

INTRODUCTION

We thank you for your interest in our range of products and services and hope that you find this catalogue helpful.

We have tried to list as much relevant information as possible, but should you find that your particular requirements are not listed, then please contact our sales office who will be pleased to help.

This catalogue is one of a set and should you require others in the series, please do not hesitate to call.

Whilst every effort is made to ensure that the information is accurate and correct, the conditions under which Portmere Rubber products are used are beyond our control and therefore our recommendations are made without warranty or guarantee. Portmere Rubber reserve the right to change specifications without prior notice.

We shall be pleased to accept your enquiry or order, whether large or small. Orders over any distance will be met from our two factories in the south of England.

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Catalogue 5

Basic Properties

Section 1

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Basic Properties of Rubber	5.	1.	1
Basic Properties of Rubber	5.	1.	2

These are only a guide and variations are available to each type that can alter their properties

1 STYRENE BUTADIENE RUBBER - SBR.

Good physical properties, including abrasion resistance. Not resistant to oils and fuels and is not U/V stable.

Temperature range -55°C to +85°C.

2 NATURAL RUBBER - NR.

Excellent physical properties including abrasion and low temperature resistance. Not resistant to oils and fuels and not U/V stable.

Temperature range -60°C to +75°C.

3 CHLOROPRENE RUBBER - CR.

Excellent U/V resistance and, flame retarding. Moderate resistance to oil and chemicals.

Temperature range -40°C to +95°C.

4 ACRYLONITRILEBUTADIENE RUBBER - NBR.

Excellent resistance to petroleum based fluids. Good physical properties. Not U/V stable.

Temperature range -20°C to +100°C.

5 ETHYLENE PROPYLENE DIENE MONOMER - EPDM.

Excellent resistance to steam, aging, U/V and chemicals. Not resistant to oil and fuels.

Temperature range -50°C to +130°C.

6 HYPALON - CSM.

Excellent resistance to U/V, weathering, and acids. Good abrasion and heat resistance. Fair resistance to petroleum based fluids.

Temperature range -25°C to +130°C.

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PROPERTIES OF RUBBER

7 VITON - FPM.

Very good chemical and high temperature resistance. Excellent resistance to oil and fuels including aromatics.

Temperature range -20°C to +205°C.

8 SILICONE - SI.

Excellent resistance to temperature, chemical and U/V. Poor resistance to fuels.

Temperature range -60°C to +205°C.

9 PVC

Excellent chemical, corrosion and U/V resistance.

Temperature range -20°C to +55°C.

10 POLYURETHANE - PU.

Excellent chemical, fuel, temperature and abrasion resistance. Highly elastic and very flexible.

Temperature range -30°C to +70°C.

11 BUTYL - IIR.

Excellent U/V resistance. Low permeability to air and gasses. Good physical properties. Heat resistant. Poor resistance to petroleum based fluids.

Temperature range -40°C to +135°C.

12 THERMOPLASTIC ELASTOMER - TPE.

Excellent U/V and temperature resistant. Low odour permeability. Good resistance against fuels and oils.

Temperature range -20°C to +100°C.

Measurements of Rubber Properties

Section 2

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MEASUREMENT OF RUBBER PROPERTIES

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Property	METHOD OF MEASUREMENT	ASTM REFERENCE	BS REFERENCE	ISO REFERENCE
Rubber	Elastomeric (i.e. rubbery or resilient) thermoset.			
Hardness	Measured in degrees and based on the penetration into the rubber of a defined indenter under a set load. These scales are commonly used: IRHD (International Rubber Hardness Degrees), Shore A, and Shore D for hard materials over 90o Shore A. IRHD is preferred for most specifications but Shore A is also in widespread use.	D2240 D1415	BS 903 Part A26	// ISO 48 // ISO 1400 // ISO 1818
Tensile Strength	This is measured in various units and is expressed as a force per unit area. A standard dumbbell type test piece of known cross sectional area is used which is stretched until it breaks. The force required to do so is then recorded and expressed as force per unit area.	D412	BS 903 Part A2	// ISO 37
Elongation	Elongation is defined as the length at breaking point expressed as a percentage of its original length (i.e. length at rest) e.g. if a rubber reaches twice its length before breaking its elongation is 100%.	D412	BS 903 Part A2	// ISO 37
Modulus	Modulus is measured as the force per unit area required to extend a rubber to a stated percentage of its original length e.g. to 100%, 200% or 300%. It is often written as M100=3.0 Mpa (i.e. modulus at 100% = 3.0 Mpa).	D412	BS 903 Part A2	// ISO 37
Compression Set	A cylindrical button of rubber of known thickness is compressed to a fixed height (typically 70% or 75% of its original height) at a defined temperature for a specified period of time. The button is then released, allowed to recover (typically for 30 mins) and the thickness is measured. Compression set is the height that is not recovered expressed as a percentage of the amount by which it was compressed.	D395	BS 903 Part A6	// ISO 815
Permanent Set (Tensile Set)	A standard test piece of known length is stretched by a stated percentage for a period of time and is then released. After recovery the length is measured and the change in length (i.e. unrecovered length) is expressed as a percentage of extended length.	D412	BS 903 Part A5	// ISO/R 1767
Density (Specific Gravity)	Density is defined as the mass per unit volume and is measured by weighing the rubber sample in air and water. $S.G = \frac{\text{weight in air}}{\text{weight in air} - \text{weight in water}}$		BS 903 Part A	/// ISO 2781
Resilience	Resilience is measured on standard test equipment (of which there are several types- e.g. Dunlop, Tripsometer, Lupke, Rebound). Standard test pieces are struck by the 'hammer' and the 'bounce back' of the hammer measured. This is expressed as a percentage of the flight path of the hammer.	D1054 D2637	BS 903 Part A8	// ISO/R 1767
Chemical Resistance	This is usually expressed as the change in properties (such as hardness, strength and elongation at break) caused by the presence of chemicals under defined conditions (including concentration, time and temperature).			

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MEASUREMENT OF RUBBER PROPERTIES

Property	METHOD OF MEASUREMENT	ASTM REFERENCE	BS REFERENCE	ISO REFERENCE
Fluid Resistance	<p>Fluid resistance is commonly measured by the effect of the fluid on the volume of the rubber expressed as a volume change (e.g. + 100% indicates that the volume of the rubber has doubled as a result of exposure to the fluid, - 10% indicates that the volume of rubber has decreased as a result of exposure to the fluid.) Volume change is measured by determining the weight of a sample in air and water before and after exposure to the fluid under defined conditions.</p> $\text{Volume change (\%)} = \frac{(W_3 - W_4) - (W_1 - W_2)}{(W_1 - W_2)} \times 100$ <p>Fluid resistance may also be defined in the same way as chemical resistance (above) i.e. by change in properties of the rubber.</p> <p>W₁ Wt in air (initial) W₂ Wt in water (initial) W₃ Wt in air (swollen) W₄ Wt in water (swollen)</p>	D471	BS 903 Part A16	/// ISO 1817
Weather Resistance	<p>Weather resistance is a fairly subjective test and it is necessary to state clearly the conditions under which the exposure took place i.e. dates, geographic location, angle and direction of exposure relative to the sun etc. The properties of test pieces are measured before and after sun exposure and expressed as percentage changes (with the exception of hardness changes which are usually recorded in degrees). The change in any property may be measured but the most common are hardness, tensile strength, elongation at break and modulus at 100% and 300%.</p>	D1171	BS 903 Part A53 BS 903 Part A54 BS 903 Part A55	
Ozone Resistance	<p>Ozone causes cracking in rubber. Test pieces are usually placed under a small degree of tension e.g. by bending round a mandril or stretching by 5%. The sample is exposed under static conditions to a controlled atmosphere containing ozone (typically 50pphm)</p> <p>The cracks are graded by standard photographs, by measurements or by description, e.g. 'visible under 10x magnification' 'visible to the unaided eye' etc. Results may be recorded as the time taken to reach a particular grade of cracking, or by the grade of cracking apparent after a fixed period of time.</p>	D1149	BS 903 Part A43	/// ISO 1431/1
Tear Strength	<p>Tear strength is measured as the force is required to tear a standard test piece. The standard test pieces are designed to produce weak points where a tear is initiated.</p>	D624	BS 903 Part A3	/// ISO 34
Abrasion Resistance	<p>Abrasion properties of rubber are difficult to define. Many different abrasion machines have been designed but they do not always give similar results. The most common abraders are AKRON, Dunlop and Du Pont. Results are recorded as volume loss per standard test piece, or as the difference in volume loss when compared with a standard material of known abrasion value. Indices of relative abrasion are also used.</p>	D394	BS 903 Part A9	

Dimensional Tolerances

Section 3

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DIMENSIONAL TOLERANCES HOSE

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INSIDE AND OUTSIDE DIAMETER TOLERANCES

I.D.		Tolerances		I.D.		Tolerances	
mm	inch	mm	inch	mm	inch	mm	inch
10	3/8	± 0.75	± 0.030	63.5	2.1/2	± 1.50	± 0.059
13	1/2	± 0.75	± 0.030	80	3.1/2	± 2.00	± 0.079
16	5/8	± 0.75	± 0.030	102	4	± 2.00	± 0.079
19	3/4	± 0.75	± 0.030	127	5	± 2.00	± 0.079
25	1	± 1.25	± 0.049	152	6	± 2.00	± 0.079
32	1.1/4	± 1.25	± 0.049	203	8	± 2.00	± 0.079
40	1.9/16	± 1.50	± 0.059	254	10	± 3.00	± 0.118
51	2	± 1.50	± 0.059	315	12.3/8	± 3.00	± 0.118

LENGTH TOLERANCES

Tolerances for Specific Cut Lengths of Hose

These tolerances apply to hose which is made in conventional lengths and then cut to specified shorter pieces.

Length		Tolerances	
mm	Inch	± mm	± inch
305 and under	12 and under	3.18	0.125
305 through 610	over 12 through 24	4.80	1.188
611 through 915	over 24 through 36	6.40	0.250
916 through 1220	over 36 through 48	9.50	0.375
1221 through 1830	over 48 through 72	12.70	0.500
over 1830	over 72	1%	1%

Tolerances for Hose Built to length

When fittings or special ends are applied at time of manufacture, tolerance to overall length.

Length		Tolerances	
Metres	Feet	± mm	± inch
1.5 and under	5 and under	25.40	1
over 1.5 through 3.0	over 5 through 10	38.00	1.5
over 3.0 through 6.0	over 10 through 20	64.00	2.5
over 6.0	over 20	1%	1%

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RUBBER EXTRUSION TOLERANCES

BS 3734

TABLE 2 - Tolerances on cross sectional dimensions.
Values in millimetres and inches.

	Nominal Dimension		Class E1	Class E2	Class E3
	above	up to	±	±	±
MM	0.000	2.500	0.200	0.350	0.500
INS	0.000	0.098	0.008	0.014	0.020
MM	2.500	4.000	0.250	0.400	0.700
INS	0.098	0.158	0.100	0.016	0.028
MM	4.000	6.300	0.350	0.500	0.800
INS	0.158	0.248	0.013	0.020	0.031
MM	6.300	10.000	0.400	0.700	1.000
INS	0.248	0.394	0.016	0.028	0.040
MM	10.000	16.000	0.500	0.800	1.300
INS	0.400	0.630	0.020	0.031	0.051
MM	16.000	25.000	0.700	1.000	1.600
INS	0.630	0.984	0.028	0.400	0.063
MM	25.000	40.000	0.800	1.300	2.000
INS	0.984	1.575	0.031	0.051	0.080
MM	40.000	63.000	-	1.600	2.500
INS	1.575	2.480	-	0.063	0.098
MM	63.000	100.000	-	2.000	3.200
INS	2.480	3.937	-	0.080	0.126

All Portmere Extrusions are to E2 Tolerances unless otherwise stated for sizes up to 100mm.

