2000 from CL at Bulkhead FR 20	EN AW-6082 T6	325	50	3	0,2

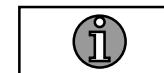


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9,2

## Section 121 – Painéis (Shell Stifenner – Longitudinais)

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. AU50X25X3 -2275 from CL at Bulkhead FR 20	EN AW-6082 T6	325	50	3	0,2
Stif. AU50X25X3 -2275 from CL at Bulkhead FR 25	EN AW-6082 T6	901	50	3	0,5
Stif. AU50X25X3 2408/2561 a.b. at Long. frame from CL	EN AW-6082 T6	504	50	3	0,3
Stif. AU50X25X3 2408/2561 a.b. at Long. frame from CL	EN AW-6082 T6	1278	50	3	0,7
Stif. AU50X25X3 2408/2561 a.b. at Long. frame from CL	EN AW-6082 T6	1278	50	3	0,7
Stif. AU50X25X3 2517/2607 a.b. at Long. frame from CL	EN AW-6082 T6	1005	50	3	0,6
Stif. AU50X25X3 2530 from CL at Bulkhead FR 25	EN AW-6082 T6	910	50	3	0,5
Stif. AU50X25X3 -2530 from CL at Bulkhead FR 25	EN AW-6082 T6	910	50	3	0,5
Stif. AU50X25X3 -2562/-2408 a.b. at Long. frame from CL	EN AW-6082 T6	1278	50	3	0,7
Stif. AU50X25X3 -2562/-2408 a.b. at Long. frame from CL	EN AW-6082 T6	1278	50	3	0,7
Stif. AU50X25X3 -2562/-2409 a.b. at Long. frame from CL	EN AW-6082 T6	676	50	3	0,4
Stif. AU50X25X3 -2608/-2518 a.b. at Long. frame from CL	EN AW-6082 T6	1005	50	3	0,6
Stif. AU50X25X3 2608/2800 a.b. at Long. frame from CL	EN AW-6082 T6	406	50	3	0,2
Stif. AU50X25X3 2608/2800 a.b. at Long. frame from CL	EN AW-6082 T6	406	50	3	0,2

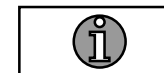


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6,8

## Section 121 – Painéis (Shell Stifenner – Longitudinais)

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. AU50X25X3 2608/2800 a.b. at Long. frame from CL	EN AW-6082 T6	909	50	3	0,5
Stif. AU50X25X3 2608/2800 a.b. at Long. frame from CL	EN AW-6082 T6	909	50	3	0,5
Stif. AU50X25X3 2687/2800 a.b. at Long. frame from CL	EN AW-6082 T6	909	50	3	0,5
Stif. AU50X25X3 2687/2800 a.b. at Long. frame from CL	EN AW-6082 T6	909	50	3	0,5
Stif. AU50X25X3 2689/2799 a.b. at Long. frame from CL	EN AW-6082 T6	100	50	3	0,1
Stif. AU50X25X3 2689/2799 a.b. at Long. frame from CL	EN AW-6082 T6	100	50	3	0,1
Stif. AU50X25X3 2689/2799 a.b. at Long. frame from CL	EN AW-6082 T6	100	50	3	0,1
Stif. AU50X25X3 2689/2799 a.b. at Long. frame from CL	EN AW-6082 T6	881	50	3	0,5
Stif. AU50X25X3 2689/2799 a.b. at Long. frame from CL	EN AW-6082 T6	100	50	3	0,1
Stif. AU50X25X3 2700/2799 a.b. at Long. frame from CL	EN AW-6082 T6	349	50	3	0,2
Stif. AU50X25X3 2700/2799 a.b. at Long. frame from CL	EN AW-6082 T6	5971	50	3	3,5
Stif. AU50X25X3 2700/2799 a.b. at Long. frame from CL	EN AW-6082 T6	447	50	3	0,3
Stif. AU50X25X3 2700/2799 a.b. at Long. frame from CL	EN AW-6082 T6	5972	50	3	3,5
Stif. AU50X25X3 2700/2799 a.b. at Long. frame from CL	EN AW-6082 T6	546	50	3	0,3

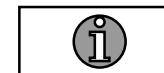


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10,7

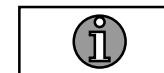
**Section 121 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. AU50X25X3 2700/2799 a.b. at Long. frame from CL	EN AW-6082 T6	5972	50	3	3,5
Stif. AU50X25X3 2700/2799 a.b. at Long. frame from CL	EN AW-6082 T6	642	50	3	0,4
Stif. AU50X25X3 -2800/-2609 a.b. at Long. frame from CL	EN AW-6082 T6	406	50	3	0,2
Stif. AU50X25X3 -2800/-2609 a.b. at Long. frame from CL	EN AW-6082 T6	406	50	3	0,2
Stif. AU50X25X3 -2800/-2609 a.b. at Long. frame from CL	EN AW-6082 T6	909	50	3	0,5
Stif. AU50X25X3 -2800/-2609 a.b. at Long. frame from CL	EN AW-6082 T6	909	50	3	0,5
Stif. AU50X25X3 -2800/-2687 a.b. at Long. frame from CL	EN AW-6082 T6	909	50	3	0,5
Stif. AU50X25X3 -2800/-2687 a.b. at Long. frame from CL	EN AW-6082 T6	909	50	3	0,5
Stif. AU50X25X3 -2800/-2690 a.b. at Long. frame from CL	EN AW-6082 T6	100	50	3	0,1
Stif. AU50X25X3 -2800/-2690 a.b. at Long. frame from CL	EN AW-6082 T6	100	50	3	0,1
Stif. AU50X25X3 -2800/-2690 a.b. at Long. frame from CL	EN AW-6082 T6	100	50	3	0,1
Stif. AU50X25X3 -2800/-2690 a.b. at Long. frame from CL	EN AW-6082 T6	881	50	3	0,5
Stif. AU50X25X3 -2800/-2690 a.b. at Long. frame from CL	EN AW-6082 T6	100	50	3	0,1
Stif. AU50X25X3 -2800/-2701 a.b. at Long. frame from CL	EN AW-6082 T6	349	50	3	0,2

**Σ****7,4**

**Section 121 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. AU50X25X3 -2800/-2701 a.b. at Long. frame from CL	EN AW-6082 T6	5971	50	3	3,5
Stif. AU50X25X3 -2800/-2701 a.b. at Long. frame from CL	EN AW-6082 T6	447	50	3	0,3
Stif. AU50X25X3 -2800/-2701 a.b. at Long. frame from CL	EN AW-6082 T6	5971	50	3	3,5
Stif. AU50X25X3 -2800/-2701 a.b. at Long. frame from CL	EN AW-6082 T6	530	50	3	0,3
Stif. AU50X25X3 -2800/-2701 a.b. at Long. frame from CL	EN AW-6082 T6	5972	50	3	3,5
Stif. AU50X25X3 -2800/-2701 a.b. at Long. frame from CL	EN AW-6082 T6	610	50	3	0,4
Stif. AU50X25X3 30+219/31 a.b. at Bulkhead FR	EN AW-6082 T6	495	50	3	0,3
Stif. AU50X25X3 30+219/31 a.b. at Bulkhead FR	EN AW-6082 T6	495	50	3	0,3
Stif. AU50X25X3 30+219/31 a.b. at Bulkhead FR	EN AW-6082 T6	495	50	3	0,3
Stif. AU50X25X3 30+219/31 a.b. at Bulkhead FR	EN AW-6082 T6	495	50	3	0,3
Stif. AU50X25X3 7270 a.b. at Bulkhead -1100 from CL	EN AW-6082 T6	946	50	3	0,6
Stif. AU50X25X3 7270 a.b. at Bulkhead 1400 from CL	EN AW-6082 T6	2693	50	3	1,6
Stif. AU50X25X3 7270 a.b. at Bulkhead 1920 from CL	EN AW-6082 T6	996	50	3	0,6
Stif. AU50X25X3 7270 a.b. at Bulkhead -1920 from CL	EN AW-6082 T6	996	50	3	0,6

**Σ****16,1**



## Section 121 – Painéis (Shell Stifenner – Longitudinais)

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. AU50X25X3 7270 a.b. at Bulkhead 250 from CL	EN AW-6082 T6	2693	50	3	1,6
Stif. AU50X25X3 7270 a.b. at Bulkhead -250 from CL	EN AW-6082 T6	946	50	3	0,6
Stif. AU50X25X3 7270 a.b. at Bulkhead 2800 from CL	EN AW-6082 T6	669	50	3	0,4
Stif. AU50X25X3 7270 a.b. at Bulkhead 2800 from CL	EN AW-6082 T6	5050	50	3	2,9
Stif. AU50X25X3 7270 a.b. at Bulkhead 2800 from CL	EN AW-6082 T6	100	50	3	0,1
Stif. AU50X25X3 7270 a.b. at Bulkhead -2800 from CL	EN AW-6082 T6	100	50	3	0,1
Stif. AU50X25X3 7270 a.b. at Bulkhead -2800 from CL	EN AW-6082 T6	669	50	3	0,4
Stif. AU50X25X3 7270 a.b. at Bulkhead -2800 from CL	EN AW-6082 T6	5050	50	3	2,9
Stif. AU50X25X3 7270 a.b. at Bulkhead FR 20	EN AW-6082 T6	5500	50	3	3,2
Stif. AU50X25X3 7270 a.b. at Bulkhead FR 22	EN AW-6082 T6	1494	50	3	0,9
Stif. AU50X25X3 7600 a.b. at Bulkhead -1100 from CL	EN AW-6082 T6	946	50	3	0,6
Stif. AU50X25X3 7600 a.b. at Bulkhead 1400 from CL	EN AW-6082 T6	2403	50	3	1,4
Stif. AU50X25X3 7600 a.b. at Bulkhead 1920 from CL	EN AW-6082 T6	996	50	3	0,6
Stif. AU50X25X3 7600 a.b. at Bulkhead -1920 from CL	EN AW-6082 T6	996	50	3	0,6



Σ

16,3

## Section 121 – Painéis (Shell Stifenner – Longitudinais)

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. AU50X25X3 7600 a.b. at Bulkhead 250 from CL	EN AW-6082 T6	2403	50	3	1,4
Stif. AU50X25X3 7600 a.b. at Bulkhead -250 from CL	EN AW-6082 T6	946	50	3	0,6
Stif. AU50X25X3 7600 a.b. at Bulkhead 2800 from CL	EN AW-6082 T6	669	50	3	0,4
Stif. AU50X25X3 7600 a.b. at Bulkhead 2800 from CL	EN AW-6082 T6	5322	50	3	3,1
Stif. AU50X25X3 7600 a.b. at Bulkhead 2800 from CL	EN AW-6082 T6	100	50	3	0,1
Stif. AU50X25X3 7600 a.b. at Bulkhead -2800 from CL	EN AW-6082 T6	100	50	3	0,1
Stif. AU50X25X3 7600 a.b. at Bulkhead -2800 from CL	EN AW-6082 T6	669	50	3	0,4
Stif. AU50X25X3 7600 a.b. at Bulkhead -2800 from CL	EN AW-6082 T6	5322	50	3	3,1
Stif. AU50X25X3 7600 a.b. at Bulkhead FR 20	EN AW-6082 T6	1650	50	3	1
Stif. AU50X25X3 7600 a.b. at Bulkhead FR 20	EN AW-6082 T6	2996	50	3	1,7
Stif. AU50X25X3 7600 a.b. at Bulkhead FR 22	EN AW-6082 T6	1494	50	3	0,9
Stif. AU50X25X3 7800 a.b. at Bulkhead 2800 from CL	EN AW-6082 T6	669	50	3	0,4
Stif. AU50X25X3 7800 a.b. at Bulkhead 2800 from CL	EN AW-6082 T6	5096	50	3	3
Stif. AU50X25X3 7800 a.b. at Bulkhead -2800 from CL	EN AW-6082 T6	669	50	3	0,4

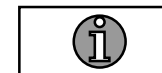


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16,6

**Section 121 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. AU50X25X3 7800 a.b. at Bulkhead -2800 from CL	EN AW-6082 T6	5096	50	3	3
Stif. AU50X25X3 7800 a.b. at Bulkhead FR 20	EN AW-6082 T6	750	50	3	0,4
Stif. AU50X25X3 7800 a.b. at Bulkhead FR 20	EN AW-6082 T6	475	50	3	0,3
Stif. AU50X25X3 8250 a.b. at Bulkhead FR 20	EN AW-6082 T6	1502	50	3	0,9
Stif. AU50X25X3 8250 a.b. at Bulkhead FR 20	EN AW-6082 T6	1296	50	3	0,8
Stif. AU50X25X3 8250 a.b. at Bulkhead FR 20	EN AW-6082 T6	1502	50	3	0,9
Stif. AU50X25X3 8500 a.b. at Bulkhead FR 20	EN AW-6082 T6	1474	50	3	0,9
Stif. AU50X25X3 8500 a.b. at Bulkhead FR 20	EN AW-6082 T6	1296	50	3	0,8
Stif. AU50X25X3 8500 a.b. at Bulkhead FR 20	EN AW-6082 T6	1474	50	3	0,9
Stif. AU50X25X3 8800 a.b. at Bulkhead FR 20	EN AW-6082 T6	1446	50	3	0,8
Stif. AU50X25X3 8800 a.b. at Bulkhead FR 20	EN AW-6082 T6	1296	50	3	0,8
Stif. AU50X25X3 8800 a.b. at Bulkhead FR 20	EN AW-6082 T6	1446	50	3	0,8
Stif. AU50X25X3 9200 a.b. at Bulkhead FR 20	EN AW-6082 T6	846	50	3	0,5
Stif. AU50X25X3 a.b. at Bulkhead 2800 from CL	EN AW-6082 T6	724	50	3	0,4

**Σ****12,2**

## Section 121 – Painéis (Shell Stifenner – Longitudinais)

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. AU50X25X3 a.b. at Bulkhead -2800 from CL	EN AW-6082 T6	724	50	3	0,4
Stif. AU50X25X3 FR 2608/2800 at Long. frame from CL	EN AW-6082 T6	646	50	3	0,4
Stif. AU50X25X3 FR -2800/-2609 at Long. frame from CL	EN AW-6082 T6	646	50	3	0,4
Stif. AU50X25X3 frame 20+330 at Bulkhead -1100 from CL	EN AW-6082 T6	375	50	3	0,2
Stif. AU50X25X3 frame 20+330 at Bulkhead -250 from CL	EN AW-6082 T6	375	50	3	0,2
Stif. AU50X25X3 frame 20+670 at Bulkhead -1100 from CL	EN AW-6082 T6	375	50	3	0,2
Stif. AU50X25X3 frame 20+670 at Bulkhead -250 from CL	EN AW-6082 T6	375	50	3	0,2
Stif. AU50X25X3 frame 25+325 at Bulkhead 2800 from CL	EN AW-6082 T6	355	50	3	0,2
Stif. AU50X25X3 frame 25+325 at Bulkhead -2800 from CL	EN AW-6082 T6	355	50	3	0,2
Stif. AU50X25X3 frame 28+330 at Bulkhead -250 from CL	EN AW-6082 T6	1909	50	3	1,1
Stif. AU50X25X3 frame 28+670 at Bulkhead -250 from CL	EN AW-6082 T6	1770	50	3	1
Stif. AU50X25X3 frame 29 at Bulkhead -250 from CL	EN AW-6082 T6	1410	50	3	0,8
Stif. AU50X25X3 frame 29+330 at Bulkhead -250 from CL	EN AW-6082 T6	1499	50	3	0,9
Stif. AU50X25X3 frame 29+670 at Bulkhead -250 from CL	EN AW-6082 T6	1359	50	3	0,8



Σ

7

## Section 121 – Painéis (Shell Stifenner – Longitudinais)

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. AU50X25X3 frame 30 at Bulkhead -250 from CL	EN AW-6082 T6	1000	50	3	0,6
Stif. AU50X25X3 frame 30+330 at Bulkhead -250 from CL	EN AW-6082 T6	1089	50	3	0,6
Stif. AU50X25X3 frame 30+670 at Bulkhead -250 from CL	EN AW-6082 T6	949	50	3	0,6
Stif. AU60X40X3 1100 from CL at Bulkhead FR 28	EN AW-6082 T6	2012	60	3	1,6
Stif. AU60X40X3 -1100 from CL at Bulkhead FR 28	EN AW-6082 T6	2012	60	3	1,6
Stif. AU60X40X3 1100 from CL at Bulkhead FR 31	EN AW-6082 T6	782	60	3	0,6
Stif. AU60X40X3 -1100 from CL at Bulkhead FR 31	EN AW-6082 T6	782	60	3	0,6
Stif. AU60X40X3 1370 from CL at Bulkhead FR 31	EN AW-6082 T6	787	60	3	0,6
Stif. AU60X40X3 -1370 from CL at Bulkhead FR 31	EN AW-6082 T6	787	60	3	0,6
Stif. AU60X40X3 1400 from CL at Bulkhead FR 28	EN AW-6082 T6	978	60	3	0,8
Stif. AU60X40X3 -1400 from CL at Bulkhead FR 28	EN AW-6082 T6	978	60	3	0,8
Stif. AU60X40X3 1700 from CL at Bulkhead FR 28	EN AW-6082 T6	1996	60	3	1,6
Stif. AU60X40X3 -1700 from CL at Bulkhead FR 28	EN AW-6082 T6	1996	60	3	1,6
Stif. AU60X40X3 -2 from CL at Bulkhead FR 28	EN AW-6082 T6	2003	60	3	1,6

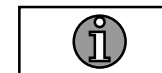


Σ

13,8

## Section 121 – Painéis (Shell Stifenner – Longitudinais)

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. AU60X40X3 -2 from CL at Bulkhead FR 31	EN AW-6082 T6	773	60	3	0,6
Stif. AU60X40X3 2000 from CL at Deck 9040 above base	EN AW-6082 T6	319	60	3	0,2
Stif. AU60X40X3 -2000 from CL at Deck 9040 above base	EN AW-6082 T6	319	60	3	0,2
Stif. AU60X40X3 2275 from CL at Bulkhead FR 28	EN AW-6082 T6	1767	60	3	1,4
Stif. AU60X40X3 -2275 from CL at Bulkhead FR 28	EN AW-6082 T6	1765	60	3	1,4
Stif. AU60X40X3 2275 from CL at Bulkhead FR 29	EN AW-6082 T6	1355	60	3	1,1
Stif. AU60X40X3 -2275 from CL at Bulkhead FR 29	EN AW-6082 T6	1355	60	3	1,1
Stif. AU60X40X3 2275 from CL at Bulkhead FR 30	EN AW-6082 T6	956	60	3	0,7
Stif. AU60X40X3 -2275 from CL at Bulkhead FR 30	EN AW-6082 T6	956	60	3	0,7
Stif. AU60X40X3 2275 from CL at Deck 9040 above base	EN AW-6082 T6	318	60	3	0,2
Stif. AU60X40X3 -2275 from CL at Deck 9040 above base	EN AW-6082 T6	318	60	3	0,2
Stif. AU60X40X3 250 from CL at Bulkhead FR 28	EN AW-6082 T6	2003	60	3	1,6
Stif. AU60X40X3 250 from CL at Bulkhead FR 31	EN AW-6082 T6	773	60	3	0,6
Stif. AU60X40X3 30+219/31 from CL at Bulkhead FR	EN AW-6082 T6	794	60	3	0,6



Σ

10,6

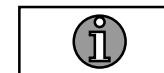
**Section 121 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. AU60X40X3 30+219/31 from CL at Bulkhead FR	EN AW-6082 T6	794	60	3	0,6
Stif. AU60X40X3 30+219/31 from CL at Bulkhead FR	EN AW-6082 T6	802	60	3	0,6
Stif. AU60X40X3 30+219/31 from CL at Bulkhead FR	EN AW-6082 T6	802	60	3	0,6
Stif. AU60X40X3 500 from CL at Bulkhead FR 28	EN AW-6082 T6	2005	60	3	1,6
Stif. AU60X40X3 -500 from CL at Bulkhead FR 28	EN AW-6082 T6	2005	60	3	1,6
Stif. AU60X40X3 500 from CL at Bulkhead FR 31	EN AW-6082 T6	775	60	3	0,6
Stif. AU60X40X3 -500 from CL at Bulkhead FR 31	EN AW-6082 T6	775	60	3	0,6
Stif. AU60X40X3 7849/9040 from CL at Deck above base	EN AW-6082 T6	2807	60	3	2,2
Stif. AU60X40X3 7849/9040 from CL at Deck above base	EN AW-6082 T6	2807	60	3	2,2
Stif. AU60X40X3 7849/9040 from CL at Deck above base	EN AW-6082 T6	3160	60	3	2,5
Stif. AU60X40X3 7849/9040 from CL at Deck above base	EN AW-6082 T6	3160	60	3	2,5
Stif. AU60X40X3 7849/9040 from CL at Deck above base	EN AW-6082 T6	3016	60	3	2,4
Stif. AU60X40X3 7849/9040 from CL at Deck above base	EN AW-6082 T6	3016	60	3	2,4
Stif. AU60X40X3 7850/9040 from CL at Deck above base	EN AW-6082 T6	3252	60	3	2,6

