

**Araldite 502 Kit
With DMP-30
Prod. No. 18050**

Contains:

18060 Araldite 502 Resin	450g	■ I, Cg
18022 DDSA	450g	■ I
18042 DMP-30.....	25g	■ I

**Araldite 502 Kit
With BDMA
Prod. No. 18052**

Contains:

18060 Araldite 502 Resin	450g	■ I, Cg
18022 DDSA	450g	■ I
18241 BDMA	25g	■ C, I, T, F

■ I: Irritant; ■ T: Toxic; ■ C: Corrosive; ■ Cg: Suspected Carcinogen ■ F: Flammable

Resin: Araldite 502 is a glycerol based aromatic epoxy resin that demonstrates little shrinkage on polymerization and good beam stability. The resin contains 16% dibutyl phthalate as a plasticiser.

Accelerator: The difference between the two kits is the tertiary amine accelerator. Prod. No. 18050 contains DMP-30 and Prod. No. 18052 contains BDMA as the accelerator. BDMA is used at a concentration of 2.5-<3.0%; DMP-30 is used at a concentration range of 1.5-2%. "BDMA is a smaller molecule which penetrates faster, has a lower viscosity and a much longer shelf life than DMP-30."⁴

NOTE: When using BDMA at the maximum concentration, significant viscosity increase can be expected with overnight filtrations or when the resin mixture is used in an automatic tissue processor and left overnight. A suitable compromise of a lower BDMA concentration may solve this problem.

Curing: Curing is achieved in 12-24 hours at 60°C. Optimum cross-linking will have occurred in this time period (old fashioned). Curing may also be achieved using a PELCO[®] Microwave Tissue Processor...the entire procedure including fixation and curing of blocks may be carried out in 3 hours using new microwave technology developed by Ted Pella, Inc. Ask for literature. An increase in temperature will facilitate a more rapid cure with increased cross-linking. This will alter the characteristics of the block and its expected trimming and sectioning properties.

Formulation:

As proposed by Luft (1961)⁵

Araldite 502	27ml
DDSA	23ml
DMP-30	1.5%

Optional

BDMA	2.5-3.0%
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As proposed by Glauert⁴

Araldite 502	19ml
DDSA	21ml
BDMA	1.2ml
DBP	0.6ml

Optional

DMP-30	1.5%
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Suggestion for Mixing: Due to the viscosity and difficulty in thorough mixing of cold components it is suggested that the resin, hardener and mixing vessels are warmed to 60°C prior to mixing for about 10 minutes. One can carry out the mixing in a conical flask, which has been warmed appropriately by gently rotating the flask by hand. Then only a few minutes of mixing are required. We recommend that this technique be used only when the resin formulation is to be used immediately.

Suggestion for harder blocks: If a harder block is desired this can be achieved by replacing some of the DDSA with the hardener NMA. Each ml of DDSA should be replaced with 0.5ml of NMA. In doing so make sure that the final concentration of accelerator does not exceed the percentages listed above.

Technical Data:

	Density	Molecular Weight
DDSA	1.00g/ml	266
Araldite 502	1.13g/ml	WPE=222
	1.17g/ml	WPE=238
DMP-30.	0.97g/ml	265
BDMA	0.90g/ml	135

Note: the viscosity of Araldite 502 at 25°C is 2100-3600 cP.

Caution: Most epoxies are suspected carcinogens and therefore should be handled with great care. Epoxies, anhydrides and accelerators should all be considered toxic, in a general sense. Care should be taken to avoid direct contact with liquids or their vapors or dusts produced from the polymerized blocks. All work with these components, or mixtures of components, must be carefully performed within a properly vented fume hood.²

In the event of direct contact with the skin, the affected areas should be immediately wiped dry with clean, dry paper towels, followed by a thorough washing with soap and water. **(Never use an organic solvent to clean the skin).**

Hints:

1. Warm the resins, hardeners and containers to 60°C for at least 10 minutes. This practice decreases the viscosity of epoxy resins, and has no other effect on them.²
2. Measurements by volume are much easier than measurements by weight.³
3. Storage of mixtures of epoxy resins and hardeners should be avoided because cross-linking will occur even without the accelerator.
4. Moisture must be avoided in these mixtures.
5. Never open bottles that have been refrigerated until room temperature is reached.
6. Storage of accelerators in a desiccator is helpful. Humidity will gradually deactivate the amine.

7. Do not use stirring rods when mixing the resins after the materials have been warmed. A warm conical flask may be used which can be shaken gently for a few minutes until it is evident that mixing is complete.²
8. The accelerator BDMA can be dispensed from a graduated pipette or with previously calibrated drops.²
9. If a graduate cylinder and conical flask are used, they can be drained immediately after use by inverting them over disposable containers - and then reused. No washing is required. Surplus embedding medium collected can then be left to harden and can be disposed of properly.

Note: See PELCO[®] Technical Note - "Resins and Embedding-General Procedures"

Footnotes:

1. *Personal Communication, Audrey Glauert.*
2. *Glauert, A. M., ed: Practical Methods in Electron Microscopy. Ro. 143-144. North-Holland American Elsevier, 1975.*
3. *Coulter H.D.: Rapid and improved methods for embedding biological tissues in Eponate 12 and Araldite 502. J Ultrastruct Res, 20, 346-345, 1967.*
4. *Glauert A. M.: Epoxy resins: an update on their selection and use. Microscopy and Analysis, 15-20, Sept 1991.*
5. *Luft J.H.: Improvements in Epoxy Resin Embedding Methods, J Biophys Biochem, Cyto, 9:409-414, 1961*

References:

- Glauert, A. M., ed: Practical Methods in Electron Microscopy. Ro. 143-144. North-Holland American Elsevier, 1975.*
- Mollenhauer, H. H.: Stain Technology 39:1 i (1964).*
- Hayat M. A.: Principles and Techniques of Electron Microscopy, 3rd Ed., CRC Press (Boca Raton, FI), p. 94, 1989.*
- Glauert A. M.: Epoxy resins: an update on their selection and use. Microscopy and Analysis, 15-20, Sept 1991.*
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- Coulter H.D.: Rapid and improved methods for embedding biological tissues in Eponate 12 and Araldite 502. J Ultrastruct Res, 20, 346-345, 1967.*
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