

ARALDITE® 2031-1 Structural Adhesive

Product Description

ARALDITE® 2031-1 structural adhesive is a two-component, room temperature-curing adhesive that can be used for resilient bonding applications. ARALDITE® 2031-1 adhesive is thixotropic and non-sagging up to 10 mm thickness, and is suitable for GRP, CFRP and SMC bonding.

Features

- Thixotropic with no slumping
- Toughened for metal and composite bonding
- High weathering resistance
- Contains spacers to ensure a minimum bond line thickness of 0.05 mm

Typical Properties*

Property	Component A (Resin)	Component B (Hardener)	Mixed Adhesive
Appearance – Visual (A112)	Black paste	Black paste	Black paste
Density, g/cm ³	1.2	1.4	~1.3
Viscosity at 77°F (25°C), cP	Thixotropic	Thixotropic	Thixotropic
Pot life at 77°F (25°C), 100 g, min	--	--	60-70
Lap shear strength at 23°C, MPa (A501)	--	--	> 20

* 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)	120	100

The resin and hardener should be blended until they form a homogeneous mix. ARALDITE® 2031-1 is also 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 is applied with a spatula, to the pretreated and dry joint surfaces.

A layer of adhesive 0.05 to 0.10 mm thick will normally impart the greatest lap shear strength to the joint. The adhesive contains spacer to ensure a minimum bond line thickness of 0.05 mm.

The joint components should be assembled and clamped as soon as the adhesive has been applied.

An even contact pressure throughout the joint area will ensure optimum cure.

For more detailed explanations regarding surface preparation and pretreatment, adhesive joint design, and the dual syringe dispensing system, visit www.aralditeadhesives.com.

Mechanical Processing

Specialist firms have developed metering, mixing and spreading equipment that enables the bulk processing of adhesive. We will be pleased to advise customers on the choice of equipment for their particular needs.

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	12	7	3	-	-	-
	min	-	-	-	90	15	3
Cure time to reach LSS > 1450 psi (10 MPa)	hr	72	32	15	3	-	-
	min	-	-	-	-	45	5

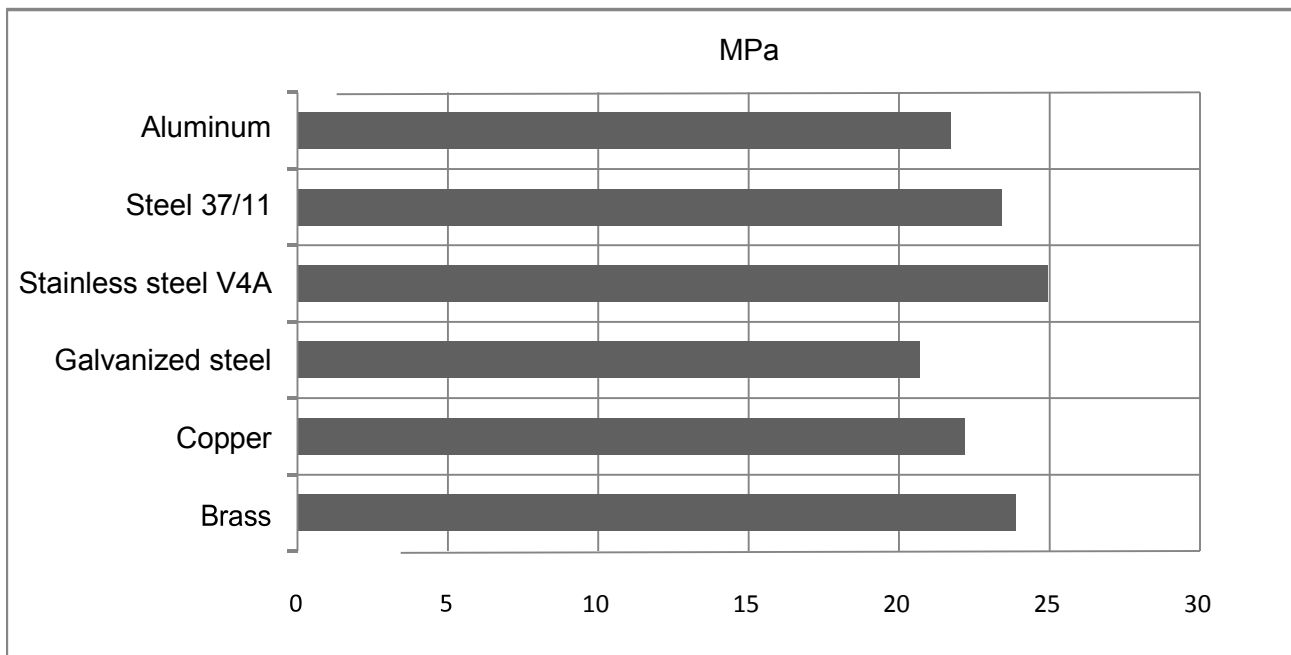
LSS = Lap shear strength

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.

