

**Advanced Materials****Araldite® 2055 Structural Adhesive**

## Structural Adhesives

**Araldite® 2055****Two component gap filling polyurethane adhesive****Key properties**

- Gap filling
- Long open time
- Resists weathering and humidity
- Low shrinkage
- Suitable for bonding a variety of metal and plastic substrates

**Description**

Araldite 2055 structural adhesive is a cold curing polyurethane adhesive, consisting of a white resin component and a beige-colored hardener component. The adhesive's flashpoint is above 212°F (100°C).

**Product data**

Property	Component A (resin)	Component B (hardener)	Mixed Adhesive
Color (visual)	white	beige	beige paste
Specific gravity	1.2	1.6	1.4
Viscosity at 77°F (cP)	thixotropic	Appr. 18,000	thixotropic
Pot Life (100 gm at 77°F)	-	-	45 - 60 mins

**Processing****Pretreatment**

The strength and durability of a bonded joint are dependent on proper treatment of the surfaces to be bonded.

At the very least, joint surfaces should be cleaned with a good degreasing agent such as acetone, iso-propanol (for plastics) or other proprietary degreasing agents in order to remove all traces of oil, grease and dirt.

Low grade alcohol, gasoline, or paint thinners should never be used.

The strongest and most durable joints are obtained by either mechanically abrading or chemically etching ("pickling") the degreased surfaces. Abrading should be followed by a second degreasing treatment

Mix ratio	Parts by weight	Parts by volume
Component A (resin)	80	100
Component B (hardener)	100	100

Araldite 2055 structural adhesive is available in cartridges incorporating mixers and can be applied as ready to use adhesive with the aid of the tool recommended by Huntsman Advanced Materials.

**Application of adhesive**

The resin/hardener mix may be applied manually or robotically to the pretreated and dry joint surfaces. Huntsman's technical support group can assist the user in the selection of a suitable application method as well as suggest a variety of reputable companies that manufacture and service adhesive dispensing equipment.

A layer of adhesive 0.002 to 0.004 in (0.05 to 0.10 mm) thick will normally impart the greatest lap shear strength to the joint. Huntsman stresses that proper adhesive joint design is also critical for a durable bond. The joint components should be assembled and secured in a fixed position as soon as the adhesive has been applied.

For more detailed explanations regarding surface preparation and pretreatment, adhesive joint design, and the dual syringe dispensing system, visit [www.araldite2000plus.com](http://www.araldite2000plus.com)

**Equipment maintenance**

All tools should be cleaned with hot water and soap before adhesives residues have had time to cure. The removal of cured residues is a difficult and time-consuming operation.

If solvents such as acetone are used for cleaning, operatives should take the appropriate precautions and, in addition, avoid skin and eye contact.

**Times to minimum shear strength**

Temperature	°F	50	59	73	104	140	212
Cure time to reach	hours	15	8	6	-	-	-
LSS > 145 psi (1MPa)	minutes	-	-	-	90	25	5
Cure time to reach	hours	55	40	35	6	-	-
LSS > 1450 psi (10MPa)	minutes	-	-	-	-	90	20

LSS = Lap shear strength.

**Typical cured properties**

Unless otherwise stated, the figures given below were all determined by testing standard specimens made by lap-jointing 4.5 x 1 x 0.063 in (114 x 25 x 1.6 mm) strips of aluminum alloy. The joint area was 0.5 x 1 in (12.5 x 25 mm) in each case. The figures were determined with typical production batches using standard testing methods. They are provided solely as technical information and do not constitute a product specification.

