

# CYMEL<sup>®</sup> U-65 resin

## PRODUCT DESCRIPTION

CYMEL U-65 resin is a high solids, methylated urea resin designed for use in both water and organo-soluble systems as a crosslinking agent for a variety of polymers that contain hydroxyl functionality.

## BENEFITS

- Solvent free
- Fast curing
- Low cost
- Stability

## APPLICATION AREAS

- Fast curing baking enamels
- Water reducible wood finishes
- Low temperature curing conversion varnishes
- Paper coatings

## PHYSICAL PROPERTIES

Property	Range	Method
Appearance	Clear Liquid	Visual
Non-volatile by wt.	98 ± 2%	Foil, 45 min/45°C
Viscosity, 25°C	Z <sub>3</sub> – Z <sub>6</sub>	Gardner-Holdt
Free formaldehyde	≤ 0.7%	Sulfite Method
Color, APHA	< 70	ISO 6271

## SOLUBILITY

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

## COMPATIBILITY

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

## BACKBONE POLYMER SELECTION

CYMEL U-65 resin is a very effective crosslinking agent for backbone polymer resins containing hydroxyl functional groups, such as alkyd, polyester or acrylic resins. The optimum level of CYMEL U-65 resin in an acid curing wood coating formulation should be in the range of 25-35% on total resin solids. To obtain coatings with optimum resistance properties, addition of a melamine resin, such as CYMEL MB-98, at levels of 5-10% on total resin solids is recommended.

## CATALYSIS

CYMEL U-65 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<sup>®</sup> 4040 catalyst based on total resin solids is recommended. For wood coating formulations cured under ambient conditions, 6-10% Cypat 4040 catalyst on total resin solids of the formulation is sufficient to obtain fast drying behavior.

## FORMULATION STABILITY

The stability of baking enamels containing CYMEL U-65 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. For best stability in waterborne systems, a pH between 7.5-8.5 should be maintained.

## STORAGE STABILITY

CYMEL U-65 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 an irreversible increase in viscosity.

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