Above this size - please enquire.

Dimensional Tolerances

Moulding

5-3-3

Tolerances for moulded products to ISO 3302 1995 (BS 3734)

Table classes M1 (Precision) and M2 (Commercial) values in mm

F= Fixed Dimensions

C= Closure Dimensions

Nominal Dimension		Class M1		Class M2	
Above	Up to	± F	± C	± F	± C
0	2.5	0.08	0.08	0.10	0.15
2.5	4.0	0.08	0.10	0.10	0.15
4.0	6.3	0.10	0.10	0.15	0.20
6.3	10.0	0.10	0.15	0.20	0.25
10.0	16.0	0.15	0.20	0.25	0.30
16.0	25.0	0.20	0.25	0.25	0.35
25.0	40.0	0.20	0.25	0.35	0.45
40.0	63.0	0.25	0.35	0.40	0.50
63.0	100.0	0.35	0.40	0.50	0.65
100.0	160.0	0.40	0.50	0.70	0.90

Dimensional Tolerances Sheeting

STANDARD - THICKNESS TOLERANCES

Nominal Thickness mm	Elastomer Sheetings
0.5	± 0.2
1.0	± 0.2
1.5	± 0.2
2.0	± 0.3
2.5	± 0.3
3.0	± 0.3
4.0	± 0.3
5.0	± 0.4
6.0	± 0.4
8.0	± 0.7
10.0	± 0.7
12.0	± 0.8
15.0	± 0.8
20.0	± 1.0
25.0	± 1.25
30.0	± 1.5
35.0	± 1.75
40.0	± 2.0
45.0	± 2.25
50.0	± 2.5

British Standards

Section 4

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There are three main British Standards for rubber compounds: BS 1154, BS 2752 and BS 2751.
For Natural Rubber, Chloroprene (Neoprene) and Nitrile

Common British Standards

Natural rubber compounds (high quality)

5-4-1

This British Standard specifies requirements for four non-black natural rubber compounds designated W40, W50, W60, W70, three non - black natural rubber / zinc oxide compounds designated Y40, Y50, Y60 and five black natural rubber compounds designated Z40, Z50, Z60, Z70, Z80, according to vulcanised hardness as shown in the table below.

These high quality compounds are primarily intended to meet the requirements of Government departments for various rubber items in the form of mouldings, moulded or calendered sheet, and items cut or punched from sheet. They are for general purpose applications only and are not recommended when special properties are required such as improved ozone or heat resistance, freedom from tarnishing or corrosion of some metallic components (copper, silver), long term low-temperature use, or seals in castor oil-based fluid systems.

The compounds do not necessarily have good electrical insulating properties.

Compound Designation

Designation	Hardness degrees (IRHD) after vulcanisation
W40 Y40 Z40	⁺⁵ 40 ₋₄
W50 Y50 Z50	⁺⁵ 50 ₋₄
W60 Y60 Z60	⁺⁵ 60 ₋₄
W70 - Z70	⁺⁵ 70 ₋₄
- - Z80	⁺⁵ 80 ₋₄

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Common British Standards Vulcanized Chloroprene Rubbers

This British Standard specifies requirements for five chloroprene rubber vulcanisates designated C40 to C80 according to their hardness as shown in the table below.

These vulcanisates are primarily intended to meet the requirements of Government departments for rubber items in the form of extrusions, mouldings, sheet and items cut or punched from sheet, in which resistance to weather and certain organic liquids is a necessary property, but stiffening at temperatures can be tolerated. Compounds made to this specification may not have good electrical insulating properties.

Compound Designation

Designation	Hardness degrees (IRHD)
C 40	40 ⁺⁵ ₋₄
C 50	50 ⁺⁵ ₋₄
C 60	60 ⁺⁵ ₋₄
C 70	70 ⁺⁵ ₋₄
C 80	80 ⁺⁵ ₋₄

Compound C40 is not necessarily suitable for extrusion

Common British Standards

Acrylonitrile - Butadiene Rubber Compounds

5-4-3

These compounds are intended for the manufacture of items in the form of extrusions, mouldings, sheet and items cut or punched from sheet in which resistance to certain organic liquids, in particular hydrocarbon fuels and oils, is a necessary property, but where some stiffening at temperatures below -20 °c can be tolerated. They are primarily intended to meet many of the ordinary requirements of Government departments.

Compounds complying with the requirements of BS 2751 may not have good electrical insulating properties whereas vulcanisates complying with the requirements of BS 3222 are available with specific electrical properties.

Compound Designation

Designation	Hardness after vulcanisation (IRHD)
BS 2751 BA 40	40 ⁺⁵ ₋₄
BS 2751 BA 50	50 ⁺⁵ ₋₄
BS 2751 BA 60	60 ⁺⁵ ₋₄
BS 2751 BA 70	70 ⁺⁵ ₋₄
BS 2751 BA 80	80 ⁺⁵ ₋₄
BS 3222 M (mechanical)	60 ⁺⁵ ₋₄
BS 3222 E (electrical)	60 ⁺⁵ ₋₄

Conversion Tables

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CONVERSION TABLES.

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LENGTH

	inches	feet	yards	metres	mm's
1 inch	= -	0.0833	0.0277	0.0254	25.4
1 foot	= 12	-	0.3333	0.3048	304.8
1 yard	= 36	3	-	0.9144	914.4
1 metre	= 39.37	3.2808	1.0936	-	1000
1 mm	= 0.0394	0.0033	0.0011	0.0010	-

VOLUME

	U.K. gall	U.S. gall	cu. ft.	litre	c.m.
1 UK gallon	= -	1.200	0.160	4.546	0.0045
1 US gallon	= 0.833	-	0.134	3.785	0.0036
1 cu. ft.	= 6.229	7.480	-	28.316	0.0283
1 litre	= 0.220	0.264	0.353	-	0.0010
1 c.m.	= 219.969	264.172	35.315	1000	-

PRESSURE

	bars	atmos- phere	mm/Hg	metres head of water	lbf/in ²	in/Hg	feet head of water
1 Bar	= 1	0.9700	750	10.2	14.5	29.53	33.4
1 Atmosphere	= 1.0100	1	760	10.33	14.7	29.92	33.9
1mm Hg	= 0.0013	0.0013	1	0.0136	0.0193	0.0394	0.0446
1 m head of water	= 0.9078	0.0968	73.560	1	1.4220	2.8960	3.2810
1 lbf/in ²	= 0.0690	0.0680	51.710	0.7031	1	2.0360	2.0370
1 in Hg	= 0.0340	0.0334	25.400	0.3453	0.4911	1	1.1330
1 ft. head of water	= 0.0300	0.0295	22.420	0.3048	0.4325	0.8827	1
METRIC UNITS							
1 kPa (Kilopascal)	=	0.154 psi		=	0.01 bars		
1 MPa (Megapascal)	=	145.04 psi		=	10 bars		
1 kp/cm ²	=	14.20 psi		=	0.98 bars		
1 kgf/cm ²	=	14.20 psi		=	0.98 bars		

5-5-2

CONVERSION TABLES.

VACUUM

ATM	PSI	<u>water</u>		<u>mercury</u>		%
		metre	feet	mm	inches	
0.1	1.4	1	3' 3.3/8"	73.6	2.9	10
0.2	2.8	2	6' 6.3/4"	147.1	5.8	20
0.3	4.2	3	9' 10.1/8"	220.7	8.7	30
0.4	5.7	4	13' 1.1/2"	294.2	11.6	40
0.5	7.1	5	16' 4.13/16"	367.8	14.5	50
0.6	8.5	6	19' 8.3/16"	441.3	17.4	60
0.7	10.0	7	22' 11.9/16"	514.9	20.3	70
0.8	11.4	8	26' 2.15/16"	588.4	23.2	80
0.9	12.8	9	29' 6.3/8"	662.0	26.0	90
1.0	14.2	10	32' 9.11/16"	735.5	29.0	100

CONVERSION TABLES

5-5-3

TEMPERATURE CONVERSION CHART.
Fahrenheit - Celcius (Centigrade).

°C		°F	°C		°F	°C		°F
-46	-50	-58	21	70	158	138	280	536
-43	-45	-49	24	75	167	143	290	554
-40	-40	-40	27	80	176	149	300	572
-35	-30	-22	29	85	185	154	310	590
-32	-25	-13	32	90	194	160	320	608
-29	-20	-4	35	95	203	166	330	626
-26	-15	+5	38	100	212	171	340	644
-23	-10	14	43	110	230	177	350	662
-21	-5	23	49	120	248	182	360	680
-18	0	32	54	130	266	188	370	698
-15	+5	41	60	140	284	193	380	716
-12	10	50	66	150	302	199	390	735
-10	15	59	71	160	320	204	400	752
-7	20	68	77	170	338	210	410	770
-4	25	77	82	180	356	216	420	788
-1	30	86	88	190	374	221	430	806
0	32	90	99	210	410	227	440	824
+2	35	95	100	212	414	232	450	842
5	40	104	104	220	428	238	460	860
7	45	113	110	230	446	243	470	878
10	50	122	116	240	464	249	480	896
13	55	131	121	250	482	254	490	914
16	60	140	127	260	500	260	500	932
18	65	149	132	270	518			

How to use the table.

Locate the temperature in bold type and read the equivalent °F in the right hand column and the equivalent °C in the left hand column.

Example:

- 1 °C to °F. You wish to convert 40°C to °F. Locate 40 in the bold typeface column and read the appropriate temperature in the °F column to the right. The answer is 104°F.
- 2 °F to °C. To convert 40°F to °C, locate 40 in the bold typeface column, and the °C to the left will show that the answer is 5°C.

Rubber Terms

Section 6

Rubber Terms	cat	sect	page
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Calendering	Producing rubber in continuous sheets by processing it through a series of rollers.
Compound	A general word used to describe a particular formulation or 'recipe', or as a descriptive term for unvulcanised rubber in general. It is used in such applications as 'Compounding ingredients', 'Compound no. XYZ', etc.
Compression Set	The degree to which a rubber does not recover fully to its original state after it has been compressed for a long period of time.
Curing	Also known as vulcanisation, this is the permanent change which the rubber undergoes during moulding. When mixed, rubber compounds are thermoplastic and will melt and deform easily. After curing, the rubber is heat stable.
Elastomer	General term used to describe all natural and synthetic polymeric materials which have rubbery or 'elastic' properties.
Extrusion	Producing continuous lengths of rubber with a constant profile by forcing it through a die under pressure and vulcanising it. Harboro does not specialise in this sector of the industry.
Heat Ageing	Also known as 'accelerated ageing'. Rubber materials are often tested for shorter times at higher temperatures to predict what will happen over longer times and at lower temperatures.
Modulus	The relationship between stress (force) and strain (extended length). Modulus is usually given as the stress (or force) required to extend a rubber.
Polymer	General term used to describe all rubbers and plastics. In fact, it is the chemical term used to describe all organic materials which are formed from chains of repeated chemical units.
Resilience	The technical term used to describe 'bounce' or 'snap'. Increasing resilience means an increasing 'bounciness'.
Set	The degree to which a rubber does not fully recover to its original shape after it has been deformed for a long period of time. Also called 'permanent set'.
Thermoplastic	Any material which melts on heating and resets on cooling. This melting and refreezing can be repeated indefinitely.
Vulcanisation	The permanent chemical change that a rubber undergoes on heating together with chemicals. The chemicals which accomplish this change are called 'vulcanising agents'.

