

Advanced Materials

Araldite® 420 A/B

Structural Adhesives

ARALDITE® 420 A/B

Two component epoxy adhesive system

Key properties

- Very high lap shear and peel strength
- Bonds a wide variety of materials (metal, composite and thermoplastics)
- Good moisture resistance
- Extremely tough and resilient adhesive

Description

ARALDITE® 420 A/B is a two-component room temperature curing, epoxy adhesive paste of high strength and toughness. Performances can be enhanced by post-curing at elevated temperature. It is suitable for bonding a wide variety of metals, ceramics and many other substrates in common use.

Product data

Property	Araldite 420 A	Araldite 420 B	Mixed Adhesive
Colour (visual) (A112)*	Yellow	Blue	Dark green
Specific gravity	1.2	1.0	approx. 1.1
Viscosity at 25 °C (A93) (Pa.s)*	100-300	0.6-1.4	35-45
Lap shear strength at 23 °C (A501)*	-	-	> 30 MPa
Pot Life (100 gm at 25°C)			Ca. 60 min

* Specified data are on a regular basis analysed. Data which is described in this document as 'typical' is not analysed 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, iso-propanol (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	Parts by weight	Parts by volume
Araldite 420 A	100	100
Araldite 420 B	40	50

The resin and hardener should be blended until they form a homogeneous mix.

Araldite® 420 A/B 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 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 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.

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 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.

Typical times to minimum shear strength

Temperature	°C	23	40	60	100
Cure time to reach	hours	7.5			
LSS > 1N/mm ²	minutes		100	35	< 5
Cure time to reach	hours	11	2	1	
LSS > 10N/mm ²	minutes				20

LSS = Lap shear strength.

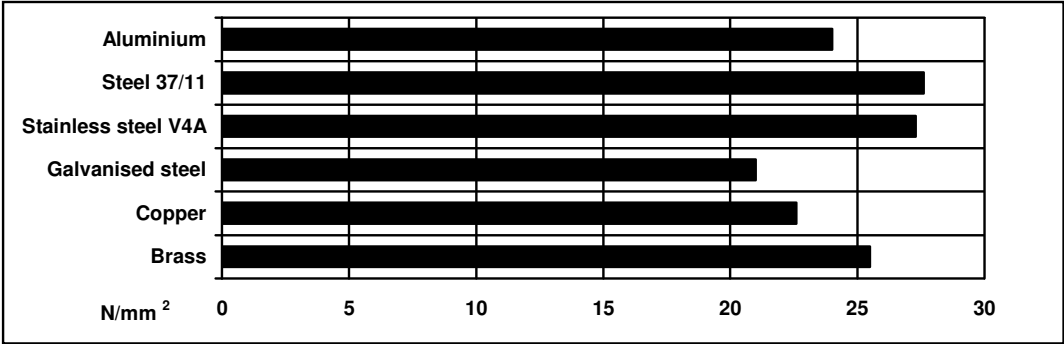
Typical cured properties

Unless otherwise stated, the figures given below were all determined by testing standard specimens made by lap-jointing 114 x 25 x 1.6 mm strips of aluminium alloy. The joint area was 12.5 x 25 mm in each case.

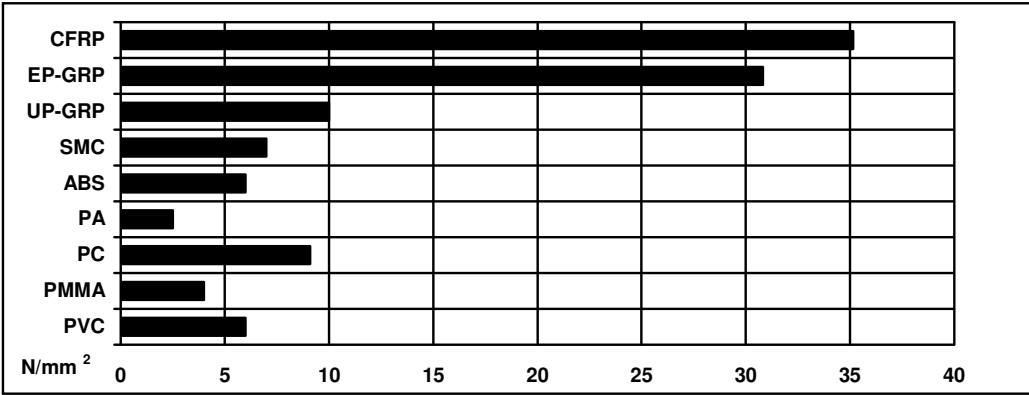
The figures were determined with typical production batches using standard testing methods. They are provided solely as technical information and do not constitute a product specification.

Note: The data in this edition is based on recent retesting of the product.