**Σ****22,988**

## Section 121 – Painéis (Shell Stifenner – Longitudinais)

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. AU60X40X3 7850/9040 from CL at Deck above base	EN AW-6082 T6	3252	60	3	2,6
Stif. AU60X40X3 7850/9040 from CL at Deck above base	EN AW-6082 T6	3252	60	3	2,6
Stif. AU60X40X3 7850/9040 from CL at Deck above base	EN AW-6082 T6	3252	60	3	2,6
Stif. AU60X40X3 7850/9040 from CL at Deck above base	EN AW-6082 T6	3252	60	3	2,6
Stif. AU60X40X3 7850/9040 from CL at Deck above base	EN AW-6082 T6	3252	60	3	2,6
Stif. AU60X40X3 7850/9040 from CL at Deck above base	EN AW-6082 T6	3252	60	3	2,6
Stif. AU60X40X3 7850/9040 from CL at Deck above base	EN AW-6082 T6	3252	60	3	2,6
Stif. AU60X40X3 7850/9040 from CL at Deck above base	EN AW-6082 T6	3252	60	3	2,6
Stif. AU60X40X3 7850/9040 from CL at Deck above base	EN AW-6082 T6	3252	60	3	2,6
Stif. AU60X40X3 7850/9040 from CL at Deck above base	EN AW-6082 T6	3252	60	3	2,6
Stif. AU60X40X3 800 from CL at Bulkhead FR 28	EN AW-6082 T6	2008	60	3	1,6
Stif. AU60X40X3 -800 from CL at Bulkhead FR 28	EN AW-6082 T6	2008	60	3	1,6
Stif. AU60X40X3 800 from CL at Bulkhead FR 31	EN AW-6082 T6	778	60	3	0,6
Stif. AU60X40X3 -800 from CL at Bulkhead FR 31	EN AW-6082 T6	778	60	3	0,6



Σ

30,3



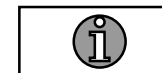
**Section 121 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. AU60X40X3 FR 7849/9040 at Deck above base	EN AW-6082 T6	423	60	3	0,3
Stif. AU60X40X3 FR 7849/9040 at Deck above base	EN AW-6082 T6	423	60	3	0,3
Stif. AU60X40X3 from CL at Bulkhead FR 28	EN AW-6082 T6	1036	60	3	0,8
Stif. AU60X40X3 from CL at Bulkhead FR 28	EN AW-6082 T6	1036	60	3	0,8
Stif. AU60X40X3 from CL at Bulkhead FR 28	EN AW-6082 T6	850	60	3	0,7
Stif. AU60X40X3 from CL at Bulkhead FR 28	EN AW-6082 T6	850	60	3	0,7
Stif. AU75X50X5 1100 from CL at Deck 8000 above base	EN AW-6082 T6	1841	75	5	3
Stif. AU75X50X5 1100 from CL at Deck 8000 above base	EN AW-6082 T6	3802	75	5	6,2
Stif. AU75X50X5 -1100 from CL at Deck 8000 above base	EN AW-6082 T6	4250	75	5	6,9
Stif. AU75X50X5 -1100 from CL at Deck 8000 above base	EN AW-6082 T6	1986	75	5	3,2
Stif. AU75X50X5 1400 from CL at Deck 8000 above base	EN AW-6082 T6	1996	75	5	3,2
Stif. AU75X50X5 1400 from CL at Deck 8000 above base	EN AW-6082 T6	936	75	5	1,5
Stif. AU75X50X5 1400 from CL at Deck 8000 above base	EN AW-6082 T6	2210	75	5	3,6
Stif. AU75X50X5 -1400 from CL at Deck 8000 above base	EN AW-6082 T6	5950	75	5	9,6

**Σ****40,8**

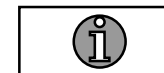
**Section 121 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. AU75X50X5 -1400 from CL at Deck 8000 above base	EN AW-6082 T6	936	75	5	1,5
Stif. AU75X50X5 -1400 from CL at Deck 8000 above base	EN AW-6082 T6	595	75	5	1
Stif. AU75X50X5 1700 from CL at Deck 8000 above base	EN AW-6082 T6	5950	75	5	9,6
Stif. AU75X50X5 1700 from CL at Deck 8000 above base	EN AW-6082 T6	1986	75	5	3,2
Stif. AU75X50X5 -1700 from CL at Deck 8000 above base	EN AW-6082 T6	5950	75	5	9,6
Stif. AU75X50X5 -1700 from CL at Deck 8000 above base	EN AW-6082 T6	1986	75	5	3,2
Stif. AU75X50X5 -1920 from CL at Deck 8000 above base	EN AW-6082 T6	546	75	5	0,9
Stif. AU75X50X5 -2 from CL at Deck 8000 above base	EN AW-6082 T6	5950	75	5	9,6
Stif. AU75X50X5 -2 from CL at Deck 8000 above base	EN AW-6082 T6	1986	75	5	3,2
Stif. AU75X50X5 2000 from CL at Deck 8000 above base	EN AW-6082 T6	4100	75	5	6,6
Stif. AU75X50X5 -2000 from CL at Deck 8000 above base	EN AW-6082 T6	4100	75	5	6,6
Stif. AU75X50X5 2275 from CL at Deck 8000 above base	EN AW-6082 T6	4996	75	5	8,1
Stif. AU75X50X5 -2275 from CL at Deck 8000 above base	EN AW-6082 T6	4996	75	5	8,1
Stif. AU75X50X5 250 from CL at Deck 8000 above base	EN AW-6082 T6	1996	75	5	3,2

**Σ****74,4**

## Section 121 – Painéis (Shell Stifenner – Longitudinais)

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. AU75X50X5 250 from CL at Deck 8000 above base	EN AW-6082 T6	2661	75	5	4,3
Stif. AU75X50X5 250 from CL at Deck 8000 above base	EN AW-6082 T6	661	75	5	1,1
Stif. AU75X50X5 -250 from CL at Deck 8000 above base	EN AW-6082 T6	4250	75	5	6,9
Stif. AU75X50X5 -250 from CL at Deck 8000 above base	EN AW-6082 T6	1046	75	5	1,7
Stif. AU75X50X5 -250 from CL at Deck 8000 above base	EN AW-6082 T6	721	75	5	1,2
Stif. AU75X50X5 2530 from CL at Deck 8000 above base	EN AW-6082 T6	4996	75	5	8,1
Stif. AU75X50X5 -2530 from CL at Deck 8000 above base	EN AW-6082 T6	4996	75	5	8,1
Stif. AU75X50X5 500 from CL at Deck 8000 above base	EN AW-6082 T6	1996	75	5	3,2
Stif. AU75X50X5 500 from CL at Deck 8000 above base	EN AW-6082 T6	3802	75	5	6,2
Stif. AU75X50X5 -500 from CL at Deck 8000 above base	EN AW-6082 T6	4400	75	5	7,1
Stif. AU75X50X5 -500 from CL at Deck 8000 above base	EN AW-6082 T6	1986	75	5	3,2
Stif. AU75X50X5 800 from CL at Deck 8000 above base	EN AW-6082 T6	1996	75	5	3,2
Stif. AU75X50X5 800 from CL at Deck 8000 above base	EN AW-6082 T6	3802	75	5	6,2
Stif. AU75X50X5 -800 from CL at Deck 8000 above base	EN AW-6082 T6	4400	75	5	7,1

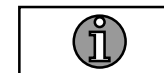


Σ

67,6

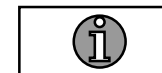
**Section 121 – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. AU75X50X5 -800 from CL at Deck 8000 above base	EN AW-6082 T6	1986	75	5	3,2
Stif. AU75X50X5 FR 26+545 at Deck 8000 above base	EN AW-6082 T6	595	75	5	1
Stif. AU75X50X5 FR 26+545 at Deck 8000 above base	EN AW-6082 T6	595	75	5	1
Stif. AU75X50X5 FR 27+275 at Deck 8000 above base	EN AW-6082 T6	493	75	5	0,8
Stif. AU75X50X5 FR 27+275 at Deck 8000 above base	EN AW-6082 T6	492	75	5	0,8
Stif. AU75X50X5 from CL at Deck 8000 above base	EN AW-6082 T6	370	75	5	0,6
Stif. AU75X50X5 from CL at Deck 8000 above base	EN AW-6082 T6	900	75	5	1,5
Stif. FB40X4 7270 a.b. at Bulkhead FR 21	EN AW-6082 T6	120	40	4	0,1
Stif. FB40X4 7270 a.b. at Bulkhead FR 21	EN AW-6082 T6	120	40	4	0,1
Stif. FB40X4 7270 a.b. at Bulkhead FR 27	EN AW-6082 T6	220	40	4	0,1
Stif. FB40X4 7270 a.b. at Bulkhead FR 27	EN AW-6082 T6	220	40	4	0,1
Stif. FB40X4 7270 a.b. at Bulkhead FR 27	EN AW-6082 T6	120	40	4	0,1
Stif. FB40X4 7270 a.b. at Bulkhead FR 27	EN AW-6082 T6	120	40	4	0,1
Stif. FB40X4 7600 a.b. at Bulkhead FR 21	EN AW-6082 T6	120	40	4	0,1

**Σ****9,6**

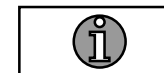
**Section 121 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. FB40X4 7600 a.b. at Bulkhead FR 21	EN AW-6082 T6	120	40	4	0,1
Stif. FB40X4 7600 a.b. at Bulkhead FR 27	EN AW-6082 T6	220	40	4	0,1
Stif. FB40X4 7600 a.b. at Bulkhead FR 27	EN AW-6082 T6	220	40	4	0,1
Stif. FB40X4 7600 a.b. at Bulkhead FR 27	EN AW-6082 T6	120	40	4	0,1
Stif. FB40X4 7600 a.b. at Bulkhead FR 27	EN AW-6082 T6	120	40	4	0,1
Stif. FB40X4 7600 a.b. at Bulkhead FR 29	EN AW-6082 T6	246	40	4	0,1
Stif. FB40X4 7600 a.b. at Bulkhead FR 29	EN AW-6082 T6	246	40	4	0,1
Stif. FB40X4 7900 a.b. at Bulkhead FR 27	EN AW-6082 T6	215	40	4	0,1
Stif. FB40X4 7900 a.b. at Bulkhead FR 27	EN AW-6082 T6	206	40	4	0,1
Stif. FB40X4 8000 a.b. at Bulkhead FR 29+500	EN AW-6082 T6	165	40	4	0,1
Stif. FB40X4 8000 a.b. at Bulkhead FR 30-330	EN AW-6082 T6	143	40	4	0,1
Stif. FB40X4 8004 a.b. at Bulkhead FR 26	EN AW-6082 T6	160	40	4	0,1
Stif. FB40X4 8004 a.b. at Bulkhead FR 26	EN AW-6082 T6	160	40	4	0,1
Stif. FB40X4 8200 a.b. at Bulkhead FR 27	EN AW-6082 T6	188	40	4	0,1

**Σ****1,4**

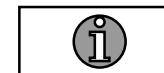
**Section 121 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. FB40X4 8200 a.b. at Bulkhead FR 27	EN AW-6082 T6	188	40	4	0,1
Stif. FB40X4 8500 a.b. at Bulkhead FR 27	EN AW-6082 T6	160	40	4	0,1
Stif. FB40X4 8500 a.b. at Bulkhead FR 27	EN AW-6082 T6	160	40	4	0,1
Stif. FB40X4 8800 a.b. at Bulkhead FR 27	EN AW-6082 T6	132	40	4	0,1
Stif. FB40X4 8800 a.b. at Bulkhead FR 27	EN AW-6082 T6	132	40	4	0,1
Stif. FB50X5 1100 from CL at Bulkhead FR 21	EN AW-6082 T6	264	50	5	0,2
Stif. FB50X5 -1100 from CL at Bulkhead FR 21	EN AW-6082 T6	264	50	5	0,2
Stif. FB50X5 1400 from CL at Bulkhead FR 22	EN AW-6082 T6	264	50	5	0,2
Stif. FB50X5 -1400 from CL at Bulkhead FR 22	EN AW-6082 T6	264	50	5	0,2
Stif. FB50X5 1400 from CL at Bulkhead FR 26	EN AW-6082 T6	299	50	5	0,2
Stif. FB50X5 -1400 from CL at Bulkhead FR 26	EN AW-6082 T6	299	50	5	0,2
Stif. FB50X5 1700 from CL at Bulkhead FR 24	EN AW-6082 T6	271	50	5	0,2
Stif. FB50X5 -1700 from CL at Bulkhead FR 24	EN AW-6082 T6	271	50	5	0,2
Stif. FB50X5 1700 from CL at Bulkhead FR 25	EN AW-6082 T6	280	50	5	0,2

**Σ****2,3**

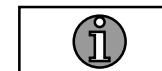
**Section 121 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. FB50X5 -1700 from CL at Bulkhead FR 25	EN AW-6082 T6	280	50	5	0,2
Stif. FB50X5 1700 from CL at Bulkhead FR 27+500	EN AW-6082 T6	266	50	5	0,2
Stif. FB50X5 -1700 from CL at Bulkhead FR 27+500	EN AW-6082 T6	266	50	5	0,2
Stif. FB50X5 2275 from CL at Bulkhead FR 22	EN AW-6082 T6	228	50	5	0,2
Stif. FB50X5 -2275 from CL at Bulkhead FR 22	EN AW-6082 T6	228	50	5	0,2
Stif. FB50X5 500 from CL at Bulkhead FR 21	EN AW-6082 T6	274	50	5	0,2
Stif. FB50X5 -500 from CL at Bulkhead FR 21	EN AW-6082 T6	274	50	5	0,2
Stif. FB50X5 500 from CL at Bulkhead FR 22	EN AW-6082 T6	283	50	5	0,2
Stif. FB50X5 -500 from CL at Bulkhead FR 22	EN AW-6082 T6	283	50	5	0,2
Stif. FB50X5 500 from CL at Bulkhead FR 23	EN AW-6082 T6	292	50	5	0,2
Stif. FB50X5 -500 from CL at Bulkhead FR 23	EN AW-6082 T6	292	50	5	0,2
Stif. FB50X5 500 from CL at Bulkhead FR 24	EN AW-6082 T6	301	50	5	0,2
Stif. FB50X5 -500 from CL at Bulkhead FR 24	EN AW-6082 T6	301	50	5	0,2
Stif. FB50X5 500 from CL at Bulkhead FR 25	EN AW-6082 T6	309	50	5	0,2

**Σ****2,8**

**Section 121 – Painéis (Shell Stifenner – Longitudinais)**

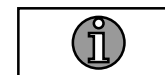
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. FB50X5 -500 from CL at Bulkhead FR 25	EN AW-6082 T6	309	50	5	0,2
Stif. FB50X5 500 from CL at Bulkhead FR 26	EN AW-6082 T6	318	50	5	0,2
Stif. FB50X5 -500 from CL at Bulkhead FR 26	EN AW-6082 T6	318	50	5	0,2
Stif. FB50X5 500 from CL at Bulkhead FR 27+500	EN AW-6082 T6	296	50	5	0,2
Stif. FB50X5 -500 from CL at Bulkhead FR 27+500	EN AW-6082 T6	296	50	5	0,2
Stif. HP80X3.7 24+134/24+838 a.b. at Bulkhead FR	EN AW-6082 T6	1254	80	4	1,4
Stif. HP80X3.7 24+134/24+838 a.b. at Bulkhead FR	EN AW-6082 T6	1254	80	4	1,4
Stif. HP80X3.7 2580/2990 a.b. at Long. frame from CL	EN AW-6082 T6	5152	80	4	5,8
Stif. HP80X3.7 2580/2990 a.b. at Long. frame from CL	EN AW-6082 T6	1264	80	4	1,4
Stif. HP80X3.7 -2991/-2581 a.b. at Long. frame from CL	EN AW-6082 T6	5152	80	4	5,8
Stif. HP80X3.7 -2991/-2581 a.b. at Long. frame from CL	EN AW-6082 T6	1264	80	4	1,4
Stif. HS120X120X10 1156 from CL at	EN AW-6082 T6	2628	120	10	31,2
Stif. HS120X120X10 -1156 from CL at	EN AW-6082 T6	2628	120	10	31,2
Stif. HS150X50X5 -20/820 from CL at	EN AW-6082 T6	1422	150	5	6,8

**Σ****87,4**



## Section 121 – Painéis (Shell Plate)

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. HS150X50X5 -20/820 from CL at	EN AW-6082 T6	1423	150	5	6,9
Stif. HS150X50X5 -225 from CL at	EN AW-6082 T6	2192	150	5	11,2
Stif. HS150X50X5 FR -20000/820000 at	EN AW-6082 T6	1195	150	5	6
Stif. HS150X50X5 FR -20000/820000 at	EN AW-6082 T6	1195	150	5	6
Stif. PI50X5 FR -20000/820000 at	EN AW-6082 T6	1272	50	5	2,4
Stif. PI50X5 FR -20000/820000 at	EN AW-6082 T6	1272	50	5	2,4
Stif. PI50X5 frame 19+300 at	EN AW-6082 T6	821	50	5	1,6
Stif. PI50X5 frame 19+300 at	EN AW-6082 T6	821	50	5	1,6
Stif. PI50X5 frame 26 at	EN AW-6082 T6	1836	50	5	3,5
Stif. PI50X5 frame 26 at	EN AW-6082 T6	1836	50	5	3,5



Σ

45,1



Σ *Peso (Kg)*

*Total*

892,19

*Expected material flows  
between departments*

*Table 2 – Section 121*


<i>From</i>	<i>to</i>	<i>Quantity</i>	<i>From</i>	<i>to</i>	<i>Quantity</i>
1	2	3,39724 t	9	13	3,39724 t
2	 3	0,9905 t ( <i>shell plates</i> ) 0,8922 t ( <i>shell stifenner</i> )	-----	-----	-----
2	6	1,514 t	-----	-----	-----
3	 4	0,8922 t	-----	-----	-----
3/4	5	(0,9905 t + 0,8922 t) t 1,8827 t	-----	-----	-----
5	9	1,8827 t	-----	-----	-----
6	7	1,514 t	-----	-----	-----
7	8	1,514 t	-----	-----	-----
8	9	1,514 t	-----	-----	-----
<b>Section 121</b>				<b>Σ</b>	<b>3,39724 t</b>

# *Section* 122

# *Section 122*

*Section 122 – Painéis (Shell Plate)*

## Section 122 – Painéis (Shell Plate)

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Face plate 50X5 at Bulkhead 800 from CL	EN AW-6082 T6	604	50	5	0,4
Face plate 50X5 at Bulkhead -800 from CL	EN AW-6082 T6	604	50	5	0,4
Long. frame -1397/-900 from CL	EN AW-5083 H111	4006	1077	4	36
Long. frame 899/1396 from CL	EN AW-5083 H111	4005	1077	4	36
				$\Sigma$	72,8
				$\Sigma$ <i>Peso (Kg)</i>	72,8
				<i>Total</i>	

***Section 122 – Painéis (Shell Stifenner – Longitudinais)***

## Section 122 – Painéis (Shell Stifenner – Longitudinais)

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. AU50X25X3 10750 a.b. at Bulkhead 1396 from CL	EN AW-6082 T6	2217	50	3	1,3
Stif. AU50X25X3 10750 a.b. at Bulkhead -1396 from CL	EN AW-6082 T6	2217	50	3	1,3
Stif. AU50X25X3 11000 a.b. at Bulkhead 1396 from CL	EN AW-6082 T6	1837	50	3	1,1
Stif. AU50X25X3 11000 a.b. at Bulkhead -1396 from CL	EN AW-6082 T6	1836	50	3	1,1
Stif. AU50X25X3 11250 a.b. at Bulkhead 1396 from CL	EN AW-6082 T6	1359	50	3	0,8
Stif. AU50X25X3 11250 a.b. at Bulkhead -1396 from CL	EN AW-6082 T6	1359	50	3	0,8
Stif. AU50X25X3 -1397/-900 a.b. at Long. frame from CL	EN AW-6082 T6	1437	50	3	0,8
Stif. AU50X25X3 -1397/-900 a.b. at Long. frame from CL	EN AW-6082 T6	1436	50	3	0,8
Stif. AU50X25X3 22+500/23+17 a.b. at Bulkhead FR	EN AW-6082 T6	546	50	3	0,3
Stif. AU50X25X3 22+500/23+17 a.b. at Bulkhead FR	EN AW-6082 T6	546	50	3	0,3
Stif. AU50X25X3 22+500/23+17 a.b. at Bulkhead FR	EN AW-6082 T6	546	50	3	0,3
Stif. AU50X25X3 22+500/23+17 a.b. at Bulkhead FR	EN AW-6082 T6	546	50	3	0,3
Stif. AU50X25X3 22+500/23+17 from CL at Bulkhead FR	EN AW-6082 T6	873	50	3	0,5
Stif. AU50X25X3 22+500/23+17 from CL at Bulkhead FR	EN AW-6082 T6	869	50	3	0,5



