

Araldite® 2023-60 A/B Toughened Acrylate Adhesive

Product Description

Araldite® 2023-60 A/B 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 for the manufacturing of large structures.

Features

- 60-minute open time at RT
- Gap filling up to 30 mm
- Bright grey color (UV stable)
- Tolerant to “less than ideal” pretreatment
- Tough flexible bonds for use in dynamic environments



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800.220.1966

410 Pike Road • Huntingdon Valley, PA 19006

Typical Properties*

Property	Araldite® 2023-60 A	Araldite® 2023-60 B	Mixed System
Appearance	White	Black	Bright Grey
Density, g/cm ³	1.08	1.17	1.09
Viscosity at 25°C (77°F), cP (Brookfield, spindle #7 at 10 rpm)	160,000 - 200,000	80,000 - 120,00	non-sag
Pot Life at 25°C (77°F), 20 g, min	--	--	75-95
Open Time at 25°C (77°F), 20 g, min	--	--	>60
Time to peak exotherm, 20g, min	--	--	90-120

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

Processing

Mix Ratio

Product	Parts by weight	Parts by volume
Araldite® 2023-60 A	100	100
Araldite® 2023-60 B	10	10

Cure times to reach minimum shear strength (sandblasted aluminum)

Temperature	10°C (50°F)	23°C (73°F)	40°C (104°F)
>1MPa (145 psi)	5 hours	100 min	45 min
>10MPa (1,450 psi)	7 hours	2 hours	60 min

Pretreatment

The strength and durability of a bonded joint are dependent on proper pretreatment of the surfaces to be bonded, however the methacrylate adhesives can be used effectively with little surface preparation. Ideally joint surfaces should be cleaned with a good degreasing agent such as acetone, iso-propanol (for plastics) 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.

Application of adhesive

This system 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. Because of the high viscosity of the product, it is recommended to use a pneumatic dispensing gun. To ease the use with a manual dispensing gun, the cartridges can be preheated at 40°C during minimum 1 hour, if possible 2 hours before use. 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 a suitable application method as well as suggest a variety of reputable companies that manufacture and service adhesive dispensing equipment. A layer of adhesive 0.25 mm thick will normally impart the greatest lap shear strength to the joint. 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 cartridge dispensing system, visit us.aralditeadhesives.com.

WARNING! *The cure reaction can generate a high amount of heat, it is not recommended to mix large amounts of material at room temperature*

