

Product Information

45359 Epoxy-Embedding Kit

Description:

This embedding medium (Epon_812 substitute) is a very widely used embedding resin for electron microscopy, as it penetrates into the tissue specimen faster than Araldite and other polymers due to its low viscosity. It can be hardened easily and uniformly at low temperatures by the addition of DDSA, MNA and the accelerator DPM-30. Slight shrinkage does occur during curing. Epoxy embedding medium is useful for embedding a variety of tissues as a wide hardness can be obtained with this resin to suit a specific tissue type by using two different anhydride curing agents (DDSA and MNA).

Components:

Order number, name	Package
45345 Epoxy Embedding Medium	2x250 ml
45346 DDSA [2-Dodecenylsuccinic anhydride]	250 ml
45347 MNA [Methylnadic anhydride] 250 ml	250 ml
45348 DPM-30 [2,4,6-Tris(dimethylaminomethyl)phenol]	250 ml

Embedding formulation

The following embedding formulation originally published by Luft (1961) has proven excellent for both plant and animal tissues:

Mixture A: Epoxy Embedding Medium 5 ml, DDSA 8 ml

Mixture B: Epoxy Embedding Medium 8 ml, MNA 7 ml

Final embedding media

Since the viscosity of the various ingredients differ, it is imperative to mix all the ingredients very thoroughly (at least 20 minutes by stirring with a magnetic stirrer).

Immediately before use the two mixtures are blended, and the accelerator DPM-30 is added in the proportion of 1,5 to 2,0 %. It should be measured carefully; otherwise the block becomes dark in color and too brittle for satisfactory sectioning.

Mixture A: 13 ml

Mixture B 15 ml, DPM-30 16 drops (» 1,5-2,0%)

The hardness of the final embedding depends upon the ratio of mixture A to mixture B in the final embedding mixture. An increase in the proportion of mixture B will harden the block. A proportion of 1 + 1 has proven most successful for general use

Normal embedding

Fix	
Wash in buffer solution	10 min
Acetone (30%)	10 min
Acetone (60%)	10 min
Acetone (90%)	10 min
Acetone (100%) 3 changes	10 min each
Acetone + final Epoxy mixture (1+1)	30 min
Acetone + Final Epoxy mixture (1+2)	30 min

Final Epoxy mixture Embed in pre-dried gelatin (or polyethylene) capsules and polymerize at 45°C for 12 hours followed by 24 hours at 60°C.

There is some evidence that blocks section better, if they are air-cured for a few days after polymerization.

Rapid embedding (less than 3 hours)

Fix	
Wash in buffer solution	3 min
Acetone (30%)	4 min
Acetone (70%)	4 min
Acetone (95%)	4 min
Acetone (100%) 2 changes	4 min each
Epoxy mixture + Acetone (1+1)	15 min
Epoxy mixture 2 changes	10 min
Embed in fresh Epoxy mixture in Pre-dried capsules at 100°C.	
Sections can be cut when the blocks are cooled to room temperature.	1 hour

Remarks

Since Epoxy resin is hygroscopic, extreme care should be taken to prevent contamination with water. The tissues must be dehydrated completely. The Epoxy mixture can be stored tightly closed at +4°C in the refrigerator and protected from light. Before opening, the container should be kept at room temperature for at least 1 hour to prevent condensation.

References

Luft, J.H.; Journal Biophysics and Biochem. Cytol., 9-409 (1961)
Journal of Cell Biology 11-5 (1979)

Precautions and Disclaimer:

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

©2015 Sigma-Aldrich Co. LLC. All rights reserved. SIGMA-ALDRICH is a trademark of Sigma-Aldrich Co. LLC, registered in the US and other countries. Sigma brand products are sold through Sigma-Aldrich, Inc. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see product information on the Sigma-Aldrich website at www.sigmaaldrich.com and/or on the reverse side of the invoice or packing slip.