HUNTSMAN

Enriching lives through innovation

Advanced Materials

Araldite® AW 4510 / Hardener HW 4511

Structural Adhesives

Araldite® AW 4510 / Hardener HW 4511

Temperature resistant two component epoxy paste adhesive

Key properties

- **Temperature resistant to 180°C**
- **Excellent resistance to most common chemicals**
- **Non-flowing paste for ease of application and good gap filling**
- **Bonds a wide range of substrate materials**
- **Post cure recommended for optimum properties**

Description

Araldite® AW 4510 / Hardener HW 4511 is a two component, ambient temperature gelling paste adhesive, which after post curing at temperatures up to 150°C, will give bonds with temperature resistance up to 180°C and excellent resistance to common chemicals. It is suitable for bonding a range of ferrous metals and aluminium alloy substrates and composite materials such as GRE, GRP and SMC.

Typical product data

Property	Araldite® AW 4510	Hardener HW 4511	Mix
Colour (visual)	White-beige paste	Black paste	Dark grey paste
Viscosity at 25°C (Pas)	120 - 240	65 - 120	thixotropic
Specific gravity	1.55 - 1.65	1.55 - 1.65	1.55 - 1.65
*T_g midpoint (2h, 150°C) (A76)**			*> 125°C*
*Lap shear strength at 25°C (A501)**			*> 16 MPa*
Pot Life (100 gm at 25°C)	-	-	90 minutes

** 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 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

Mix ratio	Parts by weight	Parts by volume
Araldite® AW 4510	100	100
Hardener HW 4511	50	50

The resin and hardener should be mixed together at room temperature stirring thoroughly.

Application of adhesive

The resin/hardener mix is applied directly or with a spatula, to the pretreated and dry joint surfaces. A layer of ad hesive 0.05 to 0.10mm 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 through out the joint area will ensure optimum cure.

Mechanical processing

Specialist firms have developed metering, mixing and spreading equipment that enables the bulk processing of ad hesive. 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 re- moval 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.

Curing requirements

To achieve optimum performance properties an elevated temperature cure or post cure is recommended. This ad hesive will solidify to a handlable state but will not fully cure at temperatures below 60°C.

Suggested cure schedules are:

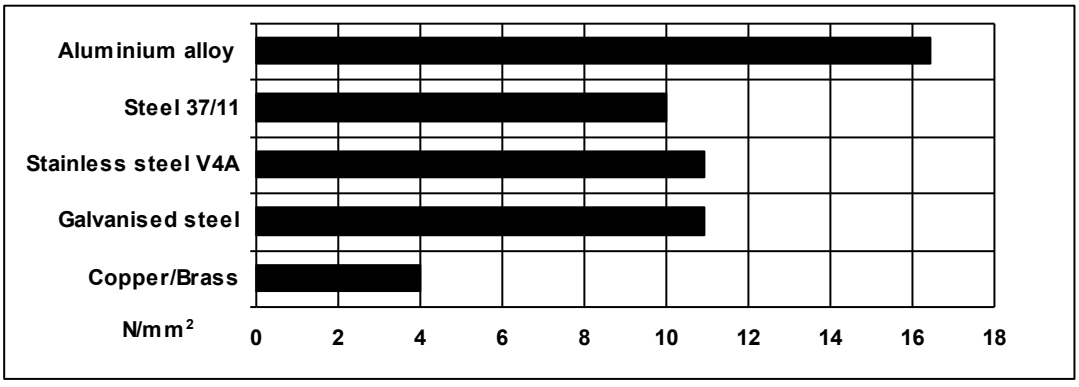
3 hrs	at 80°C
1 hr	at 130°C
30 mins	at 150°C

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 tech nical information and do not constitute a product specification.

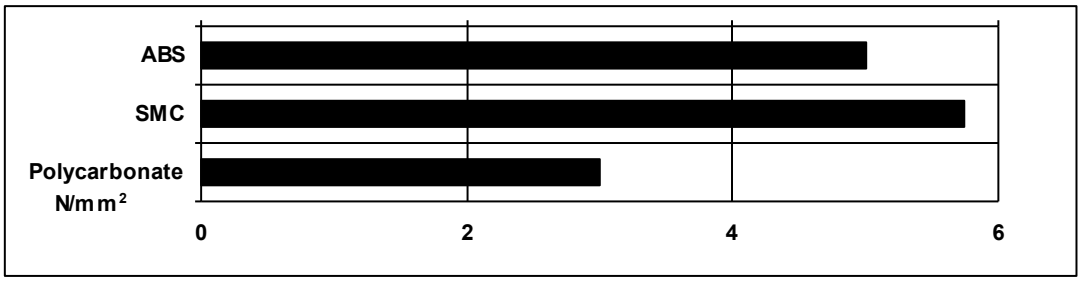
Average lap shear strengths of typical metal-to-metal joints (ISO 4587) (typical average values)

Cure: 24 hours at 23°C + 1hour at 130°C and tested at 23°C. Pretreatment - Sand blasting



