

Quetol 651 - NSA Kit

#E14640

Quetol 651 is a water miscible epoxy resin with a low viscosity affording easy embedding, infiltration, sectioning and staining. Characterized by low electron scattering, it can be used for both light and electron microscopy.

Semi-thin sections approximately 0.2µm thick embedding in QUETOL 651 are suitable for examination with an ordinary electron microscope operating at 100 kV.

This method uses QUETOL 651 (EMS Catalog #20440) and the epoxy resin, Nonenyl Succinic Anhydride (NSA) (EMS Catalog #19050) and NMA (EMS Catalog 19000) as hardener and DMP-30 (EMS Catalog #13600) as accelerator. QUETOL 651 is an ethylene glycol diglycidyl ether, an epoxy resin of low viscosity. It is a light-colored epoxy resin with a viscosity of 15 cps at 25 degrees C. It is readily miscible with water, alcohol, acetone, n-butyl glycidyl ether, etc. It acts as a dehydrating agent, and combines chemically in any cured epoxy resin formulation.

The following mixture is recommended for this method:

QUETOL 651	35 ml
NSA	54 ml
NMA	11 ml
DMP-30	1.5-2.0 ml

This mixture has a low viscosity, and is therefore easy to handle and penetrates readily and completely into the specimen. It sets in about 24 hours at 60 degrees C and yields a light yellow block which is suitable for sectioning at 20 degrees C. This final hardness of the blocks can be adjusted by altering the ratio of QUETOL 651 and NSA.

Tissue sample sizes are approximately 2 x 2 x 1 mm, since a section of an area of approximately 2 x 2 mm is suitable for mounting on a grid 3 mm in diameter. The pieces are fixed in buffered aldehyde solution, postfixed in buffered osmium tetroxide solution, washed in a non-phosphate buffer, and should then be stained en block with aqueous uranyl acetate. After dehydration in graded alcohol or QUETOL 651, the following infiltration procedure is appropriate. n-Butyl glycidyl ether (n-BGE) is employed as an auxiliary to infiltration. All steps are carried out on a shaker at room temperature.

Embedding:

Dehydrating agent /n-BGE (1:1)	30 min
n-BGE	30 min
n-BGE/QUETOL 651 mixture (1:1)	1-2 hr.
QUETOL 651 mixture	2-3 hr.

Embed in gelatin (or polyethylene) capsules and cure in an oven at 60 degrees C for about 24 hours.

Reference:

Kushida, H. and Kushida, T. Journal of Electron Microscopy, Vol 31, No. 2, 206-209, 1982.