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vantico

Product Data

ARALDITE® 2021
TWO COMPONENT TOUGHENED METHACRYLATE ADHESIVE

DESCRIPTION:

Araldite 2021 is a two component, room temperature curing multi-purpose, methacrylate adhesive system for rapid assembly operations on a wide variety of substrates.

APPLICATIONS:

- Metal
- Composites
- Plastics

ADVANTAGES:

- High shear and peel strengths
- Very good resistance to chemicals and water
- Very fast curing with good gap filling properties
- Excellent bond to a wide range of plastics, composites and metals
- Suitable for service at temperatures up to 212ºF (100ºC)

TYPICAL PROPERTIES:

Property	Test Method	Test Values[1] Resin	Hardener
Color/appearance	Visual	Off White Liquid	Beige/ Yellow Liquid
Specific Gravity	ASTM D-792	1.03	0.96
Viscosity (cP)	ASTM D-2393	45,000	40,000

TYPICAL MIXED PROPERTIES:

Property	Test Method	Test Values[1]
Reaction Ratio (by weight)		100R/90H
Reaction Ratio (by volume)		100R/100H
Pot Life (minutes) (4.fl. oz. mass)	ASTM D-2471	2-3
Mixed viscosity (cP)	ASTM D-2393	45,000

[1]Tested @ 77°F (25°C)

RECOMMENDED CURE SCHEDULES:

Temperature	Handling Strength	Minimum Cure Time
50ºF (10ºC)	20 minutes	30 minutes
59ºF (15ºC)	12 minutes	25 minutes
77ºF (25ºC)	8 minutes	18 minutes
104ºF (40ºC)	2 minutes	5 minutes

TYPICAL CURED PROPERTIES:

Application of Adhesive

The resin/hardener mix is applied with a spatula to the pretreated and dry joint surfaces.

A layer of adhesive 0.004 to 0.008 inches thick will normally impart the greatest lap shear strength to a joint.

The joint components should be assembled and clamped as soon as the adhesive has been applied. Even contact throughout suffices to ensure proper cure.

Standard Test Specimens
Unless otherwise stated, the figures given below were all determined by testing standard specimens made up by lap-jointing 4 x 1 x 0.06 inch strips of aluminum. The joint area was 0.5 x 1 inch in each case.

Property	**Test Method**
Lap Shear Strength (psi)	ISO 4587

Effect of Test Temperature
(Load applied 10 minutes after specimens reach test temperature.)

Cure Cycle	**Test Temp.**	
7 days @ 77ºF (25ºC)	-76ºF (-60ºC)	2030
	-40ºF (-40ºC)	2755
	-4ºF (-20ºC)	3250
	32ºF (0ºC)	3480
	68ºF (20ºC)	3625
	104ºF (40ºC)	3625
	140ºF (60ºC)	3335
	176ºF (80ºC)	2465
	212ºF (100ºC)	1450

[1]Tested @ 77°F (25°C)

Tested on Metal Substrates
(Cured 7 days @ 77ºF (25ºC)

Metal	**Substrate Thickness (mm)**	**Test Values[(1)]**
Aluminum L165	1.0	3190
Carbon Steel	1.0	3335
Stainless Steel	1.0	4350
Galvanized Steel[2]	1.5	1950
Copper	1.5	2175
Brass	1.5	350

[1]Tested @ 77°F (25°C)
[2]Surface degreased only, not roughened.

Tested on Plastic Substrates[1]
(Cured 7 days @ 77ºF (25ºC)

Plastic	**Test Values[(1)]**
SMC	725
Polycarbonate	1025
ABS	1015
Perspex	1000
PVC	1150
Polyamide (nylon 6)	450
GRP	870
GRE	1250

[1]Surface lightly abraded and degreased.

Property
Lap Shear Strength (psi)
Effect of Immersion
(Cure cycle 7 days @ 77ºF (25ºC). Immersion for 90 days in media listed.)

Media	**Test Values[1]**
Standard - As prepared	3190
IMS	2450
Gasoline	4200
Acetic Acid 10%	1350
Acetic Acid 10% - 30 day immersion	3190
Xylene	3650
Paraffin	4000
Lubricating Oil - HD30	4350
Water @ 73°F (23°C)	1450
Water @ 73°F (23°C) - 30 day immersion	3100
Water @ 194°F (90°C)	1450
Water @ 194°F (90°C) – 30 day immersion	3000

Property
Lap Shear Strength (psi)
Effect of Tropical Exposure
(104ºF (40ºC)/92% R.H.)

