

## PRODUCT DESCRIPTION

CYMEL® 211 resin is a high imino, mix-alkylated melamine formaldehyde resin designed specifically for high solids system. Its most significant advantage over the other high imino melamine resins in our product line is its superior water and corrosion resistance properties. CYMEL® 211 has higher monomeric content than CYMEL® 254.

## BENEFITS

- Fast cure response
- Low formaldehyde release
- No strong acid catalyst requirement
- Superior humidity and water resistance
- Good flow, leveling and wetting

## APPLICATION AREAS

- High solids coatings
- Automotive enamels
- General purpose enamels
- Coil coatings
- Primers

## PHYSICAL PROPERTIES

Property	Range	Method
Appearance	Clear Liquid	Visual
Non-volatile by wt.	80 ± 2%	Pan, 180 min/105°C
Viscosity, 25°C	T – Z	Gardner Holdtz Method
Free formaldehyde	≤ 1.0%	Sulfite Method
Color, Gardner	≤ 1	ISO 4630-2
Solvent	n-butanol	

## SOLUBILITY

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

## COMPATIBILITY

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

## BACKBONE POLYMER SELECTION

CYMEL® 211 resin is an efficient cross-linking agent for hydroxy, amide, carboxyl, functional polymers or resins. CYMEL® 211 resin also has a high tendency toward self-condensation.

## CATALYSIS

CYMEL® 211 resin responds to catalysis by weak, low dissociation acids. For acceptable cure response at baking temperatures above 125°C, in most instances the carboxyl functionality of the other resins in a formulation would be an adequate catalyst.

If catalyst addition is found to be necessary, then virtually any soluble acid would be effective. Normally, phosphate esters, or sulfonic acids are recommended.

The acid concentration would have to be determined for each system. Cure response at lower baking temperatures is possible, but higher catalyst concentrations are necessary.

## FORMULATION STABILITY

Formulated systems containing CYMEL® 211 resin have to be stabilized with primary alcohols, amines or with 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. Acid curing systems are usually stabilized only by addition of adequate amounts of primary alcohols.

## STORAGE STABILITY

CYMEL® 211 resin has a shelf life of 540 days from the date of manufacture when stored at temperatures between 5°C and 25°C packed in unopened original container. CYMEL® 211 resin must be kept indoors and avoided the direct sunlight exposure.

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.