

# CYMEL<sup>®</sup> MI-12-I resin

## PRODUCT DESCRIPTION

CYMEL MI-12-I resin is a partially iso-butylated melamine supplied in iso-butanol. Its high reactivity, combined with very good leveling properties, makes CYMEL MI-12-I resin suitable for fast drying industrial applications like mirror backing, primers, and dipping enamels.

## BENEFITS

- Fast reaction speed
- Good wetting of metal substrates
- Good adhesion properties

## APPLICATION AREAS

- Metal decorating coatings
- General industrial coatings
- Primer formulations

## PHYSICAL PROPERTIES

Property	Range	Method
Appearance	Clear Liquid	Visual
Non-volatile by wt.	60 ± 2%	Pan, 1 hr/100°C
Viscosity, 23°C	1050-1950 mPa-s	Dynamic Viscosity
Free formaldehyde	~ 0.4%	Sulfite Method
Color, APHA	< 50	ISO 6271

## SOLUBILITY

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

## COMPATIBILITY

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

## BACKBONE POLYMER SELECTION

CYMEL MI-12-I resin contains a combination of butoxymethyl, methylol and imino functionalities, making it a very effective crosslinker for backbone polymer resins containing hydroxyl, amide and to some extent carboxyl functional groups, such as alkyd, polyester or acrylic resins. CYMEL MI-12-I resin is very reactive and has a high tendency to self-condense at rather low baking temperatures with a wide range of backbone polymers, providing films with very good hardness, gloss, and outdoor durability. Although the optimum level of CYMEL MI-12-I resin should be determined experimentally, ratios of 25 to 35% based on resin solids are typically most effective.

## CATALYSIS

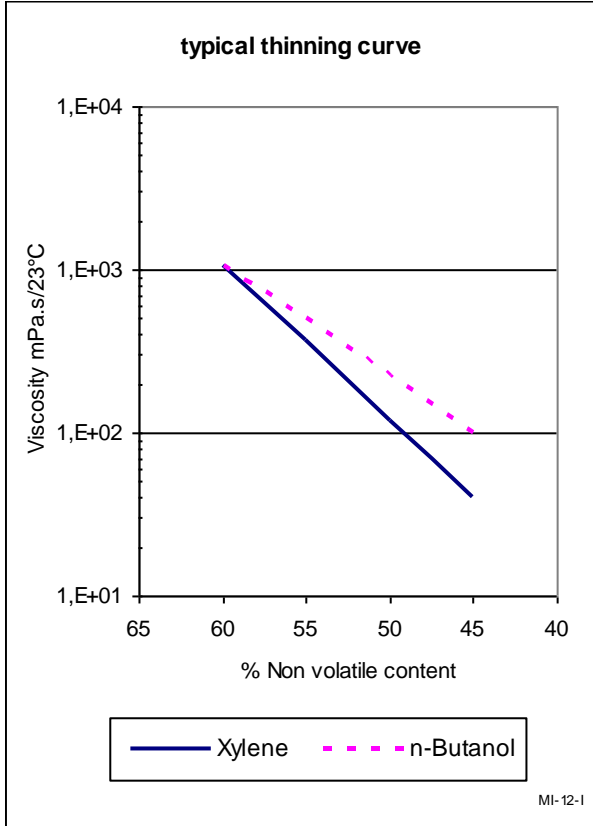
CYMEL MI-12-I resin may not require the addition of an acid catalyst to the formulation to obtain effective cure. In many instances, the acidity of the backbone polymer in the formulation is sufficient to catalyze the reaction under normal baking conditions (15-20 minutes at 120-150°C). If catalyst addition is required, then 0.5-1.0% of CYCAT<sup>®</sup> 296-9 catalyst based on total resin solids is recommended.

## FORMULATION STABILITY

The stability of solvent-borne systems containing CYMEL MI-12-I 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 TEA, DMEA or 2-AMP at a concentration of 0.5-1.0% on total binder solids.

## STORAGE STABILITY

CYMEL MI-12-I resin has a shelf life of 3 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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