

# Araldite<sup>®</sup> CW 5817

# Aradur<sup>®</sup> HY 1235

# Accelerator DY 062

## Pre-Filled three-component Epoxy Resin System

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**General**

Araldite CW 5817 with Aradur HY 1235 and Accelerator DY 062 is a cycloaliphatic, prefilled, hot-curing, three component epoxy casting resin system recommended for outdoor applications in the medium voltage and heavy power electrical industry. It offers high thermal shock resistance combined with high glass transition temperature.

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**Applications**

Outdoor electrical insulating components  
Bushings  
Line post and pin insulators in the medium voltage range.  
All components for humid indoor medium and high voltage environments

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**Features**

Easy handling combined with long pot-life at moderate temperature  
Short gel and demolding time at temperature above 140°C  
High tracking and arc resistance  
Very high erosion resistivity under ultra violet radiation  
Good dielectric properties  
Insulating material with excellent outdoor behavior

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**Typical Properties\*****Araldite CW 5817**

|                     |                     |
|---------------------|---------------------|
| Appearance          | Grey Viscous Liquid |
| Specific Gravity    | 1.95 – 2.00         |
| Viscosity, cPs      |                     |
| @ 40°C              | 100,000 – 120,000   |
| @ 50°C              | 85,000 – 95,000     |
| @ 70°C              | 20,000 – 30,000     |
| Moisture Content, % | < 0.05              |
| Flash Point, °F     | > 200               |

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**Aradur HY 1235**

|                                  |              |
|----------------------------------|--------------|
| Appearance                       | Clear Liquid |
| Specific Gravity                 | 1.18 – 1.20  |
| Viscosity @ 25°C, cPs            | 70 – 80      |
| Vapor Pressure, N/m <sup>2</sup> |              |
| @ 25°C                           | 0.01         |
| @ 60°C                           | 0.1          |
| Flash Point, °C                  | 165          |

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**Accelerator DY 062**

|                                  |              |
|----------------------------------|--------------|
| Appearance                       | Clear Liquid |
| Specific Gravity                 | 0.88 – 0.92  |
| Viscosity @ 25°C, cPs            | ~ 10         |
| Vapor Pressure, N/m <sup>2</sup> |              |
| @ 25°C                           | 300          |
| @ 60°C                           | 1600         |
| Flash Point, °C                  | 59           |

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

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**Packaging & Storage****Araldite CW 5817**

Store at 70-90°F in a dry and well-sealed condition, if possible, in original containers. If only part of container is used, re-close to prevent contamination.

**Aradur HY 1235**

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

**Accelerator DY 062**

Store at 70-90°F in a dry and well-sealed condition, if possible, in original containers. If only part of container is used, re-close to prevent contamination.

Provided these materials are stored under the recommended storage conditions in their original containers, they will remain in usable condition for 1 year from date of manufacture.

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## Mix ratios

|                    | Parts by weight |
|--------------------|-----------------|
| Araldite CW 5817   | 100             |
| Aradur HY 1235     | 23              |
| Accelerator DY 062 | 0.125           |

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## Processing and Cure

Araldite CW 5817 resin component should be heated in its original container to 50°C – 60°C in an oven. Pre-weigh the appropriate amount of resin component into a mixing vessel. Add the correct amount of Aradur HY 1235 (at room temperature) followed by the correct amount of Accelerator DY 062 (also at room temperature). The three components should then be mixed under a vacuum of 4 – 8 mbar at slight elevated temperature. The recommended mix temperature is 40°C – 50°C. Depending on the quantity mixed, mixer device, mixing temperature and application, the recommended mixing time is 0.25 to 1 hour.

The effective pot-life of the mixed system is about 1 to 2 days at temperatures below 25°C. Conventional batch mixers should be cleaned once a week or at the end of work. For longer interruptions of work, the pipes of the mixing and metering installations must be cooled and cleaned with the resin component to prevent sedimentation and/or undesired viscosity increase. Interruptions over a weekend without cleaning are possible if the pipes are cooled at temperatures below 10°C. For information regarding viscosity increase and gel time at various temperatures, refer to Figure 1.

