

**Advanced Materials****Araldite® AV 138M-1 / Hardener HV 998-1****Structural Adhesives**

## TECHNICAL DATASHEET

**Araldite® AV 138M-1 / Hardener HV 998-1****Two component epoxy adhesive****Key properties**

- Excellent chemical resistance
- Temperature resistant to 140°C
- Thixotropic, gap filling paste

**Description**

Araldite® AV 138M-1 / Hardener HV 998-1 is a two component, room temperature curing paste adhesive of high strength. When fully cured the adhesive will have excellent performance at elevated temperatures and has high chemical resistance. It is suitable for bonding a wide variety of metals, ceramics, glass, rubbers, rigid plastics and other materials, and is widely used in many industrial applications where resistance to aggressive or warm environments are required.

**Typical product data**

Property	Araldite® AV 138M-1	Hardener HV 998-1	Mix
Colour - visual (A112)*	beige	grey	grey
Specific gravity	ca. 1.7	ca. 1.6	ca. 1.7
Viscosity (Pa.s)	thixotropic	thixotropic	thixotropic
Lap shear strength at 25 °C (A501)*	-	-	> 11 MPa
Pot Life (100 g at 25°C)	-	-	30 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 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® AV 138M-1	100	100
Hardener HV 998-1	40	40

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 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	10	15	23	40	60	100
Time to reach a LSS	hours	14	8	4	-	-	-
of 1 MPa	minutes	-	-	-	75	20	4
Time to reach a LSS	hours	22	15	6	-	-	-
of 10 MPa	minutes	-	-	-	120	30	5

LSS = Lap shear strength.

**Typical cured properties**

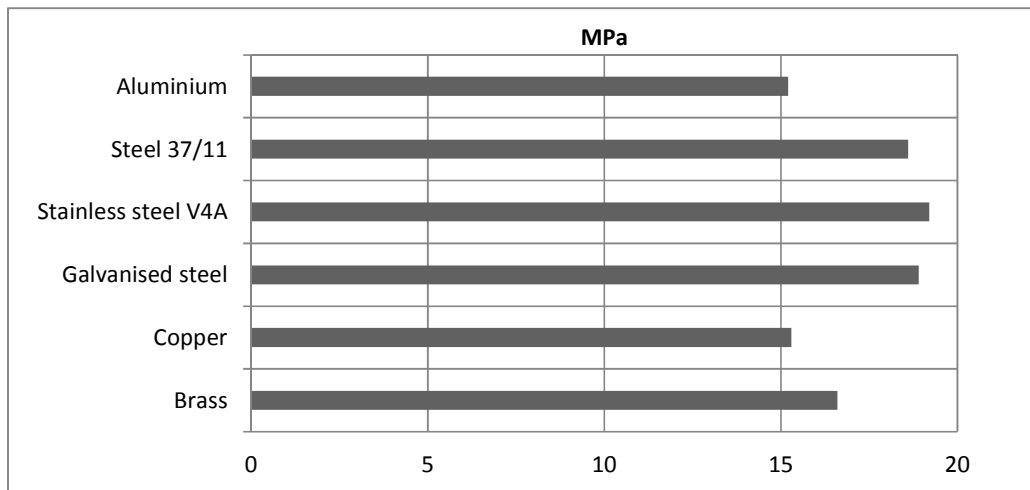
Unless otherwise stated, the figures given below were all determined by testing standard specimens made by lap-jointing 114 x 25 x 1.6 mm strips of aluminium alloy. The joint area was 12.5 x 25 mm in each case.

