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2011

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A ® 2011

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Araldite® 2011 is a multipurpose, two component, room temperature curing adhesive of high strength and toughness. It is suitable for bonding a wide variety of metals, ceramics, glass, rubber, rigid plastics and most other materials in common use. It is a versatile adhesive for the craftsman as well as most industrial applications.

	2011/A	2011/B	2011 ( )
Colour - visual (A112)*	Neutral	pale yellow	pale yellow
Specific gravity	ca. 1.15	ca. 0.95	ca. 1.05
Viscosity at 25°C (Pas) (A191)*	30-50	20-35	30-45
Pot Life (100 gm at 25°C)	-	-	ca. 100 minutes
Lap shear strength at 23°C (A501)*	-	-	> 19 MPa

\* 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.

The strength and durability of a bonded joint are dependant 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.

Araldite® 2011/A	100	100
Araldite® 2011/B	80	100

Araldite® 2011 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.

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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 an 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](http://www.araldite2000plus.com).

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.

Temperature	°C	10	15	23	40	60	100
Cure time to reach	hours	24	12	7	2	-	-
LSS > 1MPa	minutes	-	-	-	-	30	6
Cure time to reach	hours	36	18	10	3	-	-
LSS > 10MPa	minutes	-	-	-	-	45	7

LSS = Lap shear strength.

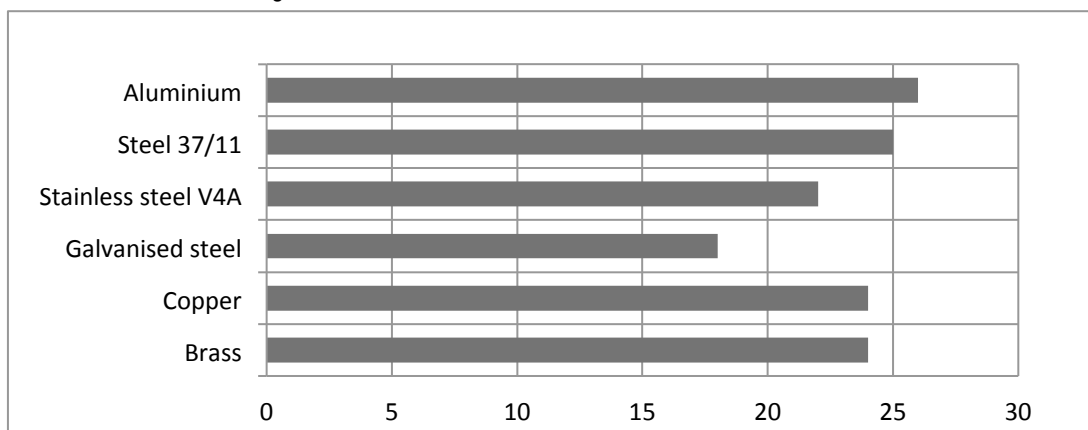
Unless otherwise stated, the figures given below were all determined by testing standard specimens made by lap-jointing 114 x 25 x 1.6 mm strips of aluminium alloy. The joint area was 12.5 x 25 mm in each case.

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.

