HUNTSMAN

Enriching lives through innovation

Advanced Materials

Araldite® CW 5817
Aradur® HY 1235
Accelerator DY 062 System

PRE-FILLED THREE-COMPONENT EPOXY RESIN SYSTEM

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.

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

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

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

Aradur® HY 1235

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

Accelerator DY 062

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

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

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.

MIX RATIO :

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

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 post cure)

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.

Figure 1

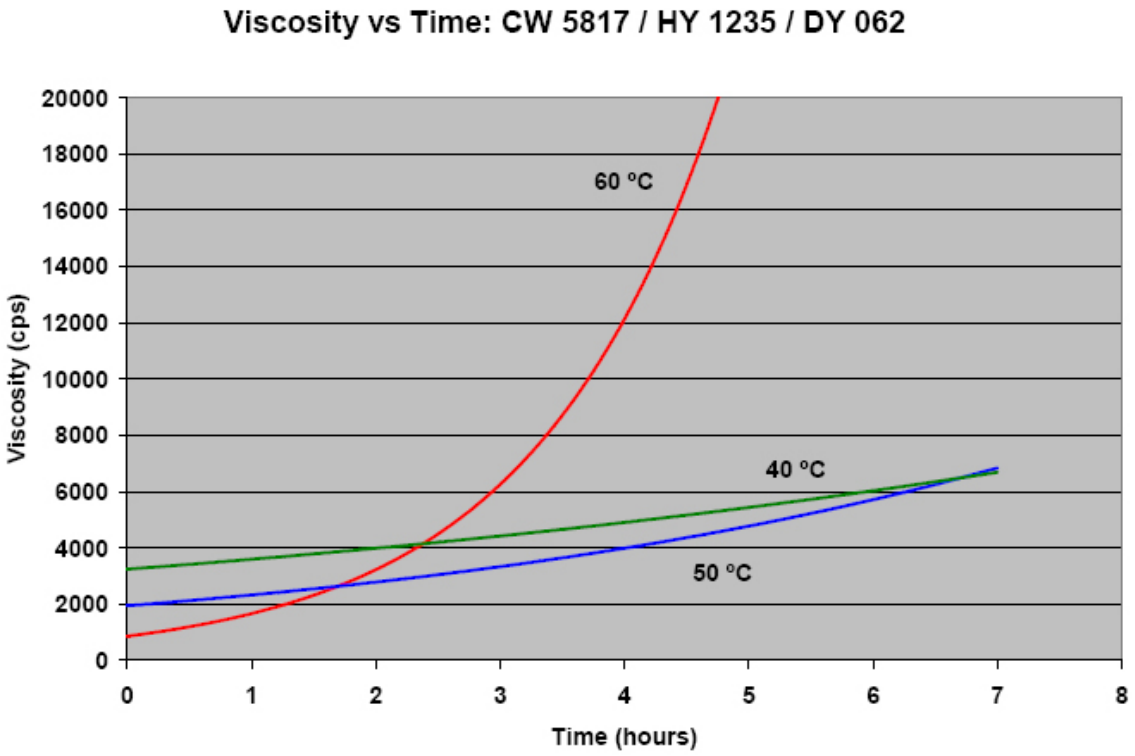
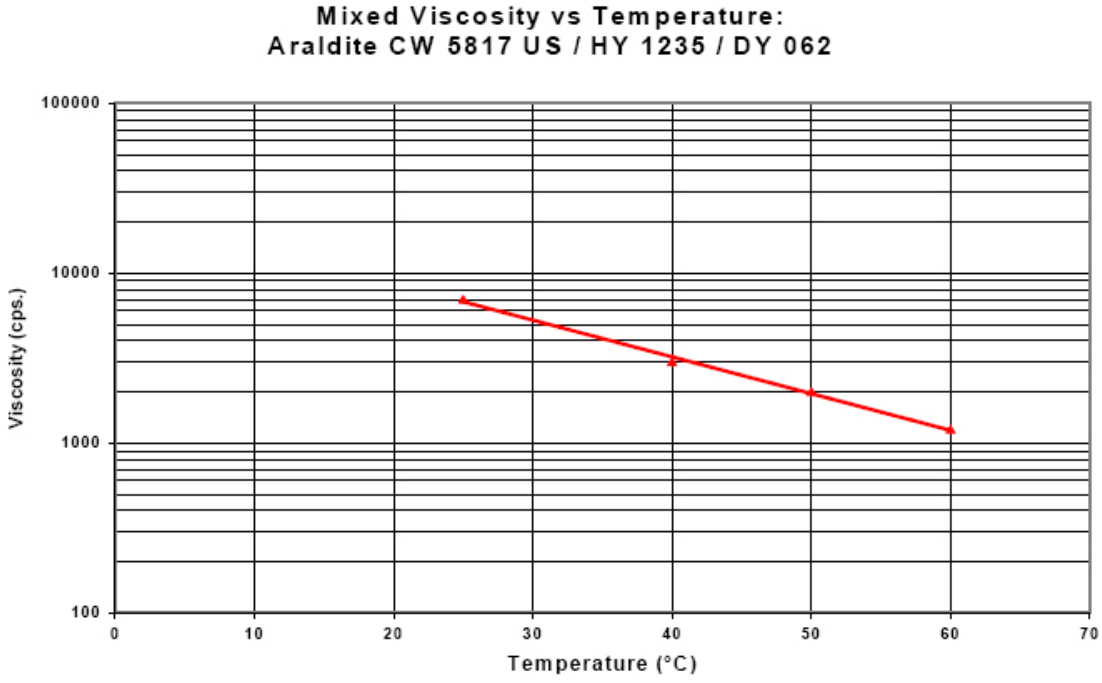