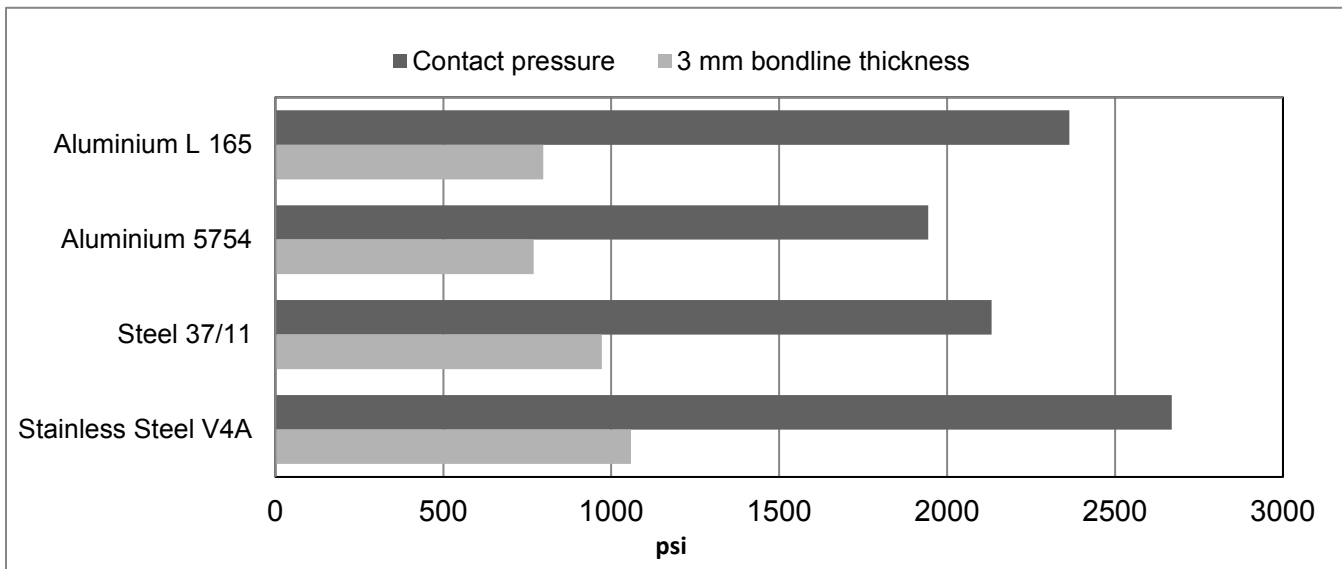
Equipment Maintenance

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 MEK are used for cleaning, operatives should take the appropriate precautions and, in addition, avoid skin and eye contact.

Typical Physical Properties

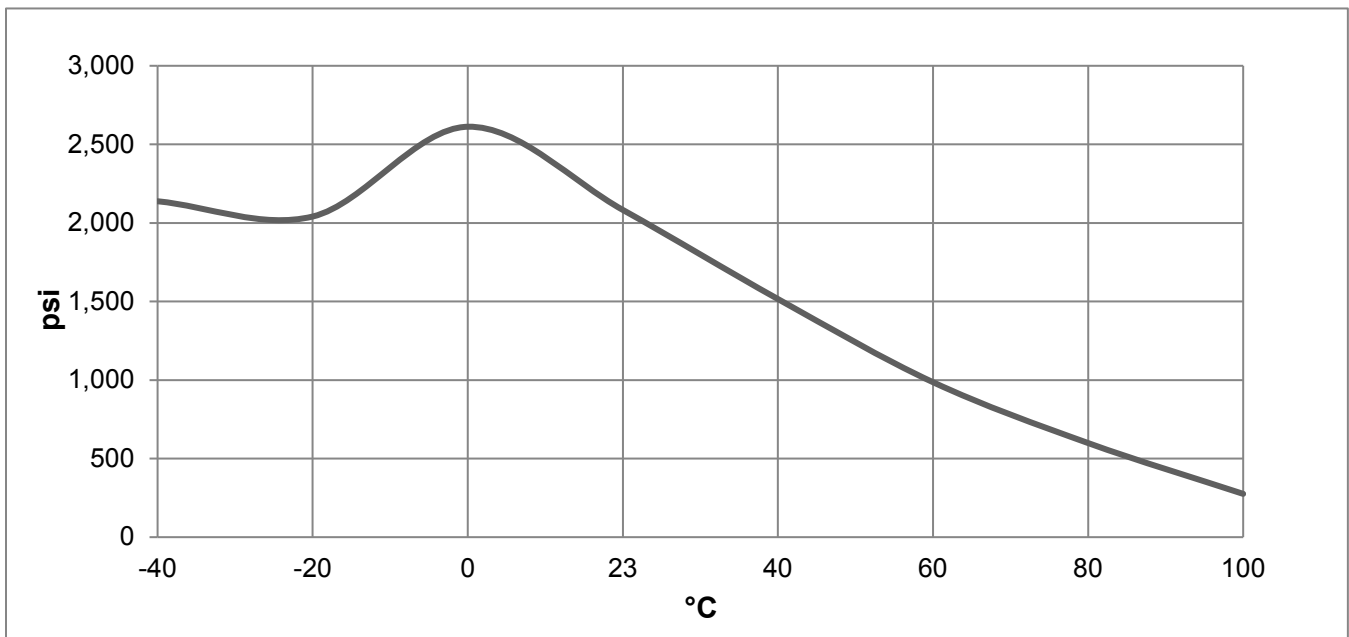
Unless otherwise stated, the data were determined with typical production batches using standard test methods. They are typical values only, and do not constitute a product specification. Unless a different specification is given, the figures below were all determined by testing standard specimens made by lap-jointing 4.5 x 1 x 0.063 in (114 x 25 x 1.6 mm) strips. The joint area was 0.5 x 1 in (12.5 x 25 mm) in each case.