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)**

Cure: 16 hours at 40°C and test at 23°C

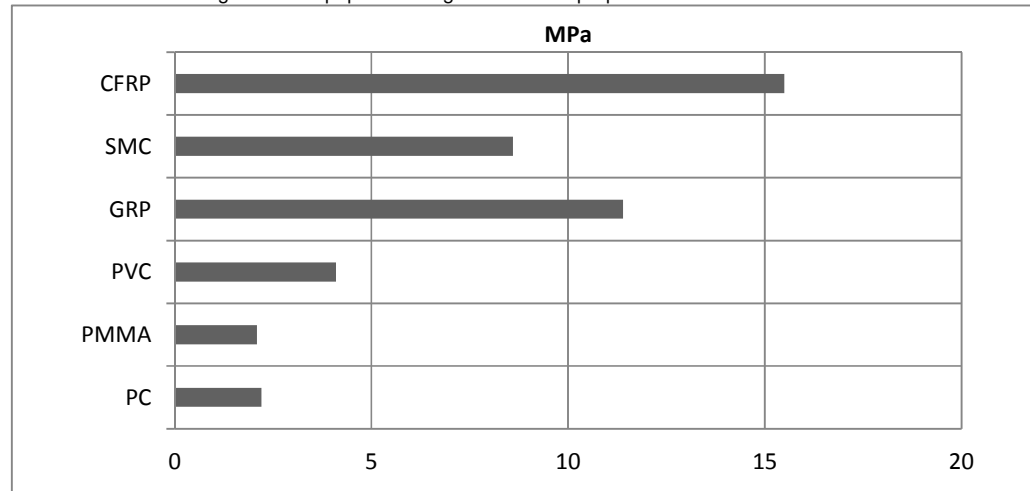
Pretreatment - Sand blasting



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

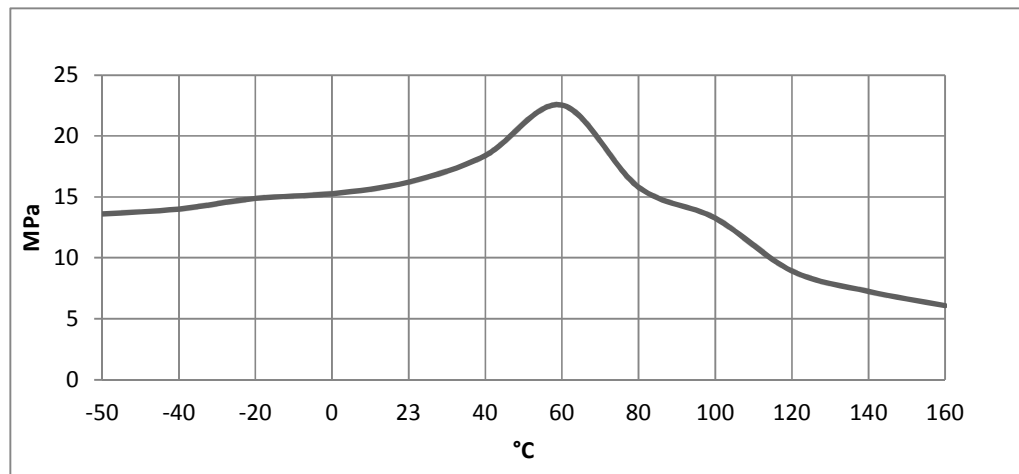
Cure: 16 hours at 40°C and test at 23°C

Pretreatment – abrading with sand paper and degrease with isopropanol



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

Cure: 16 hours at 40°C



Shore hardness (typical average value)

D86

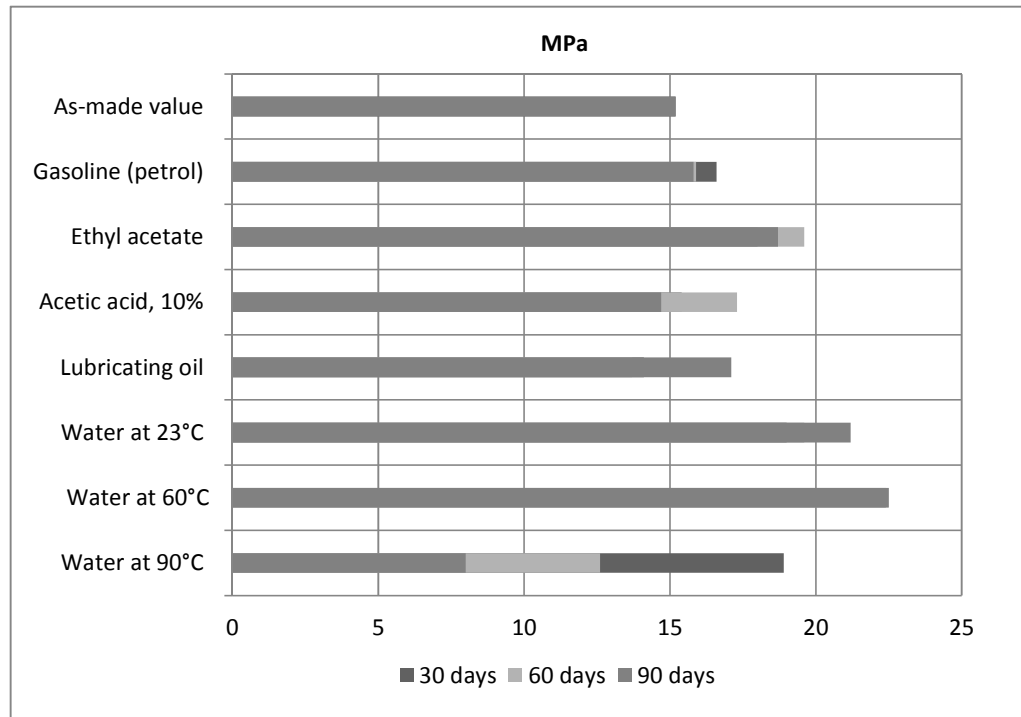
### Tensile Properties (ISO 527) (typical average values)

