CYMEL® 303 crosslinking agents

CYMEL 303 crosslinking agent is a commercial grade of hexamethoxymethylmelamine supplied in liquid form at >98% non-volatile. It is a versatile crosslinking agent for a wide range of polymeric materials, both organo-soluble and water borne. The polymeric materials should contain either hydroxyl, carboxyl or amide groups and would include alkyds, polyesters, acrylic, epoxy, urethane, and cellulosics.

ADVANTAGES

Solvent-free
Wide compatibility and solubility
Excellent stability
Excellent hardness-film flexibility
Fast catalyzed cure response
Economical

APPLICATION AREAS

High solids finishes
Water borne finishes
Coil coatings
Automotive finishes
Container coatings
General metals finishes
Inks

TYPICAL PROPERTIES

Appearance	Clear, viscous liquid
Non-volatile, % by weight*	98.0 minimum
Color, Gardner 1963	1 maximum
Viscosity, Gardner-Holdt, 25°C	Y-Z2
Viscosity, Cone/Plate, cps	2600-5000
Weight/gallon, pounds, approximate	10.0
Specific gravity, 25°C, approximate	1.20
Refractive index	1.515-1.520
Flash point, Setaflash, °F	>200
Flash point, Tag open cup, °F	>200
Free formaldehyde, weight %	0.5 maximum

* as determined by Foil Method, 45 minutes at 45°C

SOLUBILITY CHARACTERISTICS

CYMEL 303 resin is soluble in most commonly used organic solvents, e.g., aromatic hydrocarbons, alcohols, esters, and ketone solvents. Solubility in water is limited; however, CYMEL 303 resin, when blended with most other water-reducible resins, tolerates dilution in water.

REACTIVITY AND CATALYSIS

Because of its high extent of alkylation, the reaction of CYMEL 303 resin with hydroxyl, carboxyl and amide funtionalities on other polymers is typically catalyzed by the presence of a strong acid catalyst (pKa value of <1). Usually, 0.5-1.0% (based on binder solids) of CYCAT® 4040 catalyst or CYCAT® 600 catalyst is recommended for a 15-20 minute bake schedule at 120-150°C. Higher concentrations might be necessary if there are basic pigments or additives in the formulation. Because of its high functionality and low tendency to self-condense, CYMEL 303 resin is a very effective crosslinking agent. When used with polyester resins, in particular, it can provide films with high flexibility and formability. Its effective equivalent weight will typically range from 130-190, but the CYMEL 303 resin loading should be determined experimentally for each formulation and with consideration of the performance properties to be optimized.

STABILIZATION

Solvent based coating formulations containing CYMEL 303 resin can be stabilized by adding either alcohol solvents or amines. For many high solids formulations, a combination of both is desired. Typically, for optimum pot life or storage stability, a formulation to be cured at 125°C could be catalyzed with 1% CYCAT® 4045 catalyst (an amine salt of p-toluene sulfonic acid) and 20-30% butanol solvent, both based on total resin solids. For a water borne system, the pH should be kept at >8 for optimum stability.

CYTEC

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FDA STATUS

CYMEL 303 resin has FDA acceptance for food contact use as directed in the following sections of the Code of Federal Regulations:

21 CFR 175.300 Resinous and polymeric coatings

21 CFR 176.170 Components of paper and paperboard in contact with aqueous and fatty foods.

21 CFR 176.180 Components of paper and paperboard in contact with dry food.

21 CFR 175.320 Resinous and polymeric coatings for polyolefin films.

21 CFR 175.105 Adhesives.

21 CFR 177.2260 Filters, resin-based.

It should be noted that some applications covered are subject to extractive limitations. We suggest that you consult the Code of Federal Regulations for specific details.

HEALTH AND SAFETY INFORMATION

CYMEL 303 resin has estimated acute oral (rat) and acute dermal (rabbit) LD50 values of >5000 mg/kg and >2000 mg/kg, respectively; and an estimated 4-hour inhalation (rat) LC50 value of >20 mg/L. Direct contact with this material may cause mild eye and minimal skin irritation. CYMEL 303 resin contains formaldehyde. Overexposure to formaldehyde vapors may cause irritation of the respiratory tract and eyes.

Before handling this material, read the Cytec Industries Inc. Material Safety Data Sheet (MSDS) for safety and health data.

IMPORTANT NOTICE

The information and statements herein are believed to be reliable but are not to be construed as a warranty or representation for which we assume legal responsibility or as an assumption of a duty on our part. Users should undertake sufficient verification and testing to determine the suitability for their own particular purpose of any information, products or vendors referred to herein. NO WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE IS MADE. Nothing herein is to be taken as permission, inducement or recommendation to practice any patented invention without a license.

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CYTEC

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