

ARALDITE® 2028-1 Structural Adhesive

Product Description

ARALDITE® 2028-1 structural adhesive is a two-component, transparent, cold-curing polyurethane adhesive that has flash point above 100 °C. ARALDITE® 2028-1 adhesive is fast curing and UV stable. It is suitable for bonding a variety of metal and plastic substrates.

Features

- Transparent
- Fast curing
- UV stable
- Suitable for bonding a variety of metal and plastic substrates

Typical Properties*

Property	Component A (Resin)	Component B (Hardener)	Mixed Adhesive
Appearance – Visual (A112)	Transparent	Transparent	Transparent
Density, g/cm ³	1.12	1.12	~1.12
Viscosity at 77°F (25°C), Poise	30 - 45	70 - 110	-
Pot life, min at 77°F (25°C), 100 g in static mixer	-- --	-- --	~6 6 - 8
Lap shear strength at 23°C, MPa (A501)	--	--	> 8

*Specified data are on a regular basis analyzed. Data which is described in this document as 'typical' is not analyzed on a regular basis and is given for information purposes only. Data values are not guaranteed or warranted unless if specifically mentioned.

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, isopropanol (for plastics) or other proprietary degreasing agents in order to remove all traces of oil, grease and dirt. Low grade alcohol, gasoline (petrol) 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

Product	Parts by weight	Parts by volume
Component A (Resin)	100	100
Component B (Hardener)	100	100

The resin and hardener should be blended until they form a homogeneous mix. ARALDITE® 2028-1 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 0.05 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 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)	77 (40)	104 (60)	140 (100)
Cure time to reach LSS* > 145 psi (1 MPa)	hr	2	-	-	-	-	-
	min	-	75	30	7	3	< 2
Cure time to reach LSS > 1450 psi (10 MPa)	hr	>24	20	8	-	-	-
	min	-	-	-	100	60	20

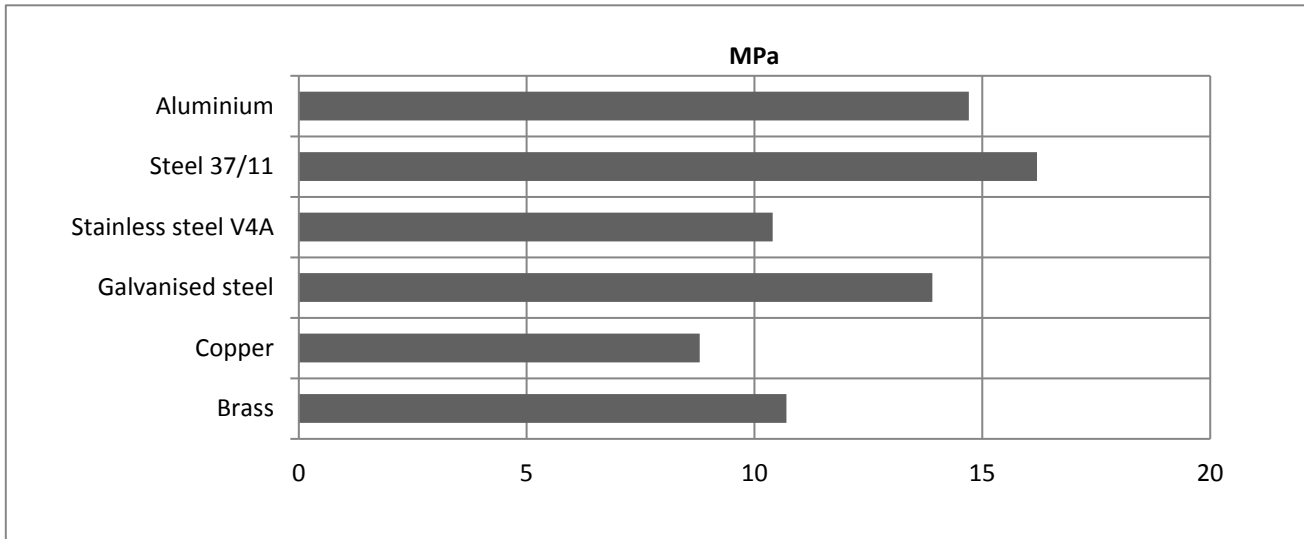
LSS = Lap shear strength

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 overlap was 12.5 x 25 mm in each case. The figures were determined with typical production batches using standard testing methods and 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)