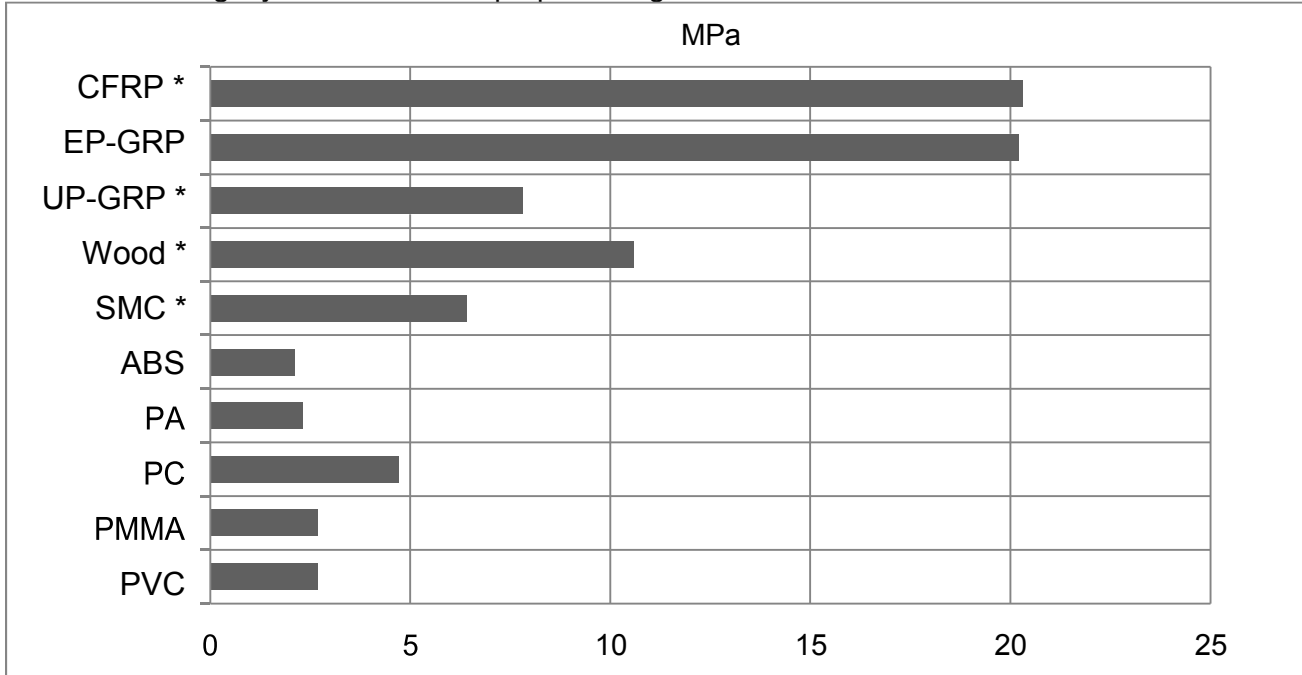
Average lap shear strengths of typical metal-to-metal joints (ISO 4587)

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



Average lap shear strengths of typical non-metallic substrates joints (ISO 4587)

