

CYMEL[®] U-80 resin

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PRODUCT DESCRIPTION

CYMEL U-80 resin is a highly n-butylated urea resin supplied at >96% solids content. Its high extent of alkylation and hydrophobic nature make the CYMEL U-80 resin suitable for a wide range of coating applications including high solids primers for automotive, general industrial, and container coatings providing improved film flexibility and adhesion and to various substrates. CYMEL U-80 resin is insoluble in water but can be used in emulsified form as a crosslinking agent in water-dispersible alkyds, acrylic resins and in emulsion systems.

BENEFITS

- Low temperature cure
- Broad compatibility
- Water resistance
- Excellent film flexibility
- Excellent adhesion to metal substrates

APPLICATION AREAS

- High solids primer formulations
- Interior can coating formulations
- Low bake conversion varnishes and enamels

PHYSICAL PROPERTIES

Property	Range	Method
Appearance	Clear Liquid	ASTM E284
Non-volatile by wt.	≥ 96%	DIN 55671 (Foil, 45 min/45°C)
Viscosity, 25°C	2000-3400 mPa·s	DIN EN ISO 3219
Free formaldehyde	≤ 0.3%	Sulfite Titration
Color, Gardner	< 1	DIN EN ISO 4630-1

SOLUBILITY

Alcohols	Complete
Esters	Complete
Ketones	Complete
Aromatic hydrocarbons	Complete
Aliphatic hydrocarbons	Complete
Water	Insoluble

COMPATIBILITY

Acrylic resins	Very good
Alkyd resins	Very good
Polyester resins	Good
Epoxy resins	Very good

BACKBONE POLYMER SELECTION

CYMEL U-80 resin contains mainly butoxymethyl functional sites making it a very effective crosslinker for backbone polymer resins containing hydroxyl, carboxyl, and amide functional groups, such as those found on alkyd, polyester and acrylic based resins. CYMEL U-80 resin is hydrophobic in nature and compatible with a wide range of backbone polymers providing films with very good appearance, adhesion and film flexibility properties. The optimum level of CYMEL U-80 resin in a given formulation should be determined experimentally. Depending on the application, 20 to 40%, based on resin solids can be taken as a starting point.

CATALYSIS

CYMEL U-80 resin will respond best to sulfonic acid catalysts, like CYCAT[®] 4040 or the blocked version, CYCAT 4045 catalyst. Generally, 0.5 - 1.0% catalyst solution on total binder solids of the formulation is sufficient to provide good cure for industrial formulations at baking schedules of 20 minutes at 120°C to 160°C. For low temperature cure systems, 20 minutes at 100 to 120°C, 2-3% of CYCAT 4040 catalyst is advised to be used.

FORMULATION STABILITY

The stability of formulated systems containing CYMEL U-80 resin can be enhanced by the addition of alcohols, amines or a combination of these. Low molecular weight primary alcohols such as methanol, ethanol, or n-butanol are most effective. Recommended amines are TEA, DMEA or 2-AMP at a concentration of 0.5-1.0% on total binder solids. Package stability can also be enhanced by the use of a blocked acid catalyst such as CYCAT 4045 catalyst. For waterborne systems, a pH of 7.5-8.5 should be maintained to achieve stability.

STORAGE STABILITY

CYMEL U-80 resin has a shelf life of 1440 days from date of manufacture when stored at temperatures below 32°C. Although low temperatures are not detrimental to stability, the viscosity of the product will increase making the resin more difficult to pump or pour. Product viscosity can be returned to normal by gentle warming, however, care should be taken to avoid excessive localized heating as this can cause an irreversible increase in viscosity.

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