HUNTSMAN

Advanced Materials

DATA SHEET

Araldite â CV 5863
Aradur â HV 5863

UL® Recognized Insulation Compound for 180ºC Applications

General

Araldite CV 5863 with Aradur HV 5863 is a two-component epoxy paste compound for bonding electrical insulating materials. It has excellent thermal endurance up to 180°C and outstanding resistance to most common chemicals including electrical insulating oils.

Applications

Araldite CV 5863 with Aradur HV 5863 is a two-component ambient temperature gelling electrical bonding compound, which after post curing at temperatures up to 150°C, will give bonds with temperature resistance up to 180°C and excellent resistance to common chemicals, including transformer oils. It is suitable for bonding a wide range of substrates, both metals and electrical insulating materials that include Nomex® and porcelain ceramics.

Benefits

Non-flowing paste for ease of application
Gap filling
For use in applications up to 180°C as tested in accordance with UL 1446
Excellent resistance to most common chemicals including transformer oils
Bonds to a wide range of substrate materials used in electrical applications
Cures at room temperature - post cure recommended for optimal properties

Typical Properties*

Araldite CV 5863	
Appearance	White-beige paste
Viscosity @ 25ºC, cPs	90,000 – 140,000
Specific gravity, g/cm^3	1.55 – 1.65
Flash Point, Closed Cup, ºC	190
Aradur HV 5863	
Appearance	Black paste
Viscosity @ 25ºC, cPs	50,000 – 70,000
Specific gravity, g/cm^3	1.55 – 1.65
Flash Point, Closed Cup, ºC	> 200
Mixed	
Appearance	Dark grey paste
Viscosity @ 25ºC, cPs	80,000 – 140,000
Specific gravity, g/cm^3	1.55 – 1.65
Pot life (100 gm) @ 25ºC, min	90

* Typical properties are based on Huntsman's test methods. Copies are available upon request.

Packaging & Storage

Store at 70-90°F in a dry well-sealed condition, if possible in original containers. If only part of container is used, blanket with dry nitrogen and tightly re-seal.

Under these conditions their shelf lives will be one year from date of shipping. Contact Customer Service for packaging information.

Mix ratios*

	Parts by weight	Parts by volume
Araldite CV 5863	100	100
Aradur HV 5863	50	50

*Resin and hardener should be mixed together at room temperature with thorough stirring

Processing data

Pretreatment

The strength and durability of a bonded joint are dependent on proper pretreatment of the surfaces to be bonded. The bonding surfaces should be cleaned with a degreasing agent such as acetone in order to remove all traces of oil, grease and dirt. Alcohol, gasoline or paint thinners are not recommended. The strongest and most durable joints are obtained by either mechanically abrading or chemically etching the degreased surfaces. Abrading should always be followed by a second degreasing step.

Application

The resin/hardener mixture is applied directly or with spatula, to the pretreated and dry bonding surfaces. A layer of adhesive 0.05 to 0.10 mm. thick will normally impart the greatest lap shear strength to a joint. The bonded components should be assembled and clamped if necessary as soon as the adhesive has been applied. An even contact pressure over the bonded area will ensure optimum cure.

Equipment Maintenance

All tools should be cleaned with hot water and soap before any residual material has had time to cure. If solvents such as acetone are used for cleaning, operators should take the appropriate precautions and avoid any contact with skin or eyes.

Cure Requirements

Temperature (°C)	40	60	100
Cure to lap shear > 1 N/mm^2	50 minutes	15 minutes	5 minutes

To achieve optimum performance properties an elevated temperature cure or post cure is recommended. Lap shear strength of >1 N/mm2 represents strength where careful handling of the bonded object is possible. This product will not fully cure at temperatures below 60°C. Suggested cure schedules are:

3 hours at 80°C or
1 hour at 130°C or
15 minutes at 150°C

Average lap shear strength vs. immersion in various media for 90 days (ISO 4587)

Cured for 24 hours/23°C + 1 hour/130°C and tested at 23°C
Substrates are aluminum alloy

Physical Properties

Hardness, Shore D	87 – 92
Tg, °C	148 – 153
Coefficient of linear thermal expansion	25– 30 x 10^{-6}

Average lap shear strength of typical metal-to-metal joints (ISO 4587)

Cured for 24 hours/23°C + 1 hour/130°C and tested at 23°C
Pre-treatment – sandblasted

Metal	Joint Thickness (mm.)	Value ((N/mm^2)
Aluminum alloy	1.5	17
Steel 37/11	1.0	10
Stainless steel V4A	2.0	12
Steel (galvanized)	0.8	12
Copper	1.5	4
Brass	1.5	4

