Compound S70

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.

GENERAL INFORMATION	
ASTM D1418 Designation	Q, MQ, VMQ, PVMQ
ISO/DIN 1629 Designation	Q, MQ, VMQ, PVMQ
ASTM D2000/ SAE J 200 Codes	FC, FE, GE
Standard Color	Rust
Hardness Range	25 to 90 Shore A
Relative Cost	Medium to High

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.

SERVICE TEMPERATURES	
Standard Low Temperature	-60°C (-76°F)
Standard High Temperature	225°C (437°F)
Special Compound Low Temperature	-100°C (-150°F)
Special Compound High Temperature	300°C (572°F)

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.

PERFORMS WELL IN:
• Engine and transmission oil (mineral oils)
• Diluted salt solution
• Moderate water
• Dry heat
• Ozone and weather resistance

DOESN’T PERFORM WELL IN:
• Concentrated acids and alkalis
• Steam over 120°C (248°F)
• Petroleum oils and fuel
• Ketones

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TEST REPORT FOR COMPOUND S70

MATERIAL: SILICONE RUBBER

DUROMETER: 70

COLOR: RUST

ASTM* D2000 M5GE706 A19 B37 EO16 EO36 EA14 F19 Z1

S70

SECTION OF SPEC.	PROPERTIES	REQUIREMENTS	RESULTS	ASTM TEST METHOD
	ORIGINAL PHYSICAL PROPERTIES			
	Hardness, Shore A	70±5	69.5	D2240-05
	Tensile Strength, psi (MPa)	870 (min.)	910 (6.3)	D412-06a
	Elongation, percent	150 (min.)	247	D412-06a
	Modulus at 100%, psi (MPa)		567 (3.9)	D412-06a
	Specific Gravity (g/cm³)		1.33	
A19	**HEAT AGE**			D573-04
	70 hours at 225°C (437°F)			
	Hardness Change, points	+10 (max.)	+6	
	Tensile Strength Change, percent	-25 (max.)	+4	
	Elongation Change, percent	-30 (max.)	-28	
	Weight Change, percent		-4	
B37	**COMPRESSION SET**			D395-03, Method B
	22 hours at 175°C (347°F), percent	25 (plied) (max.)	17.6	
EO16	**IRM 901 OIL**			D471-06
	70 hours at 150°C (302°F)			
	Hardness Change, points	0 to -15	-4	
	Tensile Strength Change, percent	-20 (max.)	+11	
	Elongation Change, percent	-20 (max.)	0	
	Volume Change, percent	0 to +10	+4	
EO36	**IRM 903 OIL**			D471-06
	70 hours at 150°C (302°F)			
	Hardness Change, points	-30 (max.)	-19	
	Tensile Strength Change, percent		-14	
	Elongation Change, percent		+3	
	Volume Change, percent	+60 (max.)	+33.7	
EA14	**WATER RESISTANCE**			D471-06
	70 hours at 100°C (212°F)			
	Hardness Change, points	±5	0	
	Tensile Strength Change, percent		-3	
	Elongation Change, percent		-20	
	Volume Change, percent	±5	+1.9	
F19	**LOW-TEMPERATURE BRITTLENESS POINT**			D2137-05, Method A
	3 minutes at -55°C (-67°F)			
	Sample type: T-50			
	Coolant : Methanol			
	Brittleness temperature to nearest 1°C (1°F)	No crack	Pass	

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