Araldite® Embedding Resin Kits

Use Instructions

Araldite® 502 is an epoxy embedding resin embedding medium yielding a light gold color block that does not shrink or expand upon polymerization. Tissues to be embedded in Araldite 502 can be dehydrated with any commonly used organic solvent. However, when ethyl alcohol (ethanol) or methyl alcohol (methanol) is used, the application of a transitional solvent, such as propylene oxide is necessary because residual traces of non-reactive alcohols adversely affect the sectioning quality. When embedding, the viscosity of Araldite is slightly greater than that of methacrylate, but it can be reduced by raising the temperature.

Planning the embedding protocol:

Nothing is more frustrating than the make up multiple preparations only to have something be "not quite perfect" with all of them. We like to point out that one can selected an embedding protocol on the basis of:

1. Hardness desired or
2. Time for polymerization that avoids overheating
3. Apply heat that is required to caused the desired polymerization.

Generally speaking, more DMP-30 is added to get a faster polymerization but the trade off is a more brittle block. A slower polymerization results in a more uniform curing of the block.

Recommended Procedure for Araldite 502 Kit:

Fixation:

Fix tissue in osmium tetroxide, glutaraldehyde, or other suitable fixative.

Dehydration:

Place tissue in following exchange solutions:

50% ethanol for 20 minutes

75% ethanol for 20 minutes

100% ethanol for 20 minutes

100% ethanol for 20 minutes

100% propylene oxide for 15 minutes

100% propylene oxide for 15 minutes

Mixing the resin:

Recommended formula:

Araldite 502 resin	10.0 g
DDSA	7.8 g
DMP-30	0.27g
Or	
BDMA	0.45 g

For larger amounts, increase proportionately.

Mixing of the components:

This resin solution should be mixed thoroughly for about 20 minutes. The final hardness of the block can be varied by changing the proportion of the hardener (DDSA) to Araldite 502.

Slight variations of the accelerator (DMP-30) will drastically affect the color and brittleness of the block.

This mixture can be stored for up to six months at 30° C (86° F) or lower.

Infiltration:

Drain tissue of old propylene oxide

Immerse the tissue for one hour in the solution containing 2 ml propylene oxide and 2 ml resin solution at room temperature. Add 2 ml additional resin solution, swirl to mix and let stand at room temperature 3-6 hours.

Embedding: This may be done in gelatin capsules. If gelatin capsules are used, they must be pre-dried in an oven to remove all moisture. For embeddment, capsule should be filled with resin solution. Tissue should be drained and then placed on top of the resin solution in the capsules. As the tissue settles through the resin solution, any residual traces of solvent are removed. Polymerization of the resin solution may be carried out by heating filled capsules to 60° C (140° F) for at least 16 hours. An alternative procedure is to heat filled capsules to 35° C (95 °F) over night, then to 45 °C (113° F) the following day, then to 60° C (140° F) that night.

Blocks may be trimmed and sectioned after cooling to room temperature.

References:

Glauert and Glauert, J. Biophys. Biochem. Cytol. 4:191 (1958). Luft, J. H., J. Biophys. Biochem. Cytol. 9:409 (1961).

Hayat, M. A., Principles and Techniques of E. M., V. I., 2nd Edition, University Park Press, Balitimore, 1981.