

XP-697 Silicone Rubber

Description

XP-697 silicone rubber is a two-component, addition reaction, platinum catalyzed system that cures at room temperature. XP-697 is a fast curing material with improved inhibition resistance. It has a moderate durometer, superb physical properties, excellent release and good chemical resistance.

Applications

XP-697 has an outstanding combination of physical integrity and moderate hardness, making it an excellent choice for prototyping. Due to its flexibility and ease in releasing, it performs well with expandable foam systems maintaining its shape and detail for multiple castings.

Mixing Instructions

Mix 100 parts by weight of XP-697 Base with 10 parts by weight of XP-697 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. 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.

Curing

Vulcanization of the XP-697 takes place in 6 to 7 hours after mixing at normal room temperatures (70 °F to 72 °F). **Temperature fluctuations will have a noticeable impact on the cure rate.** Temperatures below 65 °F will slow the cure rate and temperatures above 77 °F will quicken the cure rate. Heating above 90 °F can be used to dramatically 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	90°F	125°F	150°F	200°F	250°F
300°F						
Cure Time	6-7 hrs	1.5-2 hrs	30-45 mins	15-30 mins	10-15 mins	~5 mins

Please note that the addition of heat will cause the working time to shorten. Cure rates can be accelerated at room temperature using 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

XP-697 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 **XP-697** rubber. After 8 hours this film must 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 substrates such as clay containing sulfur or any other sulfur, amine, or tin contaminated materials will cause surface inhibition and in all cases a test should be run as outlined above to determine compatibility.

Typical Properties

Color of Base	Off White
Color of Activator	Red Brown
Viscosity, mixed, cps	75,000 ± 10,000
Specific gravity	1.12
Working time, minutes	45 - 55
Shore A hardness	40 ± 3
Tear strength, ppi	160 ± 20
Tensile strength, psi	800 ± 50
Elongation, %	275 ± 50
Shrinkage, %	≤0.001%
Shelf Life, uncured material	6 months

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