CYMEL® 254

Technical Datasheet

PRODUCT DESCRIPTION

CYMEL® 254 resin is a methylated/n-butylated high imino melamine crosslinker supplied in n-butanol. It has a slightly lower butoxymethyl content and higher molecular weight compared to CYMEL® 202, which provides for fast cure response while maintaining the hydrophobicity of the film. CYMEL® 254 resin is highly reactive and has a high tendency towards self-condensation reactions at rather low baking temperatures providing films with very good hardness, gloss, chemical resistance and outdoor durability.

BENEFITS

- Low formaldehyde release
- Medium to high solids
- Adhesion properties

APPLICATION AREAS

- Primer formulations
- General industrial coatings
- Automotive coatings

PHYSICAL PROPERTIES

Property	Range	Method
Appearance	Clear Liquid	ASTM E284
Non-volatile by wt.	83-87%	DIN 55671 (Foil, 45 min/45°C)
Non-volatile by wt.	78-82%	DIN EN ISO 3251 (Pan, 3 hrs/105°C)
Viscosity, 23°C	1400-3000 mPa·s	DIN EN ISO 3219
Viscosity, 25°C	W-Z1	ASTM D1545 (Gardner-Holdt)
Free formaldehyde	≤ 0.6%	Sulfite Titration
Color, APHA	≤ 70	DIN EN ISO 6271

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® 254 resin contains a combination of methoxymethyl, butoxymethyl, methylol and imino functionalities, making it a very effective crosslinker for backbone polymer resins containing hydroxyl, amide, and carboxyl functional groups, such as those found on alkyd, polyester or acrylic resins. Although the optimum level of CYMEL® 254 resin should be determined experimentally, ratios of 25 to 35% based on resin solids are typically most effective.

CATALYSIS

CYMEL® 254 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® 296-9 catalyst based on total resin solids is recommended.

FORMULATION STABILITY

The stability of solvent-borne systems containing CYMEL® 254 resin can be enhanced by the addition of primary alcohols, amines, or a combination of these. Low molecular weight primary alcohols such as ethanol or n-butanol are most effective. Recommended amines are TEA or DMEA at a concentration of 0.5 - 1.0% on total binder solids. For best stability in waterborne systems, a pH of 7.5 - 8.5 should be maintained using tertiary amines only.

STORAGE STABILITY

CYMEL® 254 resin has a shelf life of 720 days from the date of manufacture when stored at temperatures below 32°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.