HUNTSMAN
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Advanced Materials

Araldite® 5865 A/B

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

DESCRIPTION:

Araldite® 5865 A/B epoxy adhesive is a two-component, 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.

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 insuators, 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 SF_6
- Gap filling and non-sagging up to 5mm 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:

Araldite® 5865 Resin

Product	Test Values	Test method
Appearance	Beige Paste	Visual
Specific Gravity	1.60	ASTM D-792
Viscosity @ 25°C (77°F), RVT/Spindle 7, cP @ 2 RPM @ 20 RPM	 200,000 – 350,000 70,000 – 120,000	ASTM D-2393

Araldite® 5865 Hardener

Product	Test Values	Test method
Appearance	Beige Thixotropic Paste	Visual
Specific Gravity	1.60	ASTM D-792
Viscosity @ 25°C (77°F), RVT/Spindle 7, cP @ 2 RPM @ 20 RPM	 200,000 – 350,000 50,000 – 130,000	ASTM D-2393

Mixed System

Product	Test Values	Test method
Pot Life, 100gr. Mass, min.	40	ASTM D-2471
Viscosity @ 25°C (77°F), RVT/Spindle 7, cP @ 2 RPM @ 20 RPM	 200,000 – 350,000 50,000 – 100,000	ASTM D-2393

MIX RATIO:

Resin to Hardener
(by weight and volume) 100:50

RECOMMENDED CURE SCHEDULES:

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

Tested @ 77°F (25°C)

DIELECTRIC PROPERTIES:

Property	Test Values	Test Method
Dielectric Strength, @ 3mm, v/mil	440	ASTM D-149
Dielectric Constant, 60Hz		ASTM D-150
@ 25°C (77°F)	4.00	
@ 50°C (122°F)	4.16	
@ 60°C (140°F)	4.40	
@ 70°C (158°F)	4.58	
@ 80°C (176°F)	4.97	
Dissipator factor, 60Hz		ASTM D-150
@ 25°C (77°F)	0.010	
@ 50°C (122°F)	0.019	
@ 60°C (140°F)	0.027	
@ 70°C (158°F)	0.037	
@ 80°C (176°F)	0.064	
Volume Resistivity, ohm-cm		ASTM D-257
@ 25°C (77°F)	2.2×10^{15}	
@ 50°C (122°F)	6.4×10^{14}	
@ 60°C (140°F)	2.1×10^{14}	
@ 70°C (158°F)	3.6×10^{13}	
@ 80°C (176°F)	2.7×10^{12}	
Surface Resistivity, ohms		IEC 60093
@ 25°C (77°F)	7.0×10^{15}	

TYPICAL CURED PROPERTIES:

Application of Insulation Bonding Compound

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 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.

TYPICAL PHYSICAL PROPERTIES:

Lap Shear Strength, psi (MPa)		**Test Method**
Effect of Cure Time and Test Temperature		DIN 53283
Cure Cycle	Test Values[(1)]	
7 days @ 77°F (25°C)	2400 (16.5)	
24 hrs. @ 77°F (25°C) + 30 min. @ 176°F (80°C)	2600 (17.9)	

[1] Tested @ 77°F (25°C)

Lap Shear Strength, psi (MPa)		**Test Method**
Effect of Test Temperature		DIN 53283
Cure Cycle	Test Temp.	Test Values[(1)]
7 days @ 77°F (25°C)	-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)
24 hrs. @ 77°F (25°C) + 30 min. @ 176°F (80°C)	-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)	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)

Lap Shear Strength, psi (MPa)	
Effect of Immersion	
Media	Test Values[(1)]
Standard – As prepared	2700 (18.6)
IMS	2750 (18.9)
Gasoline	3200 (22)
Ethyl Acetone (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) @ 194°F (90°C)	2750 (18.9) 2000 (13.8)

Lap Shear Strength, psi (MPa)		**Test Method**
Effect of Tropical Exposure (104°F/40°C/92% R.H.)		DIN 53283
Cure Cycle	Exposure Time	Test Values
16 hrs @ 104°F (40°C)	0 day 30 days 60 days 90 days	2700 (18.6) 3050 (21) 3100 (21.3) 2900 (20)

Lap Shear Strength, psi (MPa)		**Test Method**
Effect of Heat Aging Cured 16 hours @ 104°F (40°C)		DIN 53283
Aging Temperature	Exposure Time	Test Values
158°F (70°C)	0 day 30 days 60 days 90 days	2700 (18.6) 2800 (19.3) 2600 (17.9) 3000 (20.6)

Lap Shear Strength, psi (MPa)		**Test Method**
Tested on Metal Substrates Cured 16 hours @ 104°F (40°C)		DIN 53283
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)
Coefficient of Thermal Expansion, PPM/°C (°F)	ASTM E-381	67 (37)
Roller Peel Test, pli (N/mm)	ISO 4578	17 (1) & (2)
Thermal Conductivity, W/mK	ISO 8894/90	0.33

STORAGE AND SHELF LIFE:

Araldite® epoxy adhesive components should be stored in their original, sealed containers at room temperature. When stored at temperatures from 59-77°F (15-25°C), the resin and hardener will remain in usable condition for 12 months from date of shipping from Huntsman.

CAUTION:

Huntsman Advanced Materials Americas Inc. 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. Copies of the latest MSDS may be requested by calling our customer service group at 888-564-9318.

FIRST AID:

Eyes and skin: **F**lush 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

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