Elastomer Chemical Resistance Guide

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Methyl Acetate - Monovinyl Acetate	5.	7.	14
Motor Oil - Octylene Glycol	5.	7.	17
Oil, Petroleum - Phenois (di-nitrols)	5.	7.	18
Phenolsulfonic Acid - Potassium Nitrate	5.	7.	19
Potassium Nitrite - Secondary Butyl Alcohol	5.	7.	20
Sewage - Sodium Perborate	5.	7.	21
Sodium Peroxide - Terpeneol	5.	7.	22
Tertiary Butyl Alcohol - Tricresyl Phosphate (TCP)	5.	7.	23
Triethanolamine (TEA) - Xylene (Xylol)	5.	7.	24
Xylidine - Zinc Sulphate	5.	7.	25

Elastomer Chemical Resistance Guide

Acetal - Ammonia Anhydrous

5-7-1

	Natural Rubber	Buna-S (SBR)	Butyl	Nitrite (Hycar, Buna-N)	Neoprene	Hypalon	EPDM	Viton	Teflon
Acetal	C	C	G	D	C	C	G	D	E
Acetaldehyde	C	D	E	D	C	C	E	D	E
Acetamide	C	C	E	G	G	G	E	G	E
Acetate Solvents	C	D	C	D	D	D	C	D	E
Acetic Acid 10%	G	G	G	G	C	C	G	C	E
Acetic Acid 30%	D	D	G	D	C	G	E	C	E
Acetic Acid 50%	D	D	G	C	C	D	E	D	E
Acetic Acid Glacial	D	D	G	D	C	D	G	D	E
Acetic Anhydride	D	D	G	D	D	D	G	D	E
Acetic Ester (Ethyl Aceate)	D	D	G	D	D	D	G	D	E
Acetic Ether (Ethyl Acetate)	D	D	G	D	D	C	G	D	E
Acetic Oxide (Acetic Anhydride)	D	D	G	D	D	D	G	D	E
Acetone	G	C	E	D	C	C	E	D	E
Acetophenone	C	D	E	D	D	D	E	D	E
Acetyl Acetone	G	D	G	D	D	D	G	D	E
Acetyl Chloride	D	D	C	D	D	D	C	G	G
Acetylene	D	D	E	E	G	G	G	E	E
Acrylonitrile	C	D	D	D	C	C	D	D	E
Air	E	E	E	E	E	E	E	E	E
Alcohols, Aliphatic	E	G	E	E	E	E	E	C	E
Alcohols Aromatic	C	D	D	C	C	D	D	E	E
Alk Tri (Trichloroethylene)	D	D	D	D	D	D	D	E	E
Allyl Alcohol	E	G	E	E	E	E	E	G	E
Allyl Bromide	D	D	D	D	D	D	D	G	G
Allyl Chloride	D	D	D	D	D	D	D	G	G
Alum (Aluminium Potassium Sulphate)	E	E	E	E	E	E	E	E	E
Aluminium Acetate	C	C	E	C	C	G	E	E	E
Aluminium Chloride	E	E	E	E	E	E	E	E	E
Aluminium Fluoride	E	E	E	E	E	E	E	E	E
Aluminium Hydroxide	E	E	E	E	E	E	E	E	E
Aluminium Nitrate	E	E	E	E	E	E	E	E	E
Aluminium Phosphate	E	E	E	E	E	E	E	E	E
Aluminium, Sulphate, Ammonia, Anhydrous	E	C	E	E	E	G	E	D	E

Key
E - Excellent. Suitable for continuous service.
G - Good. Generally suitable for continuous or intermittent service.
C - Conditional. Not recommended for continuous or intermittent service.
D - DO NOT USE
- No experience

Elastomer Chemical Resistance Guide

5-7-2

Ammonia, Liquid - Ansul Ether

	Natural Rubber	Buna-S (SBR)	Butyl	Nitrite (Hycar, Buna-N)	Neoprene	Hypalon	EPDM	Viton	Teflon
Ammonia, Liquid	G	G	E	E	E	E	E	E	E
Ammonia, in Water	G	G	G	G	G	G	E	G	E
Ammonia Gas (Cold)	E	-	E	E	E	E	-	-	D
Ammonia Gas (150F)	C	-	C	C	G	-	-	-	D
Ammonium Carbonate	E	E	E	C	E	E	E	E	E
Ammonium Chloride	E	E	E	E	E	E	E	E	E
Ammonium Hydroxide	G	G	E	G	G	E	G	G	E
Ammonium Metaphosphate	E	E	E	E	E	E	E	E	E
Ammonium Nitrate	G	E	E	E	E	E	E	E	E
Ammonium Nitrite	E	E	E	E	E	E	E	E	E
Ammonium Persulfate	E	D	E	D	E	E	E	E	E
Ammonium Phosphate	E	E	E	E	E	E	E	E	E
Ammonium Sulphate	E	E	E	E	E	E	E	E	E
Ammonium Sulphide	E	E	E	E	E	E	E	E	E
Ammonium Sulphite	E	E	E	E	E	E	E	E	E
Ammonium Thiocyanate	E	E	E	E	E	E	E	E	E
Ammonium Thiosulphate	E	E	E	E	E	E	E	E	E
Amyl Acetate	C	D	G	D	D	D	G	D	E
Amyl Acetone	D	D	G	D	D	D	G	D	E
Amyl Alcohol	E	E	E	E	E	E	E	E	E
Amylamine	G	G	G	G	G	C	G	D	E
Amyl Borate	D	D	D	E	E	C	D	E	E
Amyl Chloride	D	D	D	D	D	D	D	E	E
Amyl Chloronaphthalene	D	D	D	D	D	D	D	E	E
Amyl Napthalene	D	D	D	D	D	D	D	E	E
Amyl Oleate	D	D	G	D	D	D	G	C	E
Amyl Phenol	D	D	D	D	D	D	D	E	E
Anethole	D	D	D	D	D	D	D	G	G
Aniline	D	D	G	D	C	C	D	G	E
Aniline Dyes	G	G	G	C	G	G	G	G	E
Aniline Hydrochloride	G	C	G	G	D	D	G	E	E
Animal Fats	D	D	G	E	G	G	G	E	E
Animal Grease	D	D	D	G	G	D	C	E	E
Animal Oils	D	D	G	E	D	D	C	E	E
Ansul Ether	D	D	C	C	D	D	C	D	E

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- No experience

Elastomer Chemical Resistance Guide

Antifreeze (Ethylene Glycol) - Bismuth Carbonate

5-7-3

	Natural Rubber	Buna-S (SBR)	Butyl	Nitrite (Hycar, Buna-N)	Neoprene	Hypalon	EPDM	Viton	Teflon
Antifreeze (Ethylene Glycol)	E	E	E	E	E	E	E	E	E
Antimony Chloride	-	-	E	G	-	-	-	-	E
Antimony Trichloride	D	D	E	G	G	G	G	E	E
Antimony Pentachloride	D	D	C	D	D	D	C	E	G
Aqua Regia	D	D	D	D	D	C	C	G	-
Aromatic Hydrocabons	D	D	D	C	D	D	D	E	E
Arquad	E	E	E	E	E	E	E	E	E
Arsenic Acid	E	E	E	E	E	E	E	E	E
Arsenic Chloride	D	D	G	D	G	D	G	D	-
Arsenic Trichloride	D	D	G	D	G	D	G	D	-
Asphalt	D	D	D	E	G	D	D	E	G
ASTM #1 Oil	D	D	D	E	E	G	D	E	E
ASTM #2 Oil	D	D	D	E	G	C	D	E	E
ASTM #3 Oil	D	D	D	E	G	C	D	E	E
Aviation Gasoline	D	D	D	E	C	D	D	E	E
Bardol B	D	-	D	D	D	-	-	-	C
Barium Carbonate	E	E	E	E	E	E	E	E	E
Barium Chloride	E	E	E	E	E	E	E	E	E
Barium Hydroxide	E	E	E	E	E	E	E	E	E
Barium Sulphate	E	E	E	E	E	E	E	E	E
Barium Sulphide	E	E	E	E	E	E	E	E	E
Beet Sugar Liquors	E	E	E	E	E	E	E	E	E
Benzaldehyde	D	D	G	D	D	D	G	D	E
Benzene (Benzol)	D	D	D	C	C	D	D	E	E
Benzene Sulfonic Acid	D	D	D	G	E	E	C	E	E
Benzine Solvent (Ligroin)	D	D	D	E	E	C	D	E	E
Benzoic Acid	D	D	G	D	G	G	G	E	E
Benzoic Aldehyde	D	D	D	D	D	D	D	D	E
Benzotrichloride	D	D	D	D	D	D	D	G	G
Benzoyl Chloride	D	D	D	D	D	D	D	G	G
Benzyl Acetate	D	D	G	D	D	G	G	D	E
Benzyl Alcohol	G	G	G	D	G	G	G	E	E
Benzyl Benzoate	C	-	E	D	D	-	-	-	E
Benzyl Chloride	D	D	C	D	D	D	D	E	E
Bichromate of Soda (Sodium Dichromate)	D	D	E	D	G	G	C	E	E
Bismuth Carbonate	E	-	E	E	E	E	-	-	E

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Elastomer Chemical Resistance Guide

5-7-4

Black Sulphate Liquor - Butyric Anhydride

	Natural Rubber	Buna-S (SBR)	Butyl	Nitrite (Hycar, Buna-N)	Neoprene	Hypalon	EPDM	Viton	Teflon
Black Sulphate Liquor	G	G	E	G	E	G	E	E	E
Blast Furnace Gas	D	D	C	C	G	G	C	E	E
Bleach Solutions	D	D	G	D	D	C	G	G	G
Borax	G	G	E	G	E	E	E	E	E
Bordeaux Mixture	G	G	E	E	E	E	E	E	E
Boric Acid	E	E	E	E	E	E	E	E	E
Brandy	E	-	E	E	E	E	-	-	-
Brine	E	E	E	E	E	E	E	E	E
Bromine	D	D	D	D	D	C	D	C	E
Bromine Water	D	D	G	C	G	E	G	E	E
Bromobenzene	D	D	D	D	D	D	D	G	-
Bunker Oil	D	D	D	E	G	D	D	E	E
Butane	REFER TO SUPPLIER								
Butanol (Butyl Alcohol)	E	E	E	E	E	E	E	E	E
Butadiene	D	D	D	D	C	G	D	E	E
1-Butene (Aliphatic Hydrocarbon 95F)	D	-	D	-	E	-	-	-	E
1-Butene, 2-Ethyl (95F)	D	-	D	-	G	-	-	-	E
Butter (Non FDA)	C	C	G	E	E	E	G	E	E
Butyl Acetate	D	D	G	D	D	D	C	D	E
n-Butyl Acetate	C	-	-	D	D	D	-	-	D
Butyl Acetate Recinoleate	C	-	-	E	D	-	-	-	C
Butyl Acrylate	D	D	D	D	D	D	D	D	E
Butylamine	G	C	C	C	D	C	C	D	E
Butyl Benzene	D	D	D	D	D	D	D	E	E
Butyl Bromide	D	D	D	D	D	D	D	G	-
Butyl Butyrate	D	D	C	D	D	D	G	C	-
Butyl Carbitol	D	D	E	G	G	G	E	E	E
Butyl Cellosolve	D	D	E	G	G	G	E	D	E
Butyl Chloride	D	D	C	D	D	D	D	E	G
Butyl Ether	D	D	C	G	G	G	C	D	E
Butyl Oleate	D	D	G	D	D	D	G	E	E
Butyl Phthalate	D	D	C	D	D	D	C	C	E
Butyl Stearate	D	D	C	G	D	D	C	E	E
Butyraldehyde	C	D	D	D	D	D	D	D	E
Butyric Acid	C	D	C	C	C	G	C	C	E
Butyric Anhydride	C	D	C	C	D	G	C	C	E