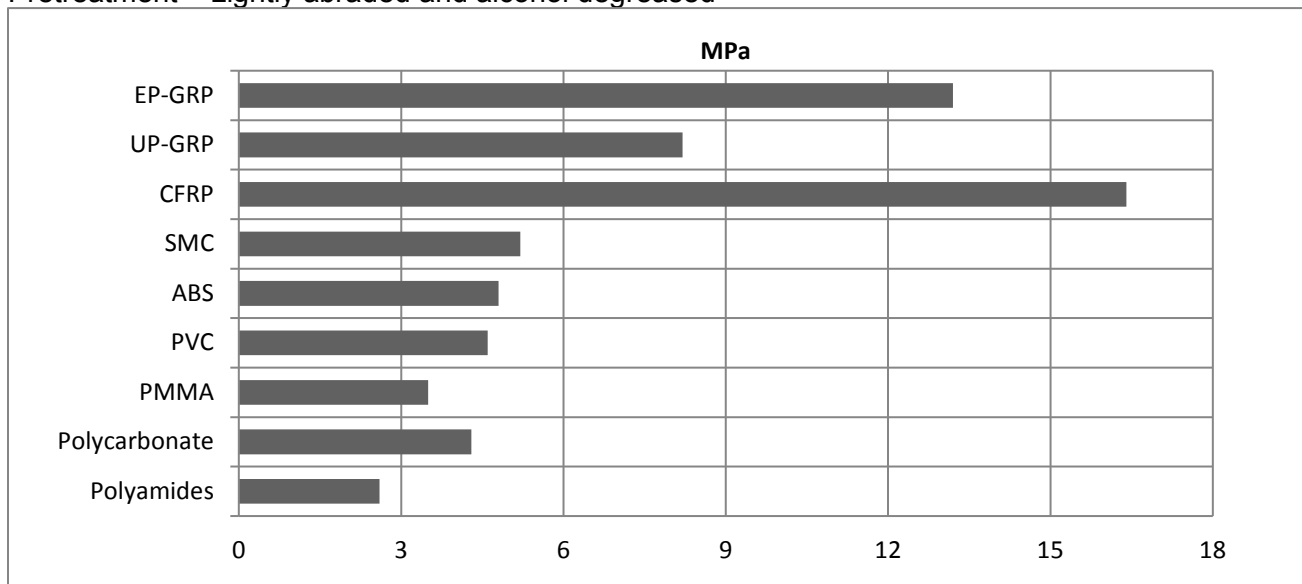
Cured for 16 hours at 104°F (40°C) and tested at 73°F (23°C). Pretreatment – Sandblasting



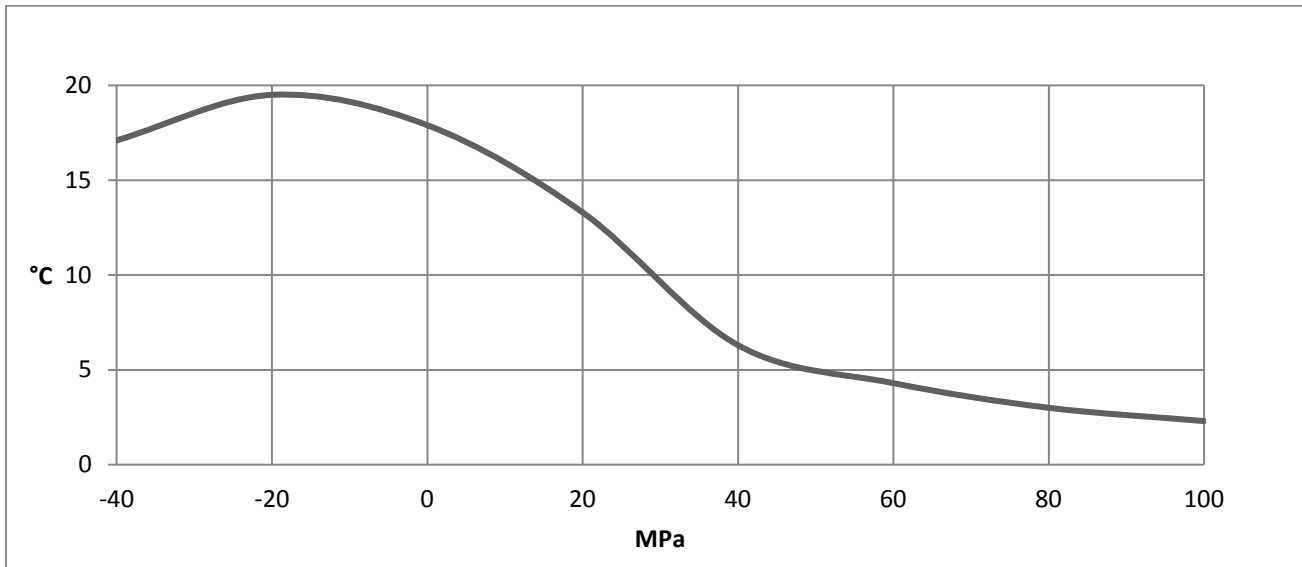
Average lap shear strengths of typical plastic-to-plastic joints (ISO 4587)

