RUBBER GUIDE

Material	Chemical Group	Common Uses	Feature Summary	Generally Resistant to	Generally Attacked by	Temperature Range
AFLAS™ (TFE/P)	Fluorinated Copolymer	Seals for oilfield, aerospace, chemical and general engineering	High temp & chemical resistance	Steam, amines & amine corrosion inhibitors, caustics, high pH media, wet sour gas, oil	Aromatic hydrocarbons, chlorinated solvents, ethers, limited in low temperatures	-20° - + 200°C
BUTYL (IIR)	Isobutylene, Isoprene, polymer	Effective vacuum sealing and for hydraulic systems.	Low permeability to gases, excellent resistance to ozone & sunlight.	Water & Steam	Petroleum solvents, coal, tar, solvents, aromatic hydrocarbons	-40° - + 110°C
EPICHLOROHYDRIN (ECO)	Epichlorohydrin polymer & copolymer	Air conditioning, petroleum industry	Excellent resistance to hydrocarbon oils and fuels, low solvent and gas permeability, weather resistant.	Similar to Nitrile with ozone resistance	Ketones, esters, aldehydes, chlorinated and nitro hydrocarbons	-30° - + 120°C
ETHYLENE-PROPYLENE (EPDM)	Ethylene Propylene copolymer and terpolymer	Outdoor, automotive braking and coolant systems, (drinking) water applications	Resistance to polar solvents and keytones, as well as steam, hot water, silicone oils and greases, dilute acids and alkalis, alcohols and brake fluids	Water, steam & brake fluids	Mineral oils and solvents, aromatic hydrocarbons	-50° - + 130°C (150°C Intermittent)
FLUOROELASTOMER FKM / FPM #1 e.g. Viton A (Viton® -Dyneon®)	Standard fluorocarbon dipolymer 66% fluorine	Seals for aircraft engines, automotive fuel handling systems , oilfield, chemical processing, power generation	Highly resistant to swelling, weather, acids, silicone fluids and greases, low gas permeability.	All aliphatic, aromatic & halogenated hydrocarbons, acids, animal & vegetable oils	Ketones, low molecular weight esters & alcohols & nitro-containing compounds	-20° - + 200°C
FLUOROELASTOMER FKM / FPM #2 e.g. Viton 'B' & GF (Viton® -Dyneon®)	Standard or specialty type Terpolymer fluorocarbon. Typically >66% fluorine	Seals for aircraft engines, automotive fuel handling systems, oilfield, chemical processing, power generation	Highly resistant to swelling, weather, acids, silicone fluids and greases, low gas permeability.	All aliphatic, aromatic & halogenated hydrocarbons, acids, animal & vegetable oils	Ketones, low molecular weight esters & alcohols & nitro-containing compounds	-20° - + 200°C
HYPALON® (CSM)	Chlorosulphonated polyethylene with improved acid & ozone resistance	Applications where there is likely to be heavy weather conditions or exposure to hot liquids or gases	Resistant to corrosive or oxidising chemicals, weather, Freon® refrigerants. Tougher than silicone or EDPM	Similar to Neoprene	Concentrated oxidising acids, esters, ketones, chlorinated, aromatic & nitro hydrocarbons	-25° - + 130°C

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NATURAL RUBBER (IR)	Polyisoprene	Food and beverage seals, non-hydraulic seals.	Low compression set, high tensile strength, resilience, abrasion and tear resistance. Good friction surface and adhesion to metals.	Most moderate wet or dry chemicals, organic acids, alcohols, ketones, aldehydes	Ozone, strong acids, fats, oils, greases, most hydrocarbons	-60° - + 75°C
NEOPRENE (CR)	Chloroprene polymer	Transportation, oil processing, refrigeration, food and beverage industries.	Oil resistant substitute for natural rubber. Good weathering, Freon® and ammonia resistant, outstanding toughness, cost effective.	Moderate chemicals & acids, ozone, oils, fats, greases, many oils, and solvents.	Strong oxidising acids, esters, ketones, chlorinated, aromatic & nitro hydrocarbons	-40° - + 100°C
NITRILE (NBR)	Butadiene, Acrylonitrile copolymer	Widely used in seal industry, oil resistant applications, low temperature uses, off-road equipment, automotive, marine, hydraulic applications.	Wide working temperature range, oil and hydrocarbon fuel resistant. Available in FDA compliant grades.	Many hydrocarbons, fats, oils, greases, hydraulic fluids, chemicals.	Ozones, ketones, esters, aldehydes, chlorinated & nitro hydrocarbons	-20° - + 100°C
HYDROGENATED NITRILE (HNBR)	Butadiene, Acrylonitrile copolymer + Hydrogen	Oil resistant applications, oil well, automotive fuel handling and general industrial applications.	Enhanced temperature tolerance, strength and chemical resistance. Abrasion, steam and oil additive resistant.	Similar to NBR but with improved chemical resistance & higher service temperature	Ozones, ketones, esters, aldehydes, chlorinated &n nitro hydrocarbons	-30° - + 125°C (160°C Intermittent)
SILICONE (VMQ)	Organic silicone polymer	Seals and gaskets in extreme temperatures. Food and beverage, pharmaceutical, medical industries.	Flexibility retention, low compression set, dry heat resistance. Weather and fungus resistant, non-toxic, neutral odour and taste.	Moderate or oxidising chemicals, ozone, concentrated sodium hydroxide	Many solvents, oils, concentrated acids, dilute sodium hydroxide.	-60° - + 200°C