HUNTSMAN

Enriching lives through innovation

Advanced Materials

Araldite® AY 105-1 with Hardener HY 953 F

Structural Adhesives

Araldite® AY 105-1 with Hardener HY 953 F

Two component free flowing epoxy adhesive

Key properties

- **Free flowing liquid - easy to apply**
- **90 minutes useable life when mixed**
- **1:1 mix ratio by volume is possible**
- **Excellent environmental resistance**

Description

Araldite® AY 105-1 with hardener HY 953 F is a multipurpose, two component, room temperature curing epoxy adhesive suitable for bonding a wide variety of metals, ceramics, glass, rubbers, rigid plastics and most other materials in common use.

Typical product data

	AY 105-1	HY 953 F	Mixed adhesive
Colour (visual)	Pale viscous	Brown viscous	Amber
Specific gravity	ca 1.16	ca 0.97	ca 1.08
Viscosity (Pas)	ca 9	ca 70	-
Pot Life (100 gm at 25°C)	-	-	90 mins

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 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® AY 105-1	100	100
Hardener HY 953 F	100	100

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 0.15mm 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.

Recommended minimum curing schedules

Temperature	°C	15	23	40	60	100
Cure time	hours	48	24	12	3	-
	minutes	-	-	-	-	20

Note -The adhesive will not be fully cured after these periods at 15 - 40°C. Optimum properties will be reached within a few days, or by a short thermal post-cure.

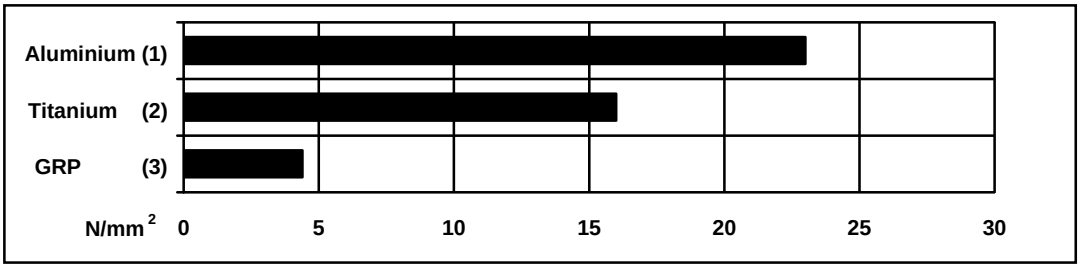
Typical cured properties

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 and plastic joints (ISO 4587)

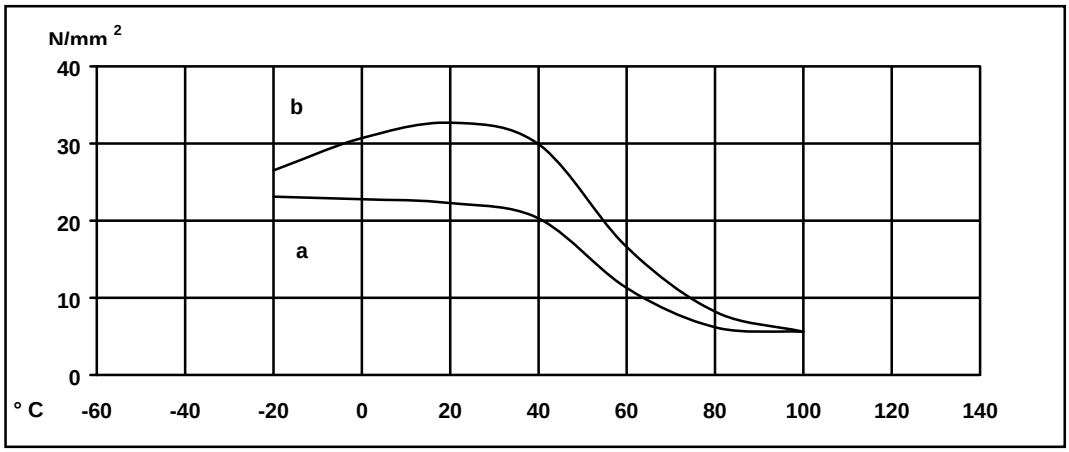
Joints cured for 7 days at 22oC and tested at 23°C (note that values are enhanced by curing at 100oC).



(1) Pretreatment - chromic acid etch
(2) Pretreatment - sandblasting
(3) Pretreatment - abrasion

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

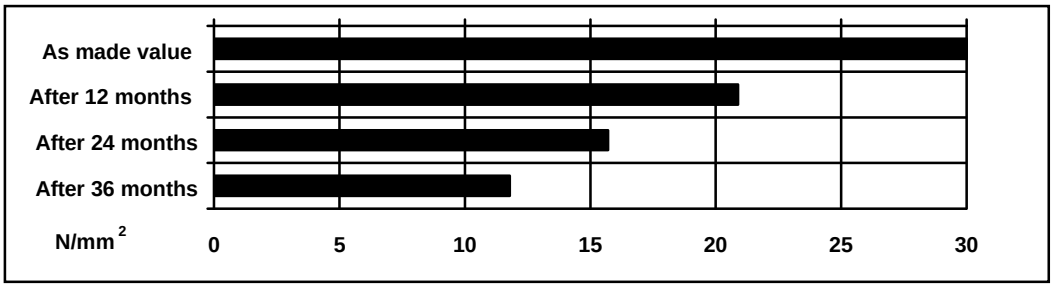
Cure: (a) = 7 days at 23°C; (b) = 1 hour at 120°C



