



TYPICAL CHARACTERISTICS OF COMMONLY USED RUBBER COMPONENTS, THERMOPLASTICS AND PTFE

NBR **ACRYLONITRILE BUTADIENE RUBBER**
Commonly known as Nitrile, NBR or BUNA N

Working Temperature Range: -20°C to +100°C

Resilience: 40/60%

Nitrile rubber forms the most common group of elastomers for general sealing use. Chemically, Nitrile is a copolymer of butadiene and acrylonitrile. In order to obtain good low temperature performance, it is usually necessary to sacrifice some high temperature characteristics.

Nitrile rubbers have good physical characteristics, and are superior to most rubbers as regards cold flow, tear and abrasion resistance.

In extreme temperature ranges, please seek advice from our Technical Department, who would be pleased to formulate special compounds for your requirements.

FPM **FLUOROCARBON RUBBER**
Commonly known as VITON *DU PONT TRADE MARK*

Working Temperature Range: -20°C to +200°C

Resilience: 20/40%

Fluorocarbon elastomers are suitable for fire resistant hydraulic fluids, mineral oils, greases, most inorganic acids, chemicals, and a number of organic compounds.

FPM specially compounded can increase resistance to acids, water and steam to 120°C.

FPM is not resistant to ammonias, sodium solutions, ketones, low molecular esters, amines and organic acids, unless as previously stated, it is specifically compounded.



MQ METHYL SILICONE RUBBER
Commonly known as Silicone

Working Temperature Range: -70°C to +250°C

Resilience: 40/60%

Basically Silicone compounds have poor strength and tear resistance, though mechanical performance can be enhanced by special compounding. Resistance to Alkalis is generally good, chemical properties are poor for resistance to oils and fuels.

Silicone rubbers are not recommended for use with petrols, paraffin, lighter mineral oils, or steam above a pressure of 50 lb/in², as swelling and softening can occur.

The chief advantages are, silicone retains flexibility at very low temperatures and can withstand continuous heating without hardening, making it suitable for low and high temperature applications.

EPDM ETHYLENE PROPYLENE DIEN RUBBER

Working Temperature Range: -40°C to +120°C

Resilience: 40/60%

EPDM is from a general class of Ethylene Propylene Dien Rubber, with enhanced properties. It is resistant to non-mineral, automotive brake fluids, phosphate ester fluid, water/steam and many chemicals, it is not resistant to mineral oils, grease and hydrocarbon fuels.



THERMOPLASTICS AND PTFE MATERIALS

Working Temperature Range: -270°C to +260°C

Resilience: Excellent

PTFE POLYTETRAFLUOROETHYLENE

PTFE is a synthetic material with a waxlike feel with a surface which repels the majority of liquids

It has low co-efficient friction, is inert, combined with a wide temperature range (-270°C to +260°C).

Melted alkali metals and gaseous fluorine will chemically attack at high temperature and pressure. Also some highly fluorinated greasing oils cause swelling at high temperature and pressures. The material also tends to deform over a period of time.

Adding appropriate fillers, glass fibre, graphite, carbon and bronze, will improve compressive creep, dimensional stability under load and abrasion resistance.

PTFE is resistant to weathering and is not flammable. It is used extensively in hydraulics for low friction.

TPU POLYURETHANE (POLYESTER BASED)

Polyurethane compounds are reliable materials for production of Rod seals, Wipers and Piston seals. They form a large percentage of today's hydraulic seal usage, typical characteristics are as follows:-

Working Temperature Range: -30°C to +80°C

Resilience: 60/80%

TPU has excellent strength, abrasion, tear resistance and retains excellent flexibility at low temperatures.

Resistance is good to petroleum products, hydrocarbons, ozone and weathering.

Unsatisfactory for use with solutions of acid or alkaline, chlorinated hydrocarbons, ketones, hot water, steam or alcohol.

With the increase of temperature the compression set characteristics rapidly deteriorate.

This material, therefore, is attractive for its mechanical strength rather than chemical or temperature properties.