**Average lap shear strengths of typical metal-to-metal joints (ISO 4587)**

Cured for 16 hours at 104°F (40°C) and tested at 73°F (23°C)

Pretreatment - Sand blasting

Substrate	psi
Aluminum	1784
Steel 37/11	1218
Stainless steel V4A	1740
Galvanized steel	2031
Copper	1987
Brass	1523

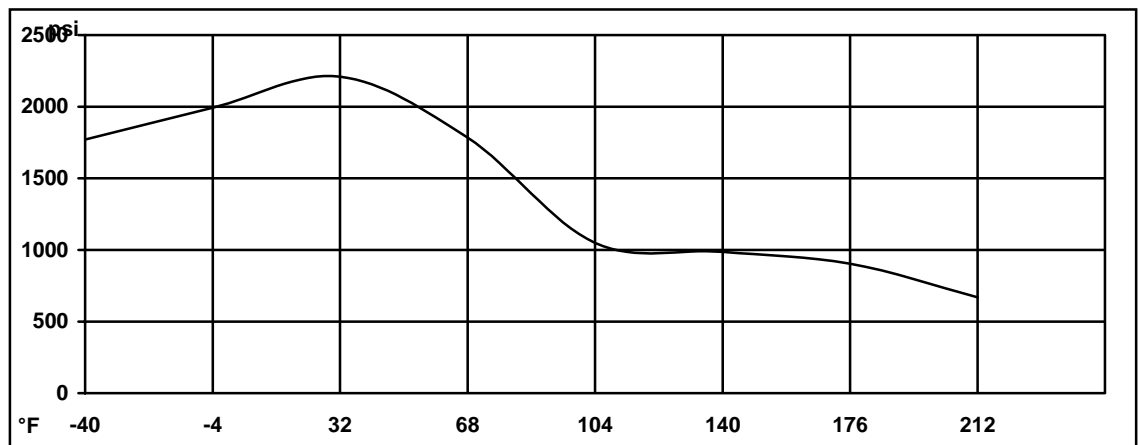
**Average lap shear strengths of typical plastic-to-plastic joints (ISO 4587)**

Cured for 16 hour at 104°F (40°C) and tested at 73°F (23°C). Pretreatment - Lightly abrade and alcohol degrease.

Substrate	psi
GRP	1305
CFRP	1160
SMC	1015
ABS	798
PVC	290
PMMA	406
Polycarbonate	653
Polyamides	580

**Lap shear strength versus temperature (ISO 4587) (typical average values)**

Cure: 16 hours at 104°F (40°C)

**Roller peel test (ISO 4578)**

Cure: 16 hours at 104°F (40°C)

7 pli (1.2 N/mm)

**Glass transition temperature**

Cure: 16 hours at 104°F (40°C)

140°F (60°C) by DMA

**Lap shear strength versus immersion in various media (typical average values)**

Unless otherwise stated, L.S.S. was determined after immersion for 90 days at 73°F (23°C) Cure: 16 hour at 104°F (40°C)

	30 days	60 days	90 days
	<b>psi</b>		
As-made value	1784	1784	1784
IMS	131	1436	
Fuel (unleaded)	2132	1117	
Ethyl acetate	247	406	
Acetic acid, 10%	1798	2161	
Xylene	464	1958	
Lubricating oil	2524	1944	
Paraffin	1668	2118	
Water at 73°F	1827	1929	
Water at 140°F	1349	1559	
Water at 194°F	2701	2013	

**Lap shear strength versus tropical weathering**

(40/92, DIN 50017; typical average values)

Cure: 16 hours / 104°F (40°C); Tested at 73 °F (23°C)

	psi
As made value	1784
After 30 days	2603
After 60 days	2474
After 90 days	

**Lap shear strength versus heat aging**

Cure: 16 hours at 104°F (40°C)

	psi
As made value	1784
30 days / 158°F	2857
60 days / 158°F	2937
90 days / 158°F	

**Thermal cycling**

100 cycles of 6 hour duration from -22°F to 158°F (-30°C to 70°C):

638 psi (4.40 MPa)

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**Storage**

Araldite 2055 structural adhesive may be stored for up to two years at 36°F-46°F (2°C-8°C) or six months at 59°F-77°F (15°C-25°C), provided the components are stored in sealed containers. The expiry date is indicated on the label.

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**Handling precautions****Caution**

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.

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