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Advanced Materials

Aradur® 943 Hardener

AN ALIPHATIC AMINE ADDUCT

GENERAL:

Aradur® 943 hardener is a light colored, very reactive hardener which, when combined with Araldite® bisphenol A and multifunctional epoxy resins, forms solvent-free and high solids coatings with excellent resistance to organic solvents, particularly alcohols and gasohol.

CHEMICAL DESCRIPTION:

Aradur® 943 hardener is an aliphatic amine adduct.

ADVANTAGES:

- Excellent resistance to alcohol and gasohol
- Outstanding resistance to solvents
- Excellent resistance to acids
- Light color
- Rapid cure properties
- Good mechanical properties

APPLICATIONS:

- Solvent-free and high solids coatings
- Tank linings
- Chemical processing equipment
- Maintenance coatings
- Floorings

TYPICAL PROPERTIES*:

Visual Appearance	Clear, no contamination
Color, Gardner, max.	6
Viscosity @ 25°C (77°F), mPa s (cPs)	3,000 - 5,000
H^+ Active Equivalent, g/eq.	38
Amine Value, mg KOH/g	775-825
Density @ 25°C (77°F), g/cm^3 (lb/gal.)	1.08 (8.9)
Flash Point, Closed Cup, °C (°F)	>93 (>200)

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

STARTING FORMULATIONS:

Clear Coating Starting Formulations

System (Parts by weight)	1	2
Araldite® GY 6010 (1)	100	-
Araldite® PY 313 (2)	-	100
Aradur® 943	20	20
Mix viscosity (3) @ 23°C, cPs	> 4,000	1,250
Gel time (4) 100 g, @ 23°C, min	15	22

Curing Properties (5)
@ 23°C / 50% Relative Humidity

Dust-free time, hours	2.0	3.5
Cure-through time, hours	3.0	4.5
Film appearance (6)	Semi-gloss	Matte, tacky

@ 5°C / 80% Relative Humidity

Dust-free time, hours	>23.0	>24
Cure-through time, hours	>24	4.5
Film appearance (6)	Matte, tacky	Not cured

Coating properties after 7 day cure @ 23°C
Dry film thickness, 10 – 11 mil

Glass Transition temperature, Tg, (7) °C	49	43
Pencil hardness (8)	3H	2B
Cross hatch adhesion (9)	2	1
Impact (direct/reverse), (10) in.-lbs.	0/0	26/0

(1) Standard bis A liquid epoxy resin (epoxy equivalent weight: 182 - 192)
(2) Reactive diluent modified bis A / F epoxy resin blend (epoxy eq. weight: 182 - 192)
(3) ASTM D 4440 (ICI Cone & Plate)
(4) Tested by TECAM® gelation timer
(5) Tested by Gardner® Circular Drying Time Recorder on a 10 mil wet coating
(6) Visual
(7) Tested by DSC (Differential Scanning Calorimetry)
(8) ASTM D 3363
(9) ASTM D 3359 (0 = worst, 5 = best)
(10) ASTM D 2794

Chemical Resistance Data

Chemical resistance of Aradur® 943 formulated with Araldite® GY 6010, multifunctional epoxy resins Araldite® MY 0500, Araldite® PY 258, Araldite® EPN 1179 and Araldite® ECN 1235.

	Parts by weight		
Formulations	**1**	**2**	**3**
Araldite® PY 258	100	-	-
Araldite® MY 0500	-	25	-
Araldite® GY 6010	-	75	-
Araldite® EPN 1179	-	-	76
Araldite® ECN 1235	-	-	24
MIBK-Toluene (2:1)	-	-	9
Aradur® 943	20	24	19

Formulation	**1**		**2**		**3**
Cure	10 days @23°C (73°F)	10 hrs @80°C (176°F)	10 hrs @65°C (149°F)	10 days @23°C (73°F)	10 hrs @65°C (149°F)
Film Properties					
Substrate	Sandblasted hot rolled steel				
Film thickness, mils	7	12-16	12-16	12-16	12
MEK rubs	>500	>500	>500	>500	>500
Chemical Resistance	(12-16 mils DFT), days				
Formulation	**1**		**2**		**3**
Reagents					
HCl (36%)	210	240	>240	>240	210
Acetic acid (10%)	14	150	60	27	120
NH_4OH	>240	>240	>210	>210	>240
Butyl Cellosolve	<3	>240	>240	7	>240
Acetone	<3	>240	<2	<3	9
MEK	<3	>240	>240	<3	>240
Butyl acetate	>240	>240	>240	-	>240
Methylene chloride	<3	>240	<2	<3	<2
Trichloroethylene	>210	>120	20	>210	>240
Ethanol (95%)	>240	>240	>240	150	20
Methanol	<3	>240	>240	5	15
Skydrol* 500B	-	-	>240	>210	>240

* Monsanto

STORAGE:

Aradur® 943 is supplied in 425 pound steel drums and in bulk. This product should be stored in a dry place, in the sealed original container, at temperatures between +2°C and +40°C (+35.6°F and 104°F). Under these storage conditions, the shelf life is 3 years. The product should not be exposed to direct sunlight.

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First Aid!
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