

## Structural Adhesives

### Araldite® 2020 (XW 396/XW 397)

#### Two component clear epoxy adhesive system

##### Key properties

- Low viscosity, water white adhesive
- Especially suitable for glass and ceramic bonding
- Suitable for clear castings and laminates
- Refractive index similar to that of glass

##### Description

Araldite 2020 is a two component, room temperature curing, low viscosity adhesive specifically designed for glass bonding.

It is also suitable for bonding a wide variety of metals, ceramics, rubbers, rigid plastics and most other materials in common use.

##### Product data

	2020/A	2020/B	2020 (mixed)
Colour (visual)	Water white	Water white	Water white
Specific gravity	ca 1.12	ca 0.95	ca 1.1
Viscosity (mPas)	ca 150	ca 150	ca 150
Pot life (100 gm at 25°C)	-	-	40 - 50 minutes
Shelf life (2 - 40°C)	3 years	3 years	-
Refractive index	-	-	1.553
Flash point (°C)	140	>120	-

##### Processing

###### Pretreatment

The strength and durability of a bonded joint are dependant on proper pretreatment 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 2020/A	100	100
Araldite 2020/B	30	35

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

###### 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 a 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.

**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	°C	10	15	23	40	60	100
Cure time to reach	hours	24	20	16	3	-	-
LSS > 1N/mm <sup>2</sup>	minutes	-	-	-	-	90	15
Cure time to reach	hours	60	48	25	7	2.5	-
LSS > 10N/mm <sup>2</sup>	minutes	-	-	-	-	-	20

LSS = Lap shear strength.

Note – There is a risk of exotherm when casting the product in bulk or in thick sections (>1cm) when the mould is insulating. This should be assessed before proceeding.

**Typical cured properties**

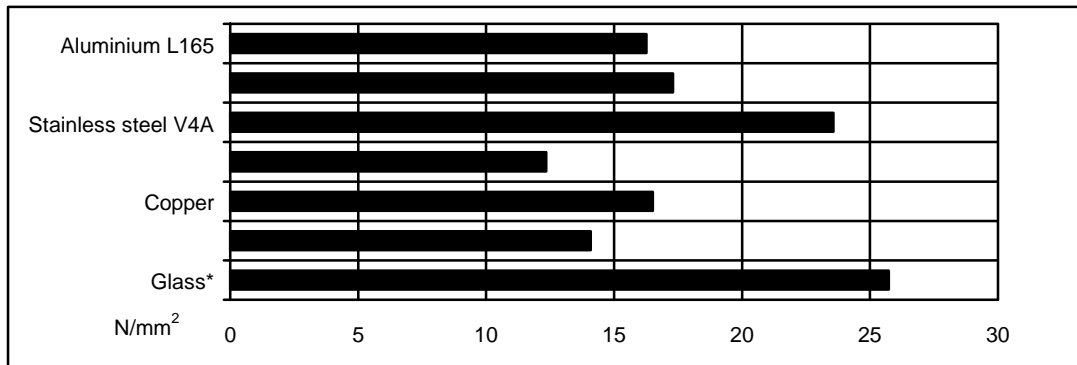
Unless otherwise stated, the figures given below were all determined by testing standard specimens made by lap-jointing 170 x 25 x 1.5 mm strips of aluminium alloy. The joint area was 12.5 x 25 mm in each case.

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.

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

Cured for 16 hours at 40°C and tested at 23°C

Pretreatment - Sand blasting

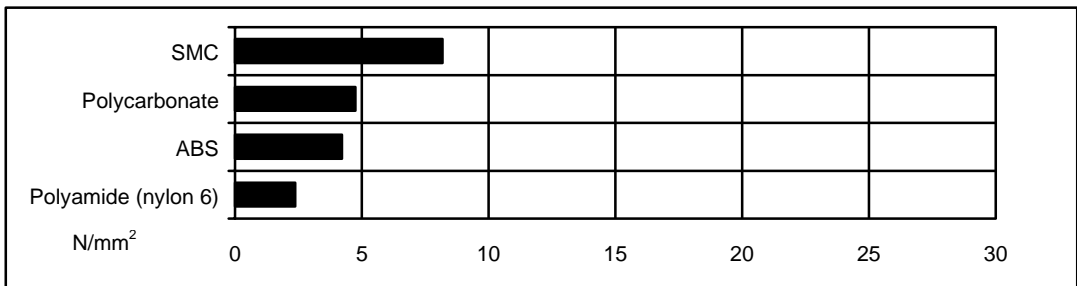


\*Compression lap shear strength.

