



Uniting everyone,  
everything, everywhere.

# **RUBBER PROPERTIES**

Find out everything you need to know about our rubbers

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The rubber materials listed in this overview describe those which are currently used by MPC. It serves only as a reference for the user and in no way implies that MPC is required to use these listed rubber materials. As raw material prices move and new technologies emerge, MPC reserves the right to change raw materials and processes used in our products as long as MPC can demonstrate that the overall clamp performance and chemical resistance has not been impaired.



# GENERAL PROPERTIES OF RUBBERS

<b>ASTM Designated abbreviation</b>	EPDM, EP, EPT, EPR	NBR	CR	VMQ, PMQ, PVMQ	FKM, FEPM
<b>Chemical name</b>	Ethylene Propylene	Acrylonitrile Butadiene	Polychloroprene	Sillicone	Fluorocarbon
<b>Popular names</b>	EPDM	Nitrile	Neoprene	Sillicone	Viton
<b>Used on MPC mounting clamps</b>	"HC-ESA" Heavy Duty Clamp - European Standard "HC-AS" Heavy Duty Clamp - American Standard "LC" Light Duty Clamp "SB" Support Brackets "DL" Pipe Mounting strengthened "SL" Pipe Mounting firm M6	Upon request Upon request Upon request Upon request Upon request Upon request Upon request	Upon request Upon request Upon request Upon request Upon request Upon request Upon request	Upon request Upon request Upon request Upon request Upon request Upon request Upon request	Upon request Upon request Upon request Upon request Upon request Upon request Upon request
<b>Used on "U-connect" couplings</b>	All U-connect couplings	All U-connect couplings	-	Upon request	Upon request

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# PROPERTIES OF THE RUBBER COMPOUNDS

**A** Good - Excellent

**B** Fair - Good

**C** Poor

**X** Do not use



**General temperature range in Celcius**

**General temperature range in Fahrenheit**

**Specific temperature range for "U-connect"-couplings in Celcius**

**Specific temperature range for "U-connect"-couplings in Fahrenheit**

**Hardness "Shore A" (+5 / -5)**

**Heat aging at 100 °C (212 °F)**

**Steam resistance**

**Weather resistance**

**Sunlight resistance**

**Ozone resistance**

**Water resistance**

**Vibration dampening**

**Abrasion resistance**

	EPDM	NBR	CR	VMQ-PVMQ	FKM
General temperature range in Celcius	-55 - 130	-35 - 110	-45 - 120	-55 - 230	-20 - 326
General temperature range in Fahrenheit	-67 - 266	-30 - 230	-49 - 248	-67 - 446	-40 - 410
Specific temperature range for "U-connect"-couplings in Celcius	-30 - 110	-20 - 80	-	-40 - 220	-18 - 300
Specific temperature range for "U-connect"-couplings in Fahrenheit	-22 - 230	-4 - 176	-	-40 - 428	-0.4 - 572
Hardness "Shore A" (+5 / -5)	60	60	60	60	60
Heat aging at 100 °C (212 °F)	A	B	A	A	A
Steam resistance	A	A	B	B	C
Weather resistance	A	B	B	A	A
Sunlight resistance	A	B	B	A	A
Ozone resistance	A	B	B	A	A
Water resistance	A	A	B	A	A
Vibration dampening	B	B	A	B	B
Abrasion resistance	B	A	A	C	B

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# CHEMICAL RESISTANCE OF THE RUBBER COMPOUNDS

**A** Good - Excellent

**B** Fair - Good

**C** Poor

**X** Do not use



Contact fluid	Type	EPDM	NBR	CR	VMQ-PVMQ	FKM
10% Hydrated ammonium	Inorganic base	A	AB	A	A	B
10% Hypochlorite sodium (aqueous solution)	Inorganic salt	AB	BC	B	B	A
25% Oxalic acid at 80 °C (176 °F)	Organic acid	A	BC	B	BC	A
50% Fluoridic acid	Inorganic acid	A	CX	C	X	A
65% Concentrated nitric acid	Inorganic acid	CX	X	X	X	B
65% Fluoridric acid at 60 °C (140 °F)	Inorganic acid	X	X	X	X	B
75% Fluoridic acid	Inorganic acid	BC	X	CX	X	B
90% Oxygen water	Inorganic peroxide	BC	CX	CX	AB	B
<b>A</b>						
Acetaldehyde	Aldehyde	A	X	CX	AB	X
Acetamide 100 °C (212 °F)	Amide	A	B	B	BC	A
Acetate lead (aqueous solution)	Organic salt	A	B	B	X	-
Acetic acid at 25% at 100 °C (212 °F)	Organic acid	X	X	X	BC	X
Acetic anhydride	Organic anhydride	B	C	AB	C	X
Acetone	Ketone	A	X	BC	B	X
Acetophenone	Ketone	A	X	X	CX	X

