67240       MS2A - RESIN

Ketone resins were first patented in the 1930’s. MS2 was produced in England in the early 1950’s by condensation reactions of cyclohexanone and methyl cyclohexanone in alkaline methanol.

The intended use for MS2 was for improving the gloss, adhesion, hardness and stability of lacquers, enamels, varnishes and various speciality paints. Its low molecular weight provided excellent solubility in a range of solvents, including aromatic and higher aliphatic hydrocarbons such as mineral spirits. Its high refractive index provided excellent optical properties. This led to its development as an alternative to natural resins as a varnish / varnish component for works of art. However, appearance and handling characteristics were not ideal and a slight discoloration tended to appear by the action of UV visible light over a period of time.

A reduced form (the ketone groups were converted to OH groups) of MS2 was developed for the conservation of works of art. This product, designated MS2A, gave superior handling characteristics and appearance of MS2 and negligible tendency to discolor in UV visible light. MS2A was produced and marketed exclusively for this purpose form the late 1950’s.

**MS2A Technical Specification:**

MS2A is a pale yellow resin produced in small granule form.

- **Appearance:** Pale yellow solid with mild camphor odor
- **Softening point:** > 85°C (Ring & Ball)
- **OH value:** > 190 mg KOH/g (acetic anhydride determination)
- **Ketone content:** < 0.4 groups/1000 g (hydroxylamine hydrochloride)
- **Acid value:** Practically zero
- **Color:** < 1.2 yellow < 0.2 red for 50% solution in white spirit. (on a standard 4 cm Lovibond cell)
- **Density:** 1.08
- **Refraction index:** 1.505
- **Molecular weight range:** 400-1000 typical
MS2A can be applied at levels up to 50% w/w in white (mineral) spirit by spray or brush. The low molecular weight of MS2A provides a high solids, low viscosity solution. Fast surface drying is achieved so that no flow (gelation) point can be reached rapidly. Because of its excellent stability and optical properties MS2A is most often used as one or more of the inner layers and always as the outer component of a multi layer conservation treatment. MS2A is compatible with virtually all natural resins and plasticisers. A low level of microcrystalline wax (e.g. Cosmoloid 80H) may be added to improve plasticity and modify gloss.

Where particularly harsh UV conditions are to be encountered, incorporation of an UV-absorber (e.g. 2% Tinuvin 900) should be applied. Whilst MS2A is effectively non-yellowing, UV catalysed degradation may occur over a number of years outside the visible region.

Where harsh conditions have promoted a degree of degradation, a proportion of aromatic (toluene) may be combined with white spirit to assist varnish removal.

MS2A is not considered to be a hazardous product under National and International regulations and codes. MS2A should be regarded as harmful by ingestion and irritating to eyes. MS2A dust should be regarded as harmful by inhalation. Containers should be stored closed under cool, dry conditions. MS2A should be used with good natural or mechanical ventilation. Rubber or PVC gloves and goggles should be worn to help prevent irritation. MS2A is stable under normal conditions. MS2A should not be used in confined spaces with poor ventilation. Where decomposition occurs, e.g. in a fire, hazardous fumes, including carbon monoxide, may be evolved. Occupational Exposure Limits for dust apply. (5 mg/m$^3$ for respirable dusts, 10 mg/m$^3$ total dust [8 hr TWA]). Mechanical extraction should be used for solvent based formulations where natural ventilation is poor.