Refractive index of mixed adhesive ca. 1.57

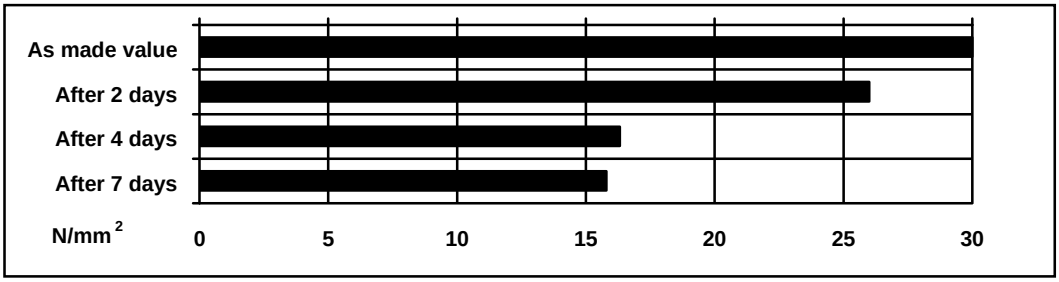
Lap shear strength versus immersion in water at 23oC

(typical average values) Cure: 1 hour at 120oC



Lap shear strength versus immersion in boiling water (typical average values)

Cure: 1 hour at 120oC

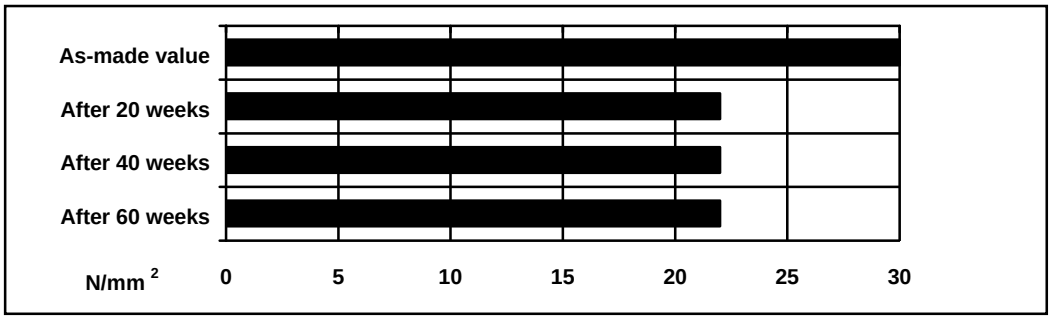


Lap shear strength versus natural weathering (UK - rural site)

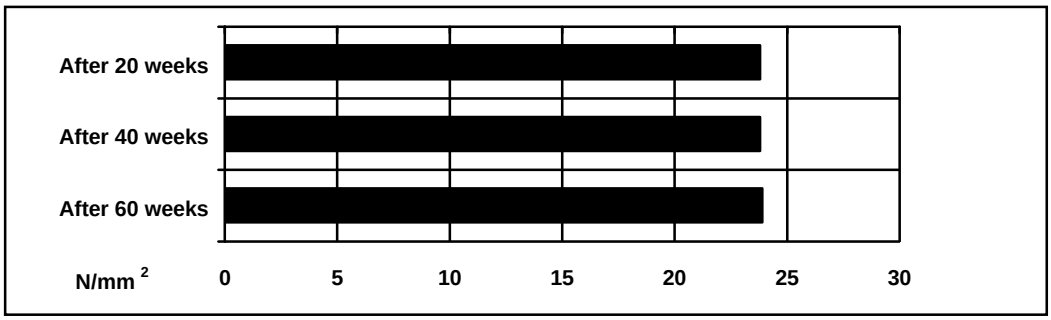
Cure: 1 hour at 120oC; test at 22oC

Lap shear strength versus tropical weathering ISAT Schedule B (see notes)

A -Cure: 1hour at 120oC Test at 22oC



B -Cure: 7 days at 23oC Test at 22oC



Notes - ISAT (Schedule B) specifies the following continuous cycle which has approximately a 1 : 9 ratio to actual tropical exposure.

75°C dry heat 8 hours 46°C/95% RH 48 hours
Ambient temperature 16 hours 60°C/60% RH 24 hours
46°C/95% RH 24 hours Ambient temperature 24 hours
Ambient temperature 24 hours

Storage

Araldite® AY 105-1 and Hardener HY 953 may be stored for up to 6 years at room temperature provided that the components are stored 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 food-stuffs 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 (Switzerland) GmbH
Klybeckstrasse 200
CH - 4057 Basel
Switzerland

Tel: +41 (0)61 966 33 33

www.huntsman.com/advanced_materials