

CYMEL[®] 380 resin

PRODUCT DESCRIPTION

CYMEL 380 resin is a partially methylated melamine crosslinker supplied in isobutanol and is a lower solids version of CYMEL 370 resin. Cymel 380 resin is fast reacting and has a high tendency to self-condense resulting in films with high film hardness, gloss, chemical resistance and exterior durability. The high reactivity, combined with high solids content makes CYMEL 380 resin suitable for a wide range of solventborne and waterborne industrial bake formulations.

BENEFITS

- Fast cure response
- Very high gloss
- Higher solids
- Chemical resistance

APPLICATION AREAS

- General purpose enamels
- Coil coating
- Exempt solvent coatings
- Wood conversion varnishes
- Water-based coatings

PHYSICAL PROPERTIES

Property	Range	Method
Appearance	Clear Liquid	Visual
Non-volatile by wt.	80 ± 2%	Foil, 45 min/45°C
Viscosity, 25°C	1000-2600 mPa-s	Dynamic Viscosity
Free formaldehyde	≤ 3.5%	Sulfite Method
Color, Gardner	< 1	

SOLUBILITY

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

COMPATIBILITY

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

BACKBONE POLYMER SELECTION

CYMEL 380 resin contains a combination of methoxymethyl and methylol functionalities, making it a very effective crosslinker for backbone polymer resins containing hydroxyl, carboxyl, and amide functional groups, such as those found on alkyd, polyester or acrylic resins. Although the optimum level of CYMEL 380 resin should be determined experimentally, ratios of 25 to 35% based on resin solids are typically most effective.

CATALYSIS

CYMEL 380 resin may not require the addition of an acid catalyst to the formulation to obtain effective cure. In many instances, the acidity of the backbone polymer in the formulation is sufficient to catalyze the reaction under normal baking conditions (15-20 minutes at 120-150°C). If catalyst addition is required, then 0.5-1.0% of CYCAT[®] 4040 catalyst or CYCAT 296-9 catalyst based on total resin solids is recommended.

FORMULATION STABILITY

The stability of solvent-borne systems containing CYMEL 380 resin can be enhanced by the addition of primary 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. For best stability in waterborne systems, a pH between 7.5-8.5 should be maintained using tertiary amines only.

STORAGE STABILITY

CYMEL 380 resin has a shelf life of 3 years from the date of manufacture when stored at temperatures between 5°C and 30°C. Although lower temperatures are not detrimental to stability, its viscosity will increase, possibly making the resin difficult to pump or pour. The viscosity will reduce again on warming, but care should be taken to avoid excessive local heat as this can cause an irreversible increase in viscosity.