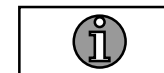
Σ

10,2



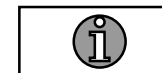
**Section 122 – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. AU50X25X3 800 from CL at Deck 11250 above base	EN AW-6082 T6	1000	50	3	0,6
Stif. AU50X25X3 -800 from CL at Deck 11250 above base	EN AW-6082 T6	1000	50	3	0,6
Stif. AU50X25X3 899/1396 a.b. at Long. frame from CL	EN AW-6082 T6	1437	50	3	0,8
Stif. AU50X25X3 899/1396 a.b. at Long. frame from CL	EN AW-6082 T6	1436	50	3	0,8
Stif. AU50X25X3 FR 10556/11499 at Deck above base	EN AW-6082 T6	1861	50	3	1,1
Stif. AU50X25X3 FR 10556/11499 at Deck above base	EN AW-6082 T6	1861	50	3	1,1
Stif. AU75X50X5 625 from CL at	EN AW-6082 T6	415	75	5	0,6
Stif. AU75X50X5 -625 from CL at	EN AW-6082 T6	415	75	5	0,6
Stif. AU75X50X5 652 from CL at	EN AW-6082 T6	370	75	5	0,6
Stif. AU75X50X5 -653 from CL at	EN AW-6082 T6	370	75	5	0,6
Stif. AU75X50X5 FR 22+522 at	EN AW-6082 T6	1295	75	5	2,1
Stif. AU75X50X5 FR 22+902 at	EN AW-6082 T6	72	75	5	0,1
Stif. AU75X50X5 FR 22+902 at	EN AW-6082 T6	72	75	5	0,1
Stif. AU75X50X5 FR 23+272 at	EN AW-6082 T6	1240	75	5	2

**Σ****11,7**


**Section 122 – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. FB60X6 FR -1397/-900 at Long. frame from CL	EN AW-6082 T6	275	60	6	0,2
Stif. FB60X6 FR -1397/-900 at Long. frame from CL	EN AW-6082 T6	303	60	6	0,3
Stif. FB60X6 FR 899/1396 at Long. frame from CL	EN AW-6082 T6	275	60	6	0,2
Stif. FB60X6 FR 899/1396 at Long. frame from CL	EN AW-6082 T6	303	60	6	0,3
Stif. FB60X6 frame 22 at Bulkhead 1396 from CL	EN AW-6082 T6	250	60	6	0,2
Stif. FB60X6 frame 22 at Bulkhead -1396 from CL	EN AW-6082 T6	250	60	6	0,2
Stif. HP80X3.7 11504 a.b. at	EN AW-6082 T6	895	80	4	1
Stif. HP80X3.7 11504 a.b. at	EN AW-6082 T6	895	80	4	1
Stif. HP80X3.7 11504 a.b. at	EN AW-6082 T6	1794	80	4	2
Stif. HP80X3.7 11504 from CL at	EN AW-6082 T6	1518	80	4	1,7
Stif. HP80X3.7 11504 from CL at	EN AW-6082 T6	1518	80	4	1,7
Stif. HP80X3.7 frame 21 at	EN AW-6082 T6	441	80	4	0,5
Stif. HP80X3.7 frame 21 at	EN AW-6082 T6	441	80	4	0,5
Stif. HP80X3.7 frame at	EN AW-6082 T6	604	80	4	0,7

 $\Sigma$ 



10,5

**Section 122 – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. HP80X3.7 frame at	EN AW-6082 T6	604	80	4	0,7
					$\Sigma$ 0,7
					$\Sigma$ <i>Peso (Kg)</i> <i>Total</i> 33,1

*Expected material flows  
between departments*

*Table 2 – Section 122*

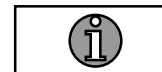
<i>From</i>	<i>to</i>	<i>Quantity</i>	<i>From</i>	<i>to</i>	<i>Quantity</i>
1	2	0,2182 t	9	13	0,2182 t
2	 3	0,0728 t ( <i>shell plates</i> ) 0,0331 t ( <i>shell stifenner</i> )	-----	-----	-----
2	6	0,1123 t	-----	-----	-----
3	 4	0,0331 t	-----	-----	-----
3/4	5	(0,0728 t + 0,0331 t) t 0,1059 t	-----	-----	-----
5	9	0,10591	-----	-----	-----
6	7	0,1123 t	-----	-----	-----
7	8	0,1123 t	-----	-----	-----
8	9	0,1123 t	-----	-----	-----
<b>Section 122</b>				<b>Σ</b>	<b>0,2182</b>

*General Items*

*(131\_371\_372\_510\_540)*

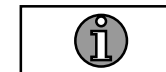
**Section (131\_371\_372\_510\_540) – Painéis (Shell Plate)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell frame 0/1955	EN AW-6082 T6	4258	50	5	2,9
Shell frame 0/1955	EN AW-6082 T6	4254	50	5	2,9
Shell frame 1100 from CL	EN AW-6082 T6	4823	80	4	5,5
Shell frame -1100 from CL	EN AW-6082 T6	4823	80	4	5,5
Shell frame 1400 from CL	EN AW-6082 T6	4823	80	4	5,5
Shell frame -1400 from CL	EN AW-6082 T6	4823	80	4	5,5
Shell frame 15+36/15+503	EN AW-6082 T6	1753	50	5	1,2
Shell frame 15+503/15+970	EN AW-6082 T6	1753	50	5	1,2
Shell frame 1667/1914	EN AW-6082 T6	558	155	6	1,6
Shell frame 1668/1915	EN AW-6082 T6	561	155	6	1,6
Shell frame 1700 from CL	EN AW-6082 T6	4827	80	4	5,5
Shell frame -1700 from CL	EN AW-6082 T6	4827	80	4	5,5
Shell frame -1915/-1668	EN AW-6082 T6	558	155	6	1,6
Shell frame -1916/-1669	EN AW-6082 T6	561	155	6	1,6

**Σ****47,6**

**Section (131\_371\_372\_510\_540) – Painéis (Shell Plate)**

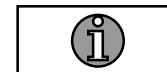
<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell frame -1956/0	EN AW-6082 T6	4254	50	5	2,9
Shell frame -1956/-1	EN AW-6082 T6	4258	50	5	2,9
Shell frame -2 from CL	EN AW-6082 T6	842	60	3	0,7
Shell frame 250 from CL	EN AW-6082 T6	2909	80	4	3,3
Shell frame 250 from CL	EN AW-6082 T6	908	80	4	1
Shell frame 250 from CL	EN AW-6082 T6	842	60	3	0,7
Shell frame -250 from CL	EN AW-6082 T6	2909	80	4	3,3
Shell frame -250 from CL	EN AW-6082 T6	908	80	4	1
Shell frame -250 from CL	EN AW-6082 T6	842	60	3	0,7
Shell frame -3 from CL	EN AW-6082 T6	2909	80	4	3,3
Shell frame -3 from CL	EN AW-6082 T6	908	80	4	1
Shell frame 500 from CL	EN AW-6082 T6	2909	80	4	3,3
Shell frame 500 from CL	EN AW-6082 T6	908	80	4	1
Shell frame -500 from CL	EN AW-6082 T6	2909	80	4	3,3

**Σ****28,4**



**Section (131\_371\_372\_510\_540) – Painéis (Shell Plate)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Shell frame -500 from CL	EN AW-6082 T6	914	80	4	1
Shell frame 800 from CL	EN AW-6082 T6	4823	80	4	5,5
Shell frame -800 from CL	EN AW-6082 T6	4823	80	4	5,5
SHELLPLATE	EN AW-5083 H111	4940	1955	5	379,1
SHELLPLATE	EN AW-5083 H111	4940	1985	5	384,9
SHELLPLATE	EN AW-5083 H111	954	948	5	35,5
Long. frame 2909/3097 from CL	EN AW-5083 H111	3132	2309	8	98,5
Long. frame -3098/-2909 from CL	EN AW-5083 H111	3132	2309	8	98,5
Long. frame 4069/4429 from CL	EN AW-5083 H111	2562	1421	4	29,4
Long. frame -4429/-4069 from CL	EN AW-5083 H111	2562	1421	4	29,4
Long. frame 4429/4491 from CL	EN AW-5083 H111	2439	852	4	20
Long. frame -4492/-4429 from CL	EN AW-5083 H111	2439	852	4	20
Long. frame -1004/-448 from CL	X2CrNiMo17-12-2	1142	1005	10	87
Long. frame -1204/-448 from CL	X2CrNiMo17-12-2	1207	1001	10	88,3

**Σ****1282,6**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Long. frame 447/1003 from CL	X2CrNiMo17-12-2	1142	1005	10	87
Long. frame 447/1203 from CL	X2CrNiMo17-12-2	1207	1001	10	88,3
Shell frame 3277/5222	X2CrNiMo17-12-2	4697	40	40	60,4
Shell frame 3277/5222	X2CrNiMo17-12-2	4697	40	40	60,4
Long. frame 2748/3137 from CL	EN AW-5083 H111	1707	668	5	14,9
Long. frame 2981/3355 from CL	EN AW-5083 H111	1704	714	5	15,9
Long. frame -3138/-2749 from CL	EN AW-5083 H111	1712	668	5	14,9
Long. frame -3356/-2982 from CL	EN AW-5083 H111	1712	714	5	15,9
Long. frame -2001/-1920 from CL	EN AW-5083 H111	921	544	4	5,4
Long. frame 2259/2447 from CL	EN AW-5083 H111	516	484	4	2,6
Long. frame 2322/2384 from CL	EN AW-5083 H111	516	485	4	2,6
Long. frame -2341/-2302 from CL	EN AW-5083 H111	491	330	4	1,7
Long. frame -2427/-2260 from CL	EN AW-5083 H111	491	340	4	1,7
Long. frame -2511/-2342 from CL	EN AW-5083 H111	485	364	4	1,8



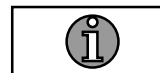
$\Sigma$	373,5
$\Sigma$ <i>Peso (Kg)</i>	1732,1
<i>Total</i>	

**Section (131\_371\_372\_510\_540) – Painéis (Shell Plate)**

***Section (131\_371\_372\_510\_540) – Painéis (Shell Stifenner – Longitudinais)***

**Section (131\_371\_372\_510\_540) – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stiffemer FR 15+503 at	EN AW-6082 T6	110	20	20	0,1
Stiffemer FR 15+503 at	EN AW-6082 T6	110	20	20	0,1
Stiffener 247 from CL at	EN AW-6082 T6	110	20	20	0,1
Stiffener 247 from CL at	EN AW-6082 T6	110	20	20	0,1
Stiffener -247 from CL at	EN AW-6082 T6	110	20	20	0,1
Stiffener -247 from CL at	EN AW-6082 T6	110	20	20	0,1
Shell stif. FB32X16 3+746/3+758	Triplate	1379	32	16	5,6
Shell stif. FB32X16 3+746/3+758	Triplate	1379	32	16	5,6
Shell stif. FB32X16 3107 from CL	Triplate	2406	32	16	9,7
Shell stif. FB32X16 -3107 from CL	Triplate	2406	32	16	9,7
Shell stif. FB32X16 3403/3403	Triplate	186	32	16	0,7
Shell stif. FB32X16 -3404/-3404	Triplate	186	32	16	0,7
Shell stif. FB32X16 3704/3704	Triplate	193	32	16	0,8
Shell stif. FB32X16 -3705/-3705	Triplate	193	32	16	0,8

 $\Sigma$ 

34,2

**Section (131\_371\_372\_510\_540) – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. FB32X16 4005/4005	Triplate	201	32	16	0,8
Shell stif. FB32X16 -4006/-4006	Triplate	201	32	16	0,8
Shell stif. FB32X16 4498/4498	Triplate	2453	32	16	9,9
Shell stif. FB32X16 -4499/-4499	Triplate	2453	32	16	9,9
Shell stif. FB32X16 6+163/6+199	Triplate	1379	32	16	5,6
Shell stif. FB32X16 6+163/6+199	Triplate	1379	32	16	5,6
Stif. AU75X50X5 2909/3097 a.b. at Long. frame from CL	EN AW-6082 T6	687	75	5	1,1
Stif. AU75X50X5 2909/3097 a.b. at Long. frame from CL	EN AW-6082 T6	687	75	5	1,1
Stif. AU75X50X5 2909/3097 a.b. at Long. frame from CL	EN AW-6082 T6	688	75	5	1,1
Stif. AU75X50X5 2909/3097 a.b. at Long. frame from CL	EN AW-6082 T6	688	75	5	1,1
Stif. AU75X50X5 2909/3097 a.b. at Long. frame from CL	EN AW-6082 T6	2022	75	5	3,3
Stif. AU75X50X5 2909/3097 a.b. at Long. frame from CL	EN AW-6082 T6	2207	75	5	3,6
Stif. AU75X50X5 3+752/3+881 a.b. at Bulkhead FR	EN AW-6082 T6	1241	75	5	2
Stif. AU75X50X5 3+752/3+881 a.b. at Bulkhead FR	EN AW-6082 T6	1241	75	5	2



Σ

47,9

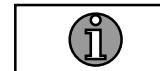
**Section (131\_371\_372\_510\_540) – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. AU75X50X5 3+752/3+881 a.b. at Bulkhead FR	EN AW-6082 T6	1240	75	5	2
Stif. AU75X50X5 3+752/3+881 a.b. at Bulkhead FR	EN AW-6082 T6	1240	75	5	2
Stif. AU75X50X5 -3098/-2909 a.b. at Long. frame from CL	EN AW-6082 T6	687	75	5	1,1
Stif. AU75X50X5 -3098/-2909 a.b. at Long. frame from CL	EN AW-6082 T6	687	75	5	1,1
Stif. AU75X50X5 -3098/-2909 a.b. at Long. frame from CL	EN AW-6082 T6	688	75	5	1,1
Stif. AU75X50X5 -3098/-2909 a.b. at Long. frame from CL	EN AW-6082 T6	688	75	5	1,1
Stif. AU75X50X5 -3098/-2909 a.b. at Long. frame from CL	EN AW-6082 T6	2022	75	5	3,3
Stif. AU75X50X5 -3098/-2909 a.b. at Long. frame from CL	EN AW-6082 T6	2207	75	5	3,6
Stif. AU75X50X5 4069/4429 a.b. at Long. frame from CL	EN AW-6082 T6	1911	75	5	3,1
Stif. AU75X50X5 4069/4429 a.b. at Long. frame from CL	EN AW-6082 T6	1911	75	5	3,1
Stif. AU75X50X5 4069/4429 a.b. at Long. frame from CL	EN AW-6082 T6	1911	75	5	3,1
Stif. AU75X50X5 4069/4429 a.b. at Long. frame from CL	EN AW-6082 T6	1911	75	5	3,1
Stif. AU75X50X5 -4429/-4069 a.b. at Long. frame from CL	EN AW-6082 T6	1911	75	5	3,1
Stif. AU75X50X5 -4429/-4069 a.b. at Long. frame from CL	EN AW-6082 T6	1911	75	5	3,1

**Σ****33,9**

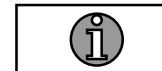
**Section (131\_371\_372\_510\_540) – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. AU75X50X5 -4429/-4069 a.b. at Long. frame from CL	EN AW-6082 T6	1911	75	5	3,1
Stif. AU75X50X5 -4429/-4069 a.b. at Long. frame from CL	EN AW-6082 T6	1911	75	5	3,1
Stif. AU75X50X5 4429/4491 a.b. at Long. frame from CL	EN AW-6082 T6	2022	75	5	3,3
Stif. AU75X50X5 4429/4491 a.b. at Long. frame from CL	EN AW-6082 T6	2207	75	5	3,6
Stif. AU75X50X5 -4492/-4429 a.b. at Long. frame from CL	EN AW-6082 T6	2022	75	5	3,3
Stif. AU75X50X5 -4492/-4429 a.b. at Long. frame from CL	EN AW-6082 T6	2207	75	5	3,6
Stif. AU75X50X5 5+151/6+192 a.b. at Bulkhead FR	EN AW-6082 T6	348	75	5	0,6
Stif. AU75X50X5 5+151/6+192 a.b. at Bulkhead FR	EN AW-6082 T6	348	75	5	0,6
Stif. AU75X50X5 5+151/6+192 a.b. at Bulkhead FR	EN AW-6082 T6	385	75	5	0,6
Stif. AU75X50X5 5+151/6+192 a.b. at Bulkhead FR	EN AW-6082 T6	385	75	5	0,6
Stif. AU75X50X5 5+151/6+192 a.b. at Bulkhead FR	EN AW-6082 T6	422	75	5	0,7
Stif. AU75X50X5 5+151/6+192 a.b. at Bulkhead FR	EN AW-6082 T6	422	75	5	0,7
Stif. AU75X50X5 5+151/6+192 a.b. at Bulkhead FR	EN AW-6082 T6	458	75	5	0,7
Stif. AU75X50X5 5+151/6+192 a.b. at Bulkhead FR	EN AW-6082 T6	458	75	5	0,7

**Σ****25,2**

**Section (131\_371\_372\_510\_540) – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. AU75X50X5 5+151/6+192 a.b. at Bulkhead FR	EN AW-6082 T6	461	75	5	0,7
Stif. AU75X50X5 5+151/6+192 a.b. at Bulkhead FR	EN AW-6082 T6	461	75	5	0,7
Stif. AU75X50X5 5+151/6+192 a.b. at Bulkhead FR	EN AW-6082 T6	441	75	5	0,7
Stif. AU75X50X5 5+151/6+192 a.b. at Bulkhead FR	EN AW-6082 T6	441	75	5	0,7
Stif. AU75X50X5 5+151/6+192 from CL at Bulkhead FR	EN AW-6082 T6	2365	75	5	3,8
Stif. AU75X50X5 5+151/6+192 from CL at Bulkhead FR	EN AW-6082 T6	2365	75	5	3,8
Stif. AU75X50X5 5+151/6+192 from CL at Bulkhead FR	EN AW-6082 T6	2382	75	5	3,8
Stif. AU75X50X5 5+151/6+192 from CL at Bulkhead FR	EN AW-6082 T6	2382	75	5	3,8
Stif. AU75X50X5 5+151/6+192 from CL at Bulkhead FR	EN AW-6082 T6	2401	75	5	3,8
Stif. AU75X50X5 5+151/6+192 from CL at Bulkhead FR	EN AW-6082 T6	2401	75	5	3,8
Stif. AU75X50X5 6563/6837 from CL at Deck above base	EN AW-6082 T6	2055	75	5	3,2
Stif. AU75X50X5 6563/6837 from CL at Deck above base	EN AW-6082 T6	2055	75	5	3,2
Stif. AU75X50X5 6563/6837 from CL at Deck above base	EN AW-6082 T6	2055	75	5	3,2
Stif. AU75X50X5 6563/6837 from CL at Deck above base	EN AW-6082 T6	2055	75	5	3,2

**Σ****38,4**



## Section (131\_371\_372\_510\_540) – Painéis (Shell Stifenner – Longitudinais)

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Stif. AU75X50X5 6563/6837 from CL at Deck above base	EN AW-6082 T6	2055	75	5	3,2
Stif. AU75X50X5 6563/6837 from CL at Deck above base	EN AW-6082 T6	2055	75	5	3,2
Stif. AU75X50X5 FR 2909/3097 at Long. frame from CL	EN AW-6082 T6	1832	75	5	3
Stif. AU75X50X5 FR 2909/3097 at Long. frame from CL	EN AW-6082 T6	1961	75	5	3,2
Stif. AU75X50X5 FR 2909/3097 at Long. frame from CL	EN AW-6082 T6	1896	75	5	3,1
Stif. AU75X50X5 FR -3098/-2909 at Long. frame from CL	EN AW-6082 T6	1961	75	5	3,2
Stif. AU75X50X5 FR -3098/-2909 at Long. frame from CL	EN AW-6082 T6	1896	75	5	3,1
Stif. AU75X50X5 FR -3098/-2909 at Long. frame from CL	EN AW-6082 T6	1832	75	5	3
Stiffener -20000/820000 above base at	X2CrNiMo17-12-2	999	40	40	10
Stiffener -20000/820000 above base at	X2CrNiMo17-12-2	999	40	40	10
Stiffener from CL at	S235JR	1748	273	20	126,4
Stiffener from CL at	S235JR	1748	273	20	126,4
Stif. FB50X5 2748/3137 a.b. at Long. frame from CL	EN AW-6082 T6	1690	50	5	1,1
Stif. FB50X5 2748/3137 a.b. at Long. frame from CL	EN AW-6082 T6	345	50	5	0,2