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

Pretreatment – Lightly abraded and alcohol degreased



Average Lab shear strength versus temperature (ISO 4587)
 Cured 16 hours at 40°C



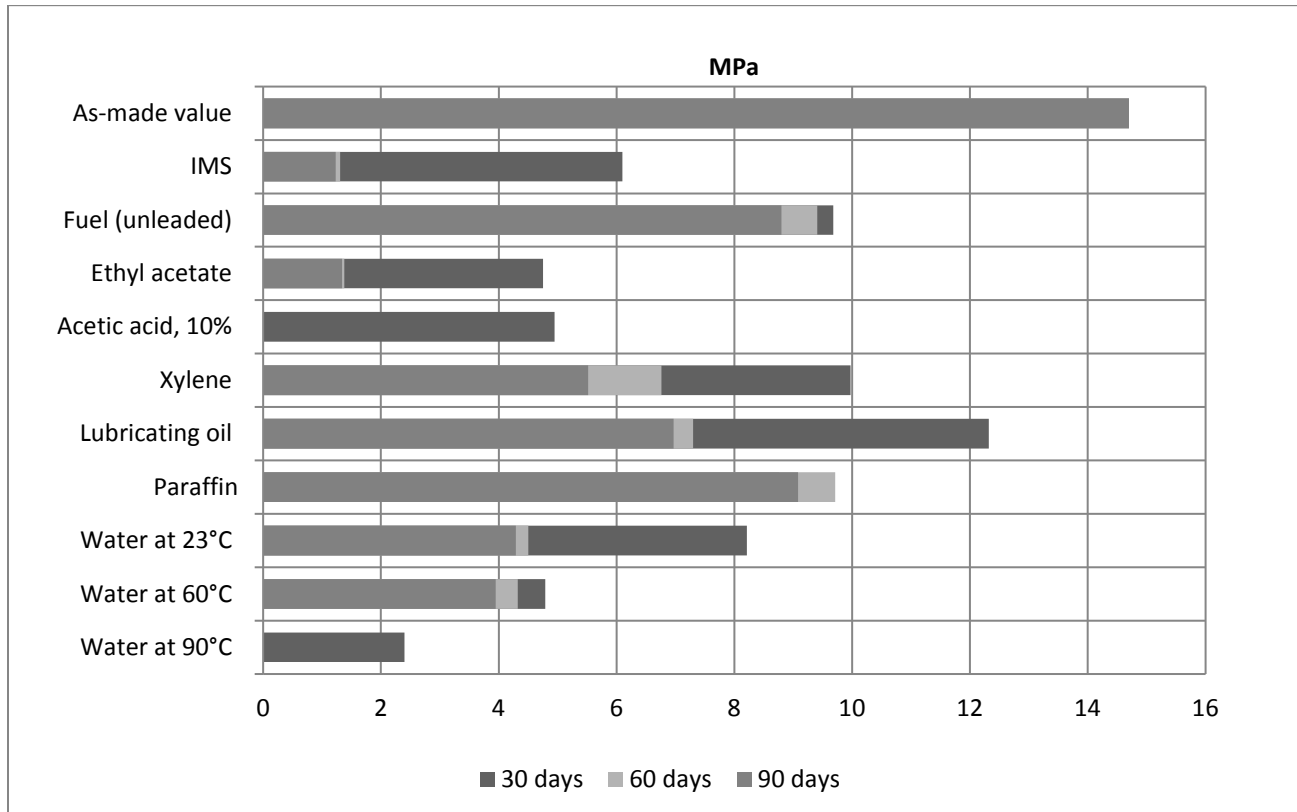
Properties	Typical average value	Test Method
Roller peel test, N/mm (on sand blasted aluminium)	6.6	ISO 4578
Glass transition temperature DMA, °C	13	ISO 6721
Lap shear strength on other substrates, MPa		ISO 4587
Wood	7	
Glass	7	
Tensile properties		ISO 527
Tensile strength, MPa	11	
E-Modulus, MPa	16	
Elongation at break, %	60	