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# CHEMICAL RESISTANCE OF THE RUBBER COMPOUNDS

Contact fluid	Type	EPDM	NBR	CR	VMQ-PVMQ	FKM
Acetylene	Hydrocarbon	A	AB	B	BC	A
Acrylonitrile at 50 °C (122 °F)	Nitrile	C	X	BC	CX	X
Adipic acid	Organic acid	A	A	A	-	A
Alum	Inorganic salt	A	A	A	AB	-
Aluminum sulphate	Inorganic salt	A	A	A	A	A
Amile acetate	Ester	B	X	X	X	X
Amile borato	Ester	X	A	A	-	A
Ammonia gassosa	Inorganic base	A	A	A	A	X
Ammonium carbonate at 80 °C sol. Watery	Inorganic salt	A	CX	AB	BC	-
Ammonium chloride (aqueous solution)	Inorganic salt	A	A	A	A	A
Ammonium nitrate (aqueous solution)	Inorganic salt	A	AB	AB	A	A
Ammonium nitrite (aqueous solution)	Inorganic salt	A	A	A	B	-
Ammonium persulphate (aqueous solution)	Inorganic salt	A	-	A	A	-
Ammonium sulphate (aqueous solution)	Inorganic salt	A	A	A	A	-
Amylic alcohol at 50 °C (122 °F)	Alcohol	A	B	A	BC	AB
Anhydro fluoridic acid	Inorganic acid	C	X	C	X	C
Anhydrous bromo	Inorganic compound	X	X	X	X	A
Aniline	Aromatic organic base	AB	X	C	A	AB
Aniline at 100 °C (212 °F)	Aromatic organic base	B	X	X	AB	C
Aqua regia	Inorganic acid	C	X	CX	CX	B
Arsenico tricoloruro	Inorganic salt	C	A	A	-	-
Astm oil n. 1 At 100 °C (212 °F)	Mineral oil	X	A	A	AB	A
Astm oil n. 2 At 100 °C (212 °F)	Mineral oil	X	A	B	B	A
Astm oil n. 3 At 100 °C (212 °F)	Mineral oil	X	A	CX	C	A

## B

Bakery gas	Gas	C	BC	C	A	A
Barium hydrate (saturated aqueous solution)	Inorganic base	A	A	A	A	A
Barium sulphate	Inorganic salt	A	A	A	A	A
Beer	Alcoholic food	A	A	A	A	A
Benzene	Aromatic hydrocarbon	X	CX	X	X	AB

**A** Good - Excellent

**B** Fair - Good

**C** Poor

**X** Do not use

# CHEMICAL RESISTANCE OF THE RUBBER COMPOUNDS

Contact fluid	Type	EPDM	NBR	CR	VMQ-PVMQ	FKM
Benzile chloride	Chlorinated aromatic hydrocarbon	X	X	X	C	A
Benzoic acid	Organic acid	C	C	X	C	A
Benzoic aldehyde	Aldehyde	A	X	X	-	CX
Benzoic aldehyde at 100 °C (212 °F)	Aldehyde	A	X	X	-	X
Benzol	Aromatic hydrocarbon	X	CX	X	X	AB
Benzyl alcohol	Alcohol	A	X	BC	AB	A
Bitumen	Hydrocarbon	X	B	C	BC	A
Borace (aqueous solution)	Inorganic salt	A	B	AB	B	A
Boric acid at 10% at 100 °C (212 °F)	Inorganic acid	A	A	A	B	A
Butadiene	Hydrocarbon	C	X	CX	X	AB
Butanone	Ketone	A	X	C	CX	X
Butyl acetate	Ester	BC	X	X	X	X
Butyl acetyl ricinoleate	Ester	A	-	-	-	-
Butyl alcohol at 100 °C (212 °F)	Alcohol	-	A	C	X	B
Butyl alcohol at 50 °C (122 °F)	Alcohol	AB	A	A	B	A
Butyl benzoate	Ester	A	X	X	-	A
Butyl carbitol	Alcohol	A	A	BC	-	A
Butyl cellosolve	Alcohol	A	C	BC	-	X
Butyl lactate	Ester	-	B	-	-	-
Butyl oiled	Ester	BC	BC	X	-	A
Butyl phthalate	Ester	AB	X	X	B	BC
Butyl stearate at 70 °C (158 °F)	Ester	C	B	X	AB	A
Butyric acid	Organic acid	BC	BC	C	-	BC
<b>C</b>						
Calcium hydrate (aqueous suspension)	Inorganic base	A	AB	A	BC	A
Carbitol	Alcohol	AB	BC	BC	B	B
Carbon dioxide	Inorganic anhydride	AB	AB	AB	AB	A
Carbon sulphide	Carbon sulphide	X	C	X	X	A
Carbon tetrachloride	Chlorinated hydrocarbon	X	C	X	X	A
Carbonic acid	Inorganic acid	A	B	A	A	A
Castor oil	Oils	A	B	C	A	A
Cellosolve	Alcohol	B	-	-	-	C
Cellosolve acetate	Ester	B	X	X	X	X

