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, NMA 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 NMA).

Components:

<table>
<thead>
<tr>
<th>Order number</th>
<th>Name</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>45345</td>
<td>Epoxy Embedding Medium</td>
<td>2x250 ml</td>
</tr>
<tr>
<td>45346</td>
<td>DDSA [2-Dodecenylsuccinic anhydride]</td>
<td>250 ml</td>
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<tr>
<td>45347</td>
<td>NMA [ Methyladic anhydride]</td>
<td>250 ml</td>
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<tr>
<td>45348</td>
<td>DPM-30 [2,4,6-Tris(dimethylaminomethyl)phenol]</td>
<td>250 ml</td>
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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, NMA 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 1 hour are cooled to room temperature.

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
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.

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