CRAYAMID®

TECHNICAL DATA SHEET

CRAYAMID® 140

Reactive polyamide

PRODUCT APPLICATION DETAILS

CRAYAMID® 140 is a low viscosity liquid amino polyamide resin that can be used in the manufacture of solventless epoxy coatings and adhesives. It is also used to cure epoxy resins in casting and laminating applications where excellent mechanical properties and chemical resistance are essential.

SALES SPECIFICATIONS

	CHARACTERISTICS	METHODS
Viscosity (Brookfield SC4-21/13R, 9 s-1) (@ 40°C)	3500 - 5500 mPa.s	ISO 3219
Color	11 max Gardner	ISO 4630
Amine value (Perchloric Method)	370 - 410 mg KOH/g	CVI 069

OTHER CHARACTERISTICS[1]

	CHARACTERISTICS	METHODS
Density (@ 20°C)	0.97 g/ml	ISO 2811
Active Hydrogen Equivalent Weight	95	

[1] The data provided for these properties are typical values, intended only as guides, and should not be construed as sales specifications

MARKETS & APPLICATIONS

COATINGS & INKS

- INDUSTRIAL COATING
  - GENERAL INDUSTRY
  - PROTECTIVE COATING
  - PROTECTIVE AND MARINE COATING

PERFORMANCE BENEFITS

- Excellent Mechanical Proprties
- Excellent Chemical Resistance

CRAYAMID® 140

FORMULATION GUIDELINES

RECOMMENDATIONS FOR USE

The principal use of CRAYAMID® 140 is as a hardener for epoxy resins. The selection of a particular grade of epoxy resin will depend on the end use, but generally speaking, epoxy resins having an epoxide equivalent of approximately 200 [1] are recommended for adhesives and high build solventless coatings. For solvent-based coatings the medium epoxy resins [2] may be used as co-reactants.
Whilst the mix ratio when using CRAYAMID® polyamides is not critical, optimum performance of a coating is achieved by stoichiometric mixing of the epoxy and CRAYAMID® 140. The mix ratio is calculated from the active hydrogen equivalent weight (AHEW) since each epoxy group in the base resin will react with one active hydrogen present in the polyamide. The AHEW of CRAYAMID® 140 is typically 95. Considering that each epoxy reacts with one reactive hydrogen, the mix ratio of CRAYAMID® 140 and an epoxy resin with epoxide equivalent approx. 200 [1] is calculated as follows:
-Mass of solid resin (g): CRAYAMID® 140/75% epoxy resin = 95/200
-Mass of resin solution (g): CRAYAMID® 140/75% epoxy resin = 95/267
The resulting epoxy:polyamide mix ratio in this case is approx. 65:35 on solid resin. Excess polyamide in a coating will impart flexibility and adhesion at the expense of solvent resistance.

CURE RATE

A 70:30 epoxy resin [2]:CRAYAMID® 140 blend (on solid resin) will reach a tack-free time in 210 minutes at 25°C. Films will obviously dry to the touch more rapidly if higher molecular weight epoxy resins are used. An induction period is recommended to ensure complete compatibility. Cure of epoxy:polyamide systems can be accelerated by a range of catalysts, and in particular Tris(dimethylaminomethyl) phenol types [3] which are recommended for use at a level of 1 - 5% (calculated by weight on total resin). It should be noted, that when catalysts are employed, pot life will be reduced and there may be an adverse effect on flexibility and colour. More rapid cure may also be obtained by heating at elevated temperatures.

POT LIFE

Since reaction between the epoxy resin and CRAYAMID® 140 commences as soon as they are mixed, the system has a limited pot life. This is affected by a number of factors, such as temperature, mass of material and solids content, increases of which will reduce pot life. Solvent balance and use of accelerators will also influence the period for which a mix is usable. Solvents have a considerable effect on pot life, with alcohols tending to reduce pot life and esters and ketones tending to extend it. Since the ketones and esters form complexes with amino polyamides on storage, these solvents should only be incorporated into the epoxy resin component.
The pot-life of a CRAYAMID® 140:epoxy resin system is dependent upon various factors including cure temperature, reactant ratio, accelerators, and fillers.
CRAYAMID® 140:epoxy resin adhesives will cure at ambient temperature but cure time can be reduced by heating to elevated temperature.

ADHESION

CRAYAMID® 140:epoxy resin systems demonstrate excellent adhesion to a wide variety of surfaces, such as glass, wood, ceramics, masonry, leather and various plastics.

Notes: [1] Araldite® GY260 (Hunstman) or Epikote 828™ (Momentive), [2] Epikote™ 1001 (Momentive) or Araldite® 6100 (Hunstman), [3] Ancamine® K54 (Air Products)

PRODUCT SAFETY

Please refer to the corresponding Safety Data Sheet.

STORAGE AND HANDLING

CRAYAMID® 140 should be stored indoors in the original, unopened and undamaged container, in a dry place at a temperature not exceeding 30°C. Exposure to direct sunlight should be avoided. In the above mentioned storage conditions the shelf life of the resin will be from the date of manufacturing.
Shelf Life (Months): 12

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