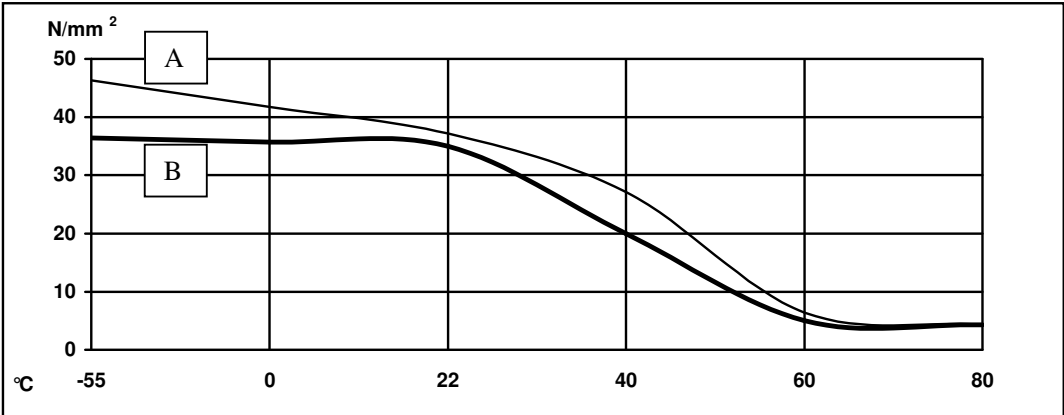
Average lap shear strengths of typical metal-to-metal joints (ISO 4587) (typical average value)
Cured for 16 hours at 40°C and tested at 23°C
Pretreatment - Sand blasting



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



Lap shear strength versus temperature (ISO 4587) (typical average values)
A: Cure: 4 hours at 50°C B: cure: 7 days at RT



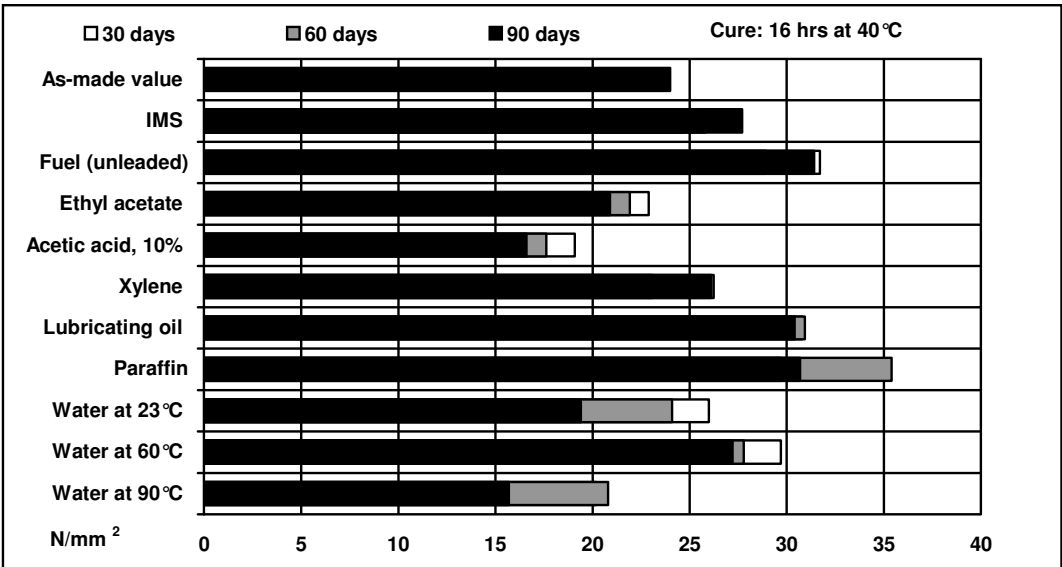
Glass transition temperature (ISO 6721) (typical average value)

Cure: 16 hours at 40°C

56°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 30,60 and 90 days at 23°C



Tensile strength at 23°C (ISO 527)	(typical average value)	29 MPa
E-modulus		1495 MPa
Elongation at break		4.6 %
Shore Hardness (D scale) (ISO 868/03)	(typical average value)	
Cure 16 hours/ 40°C , tested at 23°C,		75 D
50%RH		
Shear modulus G'(ISO 6721)	(typical average value)	
Cure: 16 hours/ 40°C		

- 20°C - 1.00 GPa
- 0°C - 880 MPa
- 23°C - 730 MPa
- 60°C - 74 MPa
- 90°C - 5.5 MPa

Storage

ARALDITE® 420A and Araldite® 420 B may be stored at room temperature provided the components are stored in sealed containers. The expiry date is indicated on the label.

**Handling
precautions****Caution**

Our products are generally quite harmless to handle provided that certain precautions normally taken when handling chemicals are observed. The uncured materials must not, for instance, be allowed to come into contact with foodstuffs or food utensils, and measures should be taken to prevent the uncured materials from coming in contact with the skin, since people with particularly sensitive skin may be affected. The wearing of impervious rubber or plastic gloves will normally be necessary; likewise the use of eye protection. The skin should be thoroughly cleansed at the end of each working period by washing with soap and warm water. The use of solvents is to be avoided. Disposable paper - not cloth towels - should be used to dry the skin. Adequate ventilation of the working area is recommended. These precautions are described in greater detail in the Material Safety Data sheets for the individual products and should be referred to for fuller information.



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