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Advanced Materials

ARALDITE® 5864 A/B

HEAT/CHEMICAL-RESISTANT EPOXY ADHESIVE

UL RECOGNIZED SYSTEM COMPONENT IN UL RECOGNIZED 180°C CLASS ELECTRICAL INSULATION SYSTEM

Description

ARALDITE® 5864 A/B epoxy adhesive is a two-component, thixotropic, room-temperature curing paste. It features high strength and toughness as well as good environmental stability and chemical resistance.

ARALDITE® 5864 A/B epoxy adhesive is well suited for bonding electronic components, GRP structures, and other parts that may be exposed to elevated temperatures and/or aggressive environments.

Applications

ARALDITE® 5864 A/B epoxy adhesive is suitable for bonding:

Metals
Ceramics
GRP
Electronic components

Advantages

Heat resistant to 248°F (120°C)
Withstands exposure to water and a wide variety of chemicals
Gap-filling, non-sagging up to 0.2 inch (5 mm) thickness
Bonds well to a wide variety of substrates

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Typical Properties

Property	Test Method	Test Values[1] Resin	Hardener
Color/appearance	Visual	Beige Paste	Black Thixotropic Paste
Specific Gravity	ASTM D-792	1.60	1.60
Viscosity, cP @ 77°F (25°C)	ASTM D-2393	70,000	130,000

[1] Tested at 77ºF (25ºC)

Typical Mixed Properties

Property	Test Method	Test Values[1]
Reaction Ratio (by weight)		100R/50H
Reaction Ratio (by volume)		100R/50H
Pot Life, minutes @ 77°F (25°C), 4 fl. oz. mass	ASTM D-2471	40
Mixed viscosity, cP @ 77°F (25°C)	ASTM D-2393	90,000

[1] Tested at 77ºF (25ºC)

Recommended Cure Schedules

Temperature	Handling Strength	Minimum Cure Time
50ºF (10ºC)	16 hours	24 hours
59ºF (15ºC)	9 hours	11.5 hours
77ºF (25ºC)	3.5 hours	6 hours
104ºF (40ºC)	75 minutes	105 minutes
140ºF (60ºC)	26 minutes	30 minutes
212ºF (100ºC)	6 minutes	6 minutes

[1]Tested @ 77°F (25°C)

Processing

Application of Adhesive

The resin/hardener mix is applied with a spatula to the pre-treated 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.

Typical Physical Properties

	Test Method
Lap Shear Strength, psi (MPa)	DIN 53283

Effect of Cure Time and Test Temperature

Cure Cycle	Test Values[(1)]
7 days @ 77ºF (25ºC)	2400 (16.5)
24 hrs. @ 77ºF (25ºC) + 30 min. @ 176ºF (80ºC)	2600 (17.9)

[1]Tested @ 77°F (25°C)

Lap Shear Strength, psi (MPa) — **Test Method** DIN 53283

Effect of Test Temperature

Load applied 10 minutes after specimens reach test temperature.

Cure Cycle	Test Temp.	Test Values[(1)]
7 days @ 77ºF (25ºC)	-40ºF (-40ºC)	1900 (13.1)
	-4ºF (-20ºC)	2000 (13.8)
	68ºF (20ºC)	2400 (16.5)
	104ºF (40ºC)	2900 (20)
	140ºF (60ºC)	2500 (17.2)
	176ºF (80ºC)	2400 (16.5)
	212ºF (100ºC)	1900 (13.1)
	248° F (120ºC)	1300 (8.9)
	284° F (140ºC)	800 (5.5)
24 hrs @ 77ºF (25ºC) + 30 min @ 176°F (80°C)	-40ºF (-40ºC)	2400 (16.5)
	-4ºF (-20ºC)	2500 (17.2)
	68ºF (20ºC)	2600 (17.9)
	104ºF (40ºC)	2500 (17.2)
	140ºF (60ºC)	3000 (20.6)
	176ºF (80ºC)	2600 (17.9)
	212ºF (100ºC)	2100 (14.5)
	248° F (120ºC)	1400 (9.6)
	284° F (140ºC)	900 ((6.2)

Typical Physical Properties (continued)

Lap Shear Strength, psi (MPa)
Effect of Immersion
Cure cycle 16 hours @ 104ºF (40ºC). Immersion for 90 days in media listed.

Media	Test Values [1]
Standard - As prepared	2700 (18.6)
IMS	2750 (18.9)
Gasoline	3200 (22)
Ethyl Acetate (30 days)	3300 (22.7)
Acetic Acid 10%	2300 (15.8)
Xylene	2650 (18.2)
Lubricating Oil - HD30	2300 (15.8)
Paraffin	2600 (17.9)
Water @ 68°F (20°C)	2750 (18.9)
@ 194°F (90°C)	2000 (13.8)

Lap Shear Strength, psi (MPa)
Effect of Tropical Exposure
(104ºF/40ºC/92% R.H.)

Cure Cycle	Exposure Time	Test Values
16 hrs @ 104ºF (40ºC)	0 days	2700 (18.6)
	30 days	3050 (21)
	60 days	3100 (21.3)
	90 days	2900 (20)

Lap Shear Strength, psi (MPa)
Effect of Heat Aging
Cured 16 hours @ 104°F (40°C).

Test Method
DIN 53283

Aging Temperature	Exposure Time	Test Values
158 ºF (70ºC)	0 days	2700 (18.6)
	30 days	2800 (19.3)
	60 days	2600 (17.9)
	90 days	3000 (20.6)

Typical Physical Properties (continued)

Lap Shear Strength, psi (MPa)
Tested on Metal Substrates
Cured 16 hours @ 104ºF (40ºC)

Metal	Substrate Thickness (in./mm)	Test Values
Carbon Steel	0.039/1.0	2500 (17.2)
Stainless Steel	0.039/1.0	3200 (22)
Galvanized Steel[1]	0.06/1.5	1300 (8.9)
Copper	0.06/1.5	2300 (15.8)
Brass	0.06/1.5	2300 (15.8)

[1]Surface degreased only, not roughened.

Property	Test Method	Test Values
Hardness	Shore	D-84
Tg per DMA, °F (°C)	ASTM D-4065	230 (110)
Coeff. Thermal expansion, ppm/°C	ASTM E-381	67
Roller Peel Test, pli (N/mm)	ISO 4578	17 (3)

Electrical Properties	Test Values
Dielectric Strength, volt/mil	440
Surface Resistivity, ohm	7.0 E+15
Volume Resistivity, ohms-cm	6.1 E+15
Dielectric Constant, at 60 Hz	4.0
Loss Tangent, % at 60 Hz	1.0

Storage and Shelf Life

Araldite® 5864 A/B should be stored in a dry place and in the sealed original container, at temperatures between 15^{O}C and 25^{O}C (59^{O}F and 77^{O}F). Under these storage conditions the shelf life is 3 years from date of manufacture of the earliest (A or B) component. The product should not be exposed to direct sunlight.

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Huntsman Advanced Materials Americas maintains up–to-date Material Safety Data Sheets (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.

First Aid!

Refer to MSDS as mentioned above.

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