EMI Conductive Rubber, LLC

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Silicone

Common Name	**Silicone**
ASTM D-2000 Classification	**FC, FE, GE**
Chemical Definition	**Polysiloxane**

General Characteristics

Durometer Range (Shore A)	30 - 90
Tensile Range (P.S.I.)	200 - 1500
Elongation (Max. %)	700
Compression Set	Good
Resilience - Rebound	Good
Abrasion Resistance	Fair to Poor
Tear Resistance	Poor
Solvent Resistance	Poor
Oil Resistance	Fair to Poor
Low Temperature Usage (F°)	-60° to -150°
High Temperature Usage (F°)	to 450°
Aging Weather - Sunlight	Excellent
Adhesion to Metal	Good

Description:

Silicone Rubber has a great many variations and can be compounded to meet any number of applications. Silicone can be compounded to have tensile in the area of 1500 PSI and tear up to 200 lbs.; low compression set and good resilience; moderate solvent resistance; excellent heat resistance; good release characteristics; extreme low tempertature properties; and can be highly resistant to oxidation and ozone attack.

Silicone is generally attacked by most concentrated solvents, oils, concentrated acids and dilute sodium hydroxide.

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Fluorosilicone

Common Name	**Fluorosilicone**
ASTM D-2000 Classification	**FK**

General Characteristics

Durometer Range (Shore A)	50 - 80
Tensile Range (P.S.I.)	500 - 800
Elongation (Max. %)	300
Compression Set	Fair to Good
Resilience - Rebound	Excellent
Abrasion Resistance	Poor
Tear Resistance	Poor
Solvent Resistance	Fair
Oil Resistance	Good
Low Temperature Usage (F°)	-80°
High Temperature Usage (F°)	to 300°
Aging Weather - Sunlight	Excellent
Adhesion to Metal	Poor

Description

Fluorosilicone is considerable more expensive than silicone, however it is developed for special applications where general resistance to oxidizing chemicals, aromatic and chlorinated solvent bases is required.

Fluorosilicone is not recommended and is generally attacked when exposed to brake fluids, hydrazine and ketones. Fluorosilicone should not be confused with silicone in regard to high heat resistance.

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EPDM

Common Name	**EPDM**
ASTM D-2000 Classification	**CA**
Chemical Definition	**Ethylene Propylene Diene Monomer**

Durometer Range (Shore A)	30 - 90
Tensile Range (P.S.I.)	500 - 2500
Elongation (Max. %)	600
Compression Set	Good
Resilience - Rebound	Good
Abrasion Resistance	Good
Tear Resistance	Fair
Solvent Resistance	Poor
Oil Resistance	Poor
Low Temperature Usage (F°)	-20° to -60°
High Temperature Usage (F°)	to 350°
Aging Weather - Sunlight	Excellent
Adhesion to Metal	Fair to Good

Comment

EPDM (Ethylene Propylene Diene Monomer) is a polymer with outstanding properties. It was exceptionally good weather aging and ozone resistance; excellent water and chemical resistance; excellent resistance to gas permeability, and excellent resistance to aging due to exposure to steam, and heat resistance excellent up to 350°F. Ethylene Propylene is a polymer where oil and solvent resistance is poor. However, it is fairly

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good in ketones and alcohols. It is not recommended for food applications or exposure to aromatic hydrocarbons.

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Fluorocarbon

Common Name	**Fluorocarbon**
ASTM D-2000 Classification	**HK**
Chemical Definition	**Vinyllidienefluoridehexafluropropylene**

General Characteristics

Durometer Range (Shore A)	50-95
Tensile Range (P.S.I.)	500 – 2,000
Elongation (Min-Max. %)	400-500
Compression Set	Good to Excellent
Resilience - Rebound	Poor to Fair
Abrasion Resistance	Fair to Good
Tear Resistance	Fair to Good
Solvent Resistance	Excellent
Oil Resistance	Excellent
Low Temperature Usage (F°)	-30° to 0°
High Temperature Usage (F°)	450°-500°
Adhesion to Metal	Good to Excellent

Description:

Fluorocarbon Elastomers were first introduced in the mid 1950s. Since then they have grown to major importance in the rubber seal industry. Due to its wide spectrum chemical compatibility and temperature range and its low compression set, fluorocarbon rubber is the most significant single elastomer delopment in the recent history.

Fluorocarbon O-Rings should be considered for use in aircraft, automobile and other mechanical devices requiring maximum resistance to elevated temperature and too many functional fluids.

RECOMMENDED FOR	NOT RECOMMENDED FOR
Petroleum oils, Di-ester base lubricants (MIL-L-7808, MIL-L-6085)	Ketones (MEK, Acetone)
Silicate ester base lubricants (MLO 8200, MLO 8515, OS-45)	Amines (UDMH), anhydrous
Halogeneted hydrocarbons, acids	Ammonia, skydrol fluids

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Polyurethane

Common Name	**Polyurethane**
ASTM D-2000 Classification	**BG**
General Characteristics	
Durometer Range (Shore A)	35 - 100
Tensile Range (P.S.I.)	500 - 6000
Elongation (Max. %)	750
Compression Set	Poor
Resilience - Rebound	Good
Abrasion Resistance	Excellent
Tear Resistance	Excellent
Solvent Resistance	Poor
Oil Resistance	Good
Low Temperature Usage (F°)	-10° to -30°
High Temperature Usage (F°)	to 175°
Aging Weather - Sunlight	Excellent
Adhesion to Metal	Fair to Good

Description

Polyurethane comes with two types. The castable types have excellent abrasion resistance; good compression set at high hardness levels; low friction surface; tensile strengths up to 6000 psi; good ozone resistance; good oil and solvent resistance; and poor heat and hot water resistance.

The millable types of polyurethane are more popular and widely use in today applications. Through the use of reinforcing pigments and other chemicals, desirable characteristics can be obtained to fit a variety of applications; wear resistance is excellent and greatly superior to most other polymers. Good oil resistance. However, it is not recommended for use in water or heat above 175°F. Polyurethane is not normally attached by moderate chemicals and hydrocarbon. It is generally attacked by concentrated acids, ketones, esters, chlorinated and nitro hydrocarbons.