Aradur® 140-2 BD Hardener

Product Description

Aradur® 140-2 BD Hardener is a medium viscosity, polyamide hardener. When used to cure Araldite® low molecular weight solid epoxy resins, it can provides some coating systems with excellent flexibility, toughness and good overall performance properties. .

Applications

- General purpose industrial coatings
- Adhesives
- Maintenance coatings
- Mortars and mastics
- Potting compounds

Features

- Excellent water resistance
- Excellent mechanical properties
- Excellent corrosion resistance
- Good chemical resistance
- Excellent adhesion
- Good electrical properties
- Complies with FDA 21 CFR 175.300

Typical Properties*

Property	Aradur® 140-2 BD
Appearance	Clear, no contamination
Color, Gardner, max	10
Amine value, mg KOH/g	370 - 410
H^+ active equivalent, g/eq	70 - 115
Viscosity@ 40°C, cP @ 75°C, cP	3000 - 6000 300 - 600
Density @ 25°C (77°F), g/cm^3	0.96
Flash point, closed cup, °C (°F)	>93 (>200)

*Typical properties are based on Huntsman's test methods. Copies are available upon request.

Processing

Aradur® 140-2 BD hardener may be used to cure both Araldite® liquid and low molecular weight solid epoxy resin solutions at ambient or slightly elevated temperatures. The normal mixing ratio of Aradur® 140-2 hardener to epoxy resin is 35 to 60 parts per hundred parts of Araldite® GY 6010 epoxy resin. The ratio of epoxy resin to polyamide resin will determine the ultimate coating properties. The cure schedule depends upon the total formulation used (i.e., resin, hardener, pigmentation, solvents) and the conditions of application (i.e., temperature, film thickness, etc.). Longer curing times will be required at lower temperatures.

Reactivity increases throughout the polyamide series of Aradur® 115, Aradur® 125 BDB, and Aradur® 140-2 hardeners. The degree of sensitivity to high atmospheric humidity increases as the amine content increases.

Unpigmented Coating

Product	Pounds	Gallons
Part A		
Araldite® GY 507[1]	682.8	71.90
Part B		
Aradur® 140-2 BD	227.6	28.10
Total (Parts A&B)	910.4	100.00

[1]Modified liquid epoxy resin (EEW = 180 –192 g/eq)[2]Nytal 3X, R.T. Vanderbilt Co. or equal

Unpigmented Coating Physical Constants (mix)

Property	Value
Non-volatile content, %	100.0
Epoxy/hardener weight ratio	100/33
Weight per gallon @ 25°C, lb/gal	9.1
Pot life @ 25°C, h	3.0
Viscosity @ 25°C, KU	98

Unpigmented Coating Performance

Property	Value
Substrate	Steel
Cure Schedule	7 days @ 25°C, 50% RH
Film thickness, mils	3.5
Dry time, 25°C, hr set-to-touch paper free	 >7.0 24.0
Flexibility, 1/8" mandrel	Pass
Adhesion	Good

Unpigmented Coating Chemical Resistance, 25°C (77°F) (continuous immersion)

Reagent	Value
Water, 7 days	No effect
MIBK	Slight film softening
10% NaOH	No effect
10% HCl	Few No. 9 blisters

White Gloss Enamel

Product	Pounds	Gallons
Part A		
Araldite® GY 507	543.2	56.00
Titanium Dioxide	517.7	15.16
Part B		
Aradur® 140-2 BD	233.6	28.84
Total (Parts A&B)	1294.5	100.00

[1]Modified liquid epoxy resin (EEW = 180 –192 g/eq)[2]Nytal 3X, R.T. Vanderbilt Co. or equal

White Gloss Enamel Physical Constants (mix)

Property	Value
Non-volatile content, %	100.0
Epoxy/hardener weight ratio	100/43
Pigment binder ratio	40/60
Weight per gallon @ 25°C, lb/gal	12.9
Pot life @ 25°C, h	1.75
Viscosity @ 25°C, cP	60,000

