CYMEL® U-227-8

Technical Datasheet

PRODUCT DESCRIPTION

CYMEL® U-227-8 resin is a general purpose n-butylated urea resin that combines fast curing speed with excellent enamel stability in pigmented systems. It is compatible with low and medium molecular weight epoxy resins and is recommended for use in epoxy/urea metal primers, metal decorating, and drum and dipping enamels. CYMEL® U-227-8 resin is also recommended as a pigment grinding vehicle. It is supplied in a mixture of n-butanol and xylene.

BENEFITS

- Very fast reaction speed
- Adhesion to metal substrates
- High flexibility

APPLICATION AREAS

- General industrial bake finishes
- Primer formulations
- Dipping enamels

PHYSICAL PROPERTIES

Property	Range	Method
Appearance	Clear Liquid	ASTM E284
Non-volatile by wt.	49 – 55%	DIN EN ISO 3251 (Pan, 2 hr/105°C)
Viscosity, 23°C	1700-4500 mPa·s	DIN EN ISO 3219
Viscosity, 25°C	X – Z1	ASTM D1545 (Gardner-Holdt)
Free formaldehyde	< 1.0%	Sulfite Titration
Color, APHA	≤ 50	DIN EN ISO 6271

SOLUBILITY

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

COMPATIBILITY

Acrylic resins	Medium
Alkyd resins	Good
Epoxy resins	Good
Polyester resins	Good

BACKBONE POLYMER SELECTION

CYMEL® U-227-8 resin contains a combination of butoxymethyl and methylol functionalities, making it a very effective crosslinking agent for backbone polymers containing hydroxyl, carboxyl, and amide functionality. In addition to entering into crosslinking reactions, CYMEL® U-227-8 resin also has a tendency toward self-condensation. Therefore, its practical equivalent weight, on a solids basis, is in the range of 200 - 280. Increasing the level of CYMEL® U-227-8 resin in a coating formulation will generally increase the hardness and chemical resistance of the cured film, although higher levels may also increase brittleness. The optimum level in a particular formulation should always be determined experimentally.

CATALYSIS

As with other urea-formaldehyde resins, CYMEL® U-227-8 resin may not require the addition of an acid catalyst to the formulation in order to obtain effective cure. In many instances, the acidity of other formulation components is sufficient to catalyze reaction. If catalyst addition is required, then 0.5 - 1.0% of either CYCAT® 4040 catalyst or CYCAT® 296-6 catalyst, based on weight of total binder solids, is recommended for normal bake schedules (15 - 20 minutes at 120 - 150°C).

FORMULATION STABILITY

The stability of formulated systems containing CYMEL® U-227-8 resin can be enhanced by the addition of alcohols, tertiary amines or a combination of these. Low molecular weight primary alcohols such as ethanol and n-butanol are most effective. Recommended amines are TEA or DMEA at a concentration of 0.5 - 1.0% on total binder solids.

STORAGE STABILITY

CYMEL® U-227-8 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.