

PRODUCT DESCRIPTION

CYMEL 27-804 resin is a partially n-butylated melamine crosslinking agent supplied in n-butanol. CYMEL 27-804 resin has been designed for a wide range of industrial bake applications, like automotive finishes, metal decorating, and drum coating formulations, providing films with very good flow, gloss, hardness adhesion, exterior durability and chemical resistance.

BENEFITS

- Fast curing speed
- Provides films with good resistance properties
- Provides films with high gloss and film hardness

APPLICATION AREAS

- General industrial bake finishes
- Metal decorating formulations

PHYSICAL PROPERTIES

| Property | Range | Method |
|---------------------|----------------|----------------------------------|
| Appearance | Clear Liquid | ASTM E284 |
| Non-volatile by wt. | 48 - 52% | DIN EN ISO 3251 (Pan, 90'/105°C) |
| Viscosity, 25°C | H - L | ASTM D1545 (Gardner-Holdt) |
| Free formaldehyde | ≤ 1.0% | Sulfite Titration |
| Color, Gardner | ≤ 1 | ASTM D1544-04 |
| Acid Number | 4 - 6 mg KOH/g | DIN EN ISO 2114 |

TYPICAL PROPERTIES

(NOT CONTINUALLY DETERMINED)

| Property | Range | Method |
|---------------|---------------------|---------------|
| Density, 25°C | 0.9800 – 1.004 g/ml | ASTM D1475-13 |

SOLUBILITY

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

COMPATIBILITY

| | |
|------------------|--------|
| Acrylic resins | Medium |
| Alkyd resins | Good |
| Polyester resins | Good |
| Epoxy resins | Good |

BACKBONE POLYMER SELECTION

CYMEL 27-804 resin is a very effective crosslinking agent for backbone polymer resins containing hydroxyl, amide, and carboxyl functional groups, such as found on alkyd, polyester or acrylic resins. In addition to crosslinking, CYMEL 27-804 resin has a high tendency for self-condensation. Although the optimum level of CYMEL 27-804 resin in a given formulation should be determined experimentally, ratios between 25% and 35% based on resin solids are typically most effective.

CATALYSIS

CYMEL 27-804 resin does not require the addition of an acid catalyst to the formulation to obtain effective cure at normal baking conditions. The acidity of the primary film former is usually sufficient to initiate the curing process. The cure can be additionally catalyzed by weak organic or inorganic acids, such as CYCAT® 296-9 catalyst, which has proved to be very effective for these systems. Recommended levels are 1.0 - 2.0% on total resin solids for baking schedules of 110°C - 150°C for 15 to 20 minutes.

FORMULATION STABILITY

The stability of formulations containing CYMEL 27-804 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 triethylamine or dimethylethanolamine at a concentration of 0.5 - 1.0% on total binder solids.

STORAGE STABILITY

CYMEL 27-804 resin has a shelf life of 180 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.