White Gloss Enamel Performance

Property	Value
Substrate	Steel
Cure Schedule	7 days @ 25°C, 50% RH
Film thickness, mils	12
Dry time, 25°C, hr set-to-touch paper free	 1.0 6.5
Flexibility, 1/8" mandrel	Fail
Adhesion	Good

White Gloss Enamel Chemical Resistance, 25°C (77°F) (continuous immersion)

Reagent	Value
Water, 7 days	No effect
MIBK, 3 h	No effect
10% NaOH, 7 days	No effect
10% HCl, 3 h	No effect

Additionally, the use of Aradur® 140-2 BD hardener in a flooring formulation gives overall good chemical resistance and very good mechanical properties

Epoxy Flooring

Product	Parts by weight
Araldite® GY 506	87
Araldite® GY 6010	23
Aradur® 140-2 BD	45
Accelerator 960-1	2 - 3
Dimethylaminoethanol	3 - 5
Bettle 216-8[2]	1 - 3
Cure Schedule	7 days at R.T.

[2]American Cyanamid or equal

Epoxy flooring Mechanical Properties

Property	Value
Shrinkage during cure, in/in	0.0008 - 0.0015
Coefficient of thermal expansion, x 10^{-6} linear/°C	50
Compressive strength, 25°C, psi	6000 - 10,000
Tensile strength, 25°C, psi	1400 - 2,000
Impact strength, ft·lb (1/4" thick specimen on concrete)	9 - 12
Abrasion resistance	0.004 - 0.008
Adhesion	Good

Epoxy flooring Chemical Resistance, 70°F

Reagent	Value
Acetic acid, 5%	P
Aliphatic solvents (mineral spirits)	E
Ammonium hydroxide, 10%	G
Ammonium hydroxide, 30%	F
Boric acid	E
Citric acid, 10%	E
Esters	E
Ethers (Ethyl ether)	
Chlorinated solvents (Carbon tetrachloride)	F
Formaldehyde, 37%	G
Glycerine	G
Hydrocarbon	E
Hydrochloric acid, 10%	P
Hydrochloric acid, 37%	P
Acetone	F
Nitric acid, 10%	P
Sulfuric acid, 10%	P
Sodium hydroxide, 10%	G
Sodium hydroxide, 50%	F
Water (distilled)	E
Calcium chloride, 50% solution	E

E = Excellent - Suitable for long and perhaps permanent immersion

G = Good - Suitable for short immersion or prolonged spillage; F = Fair - Suitable for temporary spillage

P = Poor - Not recommended

FDA Status

Cured coatings made with Aradur 140-2 BD hardener and other approved components meet the requirements of the Food & Drug Administration regulation 21 CFR 175.300, for the safe use as a food-contact surface under the conditions described in this section. Solvents are not covered and must be removed in the final coating.

Storage

Aradur® 140-2 Hardener should be stored in a dry place, in its sealed original container at a temperature between 2°C and 40°C (36°F and 104°F). Under these storage conditions, the product has a shelf life of **3 years** (from date of manufacture). The product should not be exposed to direct sunlight.

Precautionary Statement

Huntsman Advanced Materials Americas LLC maintains up-to-date Safety Data Sheets (SDS) on all of its products. These sheets contain pertinent information that you may need to protect your employees and customers against any known health or safety hazards associated with our products. Users should review the latest MSDS to determine possible health hazards and appropriate precautions to implement prior to using this material.

First Aid!
Refer to SDS as mentioned above.

KEEP OUT OF REACH OF CHILDREN

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Main Offices:

Huntsman Corporation
10003 Woodloch Forest Dr
The Woodlands, TX 77380
888-564-9318

Huntsman Advanced Technology Center
8600 Gosling Rd.
The Woodlands, TX 77381
281-719-7400