

# CYMEL<sup>®</sup> U-1051 resin

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## PRODUCT DESCRIPTION

CYMEL U-1051 resin is a partially iso-butylated urea resin supplied in a mixture of iso-butanol and xylene. It has wide compatibility with other film formers and is useful in fast curing industrial baking finishes and low temperature curing conversion varnishes.

## BENEFITS

- Exceptional cure speed
- Good resin compatibility

## APPLICATION AREAS

- Industrial wood conversion varnishes
- Fast curing baking enamels for general use interior OEM applications

## PHYSICAL PROPERTIES

Property	Range	Method
Appearance	Clear Liquid	ASTM E284
Non-volatile by wt.	58-62%	DIN EN ISO 3251 (Pan, 2 hrs/105°C)
Viscosity, 25°C	X-Z <sub>1</sub>	ASTM D 1545
Free formaldehyde	≤ 0.7%	Sulfite Titration
Color, Gardner	≤ 1	DIN EN ISO 4630-1

## 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-1051 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-1051 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 resin or CYMEL 304 resin, at levels of 5-10% on total resin solids is recommended.

## CATALYSIS

CYMEL U-1051 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 or CYCAT 296-9 catalyst based on total resin solids is recommended. For wood coating formulations cured under ambient conditions, 6-10% CYCAT 4040 catalyst on total resin solids of the formulation is sufficient to obtain fast drying behavior. In one-pack acid curing finishes, weak inorganic acids, such as CYCAT 296-9 catalyst, are strongly recommended.

## FORMULATION STABILITY

The stability of baking enamels containing CYMEL U-1051 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 or DMEA 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 n-butanol.

## STORAGE STABILITY

CYMEL U-1051 resin has a shelf life of 365 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 polymerization.

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