Compound Suitability For Fluids Gases & Chemicals

The following data and information has been derived from many sources but should be regarded as a general guide only. Consideration of compound selection for any given application should be in association with pressure, temperature and media requirements.

Key To Symbols	
AU	Polyurethane
EPM	Ethylene Propylene
FKM	Flourocarbon
IIR	Butyl
VMQ	Silicone
NBR	Medium Nitrile

Key To Rating Guide	
A	Satisfactory
B	Fair
C	Doubtful
D	Unsatisfactory
-	No Data

Immersion Medium	AU	EPDM	FKM	IIR	VMQ	NBR
Acetaldehyde	-	-	D	A	A	D
Acetic Acid Gas at 70°C	C	-	D	B	B	D
Acetic Acid Glacial	D	-	D	A	A	D
Acetic Acid Diluted	B	A	D	A	A	D
Acetone	D	A	D	A	C	D
Acetylene	D	A	A	A	B	A
Acrylonitrile	D	D	D	B	B	D
Air	A	A	A	A	A	A
Air at 180°C	D	D	A	D	A	D
Air With Oil Mist	A	D	A	D	A	A
Ammonia	D	A	D	A	D	B
Ammonium Hydroxide	D	A	B	A	B	B
Aniline	D	D	A	B	B	D
Asphalt	C	D	A	D	B	D
Beer	A	A	A	A	A	A
Benzene/Benzol	D	D	A	D	D	D
Benzaldehyde	C	B	C	B	B	D
Blast Furnace Gas	C	C	A	C	A	B
Brake Fluid veg.	D	A	D	A	C	D
Bromine Water	D	D	A	D	D	D
Bunker Oil	C	D	A	D	B	A
Butane	B	D	A	D	D	A
Calcium Hydroxide	D	A	A	A	A	A
Calcium Hypochlorite	D	A	A	C	C	A
Carbolic Acid (phenol)	D	D	B	C	D	D
Carbon Bisulphide	D	D	A	D	D	D
Carbon Dioxide	D	A	A	A	A	A
Carbon Monoxide at 70°C	C	A	B	A	A	B
Castor Oil	B	B	C	B	A	D
Chlorine	C	A	B	C	D	D
Chlorinated Solvents	D	D	A	D	D	D
Copper Sulphate	D	A	A	A	C	A
Cotton Seed Oil	A	D	A	D	C	A
Creosote	C	D	A	D	D	D
Cyclohexane	A	D	A	D	D	D
Diacetone Alcohol	C	A	C	A	C	D
Dibutyl Phthalate	A	C	B	C	A	D
Dichlorobenzene	C	D	A	D	D	D
Diethylene Glycol	A	A	A	A	B	A
Diethyl Ether	D	B	D	B	D	D

Immersion Medium	AU	EPDM	FKM	IIR	VMQ	NBR
Diethyl Sebacate	D	D	C	C	C	D
Dioctyl Phthalate	D	D	B	C	A	D
Dioxane	D	A	D	A	D	D
Dipentene	C	D	A	D	C	B
Diphenyl	C	D	C	D	C	D
Epichlorohydrin	-	B	D	-	-	D
Ethylene	-	-	A	-	-	
Ethylacetate	D	B	D	A	D	D
Ethyl Alcohol	A	A	A	A	A	A
Ethyl Benzene	C	D	B	D	D	D
Ethylene Oxide at -20°C	D	A	D	B	C	D
Ethylene Glycol	D	A	A	A	A	A
Fatty Acids	A	D	A	D	B	B
Ferric Chloride	C	A	A	A	C	A
Ferric Sulphate	C	A	A	A	B	A
Fluorine (Gas)	D	D	A	C	D	D
Fluorobenzene	D	D	A	D	D	D
Formaldehyde	D	A	A	A	C	A
Formic Acid	D	B	D	B	C	D
Freon 11	B	B	B	D	C	B
Freon 12	A	-	A	A	D	B
Freon 21	C	D	D	C	D	D
Freon 22	D	D	D	A	D	D
Freon 113	A	D	B	D	C	B
Freon 114	C	-	B	A	C	A
Furan	D	C	D	C	C	D
Furfural	D	D	D	C	B	D
Gasoline U.S. spec	B	D	A	D	D	B
Glucose	D	A	A	A	A	A
Glycerine	D	A	A	A	A	A
Glycols	D	A	A	A	A	A
Hexane	A	D	A	D	B	A
Hydrazine	B	A	A	A	D	B
Hydrochloric Acid diluted	D	A	A	A	A	A
Hydrochloric Acid (dil) 70°C	D	A	A	A	D	D
Hydrochloric Acid conc.	D	B	B	A	B	A
Hydrogen	A	A	A	A	A	A
Hydrogen Peroxide	D	A	A	A	A	A
Linseed Oil	B	D	A	A	D	A
Lubricating Oil	B	D	A	D	B	A

Compound Suitability For Fluids Gases & Chemicals

The following data and information has been derived from many sources but should be regarded as a general guide only. Consideration of compound selection for any given application should be in association with pressure, temperature and media requirements.