Lap shear strength versus immersion in various media (ISO 4587) (typical average values)

Cure: 16 hours at 104°F (40°C), test at 23°C

Substrate: Sandblasted aluminium

LSS was determined after immersion for 30, 60, and 90 days at 23°C

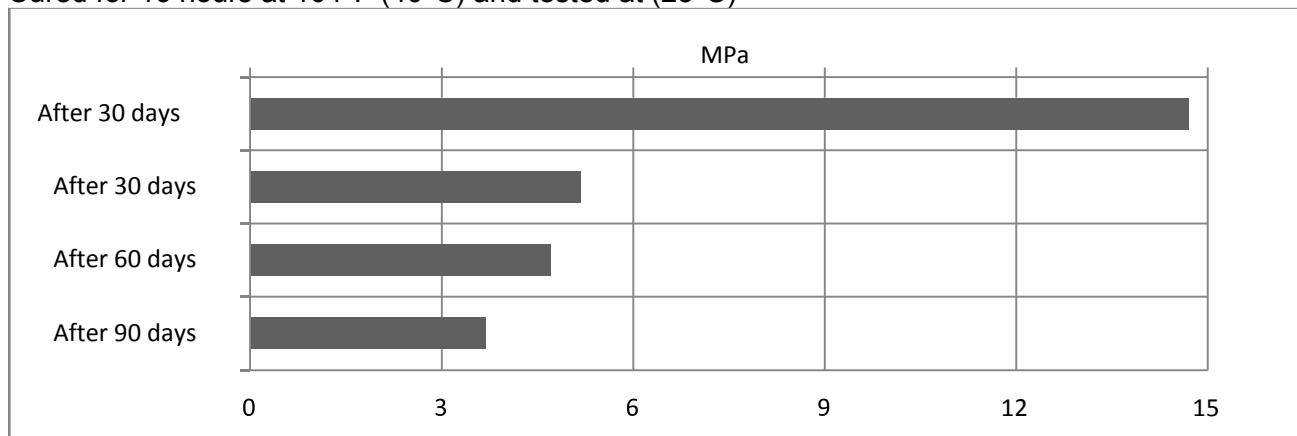


Lap shear strength versus tropical weathering (40/92, DIN 50017) (typical average values)