**A** Good - Excellent

**B** Fair - Good

**C** Poor

**X** Do not use

# CHEMICAL RESISTANCE OF THE RUBBER COMPOUNDS

Contact fluid	Type	EPDM	NBR	CR	VMQ-PVMQ	FKM
Chloride iron (aqueous solution)	Inorganic salt	A	A	A	AB	A
Chloroacetic acid 25%	Organic acid	AB	CX	C	X	X
Chloroacetone	Ketone	A	X	BC	C	X
Chlorobenzene	Chlorinated aromatic hydrocarbon	X	X	X	X	A
Chloroform	Chlorinated hydrocarbon	X	X	X	CX	A
Chrome plating baths	Inorganic salts	B	X	X	B	A
Chromic acid at 50% at 50 °C (122 °F)	Inorganic acid	BC	X	X	X	A
Citric acid 33%	Organic acid	A	AB	A	A	A
Clorobromometano	Chlorinated hydrocarbon	BC	X	X	X	A
Clorobutadiene	Chlorinated hydrocarbon	X	X	X	X	A
Clorodifenile	Chlorinated aromatic hydrocarbon	X	X	X	B	A
Cockery gas	Gas	C	C	C	AB	A
Coconut oil	Oils	BC	A	B	A	A
Cold hydrogen sulfur (aqueous solution)	Inorganic acid	A	X	A	C	X
Cold oxygen	Gas	A	B	A	A	A
Concentrated hydrate ammonium	Inorganic base	A	B	A	A	B
Copper sulphate (aqueous solution)	Inorganic salt	A	A	A	A	A
Cotton oil	Oils	B	A	BC	BC	A
Creosote	Phenol	X	AB	BC	X	A
Cresol	Phenol	BC	CX	C	-	AB
Crotonaldehyde	Aldehyde	A	A	A	X	A
Cyanidric acid at 20%	Inorganic acid	A	C	C	BC	A
Cyclohexane	Hydrocarbon	X	A	CX	X	A
Cyclohexanone	Ketone	B	X	X	C	X
<b>D</b>						
Decalin	Hydrocarbon	X	BC	X	CX	A
Diacetone	Ketone	A	X	AB	AB	X
Dibenzyl ether	Aromatic ether	B	X	CX	B	-
Dicloroisopropiletere	Ether	C	X	X	X	C
Diesel	Hydrocarbon	X	A	BC	X	A