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

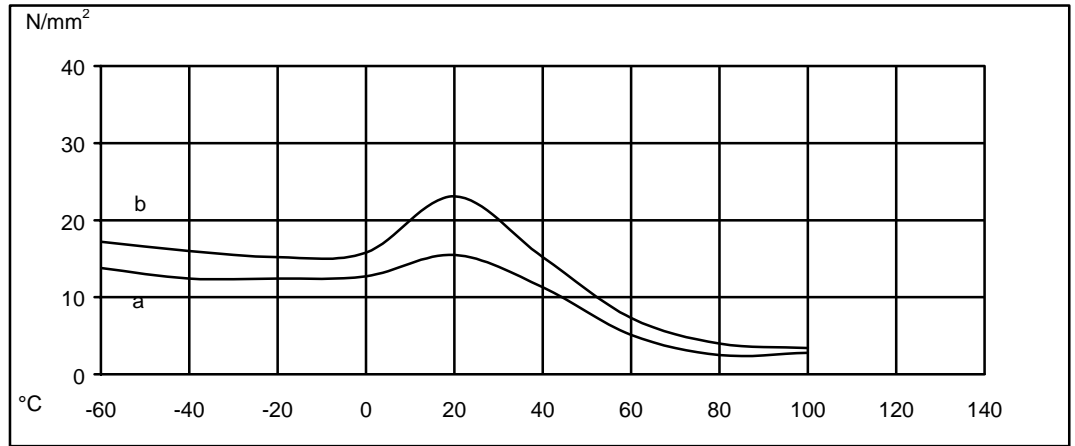
Cured for 16 hours at 40°C and tested at 23°C

Pretreatment - Lightly abrade and iso-propanol degrease.



