

Araldite® 2012 (AW 2104/HW 2934)

Two component epoxy paste adhesive

Key properties

- High shear and peel strength
- Tough and resilient
- Rapid curing
- Bonds a wide variety of materials

Description

Araldite 2012 is a rapid cure, multipurpose, two component, room temperature curing, high viscosity liquid adhesive of high strength and toughness.

It is suitable for bonding wide variety of metals, ceramics, glass, rubbers, rigid plastics, and most other materials in common use. It is a versatile adhesive for the craftsman as well as most industrial applications.

Product data

| | 2012/A | 2012/B | 2012 (mixed) |
|---------------------------|-----------|-------------|-----------------|
| Colour (visual) | opaque | pale yellow | pale yellow |
| Specific gravity | 1.16-1.18 | 1.15-1.18 | ca 1.18 |
| Viscosity (Pas) | 25-45 | 20-40 | typically 25-35 |
| Pot Life (100 gm at 25°C) | - | - | 4 minutes |
| Shelf life (2 - 40°C) | 3 years | 3 years | - |

Processing

Pretreatment

The strength and durability of a bonded joint are dependant on proper pretreatment of the surfaces to be bonded.

At the very least, joint surfaces should be cleaned with a good degreasing agent such as acetone, trichloroethylene or proprietary degreasing agent in order to remove all traces of oil, grease and dirt. 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 2012/A | 100 | 100 |
| Araldite 2012/B | 100 | 100 |

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

Resin and hardener are also available in cartridges incorporating mixers and can be applied as ready-to-use adhesive with the aid of the tool recommended by Ciba.

Application of adhesive

The resin/hardener mix is applied directly or 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.

Ciba Specialty Chemicals 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.

Times to minimum shear strength

| Temperature | °C | 10 | 15 | 23 | 40 | 60 | 100 |
|---|---------|-----|----|----|----|----|-----|
| Cure time to reach LSS > 1N/mm ² | hours | - | - | - | - | - | - |
| | minutes | 35 | 20 | 20 | 5 | 2 | <1 |
| Cure time to reach LSS > 10N/mm ² | hours | - | - | - | - | - | - |
| | minutes | 120 | 70 | 61 | 25 | 10 | 2 |

LSS = Lap shear strength.

Typical cured properties

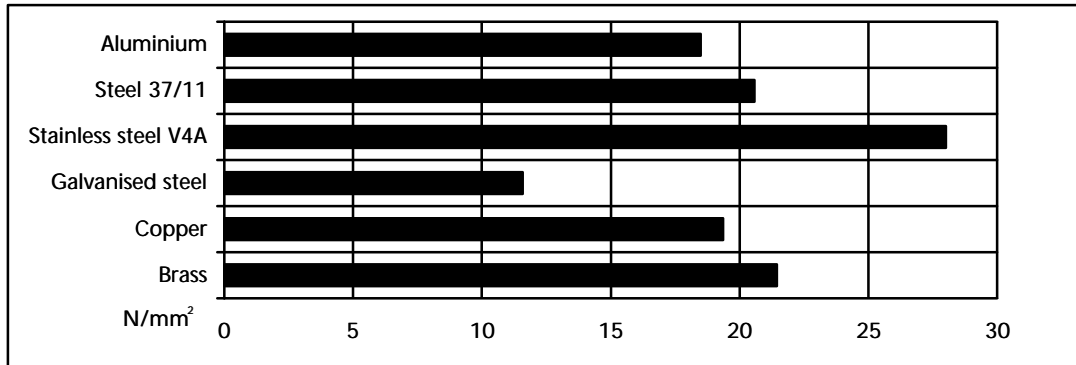
Unless otherwise stated, the figures given below were all determined by testing standard specimens made by lap-jointing 170 x 25 x 1.5 mm strips of aluminium alloy. The joint area was 12.5 x 25 mm in each case.

