



ARALDITE 420 A/B

2 Component Epoxy Adhesive

Araldite 420 A/B is a two component, room temperature curing paste adhesive of high strength and toughness. It is suitable for a wide variety of metal, honeycomb and fibre reinforced composite bonding applications. It has very high shear strength even at temperatures up to 70°C and good peel strength.

Typical uses include:

- bonding inserts, ferrules, aluminium and composite edge members, joining strips, etc, in both metallic and non-metallic honeycomb sandwich structures.
- Fabrication of composite components using the cut and fold technique.

CHARACTERISTICS:

- Very high shear and peel strength
- Extremely tough and resilient
- Good moisture resistance
- Bonds a wide variety of materials including metal, wood, rubber, glass fibre reinforced composites and many plastics

TYPICAL PRODUCT DATA

Property	Araldite 420A	Araldite 420 B	Mixed Adhesive	Test Method
Colour (visual)	Yellow	Blue	Dark green	Visual
Specific gravity	ca. 1.2	ca. 1.0	1.1 – 1.2	ASTM-D-792
Viscosity at 25°C (pas)	100 – 300	0.6 – 1.4	35 – 45	ASTM-D-2196
Gel time (100 gm at 25°C) mins	-	-	60	ASTM-D-2471

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, 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 420A	100	100
Araldite 420B	40	50



ARALDITE 420 A/B

2 Component Epoxy Adhesive

Stir the two components thoroughly together until the two colours are completely blended, without any visible streaks. Automatic mixing / dispensing may be used. Araldite 420 A/B is also supplied in cartridges incorporating mixers and can be applied as ready to use adhesive with the aid of a recommended tool.

Usable life

Due to exothermic reaction between the two components the usable life depends to some extent on the quantity mixed and the shape of the container. Use of a shallow container will extend the usable life and as a rough guide:

- for 50gm mix, usable life at 25°C is 2 hours
- for 100gm mix, usable life at 25°C is 1 hour

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.

Curing

Once applied, Araldite 420 A/B will gel in 3 - 4 hours at 25°C and will be sufficiently cured after 5 hours to allow the bonded component to be handled. After 4 - 5 days the adhesive will obtain 90% of its full strength and achieve full strength after 1 to 2 weeks at room temperature. Cure can be accelerated by heating. 4 hours at 50°C or 1 hour at 120°C will be sufficient to achieve full strength. Shear properties can be improved, particularly at elevated temperatures, by post-curing for up to 24 hours at 70°C.

Lap shear strength after various cure times at 23°C

- 5 hours: 1 N/mm²
- 6 hours: 8 N/mm²
- 7 hours: 9 N/mm²

Typical cured properties

These figures are for guidance and do not constitute a specification.

Bell peel 150 N/25mm (60°C peel using 2024-T3 clad aluminium adherends at 25°C).

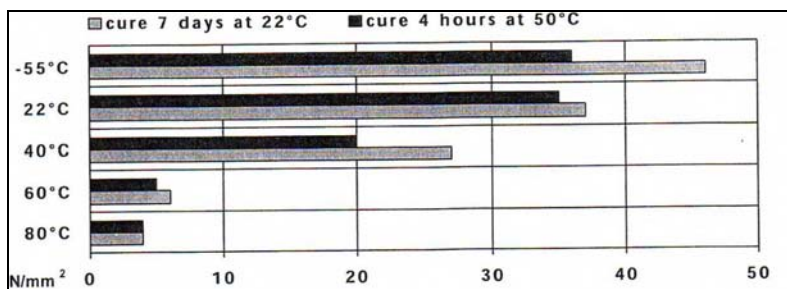
Honeycomb bonding results (in accordance with MIL-A-25463)

Beam shear at 22°C: 12kN (core failure); Flatwise tensile at 22°C: 8.5 N/mm²
Metal: 2024 - T3; Core: 7.9 - ¼ - 40 5052



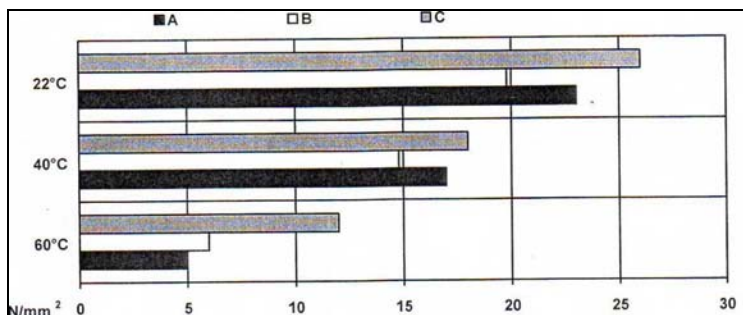
ARALDITE 420 A/B 2 Component Epoxy Adhesive

Variation of lap shear strength as a function of temperature



Lap shear strength: variation after exposure to 95% RH at 60°C

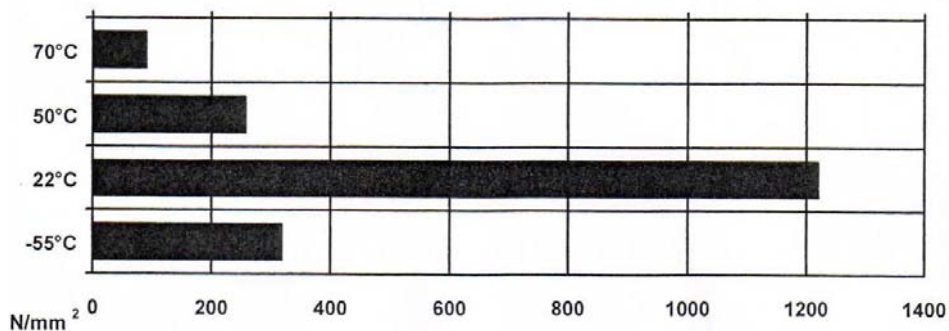
(cured 7 days at 23°C) C = 30 days exposure A = 90 days + drying for 16 hours at 60° B = 90 days exposure



Honeycomb peel performance

(Cured 7 days at 23°C)

Tested in accordance with MIL-A-25463 using approx. 300g/m² of Araldite 420 per skin.



Effects of alternative schedules on lap shear strength performance (LSS)



ARALDITE 420 A/B

2 Component Epoxy Adhesive

Test	Results		Test methods
	Test temp (°C)	LSS (MPa)	
Cure cycle			
70°C for 1 hour	22	37	A.E.C.M.A. EN2243-1
2 hours	70	4	
6 hours	70	6	
16 hours	70	11	
24 hours	70	10	
	70	8	
120°C for 1 hour	22	43	A.E.C.M.A. EN2243-1
	50	29	
	70	10	

STORAGE

Araldite 420 A/B may be stored for up to 36 months at 2 – 40°C, provided that the components are stored in their original sealed containers. The expiry date is indicated on the label.

HANDLING SAFETY

These 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.

For further information refer to Material Safety Data Sheet.

FURTHER INFORMATION

Please contact Amber Composites for additional information.

This is not a specification. The information given in this data sheet in relation to the performance, storage and other characteristics of the product is based on results gained from experience and tests and is believed to be accurate. Given, however, that conditions of use and storage will vary, Amber Composites will not be liable for any loss or damage resulting from reliance upon such information. The purchaser is recommended to carry out his own tests to establish the suitability of the product for its particular purpose. The use of the product in certain processes may require third party consent.