

Araldite[®] 2029-1 Structural Adhesive

Product Description

Araldite[®] 2029-1 structural adhesive is a two component, gap filling, cold curing polyurethane adhesive, consisting of a grey resin component and a beige-colored hardener component. It forms high strength, rigid bonds on metal, which is ideal for structural applications.

Features

- Gap filling
- Medium open time
- High strength on metal
- Adhesion to copper and brass

Typical Properties*

Property	Araldite [®] 2029-1 A	Araldite [®] 2029-1 B	Mixed System
Color	Dark Grey	Beige	Dark grey paste
Density, g/cm ³	1.44	1.19	1.32
Viscosity at 25°C, cP	60,000	60,000	--
Pot life at 25°C, 100 g, min	--	--	40

*Properties are based on Huntsman test methods. Copies are available upon request

Processing

Mix Ratio

Product	Parts by weight	Parts by volume
Araldite [®] 2029-1 A	100	100
Araldite [®] 2029-1 B	82	100

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, isopropanol (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.

Araldite® 2014 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.

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.

Cure times to reach minimum shear strength

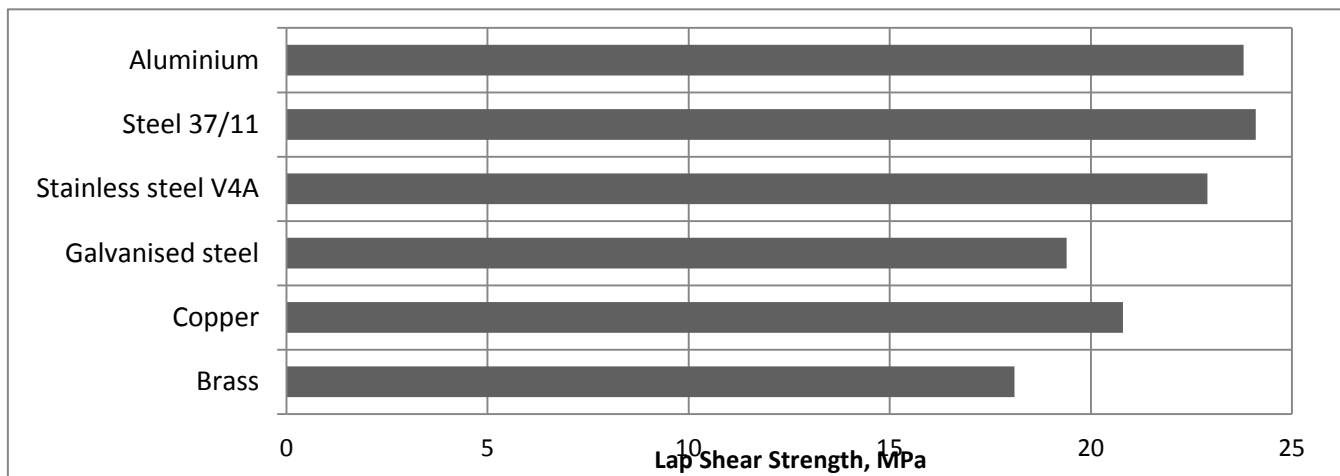
Temperature, °F (°C)	50 (10)	59 (15)	73 (23)	104 (40)	140 (60)	212 (100)
Cure time to reach LSS* > 145 psi (1 MPa)						
hours	9	6	4	-	-	-
minutes	-	-	-	70	25	< 5
Cure time to reach LSS > 1450 psi (10 MPa)						
hours	30	16	8	4	1	-
minutes	-	-	-	-	-	10