Average lap shear strength (ASTM D1002), metal-metal joints. Substrates degreased with IPA.

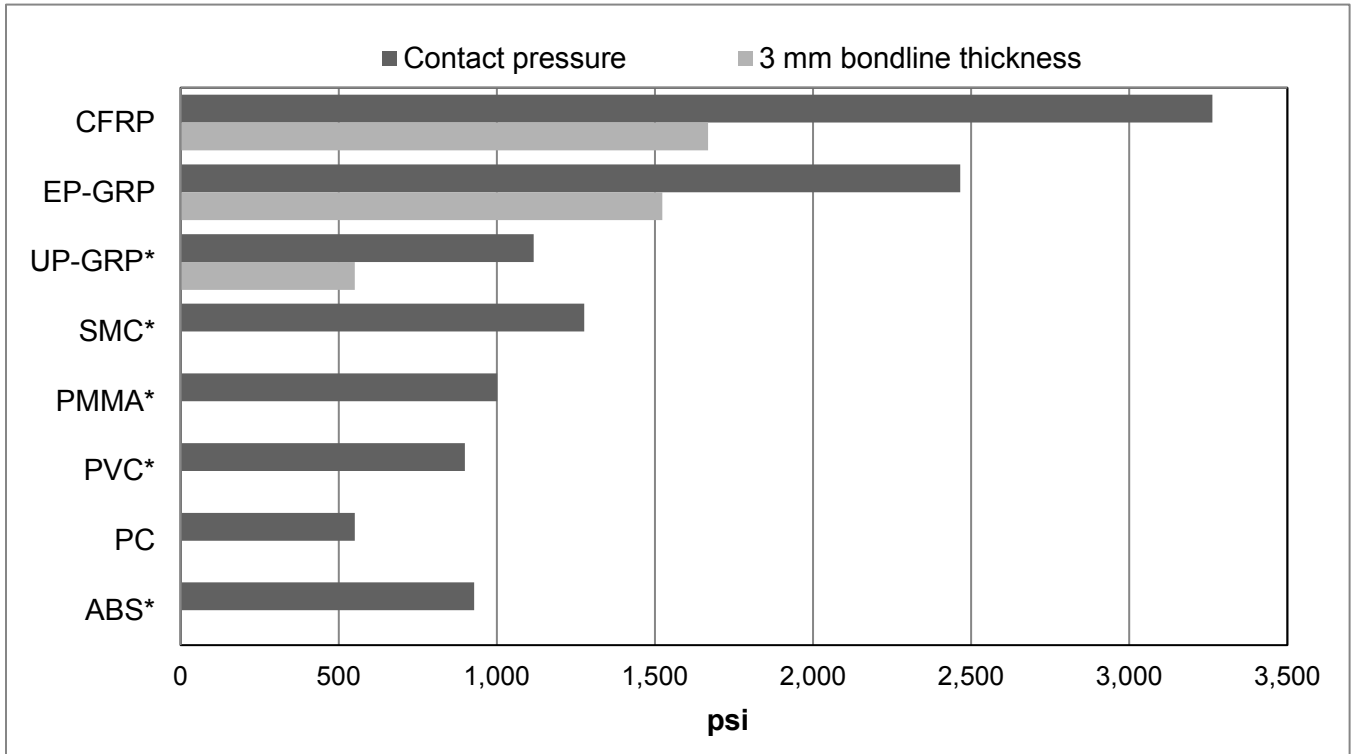


Notes: Araldite® 2023-60 is not suitable to bond galvanized steel, copper and copper alloys.

Lap shear strength (ASTM D1002) versus temperature (typical average values). On aluminum, pretreatment: sand blasting. Cured 24 hours at 23°C (73°F).