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Elastomer Chemical Resistance Guide

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Elastomer Chemical Resistance Guide

Cadmium Cyanide - Chlorine Gas (Dry)

5-7-5

	Natural Rubber	Buna-S (SBR)	Butyl	Nitrite (Hycar, Buna-N)	Neoprene	Hypalon	EPDM	Viton	Teflon
Cadmium Cyanide	-	-	E	-	E	-	-	-	E
Calcium Acetate	C	D	E	D	D	D	E	D	E
Calcium Bisulphate	E	E	E	E	E	E	E	E	E
Calcium Bisulphite	E	E	E	E	E	E	E	E	E
Calcium Carbonate	E	E	E	E	E	E	E	E	E
Calcium Chlorate	E	-	E	E	E	E	-	-	E
Calcium Chloride	E	E	E	E	E	E	E	E	E
Calcium Fluorophosphate	-	-	E	-	E	-	-	-	E
Calcium Hydroxide	E	G	E	G	E	G	E	C	E
Calcium Hypochlorite	D	D	G	D	D	C	G	E	-
Calcium Nitrate	E	E	E	E	E	E	E	E	E
Calcium Sulphate	E	E	E	E	E	E	E	E	E
Calcium Sulphite	E	E	E	E	E	E	E	E	E
Caliche Liquor (Crude Seldium Nitrate)	E	E	E	E	E	E	E	E	E
Cane Sugar Liquors (Non FDA)	E	E	E	E	E	E	E	E	E
Carbitol	E	E	E	E	E	E	E	E	E
Carbitol Acetate	D	D	E	D	E	G	G	G	E
Carbolic Acid (Pheno)	D	D	G	C	C	C	G	E	E
Carbon Bisulphide	SEE CARBON DISULFIDE								
Carbon Dioxide	E	E	E	E	E	E	E	E	E
Carbon Disulfide	D	D	D	D	D	D	D	E	E
Carbonic Acid	E	E	E	E	E	E	E	E	E
Carbon Monoxide	E	E	E	E	E	E	E	E	E
Carbon Tetrachloride	D	D	D	C	D	D	D	E	-
Castor Oil	C	D	G	E	G	C	G	E	E
Caustic Potash (Potassium Hydroxide)	E	G	E	E	G	E	E	C	E
Caustic Soda (Sodium Hydroxide)	E	G	E	E	E	E	E	C	E
Cellosolve	D	D	G	G	E	G	G	C	E
Cellulose Acetate	C	D	G	D	C	C	G	D	-
Cellulube	C	D	G	D	D	D	E	C	E
China Wood Oil (Tung Oil)	D	D	G	E	G	G	G	E	E
Chlorine Dioxide	D	D	D	D	D	C	D	E	-
Chlorine Gas (Dry)	C	C	C	C	D	G	C	G	-

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D - DO NOT USE
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Elastomer Chemical Resistance Guide

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Elastomer Chemical Resistance Guide

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Chlorine, Water Solns - Cresols

	Natural Rubber	Buna-S (SBR)	Butyl	Nitrite (Hycar, Buna-N)	Neoprene	Hypalon	EPDM	Viton	Teflon
Chlorine, Water Solns	C	D	C	D	D	G	C	E	E
Chloroacetic Acid	G	D	C	D	D	D	C	C	E
Chloroacetone	D	D	G	D	D	D	C	D	E
Chlorobenzene	D	D	D	D	D	D	D	E	-
Chlorobromomethane	D	-	D	D	D	D	-	-	E
Chlorobutane	D	D	D	D	D	D	D	E	-
Chlorobutadiene	D	D	D	D	D	D	D	E	-
Chloroform	D	D	D	D	D	D	D	E	-
o-Chloronaphthalene	D	-	D	D	D	-	-	-	E
Chlorinated Hydrocarbons	D	D	D	D	D	D	D	E	-
Chloropentane	D	D	D	D	C	D	D	E	E
Chlorophenol	D	D	D	D	D	D	D	G	G
Chloropropanone	D	D	C	D	D	D	C	D	E
Chlorosulfonic Acid	D	D	D	D	D	C	D	D	G
Chlorothene (Trichlorothane)	D	D	D	D	D	D	D	E	G
Chlorotoluene	D	D	D	D	D	D	D	E	G
Chromic Acid	D	D	D	D	D	E	C	C	E
Citric Acid	E	E	E	G	G	E	E	E	E
Coal Oil	D	D	D	E	G	D	D	E	E
Coal Tar	D	D	D	E	G	G	G	E	E
Coal Tar Naptha	D	D	D	C	C	D	D	E	E
Colbalt Chloride	E	E	E	E	E	E	E	E	E
Coconut Oil	D	D	G	E	G	G	E	E	E
Cod Liver Oil	D	D	E	E	G	G	E	E	E
Coke Oven Gas	D	D	C	D	D	G	D	E	E
Copper Arsenate	E	E	E	E	E	E	E	E	E
Copper Chloride	E	E	E	E	E	E	E	E	E
Copper Cyanide	E	E	E	E	E	E	E	E	E
Copper Nitrate	E	E	E	E	E	E	E	E	E
Copper Nitrite	E	E	E	E	E	E	E	E	E
Copper Sulphate	C	E	E	E	E	E	E	E	E
Copper Sulphide	C	E	E	E	E	E	E	E	E
Corn Oil	D	D	G	E	G	G	G	E	E
Cottonseed Oil	D	D	E	E	G	E	E	E	E
Creosote (Wood)	D	D	D	G	C	C	D	E	E
Creosote (Coal Tar)	D	D	D	G	C	C	D	E	E
Cresols	D	D	D	C	C	C	D	E	E

Key

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Elastomer Chemical Resistance Guide

Cresylic Acid - Dichlorodifluoromethane (Freon 12)

5-7-7

	Natural Rubber	Buna-S (SBR)	Butyl	Nitrite (Hycar, Buna-N)	Neoprene	Hypalon	EPDM	Viton	Teflon
Cresylic Acid	D	D	D	C	C	C	D	E	E
Crotonaldehyde	D	D	E	D	D	D	C	D	E
Crude Oil	D	D	D	E	G	D	D	E	E
Cryolite 10% (Alum/Sodium Floride)	-	-	E	G	E	-	-	-	E
Cumene	D	D	D	C	C	D	D	E	E
Cupric Carbonate	C	C	E	G	G	G	E	E	E
Cupric Chloride	C	C	E	E	G	E	E	E	E
Cupric Nitrate	C	C	E	E	G	E	E	E	E
Cupric Nitrite	C	C	E	E	G	E	E	E	E
Cupric Sulphate	C	G	E	E	G	G	E	E	E
Cyclohexane	D	D	D	G	D	D	D	E	E
Cyclohexanone	D	D	D	D	D	D	D	C	E
Cyclohexanol	D	D	D	G	G	D	D	G	E
Cyclopentane	D	D	D	C	D	D	D	E	E
p-Cymene	D	D	D	C	D	D	D	E	E
DT in Kerosene	D	D	D	E	G	C	D	E	E
Decaline	D	D	D	D	D	D	D	E	E
Deionised Water*	E	E	E	E	E	E	E	E	E
Decane	D	D	D	G	D	D	D	E	E
Detergent Solutions	G	G	E	E	E	E	E	E	E
Diacetone Alcohol	D	D	E	D	D	G	G	D	E
Diamylamine	G	C	E	G	E	C	C	G	E
Dibenzyl Ether	D	D	D	D	D	D	D	C	E
Dibenzyl Sebacate	C	D	G	D	D	C	G	G	E
Dibromobenzene	D	D	D	D	D	D	D	E	G
Dibutylamine	G	C	C	G	E	C	G	D	E
Dibutylether	D	D	D	D	D	D	G	C	E
Dibutylphthalate	D	D	G	D	D	D	E	D	E
Dibutyl Sebacate	D	D	G	D	D	D	G	D	G
Dicalcium Phosphate	E	E	E	E	E	E	E	E	E
Dichloroacetic Acid	D	D	C	D	D	D	C	C	E
P-Dichlorobenzene	D	D	D	D	D	D	D	E	E
Dichlorobutane	D	D	D	D	D	D	D	E	E
Dichloroisopropyl Ether	D	D	C	D	D	D	C	C	E
Dicyclohexylamine	D	D	D	C	D	D	C	C	G
Dichlorodifluoromethane (Freon 12)	D	D	D	G	D	D	D	G	E

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D - DO NOT USE
- No experience
* Teflon is not recommended here dionization levels are critical

Elastomer Chemical Resistance Guide

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Elastomer Chemical Resistance Guide

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Dichloroethane - Dimethylformamide (DMF)

	Natural Rubber	Buna-S (SBR)	Butyl	Nitrite (Hycar, Buna-N)	Neoprene	Hypalon	EPDM	Viton	Teflon
Dichloroethane	D	D	D	D	D	D	D	E	E
Dichloroethylene	D	D	D	D	D	D	D	E	E
Dichloroethyl Ether	D	D	D	D	D	D	D	C	E
Dichlorohexane	D	D	D	D	D	D	D	E	E
Dichloromethane	D	D	D	D	D	D	D	E	E
Dichloropentane	D	D	D	D	D	D	D	E	E
Dieidrin In Xylene	D	D	D	D	D	D	D	E	E
Dieidrin in Xylene and Water Spray	D	D	D	G	G	D	D	E	E
Diesel Oil	D	D	D	E	G	C	D	E	E
Diethanolamine	G	C	G	G	G	C	C	G	E
Diethylamine	G	C	G	G	G	C	C	D	E
Diethyl Benzene	D	D	D	D	D	D	D	E	E
Diethyl Ether	D	D	D	G	C	C	C	D	E
Diethylene Dioxide	D	D	G	D	D	D	G	D	E
Diethylene Glycol	E	E	E	E	E	E	E	E	E
Diethylenetriamine	G	G	E	G	G	C	E	C	E
Diethyl Phthalate	D	D	D	E	D	D	G	C	E
Diethyl Sebacate	D	D	D	E	D	D	G	C	E
Diethyl Sulphate	D	D	G	D	D	D	G	C	E
Diethyl Triamine	G	C	E	G	G	C	G	C	E
Dihydroxyethyl Amine	G	C	E	G	G	C	G	C	E
Diisobutylene	D	D	D	E	G	D	G	E	E
Diisobutyl Ketone	D	D	D	G	D	D	G	D	E
Diisodecyl Adipate	D	D	E	D	D	C	E	C	E
Diisodecyl Phthalate	D	D	E	D	D	C	E	C	E
Diisooctyl Adipate	D	D	E	D	D	C	E	C	E
Diisooctyl Phthalate	D	D	E	D	D	C	E	C	E
Diisopropanol Amine	G	C	E	G	G	C	E	C	E
Diisopropyl Benzene	D	D	D	C	D	D	D	E	E
Diisopropyl Ether	D	D	D	G	C	D	D	G	E
Diisopropyl Ketone	D	D	E	DD	D	D	E	D	E
Dilauryl Ether	D	D	D	D	D	D	D	C	E
Dimethylamine	G	C	E	G	G	C	E	C	E
Dimethyl Benzene	D	D	D	D	D	D	D	E	E
Dimethylaniline	D	D	D	D	D	D	C	D	G
Dimethylformamide (DMF)	C	C	C	D	C	C	C	D	E

