

Advanced Materials**Araldite® AW4858/ Hardener HW4858****Structural Adhesives****Araldite® AW4858/ Hardener HW4858
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**
- **Long pot life, ideal for large composite part assemblies**

Description

ARALDITE® AW 4858 / Hardener HW 4858 is a two-component room temperature curing black coloured 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, and especially designed for bonding composites..

Product data

Property	Araldite® AW4858	Hardener HW4858	Mixed Adhesive
Colour (visual) (A112)*	Black	Yellowish	Black
Specific gravity	1.2	1.0	approx. 1.1
Viscosity at 25 °C (Pa.s) (A191)*	60 - 120	8 - 15	thixotropic
Lap shear strength at 23 °C (A501)*	-	-	> 28 MPa
Pot Life (100 gm at 25°C)			150 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® AW4858	100	100
Hardener HW4858	42	50

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

Araldite® AW4858/ Hardener HW 4858 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.

If possible, the adhesive should be applied on both surfaces and the joint components must be assembled and clamped as soon as the adhesive has been applied. The components must be assembled within 60 minutes after the application of the adhesive.

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	10	15	23	40	60	100
Cure time to reach	hours	15	12	6			
LSS > 1N/mm ²	minutes				90	25	< 5
Cure time to reach	hours	24	15	7	2		
LSS > 10N/mm ²	minutes					35	15

LSS = Lap shear strength.

Typical cured properties

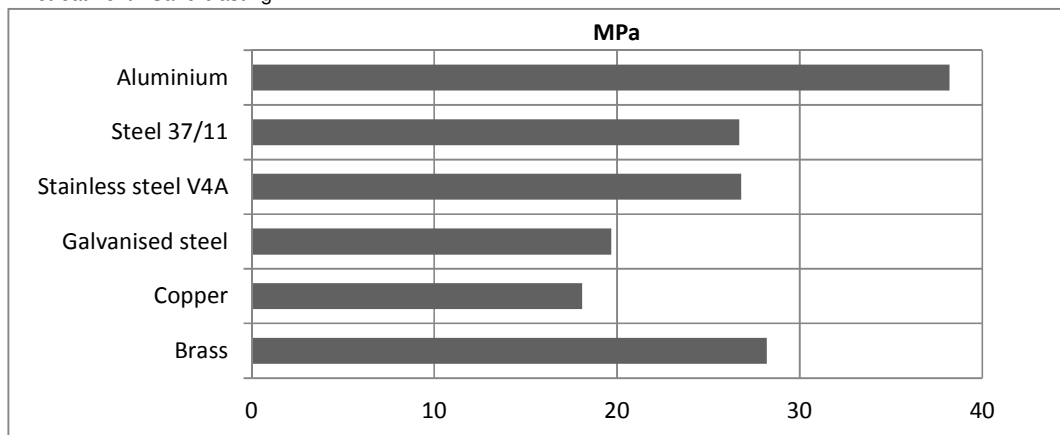
Unless otherwise stated, the figures given below were all determined by testing standard specimens made by lap-jointing 114 x 25 x 1.6 mm strips of aluminium alloy. The joint area was 12.5 x 25 mm in each case.

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.

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

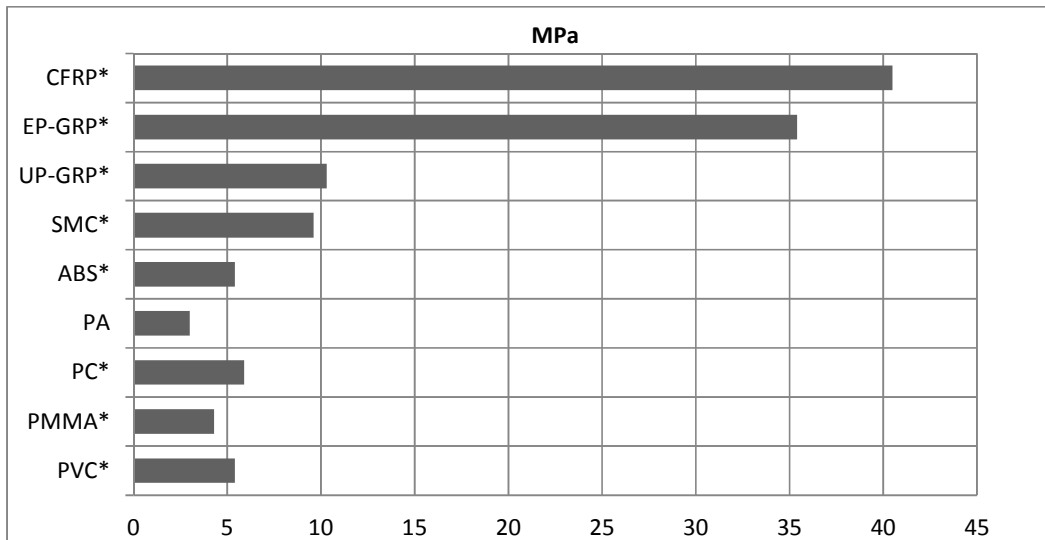
Cured for 16 hours at 40°C and tested at 23°C