### Mold temperature

|                             |             |
|-----------------------------|-------------|
| APG process                 | 130 – 160°C |
| Conventional vacuum casting | 80 – 100°C  |

### Demolding times (depending on mould temperature and casting volume)

|                             |                |
|-----------------------------|----------------|
| APG process                 | 8 – 40 minutes |
| Conventional vacuum casting | 4 – 8 hours    |

### Cure conditions (minimal postcure)

|                             |                              |
|-----------------------------|------------------------------|
| APG process                 | 2 h @ 150°C (or) 5 h @ 140°C |
| Conventional vacuum casting | 2 h @ 150°C (or) 5 h @ 140°C |

To determine whether cross-linking has been carried to completion and the final properties are optimal, it is necessary to carry out relevant measurements on the actual object or to measure the glass transition temperature. Different gel and post-curing cycles in the manufacturing process could influence the crosslinking and the glass transition temperature respectively.

Reactivity Characteristics:

Figure 1

Viscosity vs Time: CW 5817 / HY 1235 / DY 062

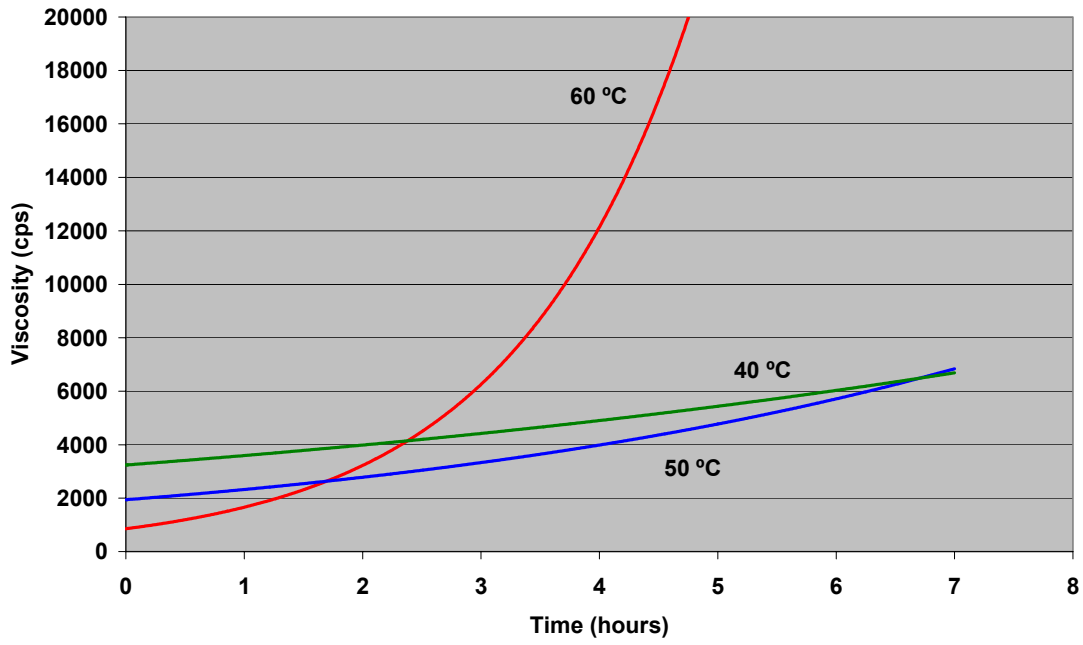
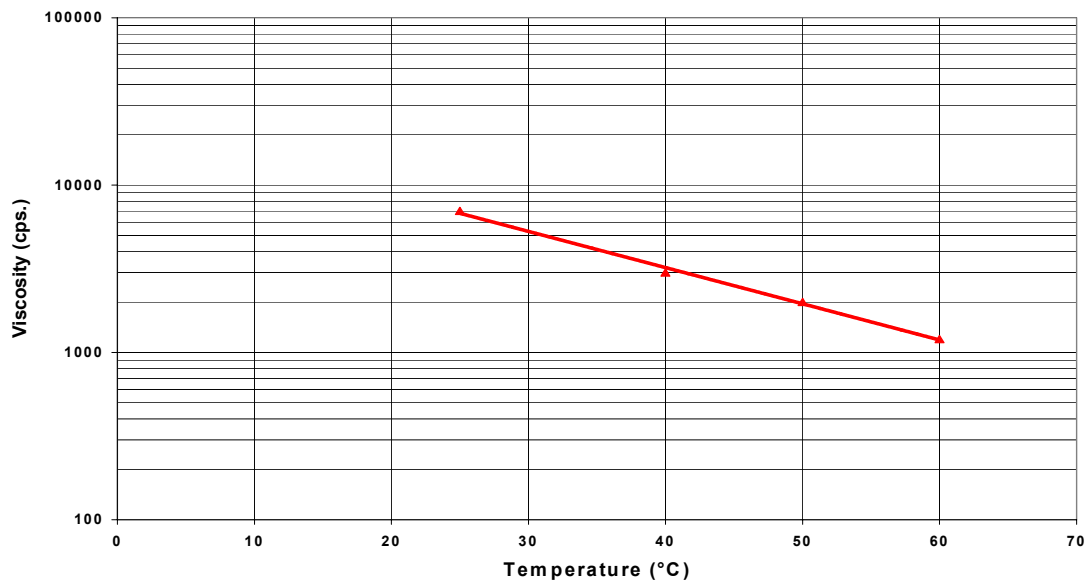