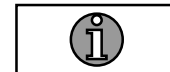


Σ

299,1

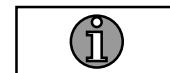
**Section (131\_371\_372\_510\_540) – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. FB50X5 2748/3137 a.b. at Long. frame from CL	EN AW-6082 T6	801	50	5	0,5
Stif. FB50X5 2748/3137 a.b. at Long. frame from CL	EN AW-6082 T6	415	50	5	0,3
Stif. FB50X5 2748/3137 a.b. at Long. frame from CL	EN AW-6082 T6	1691	50	5	1,1
Stif. FB50X5 2981/3355 a.b. at Long. frame from CL	EN AW-6082 T6	344	50	5	0,2
Stif. FB50X5 2981/3355 a.b. at Long. frame from CL	EN AW-6082 T6	800	50	5	0,5
Stif. FB50X5 2981/3355 a.b. at Long. frame from CL	EN AW-6082 T6	417	50	5	0,3
Stif. FB50X5 2981/3355 a.b. at Long. frame from CL	EN AW-6082 T6	1691	50	5	1,1
Stif. FB50X5 -3138/-2749 a.b. at Long. frame from CL	EN AW-6082 T6	1690	50	5	1,1
Stif. FB50X5 -3138/-2749 a.b. at Long. frame from CL	EN AW-6082 T6	345	50	5	0,2
Stif. FB50X5 -3138/-2749 a.b. at Long. frame from CL	EN AW-6082 T6	801	50	5	0,5
Stif. FB50X5 -3138/-2749 a.b. at Long. frame from CL	EN AW-6082 T6	415	50	5	0,3
Stif. FB50X5 -3138/-2749 a.b. at Long. frame from CL	EN AW-6082 T6	1691	50	5	1,1
Stif. FB50X5 -3356/-2982 a.b. at Long. frame from CL	EN AW-6082 T6	345	50	5	0,2
Stif. FB50X5 -3356/-2982 a.b. at Long. frame from CL	EN AW-6082 T6	799	50	5	0,5

**Σ****7,9**

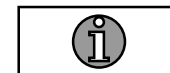
**Section (131\_371\_372\_510\_540) – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. FB50X5 -3356/-2982 a.b. at Long. frame from CL	EN AW-6082 T6	417	50	5	0,3
Stif. FB50X5 -3356/-2982 a.b. at Long. frame from CL	EN AW-6082 T6	1691	50	5	1,1
Stif. FB50X5 FR 2748/3137 at Long. frame from CL	EN AW-6082 T6	660	50	5	0,4
Stif. FB50X5 FR 2748/3137 at Long. frame from CL	EN AW-6082 T6	620	50	5	0,4
Stif. FB50X5 FR 2981/3355 at Long. frame from CL	EN AW-6082 T6	707	50	5	0,5
Stif. FB50X5 FR 2981/3355 at Long. frame from CL	EN AW-6082 T6	665	50	5	0,4
Stif. FB50X5 FR -3138/-2749 at Long. frame from CL	EN AW-6082 T6	662	50	5	0,4
Stif. FB50X5 FR -3138/-2749 at Long. frame from CL	EN AW-6082 T6	620	50	5	0,4
Stif. FB50X5 FR -3356/-2982 at Long. frame from CL	EN AW-6082 T6	706	50	5	0,5
Stif. FB50X5 FR -3356/-2982 at Long. frame from CL	EN AW-6082 T6	664	50	5	0,4
Stif. FB60X6 2981/3355 a.b. at Long. frame from CL	EN AW-6082 T6	1690	60	6	1,6
Stif. FB60X6 -3356/-2982 a.b. at Long. frame from CL	EN AW-6082 T6	1690	60	6	1,6
Stif. HP60X3.3 2748/3137 a.b. at Long. frame from CL	EN AW-6082 T6	1681	60	3	1,2
Stif. HP60X3.3 2981/3355 a.b. at Long. frame from CL	EN AW-6082 T6	1681	60	3	1,2

**Σ****10,4**

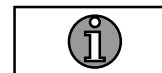
**Section (131\_371\_372\_510\_540) – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. HP60X3.3 -3138/-2749 a.b. at Long. frame from CL	EN AW-6082 T6	1681	60	3	1,2
Stif. HP60X3.3 -3356/-2982 a.b. at Long. frame from CL	EN AW-6082 T6	1681	60	3	1,2
Stif. HS60X60X4 FR 2748/3137 at Long. frame from CL	EN AW-6082 T6	554	60	4	0,53
Stif. HS60X60X4 FR 2748/3137 at Long. frame from CL	EN AW-6082 T6	532	60	4	0,51
Stif. HS60X60X4 FR 2981/3355 at Long. frame from CL	EN AW-6082 T6	601	60	4	0,57
Stif. HS60X60X4 FR 2981/3355 at Long. frame from CL	EN AW-6082 T6	579	60	4	0,55
Stif. HS60X60X4 FR -3138/-2749 at Long. frame from CL	EN AW-6082 T6	554	60	4	0,53
Stif. HS60X60X4 FR -3138/-2749 at Long. frame from CL	EN AW-6082 T6	532	60	4	0,51
Stif. HS60X60X4 FR -3356/-2982 at Long. frame from CL	EN AW-6082 T6	600	60	4	0,57
Stif. HS60X60X4 FR -3356/-2982 at Long. frame from CL	EN AW-6082 T6	579	60	4	0,55
Shell stif. FB32X16 1706 from CL	Triplate	250	32	16	1
Shell stif. FB32X16 2006 from CL	Triplate	484	32	16	1,9
Shell stif. FB32X16 2006 from CL	Triplate	484	32	16	1,9
Shell stif. FB32X16 -2006 from CL	Triplate	304	32	16	1,2

**Σ****12,71**

**Section (131\_371\_372\_510\_540) – Painéis (Shell Stifenner – Longitudinais)**

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)
Shell stif. FB32X16 -2006 from CL	Triplate	314	32	16	1,3
Shell stif. FB32X16 -2006 from CL	Triplate	544	32	16	2,2
Shell stif. FB32X16 -2006 from CL	Triplate	334	32	16	1,3
Shell stif. FB32X16 2281 from CL	Triplate	544	32	16	2,2
Shell stif. FB32X16 2281 from CL	Triplate	514	32	16	2,1
Shell stif. FB32X16 FR. 20+256	Triplate	560	32	16	2,2
Shell stif. FB32X16 FR. 21-494	Triplate	514	32	16	2,1
Shell stif. FB32X16 FR. 25-494	Triplate	789	32	16	3,2
Shell stif. FB32X16 FR. 25-494	Triplate	513	32	16	2,1
Shell stif. FB32X16 FR. 29+356	Triplate	541	32	16	2,2
Shell stif. FB32X16 FR. 30-324	Triplate	486	32	16	2
Shell stif. FB32X16 FR. 30-494	Triplate	507	32	16	2
Stif. FB30X8 -20/820 from CL at	EN AW-6082 T6	325	30	8	0,2
Stif. FB30X8 -20/820 from CL at	EN AW-6082 T6	325	30	8	0,2

 $\Sigma$ 

25,3

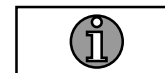
**Section (131\_371\_372\_510\_540) – Painéis (Shell Stifenner – Longitudinais)**

<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. FB30X8 -20/820 from CL at	EN AW-6082 T6	325	30	8	0,2
Stif. FB30X8 -20/820 from CL at	EN AW-6082 T6	325	30	8	0,2
Stif. FB30X8 -20000/820000 from CL at	EN AW-6082 T6	285	30	8	0,2
Stif. FB30X8 -20000/820000 from CL at	EN AW-6082 T6	285	30	8	0,2
Stif. FB30X8 -20000/820000 from CL at	EN AW-6082 T6	285	30	8	0,2
Stif. FB30X8 -20000/820000 from CL at	EN AW-6082 T6	285	30	8	0,2
Stif. FB30X8 FR at	EN AW-6082 T6	435	30	8	0,3
Stif. FB30X8 FR at	EN AW-6082 T6	435	30	8	0,3
Stif. FB30X8 frame at	EN AW-6082 T6	200	30	8	0,1
Stif. FB30X8 frame at	EN AW-6082 T6	200	30	8	0,1
Stif. FB30X8 from CL at	EN AW-6082 T6	435	30	8	0,3
Stif. FB30X8 from CL at	EN AW-6082 T6	200	30	8	0,1
Stif. FB30X8 from CL at	EN AW-6082 T6	200	30	8	0,1
Stif. FB30X8 from CL at	EN AW-6082 T6	435	30	8	0,3

**Σ****2,8**

**Section (131\_371\_372\_510\_540) – Painéis (Shell Stifenner – Longitudinais)**


<b>Descrição</b>	<b>Material</b>	<b>Comprimento (mm)</b>	<b>Largura (mm)</b>	<b>Espessura (mm)</b>	<b>Peso (Kg)</b>
Stif. FB30X8 from CL at	EN AW-6082 T6	786	30	8	0,5
Stif. FB30X8 from CL at	EN AW-6082 T6	200	30	8	0,1
Stif. FB30X8 from CL at	EN AW-6082 T6	200	30	8	0,1
Stif. FB30X8 from CL at	EN AW-6082 T6	786	30	8	0,5
Stif. FB30X8 from CL at	EN AW-6082 T6	260	30	8	0,2
Stif. FB30X8 from CL at	EN AW-6082 T6	260	30	8	0,2
Stif. FB30X8 from CL at	EN AW-6082 T6	200	30	8	0,1
Stif. FB30X8 from CL at	EN AW-6082 T6	200	30	8	0,1
Stif. FB30X8 from CL at	EN AW-6082 T6	200	30	8	0,1
Stif. FB30X8 from CL at	EN AW-6082 T6	200	30	8	0,1
Stif. FB30X8 from CL at	EN AW-6082 T6	260	30	8	0,2
Stif. FB30X8 from CL at	EN AW-6082 T6	260	30	8	0,2
Stif. FB30X8 from CL at	EN AW-6082 T6	260	30	8	0,2
Stif. FB30X8 from CL at	EN AW-6082 T6	200	30	8	0,1

 $\Sigma$ 

2,7






## Section (131\_371\_372\_510\_540) – Painéis (Shell Stifenner – Longitudinais)

Descrição	Material	Comprimento (mm)	Largura (mm)	Espessura (mm)	Peso (Kg)	
Stif. FB30X8 from CL at	EN AW-6082 T6	200	30	8	0,1	
Stif. FB30X8 from CL at	EN AW-6082 T6	260	30	8	0,2	
Stif. FB30X8 from CL at	EN AW-6082 T6	260	30	8	0,2	
Stif. FB30X8 from CL at	EN AW-6082 T6	200	30	8	0,1	
Stif. FB30X8 from CL at	EN AW-6082 T6	200	30	8	0,1	
Stif. FB30X8 from CL at	EN AW-6082 T6	260	30	8	0,2	
				$\Sigma$	0,9	
					$\Sigma$ <i>Peso (Kg)</i>	541,41
					<i>Total</i>	



*Expected material flows  
between departments*

*Table 2 – Section (131\_371\_372\_510\_540)*

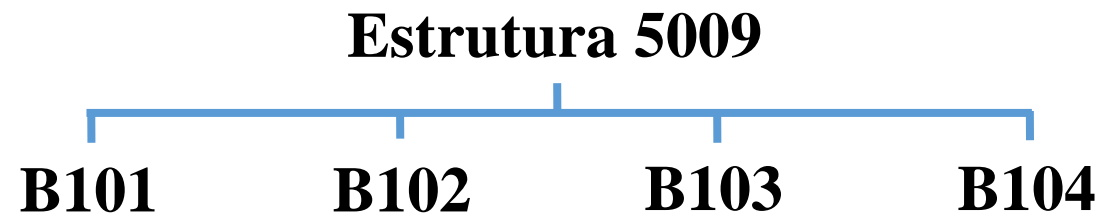
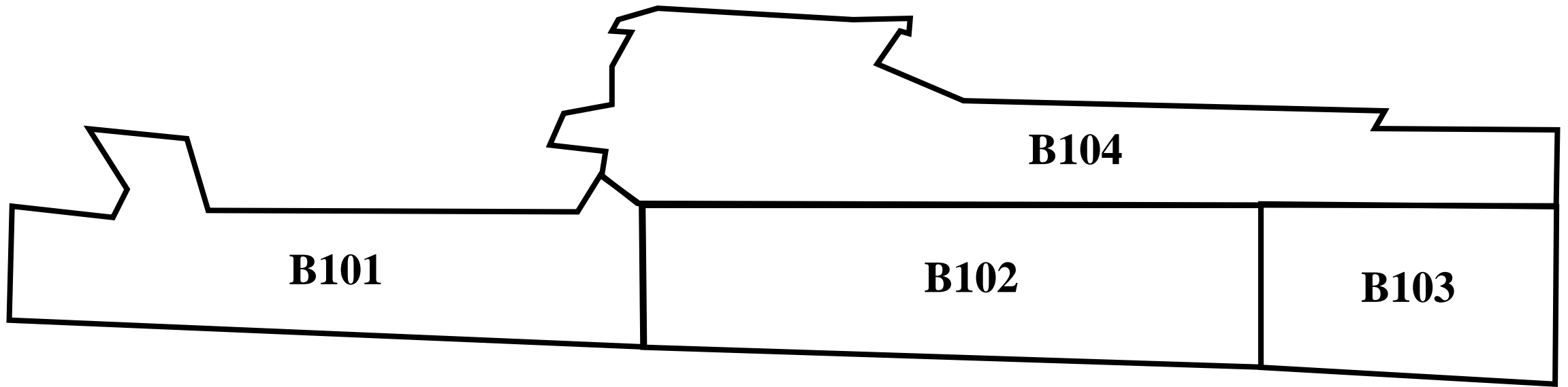
<i>From</i>	<i>to</i>	<i>Quantity</i>	<i>From</i>	<i>to</i>	<i>Quantity</i>
1	2	3,0346 t	9	13	3,0346 t
2	 3	1,73210 t ( <i>shell plates</i> ) 0,5414 t ( <i>shell stifenner</i> )	-----	-----	-----
2	6	0,7611 t	-----	-----	-----
3	 4	0,5371 t	-----	-----	-----
3/4	5	(1,73210 t + 0,5414 t) t 2,2735 t	-----	-----	-----
5	9	2,2735 t	-----	-----	-----
6	7	0,7611 t	-----	-----	-----
7	8	0,7611 t	-----	-----	-----
8	9	0,7611 t	-----	-----	-----
<i>Section (131_371_372_510_540)</i>				$\Sigma$	3,0346 t

*Expected material flows  
between departments*

*Table 2 – 5009*

# MATRIZ DE PARA (VOLUME)

\*\* Fluxos esperados de materiais



# MATRIZ DE VOLUME

\*\* Fluxos esperados de materiais

<i>Block</i>	<i>Block name</i>	<i>Section</i>	<i>Section name</i>	<i>Weight [tonnes]</i>	<i>VCG [m]</i>	<i>LCG [m]</i>	<i>TCG [m]</i>
B101	<i>Aft Ship</i>	111	<i>Aft peak</i>	25,31	2,4	4,2	0,0
B101	<i>Aft Ship</i>	112-A	<i>Engine Room (below tanktop)</i>	22,97	1,2	14,9	0,0
B101	<i>Aft Ship</i>	112-B	<i>Engine Room (below tanktop)</i>	15,09	3,9	14,9	0,0
B102	<i>Mid Ship</i>	113	<i>Accomodation BMD Aft</i>	25,43	2,3	24,3	0,0
B102	<i>Mid Ship</i>	114	<i>Accomodation BMD fore</i>	22,92	2,1	34,7	0,0
B103	<i>Fore Ship</i>	115	<i>Bowthruster room</i>	11,07	2,1	45,3	0,0
B104	<i>SuperStructure</i>	116	<i>Accomodation MD Aft</i>	22,03	6,4	26,3	0,0
B104	<i>SuperStructure</i>	117	<i>Accomodation MD Aft</i>	8,01	6,0	43,2	0,0
B104	<i>SuperStructure</i>	121	<i>Wheelhouse</i>	4,00	8,7	24,5	0,0
-----	-----	100	<i>Bow mould</i>	8,40	-----	-----	-----
-----	-----	131	<i>ER hatch</i>	0,80	4,4	14,3	0,0
-----	-----	371	<i>Ventlation outlet casing</i>	2,3	5,8	6,6	0,0
-----	-----	510	<i>Anchor Packet</i>	1,1	4,7	46,6	0,0
-----	-----	540	<i>Crane foundation</i>	0,2	7,1	17,8	0,0

# MATRIZ DE VOLUME (\*\* Fluxos esperados de materiais)

<i>Block</i>	<i>Block name</i>	<i>Section</i>	<i>Section name</i>	<i>Weight [tonnes]</i>	<i>VCG [m]</i>	<i>LCG [m]</i>	<i>TCG [m]</i>
B101	<i>Aft Ship</i>	111–A&B	<i>Aft peak</i>	25,31	2,4	4,2	0,0
B101	<i>Aft Ship</i>	112–A	<i>Engine Room (below tanktop)</i>	22,97	1,2	14,9	0,0
B101	<i>Aft Ship</i>	112–B	<i>Engine Room (below tanktop)</i>	15,09	3,9	14,9	0,0
B102	<i>Mid Ship</i>	113	<i>Accomodation BMD Aft</i>	25,43	2,3	24,3	0,0
B102	<i>Mid Ship</i>	114–A&B	<i>Accomodation BMD fore</i>	22,92	2,1	34,7	0,0
B103	<i>Fore Ship</i>	115–A&B	<i>Bowthruster room</i>	11,07	2,1	45,3	0,0
B104	<i>SuperStructure</i>	116–A&B	<i>Accomodation MD Aft</i>	22,03	6,4	26,3	0,0
B104	<i>SuperStructure</i>	117	<i>Accomodation MD Aft</i>	8,01	6,0	43,2	0,0
B104	<i>SuperStructure</i>	121	<i>Wheelhouse</i>	4,00	8,7	24,5	0,0
			<i>Total Weight</i>	156,83			
-----	-----	100	<i>Bow mould</i>	8,40	-----	-----	-----
-----	-----	131	<i>ER hatch</i>	0,80	4,4	14,3	0,0
-----	-----	371	<i>Ventlation outlet casing</i>	2,30	5,8	6,6	0,0
-----	-----	510	<i>Anchor Packet</i>	1,10	4,7	46,6	0,0
-----	-----	540	<i>Crane foundation</i>	0,20	7,1	17,8	0,0
			<i>Total Weight</i>	4,4			

From	to	①			①	①			①	①			①		Quantity
		Section 111			Section 117	Section 112			Section 113	Section 114			Section 115		
		Section 111A	Section 111B	Section 111		Section 112A	Section 112B	Section 112		Section 114A	Section 114B	Section 114	Section 115A	Section 115B	Section 115
1	2	14,83 t	13,49 t	<b>28,3242 t</b>	<b>8,3641 t</b>	22,7425 t	14,4820 t	<b>37,225 t</b>	<b>24,944 t</b>	12,6342 t	9,8145 t	<b>22,4487 t</b>	4,8568 t	6,3535 t	<b>11,2103 t</b>
2	3	8,975 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	8,2404 t	11,2580 t	<b>19,498 t</b>	<b>13,6128 t</b>	4,3642 t 2,9449 t	2,358 t 2,4889 t	<b>12,10602 t</b>	2,2985 t 0,5568 t	2,2332 t 1,5188 t	<b>6,6073 t</b>
2	6	5,859 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	5,3251 t	4,9676 t	<b>10,34268 t</b>	2,0015 t	2,6015 t	<b>4,6030 t</b>
3	4	1,296 t	2,9657 t	<b>4,262 t</b>	<b>1,2910 t</b>	1,6274 t	11,2580 t	<b>12,885 t</b>	<b>5,5693 t</b>	2,9449 t	2,4889 t	<b>5,4338 t</b>	0,5568 t	1,5188 t	<b>2,0756 t</b>
3/4	5	8,975 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	8,2404 t	11,2580 t	<b>19,498 t</b>	<b>13,6128 t</b>	7,3091 t	4,8469 t	<b>12,10602 t</b>	2,8553 t	3,752 t	<b>6,6073 t</b>
5	9	8,975 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	8,2404 t	11,2580 t	<b>19,498 t</b>	<b>13,6128 t</b>	7,3091 t	4,8469 t	<b>12,10602 t</b>	2,8553 t	3,752 t	<b>6,6073 t</b>
6	7	5,859 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	5,3251 t	4,9676 t	<b>10,34268 t</b>	2,0015 t	2,6015 t	<b>4,6030 t</b>
7	8	5,859 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	5,3251 t	4,9676 t	<b>10,34268 t</b>	2,0015 t	2,6015 t	<b>4,6030 t</b>
8	9	5,859 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	5,3251 t	4,9676 t	<b>10,34268 t</b>	2,0015 t	2,6015 t	<b>4,6030 t</b>
9	13	14,83 t	13,49 t	<b>28,3242 t</b>	<b>8,3641 t</b>	22,7425 t	14,4820 t	<b>37,225 t</b>	<b>24,944 t</b>	12,6342 t	9,8145 t	<b>22,4487 t</b>	4,8568 t	6,3535 t	<b>11,2103 t</b>
Σ		14,83 t	13,49 t	<b>28,3242 t</b>	<b>8,3641 t</b>	22,7425 t	14,4820 t	<b>37,225 t</b>	<b>24,944 t</b>	12,6342 t	9,8145 t	<b>22,4487 t</b>	4,8568 t	6,3535 t	<b>11,21 t</b>
	Planilha⇒	Block 101			Block 104	Block 101			Block 102	Block 102			Block 103		
		25,31 t			8,01 t	22,97 t + 15,09 t = 38,06 t			25,43 t	22,92 t			11,07 t		
% diferença		$\frac{(28,3242 t - 25,31 t)}{25,31 t} = 11,91 \% \uparrow$			4,42 % $\uparrow$	$\frac{(37,225 t - 38,06 t)}{38,06 t} = -2,20 \% \downarrow$			-1,91 % $\downarrow$	$\frac{(22,4487 t - 22,92 t)}{22,92 t} = -2,06 \% \downarrow$			$\frac{(11,21 t - 11,07 t)}{11,07 t} = 1,27 \% \uparrow$		



