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Advanced Materials

Araldite® 2023-60

Structural Adhesives

PROVISIONAL TECHNICAL DATA SHEET

Araldite® 2023-60

Long open time toughened methacrylate adhesive system

Key properties

- **60 minutes open time at RT**
- **Handling strength reached after 100 minutes at RT**
- **Gap filling up to 30 mm**
- **Light grey color, UV stable**
- **Tough flexible bonds for use in dynamic environments**

Description

Araldite® 2023-60 is a two component, room temperature curing, flexible, methacrylate adhesive with an open time of 60 minutes. It is a thixotropic paste which can fill gaps up to 30 mm. This adhesive is ideal for bonding composites and metals.

Product data

Property	Resin	Hardener	Mix
Aspect	Off white paste	Black paste	Light grey paste
Specific gravity	1.1	1.1	1.1
Time to peak exotherm	-	-	ca. 90 minutes
Open Time	-	-	60 minutes

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
Resin	100	100
Hardener	10	10

This product 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 may be applied manually or robotically to the pretreated and dry joint surfaces. Huntsman's technical support group can assist the user in the selection of an suitable application method as well as suggest a variety of reputable companies that manufacture and service adhesive dispensing equipment.
A layer of adhesive 0.2 to 0.5 mm thick will normally impart the greatest lap shear strength to the joint. Huntsman stresses that proper adhesive joint design is also critical for a durable bond. The joint components should be assembled and secured in a fixed position as soon as the adhesive has been applied.
For more detailed explanations regarding surface preparation and pretreatment, adhesive joint design, and the dual syringe dispensing system, visit www.aralditeadhesives.com.

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	23°C
Cure time to reach	hours	
LSS > 1MPa	minutes	100
Cure time to reach	hours	2
LSS > 10MPa	minutes	

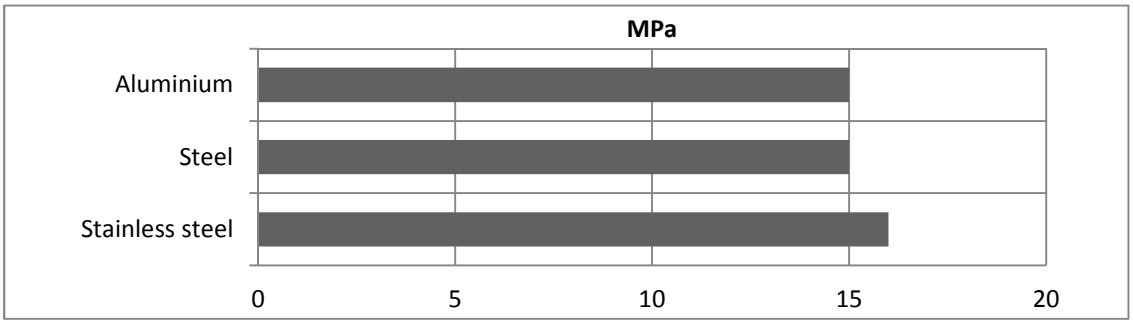
LSS = Lap shear strength.
Note: when reaching the handling strength the aspect of the product is changing slightly: it turns from a glossy aspect to a matt aspect.

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)

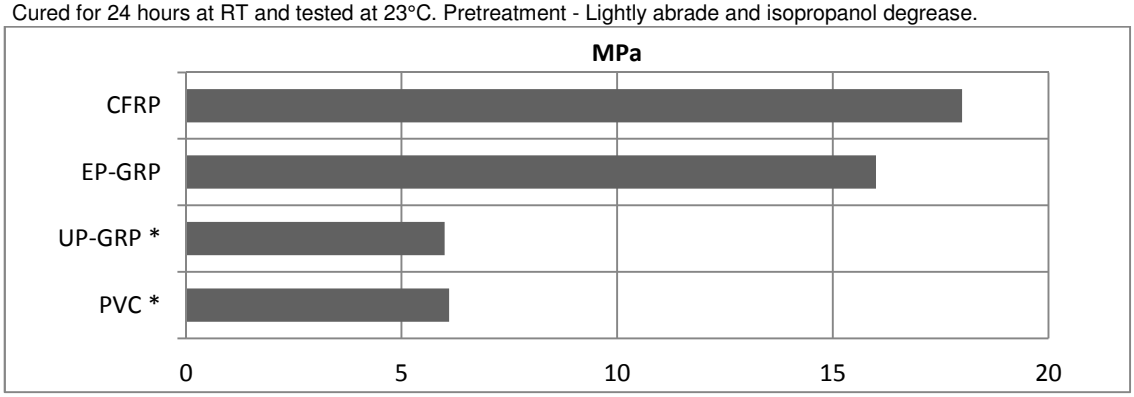
Cured for 24 hours at RT and tested at 23°C. Pretreatment - Sand blasting, isopropanol degreasing



Note: this adhesive is not suitable to bond galvanized steel

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

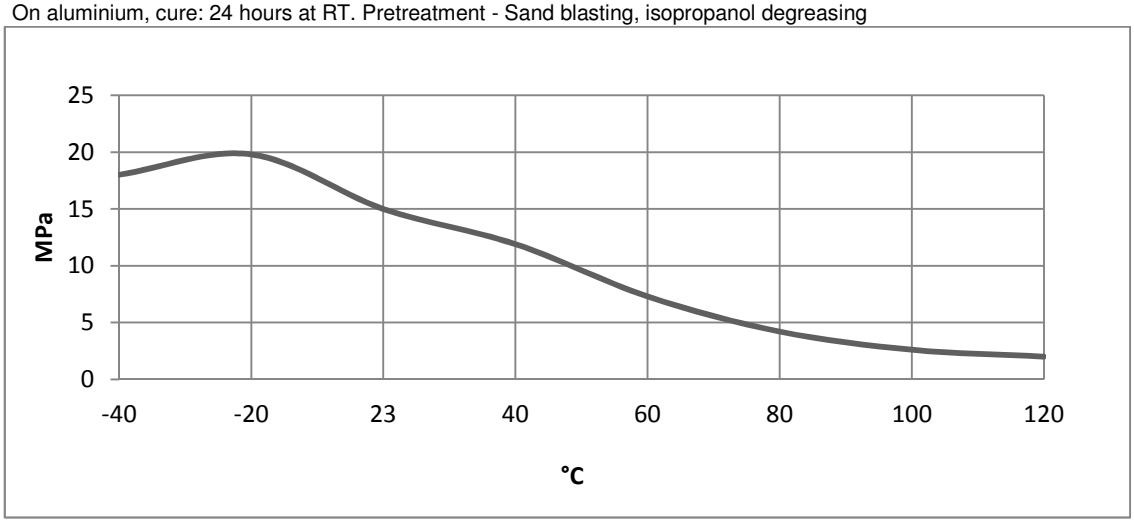
Cured for 24 hours at RT and tested at 23°C. Pretreatment - Lightly abrade and isopropanol degrease.



*: UP-GRP and PVC gave substrate's failures

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

On aluminium, cure: 24 hours at RT. Pretreatment - Sand blasting, isopropanol degreasing



Tensile properties (ISO 527) (typical average values)- tested at 23°C

Cure 7 days at RT

Tensile strength	20 MPa
Tensile modulus	600 - 800 MPa
Elongation at break	100 %

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Storage

Both components may be stored during 18 months at 2 – 8°C provided the components are stored in the original sealed containers. The expiry date is indicated on the packaging.
The product may be placed at room temperature before use, the total time at room temperature should not exceed 6 months. Long term exposure above 25°C will reduce the shelf life of the product.

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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