Figure 2

Mixed Viscosity vs Temperature:  
Araldite CW 5817 US / HY 1235 / DY 062



**Physical Properties  
(typical values)**

Determined on standard test specimen at 23°C  
Cured for 2h at 100°C + 2h at 150°C

|   |   |
|---|---|
| Specific gravity at 25°C  | 1.70                                    |
| Elongation at break, %  | 1.20 – 1.60                             |
| E modulus from tensile test, psi  | $1.43 \times 10^6 - 1.49 \times 10^6$   |
| Flexural strength, psi  | 17,400 – 18,800                         |
| Surface strain, %   | 1.1 – 1.5                               |
| E modulus from flexural test, psi   | $1.43 \times 10^6 - 1.49 \times 10^6$   |
| Double Torsion Test   |   |
| Critical stress intensity factor (K <sub>IC</sub> ), MPa·m <sup>1/2</sup> | 2.1 – 2.3                               |
| Specific energy at break (G <sub>IC</sub> ), J/m <sup>2</sup>             | 400 – 490                               |
| Glass transition temperature, °C  | 95 – 105                                |
| Coefficient of thermal expansion, in/in-°C                                | $30 \times 10^{-6} - 35 \times 10^{-6}$ |
| Water absorption (specimen: 50x50x4 mm)                                   |   |
| 10 days @ 23°C, %   | 0.14 – 0.18                             |
| Thermal Conductivity, W/m-K   | 0.70 – 0.90                             |

**Electrical Properties  
(typical values)**

Determined on standard test specimen at 23°C  
Cured for 2h at 100°C + 2h at 150°C

|   |              |
|---|--------------|
| HV arc resistance, sec                        | 195 – 210    |
| Inclined Plane Tracking and Erosion Test, min |              |
| @ 2.5 kv                                      | > 2000       |
| @ 3.5 kv                                      | > 300        |
| Dielectric Constant                           | see Figure 3 |
| Dissipation Factor                            | see Figure 4 |
| Volume resistivity                            | see Figure 5 |

