HUNTSMAN

Advanced Materials

DATA SHEET

Araldite® CW 9557 / Aradur® HW 9558

Araldite Casting Resin System

General

Araldite CW 9557 with Aradur HW 9558 is a two-component, heat curable and a formulated epoxy-based casting and encapsulating system ideally suited for manufacture of both electrical and structural components. Inorganic fillers are incorporated in the system with suspending agents to minimize settling during storage. This system has been designed to process effectively using both conventional as well as Automatic Pressure Gelation (APG) techniques.

Advantages

Readily processed liquids
Excellent mechanical and electrical properties
Excellent thermal shock and crack resistance

Typical Properties*

Araldite CW 9557	
Appearance	Viscous reddish brown liquid
Viscosity, cPs, @ 40°C	70,000 – 90,000
Density, g/cm3, @ 25°C	1.78 – 1.86
Flash point, °F (closed cup)	> 390
Percent solids	100
Aradur HW 9558	
Appearance	Viscous tan-gray liquid
Viscosity, cPs, @ 40°C	40,000 – 50,000
Density, g/cm3, @ 25°C	1.88 – 1.96
Flash point, °F (closed cup)	> 200

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

Mix ratio

	Parts by weight
Araldite CW 9557	100
Aradur HW 9558	100

Cure cycle

Excellent properties are obtained with this system when processed by Automatic Pressure Gelation (APG) techniques. However, conventional processing can also produce satisfactory castings. For conventional processes of very large parts, an extended cure cycle is recommended to reduce formation of high stresses within the cured part. The optimum gelation temperature and cure schedule in such cases is dependent on the design of the part. General guidelines for both types of processing are given below:

APG:
With mold at 140 – 160°C, fill the mold in two to four minutes with mixed material at about 50 – 60°C. Gel within mold under pressure of one to three atm for five to fifteen minutes (dependent on part size and mixed material temperature). Then postcure two to four hours at 150°C.

Conventional Casting:
Smaller parts: For relatively thin, low mass castings, a simplified cure schedule would be: gel at 60°C for four hours then post cure at 50°C for two to four hours.

Very large parts: Pre-heat mold and material both at approximately 50°C, cure in a linear programmed ramp from 50 – 150°C over a time of 16 – 24 hours. Then post cure for an additional two to four hours at 150°C. Cool slowly to ambient.

Packaging & Storage

Store in a dry place in their original, properly closed containers. Keep containers closed to prevent moisture absorption and contamination. Store away from excessive heat and humidity. Store at 65 – 80°F. Provided these materials are stored under the recommended storage conditions in their original containers, they will remain in usable condition for one and half years from date of manufacture. Contact customer service for packaging information.

Reactivity Characteristics

Viscosity, cPs		See Figure 1
Pot life, hours*	@ 40°C	4 – 5
	@ 60°C	~ 1
Gel time, minutes, 30 grams	@ 150°C	10 – 11