From	to	i			i	i			i	i			i			Quantity		
		Section 111			Section 117	Section 112			Section 113	Section 114			Section 115			Section 116		
		Section 111A	Section 111B	Section 111		Section 112A	Section 112B	Section 112		Section 114A	Section 114B	Section 114	Section 115A	Section 115B	Section 115	Section 116A	Section 116B	Section 116
1	2	14,83 t	13,49 t	<b>28,3242 t</b>	<b>8,3641 t</b>	22,7425 t	14,4820 t	<b>37,225 t</b>	<b>24,944 t</b>	12,6342 t	9,8145 t	<b>22,4487 t</b>	4,8568 t	6,3535 t	<b>11,21 t</b>	19,545 t	3,3183 t	<b>22,8633 t</b>
2	3	8,975 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	8,2404 t	11,2580 t	<b>19,498 t</b>	<b>13,6128 t</b>	4,3642 t 2,9449 t	2,358 t 2,4889 t	<b>12,106 t</b>	2,2985 t 0,5568 t	2,2332 t 1,5188 t	<b>6,6073 t</b>	9,9321 t 3,5028 t	2,7102 t 0,214 t	<b>12,6423 t</b> <b>3,7168 t</b>
2	6	5,859 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	5,3251 t	4,9676 t	<b>10,34268 t</b>	2,0015 t	2,6015 t	<b>4,6030 t</b>	6,1101 t	0,3941 t	<b>6,5042 t</b>
3	4	1,296 t	2,9657 t	<b>4,262 t</b>	<b>1,2910 t</b>	1,6274 t	11,2580 t	<b>12,885 t</b>	<b>5,5693 t</b>	2,9449 t	2,4889 t	<b>5,4338 t</b>	0,5568 t	1,5188 t	<b>2,0756 t</b>	3,5028 t	0,214 t	<b>3,7168 t</b>
3/4	5	8,975 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	8,2404 t	11,2580 t	<b>19,498 t</b>	<b>13,6128 t</b>	7,3091 t	4,8469 t	<b>12,106 t</b>	2,8553 t	3,752 t	<b>6,6073 t</b>	13,4349 t	2,9242 t	<b>16,3591 t</b>
5	9	8,975 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	8,2404 t	11,2580 t	<b>19,498 t</b>	<b>13,6128 t</b>	7,3091 t	4,8469 t	<b>12,106 t</b>	2,8553 t	3,752 t	<b>6,6073 t</b>	13,4349 t	2,9242 t	<b>16,3591 t</b>
6	7	5,859 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	5,3251 t	4,9676 t	<b>10,3427 t</b>	2,0015 t	2,6015 t	<b>4,6030 t</b>	6,1101 t	0,3941 t	<b>6,5042 t</b>
7	8	5,859 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	5,3251 t	4,9676 t	<b>10,3427 t</b>	2,0015 t	2,6015 t	<b>4,6030 t</b>	6,1101 t	0,3941 t	<b>6,5042 t</b>
8	9	5,859 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	5,3251 t	4,9676 t	<b>10,3427 t</b>	2,0015 t	2,6015 t	<b>4,6030 t</b>	6,1101 t	0,3941 t	<b>6,5042 t</b>
9	13	14,83 t	13,49 t	<b>28,3242 t</b>	<b>8,3641 t</b>	22,7425 t	14,4820 t	<b>37,225 t</b>	<b>24,944 t</b>	12,6342 t	9,8145 t	<b>22,4487 t</b>	4,8568 t	6,3 535 t	<b>11,21 t</b>	19,545 t	3,3183 t	<b>22,8633 t</b>
Σ Planilha ⇒ % diferença		14,83 t	13,49 t	<b>28,3242 t</b>	<b>8,3641 t</b>	22,7425 t	14,4820 t	<b>37,225 t</b>	<b>24,944 t</b>	12,6342 t	9,8145 t	<b>22,449 t</b>	4,8568 t	6,3535 t	<b>11,21 t</b>	19,545 t	3,3183 t	<b>22,8633 t</b>
		Block 101			Block 104	Block 101			Block 102	Block 102			Block 103			Block 104		
		25,31 t			8,01 t	22,97 t + 15,09 t = 38,06 t			25,43 t	22,92 t			11,07 t			22,03 t		
	$\frac{(28,3242 t - 25,31 t)}{25,31 t} = 11,91 \% \uparrow$			4,42 % $\uparrow$	$\frac{(37,225 t - 38,06 t)}{38,06 t} = -2,20 \% \downarrow$			-1,91 % $\downarrow$	$\frac{(22,4487 t - 22,92 t)}{22,92 t} = -2,06 \% \downarrow$			$\frac{(11,21 t - 11,07 t)}{11,07 t} = 1,27 \% \uparrow$			$\frac{(22,8633 t - 22,03 t)}{22,03 t} = 3,78 \% \uparrow$			



# 5009 (Matriz de para – original)



		ⓘ			ⓘ	ⓘ			ⓘ	ⓘ	ⓘ	ⓘ	ⓘ	Quantity
From	to	Section 111			Section 117	Section 112			Section 113	Section 114	Section 115	Section 116	Section 121	5009
		Section 111A	Section 111B	Section 111		Section 112A	Section 112B	Section 112						
1	2	14,8338 t	13,4904 t	<b>28,3242 t</b>	<b>8,3641 t</b>	22,7425 t	14,4820 t	<b>37,225 t</b>	<b>24,944 t</b>	<b>22,4487 t</b>	<b>11,2103 t</b>	<b>22,8636 t</b>	<b>3,9724 t</b>	<b>159,3523 t</b>
2	3	8,9745 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	8,2404 t	11,2580 t	<b>19,498 t</b>	<b>13,6128 t</b>	<b>12,10602 t</b>	<b>6,6073 t</b>	<b>15,8828 t</b>	<b>1,3236 t</b>	<b>91,94412 t</b>
2	6	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>67,40718 t</b>
3	4	1,2963 t	2,9657 t	<b>4,262 t</b>	<b>1,2910 t</b>	1,6274 t	11,2580 t	<b>12,885 t</b>	<b>5,5693 t</b>	<b>5,4338 t</b>	<b>2,0756 t</b>	<b>3,8516 t</b>	<b>0,8689 t</b>	<b>36,2372 t</b>
3/4	5	8,9745 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	8,2404 t	11,2580 t	<b>19,498 t</b>	<b>13,6128 t</b>	<b>12,10602 t</b>	<b>6,6073 t</b>	<b>15,8828 t</b>	<b>1,3236 t</b>	<b>91,94412 t</b>
5	9	8,9745 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	8,2404 t	11,2580 t	<b>19,498 t</b>	<b>13,6128 t</b>	<b>12,10602 t</b>	<b>6,6073 t</b>	<b>15,8828 t</b>	<b>1,3236 t</b>	<b>91,94412 t</b>
6	7	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>67,40718 t</b>
7	8	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>67,40718 t</b>
8	9	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	14,5021 t	3,2240 t	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>67,40718 t</b>
9	13	14,8338 t	13,4904 t	<b>28,3242 t</b>	<b>8,3641 t</b>	22,7425 t	14,4820 t	<b>37,225 t</b>	<b>24,944 t</b>	<b>22,4487 t</b>	<b>11,2103 t</b>	<b>22,8636 t</b>	<b>3,9724 t</b>	<b>159,3523 t</b>
Σ Planilha⇒ % diferença		14,8338 t	13,4904 t	<b>28,3242 t</b>	<b>8,3641 t</b>	22,7425 t	14,4820 t	<b>37,225 t</b>	<b>24,944 t</b>	<b>22,4487 t</b>	<b>11,2103 t</b>	<b>22,8636 t</b>	<b>3,9724 t</b>	<b>159,3523 t</b>
		Block 101			Block 104	Block 101			Block 102	Block 102	Block 103	Block 104	Block 104	4 block (b)
		25,31 t			8,01 t	22,97 t + 15,09 t = 38,06 t			25,43 t	22,92 t	11,07 t	22,03 t	4,0 t	156,83 t
		$\frac{(28,3242 t - 25,31 t)}{25,31 t} = 11,91 \% \uparrow$			4,42 % $\uparrow$	$\frac{(37,225 t - 38,06 t)}{38,06 t} = -2,20 \% \downarrow$			-1,91 % $\downarrow$	-2,06 % $\downarrow$	1,27 % $\uparrow$	3,8 % $\uparrow$	-0,69 % $\downarrow$	1,87 % $\uparrow$

From	to	i			i	i	i	i	i	i	i	i	General Items (não contabiliza)	Quantity 5009
		Section 111			Section 117	Section 112	Section 113	Section 114	Section 115	Section 116	Section 121	Section 122		
		Section 111A	Section 111B	Section 111										
1	2	14,8338 t	13,49 t	<b>28,3242 t</b>	<b>8,3641 t</b>	<b>37,225 t</b>	<b>24,944 t</b>	<b>22,4487 t</b>	<b>11,2103 t</b>	<b>22,8636 t</b>	<b>3,9724 t</b>	<b>0,2182 t</b>	3,0346 t	<b>159,57 t</b>
2	3	8,9745 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	<b>19,498 t</b>	<b>13,6128 t</b>	<b>12,10602 t</b>	<b>6,6073 t</b>	<b>15,8828 t</b>	<b>1,3236 t</b>	<b>0,1059 t</b>	2,2735 t	<b>92,05 t</b>
2	6	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>0,1123 t</b>	0,7611 t	<b>67,52 t</b>
3	4	1,2963 t	2,9657 t	<b>4,262 t</b>	<b>1,2910 t</b>	<b>12,885 t</b>	<b>5,5693 t</b>	<b>5,4338 t</b>	<b>2,0756 t</b>	<b>3,8516 t</b>	<b>0,8689 t</b>	<b>0,0331 t</b>	0,5371 t	<b>36,27 t</b>
3/4	5	8,9745 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	<b>19,498 t</b>	<b>13,6128 t</b>	<b>12,10602 t</b>	<b>6,6073 t</b>	<b>15,8828 t</b>	<b>1,3236 t</b>	<b>0,1059 t</b>	2,2735 t	<b>92,05 t</b>
5	9	8,9745 t	7,8683 t	<b>16,8428 t</b>	<b>6,0708 t</b>	<b>19,498 t</b>	<b>13,6128 t</b>	<b>12,10602 t</b>	<b>6,6073 t</b>	<b>15,8828 t</b>	<b>1,3236 t</b>	<b>0,10591 t</b>	2,2735 t	<b>92,05 t</b>
6	7	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>0,1123 t</b>	0,7611 t	<b>67,52 t</b>
7	8	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>0,1123 t</b>	0,7611 t	<b>67,52 t</b>
8	9	5,8593 t	5,6221 t	<b>11,4814 t</b>	<b>2,2933 t</b>	<b>17,726 t</b>	<b>11,3312 t</b>	<b>10,34268 t</b>	<b>4,6030 t</b>	<b>6,9808 t</b>	<b>2,6488 t</b>	<b>0,1123 t</b>	0,7611 t	<b>67,52 t</b>
9	13	14,8338 t	13,49 t	<b>28,3242 t</b>	<b>8,3641 t</b>	<b>37,225 t</b>	<b>24,944 t</b>	<b>22,4487 t</b>	<b>11,2103 t</b>	<b>22,8636 t</b>	<b>3,9724 t</b>	<b>0,2182 t</b>	3,0346 t	<b>159,57 t</b>
Σ		14,834 t	13,49 t	<b>28,3242 t</b>	<b>8,3641 t</b>	<b>37,225 t</b>	<b>24,944 t</b>	<b>22,4487 t</b>	<b>11,2103 t</b>	<b>22,8636 t</b>	<b>3,9724 t</b>	<b>0,2182 t</b>	3,0346 t	<b>159,57 t</b>
	Planilha⇒	Block 101			Block 104	Block 101	Block 102	Block 102	Block 103	Block 104	Block 104	-----	-----	4 block (b)
		25,31 t			8,01 t	38,06 t	25,43 t	22,92 t	11,07 t	22,03 t	4,0 t	-----	-----	156,83 t
% diferença		$\frac{(28,3242 t - 25,31 t)}{25,31 t} = 11,91 \% \uparrow$			4,42 % $\uparrow$	-2,20 % $\downarrow$	-1,91 % $\downarrow$	-2,06 % $\downarrow$	1,27 % $\uparrow$	3,8 % $\uparrow$	-0,69 % $\downarrow$	-----	-----	1,75 % $\uparrow$

*Bill of Material* (BOM)

# *Bill of Material (BOM)*

(grupos)



# Grupos

<p>Itens montados posterior a união dos módulos</p> <p>Componentes (Caldeiraria Leve)</p> <ul style="list-style-type: none"><li>_ 131 – componente (escotilhas – <i>Hatches</i>) do convés. B115.</li><li>_ 132 – componente (<i>Manhole-Cobers</i>) Tampas cofres distribuídas ao longo do casco do navio.</li><li>_ 142 – componente (corrimão) (<i>Railings-Handrails-Grips</i>)</li><li>_ 151 – componente (reforço externo) (<i>Finders</i>)</li></ul> <p>Componentes (Caldeiraria Pesada)</p> <ul style="list-style-type: none"><li>_ 759 – componente_ <i>Other_Stores_Workshopss</i></li></ul> <p>Estrutura</p> <p>Componentes específicos (itens comprados)</p> <ul style="list-style-type: none"><li>_ <i>Service-Space</i></li></ul>	<p><b>Sistemas (montados no bloco ⇒ módulos)</b></p> <p><b>Sistema de Propulsão</b></p> <ul style="list-style-type: none"><li>_ 211 – <i>Propulsion-Engine-System</i></li><li>_ 212 – <i>Reduction-Gear-System</i></li><li>_ 213 – <i>Thrust-System-Shafts</i></li><li>_ 411 – <i>Generator-Sets</i></li></ul> <p><b>Sistema de Propulsão (Proa)</b></p> <ul style="list-style-type: none"><li>_ 223 – <i>Transverse-Thrusters</i> parte do sistema de propulsão direcionadores da embarcação localizados na Proa</li></ul> <p><b>Sistema contra incêndio</b></p> <ul style="list-style-type: none"><li>_ 310 – (<i>Bilge-Ballast-internal-fifi</i>) Sistema contra incêndio distribuído por toda a embarcação</li></ul>
---	--

# Estrutura

Sections

# Grupos (*Section 111*)

Grupo	Descrição	<i>Bill of Material</i>	Níveis (BOM)	Peso	Tempo de processamento
1	Coberta	Longitudinal e transversal	2		
2	Berço	Longitudinal e transversal	2		
3	Mamparo	Longitudinal e transversal	2		
4	<i>Estribor</i>	Longitudinal e transversal Painéis e Nervuras	3		
5	<i>Babor</i>	Longitudinal e transversal Painéis e Nervuras	3		
6					
7					
8					
9					
10					
				$\Sigma$	

# Grupos (*Section 117*)

Grupo	Descrição	<i>Bill of Material</i>	Níveis (BOM)	Peso	Tempo de processamento
1	coberta	Longitudinal e transversal	2		
2	<i>Estribor</i>	Longitudinal e transversal Painéis e Nervuras	3		
3	<i>Babor</i>	Longitudinal e transversal Painéis e Nervuras	3		
4					
5					
6					
7					
8					
9					
10					

$\Sigma$



# Grupos (*Section 112*)

Grupo	Descrição	<i>Bill of Material</i>	Níveis (BOM)	Peso	Tempo de processamento
1	coberta	Longitudinal e transversal	2		
2	<i>Estribor</i>	Longitudinal e transversal Painéis e Nervuras	3		
3	<i>Babor</i>	Longitudinal e transversal Painéis e Nervuras	3		
4					
5					
6					
7					
8					
9					
10					

$\Sigma$

# Grupos (*Section 113*)

Grupo	Descrição	<i>Bill of Material</i>	Níveis (BOM)	Peso	Tempo de processamento
1	coberta	Longitudinal e transversal	2		
2	<i>Estribor</i>	Longitudinal e transversal Painéis e Nervuras	3		
3	<i>Babor</i>	Longitudinal e transversal Painéis e Nervuras	3		
4					
5					
6					
7					
8					
9					
10					
			$\Sigma$		

# Grupos (*Section 114*)

Grupo	Descrição	<i>Bill of Material</i>	Níveis (BOM)	Peso	Tempo de processamento
1	coberta	Longitudinal e transversal	2		
2	<i>Estribor</i>	Longitudinal e transversal Painéis e Nervuras	3		
3	<i>Babor</i>	Longitudinal e transversal Painéis e Nervuras	3		
4					
5					
6					
7					
8					
9					
10					

$\Sigma$

# Grupos (*Section 115*)

Grupo	Descrição	<i>Bill of Material</i>	Níveis (BOM)	Peso	Tempo de processamento
1	coberta	Longitudinal e transversal	2		
2	<i>Estribor</i>	Longitudinal e transversal Painéis e Nervuras	3		
3	<i>Babor</i>	Longitudinal e transversal Painéis e Nervuras	3		
4					
5					
6					
7					
8					
9					
10					

$\Sigma$

# Grupos (*Section 116*)

Grupo	Descrição	<i>Bill of Material</i>	Níveis (BOM)	Peso	Tempo de processamento
1	coberta	Longitudinal e transversal	2		
2	<i>Estribor</i>	Longitudinal e transversal Painéis e Nervuras	3		
3	<i>Babor</i>	Longitudinal e transversal Painéis e Nervuras	3		
4					
5					
6					
7					
8					
9					
10					

$\Sigma$

# Grupos (*Section 121*)

Grupo	Descrição	<i>Bill of Material</i>	Níveis (BOM)	Peso	Tempo de processamento
1	coberta	Longitudinal e transversal	2		
2	<i>Estribor</i>	Longitudinal e transversal Painéis e Nervuras	3		
3	<i>Babor</i>	Longitudinal e transversal Painéis e Nervuras	3		
4					
5					
6					
7					
8					
9					
10					