Average lap shear strength of typical plastic-to-plastic joints (ISO 4587)

Cured for 24 hours/23°C + 1 hour/130°C and tested at 23°C
Pre-treatment – lightly abrade and alcohol degrease

Media	Temperature (°C)	Value ((N/mm^2)
As-made	23	17
Acetone	23	16
Gasoline	23	15
Ethyl acetata	23	15
Acetic acid, 10%	23	6
Methanol	23	18
Lubricating oil	23	16
Sulfuric acid, 10%	23	9
1,1,1-trichloroethane	23	17
Water	20	17
Water	90	19

Average lap shear strength vs. tropical weathering (40/92, DIN 50015)
Cured for 24 hours/23°C + 1 hour/130°C and tested at 23°C
Substrates are aluminum alloy

Condition	Value (N/mm^2)
As made	17
After 30 days	17
After 60 days	17
After 90 days	18

Electrical Properties (typical values)

Cured for 24 hours/23°C + 15 minutes/150°C

Dielectric Strength @ 3mm, v/mil	375
Dielectric constant, 60 Hz	
@ 25°C	4.96
@ 50°C	5.06
@ 100°C	4.26
@ 125°C	5.48
Dissipation factor, 60 Hz	
@ 25°C	0.0066
@ 50°C	0.0059
@ 100°C	0.0097
@ 125°C	0.0319
Volume resistivity, ohm-cm	
@ 25°C	1.2×10^{16}
@ 50°C	4.2×10^{15}
@ 100°C	3.2×10^{13}
@ 125°C	2.3×10^{12}

Handling/Safety Precautions

Mandatory and recommended industrial hygiene procedures should be followed whenever our products are being handled and processed. For additional information please consult the corresponding material safety data sheets.

Araldite CV 5863
Warning! Causes skin and eye irritation. May cause allergic skin reaction. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated contact with skin. Wash thoroughly after handling.

Aradur HV 5863
Warning! Corrosive - causes skin and eye burns. Harmful if swallowed, if absorbed through skin, or if inhaled. May cause allergic skin reaction. Do not get in eyes, on skin, on clothing. Avoid breathing vapor or mist. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.

First Aid

In case of contact:

Eyes: Flush eyes with plenty of water for 15 minutes and get prompt medical attention.

Skin: Wash skin thoroughly with mild soap and water; remove contaminated clothing before reuse. Discard contaminated shoes and other articles made of leather.

Inhalation: Remove person to fresh air.

Ingestion: Do not induce vomiting. Dilute with plenty of water and contact physician immediately. Never give anything by mouth to an unconscious person.

Important

The following shall supersede any provision in Buyer's forms, letters and papers. **THERE IS NO WARRANTY OR CONDITION, WHETHER EXPRESS OR IMPLIED BY ANY STATUTE OR OTHERWISE, INCLUDING WARRANTIES AND CONDITIONS OF MERCHANTIBILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, FOR THE PRODUCT OR PRODUCTS REFERRED TO HEREIN. TECHNICAL ADVICE FURNISHED BY THE SELLER SHALL NOT CONSTITUTE A WARRANTY OR CONDITION, STATUTORY OR OTHERWISE, WHICH IS EXPRESSLY DISCLAIMED, ALL SUCH ADVICE BEING GIVEN AND ACCEPTED AT BUYER'S RISK**. While the information contained herein is believed to be accurate, Seller makes no representations as to the reliability of the results or as to the results of Buyer or as inducements to infringe any relevant patent, now or hereafter in existence. Testing for intended use is the sole responsibility of Buyer. 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. **UNDER NO CIRCUMSTANCES SHALL SELLER BE LIABLE FOR INCIDENTAL, CONSEQUENTAL OR OTHER DAMAGES FROM ALLEGED NEGLIGENCE, BREACH OF WARRANTY OR CONDITION, STRICT LIABILITY OR ANY OTHER LEGAL THEORY, ARISING OUT OF MANUFACTURE, SALE, USE OR HANDLING OF THE PRODUCT OR PRODUCTS REFERRED TO HEREIN**. The sole remedy of Buyer and the sole liability of Seller for any claims shall be limited to Buyer's purchase price of the product(s) which is the subject of the claim or the amount actually paid for such product(s), whichever is less.

Note

Huntsman Advanced Materials Americas Inc.
281 Fields Lane
Brewster, New York 10509
(914) 785-3000
Fax: (914) 785-3472

Araldite CV 5863
with Aradur HV 5863
May 2004