*LSS = Lap shear strength

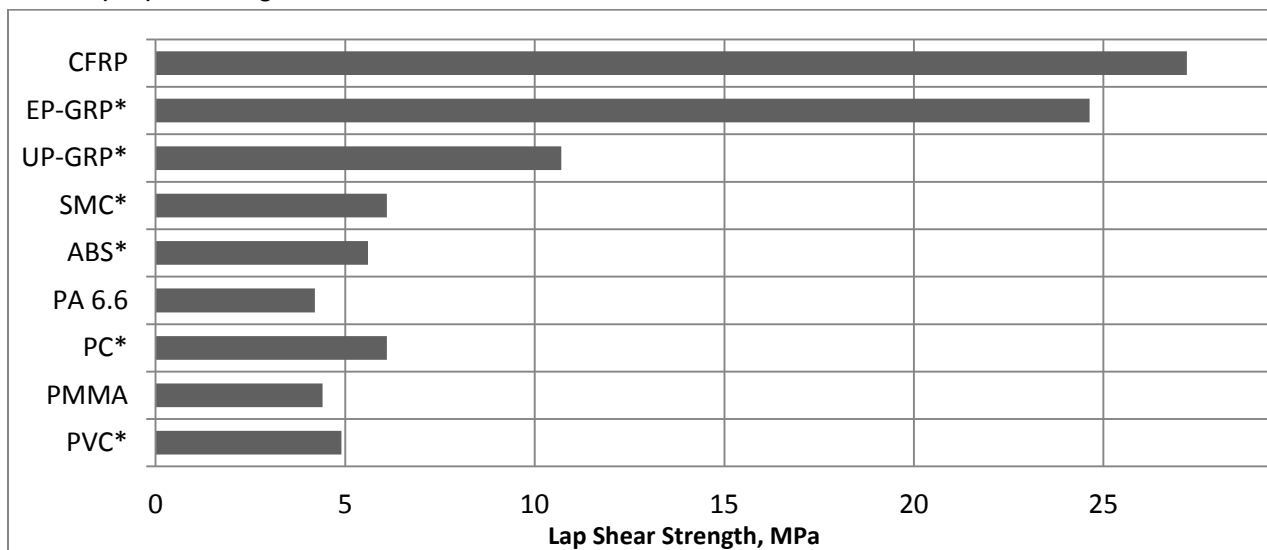
Typical Physical Properties

Unless otherwise stated, the figures given below were all determined by testing standard specimens made by lap-jointing 114 x 25 x 1.6 mm strips of aluminum alloy. The joint area was 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) (typical average values)
Cured for 16 hours at 40°C and tested at 23°C. Pretreatment - Sand blasting



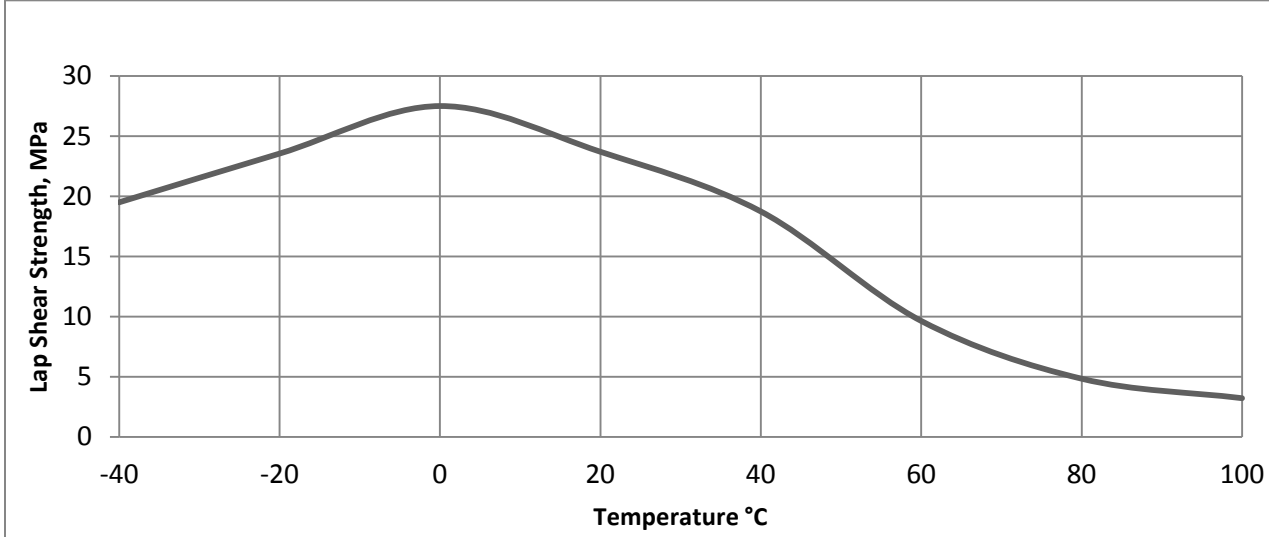
Average lap shear strengths of typical plastic-to-plastic joints (ISO 4587) (typical average values). Cured for 16 hours at 40°C and tested at 23°C. Pretreatment - Lightly abrade and isopropanol degrease.