The figures were determined with typical production batches using standard testing methods. They are provided solely as technical information and do not constitute a product specification.

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

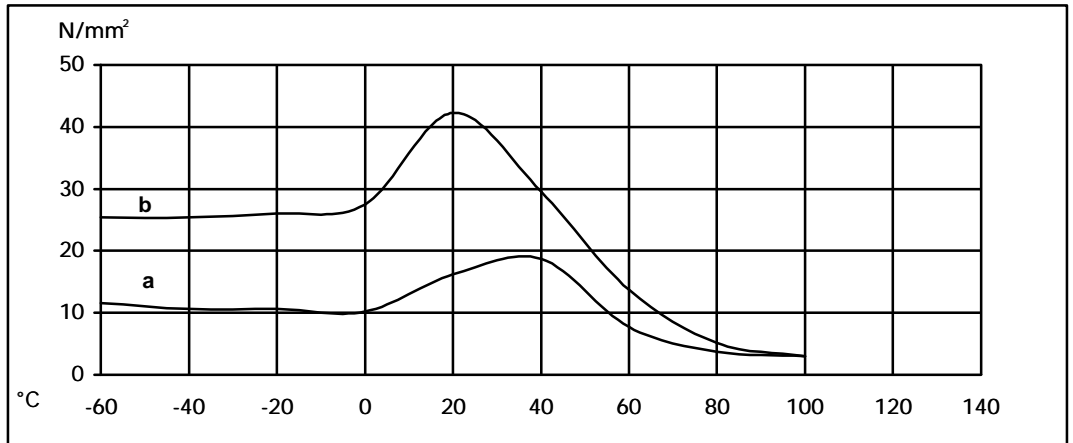
Cured for 16 hours at 40°C and tested at 23°C

Pretreatment - Sand blasting



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

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

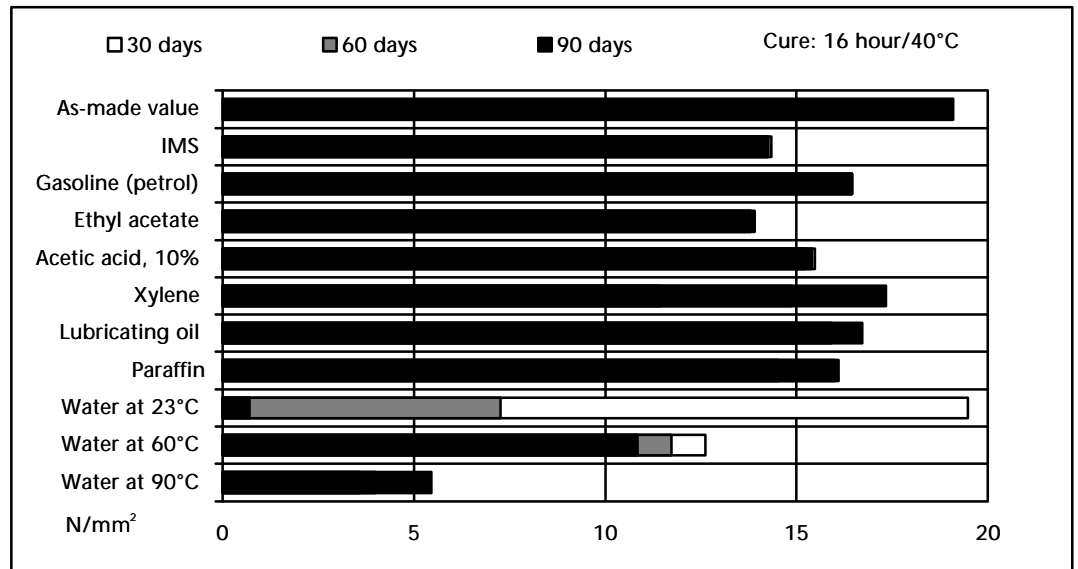


Roller peel test (ISO 4578)