$\Sigma$

# Grupos (*Section 122*)

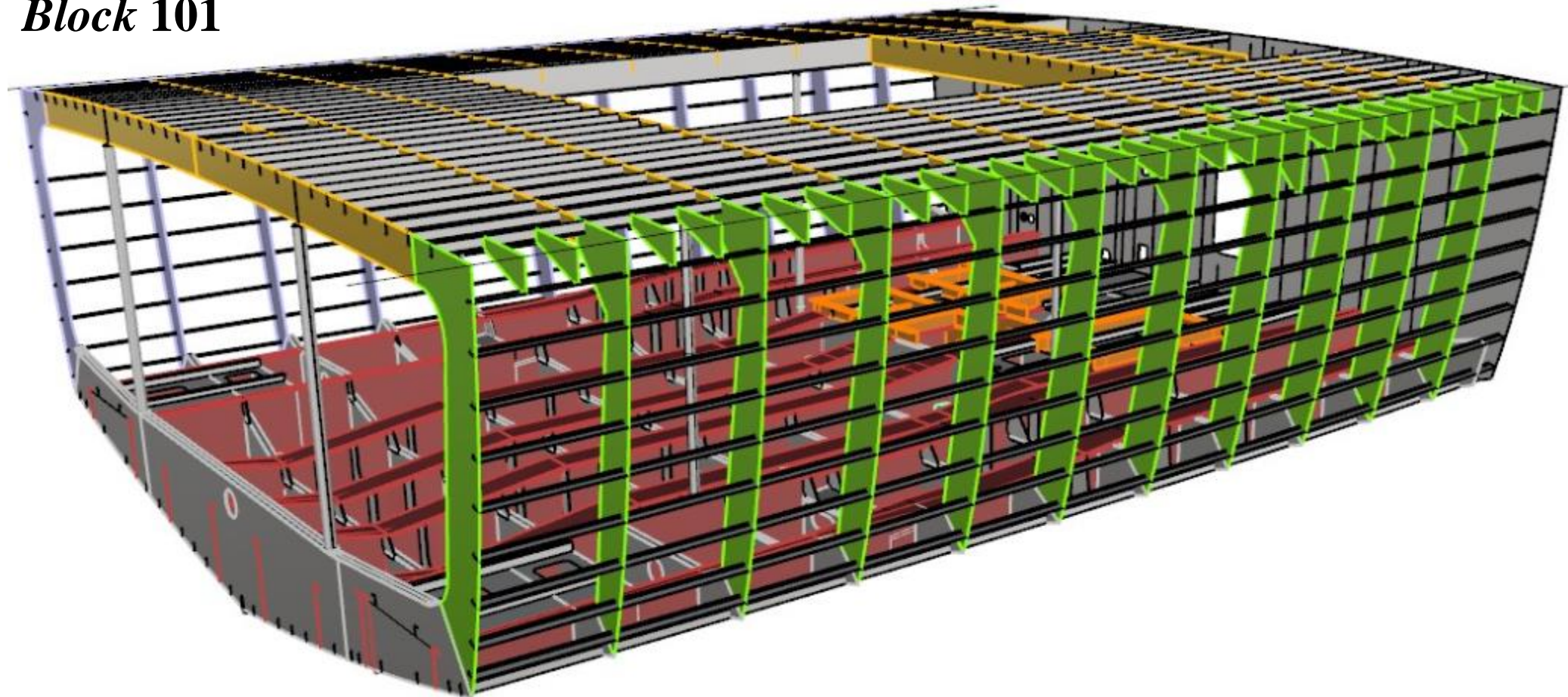
Grupo	Descrição	<i>Bill of Material</i>	Níveis (BOM)	Peso	Tempo de processamento
1	coberta	Longitudinal e transversal	2		
2	<i>Estribor</i>	Longitudinal e transversal Painéis e Nervuras	3		
3	<i>Babor</i>	Longitudinal e transversal Painéis e Nervuras	3		
4					
5					
6					
7					
8					
9					
10					

$\Sigma$





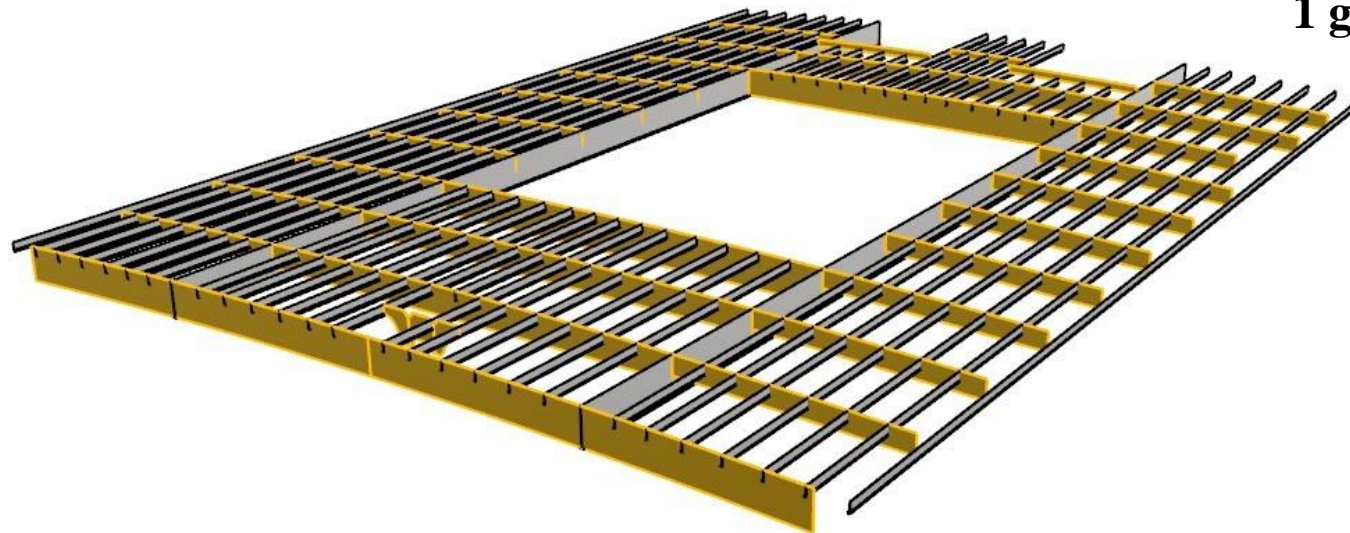
*Block 101*



# *Bill of Material* (BOM)

Coberta (1 grupo)

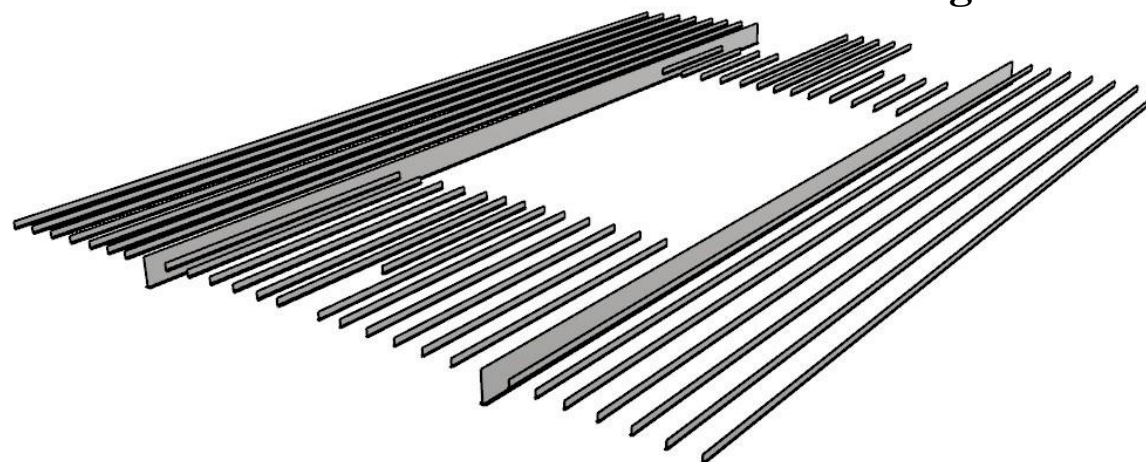
**1 grupo - coberta**



**Transversal**



**Longitudinal**



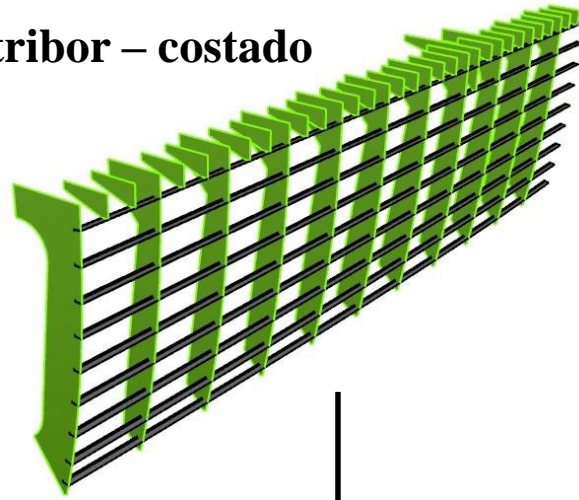
# *Bill of Material* (BOM)

Estribor (2 grupo)

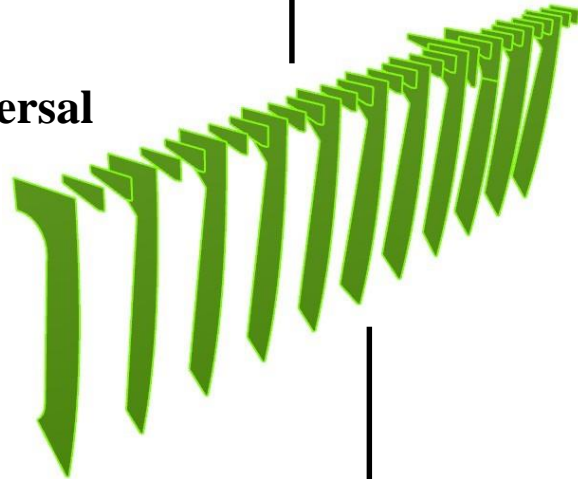
2 grupo – estribor – costado



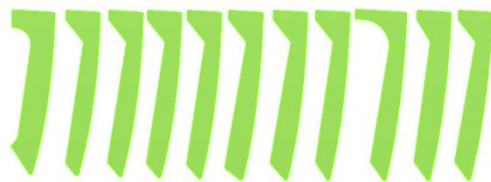
Preparação das peças dos *skids* (11 x)



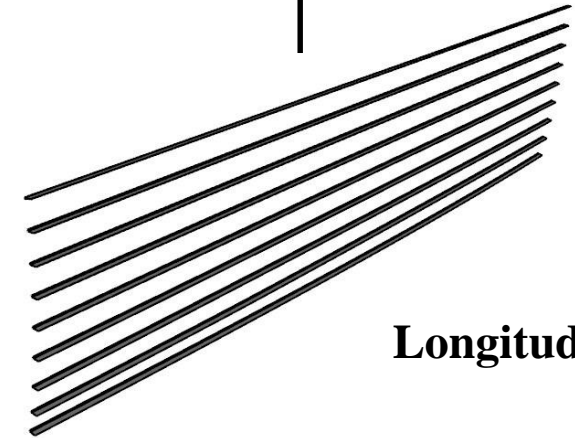
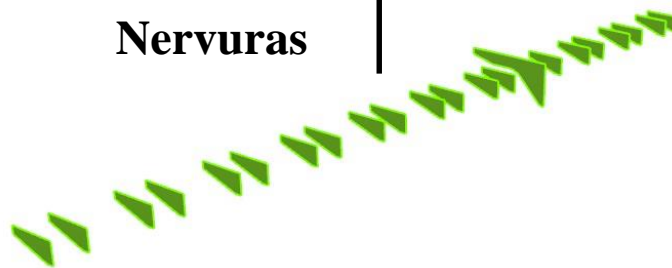
**Transversal**



**Painéis (*skids*)**



**Nervuras**



**Longitudinal**

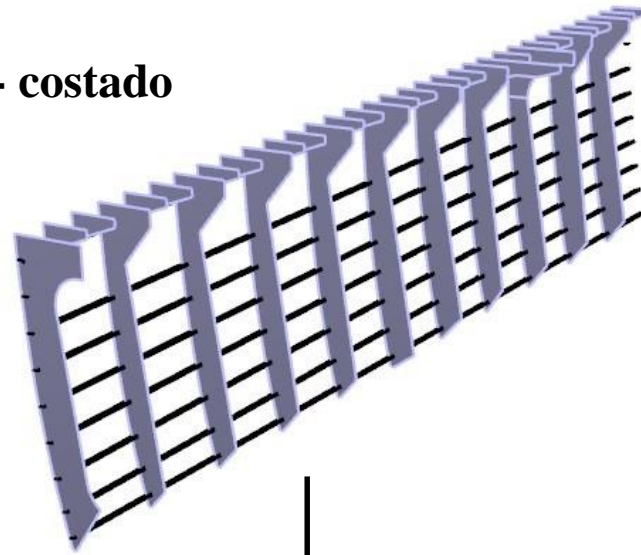
# *Bill of Material* (BOM)

Babor (3 grupo)

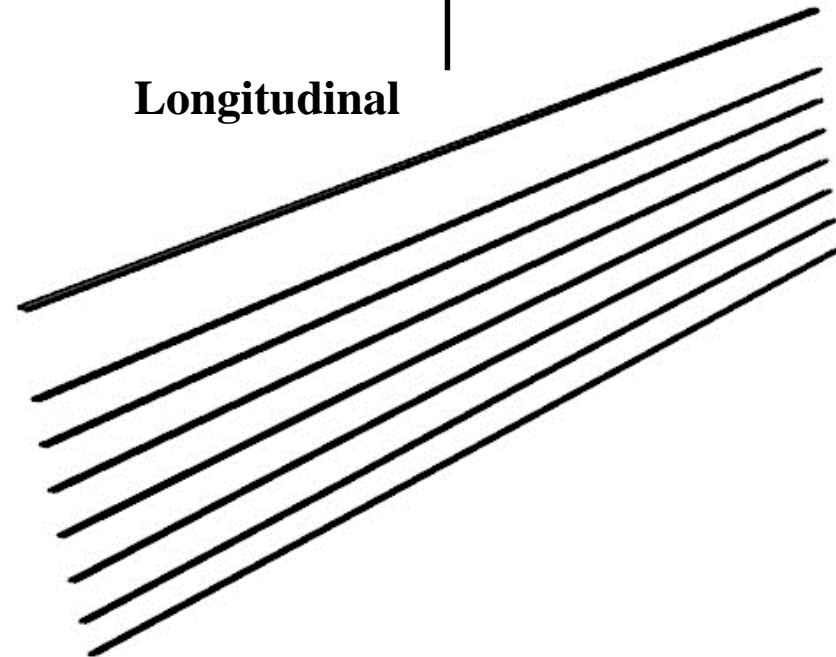
### 3 grupo – babor - costado



Preparação das  
peças dos *skids* (11 x)  
**Transversal**  
(painéis (*skids*) e nervuras)



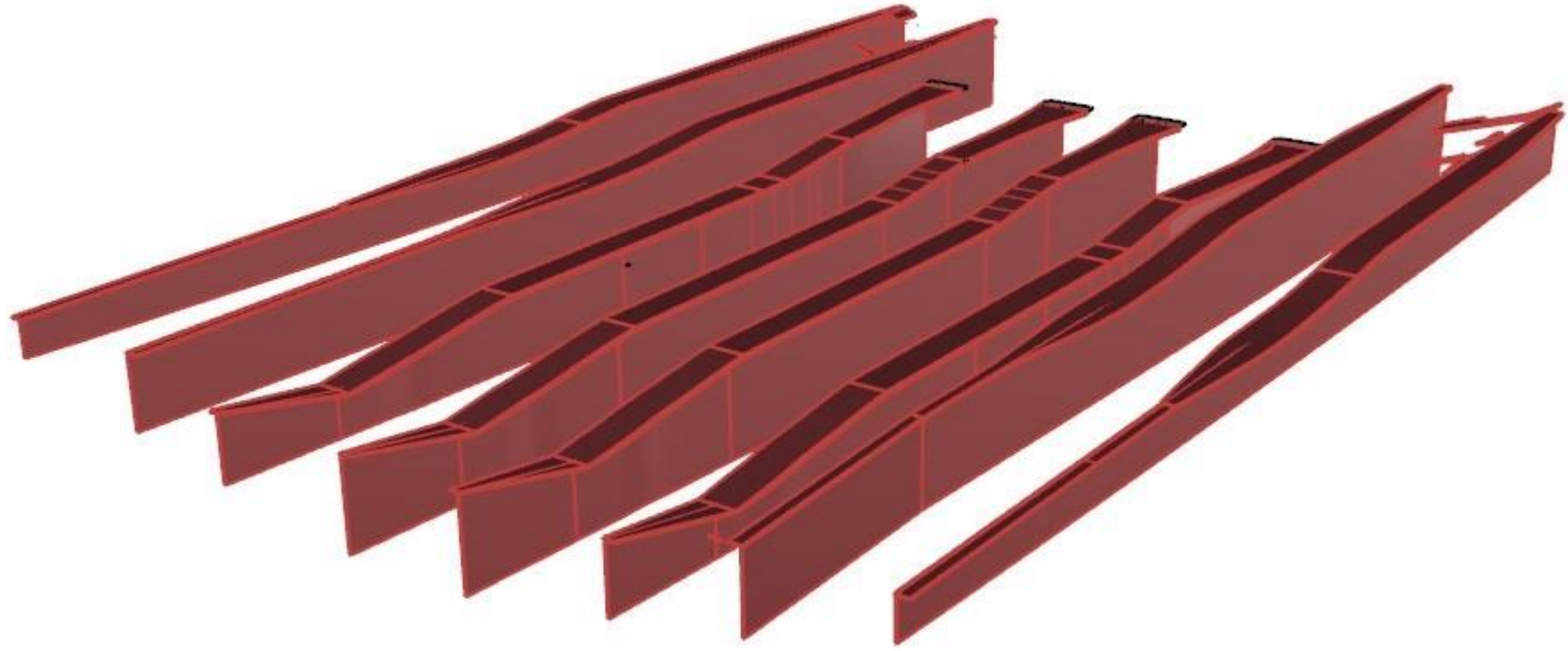
**Longitudinal**



# *Bill of Material* (BOM)

Base de máquinas (4 grupo)





