

Araldite[®] 5865 A/B Epoxy Adhesive

Product Description

Araldite[®] 5865 A/B Epoxy Adhesive is a two-component, thixotropic, room-temperature curing paste that exhibits high strength and toughness. The product is thixotropic and features good chemical resistance for use in harsh/aggressive environments. Araldite[®] 5865 A/B Epoxy Adhesive is suitable for bonding electrical components, insulation sheets and other parts requiring elevated temperature performance. This product is an UL recognized 180°C class for electrical insulation systems.

Applications

- Transformer Core Lamination Bonding for the Large Oil Filled Power Transformers and the Distribution Transformers including Dry Type Distribution Transformers
- Bonding metals to polymeric insulation materials
- Bonding ceramics
- Producing electrical insulation and apparatus such as insulators, bushings, insulation for capacitance tap
- Mounting switchgear components
- Manufacturing submersible electrical equipment for underground vaults

Features

- Heat resistant up to 120°C (248°F)
- Resists exposure to water and a wide variety of chemical including transformer oils and SF₆
- Gap filling and non-sagging up to 5 mm thickness
- Bonds well to a wide variety of substrates used in electrical applications
- Can be used at temperatures up to 180°C (356°F) in accordance with UL testing

Typical Properties*

Property ¹	Araldite® 5865 A	Araldite® 5865 B	Mixed System	Test Method
Appearance	Beige paste	Black thixotropic paste	--	Visual
Density at 25°C, g/cm ³	1.60	1.60	--	ASTM D-792
Viscosity at 25°C, cPs RVT/Spindle 7 at 2 RPM	200,000-350,000	200,000-350,000	200,000-350,000	ASTM D-2393
at 20 RPM	70,000-120,000	50,000-130,000	50,000-100,000	
Pot Life, 100 g mass, at 25°C, min	--	--	40	ASTM D-2471

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

¹Tested at 77°F (25°C).

Processing

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.

Mix Ratio

Product	Parts by weight	Parts by volume
Araldite® 5865 A	100	100
Araldite® 5865 B	50	50

Recommended Cure Cycles

Temperature	Handling Strength	Minimum Cure Time
50°F (10°C)	16 h	24 h
59°F (15°C)	9 h	12 h
77°F (25°C)	3.5 h	6 h
104°F (40°C)	75 min	105 min
140°F (60°C)	26 min	30 min
212°F (100°C)	6 min	6 min

Typical Physical Properties

Unless otherwise stated, the data were determined with typical production batches using standard test methods. They are typical values only, and do not constitute a product specification.

The values 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, unless otherwise specified. The joint area was 0.5 x 1 inch (12.5 mm x 2.5 cm) in each case.

Property	Value	Test Method
Lap shear strength, ¹ psi (MPa) Cure: 7 days at 25°C (77°F) 24 hrs. at 25°C (77°F) + 30 min at 80°C (176°F)	2400 (16.5) 2600 (17.9)	DIN 53283
Lap shear strength, ² psi (MPa) Cure: 7 days at 25°C (77°F), tested at: -40°F (-40°C) -4°F (-20°C) 68°F (20°C) 104°F (40°C) 140°F (60°C) 176°F (80°C) 212°F (100°C) 248° F (120°C) 284° F (140°C) 24 hrs. at 25°C (77°F) + 30 min. at 80°C (176°F). Tested at: -40°F (-40°C) -4°F (-20°C) 68°F (20°C) 104°F (40°C) 140°F (60°C) 176°F (80°C) 212°F (100°C) 248° F (120°C) 284° F (140°C)	1900 (13.1) 2000 (13.8) 2400 (16.5) 2900 (20) 2500 (17.2) 2400 (16.5) 1900 (13.1) 1300 (8.9) 800 (5.5) 2400 (16.5) 2500 (17.2) 2600 (17.9) 2500 (17.2) 3000 (20.6) 2600 (17.9) 2100 (14.5) 1400 (9.6) 900 (6.2)	DIN 53283
Lap shear strength, ³ psi (MPa) Standard - As prepared IMS Gasoline Ethyl Acetate (30 days) Acetic Acid 10%	2700 (18.6) 2750 (18.9) 3200 (22) 3300 (22.7) 2300 (15.8)	DIN 53283

Xylene	2650 (18.2)	
Lubricating Oil - HD30	2300 (15.8)	
Paraffin	2600 (17.9)	
Water at 20°C (68°F)	2750 (18.9)	
Water at 90°C (194°F)	2000 (13.8)	
Lap shear strength, ⁴ psi (MPa) 16 hrs. at 40°C, exposure for		
0 days	2700 (18.6)	DIN 53283
30 days	3050 (21)	
60 days	3100 (21.3)	
90 days	2900 (20)	
Lap shear strength, ⁵ psi (MPa) Aging temperature, 70°C (158°F) exposed for		
0 days	2700 (18.6)	DIN 53283
30 days	2800 (19.3)	
60 days	2600 (17.9)	
90 days	3000 (20.6)	
Lap shear strength on metal substrates, ⁶		
Carbon Steel, 1.0 mm thick	2500 (17.2)	DIN 53283
Stainless Steel, 1.0 mm	3200 (22)	
Galvanized Steel, ⁷ 1.5 mm	1300 (8.9)	
Copper, 1.5 mm	2300 (15.8)	
Brass, 1.5 mm	2300 (15.8)	
Glass transition temperature, T _g , DMA °C (°F)	230 (110)	ASTM D-4065
Hardness, Shore D	84	
Coefficient of thermal expansion, ppm/°C	67	ASTM E-381
Roller peel test, pli (N/mm)	17 (3)	ISO 4578
Thermal Conductivity, W/m·K	0.33	ISO 8894/90

¹Effects of cure time and temperature: tested at 25°C (77°F)

²Effects of test temperature: load applied 10 min after reaching test temperature

³Effects of immersion: cure cycle 16 hrs. at 40°C (104°F). Immersion for 90 days in media listed.

⁴Effects of tropical exposure: (40°C/104°F/92% R.H.), tested at 25°C (77°F).

⁵Effects of heat aging: cured 16 hours at 104°F/40°C.

⁶Cured 16 hours at 104°F (40°C).

⁷Surface degreased only, not roughened.

Typical Electrical Properties

Property	Value	Test Method
Dielectric strength, at 3mm V/mil	440	ASTM D-149
Dielectric constant, 60 Hz at 25°C (77°F) at 50°C (122°F) at 60°C (140°F) at 70°C (158°F) at 80°C (176°F)	4.00 4.16 4.40 4.58 4.97	ASTM D-150
Dissipation factor, 60 Hz at 25°C (77°F) at 50°C (122°F) at 60°C (140°F) at 70°C (158°F) at 80°C (176°F)	0.010 0.019 0.027 0.037 0.064	ASTM D-150
Volume resistivity, Ω·cm at 25°C (77°F) at 50°C (122°F) at 60°C (140°F) at 70°C (158°F) at 80°C (176°F)	2.2×10^{15} 6.4×10^{14} 2.1×10^{14} 3.6×10^{13} 2.7×10^{12}	ASTM D-257
Surface Resistivity, Ω at 25°C (77°F)	7.0×10^{15}	IEC 60093

Storage

Araldite® 5865 A/B Epoxy Adhesive 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 **1 year** (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.

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