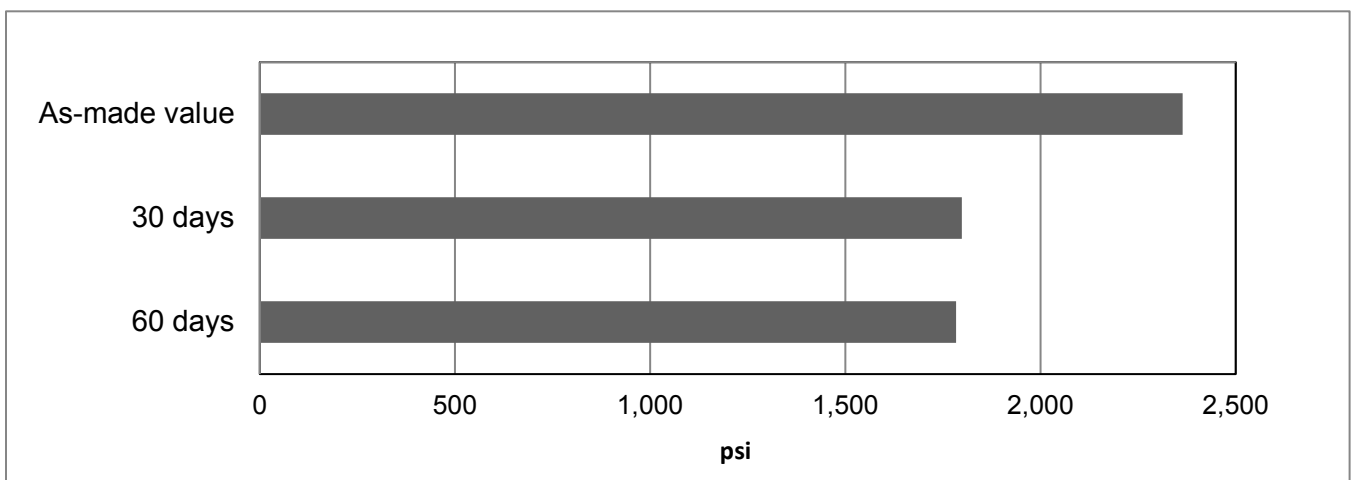


Average lap shear strength (ASTM D3163), plastic-plastic joints. Substrates were lightly abraded and degreased with IPA.

