SILICONE-70 O-RING

MATERIAL: Silicone Rubber (MQ, VMQ, PVMQ)

MATERIAL DESCRIPTION

Physically, silicones are based on silicon, an element derived from quartz. To create this class of synthetic elastomers, pendant organic groups such as methyl, phenyl and vinyl are attached to silicon atoms. Different additions of side chains can achieve significant variations in properties. Silicones have excellent heat, ozone and corona resistance and have good dielectric stability and resistance to many oils, chemicals and solvents. Silicones possess the best flexible property at low temperature but have low tensile strength and poor wear and tear resistance.

CURE SYSTEM: PEROXIDE-CURED

Standard silicone compounds are usually peroxide-cured. Platinum- cured compounds offer better flexible properties and very low volatile matter. Platinum-cured silicones usually are applied in medical systems or other required low volatile matter. However, they need to be produced in a clean room and with a higher cost of platinum catalyzer, making them more expensive than peroxide-cured ones.

OTHER COMMON VARIATIONS

- Silicones can be formulated with only “white list” ingredients, as specified in 21.CFR 177.2600, for use in applications where the elastomer will be in contact with food or beverages.
- Silicones can be submitted for approval by the National Sanitation Foundation (NSF) for use in drinking water applications.
- Silicones are most often used in automotive systems in boots, oil filter valves, gasket in light, etc.
- Silicone parts can be used in medical systems which especially require compliance to USP CLASS VI

GENERAL INFORMATION

ASTM D1418 DESIGNATION	Q, MQ, VMQ, PVMQ	**STANDARD COLOR**	Rust
ISO/DIN 1629 DESIGNATION	Q, MQ, VMQ, PVMQ	**HARDNESS RANGE**	25 to 90 Shore A
ASTM D2000/ SAE J 200 CODES	FC, FE, GE	**RELATIVE COST**	Medium to High

SERVICE TEMPERATURES

STANDARD LOW TEMPERATURE	-76°F -60°C	**SPECIAL COMPOUND LOW TEMPERATURE**	-150°F -100°C
STANDARD LOW TEMPERATURE	437°F 225°C	**SPECIAL COMPOUND HIGH TEMPERATURE**	572°F 300°C

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PERFORMS WELL IN

- Petroleum products
- Fuel or blend with methanol or ethanol
- Diesel or blend with biodiesel
- Mineral oil and grease
- Silicone oil and grease
- High vacuum
- Ozone, weather and very high temperature air
- Strong acid

DOESN'T PERFORM WELL IN

- Ketones
- Low molecular weight organic acids (formic and acetic acids)
- Superheat steam
- Low molecular weight esters and ethers
- Phosphate ester based hydraulic fluids-Skydrol®

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TEST REPORT FOR COMPOUND S70 DUROMETER: 70 COLOR: RUST

ASTM* D2000, M5GE706, A19, B37, EO16, EO36, EA14, F19, Z1

SECTION OF SPEC.	PROPERTIES	REQUIREMENTS	RESULTS	ASTM TEST METHOD
	ORIGINAL PHYSICAL PROPERTIES			
	Hardness, Shore A	70 ± 5	69.5	D2240-05
	Tensile Strength	870 PSI (min)	910 PSI (6.3 MPa)	D412-06a
	Elongation	150% (min)	247%	D412-06a
	Modulus at 100%		567 PSI (3.9 MPa)	D412-06a
	Specific Gravity		1.33 g/cm^3	
	HEAT AGE: 70 hours at 225°C (437°F)			
	Hardness Change	± 10 points	+6 points	
A19	Tensile Strength Change	-25% (max)	+4%	D573-04
	Elongation Change	-30% (max)	-28%	
	Weight Change		-4%	
B37	**COMPRESSION SET: 22 hours at 175°C (347°F)**	25% (plied) (max)	17.6%	D395-03, Method B
	IRM 901 OIL: 70 hours at 150°C (302°F)			
	Hardness Change	0 to -15	-4 points	
EO16	Tensile Strength Change	-20 (max)	+11%	D471-06
	Elongation Change	-20 (max)	0%	
	Volume Change	0% to +10%	+4%	
	IRM 903 OIL: 70 hours at 150°C (302°F)			
	Hardness Change	-30 points (max)	-19 points	
EA036	Tensile Strength Change		-14%	D471-06
	Elongation Change		+3%	
	Volume Change	+60% (max)	+33.7%	
	WATER RESISTANCE: 70 hours at 100°C (212°F)			
	Hardness Change	± 5%	0 points	
EA14	Tensile Strength Change		-3%	D471-06
	Elongation Change		-20%	
	Volume Change	± 5%	+1.9%	
	LOW-TEMPERATURE BRITTLENESS POINT: 3 minutes at -55°C (-40°F)			
	Sample type: T-50			D2137-05, Method A
F17	Coolant : Methanol			
	Brittleness temperature to nearest 1°C (1°F)	No crack	Pass	

*American Society for Testing and Materials

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