* 1 lb mass, time to double initial viscosity, see Figure 2

FIGURE 1

Viscosity vs. Shear Rate

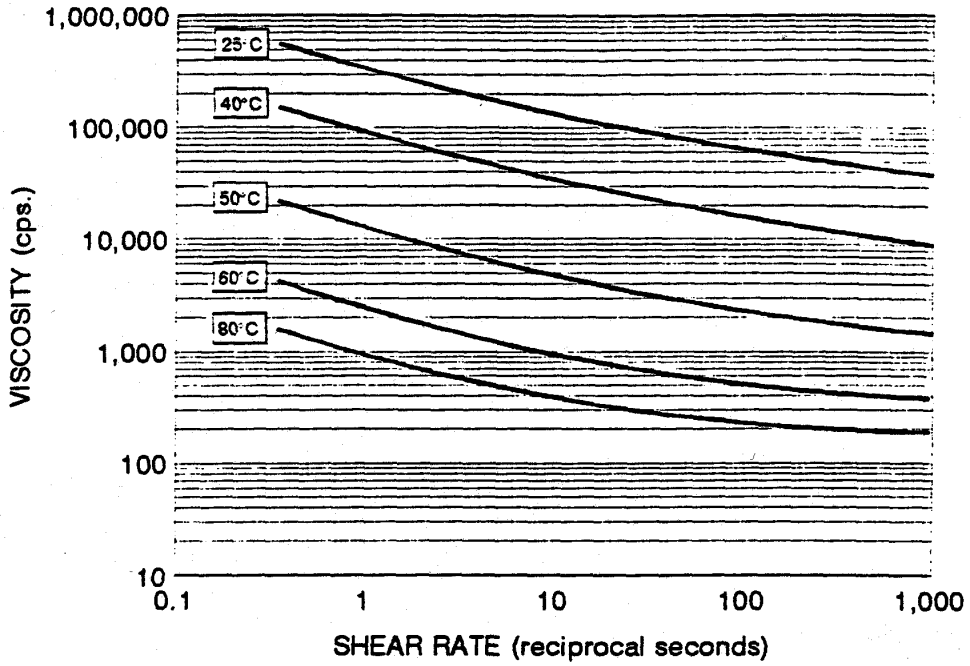
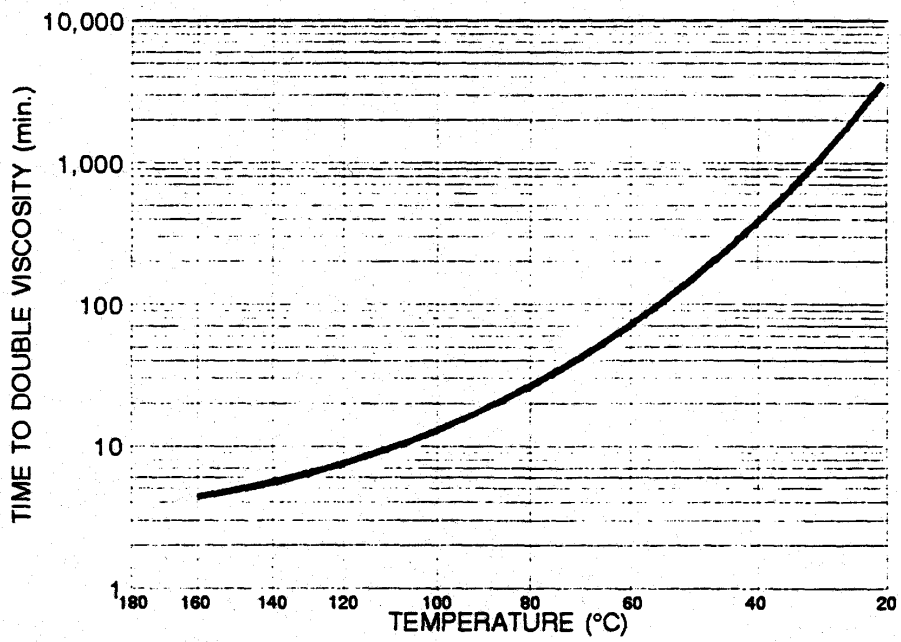