**A** Good - Excellent

**B** Fair - Good

**C** Poor

**X** Do not use



# CHEMICAL RESISTANCE OF THE RUBBER COMPOUNDS

Contact fluid	Type	EPDM	NBR	CR	VMQ-PVMQ	FKM
Diethanolamine	Organic base	A	BC	-	-	-
Diethylamine	Organic base	C	BC	BC	BC	X
Diethylene glycol	Alcohol	A	A	A	AB	A
Diisobutylene	Hydrocarbon	X	B	CX	X	A
Diisopropylcheton	Ketone	AB	X	X	X	X
Diisopropylbenzene	Aromatic hydrocarbon	X	X	X	B	A
Dimethylamine	Organic base	B	X	X	X	X
Dimethylaniline	Aromatic organic base	B	X	CX	-	X
Dimethylformamide	Amide	B	BC	C	AB	X
Diocetyl	Aromatic ester	B	C	X	BC	A
Diottilsebacato	Ester	B	X	X	C	A
Dioxane	Ether	B	X	X	-	X
Diphenyl	Aromatic hydrocarbon	X	CX	X	C	A
Diphenyl oxide	Aromatic ether	X	X	X	BC	A
Distilled water at 100 °C (212 °F)	Water	A	AB	B	AB	AB
Dowtherm	Aromatic ether	X	X	X	BC	A
Dry chlorine	Inorganic compound	CX	C	C	X	AB
<b>E</b>						
Epichlorhydrin	Chlorinated hydrocarbon	B	X	X	X	X
Esaldeide	Aldehyde	A	X	A	B	CX
Ethane	Hydrocarbon	X	A	B	X	A
Ethanolamine	Organic base	A	A	B	B	X
Ethyl acetate	Ester	A	X	C	A	X
Ethyl acetoacetate	Ester	B	X	C	B	X
Ethyl alcohol at 50 °C (122 °F)	Alcohol	A	A	A	A	B
Ethyl benzoate	Ester	B	X	X	X	A
Ethyl chloride	Chlorinated hydrocarbon	B	B	BC	X	A
Ethyl ether	Ether	C	BC	X	X	X
Ethyl lactate	Ester	-	B	-	-	-
Ethyl mercaptan	Mercaptan	CX	X	CX	C	B
Ethyl silicate	Ester of silicic acid	A	A	A	A	A
Ethylcellosolve	Alcohol	B	X	X	X	X
Ethylene	Hydrocarbon	X	A	BC	-	A
Ethylene chloride	Chlorinated hydrocarbon	C	CX	X	CX	B
Ethylene glycol	Alcohol	A	A	A	A	A
Ethylene oxide at -20 °C (68 °F)	Hydrocarbon	BC	X	X	C	X
Ethylenediamine	Organic base	AB	AB	AB	C	X

**A** Good - Excellent

**B** Fair - Good

**C** Poor

**X** Do not use

# CHEMICAL RESISTANCE OF THE RUBBER COMPOUNDS

Contact fluid	Type	EPDM	NBR	CR	VMQ-PVMQ	FKM
Ethylenglycol at 100 °C (212 °F)	Alcohol	A	A	B	A	A
<b>F</b>						
Fluid A (isooctane)	Hydrocarbon	X	A	AB	X	A
Fluid B (70% isooctane - 30% toluene)	Aromatic hydrocarbon	X	AB	C	X	A
Fluid C (50% isooctane - 50% toluene)	Aromatic hydrocarbon	X	B	X	X	A
Fluorobenzene	Fluorinated aromatic hydrocarbon	X	X	X	X	A
Fluorosilicic acid	Inorganic acid	B	B	B	X	B
Formaldehyde at 40% at 20 °C (68 °F)	Aldehyde	A	BC	AB	AB	A
Formaldehyde at 40% at 70 °C (158 °F)	Aldehyde	-	X	-	-	-
Formic acid at 23 °C (73 °F) (saturated solution)	Organic acid	B	B	B	B	C
Formic acid at 75 °C (167 °F) (saturated sol)	Organic acid	B	C	C	X	X
Freon 11	Freon	X	AB	B	X	C
Freon 112	Freon	X	B	BC	X	A
Freon 113	Freon	CX	A	A	X	B
Freon 114	Freon	A	A	A	X	B
Freon 114 / B2	Freon	X	B	A	-	B
Freon 115	Freon	A	A	A	C	B
Freon 12	Freon	B	A	A	X	B
Freon 13	Freon	A	A	A	X	AB
Freon 142 / B	Freon	AB	A	A	X	X
Freon 152 / A	Freon	A	A	A	-	X
Freon 21	Freon	X	X	BC	X	X
Freon 218	Freon	A	A	A	-	A
Freon 22	Freon	A	CX	A	X	X
Freon 31	Freon	A	X	AB	X	X
Freon 32	Freon	A	A	A	C	CX
Freon 502	Freon	A	B	A	C	B
Freon BF	Freon	X	B	BC	X	A
Freon C 316 and C / 318	Freon	A	A	A	X	AB
Freon MF	Freon	X	A	C	X	B