Key To Symbols	
AU	Polyurethane
EPM	Ethylene Propylene
FKM	Flourocarbon
IIR	Butyl
VMQ	Silicone
NBR	Medium Nitrile

Key To Rating Guide	
A	Satisfactory
B	Fair
C	Doubtful
D	Unsatisfactory
-	No Data

Immersion Medium	AU	EPDM	FKM	IIR	VMQ	NBR
Mercuric Chloride	D	A	A	A	A	A
Mercury	A	A	A	A	A	A
Methyl Chloride	D	D	A	D	D	C
Methyl Ethyl Ketone	D	B	D	B	A	D
Methylene Dichloride	D	D	B	D	D	D
Milk	A	A	A	A	A	A
Mineral Oil	A	D	A	D	A	A
Naphtha	C	D	A	D	C	B
Naphthalene	B	D	A	D	C	D
Natural Gas	A	B	A	D	B	A
Nitric Acid concentrated	D	D	B	D	D	D
Nitric Acid diluted	D	B	A	B	B	C
Nitro Benzene	D	D	B	C	C	D
Nitro Propane	D	B	D	B	C	D
Nitrogen	A	A	A	A	A	A
Oleic Acid	D	D	A	D	B	A
Oxygen at -40°C	B	A	A	B	A	B
Oxygen at 200°C	C	B	B	D	A	D
Ozone	C	B	B	B	A	D
Palmitic Acid	D	C	A	C	D	A
Paraffin	D	D	A	D	D	A
Petroleum Oils	A	D	A	D	B	A
Phenol	D	D	B	D	D	D
Phenyl Benzene	D	C	A	D	D	D
Phenyl Ethyl Ether	D	C	D	D	D	D
Phenyl Hydrazine	D	D	A	C	D	D
Phorone	-	-	-	A	A	D
Phosphoric Acid 45%	D	A	A	A	D	B
Phosphoric Acid 45%170°C	D	A	A	A	D	B
Picric Acid diluted	D	A	A	A	D	A
Piperdine	D	C	D	C	D	D
Plating Solution (Chrome)	D	-	C	-	C	D
Plating Solution (Others)	C	-	A	A	C	A
Potassium Hydroxide	D	A	A	A	D	B
Producer Gas	C	A	A	A	A	A
Propane Gas	B	D	A	D	C	A
Propylene	-	-	A	D	-	B
Pyridine	D	B	D	B	D	D
Pyrrole	-	C	-	D	-	D
Sal-Ammoniac	C	A	-	A	B	A

Immersion Medium	AU	EPDM	FKM	IIR	VMQ	NBR
Sewage	C	A	A	A	A	A
Silicone Oils & Greases	A	A	A	A	A	A
Silver Nitrate	D	A	A	A	A	A
Soap Solution	A	A	A	A	C	A
Sodium Salts	D	A	A	A	C	A
Steam below 120°C	D	A	B	A	A	D
Steam above 120°C	D	A	B	B	B	D
Stearic Acid	C	B	A	B	C	A
Styrene	D	D	B	D	D	D
Sulphur Chloride	D	D	D	D	D	D
Sulphur Dioxide dry	D	A	A	A	D	D
Sulphur Acid diluted	D	A	A	A	A	D
Sulphuric Acid conc.	D	B	A	B	D	D
Sulphuric Acid Fuming	D	D	B	D	D	D
Tar	D	D	A	D	D	D
Terpinol	D	D	A	D	D	B
Toluene	D	D	A	D	D	D
Transformer Oil	C	D	A	D	D	B
Trichlorethylene triad	D	D	A	D	D	D
Turpentine	D	D	A	D	D	A
Vaseline	D	B	A	D	D	A
Vegetable Oil	B	C	A	B	D	B
Vinegar	C	A	D	A	D	D
Wines & Spirits	D	A	A	A	A	A
Xylene	D	D	A	D	D	D
Zinc Salts	D	A	A	A	D	A

Seal Selection Materials - Plastic Faced Seals

The following tables are designed as a guide to the correct selection of the sealing element and energiser materials for your particular application. The sealing element is dynamic making it's mechanical properties the priority in selection. More detailed capabilities relevent to individual seal types are given within the catalogue.
The static energisers are rubber based compounds therefore fluid compatibility and temperature range are the main criteria for selection.