Key
E - Excellent. Suitable for continuous service.
G - Good. Generally suitable for continuous or intermittent service.
C - Conditional. Not recommended for continuous or intermittent service.
D - DO NOT USE
- No experience
* Teflon is not recommended where deionization levels are critical

Elastomer Chemical Resistance Guide

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Elastomer Chemical Resistance Guide

Dimethyl Ketone (Acetone) - Ethyl Acrylate

5-7-9

	Natural Rubber	Buna-S (SBR)	Butyl	Nitrite (Hycar, Buna-N)	Neoprene	Hypalon	EPDM	Viton	Teflon
Dimethyl Ketone (Acetone)	G	C	E	D	C	C	E	D	E
Dimethyl Phthalate	D	D	E	D	D	D	G	C	E
Dimethyl Sulphate	D	D	D	D	D	D	D	D	E
Dimethyl Sulphide	D	D	D	D	D	D	D	C	G
Dinitrobenzene	D	D	C	D	C	D	C	E	E
Dinitrotoluene	D	D	D	D	D	D	D	C	E
Diethyl Adipate (DOA)	D	D	G	D	D	D	G	C	E
Diethylamine	G	G	E	G	G	C	G	C	E
Diethyl Phthalate (DOP)	D	D	G	D	D	D	G	E	E
Diethyl Sebacate (DOS)	D	D	G	D	D	D	G	G	E
Dioxane	D	D	G	D	D	D	G	D	E
Dioxolane	D	D	C	D	D	D	G	C	E
Dipentene (Limonene)	D	D	D	C	D	D	D	E	E
Diphenyl (Biphenyl)	D	D	D	D	D	D	D	E	E
Dipropyl Ketone	D	D	G	D	D	D	G	D	E
Disodium Phosphate	E	E	E	E	E	E	E	E	E
Divinyl Benzene	D	D	D	D	D	D	D	E	E
DMP (Dimethyl Phenols)	D	D	D	D	D	D	D	D	-
Dodecyl Benzene	D	D	D	D	D	D	D	E	E
Diphenyl Oxide (Phenyl Ether)	D	D	D	D	D	C	D	E	E
Dipropylamine	G	G	E	G	G	C	E	C	E
Dipropylene Glycol	E	E	E	E	E	E	E	E	E
Dodecyl Toluene	D	D	D	D	D	D	D	E	E
Dowfume W40,100%	D	D	D	D	C	C	C	C	-
Dow-Per (Perchloroethylene)	D	D	D	C	D	D	D	E	E
Dowtherm Oil, A and E	D	D	D	D	D	C	D	E	E
Dowtherm SRI	E	E	E	E	E	E	E	E	E
Dry Cleaning Fluids	D	D	D	C	D	D	D	E	G
Epichlorohydrin	D	D	G	D	D	C	G	D	G
Ethanol (Ethyl Alcohol)	E	E	E	E	E	E	E	E	E
Ethanolamine	G	C	G	G	G	C	G	D	E
Ethers	D	D	C	D	D	C	D	C	E
Ethyl Acetate	D	D	G	D	D	C	G	D	E
Ethyl Acetoacetate	D	D	G	D	D	D	G	D	E
Ethyl Acrylate	D	D	C	D	D	D	D	D	G

Key
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- No experience

Elastomer Chemical Resistance Guide

5-7-10

Ethyl Benzene - Ferric Acid

	Natural Rubber	Buna-S (SBR)	Butyl	Nitrite (Hycar, Buna-N)	Neoprene	Hypalon	EPDM	Viton	Teflon
Ethyl Benzene	D	D	D	C	D	D	D	E	E
Ethyl Benzoate	D	D	G	G	C	C	G	C	E
Ethyl Butyl Alcohol	E	E	E	E	E	E	E	G	E
Ethyl Butyl Amine	G	C	E	G	G	C	G	G	E
Ethyl Butyl Ketone	D	D	G	D	D	D	G	D	E
Ethyl Butyrate	C	-	-	D	D	D	-	-	C
Ethyl Cellulose	G	G	G	G	G	G	G	D	E
Ethyl Chloride	C	C	D	C	C	D	D	E	E
Ethyl Dichloride	D	D	D	D	D	D	D	G	G
Ethylene	D	D	D	E	G	C	D	E	E
Ethylene Bromide	D	D	D	D	D	D	D	E	G
Ethylene Chloride	D	D	D	D	D	D	D	E	G
Ethylene Chlorohydrin	C	-	E	D	E	-	-	-	C
Ethylene Diamine	G	C	E	G	E	C	E	D	E
Ethylene Dibromide	D	D	D	D	D	D	D	G	G
Ethylene Dichloride	D	D	D	D	D	D	D	G	G
Ethylene Glycol	E	E	E	E	E	E	E	E	E
Ethylene Oxide	D	D	C	D	D	D	C	D	-
Ethylene Trichloride (Trichloroethylene)	D	D	D	C	D	D	D	E	G
Ethyl Ether	D	D	D	C	D	D	D	D	E
Ethyl Formate	D	D	G	D	D	D	C	D	E
Ethyl Hexanol	E	E	E	E	E	E	E	G	E
Ethyl Mercaptan	D	-	D	D	D	-	-	-	C
Ethyl Methyl Ketone	C	D	G	D	D	D	G	D	E
Ethyl Oxalate	E	E	E	D	D	D	G	C	E
Ethyl Pentachlorobenzene	D	-	D	C	D	-	-	-	E
Ethyl Phthalate	D	D	E	D	D	D	G	C	E
Ethyl Propyl Ether	D	D	D	D	D	D	D	C	E
Ethyl Propyl Ketone	D	D	G	D	D	D	G	D	E
Ethyl Silicate	C	C	E	E	E	E	E	E	E
Ethyl Sulphate	D	D	G	D	D	D	G	D	E
EX TRI (Trichloroethylene)	D	D	D	C	D	D	D	E	G
Fatty Acids	D	D	D	G	G	G	C	E	E
Ferric Bromide	E	E	E	E	E	E	E	E	E
Ferric Chloride	E	E	E	E	E	E	E	E	E
Ferric Nitrate	E	E	E	E	E	E	E	E	E

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Elastomer Chemical Resistance Guide

Ferric Sulphate - Freon TA*

5-7-11

	Natural Rubber	Buna-S (SBR)	Butyl	Nitrite (Hycar, Buna-N)	Neoprene	Hypalon	EPDM	Viton	Teflon
Ferric Sulphate	E	E	E	E	E	E	E	E	E
Ferrous Acetate	D	D	E	D	D	D	G	D	E
Ferrous Ammonium Sulphate	E	E	E	E	E	E	E	E	E
Ferrous Chloride	E	E	E	E	E	E	E	E	E
Ferrous Hydroxide	G	C	E	G	E	G	E	C	E
Ferrous Sulphate	E	E	E	E	E	E	E	E	E
Fluorobenzene	D	-	D	D	D	-	-	-	E
Fluoroboric Acid	E	C	E	E	G	E	E	C	E
Fluorine (Liquid)	D	D	D	D	D	D	D	D	-
Fluosilicic Acid	G	G	E	G	G	E	G	E	E
Formaldehyde (Formalin)	C	C	E	G	G	G	G	E	E
Formamide	E	E	E	E	E	E	E	D	E
Formic Acid	G	G	E	C	C	C	C	D	G
Freon 11*	D	D	D	E	G	E	D	E	E
Freon 12*	D	D	D	G	C	D	C	G	G
Freon 13*	E	E	E	E	E	E	E	E	E
Freon 21*	D	D	D	D	G	D	D	D	E
Freon 22*	D	D	E	D	E	D	G	D	E
Fron 31*	G	G	E	D	E	G	E	D	E
Freon 32*	E	E	E	E	E	E	E	C	E
Freon 112*	D	D	D	G	G	G	D	E	E
Freon 113*	C	G	D	E	E	E	D	G	E
Freon 114*	E	E	E	E	E	E	E	G	E
Freon 115*	E	E	E	E	E	E	E	G	E
E	E	E	E	E	E	C	E	D	E
Freon 152a*	E	E	E	E	E	E	E	E	E
Freon 218*	E	E	E	E	E	E	E	E	E
Freon C316*	E	E	E	E	E	E	E	E	E
Freon C318*	E	E	E	E	E	E	E	E	E
Freon 13B1*	E	E	E	E	E	E	E	E	E
Freon 114B2*	D	C	D	G	E	E	D	G	E
Freon 501*	E	E	E	G	E	E	E	G	E
Freon TF*	C	G	E	E	E	E	D	E	E
Freon T-WD602*	C	G	E	E	G	G	G	E	E
Freon TMC*	G	C	G	G	G	G	G	E	E
Freon T-P35*	E	E	E	E	E	E	E	E	E
Freon TA*	E	E	E	E	E	E	E	C	E

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Elastomer Chemical Resistance Guide

5-7-12

Freon TC* - Hexylene Glycol

	Natural Rubber	Buna-S (SBR)	Butyl	Nitrite (Hycar, Buna-N)	Neoprene	Hypalon	EPDM	Viton	Teflon
Freon TC*	D	G	E	E	E	E	G	E	E
Freon MF*	D	G	D	E	C	G	D	E	E
Freon BF*	D	D	D	G	G	G	D	E	E
Fuel Oil	D	D	D	E	G	C	D	E	E
Fuel, ASTMA	D	D	D	E	E	C	D	E	E
Fuel, ASTMB	D	D	D	E	G	C	D	E	E
Fuel, ASTM C	D	D	D	G	C	D	D	E	G
Fumaric Acid	E	E	D	E	G	G	D	E	E
Furan	D	D	C	D	D	D	C	D	E
Fufural	D	D	G	D	C	G		D	E
Fufural Alcohol	D	D	C	D	C	C	C	D	E
Gallic Acid	E	E	G	G	G	G	G	G	E
Gasoline, Reg	D	D	D	E	E	C	D	E	E
Gasoline, Hi-Test	D	D	D	E	G	D	D	E	E
Gasoline, Lead Free	D	D	D	G	G	D	D	E	E
Gelatin	E	E	E	E	E	E	E	E	E
Gluconic Acid	D	D	C	C	C	G	C	E	E
Glucose	E	E	E	E	E	E	E	E	E
Glue	E	E	E	E	E	E	E	E	E
Glycerine (Glycerol)	E	E	E	E	E	E	E	E	E
Gycols	E	E	E	E	E	E	E	E	E
Grease	D	D	D	E	G	C	D	E	E
Green Sulphate Liquor	E	E	E	E	G	E	E	G	E
Halowax Oil	D	D	D	D	D	D	D	E	E
Heptachlor in Petroleum Solvents	D	D	D	G	G	D	D	E	E
Heptachlor in Petroleum Solvents, Water Spray	D	D	D	G	G	D	D	E	E
Heptanal (Heptaldehyde)	D	D	D	D	D	D	G	D	E
Heptane	D	D	D	E	E	G	D	E	E
Heptane Carboxylic Acid	D	D	C	C	G	G	C	E	E
Hexaldehyde	D	D	G	D	G	C	G	D	E
Hexane	D	D	D	E	E	C	D	E	E
Hexene	D	D	D	G	G	C	D	E	E
Hexano (Hexyl Alcohol)	E	E	E	E	E	E	E	E	E
Hexylamine	G	C	G	G	G	C	G	D	E
Hexylene	D	D	D	E	G	D	C	E	G
Hexylene Glycol	E	E	E	E	E	E	E	E	E

