Araldite® AV 4076-1 / Hardener HV 5309-1

Product Description

Araldite® AV 4076-1with Hardener HV 5309-1 is a two component, room temperature curing paste adhesive giving a resilient bond. It is thixotropic and non-sagging up to 10mm thickness. It is particularly suitable for SMC and GRP bonding.

Features

- Thixotropic - non slumping
- Toughened adhesive resilient bond
- Suitable for metal and composite bonding
- High shear and peel strength

Typical Properties*

Property	AV 4076-1	HV 5309-1	Mixed System
Appearance	Translucent paste	Neutral paste	Neutral paste
Density, g/cm^3	~1.16	~1.4	~1.3
Viscosity at 25°C, cP	Thixotropic	Thixotropic	Thixotropic
Pot life at 25°C, 100 g, min	--	--	~60

*Properties are based on Huntsman test methods. Copies are available upon request

Processing

Mix Ratio

Product	Parts by weight	Parts by volume
Araldite® AV 4076-1	100	100
Hardener HV 5309-1	116	100

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, isopropanol (for plastics) or other proprietary degreasing agents in order to remove all traces of oil, grease and dirt. Low-grade alcohol, gasoline, 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.

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 0.10mm 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 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.

Cure times to reach minimum shear strength

Temperature, °C	15	23	40	60	100
Cure time to reach LSS* > 145psi (1N/mm^2)					
hours	10	6	2	-	-
minutes	-	-	-	40	5
Cure time to reach LSS > 1450psi (10N/mm^2)					
hours	20	14	4	-	-
minutes	-	-	-	75	12

*LSS = Lap shear strength

Typical Physical Properties

Unless otherwise stated, the data were determined with typical production batches using standard test methods. They are typical values only, and do not constitute a product specification.

Unless specified otherwise, the figures given below were all determined by testing standard specimens made by lap-jointing 170 x 25 x 1.5 mm strips of aluminum alloy. The joint area was 12.5 x 25 mm in each case. Samples were cured at 16 hours at 40°C and tested at 23 °C, unless noted otherwise.

Property	Test Method	Value
Tensile strength at 23°C, MPa	ISO 527	20
Tensile modulus, GPa	ISO 527	1
Elongation at tensile break, %	ISO 527	5
Roller peel test, cured 16 hours at 40°C, N/mm	ISO 4587	4
Glass transition temperature, T_g, °C Cured 16 hours at 40°C Cured 4 hours at 60°C	DSC	 64 78
Shear modulus G', cured 48 hours at 23°C + 8 hours at 60°C, MPa 0°C 25°C 50°C 75°C 100°C 125°C	DIN 53445	 600 500 400 300 100 10

Figure 1. Average lap shear strengths of typical metal-to-metal joints (ISO 4587)
Sand blasting pretreatment

