

Advanced Materials**Araldite® 2010-1 Resin / XD 4444 Hardener Adhesive****TOUGHENED FAST CURE EPOXY ADHESIVE**

DESCRIPTION :

Araldite® 2010-1 Resin / XD 4444 Hardener epoxy adhesive is a two-component, fast-cure, multi-purpose, thixotropic paste that cures fast at room temperature. The epoxy system features high strength and toughness. It is suitable for bonding a wide variety of substrates including metals, ceramics, glass, rubbers and rigid plastics.

APPLICATIONS :

- Metals
- Ceramics
- Rubber
- Rigid plastics
- Glass

ADVANTAGES :

- High shear and peel strength
- Tough and resilient
- Fast cure
- Bonds a wide variety of materials

TYPICAL PROPERTIES :

<u>Property</u>	<u>Test Method</u>	Test Values⁽¹⁾	
		<u>Resin</u>	<u>Hardener</u>
Color/Appearance	Visual	Neutral paste	Pale yellow paste
Specific Gravity	ASTM D-792	1.16	1.15
Viscosity (cP) @ 77 °F (25 °C)	ASTM D-2393	140,000	65,000

TYPICAL MIXED PROPERTIES :

<u>Property</u>	<u>Test Method</u>	<u>Test Values⁽¹⁾</u>
Reaction Ratio (by weight)		100R/100H
Reaction Ratio (by volume)		100R/100H
Pot Life, minutes @ 77 °F (25 °C), 4 fl. Oz. Mass	ASTM D-2471	8.5
Mixed viscosity (cP) @ 77 °F (25 °C)	ASTM D-2393	80,000

⁽¹⁾Tested @ 77 °F (25 °C)

RECOMMENDED CURE SCHEDULE :

<u>Temperature</u>	<u>Handling Strength</u>	<u>Minimum Cure Time</u>
50 °F (10 °C)	4 hours	24 hours
59 °F (15 °C)	2 hours	9 hours
77 °F (25 °C)	30 minutes	3 hours
104 °F (40 °C)	15 minutes	1 hour
140 °F (60 °C)	5 minutes	20 minutes
212 °F (100 °C)	< 5 minutes	5 minutes

TYPICAL CURE PROPERTIES :**Application of Adhesive**

The resin/hardener mix is applied with a spatula to the pretreated and dry joint surfaces.

A layer of adhesive 0.002 to 0.004-inches (0.05 to 0.10-mm) thick will normally impart the greatest lap shear strength to a joint.

The joint components should be assembled and clamped as soon as the adhesive has been applied. Even contact throughout suffices to ensure proper cure.

Standard Test Specimens

Unless otherwise stated, the figures given below were all determined by testing standard specimens made up by lap-jointing 4-inch x 1-inch x 0.06-inch (10-cm x 2.5-cm x 1.5-mm) strips of aluminum. The joint area was 0.5 x 1 inch (12.5 mm x 2.5 cm) in each case.

<u>Property</u>	<u>Test Method</u>	
Lap Shear Strength, psi (Mpa)	ASTM D-1002	
Tested on Metal Substrates		
(Cured 16 hours @ 104 °F (40 °C))		
<u>Metal</u>	<u>Substrate Thickness in. (mm)</u>	<u>Test Values⁽¹⁾</u>
Aluminum	0.039 (1.0)	2900 (20)
Carbon Steel	0.039 (1.0)	4300 (30)
Stainless Steel	0.039 (1.0)	1500 (10)

Tested on Plastic Substrates

(Cured 16 hours @ 104 °F (40 °C))

Plastic

ABS
Polycarbonate
SMC
Nylon

Test Values⁽¹⁾

425 (2.9)
220 (1.5)
470 (3.2)
215 (1.5)

Effects of Test Temperature

(Load applied 10 minutes after specimens reach test temperature.)

Cure Cycle

7 days @ 77 °F (25 °C)

24 hours @ 77 °F (25 °C) +
30 minutes @ 176 °F (80 °C)

Test Temperature

68 °F (20 °C)
140 °F (60°C)
212 °F (100 °C)
68 °F (20 °C)
140 °F (60°C)
212 °F (100 °C)

Test Values⁽¹⁾

2100 (14)
525 (3.6)
275 (1.9)
3650 (25)
1330 (9.1)
450 (3.1)

⁽¹⁾Tested @ 77 °F (25 °C)**Property**

Elongation(%)
Glass transition temperature, °F (°C)
Tensile Strength, psi (Mpa)
Tensile Modulus, psi (Mpa)
Coefficient to Thermal Expansion,
in/in/°C

Test Method

ASTM D-638
ASTM D-4065

Test Values⁽¹⁾

2.5
110 (43)
6,500 (44.8)
420,000 (2,896)
66.6 x 10⁻⁶

⁽¹⁾Tested @ 77 °F (25 °C)⁽²⁾Surface degreased only, not roughened.

CAUTION :

Huntsman Advances Materials Americas Inc. maintains up-to-date Material Safety Data Sheet (MSDS) 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. Copies of the latest MSDS may be requested by calling our customer service group at 800-367-8793 or emailing your request to adhesives_group@huntsman.com

To protect against any potential health risks presented by our products, the use of proper personal protective equipment (PPE) is recommended. Eye and skin protection is normally advised. Respiratory protection may be needed if mechanical ventilation is not available or is insufficient to remove vapors.

For detailed PPE recommendations and exposure control options consult the product MSDS or a Huntsman EHS representative.

FIRST AID :

Eyes and skin : Flush eyes with water for 15 minutes. Contact a physician if irritation persists. Wash skin thoroughly with soap and water. Remove and wash contaminated clothing before reuse.

Inhalation : Remove subject to fresh air.

Swallowing : Dilute by giving water to drink and contact a physician promptly. Never give anything to drink to an unconscious person.

KEEP OUT OF REACH OF CHILDREN**FOR PROFESSIONAL AND INDUSTRIAL USE ONLY**

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