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Elastomer Chemical Resistance Guide

Hexyl Methyl Ketone - Isoamyl Chloride

5-7-13

	Natural Rubber	Buna-S (SBR)	Butyl	Nitrite (Hycar, Buna-N)	Neoprene	Hypalon	EPDM	Viton	Teflon
Hexyl Methyl Ketone	D	D	G	D	D	D	G	D	E
Hi-Tri (Trichloroethylene)	D	D	D	C	D	D	D	E	G
Hydraulic Fluid (Petroleum)	D	D	D	E	G	G	D	E	E
Hydraulic Fluid (Phosphate Ester Base)	D	D	E	D	D	D	E	D	E
Hydraulic Fluid (Poly Alkylene Glycol Base)	G	G	E	E	E	E	E	E	E
Hydrazine	-	-	-	-	-	-	E	D	-
Hydrobromic Acid	E	D	E	D	C	E	G	E	E
Hydrochloric Acid 37%	E	G	E	C	C	E	G	E	E
Hydrochloric Acid 50%	E	C	G	D	D	E	C	E	E
Hydrochloric Acid 100%	G	C	C	D	D	G	C	C	E
Hydrocyanic Acid	G	C	E	G	C	E	G	G	E
Hydrofluoric Acid	G	D	G	D	C	E	G	G	E
Hydrofluosilic Acid	E	D	E	D	C	E	G	G	E
Hydrogen Gas	G	G	E	E	E	E	G	E	E
Hydrogen Peroxide, 3%	E	G	E	G	C	E	G	E	E
Hydrogen Peroxide, 10%	D	D	C	D	C	C	C	E	E
Hydrogen Peroxide, 30%	D	D	D	D	D	D	C	E	E
Hydrogen Peroxide, 90%	D	D	D	D	D	D	C	G	G
Hydrogen Sulphide	D	D	E	D	E	G	E	E	E
Hydroquinone	G	G	G	D	D	C	G	D	E
Hypochlorous Acid	G	G	G	D	G	E	G	E	E
Ink Oil (Linseed Oil Base)	D	D	G	G	G	G	G	E	E
Insulating Oil	D	D	D	E	G	D	D	E	E
Iodine	D	D	D	D	D	C	D	C	E
Iron Acetate	D	D	E	D	D	D	G	D	E
Iron Hydroxide	C	C	E	G	E	G	G	C	E
Iron Salts	E	E	E	E	E	E	E	E	E
Iron Sulphate	E	E	E	E	E	E	E	E	E
Iron Sulphide	E	E	E	E	E	E	E	E	E
Isoamyl Acetate	D	D	E	D	D	D	G	D	E
Isoamyl Alcohol	E	E	E	E	E	E	E	E	E
Isoamyl Bromide	D	D	D	D	D	D	D	G	G
Isoamyl Butyrate	D	D	C	D	D	D	C	D	G
Isoamyl Chloride	D	D	C	D	D	D	D	G	G

Key
E - Excellent. Suitable for continuous service.
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D - DO NOT USE
- No experience

Elastomer Chemical Resistance Guide

5-7-14

Isoamyl Ether - Lead Sulphate

	Natural Rubber	Buna-S (SBR)	Butyl	Nitrite (Hycar, Buna-N)	Neoprene	Hypalon	EPDM	Viton	Teflon
Isoamyl Ether	D	D	D	D	D	D	D	D	E
Isoamyl Phthalate	D	D	E	D	D	D	G	C	E
Isobutane	D	D	D	E	E	D	D	E	E
Isobutanol (Isolbutyl Alcohol)	E	E	E	E	E	E	E	E	E
Isobutyl Acetate	D	D	E	D	D	D	G	D	E
Isobuty Aldehyde	C	D	G	D	D	D	G	D	E
Isolbutyl Amine	G	C	G	D	D	C	G	D	E
Isobutyl Bromide	D	D	D	D	D	D	D	G	G
Isolbutylin-Butyrate	-	-	-	-	D	-	-	-	C
Isobutyl Carbinol	E	E	E	E	G	E	E	G	E
Isobutyl Chloride	D	D	D	D	D	D	D	G	G
Isobutylene	D	D	D	C	C	D	D	E	E
Isocyanates	C	D	G	D	D	C	G	C	G
Isododecane	D	-	-	E	E	E	-	-	E
Isoctane	D	D	D	E	E	G	D	E	E
Isopentane	D	D	D	E	E	D	D	E	E
Isopropyl Amine	G	C	E	G	E	C	G	D	E
Isopropyl Acetate	D	D	E	D	D	C	G	D	E
Isopropyl Alcohol (Isopropanol)	E	E	E	E	E	E	G	G	G
Isopropyl Amine	G	D	G	C	E	C	G	D	E
Isopropyl Benzene	D	D	D	D	D	D	D	E	E
Isopropyl Chloride	D	D	D	D	D	D	D	G	G
Isopropyl Ether	D	D	D	C	D	C	D	D	E
Isopropyl Toluene	D	D	D	D	D	D	D	E	E
Jet Fuels (JP1-JP6)	D	D	D	E	G	C	D	E	E
Kerosene	D	D	D	E	G	C	D	E	E
Ketones	G	G	G	D	D	D	G	D	E
Lactic Acid	G	G	G	E	E	E	G	E	E
Lacquers	D	D	D	D	D	D	D	D	E
Lacquer Solvents	D	D	D	D	D	D	D	D	E
Lard	D	D	D	E	G	D	C	E	E
Lauryl Alcohol	E	E	E	E	E	E	E	G	E
Lead Acetate	D	D	E	C	C	D	G	C	E
Lead Nitrate	E	E	E	E	E	E	E	E	E
Lead Sulfamate	G	C	E	G	E	G	E	E	E
Lead Sulphate	E	E	E	E	E	E	E	E	E

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Elastomer Chemical Resistance Guide

Ligroin - Methane

5-7-15

	Natural Rubber	Buna-S (SBR)	Butyl	Nitrite (Hycar, Buna-N)	Neoprene	Hypalon	EPDM	Viton	Teflon
Ligroin	D	D	D	E	E	D	D	E	E
Lime Water	D	D	E	C	E	E	E	E	E
Lime-Sulphur	G	-	C	E	E	G	-	-	E
Linseed Oil	D	D	E	E	G	G	G	E	E
Lindol (Tricresyl Phosphate)	D	D	E	D	D	D	E	E	E
Linoleic acid	-	-	-	G	D	-	-	-	E
Liquid Soap	E	E	E	E	E	E	E	E	E
Liquified Petroleum Gas	D	D	D	E	G	D	D	E	E
Lubricating Oils	D	D	D	E	G	C	D	E	E
Lye (Sodium Hydroxide)	E	G	E	G	E	E	E	D	E
Magnesium Acetate	D	D	E	D	D	D	G	D	E
Magnesium Ammonium Sulphate	-	-	E	-	E	-	-	-	E
Magnesium Carbonate	E	E	E	E	E	E	E	E	E
Magnesium Chloride	E	E	E	E	E	E	G	E	E
Magnesium Hydrate	E	G	E	G	E	G	E	G	E
Magnesium Hydroxide	E	E	E	E	E	E	G	E	E
Magnesium Nitrate	E	E	E	E	E	E	E	E	E
Magnesium Oxide	-	-	E	-	E	-	-	-	E
Magnesium Sulphate	E	E	E	E	E	E	E	E	E
Malathion 50 in Aromatic Solvents	D	D	D	C	C	D	D	E	E
Malathion 50 in Aromatic Solvents, Water Spray	D	D	D	E	E	D	D	E	E
Maleic Acid	D	D	C	D	C	D	C	E	-
Maleic Anhydride	D	D	C	D	C	D	C	E	E
Malic Acid	E	G	D	G	C	C	G	D	E
Manganese Sulphate	E	E	E	E	E	E	E	E	E
Manganese Sulphide	C	E	E	E	G	E	G	E	E
Manganese Sulphite	C	E	E	E	G	E	G	E	E
Mercuric Chloride	G	G	G	C	C	G	C	E	E
Mercuric Cyanide	E	-	E	E	G	E	-	-	E
Mercurous Nitrate	E	-	E	E	E	E	-	-	E
Mercury	G	G	E	E	G	E	E	E	E
Mesityl Oxide	D	-	D	D	D	D	-	-	C
Methane	D	D	D	E	G	G	D	E	E

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Elastomer Chemical Resistance Guide

5-7-16

Methyl Acetate - Monovinyl Acetate

	Natural Rubber	Buna-S (SBR)	Butyl	Nitrite (Hycar, Buna-N)	Neoprene	Hypalon	EPDM	Viton	Teflon
Methyl Acetate	C	D	G	D	D	D	G	D	E
Methyl Acrylate	C	D	G	D	C	D	G	D	E
Methacrylic Acid	D	D	G	D	G	C	G	G	E
Methyl Alcohol (Methanol)	E	E	E	E	E	E	E	C	E
Methyl Benzene (Toluene)	D	D	D	D	D	D	D	E	E
Methyl Bromide	D	D	G	G	D	D	G	E	E
Methyl Butyl Ketone	D	D	G	D	D	D	G	D	E
Methyl Cellosolve	D	D	G	C	G	C	G	D	E
Methyl Chloride	D	D	D	C	D	D	D	G	G
Methyl Cyclohexane	D	D	D	D	D	D	D	G	G
Methyl Cyclopentane	-	-	-	-	G	-	-	-	E
Methylene Bromide	D	D	D	D	D	D	D	G	G
Methylene Chloride	D	D	D	D	D	D	D	G	E
Methyl Ethyl Ketone (MEK)	G	D	G	D	D	D	G	D	E
Methyl Formate	C	C	G	D	G	C	G	C	G
Methyl Hexanol	E	E	E	E	E	E	E	G	E
Methyl Hexyl Ketone	D	D	G	D	D	D	G	D	E
Methyl Isobutyl Carbinol	G	C	E	G	G	G	E	G	E
Methyl Isobutyl Ketone (MIBK)	D	D	G	D	D	D	G	D	E
Methyl Isopropyl Ketone	D	D	G	D	D	D	G	D	E
Methyl Propyl Ether	D	D	D	D	D	D	D	D	E
Methyl Propyl Ketone	D	D	G	D	D	D	G	D	E
Methyl Methacrylate	D	D	D	D	D	G	D	D	G
Methyl Salicylate	D	D	G	D	D	D	G	C	G
Milk	C	-	C	G	G	E	-	-	E
Mineral Oil		D	D	E	G	G	D	E	E
Mineral Spirits	D	D	D	E	G	D	D	E	E
Monobromobenzene	-	-	D	D	-	-	-	-	E
Monochlorobenzene	D	D	D	D	D	D	D	E	E
Monochlorodifluoromethane (Freon 22)	D	D	E	D	E	D	E	D	E
Monoethanolamine	G	C	G	C	G	G	G	D	E
Monomethylether	G	G	E	E	E	C	E	D	E
Monovinyl Acetate	D	D	G	D	D	C	C	E	E