* : Substrate failure

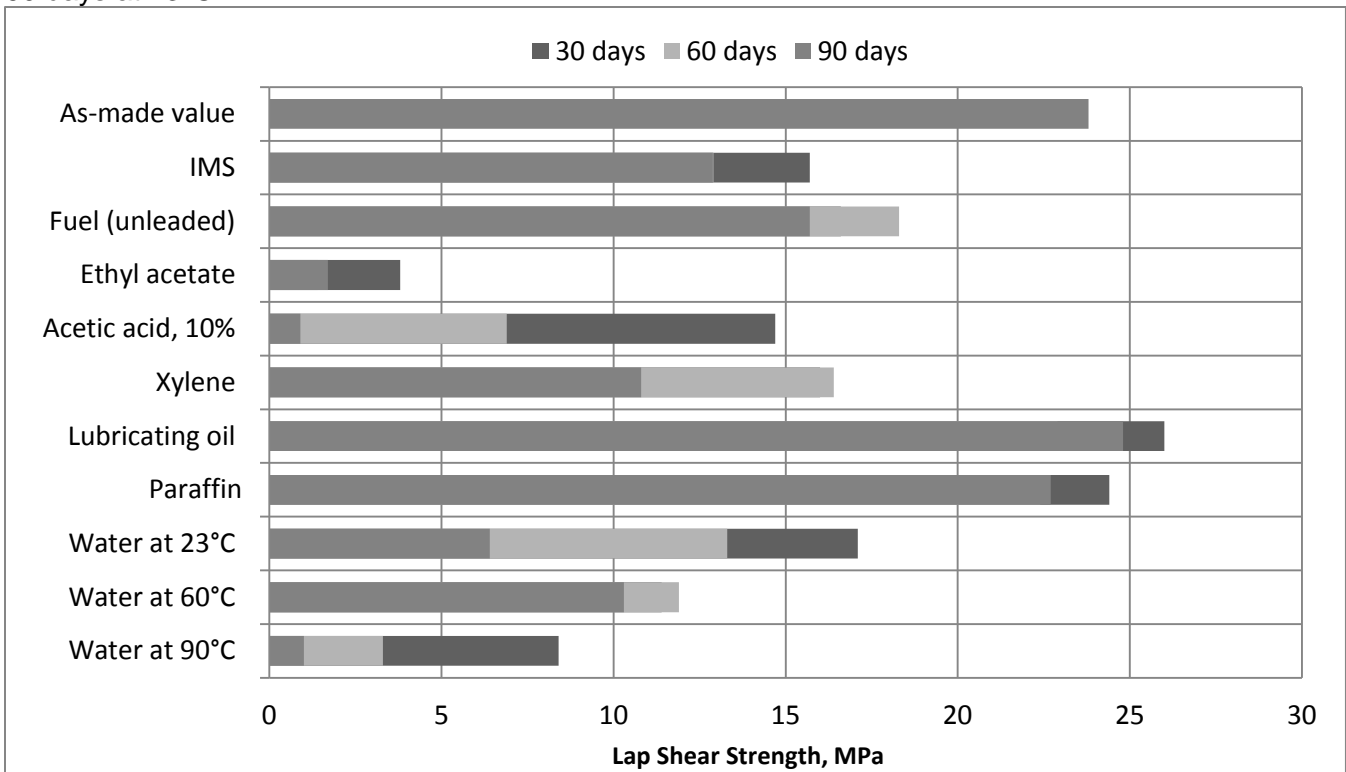
Lap shear strength versus temperature (ISO 4587) (typical average values)

On aluminum, cure: 16 hours at 40°C, Pretreatment - Sand blasting, isopropanol degreasing



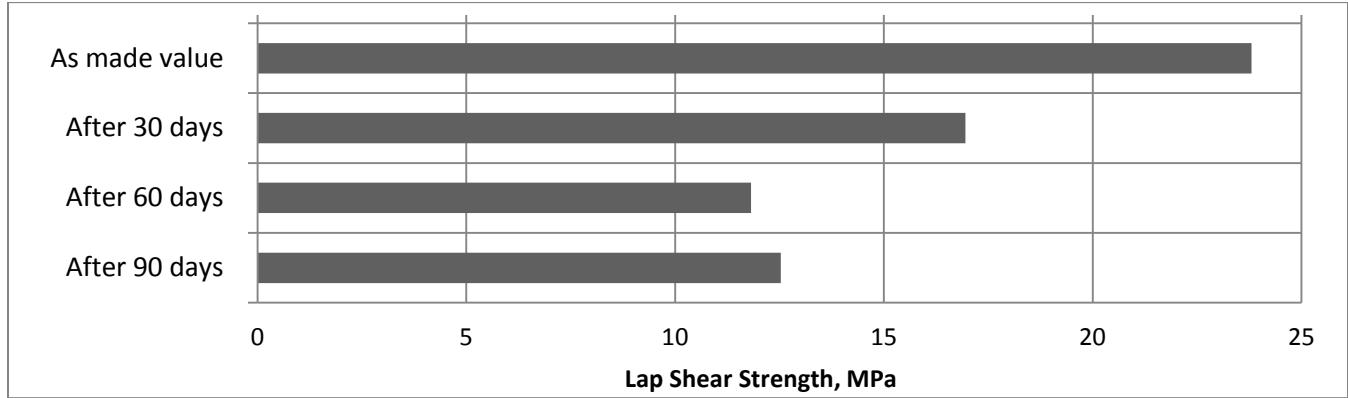
Lap shear strength versus immersion in various media(ISO4587) (typical average values)