Conditions: 40°C / 92% Relative Humidity

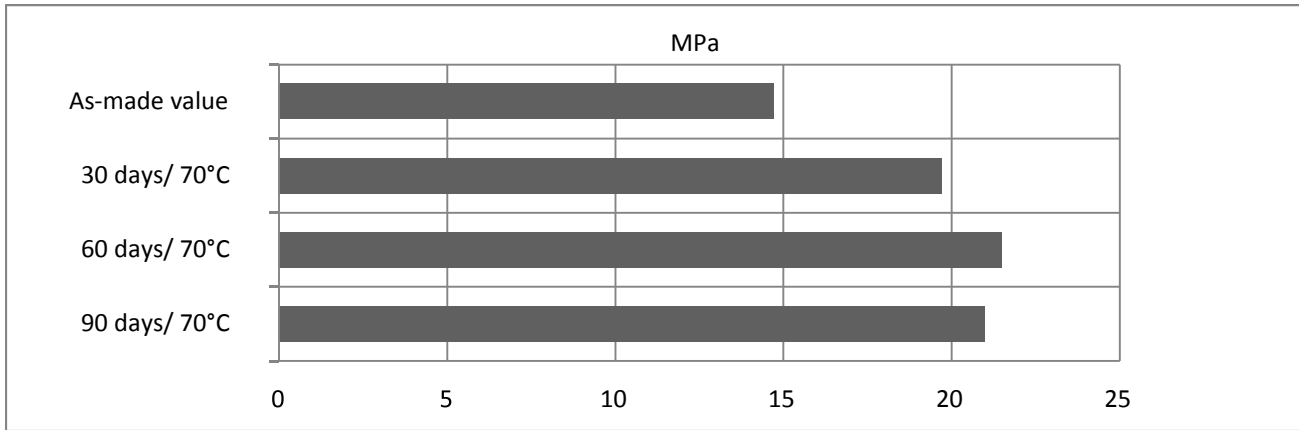
Substrate: sand blasted Aluminum

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



Lap shear strength versus heat ageing (ISO 4587) (typical average values)

Cure: 16 hours at 104°F (40°C) and tested at 73°F (23°C).

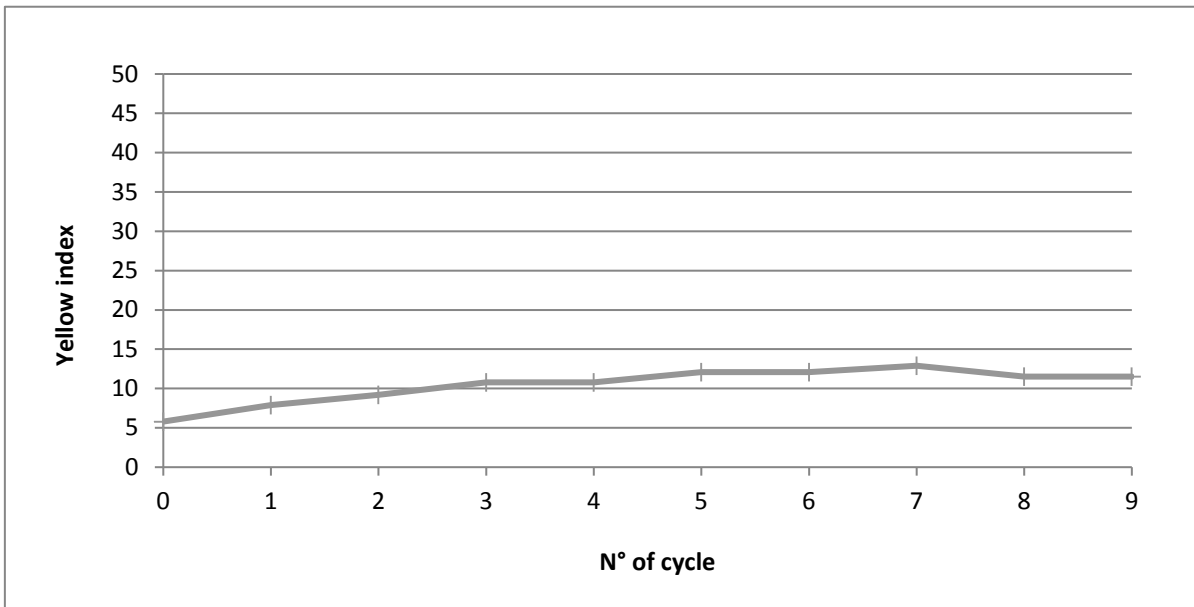


Thermal cycling (typical average value): 12.8 Mpa

100 cycles of 6 hours duration from -30°C to 70°C

Resistance to yellowing

Suntest XLS+ / 500 W/m² / 1 cycle = 66 hours



Storage

ARALDITE® 2028-1 A/B structural adhesive is supplied in 484 pound steel drums. The products should be stored in a dry place, in the sealed original containers, at temperatures between 2°C and 40°C (36°F and 104°F). Under these storage conditions, the products have a shelf life of **3 years** (from date of manufacture). The expiry date is indicated on the label. The products 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.

KEEP OUT OF REACH OF CHILDREN

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