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Advanced Materials

Araldite® AW 136 Resin
Hardener HY 5049 Adhesive

EPOXY LAMINATING ADHESIVE

DESCRIPTION :

Araldite® AW 136 Resin / Hardener HY 5049 epoxy adhesive is a two-laminating system used for fabricating skis, snowboards and other composite parts. A heat cure is recommended for optimal results.

APPLICATIONS :

- Ski and snowboard lamination
- Archery limb lamination
- Honeycomb core facing

ADVANTAGES :

- Good adhesive to many materials commonly used in the ski industry
- High strength under static and dynamic loading
- Good environmental resistance to water, ice and tropical conditions

TYPICAL PROPERTIES :

Typical Properties		**Test Values**
Reaction Ratio (by weight)		100R/30H
Reaction Ratio (by volume)		100R/40H
Araldite® AW 136 Resin	**Test Method**	**Test Values**
Color, Visual	ASTM D-695, Visual	Black
Specific Gravity, g/cc	ASTM D-792	1.39
Viscosity, cP @ 77 °F (25 °C)	ASTM D-2393	50,000
Hardener HY 5049	**Test Method**	**Test Values**
Color	Visual	Amber
Specific Gravity, g/cc	ASTM D-792	0.93
Viscosity, cP @ 77 °F (25 °C)	ASTM D-2393	900
Mixed System	**Test Method**	**Test Values**
Color	Visual	Black
Viscosity, cP @ 77 °F (25 °C)	ASTM D-2393	7500
Gel Time, minutes @77 °F (25 °C), (100 gram mass)	ASTM D-2471	75

CURE SCHEDULE :

Temperature	Minimum Cure Time
140 °F (60 °C)	60-120 minutes
176 °F (80 °C)	30-60 minutes
212 °F (100 °C)	15-20 minutes
248 °F (120 °C)	10-15 minutes

APPLICATION OF ADHESIVE :

A layer of adhesive 0.002 to 0.004-inches (0.05 to 0.10-mm) thick will normally impact 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 surfaces to ensure proper cure.

STANDARD LAP TEST :

Unless otherwise stated, the figures given below were all determined by testing standard specimens made by lap-joint 4-inch x 1-inch x 0.06-inch (10-cm x 2.5-cm x 1.5-mm) strips of degreased and 100-grit abraded aluminum. The joint area was 0.5 x 1 inch (12.5 mm x 2.5 cm) in each case. Samples were cured at 176 °F (80 °C) for 30 minutes, unless otherwise noted.

TYPICAL CURED PROPERTIES :

Tested at 77 °F (25 °C) unless otherwise noted.
Not for specification purposes.

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

Effects of Test Temperature

Cured at 212 °F (100 °C) for 15 minutes. Load applied 10 minutes after specimens reach test temperature

Test Temperature	Test Values[1]
-40 °F (-40 °C)	2160 (14.9)
-4 °F (-20 °C)	2450 (16.9)
68 °F (20 °C)	2590 (17.8)
104 °F (40 °C)	2690 (18.5)
140 °F (60 °C)	2980 (20.5)
176 °F (80 °C)	1580 (10.9)
212 °F (100 °C)	500 (3.4)

Tropical Exposure

Exposed to 104 °F (40 °C) and 92 % RH

Exposure	
Standard - As Prepared	2880 (19.8)
10 days	2520 (17.4)
30 days	2520 (17.4)
60 days	2660 (18.3)
90 days	2380 (16.4)

Water Immersion at 73 °F (23 °C)

Exposure	
Standard - As Prepared	2880 (19.8)

	10 days		2740 (18.9)
	30 days		2590 (17.8)
	60 days		2450 (16.9)
	90 days		2160 (14.9)
Various Substrates	Steel to steel	DIN 53295, tested at 73 °F (23 °C)	2450 (16.9)

Standard Drum Peel, pli (N/mm)

Material	**Failure Mode**	
Aluminum/Aluminum	Cohesive	2.2 (0.38)
Ash/Aluminum	Wood	5.1 (0.89)
Ash/Fabric	Glass Fiber	6.3 (1.1)
ABS/Roving Laminate	Glass Fiber	4.5 (0.78)
ABS/Aluminum	ABS	12 (2.1)
Aluminum/Roving Laminate	Glass Fiber	4 (0.7)
Polyurethane Core/Aluminum	Core	1.7 (0.29)
Polyurethane Core/Fabric	Glass Fiber	7.4 (1.3)
Aluminum/Fabric	Glass Fiber	10.8 (1.9)
Aluminum/Rubber Sheet/Aluminum	Rubber Sheet	50.7 (8.9)

TYPICAL PHYSICAL PROPERTIES :

Tested at 77 °F (25 °C) and cured 7 days at 77 °F (25 °C) unless otherwise noted.
Not for specification purposes.

Property	**Test Method**	**Test Values**
Hardness, Shore D	ASTM D-2240	82
Ultimate Tensile Strength, psi (Mpa)	ASTM D-638	5880 (40.5)
Tensile Modulus, psi (Mpa)	ASTM D-638	585,000 (4034)
Ultimate Flexural Strength, psi (Mpa)	ASTM D-790	10,000 (68.9)
Flexural Modulus, psi (Mpa)	ASTM D-790	500,000 (3,448)
Tg per DMA, °F (°C), cured 15 minutes at 212 °F (100 °C)	ASTM D-4065	158 (70)
Izod Impact, ft lb/in (J/m)	ASTM D-256	0.244 (13)
Ultimate Compressive Strength, psi (Mpa)	ASTM D-695	18,800 (129.6)
Compressive Modulus, psi (Mpa)	ASTM D-695	298,000 (2,055)

NOTE ON TYPICAL PROPERTIES :

These physical properties are reported as typical test values obtained by our test laboratory. If assistance is needed in establishing product specifications, please consult with our Quality Control Department.

STORAGE:

Araldite® AW 136 Resin / Hardener HY 5049 epoxy adhesive should be stored in a dry place, in the sealed original container, at temperatures between +2°C and +40°C (+36°F and 104°F). Under these storage conditions the shelf life is 3 years. The product should not be exposed to direct sunlight.

If stored below 60°F, the adhesive should be brought to 60°F – 77°F and conditioned at this temperature for some time prior to use.

PRECAUTIONARY STATEMENT:

Huntsman Advanced Materials Americas LLC. 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.

KEEP OUT OF REACH OF CHILDREN

FOR PROFESSIONAL AND INDUSTRIAL USE ONLY

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