CYMEL® 251

Technical Datasheet

PRODUCT DESCRIPTION

CYMEL® 251 resin is a novel melamine-formaldehyde crosslinking agent of the mixed ether class. It possesses a lower level of alkylation then other mixed ethers, thus improving its adaptability to waterborne coating formulations.
Waterborne systems based on CYMEL® 251 resin exhibit rapid cure response with improved water resistance compared with coatings based on conventional methylated melamine resins. In addition, coatings containing CYMEL® 251 resin maintain the excellent appearance properties characteristic of mixed ether cross linkers.

BENEFITS

- Low viscosity / high solids
- Rapid cure response
- Does not require strong acid catalyst
- Excellent water resistance and appearance properties

APPLICATION AREAS

- Waterborne coatings
- Automotive basecoats
- General industrial high solids and water-reducible coatings

PHYSICAL PROPERTIES

Property	Range	Method
Appearance	Clear Liquid	Visual
Non-volatile by wt.	80 ± 2%	Pan, 180 min/105°C
Viscosity	V-Z3	Gardner Holdt, 25°C
Free formaldehyde	< 0.4%	BS-EN-1243-2011
Color, Gardner	≤ 1	ISO 4630-2
Solvent	n-butanol	

SOLUBILITY

Alcohols	Complete
Esters	Complete
Ketones	Complete
Glycols	Complete
Glycol ethers	Complete
Aromatic hydrocarbons	High
Water	Partial

COMPATIBILITY

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

BACKBONE POLYMER SELECTION

CYMEL® 251 resin constrains a combination of butoxymethyl and methoxymethyl functionalities, making it an effective crosslinking agent for backbone polyesters such as alkyds, polyesters and acrylics contains hydroxyl or amide functionality. In addition to entering into crosslinking reactions, CYMEL® 251 resin also has a high tendency toward self-condensation. Therefore, its practical equivalent weight, on a solids basis, is in the range of 200 - 280. Typical use levels of CYMEL® 251 resin are between 25% and 35% of total resin solids, however, the appropriate use level in a particular formulation should be determined experimentally.

CATALYSIS

CYMEL® 251 resin usually does not require the addition of a strong acid catalyst to the formulation in order to obtain effective cure at common baking temperatures. In many instances, the acidity of other formulation components is sufficient to catalyze reaction. If catalyst addition is required, use of a weak inorganic acid catalyst such as CYCAT® 296-6 catalyst at a level of 1.0 - 2.0 wt. % (as supplied) based on total binder solids is recommended for baking schedules of 100 - 150°C for 15 - 20 minutes.

FORMULATION STABILITY

The stability of formulated systems containing CYMEL® 251 rein can be enhanced by the addition of alcohols, amines or a combination of these. Low molecular weight primary alcohols such as methanol and n-butanol are most effective. Recommended amines are tertiary amines such as tri-ethylamine of dimethyl ethanolamine at a concentration of 0.5 - 1.0% on total binder solids.

STORAGE STABILITY

CYMEL® 251 resin has a shelf life of 18 months from the date of manufacture when stored at temperatures between 5°C and 30°C packed in unopened original containers. CYMEL® 251 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. The expiration date may be extended and COA updated after QC testing of retained samples, only for material in allnex possession

SAFETY AND HANDLING

Please consult the Safety Data Sheet (SDS) for safety, health, and environmental data available from allnex.