**A** Good - Excellent

**B** Fair - Good

**C** Poor

**X** Do not use

# CHEMICAL RESISTANCE OF THE RUBBER COMPOUNDS

Contact fluid	Type	EPDM	NBR	CR	VMQ-PVMQ	FKM
Freon T-WD-602	Freon	B	B	B	X	X
Freon TA	Freon	AB	A	AB	-	C
Freon TC	Freon	B	A	A	-	A
Freon TF	Freon	X	A	A	X	AB
Freon TMC	Freon	BC	B	BC	C	A
Freon TP 35	Freon	A	A	A	A	A
Furfural	Alcohol	B	X	C	CX	X
<b>G</b>						
Gallic acid	Organic acid	B	C	BC	A	A
Gasohol (toluene 50% - isooctane 30% - methanol 20%)	Aromatic hydrocarbon and alcohol	X	C	X	-	-
Glacial acetic acid	Organic acid	A	C	C	BC	X
Glucose	Alcohol	A	A	A	A	A
Glue	Organic compound	A	A	A	A	A
Glycerine	Alcohol	A	A	A	A	A
<b>H</b>						
Helium	Gas	A	A	A	A	A
Hexane	Hydrocarbon	CX	A	B	X	A
Hexanol	Alcohol	C	A	B	BC	A
Hexene	Hydrocarbon	X	B	B	X	A
Hot gas ammonia	Inorganic base	B	CX	AB	A	X
Hot hydrogen sulfur (aqueous solution)	Inorganic acid	A	X	BC	C	X
Hybrid acid 40%	Inorganic acid	A	CX	B	X	A
Hydrazine	Hydrazine	A	B	B	C	X
Hydrochloric acid 10%	Inorganic acid	A	B	AB	C	A
Hydrochloric acid at 37%	Inorganic acid	A	B	BC	CX	A
Hydrochloric acid at 37% at 70 °C (158 °F)	Inorganic acid	BC	X	X	X	AB
Hydrogen	Gas	A	A	A	BC	A
Hydroquinone	Phenol	B	C	X	-	X
Hypochlorite calcium (aqueous solution)	Inorganic salt	A	C	C	B	A
Hypochlorite sodium at 10% at 100 °C (212 °F) (aqueous solution)	Inorganic salt	-	-	-	-	X

**A** Good - Excellent

**B** Fair - Good

**C** Poor

**X** Do not use

# CHEMICAL RESISTANCE OF THE RUBBER COMPOUNDS

Contact fluid	Type	EPDM	NBR	CR	VMQ-PVMQ	FKM
<b>I</b>						
Iodine pentafluoride	Inorganic compound	X	X	X	X	X
Iodoformio	Hydrocarbon	A	-	-	-	-
Isobutyl alcohol	Alcohol	A	B	A	A	A
Isopropyl alcohol	Alcohol	A	B	A	AB	A
Isopropyl ether	Ether	CX	B	BC	X	X
<b>J</b>						
Jelly	Food	A	A	A	A	A
Jp - 4	Hydrocarbon	X	A	BC	X	A
<b>K</b>						
Kerosene	Hydrocarbon	X	A	BC	X	A
<b>L</b>						
Lactic acid	Organic acid	AB	BC	BC	A	A
Lardo at 70 °C (158 °F)	Food	C	A	B	BC	A
Lead free petrol	Hydrocarbon	X	AB	C	X	A
Ligroine	Hydrocarbon	X	A	B	X	A
Linseed oil	Oils	A	A	B	B	A
Liquid ammonia	Inorganic base	A	AB	AB	CX	X
Liquid butane	Hydrocarbon	X	A	AB	X	A
Liquid fluorine	Inorganic compound	CX	X	X	X	B
Liquid propane	Hydrocarbon	X	A	B	C	A
Lithium bromide (aqueous solution)	Inorganic salt	A	A	A	A	A
<b>M</b>						
Magnesium hydrate (aqueous suspension)	Inorganic base	A	B	A	A	A
Magnesium sulphate (aqueous solution)	Inorganic salt	A	A	A	A	A
Maleic acid	Organic acid	BC	C	C	X	A