**Figure 3**

**Dielectric Constant vs. Temperature  
@ 60Hz**

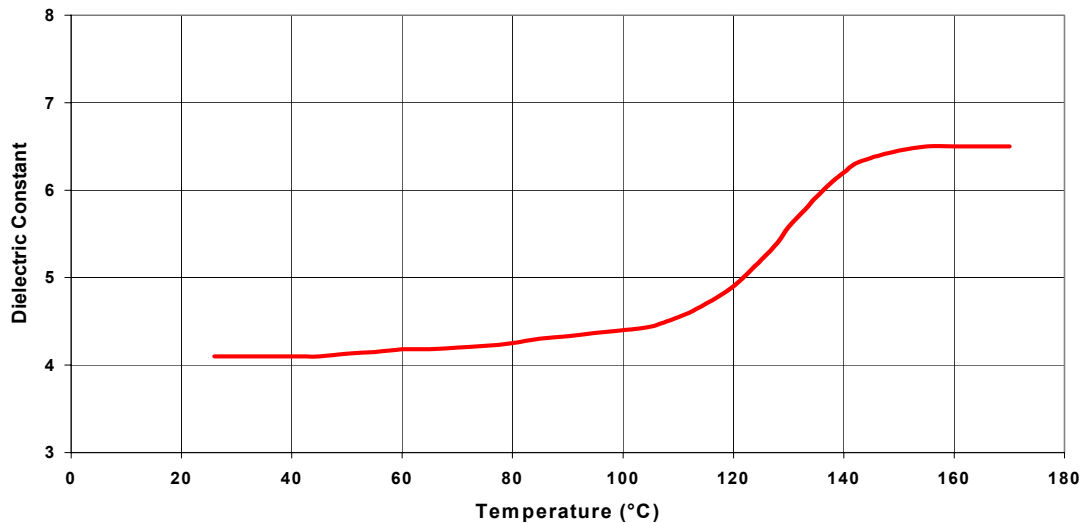


Figure 4

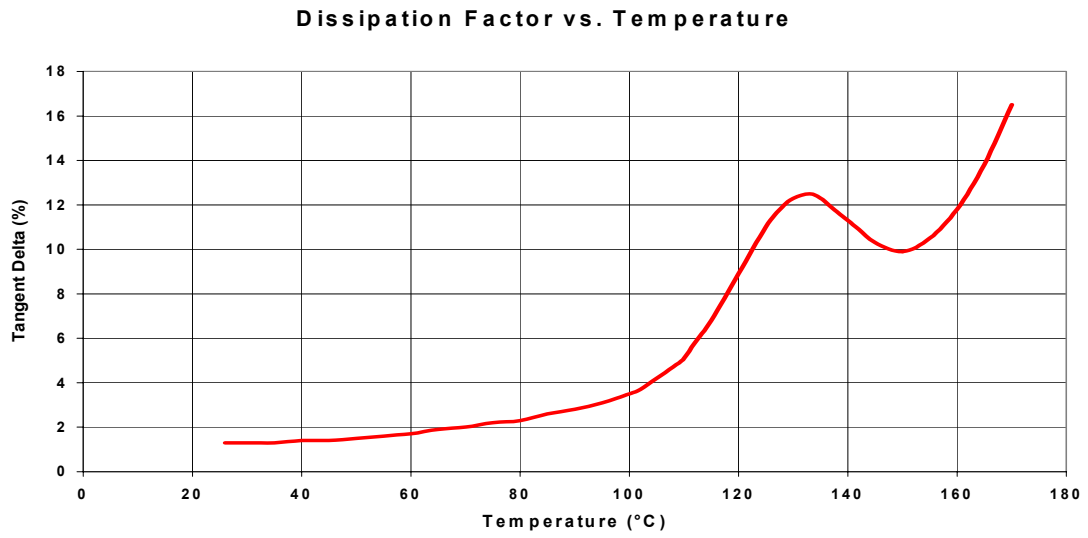
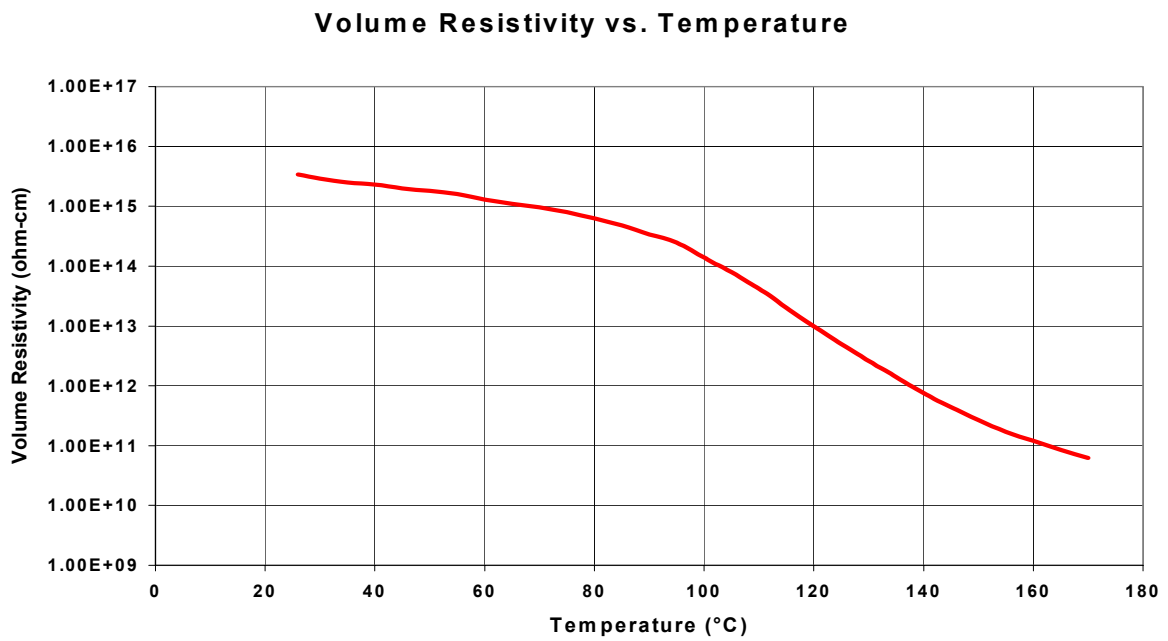