Cure: 48 hours /20°C 16 hours /40°C 2 hours /80°C
 3.5 N/mm 5.5 N/mm 5.5 N/mm

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

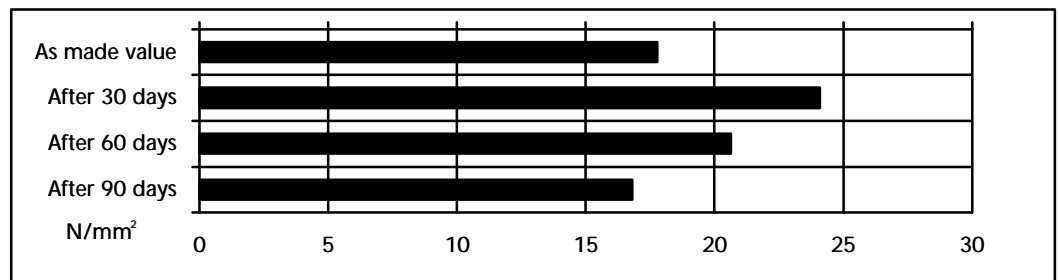
Unless otherwise stated, L.S.S. was determined after immersion for 90 days at 23°C



Lap shear strength versus tropical weathering

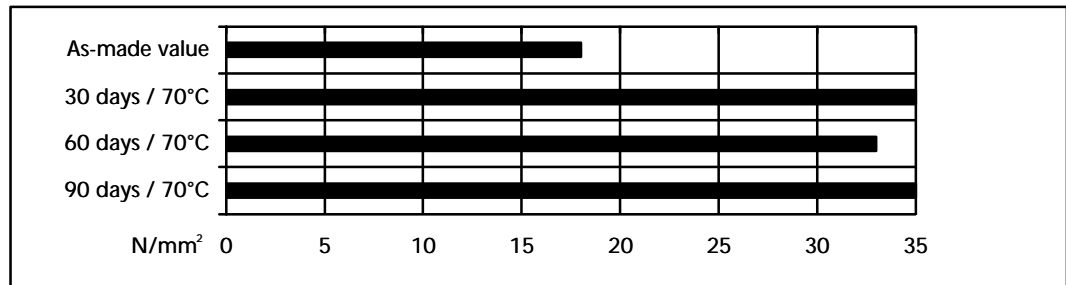
(40/92, DIN 50015; typical average values)

Cure: 16 hours/40°C; Test: at 23°C



Lap shear strength versus heat ageing

Cure: 16 hours/40°C



Storage

Araldite 2012/A and Araldite 2012/B may be stored for up to 3 years at room temperature provided the components are stored in sealed containers. The expiry date is indicated on the label.

Handling precautions

Caution

Ciba Specialty Chemicals' 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 Ciba Specialty Chemicals publication No. 24264/3/e Hygienic precautions for handling plastics products of Ciba Specialty Chemicals and in the Ciba Specialty Chemicals Material Safety Data sheets for the individual products. These publications are available on request and should be referred to for fuller information.

Ciba Specialty Chemicals
Performance Polymers

All recommendations for the use of our products, whether given by us in writing, verbally, or to be implied from the results of tests carried out by us, are based on the current state of our knowledge. Notwithstanding any such recommendations the Buyer shall remain responsible for satisfying himself that the products as supplied by us are suitable for his intended process or purpose. Since we cannot control the application, use or processing of the products, we cannot accept responsibility therefor. The Buyer shall ensure that the intended use of the products will not infringe any third party's intellectual property rights. We warrant that our products are free from defects in accordance with and subject to our general conditions of supply.

Duxford, Cambridge
England CB2 4QA

© Ciba Specialty Chemicals PLC, 1997
® Registered Trademark of Ciba Specialty Chemicals Holding Inc.

Tel: +44 (0) 1223 832121
Fax: +44 (0) 1223 493322