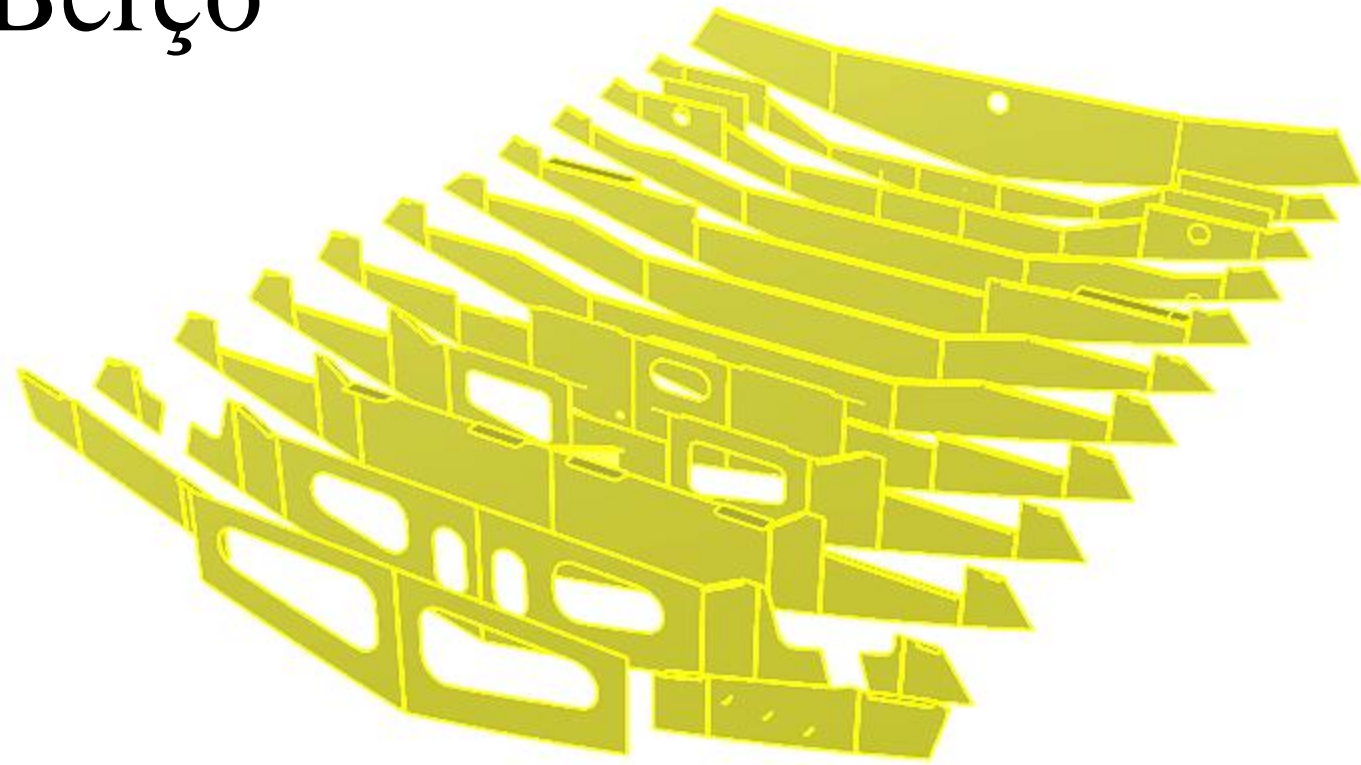
**4 grupo – base de máquinas**

# *Bill of Material* (BOM)

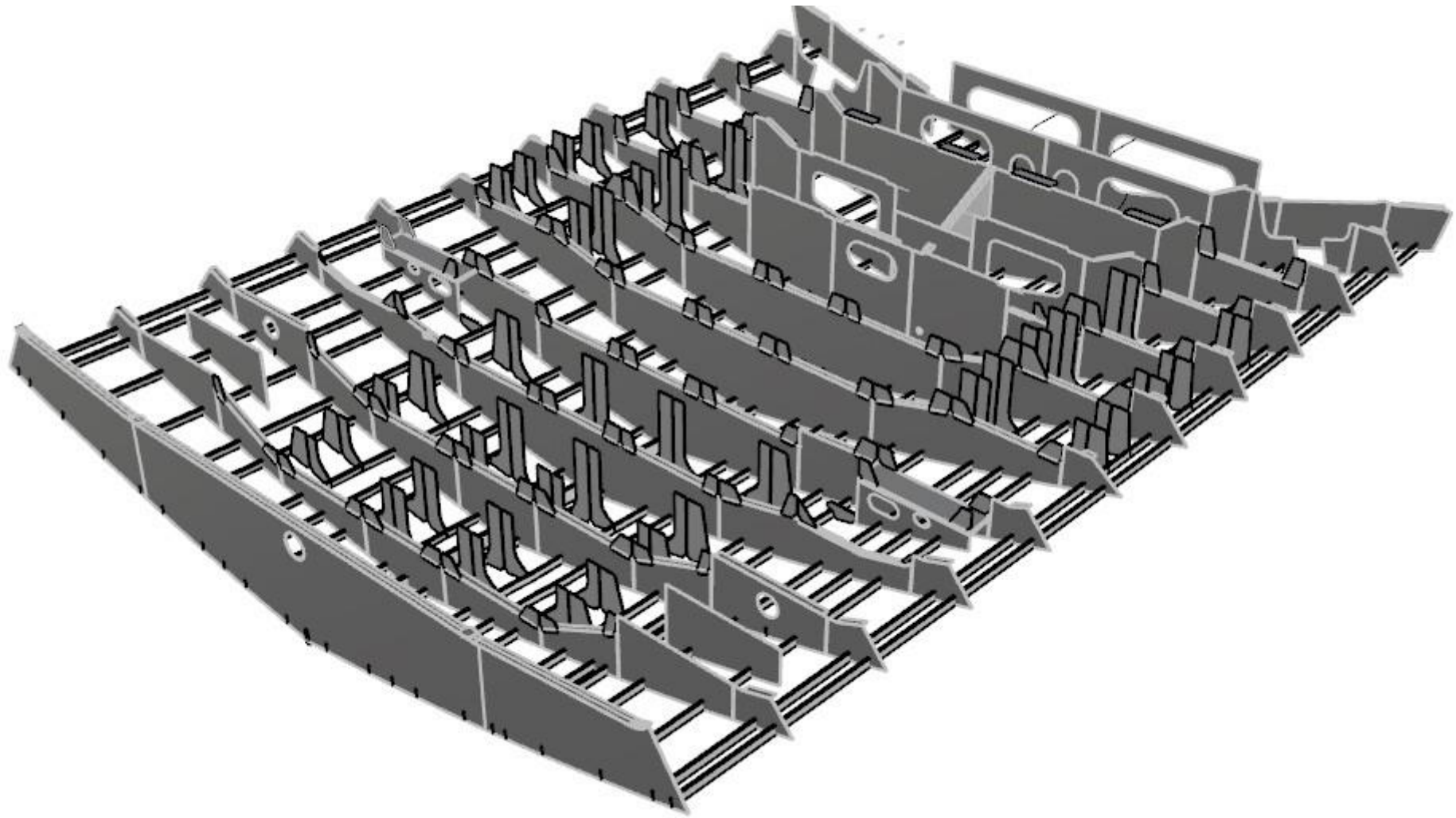
Berço (5 grupo)



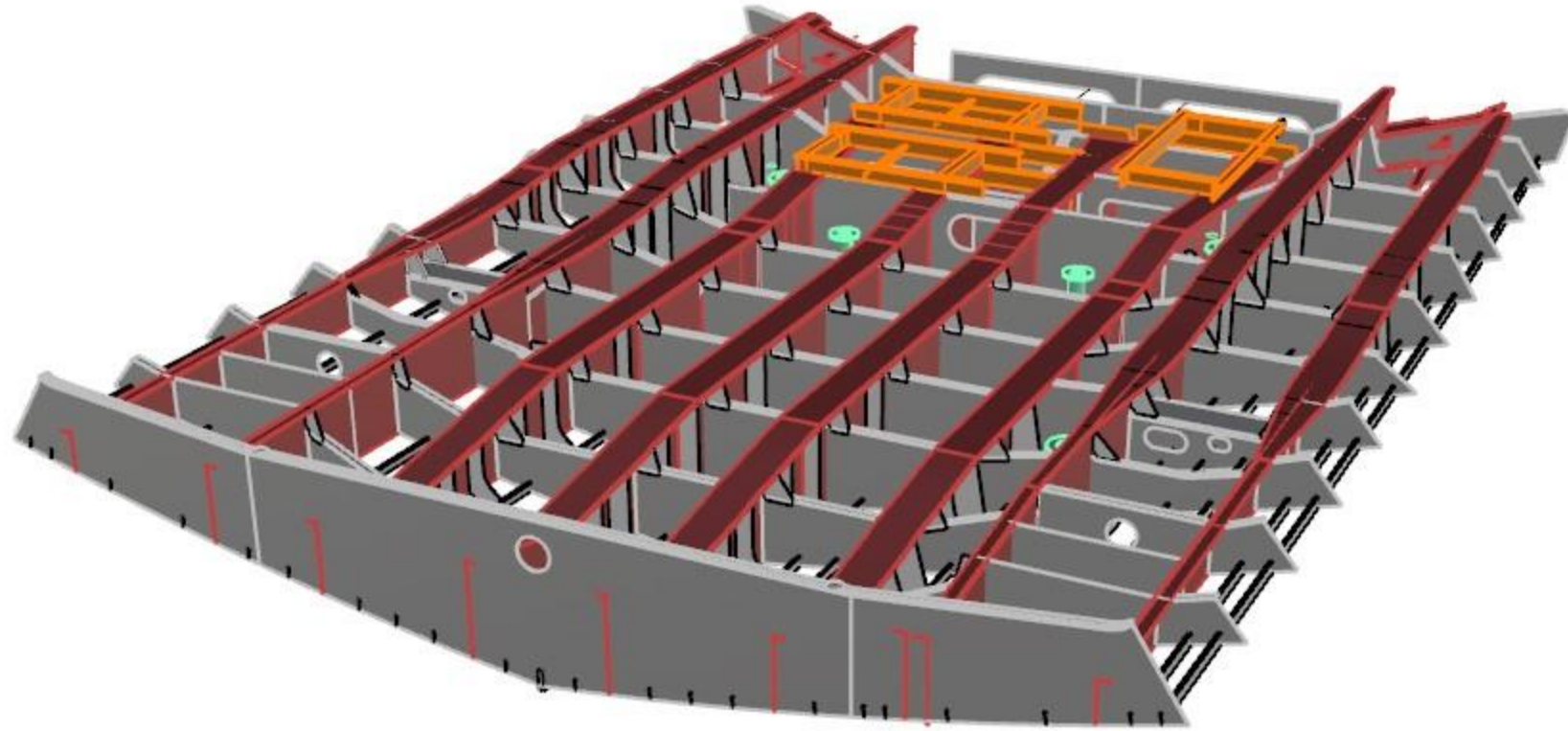
Berço



# Berço

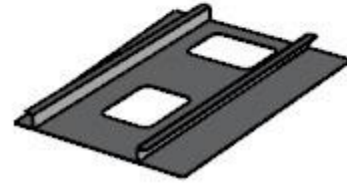
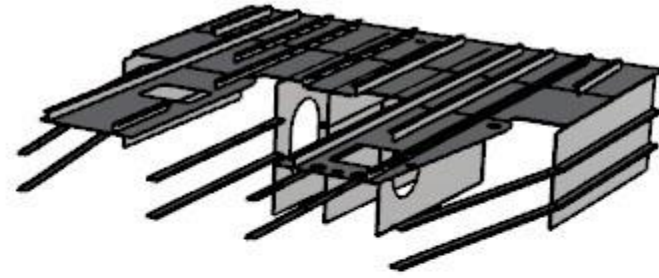


# Berço



# *Bill of Material* (BOM)

Tanques (6 grupo)

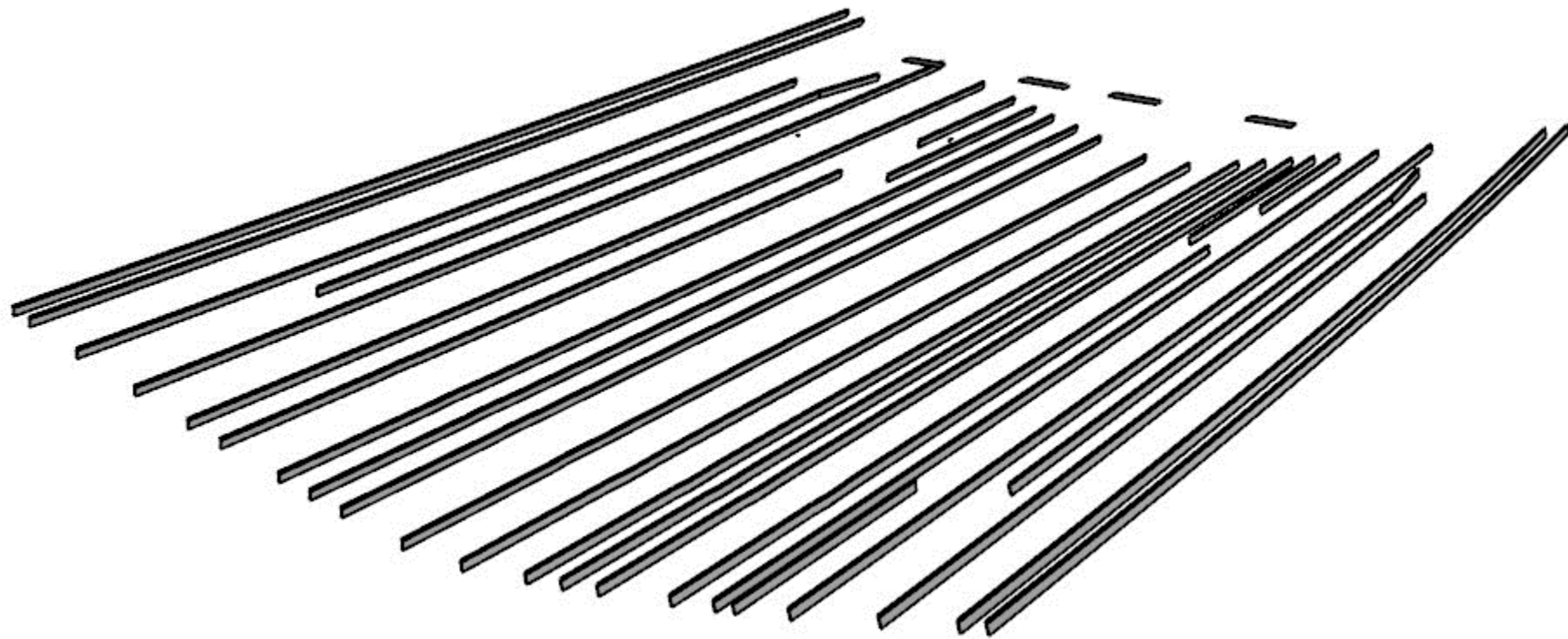


**5 grupo - tanques**



# *Bill of Material* (BOM)

Longitudinalis (7 grupo)

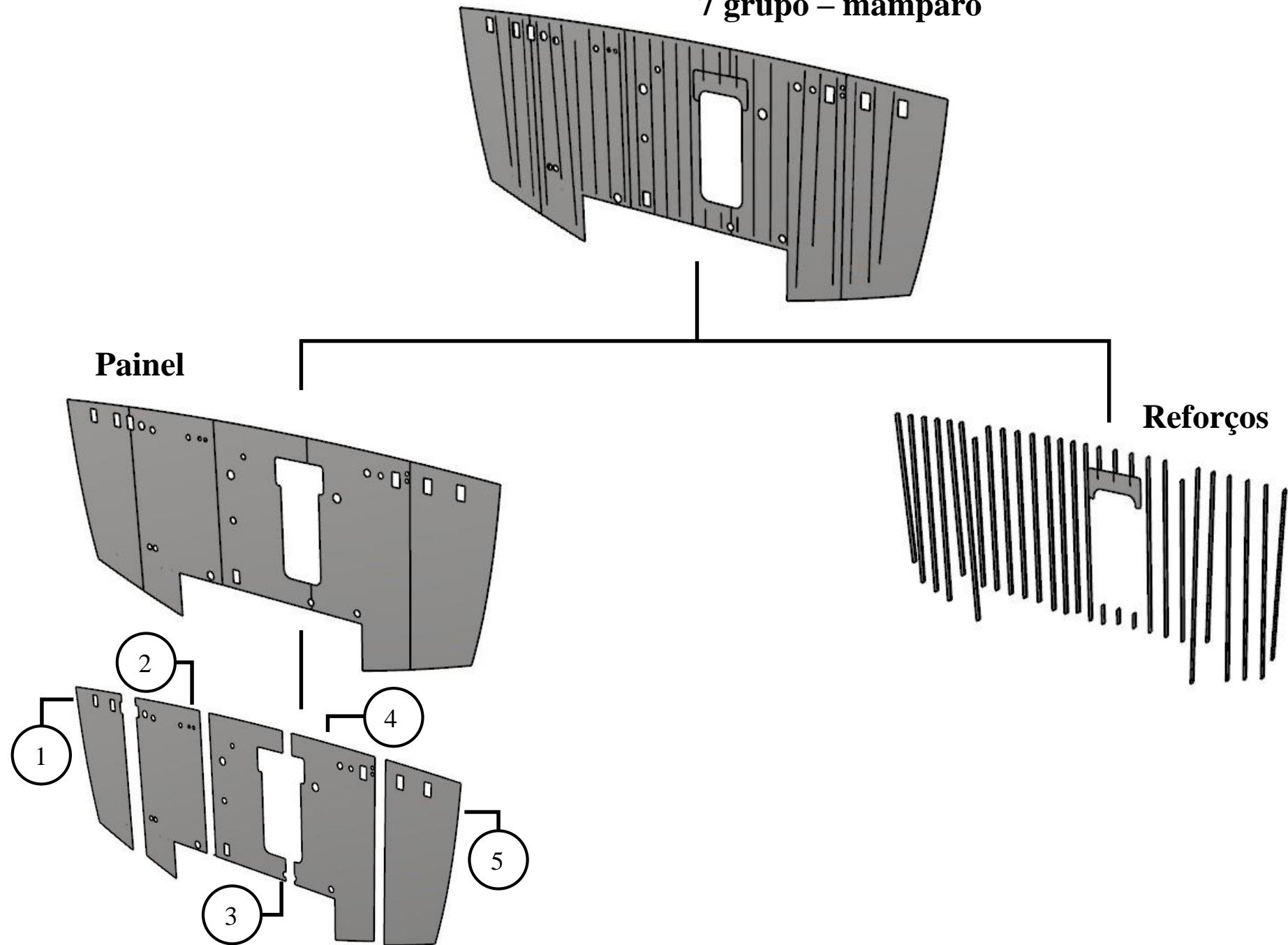


**6 grupo - longitudinais**

# *Bill of Material* (BOM)

Mamparo (8 grupo)

# 7 grupo – mamparo



## *Productivity*

Jiang, L. and Strandenes, S. P. Assessing the cost competitiveness of China's shipbuilding industry. Maritime Economics & Logistics. December 2012, Volume 14, Issue 4, pp 480–497.

## Authors

Liping Jiang

Siri Pettersen Strandenes

<i>Year</i>	<i>China</i>		<i>South Korea</i>		<i>Japan</i>		<i>Ecuador</i>	
	<i>Wage</i>	<i>Productivity</i>	<i>Wage</i>	<i>Productivity</i>	<i>Wage</i>	<i>Productivity</i>	<i>Wage</i>	<i>Productivity</i>
	<i>(\$/Man MH)</i>	<i>(CGT/Man MH)</i>	<i>(\$/Man MH)</i>	<i>(CGT/Man MH)</i>	<i>(\$/Man MH)</i>	<i>(CGT/Man MH)</i>	<i>(\$/Man MH)</i>	<i>(CGT/Man MH)</i>
2000	0,57	0,009	11,38	0,045	14,17	0,071		
2001	0,64	0,010	12,09	0,048	14,65	0,077		
2002	0,77	0,011	12,88	0,051	15,49	0,082		
2003	0,86	0,011	13,38	0,055	16,01	0,088		
2004	0,93	0,012	14,74	0,058	16,88	0,093		
2005	0,99	0,013	16,53	0,061	17,87	0,099		
2006	1,15	0,014	17,96	0,064	18,48	0,105		
2007	1,35	0,015	19,44	0,067	18,74	0,110		
2008	1,65	0,015	19,94	0,071	19,46	0,116		
2009	1,97	0,016	21,29	0,074	20,24	0,121		

<i>Year</i>	<i>China</i>		<i>South Korea</i>		<i>Japan</i>		<i>Ecuador</i>	
	<i>Wage</i>	<i>Productivity</i>	<i>Wage</i>	<i>Productivity</i>	<i>Wage</i>	<i>Productivity</i>	<i>Wage</i>	<i>Productivity</i>
	<i>(\$/Man MH)</i>	<i>(CGT/Man MH)</i>	<i>(\$/Man MH)</i>	<i>(CGT/Man MH)</i>	<i>(\$/Man MH)</i>	<i>(CGT/Man MH)</i>	<i>(\$/Man MH)</i>	<i>(CGT/Man MH)</i>
2010								
2011								
2012								
2013								
2014								
2015								
2016								
2017								



# Cálculo CGT

Compensated Gross Tonnage (CGT) is an indicator of the amount of work that is necessary to build a given ship and is calculated by multiplying the tonnage of a ship by a coefficient, which is determined according to type and size of a particular ship.



# *Comparison of Vessel Work Content by the Compensated Gross Tonnage (CGT) Method*

$$CGT = \text{Vessel Gross Tonnage} \times CGT \text{ Factor}$$

## ***Bulk Carrier***

*Gross Tonnage* = 113606

*CGT factor* = 0,31

*CGT* = 35218

## ***Notional Frigate***

*Gross Tonnage* = 5000

*CGT factor* = 9,0

*CGT* = 45000

The frigate has 28% more work content but only 4% of the volume of the bulk carrier.

$$\frac{CGT_{\text{Frigate}} - CGT_{\text{Bulk Carrier}}}{CGT_{\text{Bulk Carrier}}} = \frac{(45000 - 35218)}{35218} = 0,277 \times 100 \approx 28\%$$

$$\frac{GT_{\text{Frigate}}}{GT_{\text{Bulk Carrier}}} = \frac{(5000)}{113606} = 0,044 \times 100 = 4,4\%$$

*Source: First Marine International*



*Data for calculation of CGT and sample calculation*

*Calculation of CGT = A × GT<sup>B</sup>*

Sr No:	<i>Type</i>	A	B	GT	CGT	<i>Complexity rank</i>
1	<i>Oil tankers</i>	48	0,57	1000	2462	10
2	<i>Chemical tankers</i>	84	0,55	1000	3752	2
3	<i>Bulk carriers</i>	29	0,61	1000	1961	13
4	<i>Combined carriers</i>	33	0,62	1000	2391	11
5	<i>General cargo ships</i>	27	0,64	1000	2246	12
6	<i>Reefers</i>	27	0,68	1000	2960	7
7	<i>Full containerships</i>	10	0,68	1000	1096	15
8	<i>RoRo vessels</i>	32	0,63	1000	2484	9
9	<i>Car carriers</i>	15	0,7	1000	1888	14
10	<i>LPG carriers</i>	62	0,57	1000	3180	6
11	<i>LNG carriers</i>	32	0,68	1000	3509	3
12	<i>Ferries</i>	20	0,71	1000	2698	8
13	<i>Passenger ships</i>	49	0,67	1000	5014	1
14	<i>Fishing vessels</i>	24	0,71	1000	3238	5
15	<i>Non-cargo carrying vessels</i>	46	0,62	1000	3332	4

*Source: For CGT formula and value of A and B: OECD Directorate for Science, Technology and Industry, “Compensated Gross Ton system”, Council Working Party on Shipbuilding, 2007.*



# Nomenclatura

# Nomenclatura

- ✓ CGT – *Compensated Gross Tonnage*.
- ✓ DWT – *Dead Weight Tonnage (Dead Weight of Ship in Tons)*.
- Deadweight tonnage or tons deadweight (TDW) is a measure of how much weight a ship can carry, not its weight, empty or in any degree of load. DWT is the sum of the weights of cargo, fuel, fresh water, ballast water, provisions, passengers, and crew. DWT is often used to specify a ship's maximum permissible deadweight.
- The deadweight tonnage of a vessel is the quantity of cargo, expressed in weight, that the vessel can load when loaded up to the summer freeboard mark. The deadweight tonnage is expressed in tons: long ton (1 long ton = 1,016 kg), metric ton (1 metric ton = 1,000 kg) and sometimes also short ton (1 short ton = 907 kg).
  