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

Cure: (a) = 7 days /23°C; (b) = 24 hours/23°C + 30 minutes/80°C



**Roller peel test (ISO 4578)**

Cured 16 hours/40°C

0.21 N/mm

**Flexural Properties (ISO 178) Cure 16 hours/ 40°C tested at 23°C**

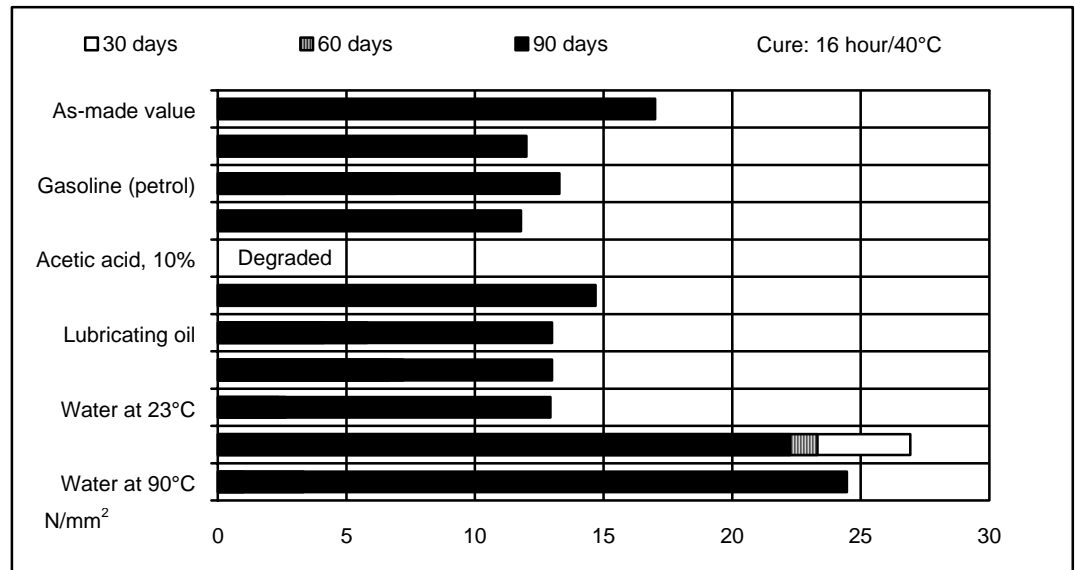
Flexural Strength 74.9 MPa

Flexural Modulus 2467.9 MPa

**Glass transition temperature (°C) 39.5**

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

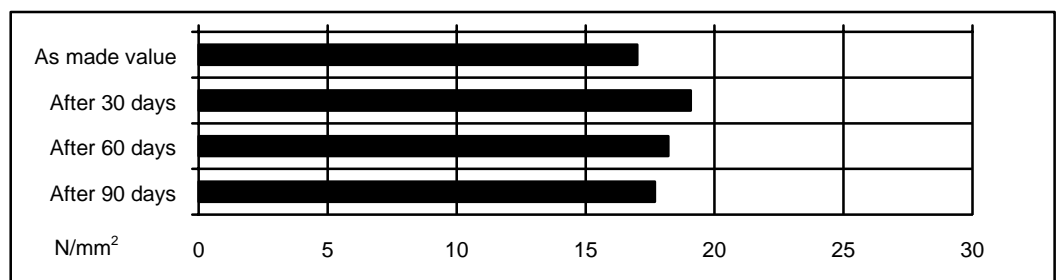
Unless otherwise stated, L.S.S. was determined after immersion for 90 days at 23°C



**Lap shear strength versus tropical weathering**

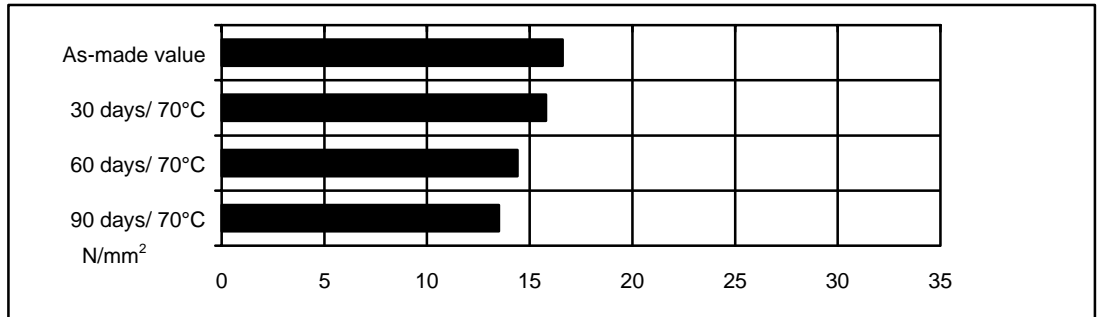
(40/92, DIN 50015; typical average values)

Cure: 16 hours/40°C; Test: at 23°C



### Lap shear strength versus heat ageing

Cure:16 hours/40°C



### Thermal cycling

100 cycles of 6 hour duration from -30°C to 70°C      4.5N/mm<sup>2</sup>

---

### Storage

Araldite 2020/A and Araldite 2020/B may be stored for up to 3 years 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.

---

### Huntsman Advanced Materials

All recommendations for the use of our products, whether given by us in writing, verbally, or to be implied from the results of tests carried out by us, are based on the current state of our knowledge. Notwithstanding any such recommendations the Buyer shall remain responsible for satisfying himself that the products as supplied by us are suitable for his intended process or purpose. Since we cannot control the application, use or processing of the products, we cannot accept responsibility therefor. The Buyer shall ensure that the intended use of the products will not infringe any third party's intellectual property rights. We warrant that our products are free from defects in accordance with and subject to our general conditions of supply.

Duxford, Cambridge  
England CB2 4QA

© 2004 Huntsman Advanced Materials (Switzerland) GmbH  
® Araldite is a registered trademark of Huntsman LLC or an affiliate thereof in one or more, but not all, countries.

Tel: +44 (0) 1223 832121  
Fax: +44 (0) 1223 493322

[www.araldite.com](http://www.araldite.com)