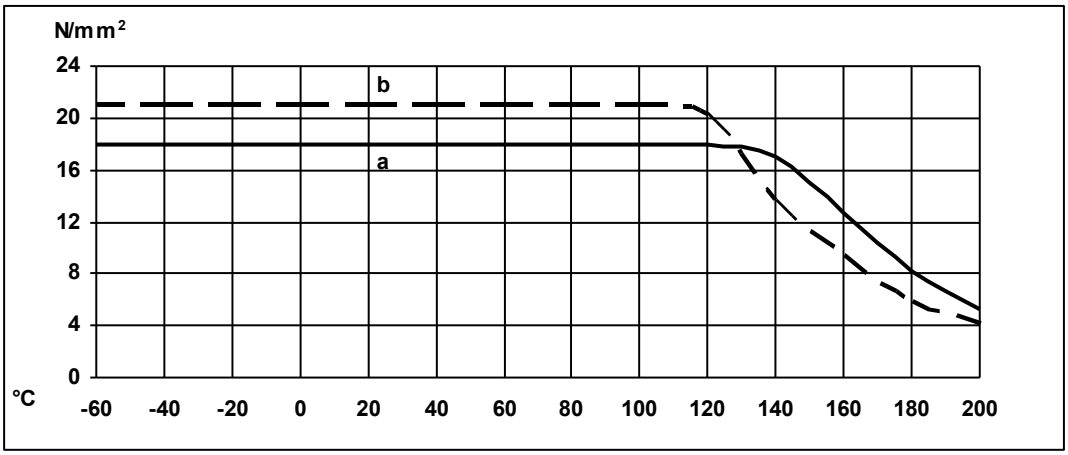
Average lap shear strengths of typical plastic-to-plastic joints (ISO 4587) (typical average values)

Cured: 24 hours at 23°C + 1hour at 130°C and tested at 23°C.Pretreatment - Lightly abrade and isopropanol de grease



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

On etched aluminium Cure: (a)=24 hours at 23°C + 1hour at 130°C (ACB, shot blast),(b)= 30 mins at 100°C (L165, pickled)



Roller peel test (ISO 4578) (typical average values)

On aluminium sandblasted, Cure: 24hours at 23°C + 1hour at 130°C

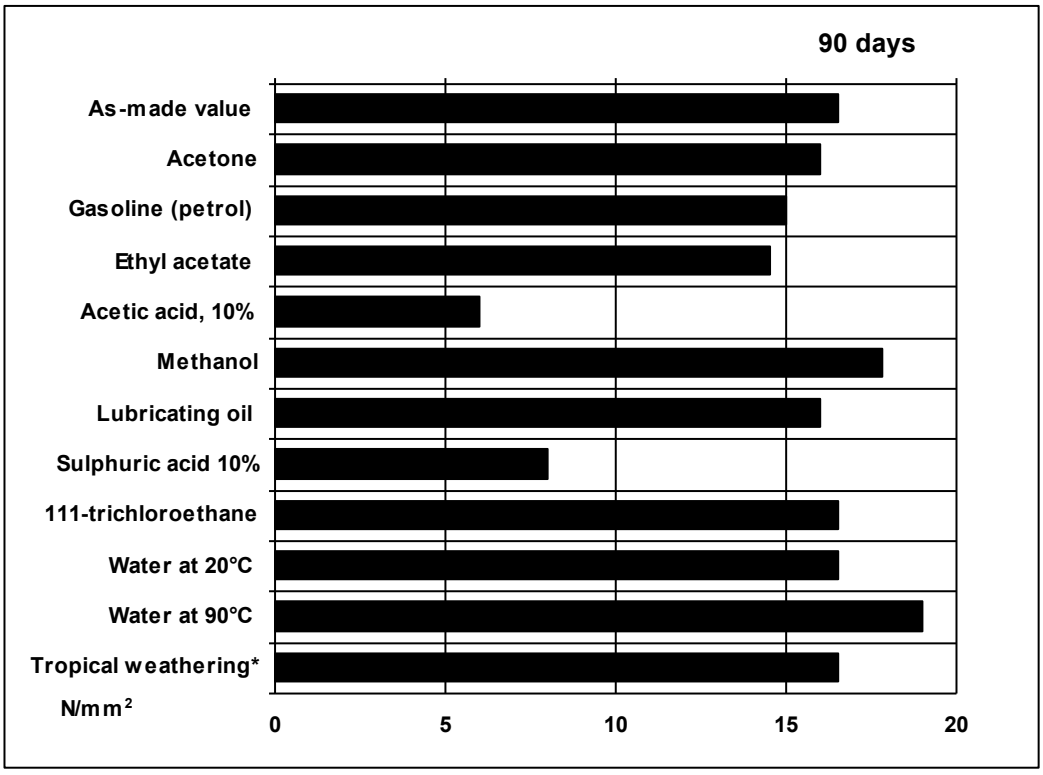
1.6N/mm tested at 23°C

6.0 N/mm tested at 120°C

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

On aluminium, cured for 24hours at 23°C + 1 hour at 130°C and tested at 23°C. Pretreatment - Sand blasting

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



*(40°C / 98% RH)

Storage

Araldite® AW 4510 and Hardener HW 4511 may be stored at room temperature, provided that storage is in original 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.

ISO 9001
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