

## HIGHTEMP 221

### CLASS H (OR U) CLEAR IMPREGNATING AND CASTING RESIN

#### GENERAL CHARACTERISTICS

The 200 series of HIGHTEMP resins are single component epoxy systems. All the components in their correct proportion have been incorporated. The user simply melts, pours and cures. There is no necessity for blending the usual hardeners or catalyst. Consequently errors in blending and formulation which can result in the damage of components, often times worth many times the value of the resin, are eliminated.

**HIGHTEMP 221** is a viscous blend of resin and reactive ingredients at room temperature. On heating to 80°C., the ingredients dissolve to form a clear extremely fluid resin. It is characterized by its extended pot life and low viscosity. Castings made with HIGHTEMP 221 are flexible at room temperature. As a result, the resin can withstand internal stresses and strains that are caused by differences in expansion within the casting.

**HIGHTEMP 221** is a 100 percent polymerizable mixture. No plasticizers have been added which will flow out under extreme conditions and result in a loss of flexibility.

#### APPLICATIONS

**HIGHTEMP 221** is being used with great success in the impregnation of electronic components. One notable result is the marked decrease in noise level of transformers which have been impregnated with HIGHTEMP 221.

**HIGHTEMP 221** meets the rigid requirements of government specification MIL-T-27 E, Class U.

#### INSTRUCTIONS FOR USE

1. Coat the mold with a mold release compound. **HIGHTEMP MOLD RELEASE** is recommended. Apply a thin layer of silicone grease to all terminals and surfaces on the component to which resin must not adhere.
2. Mount the unit in the mold and preheat at 115°C. for a period of at least two hours.
3. Heat the resin in disposable containers in a forced air circulation oven (not a hot plate) to a temperature between 80 - 90°C.
4. If the unit is to be cast, pour the resin into the dried assembly. If the compound is to be impregnated, dip the units into the resin container.
5. For optimum penetration, it is recommended that the pressure be reduced to at least 10 mm. Hg for a period of 20 minutes. Because of the extreme fluidity of the resin through a wide temperature range, a vacuum oven need not be used, although it is preferable. However, precaution should be taken that the temperature of the resin or the assembly does not drop below 60°C.



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## CURING SCHEDULE

- A. 24 hours at 125°C. or  
B. 10-12 hours at 125°C.  
plus 2 hours at 150°C. or  
C. 6 hours at 150°C.

## WORKING PROPERTIES

1. Pot Life 8 Hours at 115°C.  
2. Exotherm 5°C. Above Curing Temperature  
3. Initial Viscosity 70 CPS. at 115°C.  
4. Toxicity No Known Toxic Effect

## PHYSICAL PROPERTIES

Specific Gravity		1.18
Tensile Strength - PSI	ASTM D-638-49T	11,500
Flexural Strength - PSI	ASTM D-790-49T	17,500
Izod Impact Strength - Ft. Lb./In. Notch	ASTM D-256-47T	0.9
Water Absorption - Percent/24 Hr.	ASTM D-570-42	0.10
Vapor Transmission - GM./Ft <sup>2</sup> /24 Hr./In.	ASTM D-697-42T	0.013
Shrinkage on Cure-Percent		2

## THERMAL PROPERTIES

Heat Distortion (264 PSI)	ASTM D-648-72	16°C.
Coefficient of Expansion-Linear/°C.	ASTM D-696-44	5.1X10 <sup>-5</sup>
Thermal Conductivity (Fitch Method) cal/sec/cm <sup>2</sup> /°C.-cm		3.8X10 <sup>-4</sup>
Thermal Shock Resistance - (-65°C. to +150°C.)		Passed 5 Cycles
Heat Stability		Negligible Change in Electrical Properties after 1000 hrs. at 200°C.

## ELECTRICAL PROPERTIES

Dielectric Strength - Short Time - 1/8" Section Volts/mil	ASTM D-149-44	575
Volume Resistivity - OHMS-CM	ASTM D-257-49T	(5.5X10 <sup>12</sup> )
Dielectric Constant @ 60 Cycles	ASTM D-150-49T	3.8
@ 1000 Cycles		3.7
Power Factor @ 60 Cycles		0.002
@ 1000 Cycles		0.003

The information included in this publication is believed to be correct. No warranty of the performance of the material is given, however, since conditions of commercial usage are beyond our control.