FIGURE 2

Working Life vs. Temperature

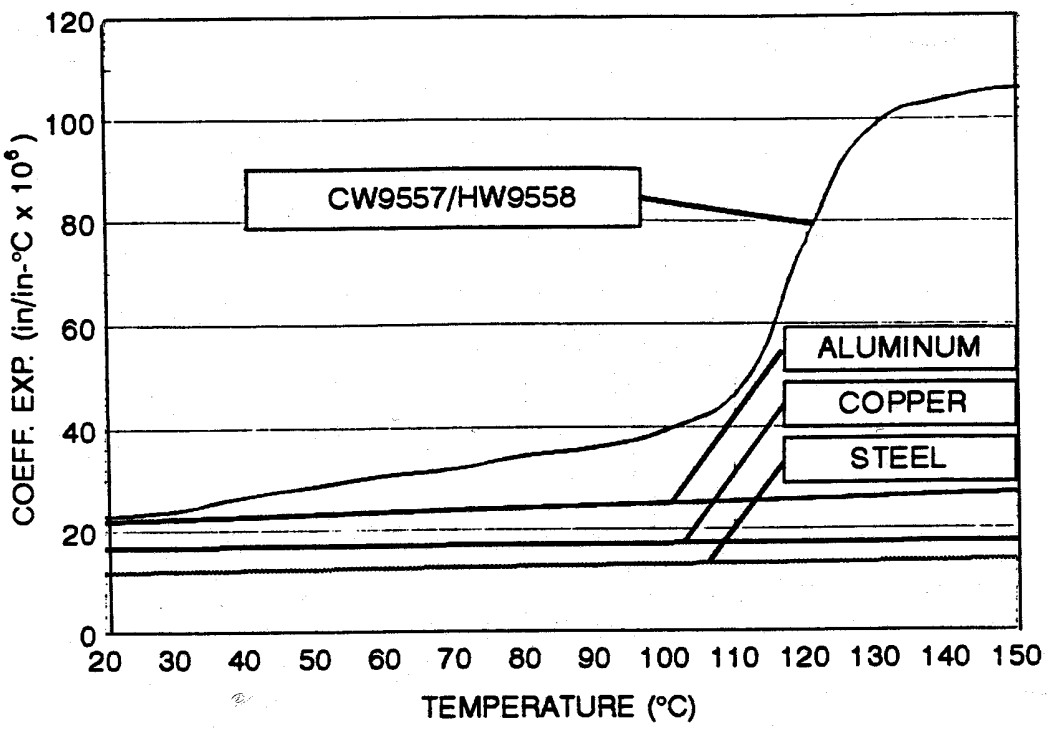


Mechanical Properties (typical values)

Property	Test Method	Test Value
Tensile strength @ 25°C, psi @ 25°C	ASTM D-638	10,000 – 12,000
Tensile modulus @ 25°C, psi	ASTM D-638	1.7 – 2.0 x 10^6
Tensile elongation @ 25°C, %	ASTM D-638	0.7 – 0.9
Flexural strength @ 25°C, psi	ASTM D-790	16,000 – 19,000
Flexural modulus @ 25°C, psi	ASTM D-790	1.4 – 1.7 x 10^5
Compressive strength @ 25°C, psi	ASTM D-695	24,000 – 28,000
Compressive modulus @ 25°C, psi	ASTM D-695	7.4 – 7.6 x 10^6
Glass transition, °C	by TMA	112 – 117
Coefficient of thermal expansion, in/in/°C	by TMA	See Figure 3
Thermal conductivity @ 50°C, W/m-K	ISO 8894 (2/90)	1.00 – 1.10
Water absorption (2 hours @ 100°C), %	ASTM D-570	0.09 – 0.11
Specific heat, cal/g-°C	by DSC	0.25 – 0.29

FIGURE 3

Coefficient of Thermal Expansion



Electrical Properties (typical values)	Volume resistivity, Ω-cm	ASTM D-257	See Figure 6
	Dielectric strength, volts/mil	ASTM D-149 (1/8" thick plaque)	400 – 500
	Dielectric constant	DuPont DEA	See Figure 4
	Dissipation factor	DuPont DEA	See Figure 5

Figure 4

Dielectric constant vs. Temperature (at 60 Hz)

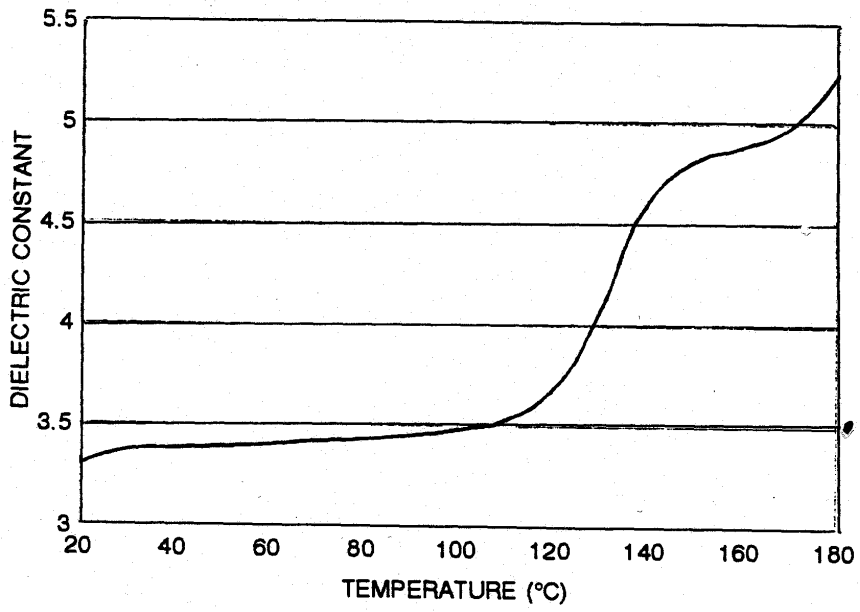


Figure 5

Dissipation Factor vs. Temperature (at 60 Hz)

