IDT

DNA Oligonucleotide Resuspension and Storage

Upon receiving newly synthesized oligonucleotides, researchers must decide how to resuspend and store the product. Here are some guidelines and recommendations.

Resuspension

Keep in mind

Most commercially synthesized oligonucleotides are shipped as lyophilized product. Dried DNA is usually very easy to resuspend in an aqueous solution. However, not all oligonucleotides dry identically and some require more time to go into solution than others. It is also possible for the dried oligonucleotide to become dislodged from the tube during shipping. Thus, it very important to spin down every oligonucleotide prior to opening the tube for resuspension.

Aqueous buffer

Resuspend oligos in TE buffer (10mM Tris; 0.1 mM EDTA; pH 8.0) as this buffer will maintain a constant pH. Alternatively, use nuclease-free water. DEPC water will harm oligonucleotides and water from deionizing systems can be overly acidic, with a pH as low as 5.0.

Concentration

Oligonucleotides can be stored at a large range of concentrations. However, concentrations <1 µM may change over time as some of the oligo can adhere to the plastic of the tube. A 5−10 mM solution is generally the highest concentration at which an oligo will go into solution. Resuspension calculations can be made using yield information contained on IDT product specification sheets and on the oligo tube. There you will find the actual yield of the oligonucleotide synthesis in three forms: optical density units (OD); mass (in mg); and copy number (in nmole). At IDT, we routinely resuspend dry oligonucleotides to a storage stock concentration of 100 µM and then dilute a portion of this to create working stock solutions.

To make a 100 µM concentration stock solution: Take the number of nmoles in the tube and multiply that by 10. This will be the number of µL buffer to add to get a 100 µM solution. For example, if you have 9 nmoles oligo, add 90 µL buffer to make a 100 µM solution. If you prefer to work in other units or to resuspend to a different concentration, a Dilution Calculator is available in the SciTools section of the IDT website.

Resuspension

For hard-to-suspend oligos, heat the oligonucleotide at 55°C for 1−5 minutes, then vortex thoroughly. If there is still a visible precipitate in the tube, the sample may contain silica which is a by-product of oligo synthesis. It will not affect the performance of the product, and may be removed through filtration or decanting the supernatant.

Storage

Long-term storage

If you would like to use a portion of the oligonucleotide immediately and store the remainder for future use, it is best to resuspend the entire product in Tris-EDTA (TE) buffer, pH 8.0 at the desired stock solution concentration. Take a sufficient volume for immediate use from the stock and dilute it to a working stock concentration. Divide the remaining stock solution into several small aliquots and store at –20°C.

Short-term storage

Oligonucleotides that have been resuspended in TE buffer, pH 8.0 can be stored at 4°C for up to 6 months.

Now read the more indepth IDT TechVault article, *Oligonucleotide Yield, Resuspension, and Storage* or browse the current issue of the *DECODED* newsletter.