

# CYMEL<sup>®</sup> 350 resin

## PRODUCT DESCRIPTION

CYMEL 350 resin is a highly methylated, monomeric melamine resin recommended for use in both waterborne and solvent-borne systems. It has very good water solubility properties which makes it easy to incorporate with excellent stability in emulsion systems, as it remains in the water phase and does not migrate to the polymer phase. Like CYMEL 303 LF resin, it is a very efficient crosslinking agent and is recommended for coil coatings and high solids systems. CYMEL 350 resin has a slightly slower cure response than other monomeric methylated melamine resins. This provides excellent flow and levelling characteristics and less solvent popping on cure.

## BENEFITS

- Water soluble
- Very high solids contents
- Excellent stability in waterborne formulations

## APPLICATION AREAS

- Emulsions
- High solids and waterborne coatings
- General industrial

## PHYSICAL PROPERTIES

Property	Range	Method
Appearance	Clear liquid	Visual
Non-volatile by wt.	> 97%	Foil, 45 min/45°C
Viscosity, 23°C	5100-16000	Dynamic Viscosity
Free formaldehyde	< 1.7%	Sulfite Method
Color, APHA	< 70	ISO 6271

## SOLUBILITY

Alcohols	Complete
Esters	Complete
Ketones	Complete
Aromatic hydrocarbons	Complete
Water	Complete

## COMPATIBILITY

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

## BACKBONE POLYMER SELECTION

CYMEL 350 resin contains mainly methoxymethyl functionality making it a very effective crosslinker for backbone polymer resins containing hydroxyl, amide or carboxyl functional groups, such as alkyd, polyester or acrylic resins. CYMEL 350 resin is highly compatible with a wide range of backbone polymers and provides films with very good hardness, flexibility, formability, adhesion and resistance properties. Although the optimum level of CYMEL 350 resin in a given formulation should be determined experimentally, its effective equivalent weight will be typically in the range of 130-190.

## CATALYSIS

Because of its high extent of alkylation, CYMEL 350 resin responds best to sulfonic acid catalysts, like CYCAT<sup>®</sup> 4040 catalyst or CYCAT 600 catalyst. Generally, 0.5 to 1.0% of CYCAT 4040 catalyst on total resin solids of the formulation is sufficient to provide good cure at normal baking schedules (15-20 minutes at 120-150°C) in solvent-borne systems. Water-borne systems generally require temperatures of 150°C or higher to effect cure. Higher concentrations of catalyst might be necessary if there are basic pigments or additives present in the formulation.

## FORMULATION STABILITY

The stability of formulated systems containing CYMEL 350 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 DMEA or 2-AMP at a concentration of 0.5-1.0% on total resin solids. Package stability can also be enhanced by the use of a blocked acid catalyst such as CYCAT 4045 catalyst. For waterborne systems, pH should be adjusted between 7.5-8.5 to achieve optimum stability.

## STORAGE STABILITY

CYMEL 350 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.

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