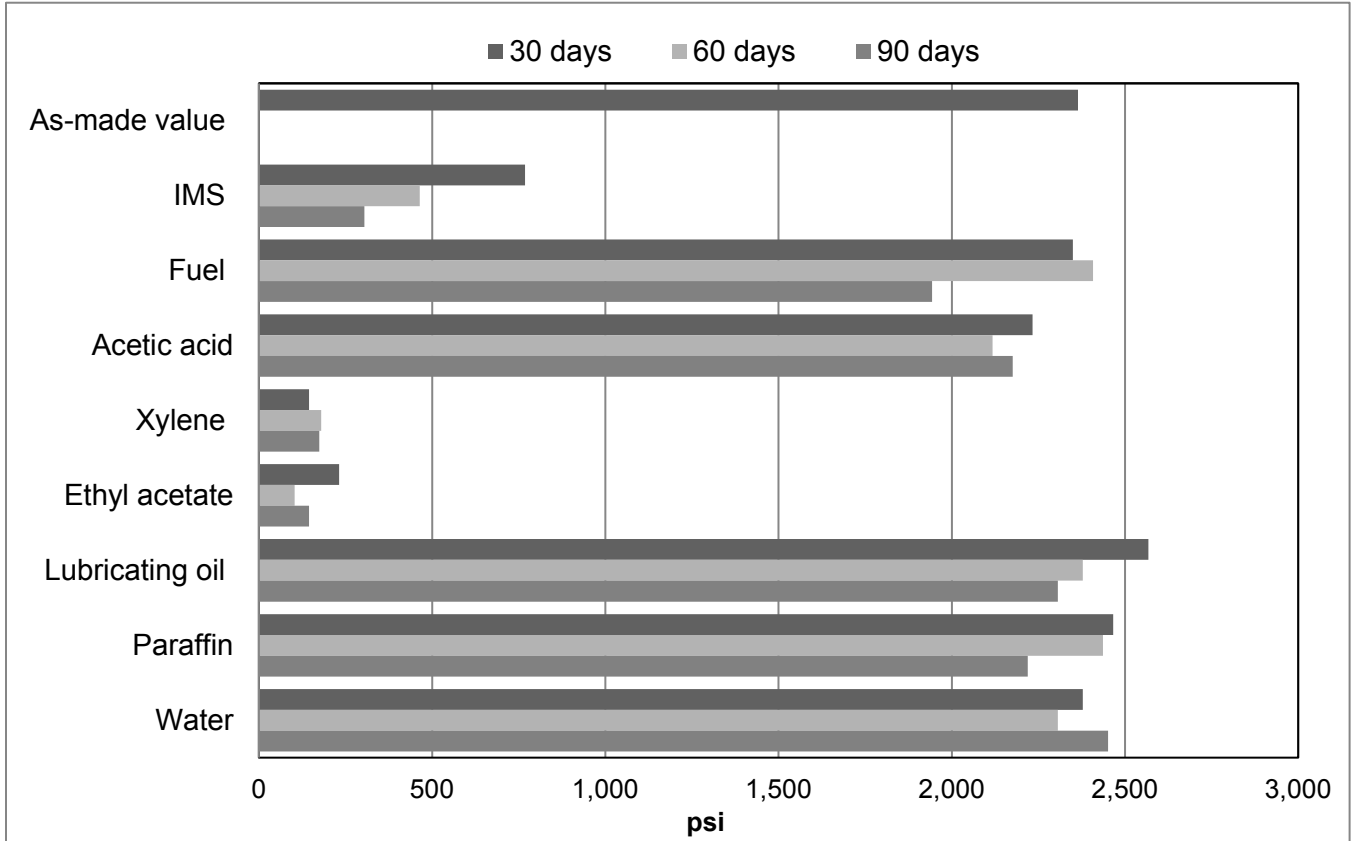


(*): UP-GRP, SMC; PMMA, PVC, substrate failure observed.

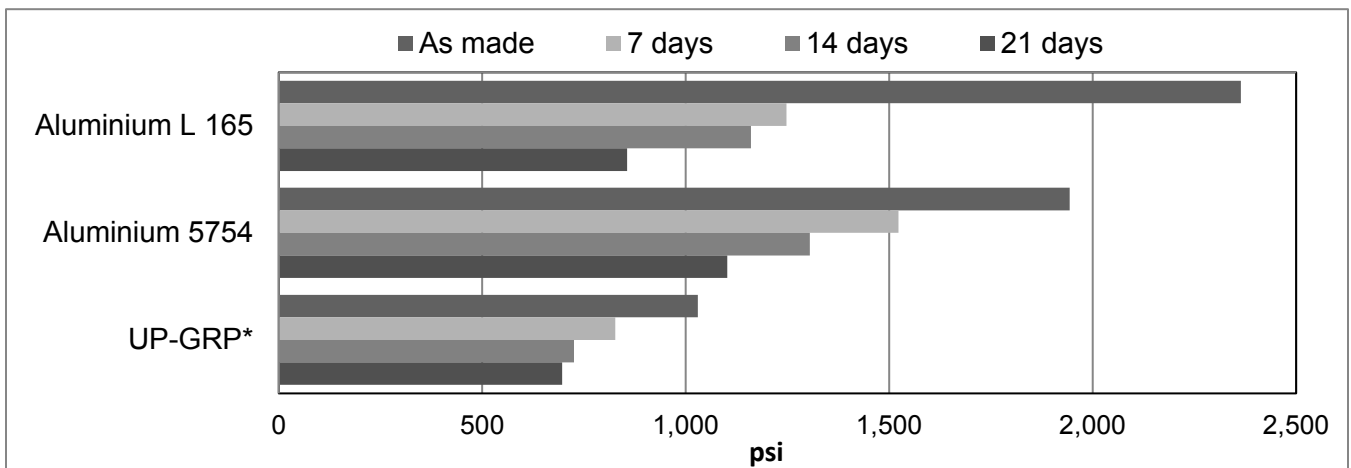
Lap shear strength (ASTM D1002) versus tropical weathering (ISO 4587) (typical average values)
 Aging at 40°C / 92% RH. Cure: 7 days at RT. Test at 23°C (73°F)



Lap shear strength versus immersion in various media (ASTM D1002) (typical average values). Cured 7 days at RT Tested at 23°C (73°F). Lap Shear Strength was determined after immersion for 30, 60 and 90 days at 23°C (73°F).

