

Araldite CW 229US/Hardener HW 229HT Heat Resistant Epoxy Casting & Encapsulation System

Araldite CW 229US with Hardener HW 229HT is a heat curing epoxy system with an excellent balance of thermal resistance and mechanical properties including excellent thermal cycling and thermal shock resistance. It is a modified version of the standard Araldite CW 229Us/Aradur HW 229US system produced by Huntsman and has been modified for higher temperature resistance. The cured polymer provides excellent mechanical and electrical properties and will adhere to most metals and many other materials.

TYPICAL APPLICATIONS

- Rotors/Stators
- Insulators & bushings
- Dry type Transformers

HANDLING PROPERTIES

	<u>VALUE</u>	<u>TEST METHOD</u>
Density Mixed, g/cm ³	1.82	ASTM E-201
Viscosity Mixed @ 25°C, cps	65,000	ASTM D-2393
Viscosity Mixed @ 60°C, cps	1,000 – 3,000	ASTM D-2393
Mix Ratio By Weight	100A:100B	Calculated
Mix Ratio By Volume	100A:90B	Calculated
Gel Time @ 25°C, 100g mass	>24 hours	ASTM D-2471
Gel time @ 100°C, 100g mass	20 – 35 minutes	ASTM D-2471
Recommended Cure Schedules:	See processing section below	

PHYSICAL PROPERTIES

	<u>VALUE</u>	<u>TEST METHOD</u>
Color	beige	Visual
Shore D Hardness	95	ASTM D-2240
Tensile Strength, psi	11,000	ASTM D-638
Tensile Elongation at break	0.9%	ASTM D-638
Flexural Strength, psi	15,000	ASTM D-638
Glass Transition Temperature	138 °C	ASTM E-381
Coefficient of Thermal Expansion	28 ppm/°C	ASTM E-381
Shrinkage, in/in	<0.0003	ASTM D-2566
Thermal Conductivity	0.78 W/mK	ASTM D-2214

ELECTRICAL PROPERTIES

	<u>VALUE</u>	<u>TEST METHOD</u>
Volume Resistivity @ 25°C, ohm-cm	$\geq 10^{15}$	ASTM D-257
Dielectric Constant @ 25°C, 50 Hz	4.2	ASTM D-150
Dissipation Factor @ 25°C, 50 Hz	0.060	ASTM D-150
Dielectric Strength, volts/mil	≥ 500	ASTM D-149

Product Datasheet



Preliminary – product still under development

NOTE : Typical Properties determined using EpoPro 8704A/HW 9029 cured for 3 hours @ 90°C + 4 hours @ 160°C. Values are based on laboratory results – not for specification purposes.

SUGGESTED PROCESSING GUIDELINES:

Araldite CW 229US with Hardener HW 229HT is suitable for meter-mix dispensing and can be supplied in premixed and frozen syringes for small volume applications.

Before each use, stir the individual containers of Araldite CW 229US and the Hardener HW 229HT to ensure that all of the mineral fillers are thoroughly dispersed and have not settled or separated during storage or transportation. When thoroughly mixed, weigh Part A and Part B in the recommended ratio as accurately as possible into a clean mixing container. Always use weighing equipment having accuracy in proportion to the amounts being weighted. Blend by using a spatula or stirring stick for 2-3 minutes using a kneading motion. Scrape the bottom and sides of the mixing container carefully and frequently to produce a uniform mixture.

Heating the mixed material and/or the individual components to 50°C -60°C will makethem easier to mix and the mixed system will have an open time of at least 6 hours at these temperatures. However, the material should be continually stirred or mixed to prevent separation which can occur more quickly at elevated temperatures. Once ready to use, pour or dispense the mixed material into your parts. Vacuum degassing the material before or after application is recommended for best electrical and mechanical performance.

Once degassed, cure using the following cure schedules:

For small parts (thin sections or less than about 2 lbs. of mixed material per part). First gel the epoxy by curing for 4 hours at 80°C, 3 hours at 90°C or 2 hours at 100°C, then post cure for 4-6 hours at 160°C or 10 hours at 140°C.

For very large castings (more than 1 lbs. of mixed material), first gel the material using a slow temperature ramp from ambient conditions (or 50°C - 60°C if using pre-heated material) up to 140°C. Ramp evenly over 16 – 24 hours. (Ramp rate of about 4 – 8 degrees Celsius per hour). Once at 160°C, post cure for 4 hours then slowly cool to 100°C or below over several hours prior to demolding. (The slower the ramp down the less the chance for thermal cracking or the build up of thermal stress during cooling.)

STORAGE GUIDELINES:

Store this material in a clean, cool and dry environment in its tightly closed original container. Products may settle during storage and should be thoroughly re-mixed prior to use. Avoid extended exposure to high humidity. Tightly re-seal after use. If the recommended storage conditions are observed the products will have a minimum shelf-life of 12 months from the date of shipment.

HANDLING PRECAUTIONS:

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

PERSONAL HYGIENE:

Product Datasheet

Preliminary – product still under development



Araldite CW 229 US

CAUTION! May cause eye irritation. Prolonged or repeated skin contact may cause irritation, may cause allergic skin reaction. Harmful if inhaled or swallowed. Avoid contact with eyes, skin, or clothing. Wear eye protection and impervious gloves when handling. Wash thoroughly after handling. Avoid breathing vapor or mist. Keep containers closed when not in use. Use only with adequate ventilation. Do not take internally.

Hardener HW 229HT

WARNING! Causes skin and eye irritation. May cause allergic skin and respiratory reactions. Harmful if inhaled or swallowed. Do NOT get in eyes, on skin, or clothing. Wear chemical splash goggles and impervious gloves when handling. Wash skin and clothing thoroughly after handling. Avoid breathing vapor or mist. Use only with adequate ventilation. Keep containers closed when not in use. Do NOT take internally.

FIRST AID

In case of contact:

Skin – Immediately wash skin thoroughly with mild soap and water. Remove contaminated clothing and wash before reuse. Destroy contaminated shoes and other articles made of leather.

Eyes – Immediately flush eyes with plenty of water for 15 minutes and get prompt medical attention.

Inhalation - Remove person to fresh air. Administer oxygen or artificial respiration if necessary. Call a physician.

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

DISCLAIMER:

IMPORTANT: The following supersedes Buyer's documents. **SELLER / MANUFACTURER 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 / Manufacturer 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 presented are based on controlled or laboratory 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

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