Pretreatment - Sand blasting



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

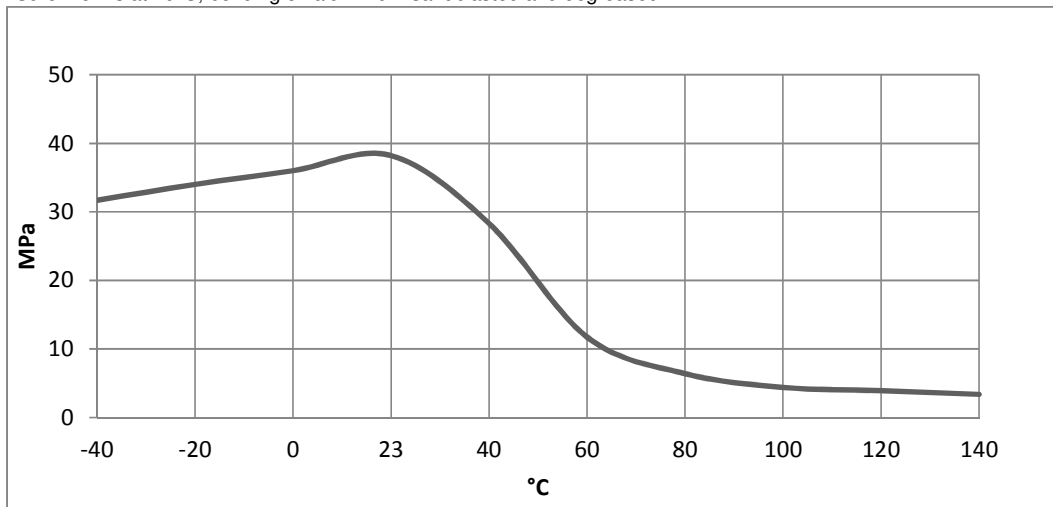
Cured for 16 hour at 40°C and tested at 23°C. Pretreatment - Lightly abrade and alcohol degrease.



*: substrate failure or substrate delamination

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

Cure: 16 hrs at 40°C, bonding on aluminium sandblasted and degreased



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

Cured: 16 hours at 40°C

6 - 8 N/mm

Glass transition temperature (DSC) (typical average values) (ISO 11357-2)

