MED-4135, MED-4150 & MED-4165

Silicone Elastomers

Product Profile

SILICONE TECHNOLOGY
Creative Partners in a Material World

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An ISO 9001 Certified Company

Description

- Uncatalyzed, vinyl-functional, high consistency silicone elastomers
- Available as soft (4135), medium (4150), and firm (4165) silicones
- Require the addition of a peroxide catalyst to accomplish vulcanization
- Strained through a 200-mesh screen (minimum) to ensure freedom from particulate contamination

Applications

- For fabrication techniques including molding, calendaring and extruding

NuSil Technology's MED-4135, MED-4150, and MED-4165 are restricted products. They shall not be considered for use in human implantation for a period of greater than 29 days.

Typical Properties	MED-4135		MED-4150		MED-4165		ASTM	NT-TM
Uncured:	Result	Metric	Result	Metric	Result	Metric		
Plasticity	70 mil	1.8 mm	100 mil	2.5 mm	-	-	D926	058
Appearance	Translucent Gray		Translucent Gray		Translucent Gray		D2090	002
Cured: Catalyzed with 1 pph of Percadox PD-50S, cured 5 min @ 116°C								
Specific Gravity	1.10	-	1.16	-	1.21	-	D792	003
Post-Cured: 2 hours @ 177°C, stabilize for a minimum 3 hours								
Durometer, Type A	35	-	50	-	65	-	D2240	006
Tensile Strength	1,250 psi.	8.6 MPa	1,450 psi	10.0 MPa	1,200 psi	8.3 MPa	D412, D882	007
Elongation	800%	-	700%	-	500%	-	D412, D882	007
Tear Strength, Die B	110 ppi	19.4 kN/m	180 ppi	31.7 kN/m	200 ppi	35.3 kN/m	D624	009
Stress @ 200% Strain	185 psi	1.3 MPa	300 psi	2.1 MPa	450 psi	3.1 MPa	D412, D882	007

Instructions for Use

MED-4135, MED-4150, and MED-4165 are fully compounded except for catalyst, and as a result, the amount of peroxide needed for a given application often cannot be determined accurately by theory or laboratory experiments. The most practical way to establish the correct amount of catalyst is to experiment using the elastomers and equipment that will be used for production. It is the responsibility of the user to observe all precautions for the safe handling of the peroxide and appropriate removal of decomposition products. Several organic peroxides are suitable for vulcanizing this product. Contact NuSil Technology for information on catalyst selection.

Catalyst Addition

On a two-roll mill, soften the product to a smooth consistency. Add the peroxide and thoroughly blend into the product, taking care not to generate excess heat.

Pigmenting and Cross Blending

Cross blending any combination of MED-4135, MED-4150, or MED-4165 on a two-roll mill will give elastomers of intermediate durometer. Accomplish pigmenting by milling the pigment into the product on a two-roll mill.

Packaging

1 lb. (450 g)
5 lb. (2.27 kg)
25 lb. (11.38 kg)

Warranty

12 Months

Caution
During vulcanization, oven-curing, and post-curing, vapors containing polychlorinated biphenyl (PCB), and other residual volatile byproducts of vulcanization may be released in small amounts, which may be harmful. Work areas must be well ventilated, and workers should avoid inhalation of vapors. Review the Material Safety Data Sheets for specific information.

Molding
Mold these thermosetting elastomers by the standard techniques of compression, transfer or injection molding. Molding cycle times are dependent on the mold temperature and cross-sectional thickness of the part. It is best to use highly polished, chrome-plated or stainless steel molds for these operations. Other polished metals will normally require release agents to prevent sticking. If using release agents, clean the parts prior to use.

Extrusion
Extrude the elastomer through an unheated die to make rod, tubing and coated wire. Accomplish vulcanization with this fabricating technique by passing the extrusion through a horizontal or vertical heated chamber. The residence time in the chamber varies with the size of the extrusion. For maximum uniformity, re-soften the elastomer on a two-roll mill the same day it is extruded.

Post-curing
The peroxide vulcanized elastomer contains 2,4-dichlorobenzoyl peroxide. The post-cure serves two purposes: post-curing removes the volatile components and other residuals generated from the decomposition of the peroxide during vulcanization, and post-curing stabilizes and enhances the physical properties of the elastomers.

Accomplish post-curing by heating the vulcanized material in a hot air circulating oven to a predetermined temperature for the required length of time. The oven must have an exhaust system of sufficient capacity to prevent volatiles from reaching an explosive level. The exhaust system should be vented so as to prevent worker exposure. The time required for post-curing at a given temperature depends upon the rate at which the volatiles can escape from the elastomer, which in turn depends upon the thickness of the part, the exposed surface area and the oven loading.

FDA Master Access File

A Master Access File for MED-4135, MED-4150, and MED-4165 has been filed with the U.S. Food and Drug Administration. Customers interested in authorization to reference the Master Access File must contact NuSil Technology.

Warnings About Product Safety

NuSil Technology believes the information and the data contained herein are accurate and reliable. However, the user is responsible to determine the material's suitability and safety of use. NuSil Technology cannot know each application's specific requirements and hereby notifies the user that it has not tested or determined this material's suitability or safety for use in any application. The user is responsible to adequately test and determine the safety and suitability for their application and NuSil Technology makes no warranty concerning fitness for any use or purpose. NuSil Technology has completed no testing to establish safety of use in any medical application.

NuSil Technology has tested this material only to determine if the product meets the applicable specifications. (Please contact NuSil Technology for assistance and recommendations when establishing specifications.) When considering the use of NuSil Technology products in a particular application, review the latest Material Safety Data Sheet and contact NuSil Technology with any questions about product safety information.

Do not use any chemical in a food, drug, cosmetic, or medical application or process until having determined the safety and legality of the use. The user is responsible to meet the requirements of the U.S. Food and Drug Administration (FDA) and any other regulatory agencies. Before handling any other materials mentioned in the text, obtain available product safety information and take the necessary steps to ensure safety of use.

Specifications

Do not use the typical properties shown in this technical profile as a basis for preparing specifications. Please contact NuSil Technology for assistance and recommendations in establishing particular specifications.

Patent Warning

NuSil Technology disclaims any expressed or implied warranty against the infringement of any patent. NuSil Technology does not warrant the use or sale of the products described herein will not infringe the claims of any United States' or other country's patents covering the product itself, its use in combination with other products or its use in the operation of any process.

Warranty Information

NuSil Technology's warranty period is 12 months from the date of shipment when stored below 40°C in original unopened containers. Unless NuSil Technology provides a specific written warranty of fitness for a particular use, NuSil Technology's sole warranty is that the product will meet NuSil Technology's then current specification. NuSil Technology specifically disclaims any other expressed or implied warranty, including warranties of merchantability and fitness for use. The exclusive remedy and NuSil Technology's sole liability for breach of warranty is limited to refund of purchase price or replacement of any product shown to be other than as warranted. NuSil Technology expressly disclaims any liability for incidental or consequential damages.