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Elastomer Chemical Resistance Guide

Motor Oil - Octylene Glycol

5-7-17

	Natural Rubber	Buna-S (SBR)	Butyl	Nitrite (Hycar, Buna-N)	Neoprene	Hypalon	EPDM	Viton	Teflon
Motor Oil	D	D	D	E	E	D	D	E	E
Muriatic Acid	(SEE HCL 37%)								
Naptha	D	D	D	E	G	D	D	E	E
Napthalene	D	D	D	D	D	D	D	E	E
Napthenic Acid	D	D	D	C	D	D	D	E	E
Natural Gas	C	-	C	E	E	E	-	-	E
Neatsfoot Oil	D	D	G	E	G	G	G	E	E
Neu-Tri (Trichloroethylene)	D	D	D	C	D	D	D	E	G
Nickel Acetate	D	D	E	D	D	D	G	D	E
Nickel Ammonium Sulphate	-	-	E	-	E	-	-	-	E
Nickel Chloride	E	E	E	E	E	E	E	E	E
Nickel Nitrate	E	E	E	E	E	E	E	E	E
Nickel Plating Solution	E	D	G	G	C	G	G	E	E
Nickel Sulphate	E	E	E	E	E	E	E	E	E
Nicotine Bentonite	-	-	-	G	-	-	-	-	C
Nicotine Sulphate	-	-	-	G	-	-	-	-	C
Niter Cake	E	E	E	E	E	E	E	E	E
Nitric Acid 10%	D	D	G	D	C	G	G	E	E
Nitric Acid 20%	D	D	G	D	D	G	C	E	E
Nitric Acid 30%	D	D	G	D	D	C	C	E	G
Nitric Acid 30-70%	D	D	C	D	D	D	D	C	-
Nitric Acid, Red Fuming	D	D	D	D	D	D	D	D	-
Nitrobenzene	D	D	D	D	D	D	D	G	E
Nitrogen Gas	E	E	E	E	E	E	E	E	E
Nitrogen Tetraoxide	D	D	D	D	D	D	D	D	-
Nitromethane	G	G	G	D	C	C	G	D	E
Nitropropane	C	C	E	D	C	C	G	D	E
Nitrous Oxide	E	E	E	E	E	E	E	E	E
Octadecanoic Acid	D	D	G	E	G	D	C	C	E
Octane	D	D	D	E	G	D	D	E	G
Octanol (Octyl Alcohol)	G	G	G	G	E	G	G	E	E
n-octrne-2	-	-	-	-	C	-	-	-	E
Octyl Acetate	D	D	E	D	D	D	G	D	E
Octyl Amine	C	C	G	C	G	C	G	D	E
Octyl Carbinol	E	E	E	E	E	E	E	G	E
Octylene Glycol	E	E	E	E	E	E	E	E	E

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Elastomer Chemical Resistance Guide

5-7-18

Oil, Petroleum - Phenois (di - Nitrols)

	Natural Rubber	Buna-S (SBR)	Butyl	Nitrite (Hycar, Buna-N)	Neoprene	Hypalon	EPDM	Viton	Teflon
Oil, Petroleum	D	D	D	E	E	C	D	E	E
Oil, ASTM #1	D	D	D	E	E	G	D	E	E
Oil, ASTM #2	D	D	D	E	E	C	D	E	E
Oil, ASTM #3	D	D	D	E	G	C	D	E	E
Oleic Acid	D	D	G	G	C	C	G	C	E
Oleum (Fuming Sulphuric Acid)	D	D	D	D	D	D	D	D	-
Olive Oil (Non FDA)	D	D	G	E	G	G	G	E	E
Orthodichlorobenzene	D	D	D	D	D	D	D	E	G
Oxalic Acid	C	C	E	G	C	G	E	C	E
Oxygen, Cold	G	G	E	G	G	G	G	E	E
Oxygen, Hot	D	D	D	D	D	D	D	G	E
Ozone	D	C	G	D	G	E	E	E	E
Paint Thinner (Duco)	D	D	D	D	D	D	D	C	E
Palmitic Acid	D	D	G	E	G	G	G	E	G
Palm Oil	D	D	E	E	G	G	G	E	E
Papermaker's Alum	E	E	E	E	E	E	E	E	E
Paradichlorobenzene	D	D	D	D	D	D	D	E	G
Paraffin	D	D	D	E	E	D	D	E	-
Paraformaldehyde	D	D	G	G	G	G	G	C	E
Peanut Oil	D	D	C	E	G	G	D	E	E
Pentachlorophenol	D	-	D	D	D	-	-	-	E
Pentane	D	D	D	E	E	G	D	E	E
n-Pentane,2-Methyl, 3-Methyl	-	-	-	-	E	-	-	-	E
Pentene-2, 4-Methyl	-	-	-	-	G	-	-	-	E
Perchloroethylene	D	D	D	C	D	D	D	E	G
Perchloric Acid	G	G	G	D	E	E	G	E	E
Permachlor (Degreasing Fluid)	-	-	-	D	-	-	-	-	C
Petrolatum	D	D	D	E	E	C	D	E	E
Petroleum, Crude	D	D	D	E	G	D	D	E	E
Petroleum Ether (Naptha)	D	D	D	E	E	D	D	E	E
Petroleum Oils	D	D	D	E	E	C	D	E	E
Phenol	C	C	G	D	C	C	C	E	E
Phenolates (di-nitrols)	D	-	-	D	D	-	-	-	G
Phenois (di-nitrols)	E	-	-	D	G	-	-	-	G

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Elastomer Chemical Resistance Guide

Phenosulphonic Acid - Potassium Nitrate

5-7-19

	Natural Rubber	Buna-S (SBR)	Butyl	Nitrite (Hycar, Buna-N)	Neoprene	Hypalon	EPDM	Viton	Teflon
Phenolsulphonic Acid	D	D	C	D	C	D	C	E	G
Phenyl Chloride	D	D	D	D	D	D	D	E	E
Phenyl Ethyl Ether	D	-	D	D	D	-	-	-	C
Phenylhydrazine	C	D	G	D	D	C	C	E	E
Phorone	D	D	E	D	D	D	G	C	E
Phosphate Esters	D	D	E	D	D	D	E	C	E
Phosphoric Acid 10%	E	E	E	E	E	E	E	E	E
Phosphoric Acid 10-85%	C	C	E	C	G	E	E	E	E
Phosphorous Trichloride	D	D	E	D	D	D	E	E	E
Pickling Solution	C	C	C	C	C	C	C	G	E
Piric Acid, Molten	C	C	C	C	C	G	C	C	-
Picric Acid, Water Soln	E	C	E	G	G	E	G	C	E
Pinene	D	D	D	E	D	D	D	E	E
Pine Oil	D	D	D	C	C	D	D	G	E
Piperidine	D	D	D	D	D	D	D	D	G
Pitch	D	D	D	G	G	C	D	C	E
Plating Solutions Chrome	D	D	E	G	G	C	E	E	E
Plating Solutions , Others	E	E	E	G	G	C	E	G	E
Polyvinyl Acetate Emulsion (PVA)	C	C	E	C	G	G	E	C	E
Polyethelene Glycol	E	E	E	E	E	E	E	E	E
Polypropelene Glycol	E	E	E	E	E	E	E	E	E
Potassium Acetate	D	D	E	D	D	D	G	D	E
Potassium Bicarbonate	E	E	E	E	E	E	E	E	E
Potassium Bisulphate	E	E	E	E	E	E	E	E	E
Potassium Bisulphite	E	E	E	E	E	E	E	E	E
Potassium Borate	E	-	E	E	E	E	-	-	E
Potassium Bromide	E	-	E	E	E	E	-	-	E
Potassium Carbonate	E	E	E	E	E	E	E	E	E
Potassium Chlorate	E	-	E	E	E	E	-	-	E
Potassium Chloride	E	E	E	E	E	E	E	E	E
Potassium Chromate	D	D	E	D	C	C	G	E	G
Potassium Cyanide	E	E	E	E	E	E	E	E	E
Potassium Dichromate	D	D	E	D	G	C	G	E	E
Potassium Hydrate	E	G	E	G	G	G	E	C	E
Potassium Hydroxide	E	E	E	E	G	E	E	D	E
Potassium Iodide	-	-	E	-	E	-	-	-	E
Potassium Nitrate	E	E	E	E	E	E	E	E	E

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Elastomer Chemical Resistance Guide

5-7-20

Potassium Nitrite - Secondary Butyl Alcohol

	Natural Rubber	Buna-S (SBR)	Butyl	Nitrite (Hycar, Buna-N)	Neoprene	Hypalon	EPDM	Viton	Teflon
Potassium Ntrite	-	-	E	-	E	-	-	-	E
Potassium Permanganate	D	D	E	D	D	D	E	E	E
Potassium Phosphate	-	-	E	-	E	-	-	-	E
Potassium Silicate	E	E	E	E	E	E	E	E	E
Potassium Sulphate	E	E	E	E	E	E	E	E	E
Potassium Sulphide	E	E	E	E	E	E	E	E	E
Potassium Sulphite	E	E	E	E	E	E	E	E	E
Potassium Thiosulphate	-	-	E	-	E	-	-	-	E
Producer Gas	D	D	D	E	G	G	D	E	E
Propanediol	E	E	E	E	G	E	E	E	E
Propyl Acetate	D	D	G	D	D	D	G	D	E
Propyl Alcohol (Propanol)	E	E	E	E	E	E	E	E	E
Propyl Aldehyde	C	D	G	D	D	D	G	D	E
Propyl Chloride	D	D	C	D	C	D	C	G	G
Propylene Diamine	G	G	E	G	G	C	G	C	E
Propylene Dichloride	D	D	D	D	D	D	D	G	G
Propylene Glycol	E	E	E	E	E	E	E	E	E
Pydraul Hydraulic Fluides	D	D	G	D	D	D	G	C	G
Pyranol	D	D	D	C	D	D	D	E	E
Pyrdine	D	D	G	D	D	D	G	D	E
Pyroligneous Acid	C	C	G	C	G	G	G	E	E
Pyrrole	C	G	G	D	D	D	C	C	E
Rape See Oil	D	D	E	G	G	G	G	E	G
Red Oil (Crude Oleic Acid)	D	D	G	G	G	G	G	E	E
Richfield A Weed Killer 100%	D	D	D	D	D	D	D	C	G
Richfield B Weed Killer 33%	D	D	G	G	G	C	D	C	G
Rosin Oil	D	D	D	E	E	G	D	E	E
Rotenone and Water	E	E	E	E	E	E	E	E	E
Rum	E	-	E	E	E	E	-	-	-
Sal Ammoniac (Ammonium Chloride)	E	E	E	E	E	E	E	E	E
Salicylic Acid	E	G	E	D	D	E	E	E	E
Salt Water (Sea Water)	E	E	E	E	E	E	E	E	E
Secondary Butyl Alcohol	E	-	E	E	E	-	-	-	E

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Elastomer Chemical Resistance Guide