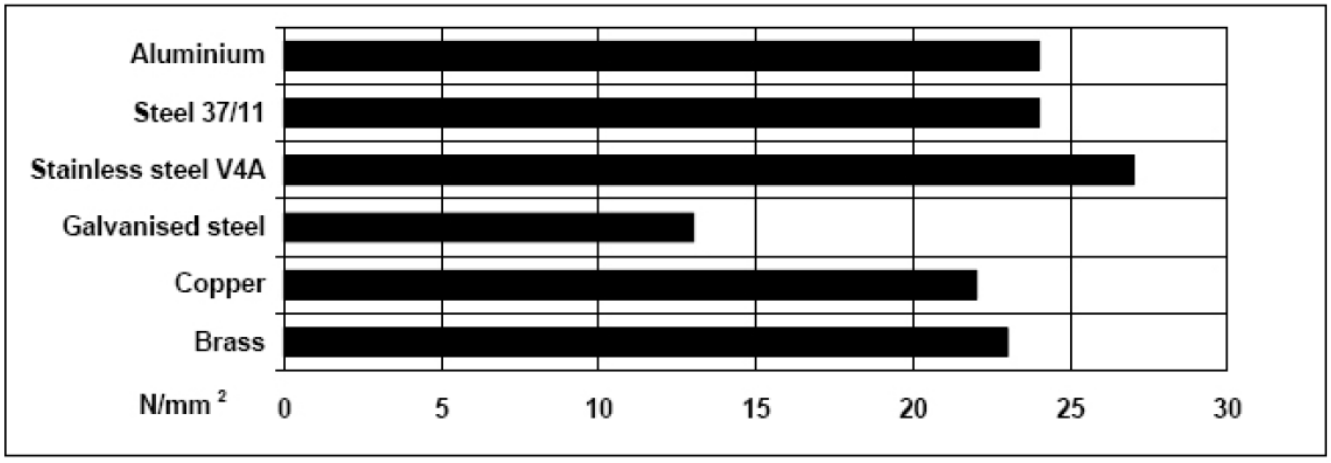


Figure 2. Average lap shear strengths of typical plastic-to-plastic joints (ISO 4587)
Lightly abrade and iso-propanol degrease pretreatment

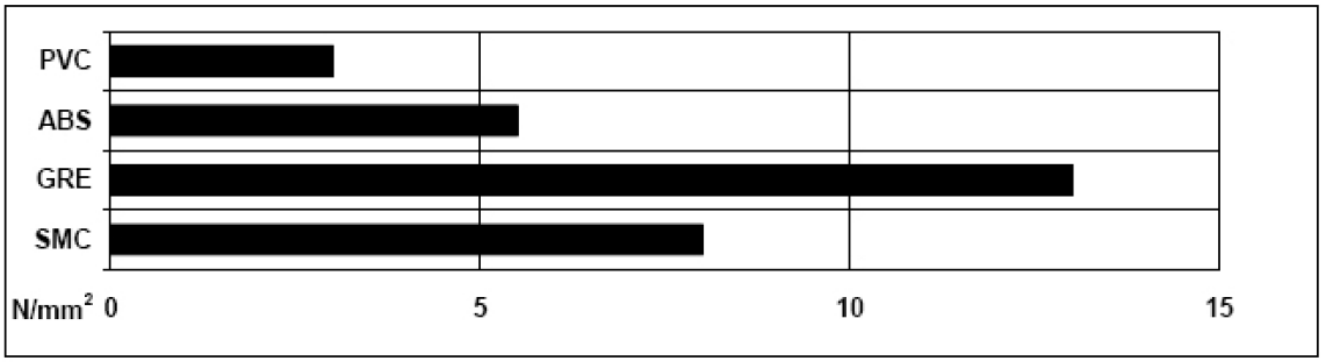


Figure 3. Lap shear strength versus temperature (ISO 4587) (typical average values)
Cure: 24 hours at 23°C + 30 minutes at 80°C (a) on GRE (b) on aluminum

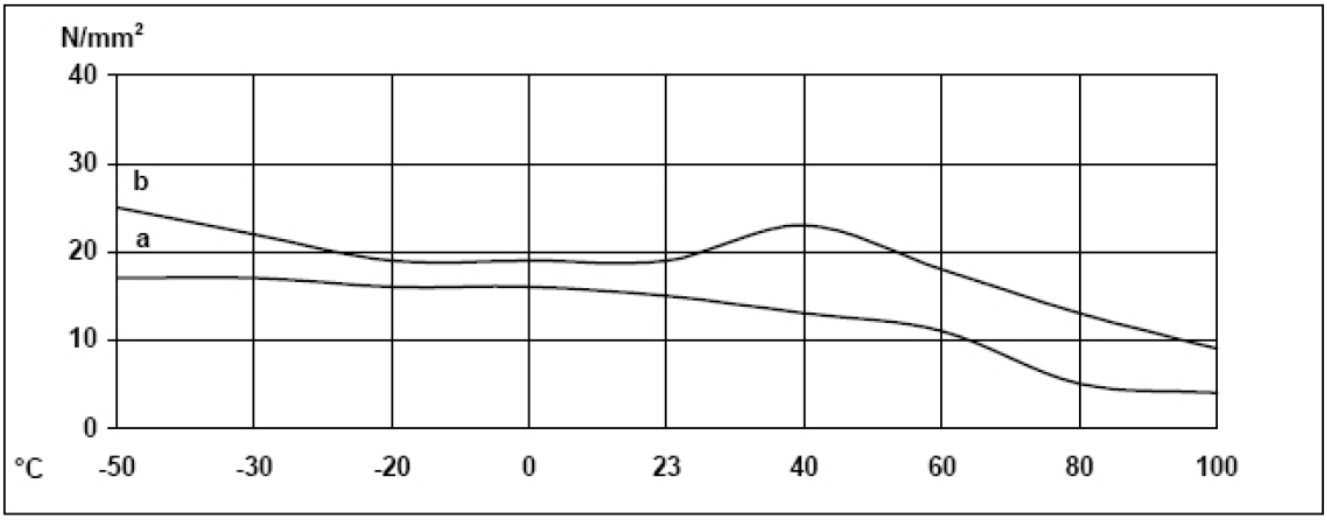


Figure 4. Lap shear strength versus tropical weathering
(40/92, DIN 50015; typical average values) Cure: 16 hours at 40°C, tested at 23°C