Cure Cycle	**Exposure Time**	**Test Values [1]**
7 days @ 77ºF (25ºC)	0 days	3190
	30 days	2750
	60 days	2500
	90 days	2400

[1]Tested @ 77°F (25°C)

	Test Method
Lap Shear Strength (psi)	ASTM D-1002

Effect of Heat Aging
(Cured 7 days @ 77ºF (23ºC).

Aging Temperature	**Exposure Time**	**Test Values[1]**
158ºF (70ºC)	0 days	3190
	30 days	4650
	60 days	4350
	90 days	4350

Property	Test Method	Test Values[1]
Elongation (%)	ASTM D-638	50-75
Roller peel test (pli)	ISO 4578	62
Hardness (Shore D)	ASTM D-2240	78
Thermal cycling – 100 cycles of 6 hour duration from -22ºF to 158ºF (psi)		3900

[1]Tested @ 77°F (25°C)

STORAGE HANDLING INFORMATION

Araldite 2021/A Resin and Araldite 2021/B Hardener
Store in tightly closed containers at room temperature in cool, ventilated area. Keep containers closed to prevent moisture absorption and contamination.

SHELF LIFE:

Provided this material is stored under the recommended storage conditions in their original containers, it will remain in useable condition for one year from date of shipping.

PACKAGING:

This product is available in the following package sizes:

Dual Syringes - 50 ml (DS-50)
- 400 ml (DS-200)

SAFETY HANDLING PRECAUTIONS:

Do not use or handle this product until the Material Safety Data Sheet has been read and understood.

Araldite 2021/A Resin
Warning! Flammable liquid. Keep away from heat, sparks, and flame. Causes irritation if inhaled and can cause skin irritation, eye irritation, and allergic skin reaction. May be harmful if absorbed through skin or if swallowed. Avoid breathing vapor or mist. Avoid contact with eyes, skin, and clothing. Avoid tasting or swallowing. Keep container closed when not in use. Use with adequate ventilation. Wash thoroughly after handling. Notice! Overexposure may have effects on heart, lungs, kidney, and liver.

Araldite 2021/B Hardener
Warning! Flammable liquid. Keep away from heat, sparks, and flame. Causes irritation if inhaled and can cause skin irritation, eye irritation, and allergic skin reaction. May be harmful if absorbed through skin or if swallowed. Avoid breathing vapor or mist. Avoid contact with eyes, skin, and clothing. Avoid tasting or swallowing. Keep container closed when not in use. Use with adequate ventilation. Wash thoroughly after handling. Notice! Overexposure may have effects on heart, lungs, kidney, and liver.

FIRST AID:	In case of contact:
Skin:	Immediately wash with soap and water. Remove contaminated clothing and launder before reuse. Destroy contaminated shoes.
Eyes:	Immediately flush with water for at least 15 minutes. Call a physician.
Ingestion:	If conscious, give plenty of water to drink. Do not induce vomiting. Call a physician.
Inhalation:	Remove to fresh air. Administer oxygen or artificial respiration if necessary. Call a physician.
Other:	Referral to physician is recommended if there is any question about the seriousness of any injury.

PRECAUTIONARY NOTE:

Thermosetting systems generate heat when curing. The amount of heat and the period of time in which heat is released varies significantly between systems. Additionally, ambient or compound temperature and amount of material mixed can also be factors in the temperature profile of a mixed system.

In some cases, the thermosetting reaction can be vigorous, generating heat sufficient to cause decomposition of the system with subsequent liberation of large volumes of acrid smoke.

A good rule of thumb is never mix more material than can be applied during the stated pot life or gel time. Also take care when using materials in applications other than stated on the Product Data Sheet.

IMPORTANT:

The following supercedes Buyer's documents. **SELLER MAKES NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, INCLUDING OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** No statements herein are to be construed as inducements to infringe any relevant patent. Under no circumstances shall Seller be liable for incidental, consequential, or indirect damages for alleged negligence, breach of warranty, strict liability, tort, or contract arising in connection with the product(s). Buyer's sole remedy and Seller's sole liability for any claims shall be Buyer's purchase price. Data and results are based on controlled or lab work and must be confirmed by Buyer by testing for its intended conditions of use. The product(s) has not been tested for, and is therefore not recommended for, uses for which prolonged contact with mucous membranes, abraded skin, or blood is intended; or for uses for which implantation within the human body is intended.