Cure: 16 hours at 40°C

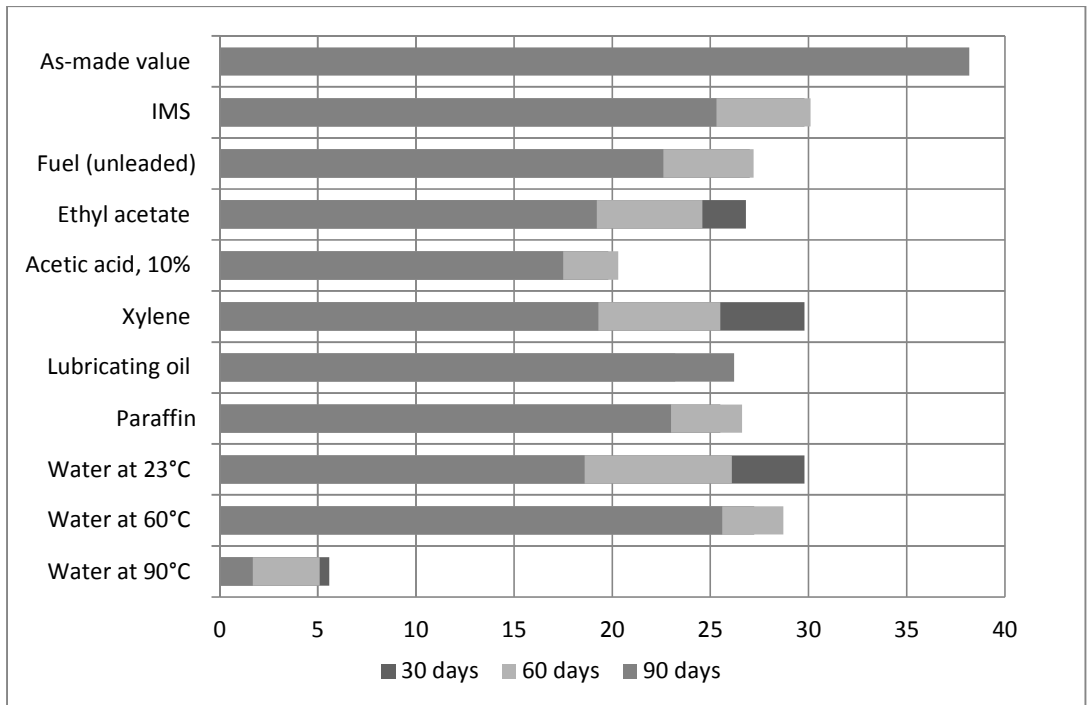
56°C

Cure: 16 hours at 40°C+ 1hour at 80°C

67°C

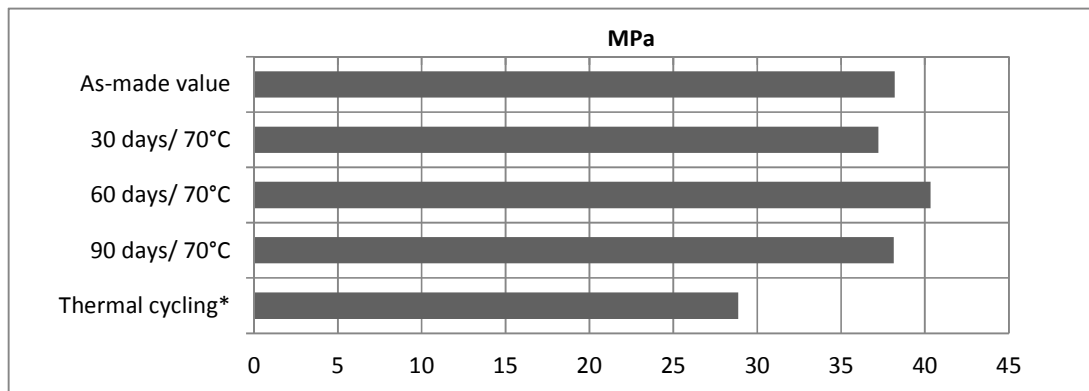
Lap shear strength versus immersion in various media (ISO 4587) (typical average values)

Unless otherwise stated, L.S.S. was determined after immersion for 30,60 and 90 days at 23°C. Cure 16 hrs 40°C.



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

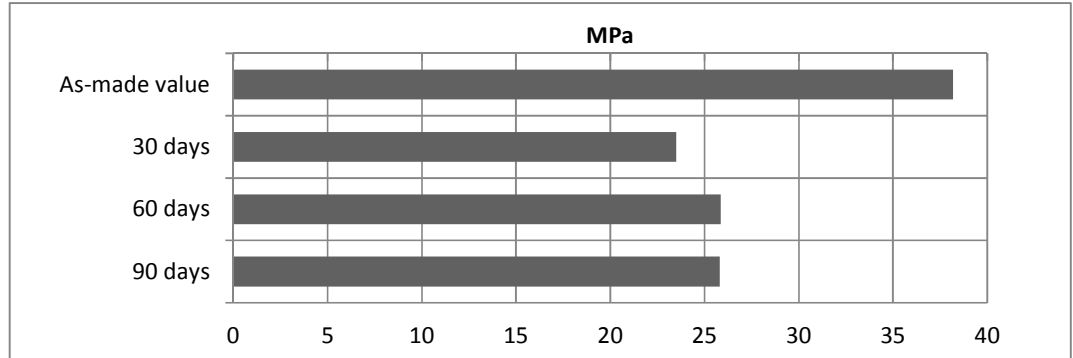
Cure: 16 hours at 40°C, on aluminium sandblasted and degreased, tested at 23°C



*25 cycles -30°C to + 70°C

Lap shear strength versus tropical weathering (ISO 4587) (typical average values)

(40 °C/ 92% RH), on aluminium, cured for 16 hours at 40 °C and tested at 23°C. Pretreatment - Sand blasting



Tensile Properties (ISO 527) (typical average values)

Cure 16 hours/ 40°C , tested at 23°C

Tensile strength	31 MPa
E-modulus	1600 MPa
Elongation at break	7 %

Flexural Properties (ISO 178) (typical average values)

Cure 16 hours/ 40°C, tested at 23°C

Flexural strength	61 MPa
Flexural modulus	1650 MPa

Shore Hardness (D scale) (ISO 868/03)

Cure 16 hours/ 40°C , tested at 23°C, 50%RH

75 D

Shear modulus G' (ISO 6721)

Cure: 16 hours/ 40°C

-40°C	1.3 GPa
0°C	980 MPa
23°C	800 MPa
60°C	9.0 MPa
90°C	7.2 MPa

Storage

ARALDITE® AW 4858 and Hardener HW 4858 can 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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