Sewage - Sodium Perborate

5-7-21

	Natural Rubber	Buna-S (SBR)	Butyl	Nitrite (Hycar, Buna-N)	Neoprene	Hypalon	EPDM	Viton	Teflon
Sewage	C	C	C	E	G	E	G	E	E
Shell DD	D	-	D	D	D	-	-	-	C
Silicate of Soda (Sodium Silicate)	E	E	E	E	E	E	E	E	E
Silicone Greases	E	E	E	E	E	E	E	E	E
Silicone Oils	E	E	E	E	E	E	E	E	E
Silver Nitrate	E	E	E	E	E	E	E	E	E
Skelly Solvent	D	D	D	E	G	C	D	E	E
Skydrol Hydraulic Fluids	D	D	E	D	D	D	E	D	E
Soap Solutions	E	E	E	E	E	E	E	E	E
Soda Ash (Sodium Carbonate)	E	E	E	E	E	E	E	E	E
Soda , Caustic (Sodium Hydroxide)	E	G	E	G	E	E	E	D	E
Soda, Lime	E	G	E	G	G	G	E	C	E
Soda Niter (Sodium Nitrate)	E	E	E	E	E	E	E	E	E
Sodium Acetate	D	D	E	D	D	D	G	D	E
Sodium Aluminate	E	E	E	E	E	E	E	E	E
Sodium Bicarbonate	E	E	E	E	E	E	E	E	E
Sodium Bisulphate	E	E	E	E	E	E	E	E	E
Sodium Bisulphite	E	E	E	E	E	E	E	E	E
Sodium Borate	E	E	E	E	E	E	E	E	E
Sodium Carbonate	E	E	E	E	E	E	E	E	E
Sodium Chloride	E	E	E	E	E	E	E	E	E
Sodium Chromate	D	D	E	D	C	C	G	C	G
Sodium Cyanide	E	E	E	E	E	E	E	E	E
Sodium Dichromate	D	D	E	D	C	C	G	C	E
Sodium Fluoride	E	E	E	E	E	E	E	E	E
Sodium Fluraluminate 10%	E	-	E	E	E	E	-	-	E
Sodium Hydroxide	E	G	E	G	E	E	E	D	E
Sodium Hypochloride	C	-	C	C	C	E	-	-	E
Sodium Hypochlorite	C	D	G	D	D	C	G	E	G
Sodium Iodide	-	-	E	-	E	-	-	-	E
Sodium Metaphosphate	E	E	E	E	G	G	E	E	E
Sodium Nitrate	E	E	E	E	E	E	E	E	E
Sodium Nitrite	E	E	E	E	E	E	E	E	E
Sodium Perborate	C	D	E	D	D	D	G	E	E

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Elastomer Chemical Resistance Guide

5-7-22

Sodium Peroxide - Terpineol

	Natural Rubber	Buna-S (SBR)	Butyl	Nitrite (Hycar, Buna-N)	Neoprene	Hypalon	EPDM	Viton	Teflon
Sodium Peroxide	G	G	E	G	G	G	E	E	G
Sodium Phosphate	E	E	E	E	E	E	E	E	E
Sodium Salts	E	-	E	-	E	E	-	-	E
Sodium Silicate	E	E	E	E	E	E	E	E	E
Sodium Sulphate	E	E	E	E	E	E	E	E	E
Sodium Sulphide	E	E	E	E	E	E	E	E	E
Sodium Sulphite	E	E	E	E	E	E	E	E	E
Sodium Thiosulphate	E	E	E	E	E	E	E	E	E
Soybean Oil	D	D	G	G	G	G	G	E	E
Stannic Chloride	E	E	G	E	E	E	E	E	E
Stannous Chloride	E	E	E	E	E	E	E	E	E
Stannous Sulphide	E	E	E	E	E	E	E	E	E
Stearic Acid	D	D	G	E	G	G	C	E	E
Stoddards Solvent	D	D	D	E	C	D	D	E	E
Styrene	D	D	D	D	D	D	D	G	E
Sugar Solutions (Sucrose) Non FDA	E	E	E	E	E	E	E	E	E
Sulphamic Acid	C	C	E	G	G	G	E	E	E
Sulphite Liquors	G	G	E	G	G	E	G	G	E
Sulphonic Acid	D	D	D	D	D	D	D	D	G
Sulphur (Molten)	D	D	G	C	C	C	C	E	-
Sulphur Chloride	D	D	D	D	D	G	D	E	G
Sulphur Dioxide	C	C	G	D	G	G	C	E	E
Sulphur Hexafluoride	E	E	E	E	E	E	E	E	E
Sulphur Trioxide	D	D	G	D	D	D	C	E	G
Sulphuric Acid 25%	G	G	G	G	E	E	G	E	E
Sulphuric Acid 25-50%	G	D	E	D	C	E	G	E	E
Sulphuric Acid 50-96%	D	D	C	D	C	G	G	E	E
Sulphuric Acid Fuming	D	D	D	D	D	D	D	D	G
Sulphurous Acid	G	C	G	C	G	E	G	E	E
Tall Oil	D	D	D	C	G	G	D	E	E
Tallow	D	D	D	E	E	D	D	E	E
Tannic Acid	E	G	E	C	G	G	E	E	E
Tanning Liquors (Alum Dichromate)	-	-	C	E	E	G	-	-	E
Tar	D	D	D	G	G	D	D	E	-
Tartaric Acid	E	E	E	E	G	E	E	E	E
Terpineol	D	D	C	D	D	D	C	E	-

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Elastomer Chemical Resistance Guide

Tertiary Butyl Alcohol - Tricresyl Phosphate (TCP)

5-7-23

	Natural Rubber	Buna-S (SBR)	Butyl	Nitrite (Hycar, Buna-N)	Neoprene	Hypalon	EPDM	Viton	Teflon
Tertiary Butyl Alcohol	E	E	E	E	E	E	E	E	E
p-Tertiary Butyl Catechol	C	-	E	D	E	-	-	-	E
Tertiary Butyl Mercaptan	D	-	D	D	D	-	-	-	E
Tetrachlorobenzene	D	D	D	D	D	D	D	G	G
Tetrachloroethane	D	D	D	D	D	D	D	E	G
Tetrachloroethylene	D	D	D	D	D	D	D	E	G
Tetraethylene Glycol	E	E	E	E	E	E	E	E	E
Tetrachloromethane	D	D	D	C	D	D	D	E	G
Tetrachloronaphthalene	D	D	D	D	D	D	D	G	G
Tetrachloronaphthalene	D	D	D	G	C	D	D	E	E
Tetrahydrofuran (THF)									
Tetralin	D	D	D	D	D	D	D	D	E
Thionyl Chloride	D	D	D	D	D	D	D	G	E
Tin Chloride	E	E	E	E	E	E	E	E	E
Tin Tetrachloride	E	E	E	E	E	E	E	E	E
Titanium Tetrachloride	D	D	D	G	C	C	C	E	E
Toluene (Toluol)	D	D	D	D	D	D	D	E	E
Toluene Diisocyanate (TDI)	C	C	E	C	D	D	E	G	E
Toxaphene	D	D	D	G	G	D	D	E	E
Transformer Oils (Petroleum Base)	D	D	D	E	G	G	D	E	E
Transformer Oils (Chlorinated Phenyl Base Askerels)	D	D	D	D	D	D	D	E	-
Transmission Fluids A	D	D	D	G	C	D	D	E	E
Transmission Fluids B	D	D	D	C	D	D	D	E	E
Triacetin	E	G	E	G	G	G	E	D	E
Tributoxy Ethyl Phosphate	G	-	C	D	C	-	-	-	C
Tributyl Amine	G	G	E	G	G	C	E	D	E
Tributyl Phosphate	D	D	G	D	D	D	G	D	E
Trichloroacetic Acid 10%	C	-	C	G	C	-	-	-	G
Trichlorobenzene	D	D	D	D	D	D	D	G	G
Trichloroethane	D	D	D	D	D	D	D	E	E
Trichloroethylene	D	D	D	C	D	D	D	E	G
Trichloropropane	D	D	D	D	D	D	D	E	E
Tricresyl Phosphate (TCP)	D	D	E	D	D	D	G	G	E

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Elastomer Chemical Resistance Guide

5-7-24

Triethanolamine (TEA) - Xylene (Xylol)

	Natural Rubber	Buna-S (SBR)	Butyl	Nitrite (Hycar, Buna-N)	Neoprene	Hypalon	EPDM	Viton	Teflon
Triethanolamine (TEA)	G	G	E	G	E	E	G	D	E
Triethylamine	G	G	G	G	E	E	G	G	E
Triethylborane	-	-	-	-	-	-	-	-	E
Triethylene Glycol	E	E	E	E	E	E	E	E	E
Trinitrotoluene (TNT)	D	D	D	D	G	G	D	G	-
Triphenyl Phosphate	D	D	E	D	C	C	G	C	E
Trisodium Phosphate	E	E	E	E	E	E	E	E	E
Tung Oil	D	D	C	E	G	G	D	E	E
Turbine Oil	D	D	D	G	G	G	D	E	E
Turpentine	D	D	D	G	G	D	D	E	E
2,4D with 10% Fuel Oil	D	D	D	E	E	D	D	E	E
Ucon Hydrolube Oils	D	D	E	E	G	D	E	E	E
(UDMH) Unsymmetrical Dimethyl-Hydrazine	D	D	E	D	D	E	E	D	C
Undecanol	E	E	E	E	E	E	E	G	E
Uran	G	C	G	G	G	E	G	C	E
Urea	E	C	E	C	E	C	E	C	E
Varnish	D	D	D	G	G	C	D	E	E
Vegetable Oils	D	D	E	E	G	G	E	E	E
Versilube	E	E	E	E	E	E	E	E	E
Vinegar	E	C	E	C	E	E	G	G	E
Vinyl Acetate	D	D	E	D	D	C	C	D	E
Vinyl Benzene	D	D	D	D	D	D	D	E	G
Vinyl Chloride (Monomer)	C	D	D	D	D	D	D	E	E
Vinyl Ether	D	D	D	D	D	C	C	D	E
Vinyl Touene	D	D	D	D	D	D	D	E	G
Vinyl Trichloride	D	D	D	D	D	D	D	E	E
V.M&P Naptha	D	D	D	E	E	D	D	E	E
Walnut Oil	D	-	C	E	G	-	-	-	E
Water Fresh (Non FDA)	E	E	E	E	E	E	E	E	E
Water, Salt	E	E	E	G	E	E	E	E	E
White Liquor	E	E	G	E	E	E	C	E	E
White Oil	D	D	D	E	G	D	D	E	E
Whiskey & Wines	E	-	E	E	E	E	-	-	E
Wilicate Esters	D	D	D	G	E	E	D	E	E
Wood Alcohol (Methanol)	E	E	E	E	E	E	E	D	E
Wood Oil	G	-	D	E	E	-	-	-	E
Xylene (Xylol)	D	D	D	D	D	D	D	E	E

Key
E - Excellent. Suitable for continuous service.
G - Good. Generally suitable for continuous or intermittent service.
C - Conditional. Not recommended for continuous or intermittent service.
D - DO NOT USE
- No experience

Elastomer Chemical Resistance Guide

Xylidine - Zinc Sulphate

5-7-25

	Natural Rubber	Buna-S (SBR)	Butyl	Nitrite (Hycar, Buna-N)	Neoprene	Hypalon	EPDM	Viton	Teflon
Xylidine	D	D	D	D	D	D	D	C	G
Zeolites	E	E	E	E	E	E	E	E	E
Zinc Acetate	C	D	E	C	C	C	G	D	E
Zinc Carbonate	E	E	E	E	E	E	E	E	E
Zinc Chloride	E	E	E	E	E	E	G	E	E
Zinc Chromate	E	C	E	E	E	C	E	E	G
Zinc Sulphate	E	E	E	E	E	E	E	E	E

Key
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D - DO NOT USE
- No experience