Cure 16 hours/ 40°C , tested at 23°C

Tensile strength	29 MPa
Tensile modulus	4.2 GPa
Elongation at break	0.8%

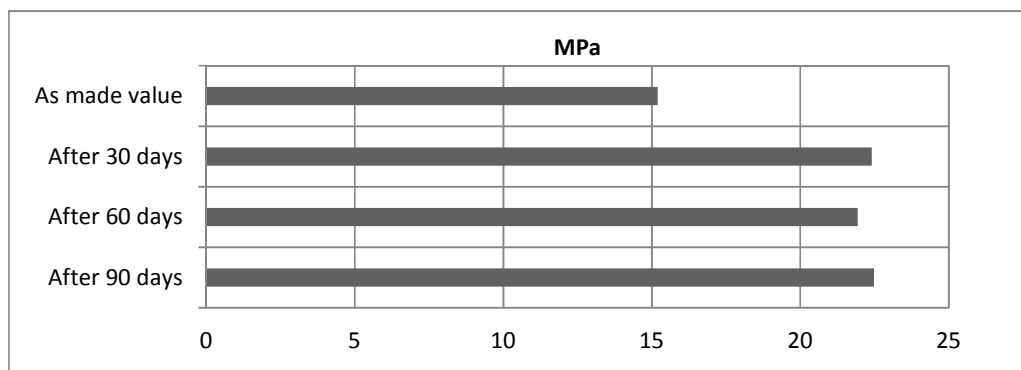
### Lap shear strength versus immersion in various media (typical average values)

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



### Lap shear strength versus tropical weathering (typical average values)

(40°C/ 92% Relative Humidity) On aluminium. Cured for 16 hours at 40°C and tested at 23°C. Pretreatment - Sand blasting



---

**Storage**

Araldite® AV 138M-1 and Hardener HV 998-1 must 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.



Huntsman Advanced Materials warrants only that its products meet the specifications agreed with the user. Specified data are analysed on a regular basis. Data which is described in this document as 'typical' or 'guideline' 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 manufacture of materials is the subject of granted patents and patent applications; freedom to operate patented processes is not implied by this publication.

While all the information and recommendations in this publication are, to the best of Huntsman Advanced Material's knowledge, information and belief, accurate at the date of publication, **nothing herein is to be construed as a warranty, whether express or implied, including but without limitation, as to merchantability or fitness for a particular purpose. In all cases, it is the responsibility of the user to determine the applicability of such information and recommendations and the suitability of any product for its own particular purpose.**

The behaviour of the products referred to in this publication in manufacturing processes and their suitability in any given end-use environment are dependent upon various conditions such as chemical compatibility, temperature, and other variables, which are not known to Huntsman Advanced Materials. It is the responsibility of the user to evaluate the manufacturing circumstances and the final product under actual end-use requirements and to adequately advise and warn purchasers and users thereof.

Products may be toxic and require special precautions in handling. The user should obtain Safety Data Sheets from Huntsman Advanced Materials containing detailed information on toxicity, together with proper shipping, handling and storage procedures, and should comply with all applicable safety and environmental standards.

Hazards, toxicity and behaviour of the products may differ when used with other materials and are dependent on manufacturing circumstances or other processes. Such hazards, toxicity and behaviour should be determined by the user and made known to handlers, processors and end users.

Except where explicitly agreed otherwise, the sale of products referred to in this publication is subject to the general terms and conditions of sale of Huntsman Advanced Materials LLC or of its affiliated companies including without limitation, Huntsman Advanced Materials (Europe) BVBA, Huntsman Advanced Materials Americas Inc., Huntsman Advanced Materials (UAE) FZE, Huntsman Advanced Materials (Guangdong) Company Limited, and Huntsman Advanced Materials (Hong Kong) Ltd.

Huntsman Advanced Materials is an international business unit of Huntsman Corporation. Huntsman Advanced Materials trades through Huntsman affiliated companies in different countries including but not limited to Huntsman Advanced Materials LLC in the USA and Huntsman Advanced Materials (Europe) BVBA in Europe.

All trademarks mentioned are either property of or licensed to Huntsman Corporation or an affiliate thereof in one or more, but not all, countries.

Copyright © 2018 Huntsman Corporation or an affiliate thereof. All rights reserved.

---

**Huntsman Advanced Materials  
(Switzerland) GmbH**

Klybeckstrasse 200  
CH - 4057 Basel  
Switzerland

Tel: +41 (0)61 299 11 11  
Fax: +41 (0)61 299 11 12

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