Seal material

Code	Generic Name	Names	Features
N	NBR -5ºC~80ºC	Nitrile rubber	* Oil resistance and abrasion resistance, often apply to seal materials, particularly resistant to mineral oil for the best. * Not suitable for using in polar solvents, such as ketones, ozone, nitro hydrocarbons, MEK and chloroform.
T	PTFE (Teflon) -5ºC~185ºC	Polytetrafluoroethylene	* Able to withstand all the strong acid(including aqua regia), strong oxidants, reducing agents and various organic solvents except alkali metal fluoride, sodium hydroxide medium. * It is better than rubber almost in all physical properties except elasticity and it has the characteristics of a low coefficient friction.
J	EPDM -5ºC~130ºC	Ethylene propylene rubber	* Resistance to polar solvents (alcohols, ketones, ethylene glycol) of hydrochloric acid. With good ozone resistance, excellent water resistance and chemical resistance. * Not recommended for aromatic hydrogen.
V	VITON (FKM) (FPM) -5ºC~130ºC	Fluorocarbon rubber	* Premium chemical resistance and higher price are the two characteristics, can be resistant to most oils and solvents * Not recommended for ketones, esters and mixtures containing nitrate
R	RUBY -10ºC~200ºC	–	* The artificial ruby sheet is used as a seal to block the orifice, which is resistant to various corrosive and volatile fluids such as aromatic hydrocarbon fluids. But a slight gas leak is caused by the hardness of the ruby.
Z	FFKM -10ºC~290ºC	Perfluoroelastomer	* Excellent air tightness and optimum temperature and chemical resistance in all elastomer materials. * Resistant to corrosion from various chemical products such as strong acids, alkalis, ethers, ketones, esters, lubricants, fats, aromatics, nitrogenous compounds, hydrocarbons, alcohols, aldehydes, oils, vapors, amines, etc.
S	Silicone -5ºC~130ºC	Silicone rubber	* Excellent ozone ,oxides corrosion, and neutral solvent resistance * Not recommended for most concentrated solvents, oils, concentrated acid and dilution sodium hydroxide

* Please follow the recommended solenoid valve temperatures.

M* Stability for various oil and solvent to rubber & plastic

2/2, 3/2 WAY **SOLENOID VALVE**

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◎: Outstanding ○: Resistant, unless otherwise specified △: Have no resistance ,Unless otherwise specified ×: Have no resistance

Oil, solvents		Rubber types					
		NBR	PTFE	EPDM	VITON	FFKM	Silicone
Engine oil	SAE#30	◎	◎	×	◎	–	◎
	SAE 10w-#30	◎	◎	×	◎	–	○
Gear oil	For Vehicles	◎	◎	×	○	–	△
	Industrial second type (polarity) synthesis	◎	◎	△	○	–	△
Brake oil	DOT3(ethanol)	△	◎	○	×	–	○
	DOT5(ethanol)	△	◎	○	×	–	○
	DOT5(Silicon-based)	◎	◎	×	◎	–	×
Machine oil (the 2nd axis lubricants)		○	◎	×	◎	–	×
Hydraulic operating oil (mineral oil-based)		◎	◎	×	◎	–	△
Flame retardant hydraulic oil	Phosphate ester	×	◎	×	△	–	◎
	Water + diethanol Department	○	◎	×	△	–	△
Consumers cut oil		△	◎	×	◎	–	◎
Lubricating oil	Mineral oil-based	◎	◎	×	◎	◎	◎
	Silicon-based	◎	◎	○	◎	◎	×
	Fluorine	◎	◎	×	×	◎	◎
Refrigerant	R12+Paraffinic	△	◎	×	×	–	×
	R134a+Glycol	△	◎	◎	×	–	×
Gasoline, diesel oil		△	◎	×	◎	◎	×
Light oil, kerosene		△	◎	×	◎	◎	×
Heavy oil		△	◎	×	◎	–	×
Antifreeze (in ene glycol system)		○	◎	◎	×	–	△
Warm water		◎	◎	◎	○	◎	◎
Sea water		△	◎	◎	○	–	×
Hot water, Steam (100ºC)		×	◎	◎	△	○	○
Hydrochloric acid solution		△	◎	◎	○	–	○
30% Sulfuric acid solution		×	◎	○	△	–	×
10%Nitric acid solution		×	◎	○	△	–	×
40% Sodium hydroxide solution		△	◎	◎	×	–	×
Benzene		×	◎	×	×	◎	×
Alcohol		△	◎	◎	○	◎	○
Butanone		×	◎	×	×	◎	△

M* Stability for various Chemical liquid to rubber & plastic

2/2, 3/2 WAY **SOLENOID VALVE**

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◎: Outstanding ○: Resistant, unless otherwise specified △: Have no resistance ,Unless otherwise specified ×: Have no resistance

Oil, solvents		Rubber types					
		NBR	PTFE	EPDM	VITON	FFKM	Silicone
Organic acids	Acetic acid	△	◎	◎	○	◎	◎
Inorganic acid	Hydrochloric acid solution	△	◎	◎	○	◎	◎
	Sulfuric acid solution	–	◎	◎	◎	◎	○
	Nitric acid solution	×	◎	○	△	◎	○
Alkalies	Sodium hydroxide	△	◎	◎	○	◎	○
	Ammonium hydroxide	△	◎	◎	○	◎	◎
Salt	Sodium chloride	△	◎	◎	◎	–	◎
	Sodium carbonate	△	◎	◎	○	–	◎
Oxidizing agent	Sydrogen peroxide	△	◎	○	◎	◎	◎
	Sodium hypochlorite	×	◎	○	◎	◎	○
Aliphatic carbohydrates	Trimethylpentane	△	◎	×	◎	◎	×
Aromatic carbohydrate	Methylbenzene	△	◎	×	◎	◎	△
Chlorination of carbohydrates	Trichloro ethylene	△	◎	×	◎	–	×
Alcohols	Methyl alcohol	△	◎	◎	△	◎	◎
	Ethyl alcohol	△	◎	◎	◎	◎	◎
Ethers	Diethyl ether	△	◎	△	×	◎	×
Esters	Ethyl acetate	×	◎	○	△	–	×
Ketone	Chloromethyl ethyl ketone	×	◎	◎	×	◎	×
Aldehydes	Furfuraldehyde	△	◎	◎	×	◎	×
Amine	Triethanolamine	△	◎	◎	×	–	×
Sulfur	Carbon disulfide	△	◎	×	◎	–	–