

Commercial 'O' Ring Materials

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Standard Materials

Compound	Application
Nitrile	Rubber for general use at temperatures between -30°C and +100°C with: Mineral-based hydraulic oils and greases. Transformer and machine oils; Engine oils S.A.E. 10 to 40 and multigrade; Tractor Universal Oil; Pneumatic applications.
High Nitrile	Rubber for use at temperatures between -30°C and +120°C with: Mineral-based hydraulic oils and greases. Transformer and machine oils; Gear oils S.A.E. 70 to 120 and E.P. lubricants; Engine oils 10 to 40 and multigrade; Tractor Universal Oil; Ester-based lubricant; Paraffin and Petrol; Pneumatic applications.
Neoprene	Rubber for use at temperatures between -30°C and +80°C having: Resistance to weathering, oxidation and ozone.
Ethylene Propylene	For use at temperatures between -50°C to +120°C. This material exhibits good weathering and ozone resistance plus good resistance to castor-based and certain fire resistant fluids.
Fluorocarbon (VITON®)	Temperature range -20°C to +200°C. Good resistance to various chemicals, mineral oils and fuels. (VITON is a registered trade mark of DuPont).
Silicone	Temperature range -60°C to +200°C. Extreme temperature compound, but with limited oil and fuel resistance. Good resistance to hot air and satisfactory for use in hot water up to 100°C.
Polytetrafluoroethylene	Temperature range of -100°C to +300°C. Excellent chemical resistance and has self lubricating properties.

Special Materials

'O' Rings are manufactured in the following materials subject to availability

Compound	Application
Chemraz®	Resistant to more chemicals than any other elastomeric material, Chemraz o-rings last longer and seal better in the harsh environments of chemical or petrochemical process equipment. Chemraz o-rings are available in all standard AS568A sizes, along with many metric and non- standard sizes.
Kalrez®	This perfluoroelastomer has outstanding chemical resistance and a temperature capability up to +350°C. Kalrez comes in several grades.

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Aflas	This material is unique due to its resistance to petroleum products, steam, phosphate esters and brake fluids. This material is finding interest for seal applications requiring petroleum resistance, steam and amine resistance such as those applications encountered in the petroleum industry. The temperature service range for this material is -20°F to +400°F.
Butyl	Butyl exhibits excellent resistance to phosphate ester fluids such as Skydrol. Butyl exhibits the best resistance to gas permeation and some rocket propellants. The temperature service range for this material is -65°F to +225°F;
Chlorosulfonated Polythene	Compounds from this material find only very little usage as 'o' ring seals, due to poor compression set resistance. It does exhibit good resistance to some acids. The temperature service range for this material is -65°F to +25°F
Epichlorohydrin	This compound is found in the petroleum industry due to its excellent petroleum resistance and its stable cycling capability from low to high temperature. Copolymers temperature range -65°F to +250/275°F and in homopolymer exhibiting a temperature range of -40 to 275°F.
Fluorosilicone	These polymers exhibit good low/high temperature resistance with excellent resistance to petroleum oils and fuels. These are used in aerospace applications for fuel systems and systems requiring resistance to diester base lubricants to 350°F. Due to the limited strength and abrasion resistance of these materials, they are generally recommended for static applications only. The sealing temperature service range is -80°F to +350/400°F.
Phosphonitrilic Fluoroelastomer	This material is similar to fluorosilicone but exhibits higher strength and can be used in dynamic applications. Compounds of this polymer exhibits excellent resistance to petroleum fluids over a wide temperature range. These compounds are available in green colour. The general temperature service range for PNF is -80°F to + 300/350°F



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Polyacrylate	Due to the excellent resistance to oil, ATF, oxidation and flex cracking, this material is utilised in transmission and power steering applications. Heat resistance is slightly superior to standard nitrile compounds, but low temperature, compression set and water resistance are inferior. The temperature service range for these compounds is 0°F to +300°F
Polysulfide	This is a very limited use polymer o ring due to its poor compression set, strength and heat resistance. In addition, it is very difficult to process in manufacturing. However, it does find service in the paint industry since it is the only available polymer that is resistant to virtually all of the solvents used in the paint industry. The temperature service range is -65°F to + 225°F
Polyurethane	Polyurethane compounds exhibit high tensile strength, excellent abrasion and tear strength, making them the toughest of the elastomers. Compression set and heat resistance are inferior to other elastomers such as nitrile. These materials may be suitable for hydraulic applications. Temperature range -65°F to 212°F.
Styrene Butadine	This material is similar to natural rubber. 'O' ring usage has been on the decline since the introduction of ethylene propylene. SBR exhibits excellent resistance to automotive brake fluids and still finds service in brake applications, although the high temperature range is inferior to that of ethylene propylene compounds. The temperature service
Vamac	This material exhibits properties similar to polyacrylate but can be formulated to exhibit lower temperature capabilities. It has excellent resistance to oxidation, automatic transmission power steering fluids. The temperature service Range is -40°F to +300/350°F.