**A** - - ( **4587**) (typical average values)

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

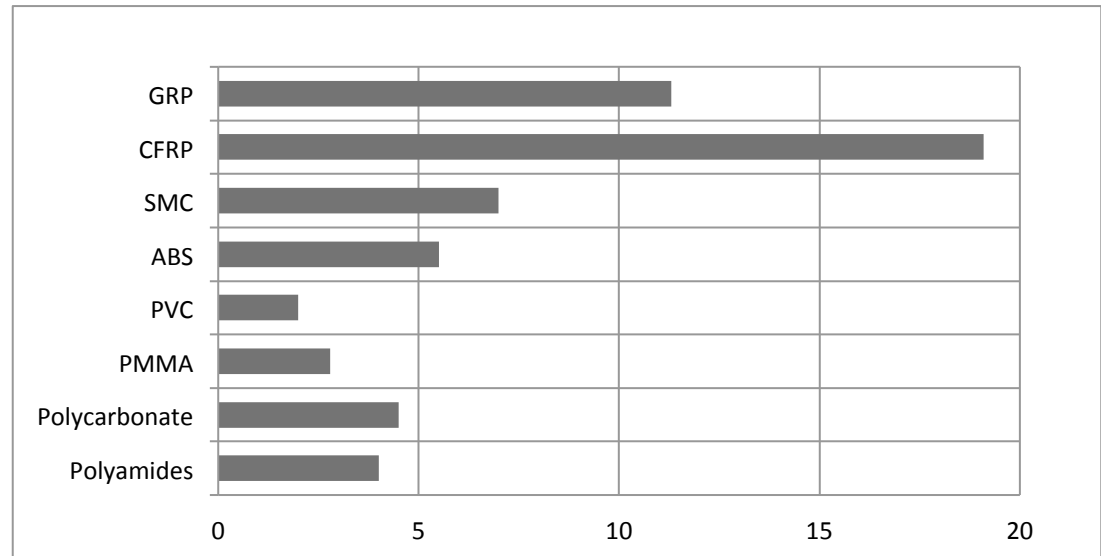
Pretreatment - Sand blasting



**A** - - ( **4587**) (typical average values)

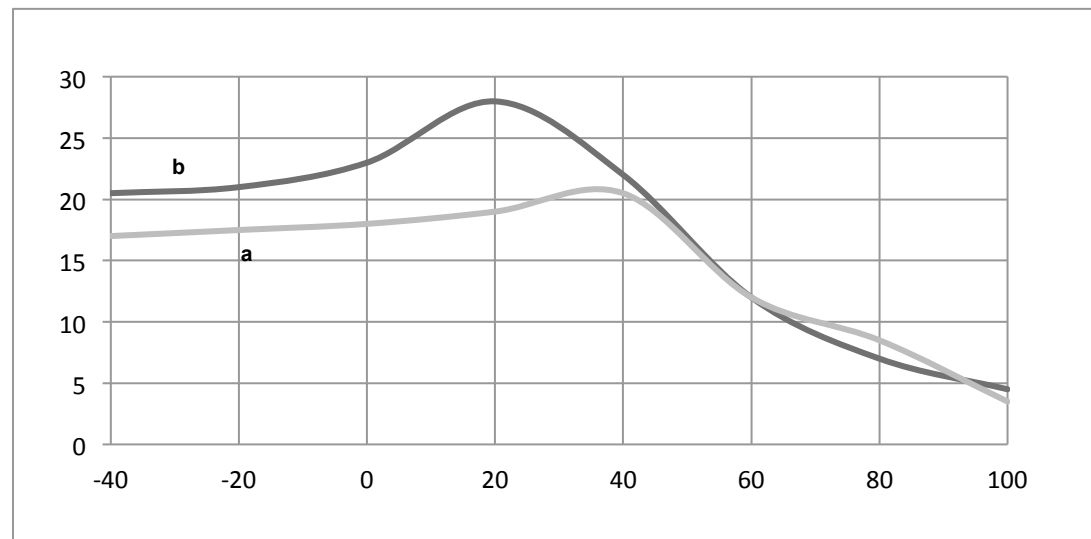
Cured for 16 hours at 40°C and tested at 23°C

Pretreatment - Lightly abrade and alcohol degrease.



( **4587**) (typical average values)

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



( **4578**)(typical average values) - Cure : 16 hours/40°C

5 N/mm

(typical average value) – cure 16 hours/40°C

D 74

(typical average values) - Cure : 16 hours/40°C

ca. 45°C

( **8894/90**) (typical average values)

Cure : 20 minutes/100°C - Test: At 23°C

0.22W/mK

( **53489**) (cure 16hrs at 40°C or 20 mins at 100°C)

Test: 4 days in a conditioning chamber in 40/92 climate as specified by DIN 50015

Rating according to specified standard

A -A/B 1,2

**50** , 24°C ( **77170**) (typical average values)

Instantaneous value

25-27 kV/mm

1-minute value

22-24 kV/mm

( **41001**) (typical average values)

(38°C, 90% rh) Cure : 5 days/23°C

Test on a 1mm thick film

16g/m2/24 hours

( **62-80**) (typical average values)

24 hours at 23°C

0.8%

30 mins at 100°C

1.3%

( **53445**) (typical average values) Cure : 16 hours/40°C

-50°C - 1.5GPa

0°C - 1.2GPa

50°C - 0.2GPa

100°C - 7.0MPa

( **178**) (typical average values)

Cure 16 hours/ 40°C - tested at 23°C

Flexural Strength

60 MPa

Flexural Modulus

1900 MPa

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Dielectric strength (Volt/mil)	400	ASTM D-149
Surface resistivity (Ohm)	1.2 E+16	IEC 60093
Volume resistivity (Ohm-cm)	7.1 E+14	IEC 60093
Dielectric constant at 50Hz/1kHz/10kHz	3.4/ 3.2/ 3.2	IEC 60250
Loss tangent, % at 50Hz/1kHz/10kHz	1.7/ 1.8/ 2.6	IEC 60250

( **53285**) (typical average values)