**A** Good - Excellent

**B** Fair - Good

**C** Poor

**X** Do not use

# CHEMICAL RESISTANCE OF THE RUBBER COMPOUNDS

Contact fluid	Type	EPDM	NBR	CR	VMQ-PVMQ	FKM
Maleic anhydride	Organic anhydride	C	X	C	-	-
Malic acid	Organic acid	-	A	BC	B	A
MEK, methylisobutyl ketone	Ketone	B	X	X	CX	X
Menthol	Alcohol	A	A	A	X	A
Mercury	Mercury and derivatives	A	A	A	A	A
Mesitylene oxide	Ketone	BC	X	X	X	X
Methane	Hydrocarbon	CX	A	BC	X	A
Methyl acrylate	Ester	B	X	C	X	X
Methyl alcohol at 50 °C (122 °F)	Alcohol	A	A	A	A	CX
Methyl bromide	Brominated hydrocarbon	X	BC	X	X	A
Methyl chloride	Chlorinated hydrocarbon	C	X	X	X	AB
Methyl methacrylate	Ester	BC	X	CX	C	X
Methyl salicylate	Ester	B	X	X	-	-
Methylcyclopentane	Hydrocarbon	X	-	CX	X	AB
Methylene chloride	Chlorinated hydrocarbon	C	X	X	X	B
Milk	Food	A	A	A	A	A
Mineral oil	Mineral oil	X	A	B	B	A
Molasses	Food	A	A	A	A	A
Mono-di-tri-basic ammonium phosphate (aqueous solution)	Inorganic salt	A	A	A	AB	A
Monochlorobenzene	Chlorinated aromatic hydrocarbon	X	X	X	CX	AB
Monoethanolamine	Organic base	A	X	X	B	X
Monomethylaniline	Aromatic organic base	AB	X	X	-	B
Monovinyl acetylene at -20 °C (68 °F)	Hydrocarbon	AB	A	B	BC	A
<b>N</b>						
Naphtha	Hydrocarbon	X	AB	C	X	A
Naphthalene at 80 °C (176 °F)	Aromatic hydrocarbon	X	CX	X	X	A
Naphthenic acid	Organic acid	X	B	X	-	A
Natural gas	Gas	X	A	A	BC	A
Nitric acid diluted at 10% at 50 °C (122 °F)	Inorganic acid	A	B	C	X	BC
Nitrobenzene at 50 °C (122 °F)	Aromatic nitroderivate	A	X	X	A	BC
Nitroethane	Nitroderivative	B	X	C	X	X
Nitromethane	Nitroderivative	B	X	C	X	X

**A** Good - Excellent

**B** Fair - Good

**C** Poor

**X** Do not use

# CHEMICAL RESISTANCE OF THE RUBBER COMPOUNDS

Contact fluid	Type	EPDM	NBR	CR	VMQ-PVMQ	FKM
<b>O</b>						
Octile adipate	Ester	B	X	X	C	AB
Octyl alcohol	Alcohol	BC	B	A	B	A
Oil at 150 °C (302 °F)	Hydrocarbon	X	BC	C	X	AB
Oil methyl	Ester	B	X	X	-	AB
Oil of ox feet	Oils	B	A	X	B	A
Oleic acid	Organic acid	BC	BC	BC	BC	-
Oleum	Inorganic acid	B	BC	C	CX	AB
Olive oil	Oils	C	A	B	A	A
Orthodichlorobenzene	Chlorinated aromatic hydrocarbon	X	CX	X	C	AB
Oxygen at 100 - 200 °C (212 - 392 °F)	Gas	C	X	X	B	B
Ozone (50pphm) at 40 °C (104 °F)	Gas	A	X	BC	A	A
<b>P</b>						
Palmitic acid	Organic acid	B	A	B	CX	A
Paradichlorobenzene	Chlorinated aromatic hydrocarbon	X	-	X	C	AB
Paraffin	Hydrocarbon	C	A	AB	-	A
Peanut oil	Oils	BC	A	BC	A	A
Perchlorethylene	Chlorinated hydrocarbon	X	BC	X	CX	A
Petrol 50% / Benzol 30% / Ethanol 20%	Aromatic hydrocarbon	X	C	CX	X	B
Petroleum	Hydrocarbon	X	A	B	BC	A
Phenol	Phenol	AB	X	CX	AB	A
Phenol at 100 °C (212 °F)	Phenol	B	X	X	B	B
Phenylhydrazine	Hydrazine	B	X	CX	X	A
Phosphoric acid 20%	Inorganic acid	A	B	B	BC	A
Phosphoric acid 85%	Inorganic acid	A	CX	AB	C	A
Phosphoric acid at 60% at 50 °C (122 °F)	Inorganic acid	A	C	B	-	A
Picric acid at 10% at 100 °C (212 °F)	Organic acid	AB	B	AB	X	A
Pine oil	Oils	X	B	X	X	A