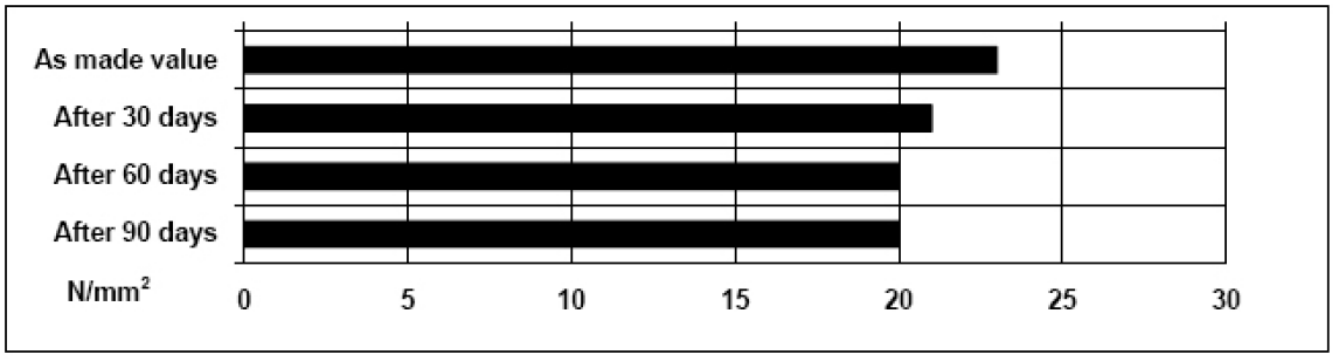


Figure 5. Lap shear strength versus heat ageing
25 cycles, -30°C to 70°C, Cure: 16 hours at 40°C

