

# CYMEL<sup>®</sup> U-1050-10 resin

## PRODUCT DESCRIPTION

CYMEL U-1050-10 resin is a partially n-butylated urea resin supplied in n-butanol and is the exempt solvent version of CYMEL U-1050 resin. CYMEL U-1050-10 resin has wide compatibility with other film formers and is useful in fast curing industrial baking finishes and low temperature curing conversion varnishes for wood.

## BENEFITS

- Fast curing
- Wide range of compatibility

## APPLICATION AREAS

- Exempt solvent systems
- Fast-curing baking enamels
- Low temperature curing conversion varnishes
- Epoxy ester primers
- Grinding vehicle

## PHYSICAL PROPERTIES

Property	Range	Method
Appearance	Clear Liquid	Visual
Non-volatile by wt.	60 ± 2%	Pan, 2 hrs/105°C
Viscosity, 25°C	Z-Z <sub>2</sub>	Gardner-Holdt
Free formaldehyde	<3.0%	Sulfite Method
Color, Gardner	< 1	

## SOLUBILITY

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

## COMPATIBILITY

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

## BACKBONE POLYMER SELECTION

CYMEL U-1050-10 resin is a very effective crosslinking agent for backbone polymer resins containing hydroxyl, carboxyl, and amide functional groups, such as those found on alkyd, polyester or acrylic resins. CYMEL U-1050-10 resin has a high reactivity and a high tendency for self-condensation providing fast drying films with very good gloss, hardness, stackability and adhesion properties. Although the optimum level of CYMEL U-1050-10 resin in a given formulation should be determined experimentally, ratios of 25-35%, based on resin solids, are typically most effective over a range of polymer backbone resins.

## CATALYSIS

In baking enamels, CYMEL U-1050-10 resin does not need 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. If catalyst addition is required, then 0.5 - 1.0% of CYCAT<sup>®</sup> 4040 catalyst based on total resin solids is recommended for baking schedules of ~125°C for 15 minutes. For wood coating formulations, 6 - 10% Cypat 4040 catalyst on total resin solids of the formulation is sufficient to obtain fast drying behavior at room temperature.

## FORMULATION STABILITY

The stability of baking enamels containing CYMEL U-1050-10 resin can be enhanced by the addition of alcohols, amines or combination of these. Low molecular weight primary alcohols, such as 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. Ambient cure systems are usually stabilized only by addition of adequate amounts of primary alcohol, such as ethanol or butanol.

## STORAGE STABILITY

CYMEL U-1050-10 resin has a shelf life of 48 months 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 polymerization.

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