



Silicones, Inc.

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Product Information

P-90 Silicone Rubber

Description

P-90 is a two component, addition reaction, platinum catalyzed silicone rubber that has been designed with high tear resistance, medium durometer, and exceptional flexibility. Its low viscosity allows easy mixing, good flow characteristics and enables exact detail registration. P-90 has a wide service temperature range, excellent chemical resistance, low shrinkage and will not undergo reversion.

Applications

P-90 has an outstanding combination of physical strength and moderate hardness, making it an excellent choice for prototyping, as well as full scale production of parts. It performs well with a wide range of casting materials, such as polyurethanes, polyesters and epoxies.

Mixing Instructions

Mix 100 parts by weight of **P-90 Base** with 10 parts by weight of **P-90 Activator** in a container that will hold approximately 3 to 4 times the volume being used. Stir thoroughly either by hand or by mechanical mixing until a uniform color is achieved. Immediately after mixing, place the material in a vacuum chamber capable of 28 to 29 inches of mercury vacuum. The material will expand to double or triple its original volume and then collapse. Maintain vacuum for an additional 2 to 3 minutes and remove. Carefully pour the catalyzed silicone rubber over the released pattern. (MR-15 is recommended.)

Curing

Vulcanization of the **P-90** takes place in 16 to 24 hours after mixing at normal room temperatures (70 °F to 72 °F). Heat can be used to accelerate the cure rate. Care must be taken to ensure that the master doesn't gas or give off vapors at the temperature used, since this can cause severe distortion of the mold surface. Some woods give off moisture and gas at relatively low temperatures causing failure in the mold making attempt.

Average cure times for one-half inch thick samples are listed below:

Temperature	70°F	125°F	150°F	200°F	250°F	300°F
Cure Time	16-24 hours	2 hours	60-90 minutes	30 min	15 min	10 min

Please note that the addition of heat will cause the working time to decrease. Cure rates can be accelerated at room temperature using Platinum (Pt) Accelerator (refer to Pt Accelerator data sheet for details). Heat accelerated cures and Pt Accelerator will cause some shrinkage and a slight decrease in the physical properties.

Cure Sensitivity

P-90 may have its cure inhibited at the interface between the mold and the master. Models that have come in contact with tin catalyzed rubbers (the GI-Series) may show cure inhibition at the face of the mold. This can usually be prevented by thoroughly cleaning the model with naphtha or methylene chloride, releasing and checking the area by brushing on a small amount of catalyzed P-90 rubber. After 18 hours this film should be cured and non-sticky. In the event that the contamination still exists, the model should be cleaned again and a thin film of acrylic or nitrocellulose lacquer or base coat should be applied. This should serve as a barrier coat and allow a completely cured mold to be prepared. Other inhibitors include (but are not limited to): tin compounds, sulfur compounds, sulfur-containing clays, amines, cyanoacrylate adhesives, double-sided tape, some latex gloves, and tobacco. These materials can cause surface inhibition and, if there is any question, a test should be run as outlined above to determine compatibility.

Typical Properties

Color of Base	White
Color of Activator	Red
Viscosity, mixed, cps	40,000 - 55,000
Specific gravity	1.13
Working time, hours	1 to 2
Shore A hardness	35 ± 4
Tear strength, ppi	125 ± 10
Tensile strength, psi	600 ± 50
Elongation, %	415 ± 30
Shrinkage, %	nil
Service Temperature, °F	-60 to 600 (intermittent)
Shelf Life, uncured material	6 months

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