Product Information

Composites

Hardener H3

FEATURES

- High temperature resistance
- Mechanical properties and chemical resistance
- Extended pot life

COMPOSITION

- Cycloaliphatic amine

Hardener for epoxy resins free from solvents and alcohols, characterized by a long usable time, excellent mechanical properties, high thermal and chemical resistance to acids, alkalis, water, hydrocarbons. Excellent alternative to aromatic amines in high temperature curing of liquid epoxies.

APPLICATIONS

- Designed for filament winding, laminating, casting, tooling.

TYPICAL PROPERTIES

Specifications writers: These values are not intended for use in preparing specifications. Please contact your local sales representative prior to writing specifications on this product.

Properties	Unit	Value
Aspect	Visual	Liquid
Color	Visual	Colorless
Density at 23°C	g/cm^3	0.96
Viscosity at 23°C	mPa.s	80
Molecolar weight		210
Equivalent weight {H}		52.5
Curing with standard Bisfenolo-A epoxy resin (DGEBA, EEW=190)		
Mix ratio (resin : hardener)	pbw	100 : 28
Viscosity of the mixture	mPa.s	2340
Pot life at 23°C (150g)	Minutes	160
Gel time at 23°C (150g)	Minutes	200
Hardness	Shore D	87
Flexural modulus	MPa	2310
Flexural strength	MPa	75.9
Tensile strength	MPa	41.8
Elongation at break	%	7.2
Compressive modulus	MPa	1000
Compressive strength	MPa	33.6
Linear shrinkage [500x50x10mm]	%	0.48
Glass transition (DSC)	°C	160
Chemical resistance (120 days in immersion) – weight change		
Acetone	%	6.35
Deionized water	%	1.21
Acetic acid 10%	%	14.92
Nitric acid 10%	%	3.81
Sulfuric acid 30%	%	1.86
Ammonium hydroxide 10%	%	1.76
Sodium hydroxide 10%	%	1.49
Ethanol	%	1.20
Methanol	%	8.00
Toluene	%	0.66

SETTINGS

H3 hardener has a strong tendency to crystallize at temperatures below 25°C. In the presence of solidification or crystals, heat in the oven at 50°C until complete melting. Avoid local overheating.

STOICHIOMETRY

Calculation of the grams of hardener required for 100g of resin:

$$\text{g of hardener} = \frac{\text{AHEW}}{\text{EEW}} \times 100$$

AHEW= amino equivalent
EEW= epoxy equivalent

MIXING

Weigh resin and hardener in the indicated ratio and mix until a homogeneous compound is obtained.

Warning! Epoxy resins and amines can generate a highly exothermic, uncontrolled reaction, with decomposition above 250°C. Prepare limited quantities of material and proceed with application.

POTLIFE E GELTIME

The Potlife or time of use of the mixture is normally the time required for an increase equal to twice the initial viscosity. Both Pot-life and Gel-time depend on mass and temperature: the greater the mass, the faster the reaction will be. The higher the temperature, the faster the reaction.

CURING

The system cures at room temperature but without minimal heat treatment at 50-60°C it will be extremely brittle. The best performances are obtained with the following cycle:

24 hours at TA +
2 hours at 80°C +
2 hours at 150°C

Recommended temperature ramp:
heating: 1°K/min
cooling: 1°K/min.

Post cure into the mold or on a conformer to avoid distortion during the run.

HANDLING PRECAUTIONS

The information for a correct and safe handling of the products are contained in the safety data sheet. Consult the safety data sheets before use for complete information on the risks for health and environment and for suitable protective devices to be adopted. Share the safety data sheets with all the staff involved in the use of the products.

PACKAGING

The product is supplied in 5kg, 25kg, 180kg containers.

USABLE LIFE - STORAGE

Store in the original, unopened containers at a temperature between +25°C and +35°C. Be sure to close containers after use. This material, when stored under the specified conditions, has a shelf life of 24 months from the date of manufacture.

LIMITATIONS

This product is neither tested nor represented as suitable for food contact, skin contact or medical uses.

LIMITED WARRANTY

The information contained in this document is offered in good faith based on Chemix research and is believed to be accurate. However, as the conditions and methods of use of our products are beyond our control, this information should not be used as a substitute for the tests that customers must first perform to ensure that Chemix products are fully satisfactory for their specific applications. The warranty is only applicable to the values indicated in the Product Sales Specifications. The sole and exclusive compensation for products with values that are out of specification is limited to the replacement of the product or the refund of the purchase price.

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