

CS 5447 Polythioether Windshield Sealant

Chem Seal

Technical Bulletin
January, 2002

Polythioether based fast curing sealant for aircraft windshields and transparencies

CS 5447 is a Permapol, P-3 Polythioether sealant formulated for use with windshields of Glass, Acrylic or Polycarbonate in composite of metal frames. CS 5447 does not promote crazing to acrylics and Polycarbonate, either at room temperature or at elevated temperatures. CS 5447 is fast curing at low ambient temperatures and minimizes ground time when servicing transparencies.

CS 5447 may be used over a wide temperature range, curing to a flexible resilient rubber with excellent adhesion to Acrylic, Polycarbonate, aluminum, magnesium, titanium, steel, and numerous other materials. The cured CS 5447 may be subjected to aircraft fuels, lubricants, oils, water and or weathering.

APPLICATION AND PHYSICAL PROPERTIES

| Application | Properties | Performance | Properties |
|-----------------------|----------------|---------------------|---------------|
| Color | | Color (mixed) | Gray |
| Base Compound | White | Specific Gravity | 1.48 |
| Accelerator | Black | Service Temperature | -80F to +400F |
| Mixing Ratio | Part A/Part B | Hardness Shore A | 60 |
| By Weight | Not Applicable | | |
| Nonvolatile (mixed) | 98% | | |
| Viscosity Brookfield | 12,000 poises | Adhesion (Peel) | 100% cohesive |
| Vertical Flow (slump) | <0.4 | 7 day cure at 75F | Primer ** |
| | | Aluminum | 45 lb/in |
| | | Stainless | 45 lb/in |
| | | Titanium | 45 lb/in |
| | | Polycarbonate | 40 lb/in |
| | | Acrylic | 40 lb/in |
| | | Glass | 40 lb/in |
| Stress Crazing | | | |
| Polycarbonate | Non crazing | | |
| Acrylic | Non crazing | | |
| Corrosion | Passes | | |
| Fuel Resistance | Passes | | |

All test procedures and reference fluids are in accordance with MIL-S-8802F, and or Mil-S-29574 due to variation in composition of Polycarbonate materials values are typical.

**Titanium and some Polycarbonate compositions may require primer for proper adhesion. Primer supplied with CS 5447 for use where required.

SURFACE PREPARATION

To obtain good adhesion the surfaces must be dry and free of all traces of oil, wax grease, dirt or other contamination. The solvent blend selected should address the contamination present on the substrate to receive the sealing compound. The solvent blend should not adversely effect the substrate to be cleaned. The solvent blend should not leave a residue on the surface to which the sealing compound is to be applied.

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Manufactured By The Flamemaster Corporation 1 of 3
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Supersedes February, 2000

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MIXING INSTRUCTIONS

Prior to the mixing of any sealant material the user should refer to the Material Safety Data Sheet supplied by the manufacturer. Safety glass should be worn at all times when mixing or dispensing sealants.

CS 5447 material is supplied only in two component section plastic kits.

1. Hold cartridge; pull dasher rod about 1/4 of the way out.
2. Insert ram rod into the hollow dasher rod and inject about 1/3 of the curing compound into the cartridge (use even pressure to open dasher valve).
3. Repeat steps 1 and 2 until the contents of the dasher rod have been expelled.
4. As indicated on the outer packaging mix the material for the required number of strokes for hand mixing, or the time required for machine mixing.
5. Pull dasher rod out till dasher reaches the neck of the cartridge. Slightly squeeze cartridge and remove dasher rod by turning counter clockwise.
6. Screw desired nozzle into cartridge. Material may now be extruded (if a manual or pneumatic extrusion gun is not available the dasher rod may be used to apply pressure to the plunger).

CURE

Unlike convention polysulfides, ambient temperatures minimally affect CS 5447 during the application and cure cycle. The advantages to maintenance operations include rapid turnaround during low ambient temperature conditions. As well as the ability to use material with a reduced work life during periods of elevated ambient temperatures.

| <u>CURE PROPERTIES TYPICAL</u> | | | | | |
|--------------------------------|-------------------------|------------------|-----------------------|------------------|-----------------------|
| | <u>Application Time</u> | <u>Tack Free</u> | <u>Cure time +77F</u> | <u>Tack Free</u> | <u>Cure Time +40F</u> |
| | <u>+10F to +90F</u> | <u>At 77 F</u> | <u>Shore A 35</u> | <u>At +40F</u> | <u>Shore A 35</u> |
| B-1/4 | 1/4 hour | 1/2 hour | 1 hour | 1/2 hour | 1 hour |
| B-1/2 | 1/2 hour | 1 hour | 2 hours | 1 1/2 hours | 3 hours |
| B-2 | 2 hour | 7 hour | 7 hour | | |

Note Because of the characteristics of CS 5447 the cure rate is relatively constant between +40F and +100F. The application of localized heat will not significantly alter the curing rate.

CS 5447 can not be pre-mixed and frozen.

APPLICATION AND USAGE

When utilizing CS 5447 for non structural bonding of metal to metal, Polycarbonate, glass, or acrylic to Metal apply a thin film of the mixed material (0.010" to 0.025") to one of the surfaces to be bonded. Join surfaces with sufficient pressure to insure full contact and restrain the bonded materials until cured.

CS 5447 may be injected into channels using a hand or pneumatic extrusion gun and the proper nozzle.

STORAGE

CS 5447 has a one year shelf life when stored in the original unopened containers at a temperature not exceeding 27C. Some changes to work life, viscosity, and curing rate may occur over this period. However, such changes are slight and in no way effect the performance of the product.

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CLEAN UP

Fresh CS 5447 may be removed with Chlorinated solvents. Cured CS 5447 may be removed utilizing a commercially available stripper.

SAFETY

The MSDS and product container label provided with CS 5447 describes the specific hazards if any associated with this product. The MSDS and the product container label should be utilized in establishing job specific health and safety requirements.

PACKAGING AVAILABILITY

CS 5447 is available in the following kit sizes

24 each case 2 1/2 oz. injection kit 2 fluid oz. fill
24 each case 6 oz. injection kit 3.5 fluid oz. fill

Specialty injection kit sizes can be made available and can be quoted on request.

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