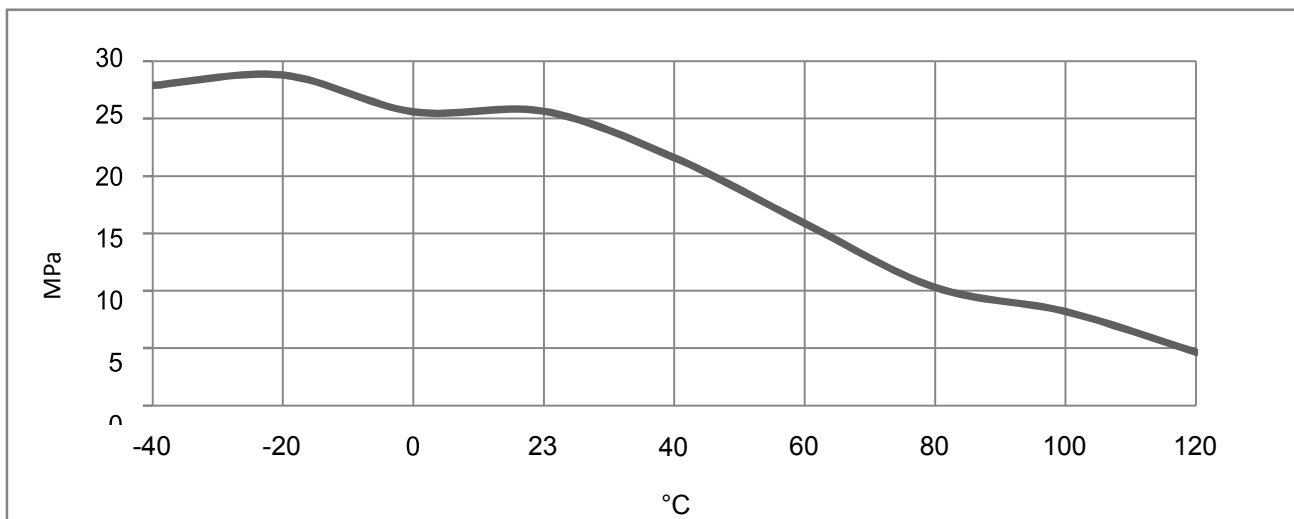
Cured for 16 hours at 104°F (40°C) and tested at 73°F (23°C).
Pretreatment: Lightly abraded and isopropanol degreased



* Substrates failures

Average Lab shear strength versus temperature (ISO 4587)

Cured 16 hours at 40°C. Substrates: Aluminum. Pretreatment: Sand blasted



Properties	Typical average value	Test Method
Roller peel test, N/mm (on sand blasted aluminium)	5	ISO 4578
Glass transition temperature DMA, °C	75	ISO 6721
Tensile properties		ISO 527
Tensile strength, MPa	23	
E-Modulus, GPa	1	
Elongation at break, %	12	
Flexural properties		ISO 178
Flexural strength, MPa	37	
E-Modulus, GPa	1.2	
Elongation at break, %	11	

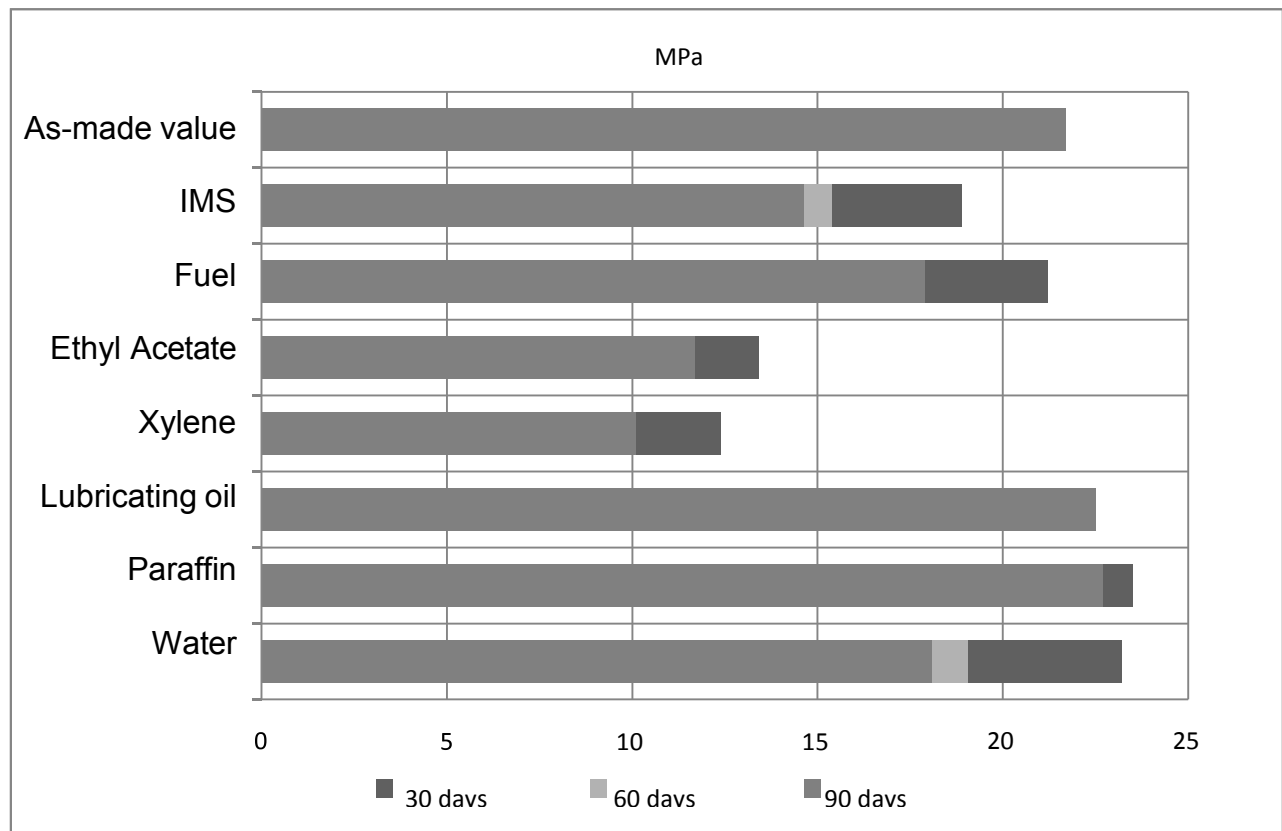
NOTE: All samples were cured 16 hours at 40°C and tested at 23°C

