

CS 3100 Electrical Potting and Sealing Compound

Chem Seal

Technical Bulletin

January, 2008

PRODUCT DESCRIPTION meets Mil-PRF-8516G
Type I & II, Class 1, 2, & 3

CS 3100 is used for potting and sealing electrical connectors and components for protection from moisture, fuels, dirt and other contaminants.

CS 3100 is a two-part polysulfide component that cures at room temperature to a firm, flexible rubber. CS 3100 cures by a chemical reaction that is independent of solvent evaporation or exposure to air. Proper mixing of CS 3100 is assured by the contrasting colors of the two parts.

Color:	
Base Compound	White
Curing Agent	Red Brown
Mixed	Tan
Mixing Ratio(by weight)	100/10
Non Volatile Content, Min.	95%
Viscosity (Type II)	550 poises
Application Time	1-3 hrs.

CS 3100 is pourable and self-leveling allowing a complete seal around wires, terminals and irregular configurations providing complete electrical insulation.

SURFACE PREPARATION

The assembly to be sealed should be free of all contamination such as grease, oil, dirt, wax and soldering flux. Cleaning may be accomplished by use of oil free solvents. Do not expose wire insulation or plastic inserts to the cleaning solvent for excessive periods. Cleaned parts should be protected from re-contamination by use of a protective covering if not sealed immediately. Wires leading into the potting area should be separated to allow CS 3100 to flow around them properly.

PRIMING

CS 3100 adheres well to most commonly used surfaces except Teflon, silicone, and polyvinyl chloride wire insulation. Adhesion to these surfaces may be attained as follows:

Teflon: Use "Tetra Etch" treated Teflon wire insulation

Silicone: Prime with silicone primer CS 9903

Primer CS 9903 is supplied in various sized containers that should be kept closed when not in use. Remove enough primer from the container for immediate use, but do not pour excess back into container. Allow 1 hour dry time @ 75°F for the primer prior to application of CS 3100.

MIXING INSTRUCTIONS

Cautions: This product has a limited application life. Do not mix curing agent and base compound together until ready to use.

Chem Seal Products

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APPLICATION

After mixing or after thawing frozen cartridges, CS 3100 should be applied to the cleaned part, using established molding or potting techniques. Since CS 3100 has a limited application life dependent on Class 1, 2, 3, material should be used within the time period. Re-freezing is not recommended. High temperatures and humidity's will decrease the application time, while low temperature and humidity will extend it. Curing rates will be affected correspondingly.

CURE

CS 3100 will cure to a resilient rubber suitable for release of molds in 24 hours @ 77°F ± 2°F. This cure period may be hastened by heat curing the potted assemblies at temperatures up to 150°F. If heat cures are used it is advisable to first allow the part to remain at ambient conditions for approximately 2 hours. This will allow escape of entrapped air bubbles. Under these conditions the mold release time of CS 3100 is usually 3 to 4 hours. Time to full cure varies with type and class; refer to specification MIL-PRF-8516 for curing schedule.

REFRIGERATED STORAGE

Many users have found it practical to mix large quantities at one time and freeze the compound immediately in order to suspend cure. A portion of the application life is used up during freezing and thawing; however, material whose application life is adjusted to compensate for this loss may be ordered from Chem Seal.

Freezing should be done as rapidly as possible to reduce loss of application life. A recommended quick freeze method is to suspend filled and capped polyethylene cartridges vertically in a solution of dry ice and alcohol for about 15 minutes. Frozen compound may then be transferred to a storage chest and maintained at -25°F or lower and stored at this temperature up to 14 days.

Frozen CS 3100 should be allowed to thaw at room temperature for 20-25 minutes immediately before use. The cartridges should be kept upright during thawing, with the small end down. Shop air may be used to aid thawing, but heat or immersion in warm water will cause the material near the outside of the cartridge to cure. Premixed and frozen CS 3100 is available for purchase and can be supplied in various sized cartridges suitable for use in standard pressure extrusion guns.

CLEANING OF EQUIPMENT

CS 3100 should be removed from equipment and tools with solvent before the sealant cures. Cured material may be removed from equipment by soaking and scrubbing with Polysulfide/Epoxy stripper.

Hardness Shore A	40
Adhesion Peel (lbs/in of width)	
Aluminum	32
Cadmium	31
Diallyl Phthalate	31
Melamine	29
Temperature Range	-65 deg. F to 225 deg. F
Low Temperature Flexibility	-65 deg. F
Fungus Resistance	Non-nutrient
Vibration Resistance	Excellent
Flame Resistance	
Overload	Does not Ignite
Flame Application	Does Not drip

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SAFETY

CS 3100 has not been found to have any toxic effect in normal usage. However, because some individuals may be sensitive to chemicals used in the manufacture of the curing agent, excessive skin contact should be avoided. The curing agent contains a lead compound refer to the Material Safety Data Sheet for further information.

PACKAGING

CS 3100 is packaged in the following kit sizes:

24 ea. per case	2 1/2 oz. and 6 oz. cartridges
16 ea. per case	Pint Kits
16 ea. per case	Quart Kits
4 ea. per case	Gallon Kits

CS 3100 is also available in 5-gallon Kits and 50 Gallon Drum Kits.

1 kc @ 77°F	10.2
1 mc @ 77°F	10.0
1 kc @ 185°F	11.0
1 mc @ 185°F	11.1
Power Factor	11.1
1 kc @ 77°F	.007
1 mc @ 77°F	.020
1 kc @ 185°F	.024
1 mc @ 185°F	.023
Resistivity	
Volume @ 77°F	1.6×10^{12} ohms-cm
Surface @ 77°F	9.4×10^{12} ohms
Volume @ 185°F	4.6×10^{10} ohms-cm
Surface @ 185°F	3.7×10^{10} ohms
Insulation Resistance	
Dall Phthalate Insert	83,000 megohms
Resilient Insert	69,000 megohms
Insulation Resistance (100% Humidity)	
Dall Phthalate Insert	11,000 megohms
Resilient Insert	11,500 megohms
Dielectric Strength	300 Volts/Mil
Humidity Resistance	No Breakdown
High Potential Resistance	No Breakdown
Resistance to Arc	88 seconds

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