**A** Good - Excellent

**B** Fair - Good

**C** Poor

**X** Do not use

# CHEMICAL RESISTANCE OF THE RUBBER COMPOUNDS

Contact fluid	Type	EPDM	NBR	CR	VMQ-PVMQ	FKM
Pinene	Hydrocarbon	X	AB	C	X	A
Piperidine	Organic base	X	X	X	X	X
Polyvinyl acetate (emulsion)	Ester	A	-	B	-	-
Potassium acetate (aqueous solution)	Organic salt	A	B	B	X	X
Potassium chloride (aqueous solution)	Inorganic salt	A	A	A	A	A
Potassium hydrate at 70 °C (158 °F) (medium-high concentration)	Inorganic base	A	BC	B	C	X
Potassium nitrate (aqueous solution)	Inorganic salt	A	A	A	A	A
Potassium permanganate at 25% at 80 °C (176 °F) (water sol.)	Inorganic salt	C	X	B	A	CX
Potassium sulphate (aqueous solution)	Inorganic salt	A	A	A	A	A
Propilnitrato	Nitroderivative	B	X	X	CX	X
Propyl	Ester	B	X	X	CX	X
Propylene	Hydrocarbon	X	C	X	X	A
Propylene oxide	Hydrocarbon	B	X	X	X	X
Pydraul 10E, 29ELT	Fluid	A	X	X	X	A
Pydraul 115E	Fluid	A	X	X	X	A
Pydraul 230E, 312C, 540C	Fluid	X	X	X	X	A
Pydraul 30E, 50E, 65E, 90E	Fluid	A	X	X	A	A
Pydraul F9 at 80 °C (176 °F)	Fluid	B	X	X	A	A
Pyridine	Organic base	B	X	X	X	X
Pyrolegnous acid	Organic acid	B	X	B	-	-
<b>R</b>						
Ragia water	Hydrocarbon	X	A	X	CX	A
Repent	Hydrocarbon	CX	A	B	X	A
<b>S</b>						
Sea water	Water	A	A	A	A	A
Siliconic oil	Oils	A	A	A	C	A
Skydrol 500	Fluid	A	X	X	AB	X

**A** Good - Excellent

**B** Fair - Good

**C** Poor

**X** Do not use

# CHEMICAL RESISTANCE OF THE RUBBER COMPOUNDS

Contact fluid	Type	EPDM	NBR	CR	VMQ-PVMQ	FKM
Skydrol 7000	Fluid	A	X	X	A	X
Smoking nitric acid	Inorganic acid	X	X	X	X	CX
Soaps (solutions OF)	Soap	A	A	B	A	A
Sodium bisulphite (aqueous solution)	Inorganic salt	A	A	A	A	A
Sodium carbonate at 20% (aqueous solution)	Inorganic salt	A	A	A	A	A
Sodium chloride (aqueous solution)	Inorganic salt	A	A	A	A	A
Sodium hydrate at 70 °C (158 °F) (medium-high concentration)	Inorganic base	A	BC	AB	BC	C
Sodium metaphosphate (aqueous solution)	Inorganic salt	A	A	BC	-	A
Sodium peroxide	Inorganic peroxide	A	B	B	X	A
Sodium phosphate mono-di-tri-basico (water sol.)	Inorganic salt	A	A	AB	X	A
Sodium silicate (aqueous solution)	Inorganic salt	A	A	A	-	A
Sodium sulphate (aqueous solution)	Inorganic salt	A	A	A	A	A
Sodium thyo sulphate (aqueous solution)	Inorganic salt	A	B	A	A	A
Soja oil	Oils	C	A	BC	A	A
Stearic acid	Organic acid	B	B	B	A	AB
Stearic acid at 70 °C (158 °F)	Organic acid	B	B	B	A	-
Stearina at 70 °C (158 °F)	Organic acid	B	B	B	AB	A
Styrene	Aromatic hydrocarbon	X	X	X	C	B
Sulfate iron (aqueous solution)	Inorganic salt	A	A	A	AB	A
Sulfur dioxide	Inorganic anhydride	B	X	X	B	A
Sulfur dioxide	Inorganic anhydride	A	CX	C	BC	A
Sulfur exafluoride	Inorganic compound	A	AB	A	AB	A
Sulfuric acid	Inorganic acid	AB	B	B	CX	-
Sulfuric acid 50%	Inorganic acid	A	CX	C	X	A
Sulfuric acid concentr. 96% warm	Inorganic acid	C	X	X	X	B
Sulfuric acid diluted at 20%	Inorganic acid	A	B	AB	X	A
Super petrol	Hydrocarbon	X	B	CX	X	A