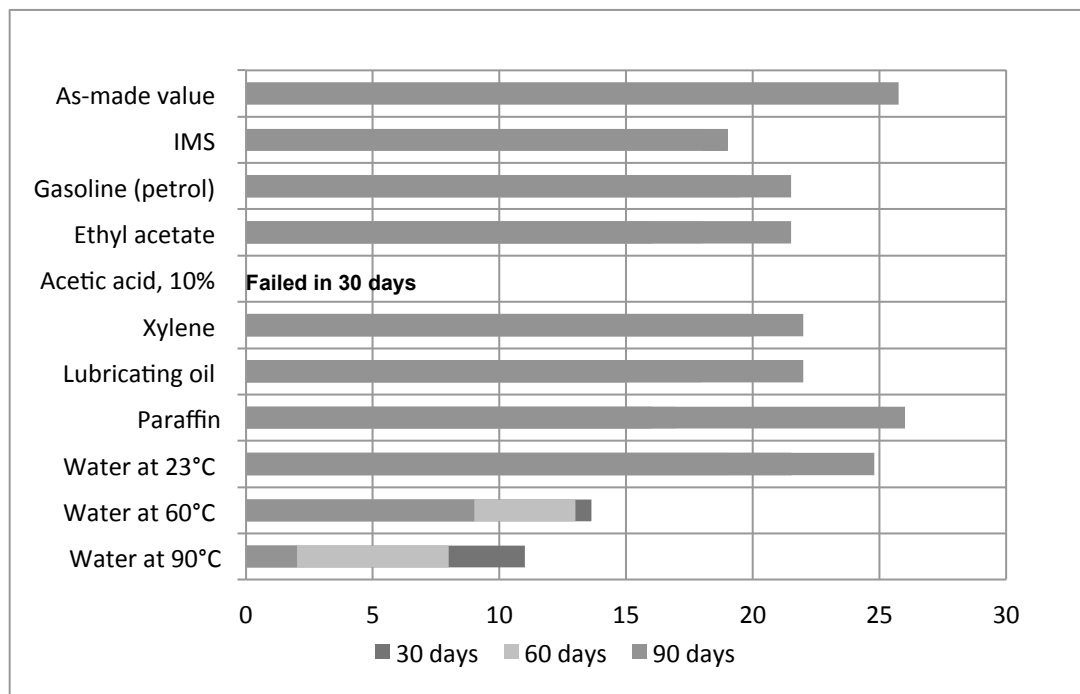
Cure: 20 minutes/100°C Mean static lap shear strength: 16.3 MPa

Test carried out using a load cycle frequency of 90 Hz.

Fluctuating load as % of static shear strength	No. of load cycles to joint failure
30	10 <sup>5</sup> - 10 <sup>6</sup>
20	10 <sup>6</sup> - 10 <sup>7</sup>
15	> 10 <sup>7</sup>

23°C (typical average values)

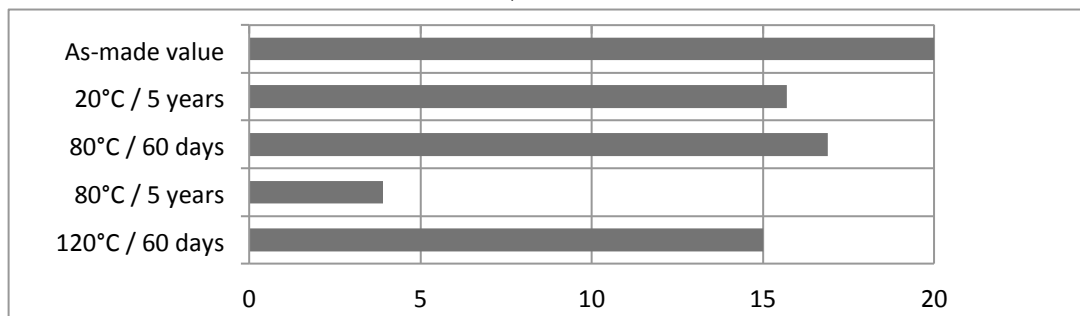
Cure 16 hours at 40°C



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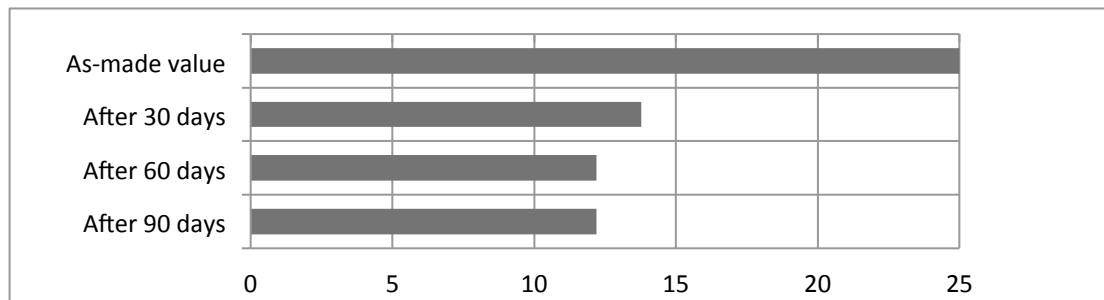
Cure: 16 hours/40°C

Test: at 23°C, 50% rh



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

Cure: 16 hours/40°C - Test at 23°C.



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Araldite® 2011/A and Araldite® 2011/B must be stored at room temperature and the components must be stored in sealed containers. The expiry date is indicated on the label.