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Advanced Materials

Araldite® 501 A/B

EPOXY LAMINATING SYSTEM

- Good mechanical strength
- High temperature resistance up to 248°F (120°C)

DESCRIPTION : Araldite® 501 A/B epoxy adhesive is a two-part system that cures at either ambient or elevated temperatures. It is designed for use in repair of composite aircraft components, maintaining its performance characteristics at temperatures up to 248°F (120°C). Araldite® 501 A/B epoxy laminating system is qualified to the ASNA 4047, issB specification.

TYPICAL PROPERTIES :

Property	Test Method	Test Values 501 A Resin	501 B Hardener	501 A/B System
Color/Appearance	Visual	Colorless	Blue	Blue
Specific Gravity	ASTM D-792	1.15	0.8 – 0.85	1.1 – 1.2
Viscosity, cP @ 73°F (23°C)	ASTM D-2393	--	--	3,500
Pot Life, min. @ 73°F (23°C)		--	- --	90

- After parts are in contact
-

PROCESSING:

Pretreatment

The strength and durability of a bonded joint are dependent on proper pretreatment of the surfaces to be bonded. At a minimum, 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. **Alcohol, gasoline or paint thinners should never be used**. The strongest and most durable joints are obtained after either mechanically abrading or chemically etching the degreased surfaces.

All machining and preparation of the repair surfaces should be completed before Araldite® 501 A/B is prepared for use. Surfaces must be clean, dry and free from grease or loose deposits, and should have a uniform, finely roughened (matte) finish. This will enable the resin to wet the surface properly, thus creating a high strength bond.

Mix ratio	Parts by weight	Parts by volume
Araldite® 501 A	100	100
Araldite® 501 B	15	22

Application of Adhesive

Impregnate the dry repair fabric with mixed Araldite® 501 A/B epoxy adhesive using a brush or spreader bar on a release-covered surface. Cut layers of the wet fabric to shape and position on the prepared, damaged area. After consolidating with a roller, cover the assembly with a vacuum bag lay-up and apply vacuum throughout the cure cycle. A heater mat placed between the release film and breather layer will reduce cure time.

If the honeycomb is exposed in the damaged area, it should first be filled with one of Huntsman Advanced Materials' syntactic filler pastes, and cured before application of Araldite® 501 A/B epoxy adhesive and fabric.

Mechanical processing
Special equipment has been developed to meter, mix and dispense bulk adhesives. Huntsman will be pleased to advise customers on the choice of equipment that will meet their particular needs.

Equipment maintenance
All tools should be cleaned with hot water and soap before adhesive 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 as described in the applicable MSDS.

Typical Cure Schedules

At 77°F (25°C), Araldite® 501 A/B epoxy adhesive achieves 50% of its full strength approximately two days after mixing, 80 – 90% after seven days and full strength after seven weeks.

Where circumstances permit, curing time can be reduced by warming the repair assembly:

At 113°F (45°C), Araldite® 501 A/B epoxy adhesive will cure fully in 16 hours.
At 158°F (70°C), Araldite® 501 A/B epoxy adhesive will cure fully in two hours.

TYPICAL CURED PROPERTIES : 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.

The following tests were conducted using 8 harness satin weave glass fabric, No. 181, with P-703 finish, and were carried out on specimens cut from laminates cured for 3 hours at 150°F (66°C).

	Test Values		
	Dry at 73°F (23°C)	Wet at 73°F (23°C)	Dry at 158°F (70°C)
Flexural Strength, ASTM-D-790, psi (MPa)	76,850 (530)	43,500 (300)	58,000 (400)
Flexural Modulus, ASTM-D-790, ksi (GPa)	3,190 (22)	2,465 (17)	2,610 (18)
Tensile Strength, ASTM D-638*, psi (MPa)	46,400 (320)	29,000 (200)	40,600 (280)
Tensile Modulus, ASTM D-638*, ksi (GPa)	2,900 (20)	2,900 (20)	2,755 (19)
Flexural Modulus on unreinforced material, ASTM D-790, ksi (GPa)	507.5 (3.5)	--	--
Tensile Strength on unreinforced material, ASTM D-638*, psi (MPa)	11,600 (80)	--	--

* Using ISO R527 type 1 specimens.

Typical Tg values of Araldite® 501 A/B epoxy adhesive determined by DMTA.

Cure	Tg
3 days at 77°F (25°C)	246 (119)
7 days at 77°F (25°C)	253 (123)
2 hours at 158°F (70°C)	250 (121)

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STORAGE :

Araldite® 501 A/B epoxy adhesive should be stored in a dry place, in the sealed original container, at temperatures between +18°C and +40°C (+64.4°F and 104°F). Under these storage conditions, the shelf life is 2 years. The product should not be exposed to direct sunlight.

Material temperatures should be above 18°C (+64.4°F) when mixing. After use, tightly reseal containers.

PRECAUTIONARY STATEMENT

Huntsman Advanced Materials Americas LLC maintains up–to-date Material Safety Data Sheets (MSDS) 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 MSDS as mentioned above.

KEEP OUT OF REACH OF CHILDREN

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