- ✓ GT – *Gross Tonnage (Gross Ton)*.
- ✓ L – *Length of Ship*.
- ✓ LRS – *Lloyds Register of Shipping*.

# Nomenclatura

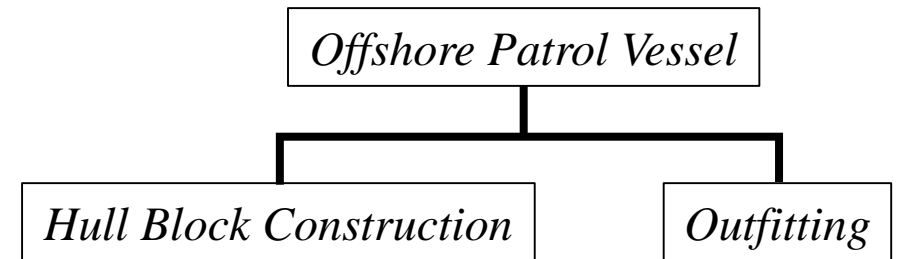
- ✓ MH/CGT – *Shipbuilding productivity.*
- ✓ MH – *Man hour.*
- ✓ ULC – *Unit labour cost.*

$$\text{ULC} = \frac{\text{Average Industrial Wage}}{\text{Shipbuilding Productivity}}$$

$$\text{ULC} = \frac{\text{Average Industrial Wage}}{\text{MH/CGT}} = \frac{(\text{Average Industrial Wage}) \times \text{CGT}}{\text{MH}}$$

# Nomenclatura

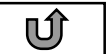
- ✓ GVC – *Global Value Chain.*
- ✓ LCC – *Life Cycle Costs.*
- ✓ ICS – *International Chamber of Shipping.*
- ✓ PWBS – *Product Work Breakdown Structure.*
- ✓ HBCM – *Hull Block Construction Method.*
- ✓ ZOFM – *Zone Outfitting Method.*
- ✓ ZPTM – *Zone Painting Method.*
- ✓ PPFM – *Pipe Piece Family manufacturing.*
- ✓ OPV – *Offshore Patrol Vessel.*
- ✓ PWBS – *Product Work Breakdown Structure.*
- ✓ NPL – *New Production Line.*



# Bibliografia


















# Bibliografia

- N. M. Golam Zakaria, K. Shahriar Iqbal and K. Akhter Hossain. Performance Evaluation of the Contemporary Shipbuilding Industries in Bangladesh. Journal of Naval Architecture and Marine Engineering December, 2010. DOI: 10.3329/jname.v7i2.5407. Page 78.
- ✓ The calculation of MH/CGT for steel as per empirical formula for the case of inland and ocean going ship is around 24. But actual MH/CGT (which is internationally accepted potential measure of productivity) for steel in local shipyard for export quality ship is six time higher than the international standard of MH/CGT value and for local vessel, it is 1.5 times higher than international standard. This is because, to maintain welding quality and job finishing as per international standard, the MH/ CGT for steel for export quality or class vessel produced in Bangladeshi shipyards was more. The manual welding, cutting and job fitting increase the MH/CGT in local shipyard.
- ✓ The productivity for different shipbuilding nation around the world has been compared and shown in Fig.3. Fig.4 shows the comparison of relative labour rate with other countries around the world. It is estimated that, relative productivity of shipbuilding labour of Bangladesh is 11.4 and which is one of lowest among neighboring countries.





# Ship type

<i>Comparison of Productivity Measures</i>		
<i>Ship type</i>	<b>mh / st.wt.</b>	<b>mh / cgt</b>
  VLCC	16	32
 <i>Suezmaz tanker</i>	19	22
 <i>Product tanker</i>	27	20
 <i>Chemical tanker</i>	46	36
 <i>Hull tanker</i>	-----	-----
  <i>Bulk carrier</i>	19	20
 <i>Containership 4,400 teu</i>	19	22
 <i>Containership 1,800 teu</i>	28	22
 <i>Reefer</i>	43	34
 <i>General cargo (Cargo Ship)</i>	56	29
 <i>Ferry</i>	51	39
 <i>Ocean tug</i>	105	31
 <i>Ro-Ro/Passenger</i>	-----	-----
  <i>Patrol Vessel</i>	-----	-----

\*\* <http://www.tandfonline.com/doi/figure/10.1080/09733159.2012.690565?scroll=top&needAccess=true>

# *Comparison of tanker sizes*



<http://www.marinetraffic.com/en/ais/details/ships/shipid:437855/mmsi:367132630/imo:7329314/vessel:CALUMET>  
<https://www.vesselfinder.com/vessels/NSS-CONFIDENCE-IMO-9181625-MMSI-431464000>  
<http://www.marinetraffic.com/en/ais/details/ships/shipid:5326203/mmsi:8949707/vessel:TYPE%2023%20FRIGATE>

***VLCC or Very Large Crude Carriers and ULCC or Ultra Large Crude Carriers***

# ***VLCC or Very Large Crude Carriers***

# *VLCC Maersk Nautilus*



## *VLCC or Very Large Crude Carriers and ULCC or Ultra Large Crude Carriers*

- **VLCC or Very Large Crude Carriers and ULCC or Ultra Large Crude Carriers** are the largest operating cargo vessels in the world. With a size in excess of 250,000 Dead Weight Tonnage (DWT), these giant ships are capable of carrying huge amount of crude oil in a single trip. Known as **Supertankers**, these vessels are primarily used for long-haul crude transportation from the Persian Gulf to countries in Europe, Asia and North America.
- VLCC have a size ranging between 180,000 to 320,000 DWT. They are capable of passing through the Suez Canal in Egypt, and as a result are used extensively around the North Sea, Mediterranean and West Africa. VLCC are very large shipping vessels with dimensions of up to 470 m (1,540 ft) in length, beam of up to 60 m (200 ft) and draught of up to 20 m (66 ft). But the standard dimensions of these ships range between 300 to 330 meters in length, 58 meters breath and 31 meters in depth. They are known for their flexibility in using terminals and can operate in ports with some depth limitations. The cost of a VLCC ranges between \$100 million to \$120 million depending on its age. Frontline Limited of Bermuda has the largest fleet of VLCC consisting of 44 vessels.



# *Ultra Large Crude Carriers*

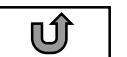
# *ULCC TI Oceania*





# ***ULCC or Ultra Large Crude Carriers***

- ULCC or Ultra Large Crude Carriers are the largest shipping vessels in the world with a size ranging between 320,000 to 500,000 DWT. Due to their mammoth size, they need custom built terminals. As a result they serve a limited number of ports with adequate facilities to accommodate them. They are primarily used for very long distance crude oil transportation from the Persian Gulf to Europe, Asia and North America. ULCC are the largest shipping vessels being built in the world with standard dimensions of 415 meters length, 63 meters width and 35 meters draught.



*ULCC Knock Nevis(Jahre Viking)*

## *ULCC Knock Nevis(Jahre Viking)*

- Knock Nevis is regarded as the longest ULCC supertanker ever built in the world with massive dimensions of 564,763 DWT, 458.45 m (1,504.10 ft) length and 68.8 m (225.72 ft) in width. Not in operation now, the ship was sold to Indian ship breakers in 2009 for its disposal.

<i>General Characteristics</i>	
<i>Tonnage:</i>	260,941 GT (214,793 NT)
<i>Length:</i>	458.45 m (1,504 ft)
<i>Beam</i> (haste de âncora):	68.8 m (226 ft)
<i>Draught:</i>	24.611 m (81 ft)
<i>Capacity:</i>	564,763 DWT
<i>Speed:</i>	16 knots (30 km/h; 18 mph)

# *ULCC Knock Nevis(Jahre Viking)*



# ***HYUNDAI SAMHO S740 (Type: CONTAINER SHIP)***

<i>Name of the ship</i>	HYUNDAI SAMHO S740
<i>Type of ship</i>	CONTAINER SHIP
<i>Gross tonnage</i>	150800 tons
DWT	134300 tons
<i>Builder</i>	HYUNDAI SAMHO HEAVY INDUSTRIES - SAMHO, SOUTH KOREA

***HYUNDAI SAMHO S740 (Type: CONTAINER SHIP)***



# ***HYUNDAI MIPO 8173 Type: LPG TANKER***

<i>Name of the ship</i>	HYUNDAI MIPO 8173
<i>Type of ship</i>	LPG TANKER
<i>Gross tonnage</i>	18000 tons
DWT	23000 tons
<i>Builder</i>	HYUNDAI MIPO DOCKYARD - ULSAN, SOUTH KOREA

# ***HYUNDAI MIPO 8173 Type: LPG TANKER***

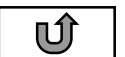




# ***MINAMINIPPON 744 Type: CHEMICAL TANKER***

<i>Name of the ship</i>	MINAMINIPPON 744
<i>Type of ship</i>	CHEMICAL TANKER
<i>Gross tonnage</i>	20000 tons
DWT	30000 tons
<i>Builder</i>	MINAMINIPPON SHIPBUILDING - USUKI, JAPAN

# ***MINAMINIPPON 744 Type: CHEMICAL TANKER***



# DURWARD KNOWLES - 9729518 - PATROL VESSEL

<i>Name of the ship</i>	DURWARD KNOWLES
<i>Type of ship</i>	PATROL VESSEL
<i>MMSI</i>	311000244 (4207)
<i>Gross tonnage</i>	241 tons
<i>DWT</i>	56 tons
<i>Lenght (meter)</i>	42,8
<i>Crew</i>	18
<i>Beam (haste de âncora):</i>	9 m (29,564 ft)
<i>Builder</i>	DAMEN SHIPYARD GORINCHEM – GORINCHEM, NETHERLANDS

# DURWARD KNOWLES - 9729518 - PATROL VESSEL



# ISSARA NAREE Type: BULK CARRIER

<i>Name of the ship</i>	ISSARA NAREE
<i>Type of ship</i>	BULK CARRIER
MMSI	567278000
<i>Gross tonnage</i>	36264 tons
DWT	63800 tons
<i>Builder</i>	SAINTY JIANGDU SHIPBUILDING - JIANGDU, CHINA

# ISSARA NAREE Type: BULK CARRIER



# *Capesize vessel Aquahaha Type: BULK CARRIER*

<i>Name of the ship</i>	<i>Capesize vessel Aquahaha</i>
<i>Type of ship</i>	<i>BULK CARRIER</i>
MMSI	636016674
<i>Net Tonnage</i>	44352 tons
<i>Gross tonnage</i>	113606 tons
DWT	229545 tons
<i>Builder</i>	<i>GoodBulk Ltd. Fourth CarVal Capesize Joins GoodBulk</i>

*Capesize vessel Aquahaha Type: BULK CARRIER*





## ***HMS SUTHERLAND Type: Frigate***

<i>Name of the ship</i>	<b><i>HMS SUTHERLAND</i></b>
<i>Type of ship</i>	<b><i>Frigate</i></b>
MMSI	232002833
<i>Gross tonnage</i>	5000 tons (4200 tons)
<i>Builder</i>	<i>Yarrow Shipbuilders</i>

<http://www.marinetraffic.com/en/ais/index/search/all?keyword=frigate>

# *HMS SUTHERLAND Type: Frigate*



# CHEBU Type: RO-RO/PASSENGER SHIP

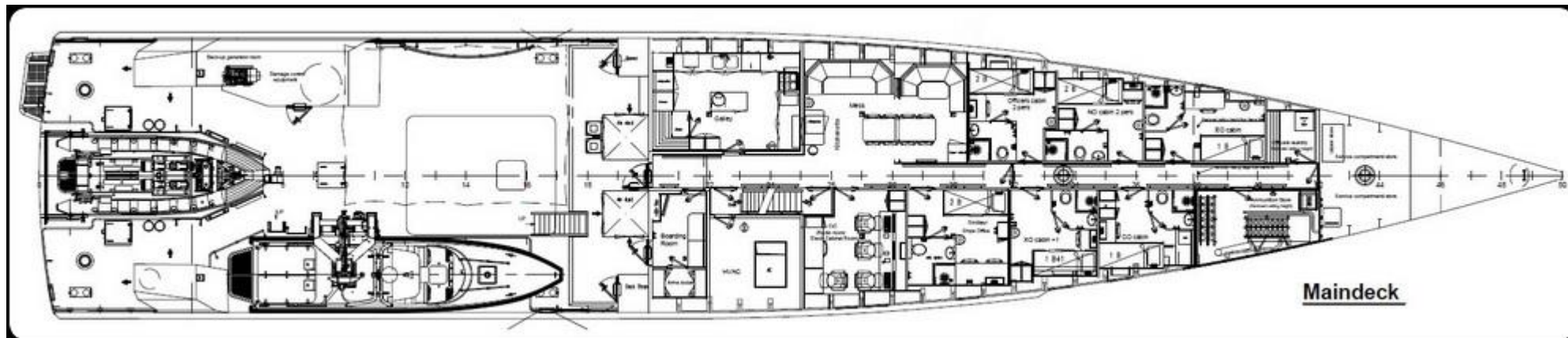
<i>Name of the ship</i>	CHEBU
<i>Type of ship</i>	RO-RO/PASSENGER SHIP
MMSI	553111722
<i>Gross tonnage</i>	1157 tons
<i>Builder</i>	SHUNHAI SHIPBUILDING INDUSTRY - GUANGZHOU, CHINA

# CHEBU Type: RO-RO/PASSENGER SHIP



# ***STAN PATROL 5009 Type: PATROL VESSEL***

<i>Name of the ship</i>	<i>STAN PATROL 5009 (STANDARD)</i>
<i>Type of ship</i>	<i>PATROL VESSEL</i>
MMSI	(5009)
<i>Gross tonnage</i>	≈ 282 tons
DWT	≈ 66 tons
<i>Lenght (meter)</i>	50,1
<i>Crew</i>	28
<i>Builder</i>	DAMEN SHIPYARDS GROUP



***STAN PATROL 5009 Type: PATROL VESSEL***



# **Hellespont Metropolis**

This photo shows the Hellespont Metropolis, one of eight ships built by ThorCon's predecessor company. This ship is the largest double hull tanker



**500,000 tons on the move, 89 million dollars**



# Especificações técnicas

- This ship is the largest double hull tanker ever built. It can carry 440,000 tons of oil. His steel weight is 67,000 tons. She required 700,000 man-hours of direct labor, a little more than 10 man-hours per ton of ship steel. About 40% of this was expended on hull steel; the rest on outfitting. It was built in less than 12 months and cost 89 million dollars in 2002.
- ✓ DWT  $\approx$  440.000 toneladas (somente carga, falta adicionar suprimentos).
- ✓ *Gross tonnage* = 67.000 toneladas.
- ✓ MH (*Man hour*) = 700.000 *man-hours*.
- ✓ 
$$\frac{\textit{Man hour}}{\textit{Gross tonnage}} = \frac{700.000}{67.000} = 10,45 \textit{ man-hour}$$
 por tonelada (navio completo).
- ✓ 40% consumido na construção do casco =  $0,4 * 700.000 = 280.000 \textit{ man-hour}$ .
- ✓ 60% consumido na instalação do *outfitting* =  $0,6 * 700.000 = 420.000 \textit{ man-hour}$ .



*Reefer ship*

# *Reefer ship*



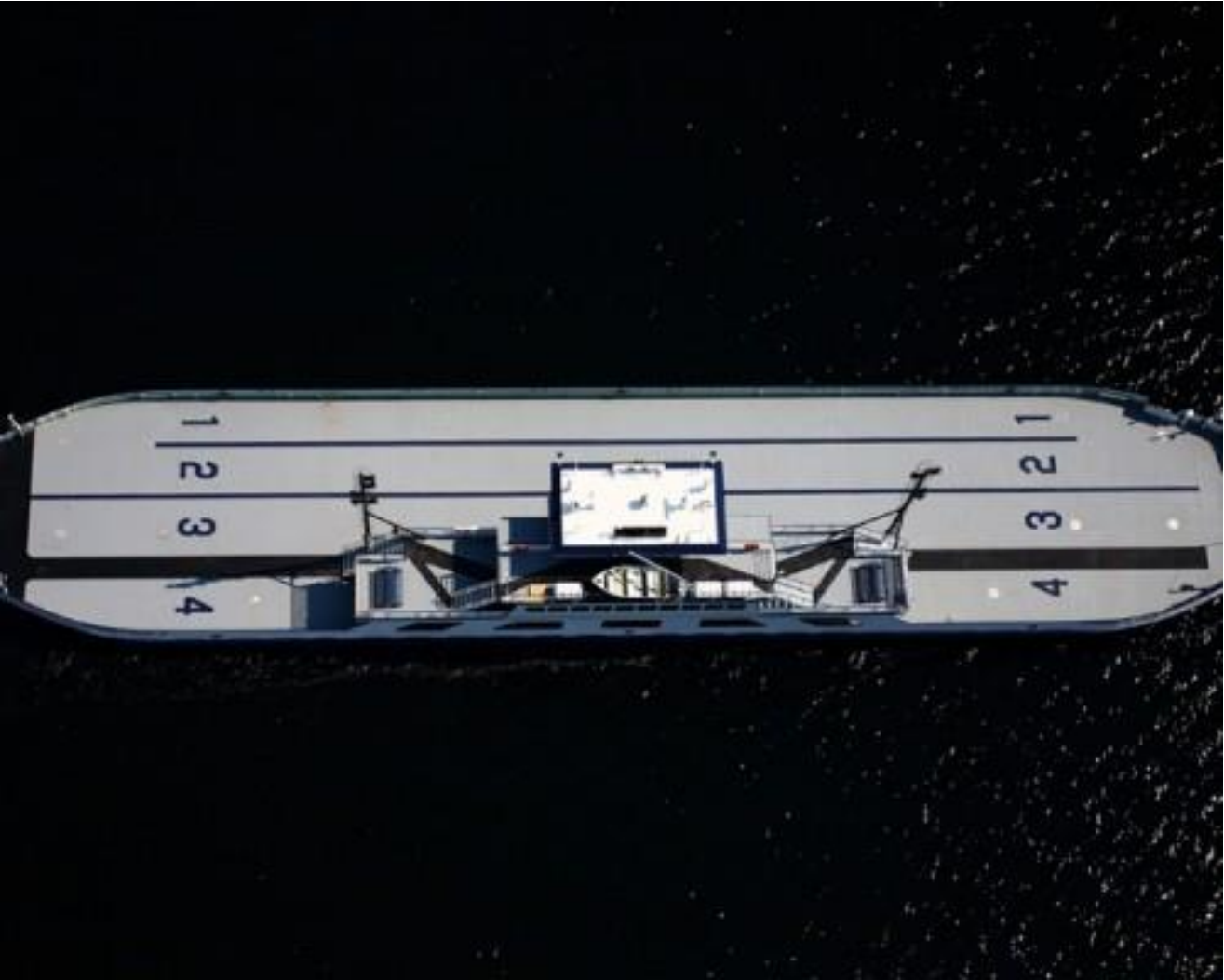
*General cargo (Cargo Ship)*

# *General cargo (Cargo Ship)*



*Ferry Ship*

# *Ferry Ship*



*Ocean tug Ship*



# *Ocean tug Ship*



# *A Shipbuilding Productivity Predictor*

Um preditor de produtividade naval

Journal of Ship Production, Vol. 18, No. 2, May 2002, pp. 79–85

**Thomas Lamb** and **Aasmund Hellesoy**

*The University of Michigan*

# Parâmetros

- ❑ Tamanho;
- ❑ Nível Tecnológico do estaleiro;
- ❑ Quantidade de material ou itens passando através de um sistema ou processo;
- ❑ Integração vertical;
- ❑ *Mix* de tipos de navios;
- ❑ Relação entre trabalhadores produtivos e não produtivos do estaleiro;

# Especificações técnicas

- This ship is the largest double hull tanker ever built. It can carry 440,000 tons of oil. Its steel weight is 67,000 tons. She required 700,000 man-hours of direct labor, a little more than 10 man-hours per ton of ship steel. About 40% of this was expended on hull steel; the rest on outfitting. It was built in less than 12 months and cost 89 million dollars in 2002.
- ✓ DWT  $\approx$  440.000 toneladas (somente carga, falta adicionar suprimentos).
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