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

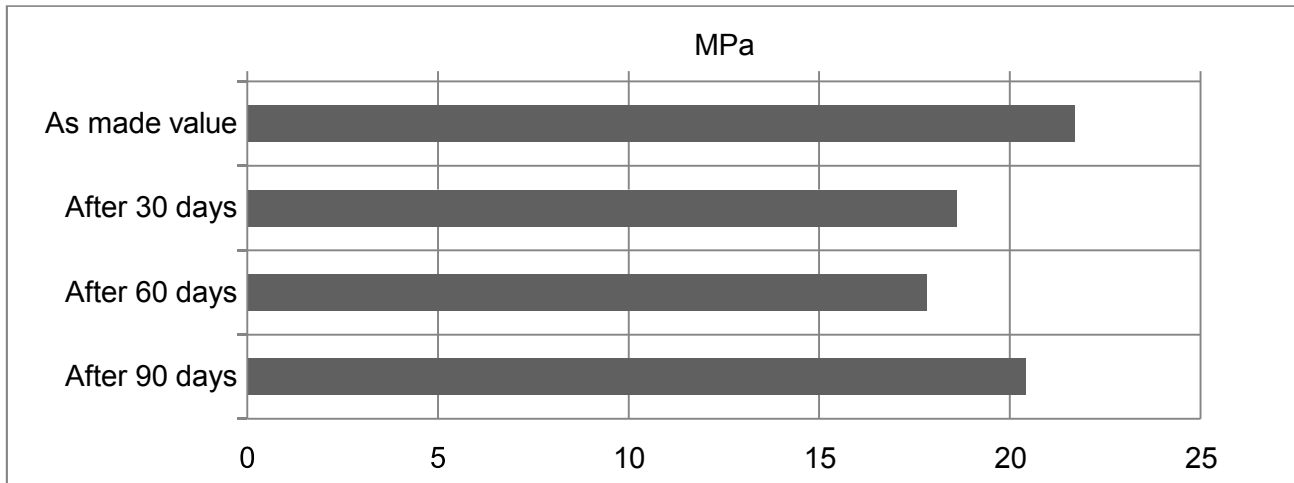
Substrate: Sandblasted aluminium

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



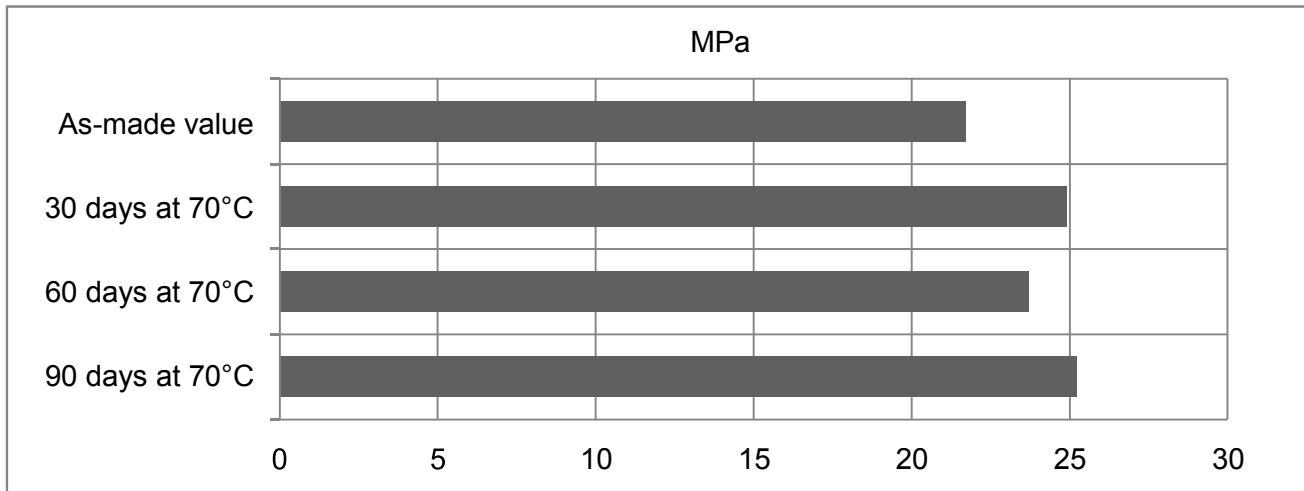
Lap shear strength versus tropical weathering (typical average values)

Conditions: 40°C / 92% Relative Humidity
Substrate: sand blasted Aluminum
Cured for 16 hours at 104°F (40°C) and tested at (23°C)

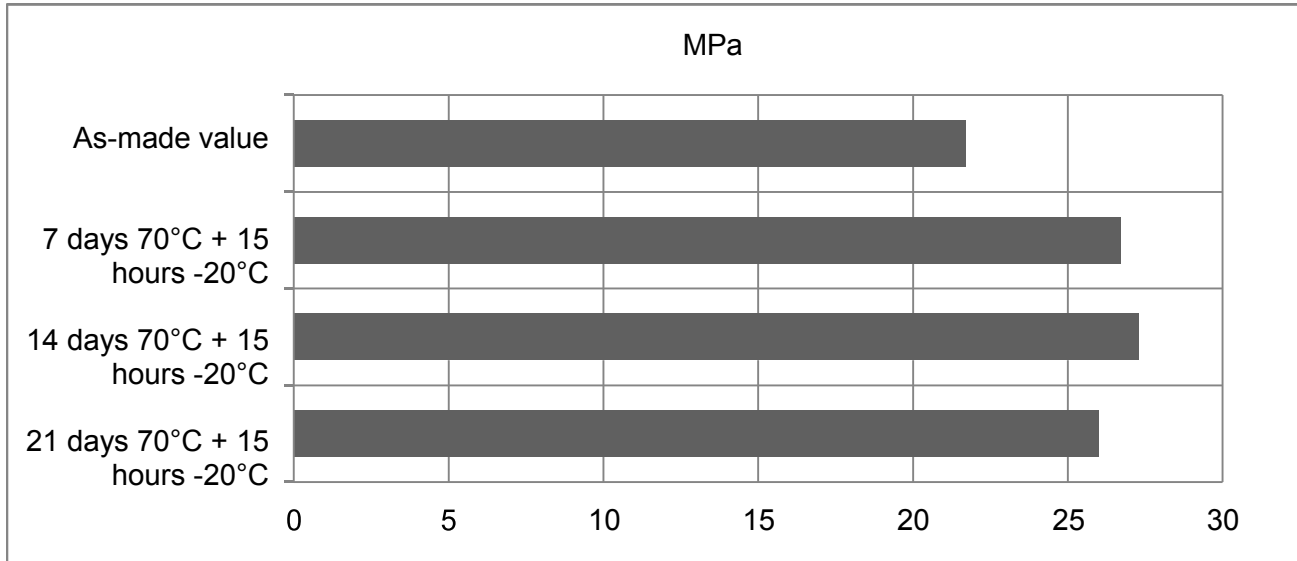


Lap shear strength versus heat ageing (ISO 4587) (typical average values)

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



Lap shear strength versus Cataplasma ageing (ISO 9142/E2) (typical average values)
Cure: 7 days at 73°F (23°C) and tested at 73°F (23°C).



Storage

ARALDITE® 2031-1 structural adhesive should be stored in a dry place, in the original sealed containers, at temperatures between 2°C and 40°C (36°F and 104°F). Under these storage conditions, the product has a shelf life of **3 years** (from date of manufacture). The expiry date is indicated on the label. 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 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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