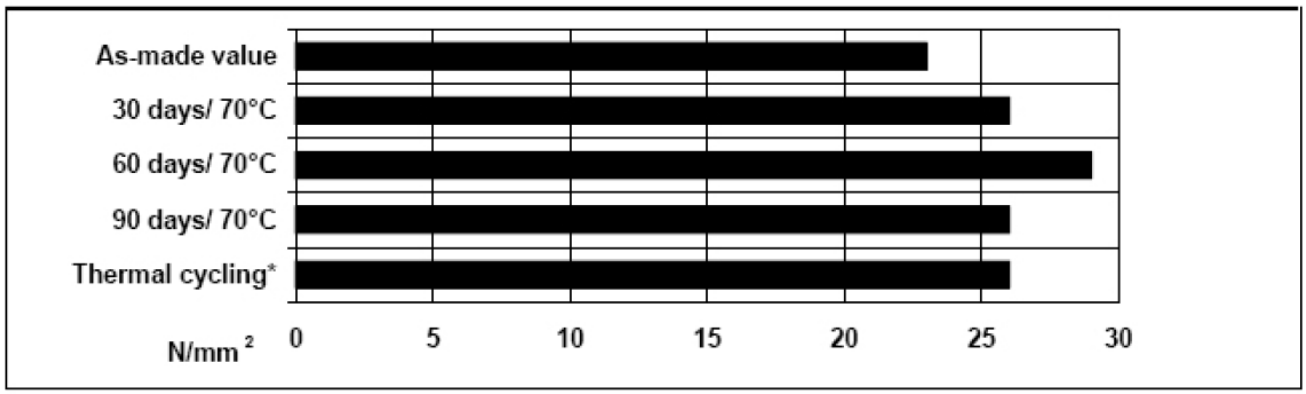
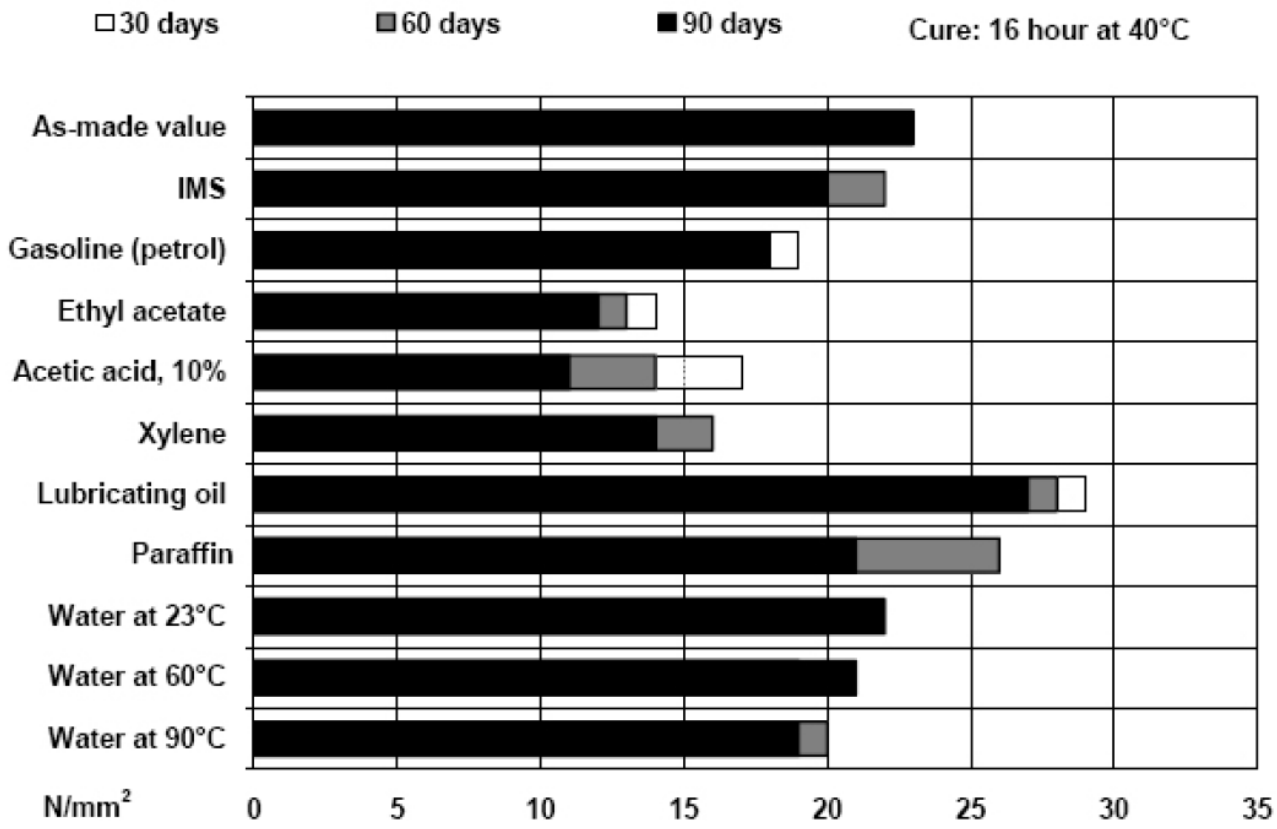


Figure 6. Lap shear strength versus immersion in various media (typical average values)
Unless otherwise stated, L.S.S. was determined after immersion for 90 days at 23°C



Storage

Araldite® AV 4076-1 and Hardener HW 5309-1 should be stored in a dry place, in the original sealed containers, at temperatures between 2°C and 40°C (36°F and 104°F). Under these storage conditions, the product has a shelf life of **3 years** (from date of manufacture). The product should not be exposed to direct sunlight.

Precautionary Statement

Huntsman Advanced Materials Americas LLC maintains up-to-date Safety Data Sheets (SDS) on all of its products. These sheets contain pertinent information that you may need to protect your employees and customers against any known health or safety hazards associated with our products. Users should review the latest MSDS to determine possible health hazards and appropriate precautions to implement prior to using this material.

First Aid!
Refer to SDS as mentioned above.

KEEP OUT OF REACH OF CHILDREN

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Main Offices:

Huntsman Corporation
10003 Woodloch Forest Dr
The Woodlands, TX 77380
888-564-9318

Huntsman Advanced Technology Center
8600 Gosling Rd.
The Woodlands, TX 77381
281-719-7400