Figure 5



## Testing in Accordance with Underwriter Laboratories®:

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Araldite CW 5817 US / HY 1255 / DY 062 system has been tested by Underwriters Laboratories® in accordance with UL 746 A. These tests include the following:

Flammability in accordance with UL 94, Liquid Contaminant Inclined Plane Tracking in accordance with ASTM D-2303 at 3.5 kv as “time to track”, Hot Wire Ignition (HWI), High Arc Ignition (HAI), and Comparative Tracking Index (CTI). Results are tabulated below. UL yellow cards will be furnished upon request. The system is tested to facilitate selection of material to meet components made for switchgear applications specified in ANSI / IEEE C 37.20.2.

|                      | <b>Flammability</b> | <b>Arc Tracking</b> | <b>HWI</b> | <b>HAI</b> | <b>CTI</b> |
|----------------------|---------------------|---------------------|------------|------------|------------|
| Test Results         | UL 94 V-0           | > 300 minutes       | 1          | 0          | 0          |
| UL Test Requirements | -                   | -                   | <4         | <3         | <2         |

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**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 CW 5817**

**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. Do not breathe dust. Wash thoroughly after handling. Notice! Contains crystalline silica. Breathing dust may cause cancer and delayed lung injury.

**Aradur HY 1235**

**Warning!** Causes eye, skin, and respiratory irritation. May cause allergic skin and respiratory reactions. Avoid contact with eyes, skin, and clothing. Avoid breathing vapor or mist. Avoid prolonged or repeated contact with skin. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.

**Accelerator DY 062**

**Danger!** Combustible. Corrosive - causes skin and eye burns. Causes severe respiratory irritation. May be fatal if inhaled. May cause allergic skin reaction. Harmful if swallowed. Keep away from heat and flame. Do not get in eyes, on skin, or on clothing. Do not breathe vapor or mist. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.

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**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.

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**Important**

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and Accelerator DY 062  
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