

Dimethyl Hydantoin Formaldehyde: A new Water-soluble Resin for Use as a Mounting Medium

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SUMMARY

Dimethyl hydantoin formaldehyde resin dissolved in water or in 70 ml ethyl alcohol + 30 ml water is put forward as a solution suitable for the mounting of insects, small crustacea, &c. Its chief advantage over other water-soluble resins is its high solubility in water, its excellent adhesion to glass, its low viscosity even in high percentage solutions, and its hardness on drying.

PHYSICAL AND CHEMICAL DATA

Colour: water-white to pale amber.

Odour: faint.

Form: brittle lumps.

Molecular weight: 240-300.

Initial softening point: 59° C-80° C.

Free formaldehyde: approximately 0.3% in aqueous solution.

Solubility in water: solutions up to 80% may be prepared with ease and filtered.

pH of solution: 6.5-7.5.

Soluble in methanol, ethyl acetate, methyl ethyl ketone, methylene chloride. Insoluble in xylene, benzene, diethyl ether, carbon tetrachloride, trichloroethylene.

Supplied by Rex Campbell, 7 Idol Lane, London, E.C.3.

HISTOLOGICAL DATA

Stained sections: unsuitable because the resin will ultimately wash out the stain.

Whole mounts: excellent for all arthropods, turbellaria, teased materials such as muscle fibres stained with gold chloride, &c. Such specimens may be mounted directly from water or from alcohol solutions, or from formaldehyde solutions.

Strength of solution: the resin may be dissolved in either pure water or in water and alcohol solutions. The pure water solutions show a tendency to develop moulds and the solution recommended is therefore made up with 70 ml ethyl alcohol + 30 ml water, or in phenol solution (5% aqueous).

Refractive index: DMHF resin	70 g	} R.I. 1.457.
Distilled water	30 ml	
DMHF resin	70 g	} R.I. 1.466.
70% alcohol	30 ml	
Dry resin		R.I. 1.54.

Effect on tissues: solutions of dimethyl hydantoin formaldehyde keep tissues soft. The following solution may be used in tubes or bottles as a preserving fluid for insects, &c., until it is convenient to mount them on slides:

dimethyl hydantoin formaldehyde	50 g
ethyl alcohol, 70%	50 ml

Penetration of tissues: a whole *Daphnia* mounted from water is translucent within 10 h.

Drying of mounted preparations: this may be done by leaving the slides on the bench at room temperature, or by drying in an oven at about 40° C for 3 or 4 days. Heating above 40° C produces bubbles in the resin. With large whole mounts the resin remains soft for some time.

Tendency to retain water: the solutions dry to a hard mass which retains about 3–4% water. This prevents the resin becoming brittle and flaking away from the microscope slide.

PREPARATION OF SOLUTIONS

1. Grind the resin to a powder. A mincing machine such as is used for household purposes is most suitable for bulk work.

2. Take 70 or 80 g of the ground resin as required and add 30 ml or 20 ml of distilled water, or of 70% alcohol. Shake at times for 3–5 days until the resin is dissolved.

3. Filter through a Barcham Green 904 filter paper. The 70% resin solution will go through the paper quite readily.

4. Refilter. The total resin loss as a result of filtering is 6%.

5. If the solution is purely aqueous, add sufficient phenol to make a 5% solution. This is not necessary when the resin is dissolved in 70% alcohol.

For small thin mounts the 70% resin solution is recommended: for large thick specimens the 80% solution.

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