On aluminum, cured for 16 hours at 40°C and tested at 23°C. Pretreatment - Sand blasting, isopropanol degreasing. Unless otherwise stated, L.S.S. was determined after immersion for 30, 60 and 90 days at 23°C



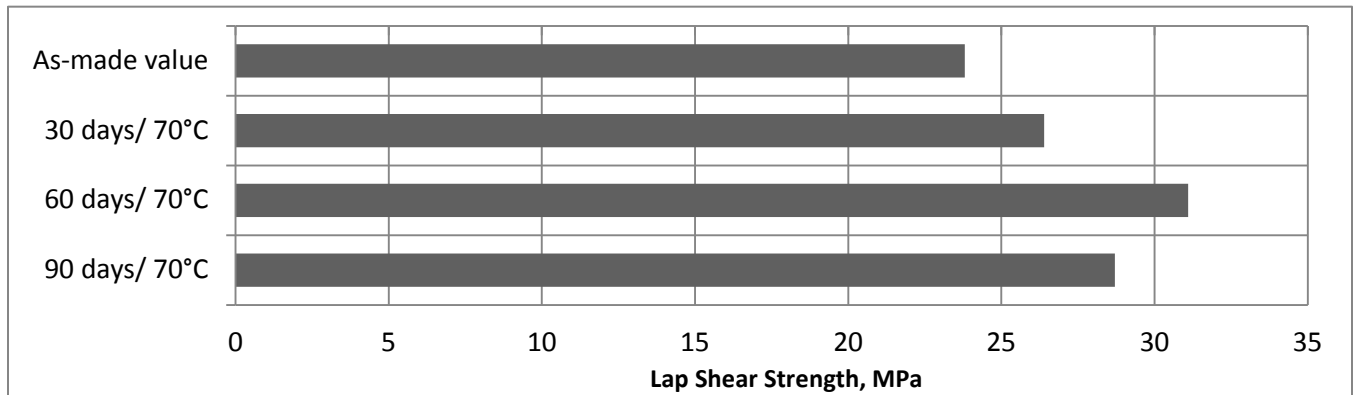
Lap shear strength versus tropical weathering (ISO 4587) (typical average values)

(40°C/92% RH) On aluminum, cured for 16 hours at 40°C and tested at 23°C. Pretreatment - Sand blasting



Lap shear strength versus heat ageing (ISO4587) (typical average values)

On aluminum, cured for 16 hours at 40°C and tested at 23°C. Pretreatment - Sand blasting



Other Physical Properties. Samples were cured at 104°F (40°C) for 16 hours and tested at 23°C, unless otherwise noted.

Property	Method	Value
Lap shear strength, psi (MPa)	ISO 4587	2,708 (19)
After thermal cycling 100 cycles of 6 hours from -30°C to 70°C		3916 (27)
Roller peel test, pli (N/mm)	ISO 4578	17 (3.0)
Glass transition temperature, T _g (DSC tanδ peak), °F (°C)	Huntsman	120 (49)
Durometer Hardness, Shore D	Huntsman	76
Tensile strength, psi (MPa)	ISO 527	2900 (20)
Elongation at tensile break, %	ISO 527	35
Tensile modulus, ksi (MPa)	ISO 527	87 (600)

Storage

Araldite® 2029-1 Structural Adhesive should be stored in a dry place, in the original sealed containers, at temperatures between 15°C and 25°C (59°F and 77°F). Under these storage conditions, the product has a shelf life of **3 years** (from date of manufacture). The product should not be exposed to direct sunlight.

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 SDS as mentioned above.

KEEP OUT OF REACH OF CHILDREN

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Main Offices:

Huntsman Corporation
10003 Woodloch Forest Dr
The Woodlands, TX 77380
888-564-9318

Huntsman Advanced Technology Center
8600 Gosling Rd.
The Woodlands, TX 77381
281-719-7400