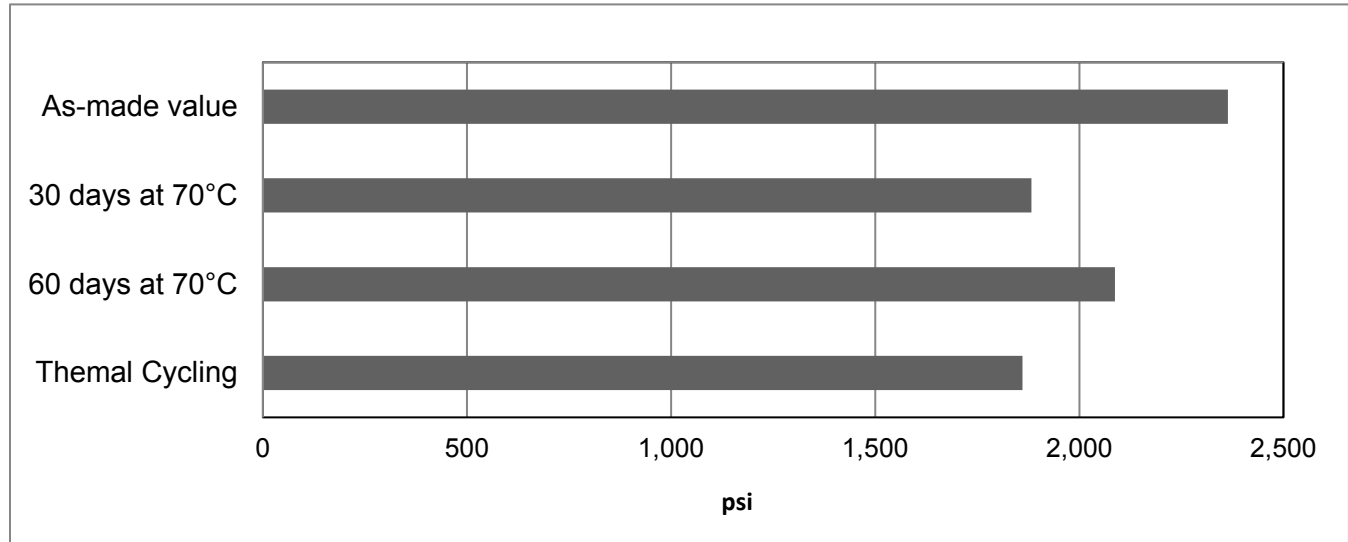


Lap shear strength (ASTM D1002) versus Cataplasma ageing (typical average values). Cure 24 hours at 23°C (73°F) – per ISO 9142/E2. Tested at 23°C (73°F). Metals: sandblasted and degreased; Plastics: abraded and degreased.



(*): UP-GRP: substrate failure observed

Lap shear strength (ASTM D1002) versus heat ageing and thermal cycling (typical average values). Cured 7 days at 23°C (73°F). Tested at 23°C (73°F). Thermal cycling 100 cycles: 2h at -30°C (-22°F) → 1 h ramp up to 70°C (158°F) → 2h at 70°C (158°F) → 1h ramp down to -30°C (-22°F)



Additional properties

Property		Value	Test Method
UV Yellowing	1000 hours, Atlas Suntest XLS+ / 500 W/m ²	No Yellowing	Huntsman
Tg by DMA	Onset Storage Modulus Midpoint Storage Modulus	49°C 81°C	ASTM E1640
Tensile Properties	Strength, psi Modulus, ksi Elongation, %	3,045 101-116MPa ~100%	ASTM D638

Storage

Araldite® 2023-60 A/B Adhesive should be stored in a dry place, in the original sealed containers, at temperatures between **2°C to 8°C (36°F to 46°F)**. Under these storage conditions, the product has a shelf life of **18 months** from date of manufacture. The product should not be exposed to direct sunlight. 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. The product should be never frozen.

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.

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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



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