Figure 2



PHYSICAL PROPERTIES :
(Typical values)

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

Specific gravity at 25 °C	1.70
Elongation at break, %	1.20 – 1.60
Tensile strength, psi	12,300 – 13,800
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_{IC}), $MPa.m^{1/2}$	2.1 – 2.3
Specific energy at break (G_{IC}), J/m^2	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 : 50 x 50 x 4mm)	
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 2 h at 100 °C + 2 h 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

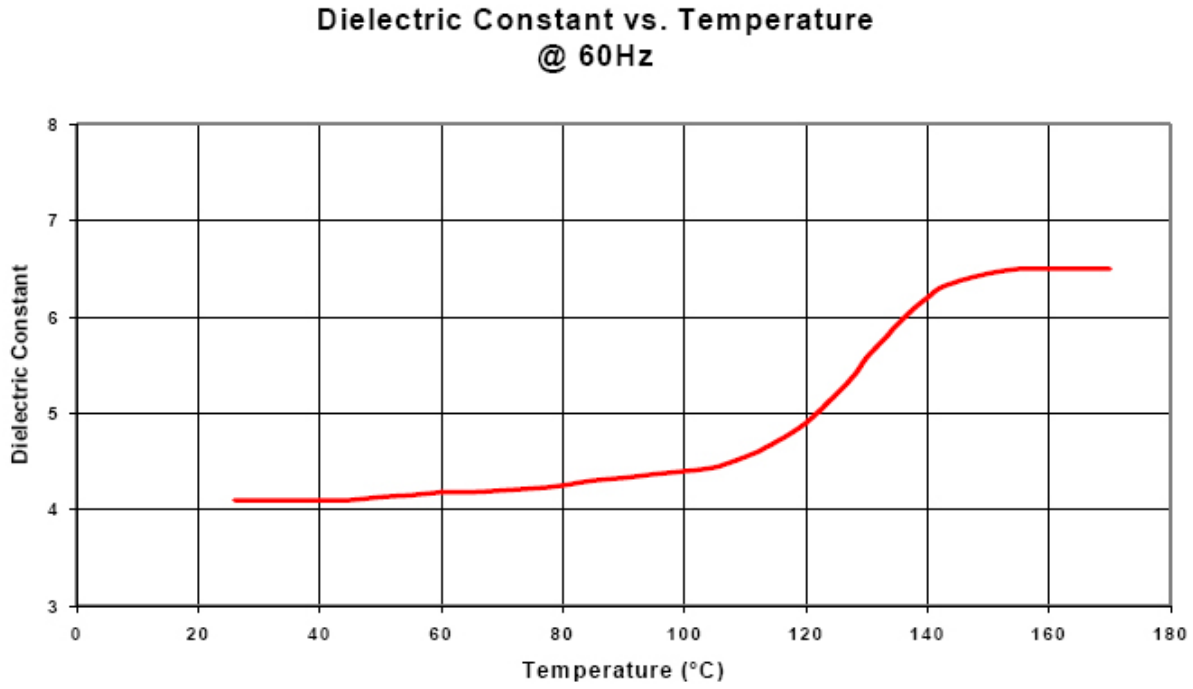


Figure 4

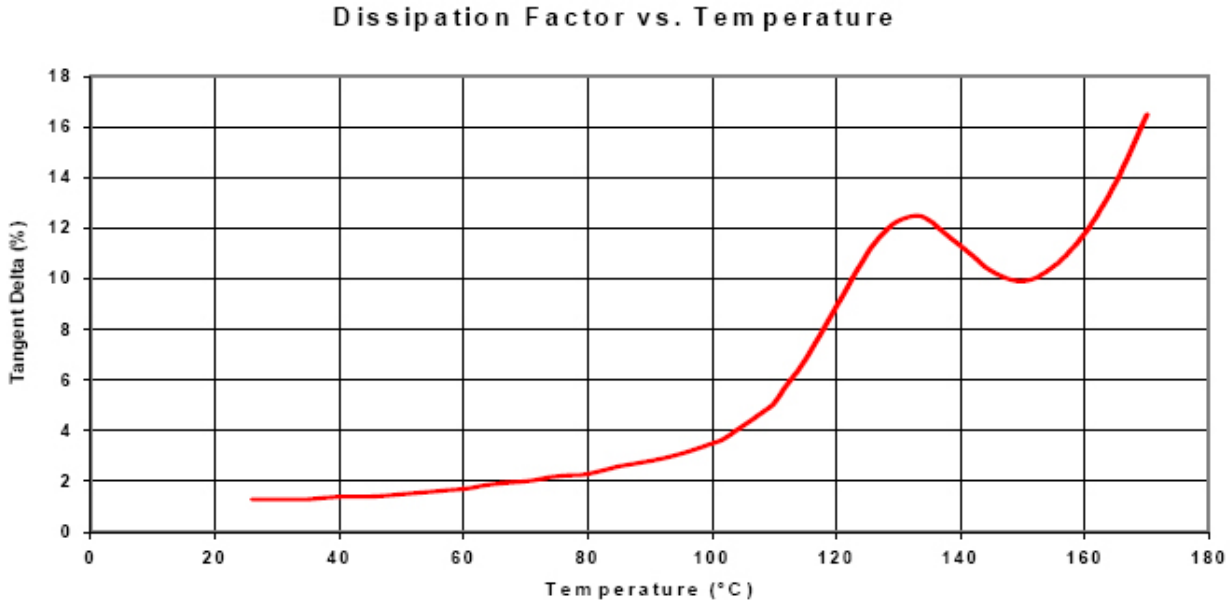
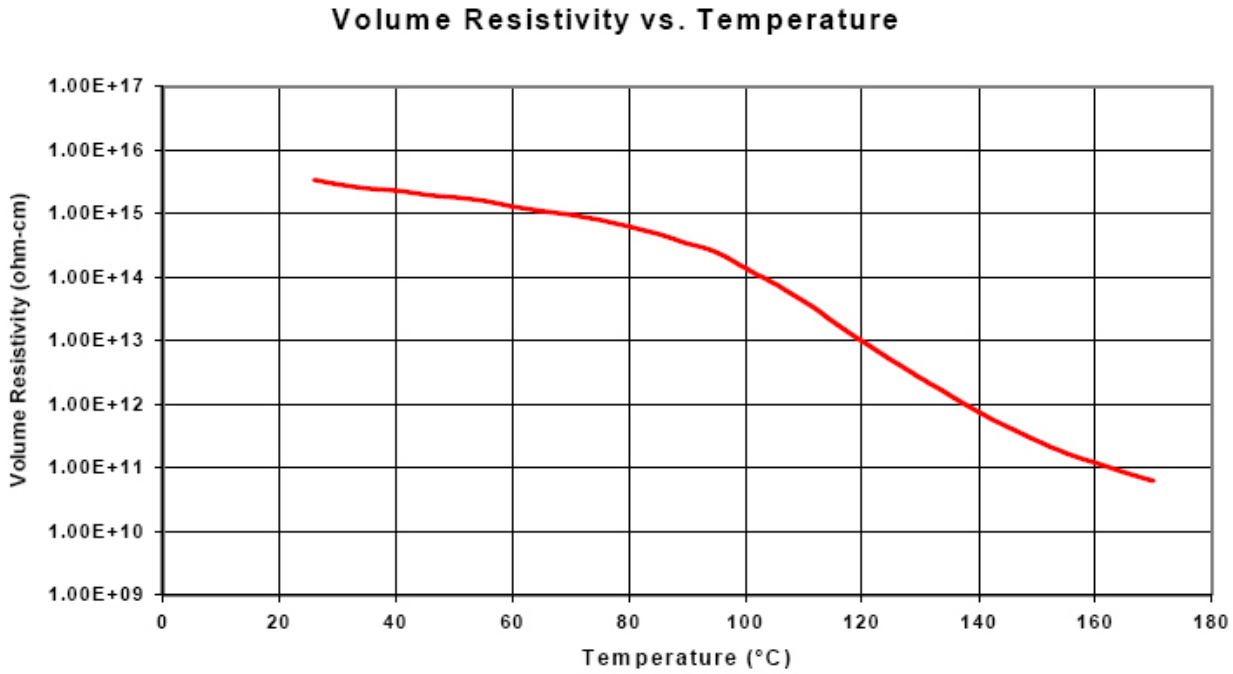


Figure 5



TESTING IN ACCORDANCE WITH UNDERWRITER LABORATORIES® :

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

Flammability in accordance with UL 94, Liquid Contaminant Included Place 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 in ANSI / IEEE C 37.20.2.

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

HANDLING/SAFETY PRECAUTIONS :

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 eyes 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 breath vapor or mist. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.

Caution To protect against any potential health risks presented by our products, the use of proper personal protective equipment (PPE) is recommended. Eye and skin protection is normally advised. Respiratory protection may be needed if mechanical ventilation is not available or is insufficient to remove vapors. For detailed PPE recommendations and exposure control options consult the product MSDS or a Huntsman EHS representative.

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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