

CYMEL[®] 1170 resin

PRODUCT DESCRIPTION

CYMEL 1170 resin is a highly butylated glycoluril crosslinker designed for use in both water and organo-soluble coating systems. Its superior adhesion relative to existing melamine and benzoguanamine crosslinkers provides increased corrosion resistance and flexibility. The better adhesion is not lost after post-forming of parts and exposure of the stressed coating to humidity, steam, dry heat, or weather. This feature makes CYMEL 1170 resin a good candidate for coil of metal decoration enamels and primers. In addition, CYMEL 1170 resin releases significantly lower amounts of formaldehyde during the baking process compared to other amino resins.

BENEFITS

- High solids content
- Excellent adhesion and intercoat adhesion
- Excellent corrosion and overbake resistance

APPLICATION AREAS

- High solids coatings
- Coil coating enamels
- Automotive primers
- Appliance primers

PHYSICAL PROPERTIES

| Property | Range | Method |
|---------------------|--------------------|-------------------|
| Appearance | Clear Liquid | Visual |
| Non-volatile by wt. | 98 ± 2% | Foil, 45 min/45°C |
| Viscosity, 25°C | Z – Z ₂ | Gardner-Holdt |
| Free formaldehyde | < 0.5% | Sulfite Method |
| Color, Gardner | < 3 | Gardner |

SOLUBILITY

| | |
|------------------------|----------|
| Alcohols | Complete |
| Esters | Complete |
| Ketones | Complete |
| Aromatic hydrocarbons | Complete |
| Aliphatic hydrocarbons | Complete |
| Water | Limited |

COMPATIBILITY

| | |
|------------------|-----------|
| Acrylic resins | Very good |
| Alkyd resins | Very good |
| Polyester resins | Very good |
| Epoxy resins | Very good |

BACKBONE POLYMER SELECTION

CYMEL 1170 resin contains mainly butoxymethyl functional sites making it a very effective crosslinker for backbone polymer resins containing hydroxyl, amide or carboxyl functional groups, such as those found on alkyd, polyester and acrylic resins. CYMEL 1170 resin is very good compatible with a wide range of backbone polymers and provide films with excellent flexibility, adhesion and humidity resistance properties. The effective equivalent weight of CYMEL 1170 resin typically ranges from 150-230, however, its optimum loading should be determined experimentally for each formulation with consideration of the performance properties to be optimized.

CATALYSIS

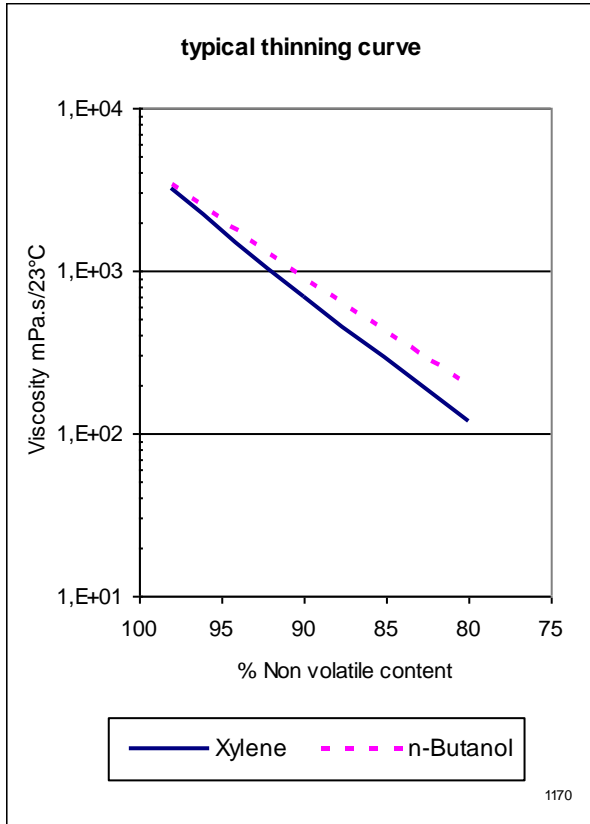
CYMEL 1170 resin reacts according to the specific acid catalysis mechanism, consequently will respond best to strong acid catalysts (pka value of <1) like CYCAT[®] 4040 catalyst. Generally 0.5 to 1.0% catalyst solution on total binder solids of the formulation is sufficient to provide good cure at baking schedules of 20 minutes at 125°C to 180°C. The presence of weakly basic reacting compounds, such as melamine or urea resins or basic pigments can reduce the cure response of this glycoluril resin and higher concentrations of catalyst might be necessary to maintain good reactivity.

FORMULATION STABILITY

The stability of formulated systems containing CYMEL 1170 resin 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 TEA, DMEA or 2-AMP at a concentration of 0.5-1.0% on total binder solids. Package stability can also be enhanced by the use of a blocked acid catalyst such as CYCAT 4045 catalyst.

STORAGE STABILITY

CYMEL 1170 resin has a shelf life of 4 years from the date of manufacture when stored at temperatures between 5°C and 30°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.



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