Materials For Sealing Element

Material suffix	Description	Colour	Material Properties & Application
B	Bronze PTFE with additives	Brown	Very high mechanical duties. Good compressive strength for oil hydraulics. (Standard Material for styles CS5, 841, 851, CS6, 751 & 741)
C	Carbon PTFE	Black	Medium Mechanical duties. Generally for pneumatic applications and water based fluids (Not Seawater). For soft mating surfaces and unlubricated conditions.
G	Glass PTFE	Black	High mechanical duties. For water and oil hydraulics, pneumatics and unlubricated applications.
V	Virgin PTFE	White	Light mechanical duties. For anti-extrusion rings and pressure seals. Low friction and almost totaly inert. Suitable for food and potable water applications. (NWC approved) Standard material for anti-extrusion rings, CS1, CS2, CS4
VM	Modified PTFE	Blue	Medium mechanical duties. Much lower wear rate than Virgin PTFE. Very good chemical resistance Standard material for styles 931, 941, 951
UH	UHMWPE	Off White	Medium mechanical duties. For water and oil hydraulics, pneumatics, and unlubricated applications. Lower temperature and speed range than PTFE but very good abrasion resistance. Suitable for soft mating surfaces.

Materials For Energiser

Compound	Temp Range (Intermitant) °C	Recommended For	NOT Recommended For
NBR Nitrile (Standard Material)	-40 to +120	Petroleum based oils and fluids, cold water, Silicone greases and oils, ethylene glycol based fluids, Di-ester based lubricants.	Automotive brake fluid, Phosphate ester fluids.
EPM, EPDM Ethylene Propylene	-50 to +150	Phosphate ester based fluids, Automotive brake fluid, Water, Steam.	Petroleum based oils and fluids, Di-ester based lubricants.
IIR Butyl	-40 to +150	Phosphate ester fluids, Silicone greases and fluids.	Petroleum based oils and fluids, Di-ester based lubricants.
FKM Flurocarbon	-50 to +200	Petroleum oils, Di-ester based lubricants, Silicate ester lubricants,Silicone greases & fluids, Certain phosphate ester fluids.	Skydrol Fluids, Low molecular weight esters & ethers.
Si Silicone	-90 to +240	High analine point oils, Chlorinated di-phenyls, Dry heat.	Most petroleum based fluids, Water and steam.
Note: If Energiser Materials Other Than Nitrile Are Required, Consult CLARON For Part Number.			

Storage:

Deterioration of rubber products will be minimised if stored in accordance with BS 3574:1989
P.T.F.E. is regarded as having no restrictions in terms of shelf life.

Compound Suitability For Hydraulic Fluids

				Continuous Operating Temp. °C with Seal Materials						
DIN Class	**ISO Class**	**Type**	**Description**	**NBR**	**FKM**	**AU**	**EPDM**	**POM**	**PTFE**	**PA**
H	HH	Mineral Fluid	Mineral Oil without additives	100	150	100	NS	100	200	120
H-L	HL		Mineral Fluid with anti-corrosion and anti-ageing additives	100	150	100	NS	100	200	120
H-LP	HM		As HL plus additives reducing wear, and raising load capacity	100	150	100	NS	100	200	120
H-LPD	-		As H-LP but with detergents and dispersants	100	150	100	NS	100	200	120
H-V	HV		As H-LP but with improved viscosity temperature behaviour	100	150	100	NS	100	200	120
HFA E		Flame Retardent with Water	Emulsions of mineral oil in water. Water content 80-95%	55	60	40	NS	55	55	55
HFA S			Synthetic oil in water Water content 80-95%	55	60	40	NS	55	55	55
HFB			Emulsions of water in mineral oil.. Water content 40%	60	60	40	NS	60	60	60
HFC			Aqueous polymer solutions. Water content 35%	60	60	NS	60	60	60	60
HFD R		Flame Retardent without Water	Phosphoric acid ester based	NS	150	NS	120	80	150	80
HFD S			Chlorinated hydrocarbon based	NS	150	NS	120	80	150	80
HFD T			Mixtures of HFD R and HFD S	NS	150	NS	120	80	150	80
HEPG		Biodegra-dable	Polyglycol based	NS	100	NS	120	80	150	80
HETG			Vegetable Oil basec	60	60	60	NS	60	60	60
HEES			Fully synthetic ester based	NS	100	60	NS	100	100	100

NS = Not Suitable