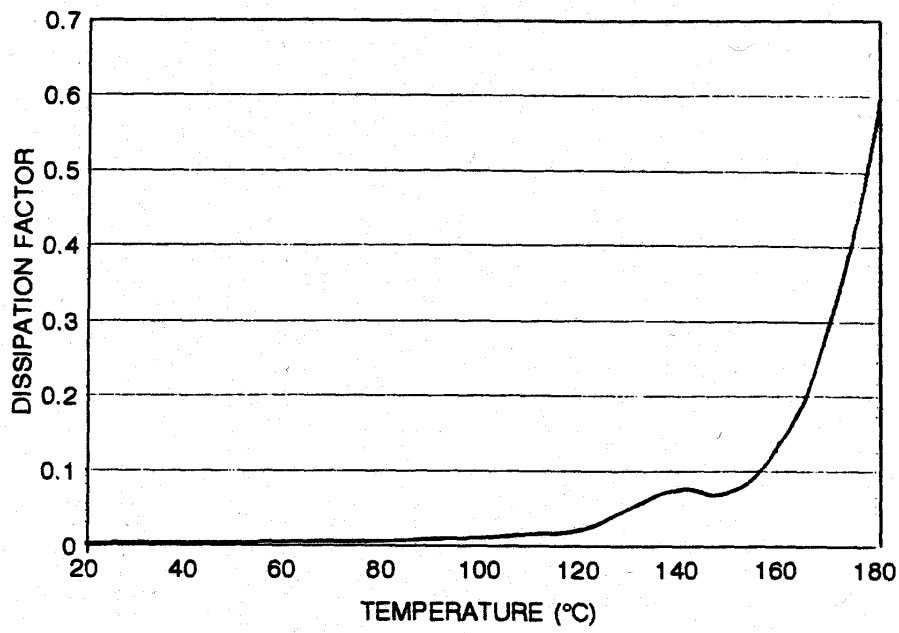
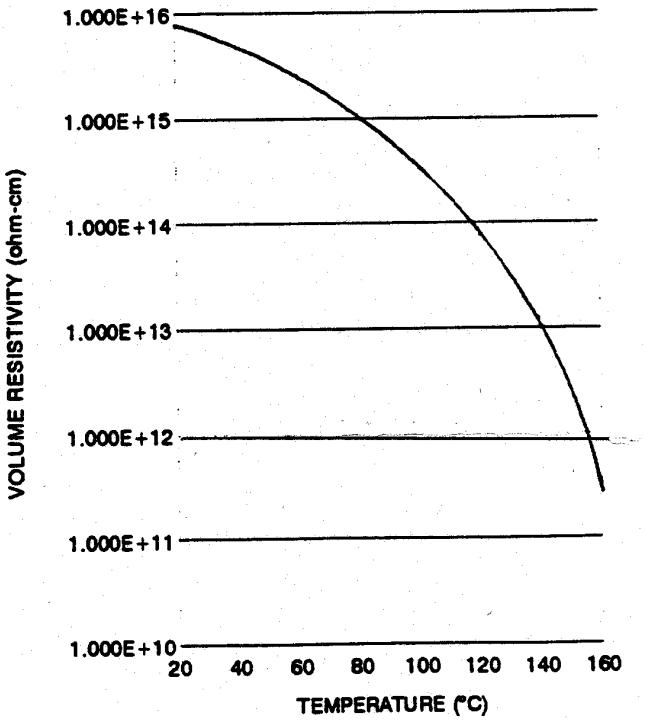


Figure 6

Volume resistivity vs. Temperature



Handling/Safety Precautions

Warning: Causes irritation.

May cause sensitization and dermatitis.

Araldite CW 9557

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 HW 9558

Corrosive - causes skin and eye burns. Can cause allergic respiratory reaction and allergic skin reaction. Can be harmful if inhaled or if swallowed. Do not get in eyes, on skin, or on clothing. Avoid breathing vapor or mist. Avoid tasting or swallowing. Keep container closed when not in use. Use with adequate ventilation. Wash thoroughly after handling. Notice! Contains crystalline silica. Breathing dust may cause cancer and delayed lung injury.

Read Material Safety Data Sheets Before Using.
For Industrial Use Only

First Aid

In case of contact:

Eyes: Immediately flush with water for at least 15 minutes. Call a physician.
Skin: Promptly wash thoroughly with mild soap and water.
Inhalation: Remove to fresh air. Give oxygen if breathing is difficult.
Ingestion: If conscious, give large quantities of water and induce vomiting. See a physician.

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April, 2004