



# C - 1509

## Semi-Rigid Urethane Casting Compound

### PRODUCT OVERVIEW

C-1509 urethane casting resin is a semi-rigid plastic (has some flexibility) that is strong and very tough. Originally developed for high impact tooling (drop hammer punch), C-1509 also offers good abrasion and chemical resistance and is ideal for a variety of industrial applications. *This product is suitable for some FDA/USDA applications - dry food contact only.* Applications include making abrasion resistant parts, foundry patterns, encapsulation, roller facings, metal bonding and vibration pads.

### TECHNICAL OVERVIEW

**Key Values:** ~**Mixing Ratio:** One to One by weight. ~**Color:** Milky Amber ~**Shore D Hardness:** 60  
~**Pot Life:** 20 mins. ~**Gel Time:** 30 mins. ~**Demold Time:** 16 hours ~**Full Cure:** 7 days @ 25°C

**Description:** C-1509 consists of two liquid components, Part A (Yellow Label) and Part B (Blue Label). When combined in a mixing ratio of one to one by weight, C-1509 cures to a solid and durable plastic.

COMPONENTS	COLOR	VISCOSITY	S.G. g/cm <sup>3</sup>	S.V. cu. in./lb.
Mixed Part A+B	Milky Amber	2,000 cps	1.12	24.7

Ultimate Tensile Strength: 2,500 PSI    Shrinkage: 0.0024 in./in.    Exotherm (1,000g mass) 80°C/120°F

### Preparation

### Applying A Release Agent

### Measuring

**Preparation . . .** Materials should be stored and used in a warm environment (72° F / 22° C). This product has a limited shelf life and should be used as soon as possible. Wear safety glasses, long sleeves and rubber gloves to minimize contamination risk. Mixing tools and containers should be clean, dry and made of metal, plastic or glass. Mixing should be done in a well ventilated area. Wearing latex gloves and long sleeve garments will help minimize skin contact. (Refer to safety information on reverse side of this technical bulletin.) **Because no two applications are quite the same, a small test application to determine suitability for your project is recommended if performance of this material is in question.**

**Applying A Release Agent . . .** C-1509 is suitable for casting over a variety of mold and pattern surfaces, but may adhere if the surface is not properly prepared. Porous surfaces such as wood, stone, masonry, and plaster, must be sealed. Suitable sealers include **Superseal** or Ease Release 2831 (both available from Smooth-On). **Polyurethane molds** should be dry and require a coat of a suitable release agent, such as Universal Mold Release (available from Smooth-On). For metals and other non-porous surfaces the application of a release agent is usually sufficient.

**Measuring . . .** The proper mixing ratio is 100 Parts of Part A to 100 Parts of Part B by weight. You must use an accurate scale (gram scale or triple beam balance scale) to weigh these components properly. Dispense the required amount of Part A into a mixing container. Weigh out the appropriate amount of Part B and combine with Part A. **IMPORTANT:** Shelf life of product is drastically reduced after opening. Immediately replace container lids after dispensing. Use remaining product as soon as possible. Purging opened containers with XTEND-IT dry gas blanket ( available from Smooth-On) before re-sealing will significantly extend shelf life of unused product.

### Mixing & Pouring

**Mixing . . .** Mix for 90 seconds making sure that you scrape the sides and bottom of your container several times. If coloring or filling C-1509, add filler or pigment dispersion to Part B and mix thoroughly before adding Part. A.

If **vacuum degassing** prior to pouring, subject mixture to 29 h.i.g. mercury in a suitable vacuum chamber for 2-3 minutes or until mixture rises, breaks and falls. Allow for 3 to 4 times volume expansion in mixing container.

**Pouring . . .** If casting **C-1509** into a rubber mold, pour mixture in a single spot at the lowest point of the mold. If encapsulating an object, do not pour the mixture directly over the object. Let the mixture seek its level. A uniform flow will help minimize entrapped air.

**For Best Results . . .** Best results are obtained using a **pressure casting technique**. After pouring the mixed compound, the entire casting assembly (mold, dam structure, etc.) is placed in a pressure chamber and subjected to 60 PSI (4.2 kg/cm<sup>2</sup>) air pressure for at least two hours.

### *Curing*

### *Post Curing*

### *Casting Thickness*

**Regular Cure . . . Warning:** Fumes, which may be visible as this product starts to “gel” and cure, will dissipate with adequate ventilation. Only use this product with room size ventilation and do not inhale/breathe fumes. Castings will be extremely hot immediately following cure and may burn the skin. Let cool to room temperature before handling. *For most applications*, room temperature curing (70 F/ 22 C) for 16 hours is adequate. Castings will reach ultimate physical properties at room temperature in 5 - 7 days.

**Adding So-Cure Accelerator . . .** The cure time of C-1509 can be accelerated by adding So-Cure Accelerator (available from Smooth-On or your distributor) in various proportions. For example, by adding 0.5% So-Cure to a 100 gram casting, the gel time of C-1509 will be shortened to 2.5 minutes. In this proportion, castings of C-1509 will achieve a Shore D Hardness of 73 after 3 hours at 25 C.

**Post Curing . . .** Castings will cure faster and achieve maximum physical properties and heat resistance if C-1509 is post cured. Post curing is recommended if castings are thin or of low mass concentration. Castings should be post cured in a mold or support structure. Allow the material to cure for 6 - 8 hours at room temperature followed by 16 hours at 150 - 160 F (65 - 72 C). The casting or part should be allowed to cool to room temperature before demolding.

If you are pouring less than 1/4 in./.64cm of material, the casting should be heat post cured. If desired thickness is greater than 3 in./7.62cm, it is recommended that consecutive casts be made (one pour on top of another) with 30 minutes in between each casting to allow for heat dissipation.

### *Safety First*

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*The Material Safety Data Sheet (MSDS) for this or any Smooth-On product should be read prior to use and is available upon request from Smooth-On. All Smooth-On products are safe to use if directions are read and followed carefully.*

**Be careful.** C-1509 Part A contains methylene diphenyl diisocyanate. Vapors, which can be significant if heated or sprayed, may cause lung damage and sensitization. Use only with adequate ventilation. Contact with skin and eyes may cause severe irritation. Flush eyes with water for 15 minutes and seek immediate medical attention. Remove from skin with waterless hand cleaner followed by soap and water Refer to MSDS.

**Important:** The information contained in this bulletin is considered accurate. However, no warranty is expressed or implied regarding the accuracy of the data, the results to be obtained from the use thereof, or that any such use will not infringe upon a patent. User shall determine the suitability of the product for the intended application and assume all risk and liability whatsoever in connection therein.

**Toll Free Technical Help: (800) 762-0744 • Fax (610) 252-6200**

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