

CYMEL® UI-27-EI resin

PRODUCT DESCRIPTION

CYMEL UI-27-EI resin is a partially iso-butylated urea resin supplied in a mixture of ethanol and iso-butanol. CYMEL UI-27-EI resin is suitable for use in both acid curing wood coating applications and general industrial primer and topcoat formulations. CYMEL UI-27-EI resin is not suitable for exterior applications.

BENEFITS

- Fast cure speed
- Good adhesion properties

APPLICATION AREAS

- Acid curing wood coating applications
- General industrial baking applications

PHYSICAL PROPERTIES

| Property | Range | Method |
|---------------------|-----------------|-------------------|
| Appearance | Clear Liquid | Visual |
| Non-volatile by wt. | 60 ± 2% | Pan, 1 hr/100°C |
| Viscosity, 23°C | 350 – 600 mPa-s | Dynamic Viscosity |
| Free formaldehyde | < 1.2 % | Sulfite Method |
| Color, APHA | < 50 | ISO 6271 |

SOLUBILITY

| | |
|------------------------|-----------|
| Alcohols | Complete |
| Esters | Complete |
| Ketones | Complete |
| Aromatic hydrocarbons | Partial |
| Aliphatic hydrocarbons | Partial |
| Water | Insoluble |

COMPATIBILITY

| | |
|----------------|--------|
| Acrylic resins | Medium |
|----------------|--------|

| | |
|----------------------------|------|
| Alkyd resins | Good |
| Polyester resins | Good |
| Nitrocellulose | Good |
| Cellulose acetate butyrate | Good |
| Polyvinyl butyrate | Good |

BACKBONE POLYMER SELECTION

CYMEL UI-27-EI resin is a very effective crosslinking agent for backbone polymer resins containing hydroxyl and carboxyl functional groups, such as alkyd, polyester or acrylic resins. CYMEL UI-27-EI resin has a high reactivity and a high tendency for self-condensation. Although the optimum level of CYMEL UI-27-EI resin in a given formulation should be determined experimentally, ratios between 25% and 35%, based on resin solids, are typically most effective in a range of polymer backbone resins.

CATALYSIS

CYMEL UI-27-EI 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® 4040 catalyst or CYCAT 296-9 catalyst based on total resin solids is recommended. For wood coating formulations cured under ambient conditions, 6-10% Cypat 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 UI-27-EI 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, DMEA or 2-AMP 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 butanol.

STORAGE STABILITY

CYMEL UI-27-EI resin has a shelf life of 12 months from date of manufacture when stored at temperatures between 5°C and 30°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 re-warming, however, care should be taken to avoid excessive localized heating as this can cause polymerization.