All About Resins

TECHNICAL DATA SHEET

Crosslinkers

CYMEL® U-216-10LF resin

PRODUCT DESCRIPTION

CYMEL U-216-10LF resin is an n-butylated urea resin which has excellent compatibility with.hydrophobic resins, including epoxies. It is the exempt solvent version of CYMEL® 216-8 resin with the additional benefit of lower free formaldehyde. It was designed for metal deco coatings, can coatings and coil coating primers. CYMEL U-216-10LF resin may also be added as a leveling agent in cold-cure amine catalyzed epoxy resin systems. Approximately 3% of CYMEL U-216-10LF on a solids basis imparts improved flow properties.

APPLICATION AREAS

- Metal Deco Coatings
- Can Coatings
- Coil Coating Primers

PHYSICAL PROPERTIES

Property	Range	Method
Appearance	Clear Liquid	Visual
Non-volatile by wt.	58 - 62%	Pan, 2 hrs/105°C
Viscosity	S - V	Gardner-Holdt
Free formaldehyde	≤ 0.65%	Sulfite Method
Color, APHA	< 70	ISO 6271

SOLUBILITY

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

BACKBONE POLYMER SELECTION

CYMEL U-216-10LF 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-216-10LF 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-216-10LF 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-216-10LF 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

TThe stability of formulated systems containing CYMEL U-216-10LF resin can be enhanced by the addition of alcohols, amines or a combination of these. Low molecular weight primary alcohols such as ethanol and 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.

STORAGE STABILITY

CYMEL U-216-10LF resin has a shelf life of 4 years from date of manufacture when stored at temperatures between 5°C and 30°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 re-warming, however, care should be taken to avoid excessive localized heating as this can cause an irreversible increase in viscosity.