**A** Good - Excellent

**B** Fair - Good

**C** Poor

**X** Do not use



# CHEMICAL RESISTANCE OF THE RUBBER COMPOUNDS

Contact fluid	Type	EPDM	NBR	CR	VMQ-PVMQ	FKM
<b>T</b>						
Tannic acid	Organic acid	C	C	AB	B	SA
Tannin	Phenol	A	A	AB	AB	A
Tar	Hydrocarbon	X	B	C	BC	A
Tartaric acid 20%	Organic acid	B	A	B	A	A
Terpineol	Alcohol	C	AB	X	-	A
Tetrabromoethane	Bromurated hydrocarbon	X	X	X	X	A
Tetrabutyl titanate	Titanium compound	A	AB	AB	-	A
Tetrachloroethane	Chlorinated hydrocarbon	X	X	X	X	AB
Tetraethyl lead	Lead compound	X	B	BC	C	A
Tetrahydrofuran	Ether	C	X	X	X	X
Tetraline	Hydrocarbon	X	CX	X	C	A
Thionyl chloride	Organic compound	C	X	X	X	B
Titanium tetrachloride	Titanium compound	X	C	X	X	A
Toluene	Aromatic hydrocarbon	X	CX	X	X	AB
Transformer oil	Oils	X	A	B	B	A
Triacetin	Ester	A	B	B	-	X
Tributylmercaptane	Mercaptan	X	X	X	X	A
Tributyl phosphite	Ester of phosphoric acid	AB	X	X	-	A
Tributyl	Ester	A	X	X	-	X
Trichlorethylene	Chlorinated hydrocarbon	X	X	X	X	AB
Trichloride phosphorus	Inorganic compound	A	CX	X	C	A
Trichloroacetic acid	Organic acid	B	B	C	-	C
Tricresyl phosphate	Ester of phosphoric acid	A	X	CX	B	A
Triethanolamine	Organic base	AB	BC	AB	-	X
Triethylamine	Organic base	CX	AB	C	CX	B
Trinitrotoluene	Nitroderivative	X	X	B	-	B
Trioctyl	Ester of phosphoric acid	A	X	X	C	B
Turpentine essence	Hydrocarbon	X	A	X	X	A
<b>U</b>						
Urea (aqueous solution)	Urea	A	A	A	A	A

**A** Good - Excellent

**B** Fair - Good

**C** Poor

**X** Do not use

# CHEMICAL RESISTANCE OF THE RUBBER COMPOUNDS

Contact fluid	Type	EPDM	NBR	CR	VMQ-PVMQ	FKM
<b>V</b>						
Vinegar	Organic acid	A	BC	B	A	C
Vinyl acetate	Ester	A	A	A	-	A
Vinyl chloride	Chlorinated hydrocarbon	C	X	X	X	A
Vinylidene chloride	Chlorinated hydrocarbon	X	BC	CX	X	B
<b>W</b>						
Water	Water	A	A	A	A	A
Water vapor above 150 °C (302 °F)	Vapor	B	X	X	X	CX
Water vapor at 125 °C - 150 °C (257 °F - 302 °F)	Vapor	AB	C	X	X	BC
Water vapor up to 125 °C (257 °F)	Vapor	A	B	BC	B	AB
Wet chlorine	Inorganic compound	C	C	C	X	AB
Wine	Alcoholic food	A	A	A	A	A
<b>X</b>						
Xylene	Aromatic hydrocarbon	X	CX	X	X	A
Xylidine	Aromatic organic base	C	BC	CX	X	X
<b>Z</b>						
Zinc acetate (aqueous solution)	Inorganic salt	A	B	B	X	X
Zinc chloride (aqueous solution)	Inorganic salt	A	A	A	A	A
Zinc sulphate (aqueous solution)	Inorganic salt	A	A	A	A	A

**A** Good - Excellent

**B** Fair - Good

**C** Poor

**X** Do not use

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