

Beta Valve Chemical Resistance Guide

2015

Introduction

When dealing with aggressive fluids the valve user is faced with the problem of finding compatible materials. In order to simplify the selection the following tables provide useful information on the choices available. Since corrosion performance is influenced by several factors, the information contained in this brochure should be treated *only as a guide and is not necessarily valid for all operating conditions*. Increased temperatures, higher concentrations, and the inadvertent admission of water in originally pure chemicals can accelerate corrosion. Depending on the purity of the fluid as well as the compounding and nature of vulcanization of the gasket materials, deviations can result which may affect the suitability and durability of the plastics and elastomers.

The information supplied in this guide does not consider the effect of mechanical loading, which may also have a bearing on the material performance in the fluid. In cases of doubt when considering our products, we strongly recommend the prior testing of samples with various material combinations, in order to establish and check their suitability under the actual operating conditions within the application.

Where liquid food products are involved, the plastics and elastomers employed must normally conform to the local food and hygiene regulations. It is emphasized that these resistance tables are intended only as a guide and that *no guarantees can be given in respect of the information contained within*.

Explanation of Symbols

+	Material little or not affected by chemical: suitable
0	Various attack grades depending on conditions: limited suitability
-	Material shows severe attack: unsuitable

This guide assumes a temperature of 68°F (20°C). The chemical resistance of materials decreases generally with increasing temperature.

If the chemical resistance of a material changes from good to poor depending on the operating conditions eg: temperature, pressure etc, or on the concentration and purity of the chemical then the rating 0 will be given.

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References

All the information provided in these resistance tables has been compiled from our own industrial experience and is supplemented by internet searches and other sources of information.

The following chemical resistance tables are divided into three categories, standard chemicals, commercial products and liquid foods and beverages. Materials that are rarely used in our products (e.g. aluminum) are not described in detail in the tables. In such cases, chemical resistance information related to a particular application or product should be researched. The same applies to nickel-plated and chromium-plated components. The materials PTFE and epoxy resin are also excluded as both materials are resistant to most common chemicals and can be employed in the majority of applications. Chemicals to which these materials are not resistant are mentioned in the following summary.

Summary of Chemical Resistance Properties of Gasket, Diaphragm and Housing Materials

Material	Designation	Chemical Resistance	Permissible Temperatures	
			Short-tem	Long-term
Gasket and Diaphragm			Shown in Centigrade & (Farenheight)	
Ethylene propylene rubber	EPDM	Good resistance to ozone and weathering. Particularly suitable for aggressive chemicals.	(-30) -22 to (+130) +266	(-30) -22 to (+130) +266
		Unsatisfactory for oils and fats.		
			Dependent on aggressiveness of the fluid and on mechanical load.	
Nitrile rubber	NBR	Fairly resistant to oil and petrol.	(-10) +23 to (+120) +248	(-10) +23 to (+90) +194
		Unsatisfactory with oxidizing fluids.		
Perfluorinated elastomers (Simnz, Kalrez, Chemraz)	FKM	Chemical properties superior to all elastomers.	(-50) +45 to (+608) +320	(-50) +45 to (+500) +260
Steel	1.4112	See resistance tables	(-4) -20 to (+302) +150	(-4) -20 to (+842) +450

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Material	Designation	Chemical Resistance	Permissible Temperatures	
			Short-tem	Long-term
Housing Materials			Shown in Centigrade & (Farenheight)	
Stainless steel		<i>See resistance tables</i>	(-4) -20 to (+752) +400	(-4) -20 to (+302) +150
	1.4401	(also 1.4404,1.4408 1.4410)		
	1.4571	(also 1.4581)		
	1.4305	(also 1.4301,1.4303)		
	1.4104	(also 1.4105)		
S.G. cast iron	GGG 40.3	For neutral fluids	(-4) -20 to (+752) +400	
Brass	Ms	See resistance tables	(-4) -20 to (+482) +250	

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Material	Designation	Chemical Resistance	Permissible Temperatures	
			Short-tem	Long-term
Plastics			Shown in Centigrade & (Farenheight)	
Polypropylene	PP	Resistant to: Organic solvents, aqueous solutions of acids, bases and salts.	(+32) 0 to (+230) +110	(+32) 0 to (+194) +90
Polyethylene	PE	Unsuitable for: concentrated, oxidizing acids.		
Polytetrafluoroethylene (Teflon)	PTFE	Resistant to nearly all chemicals.	(-4) -20 to (+500) +260	(-4) -20 to (+302) +150
Fluorine plastic	PFA	Unsuitable for liquid sodium and fluorine compounds		
Polyphenylsulfide	PPS	Resistant to: Dilute mineral acids, bases, hydrocarbons, ketones, alcohols, chlorinated hydrocarbons, oils, fats, water , hydrolysis	(+32) 0 to (+500) +260	(+32) 0 to (+392) +200
Epoxy resin	EP	Resistant to nearly to all chemicals. Unsuitable for short- chain organic acids of high concentration and for strong oxidizing substances.	(-4) +20 to (+150) +302	(-4) +20 to (+150) +302

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Standard Chemicals

	NBR	EPDM	FKM	FFKM	CR	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG	GS	1.4401/1.4571	1.4305/1.4104
Acetaldehyde - aqueous	-	+	0	0	0	0	+	0	0	0	+	+	+	0	0	+	+
Acetic acid - aqueous	-	0	-	0	-	0	0	0	+	+	+	-	0	0	0	0	0
Acetic acid ethyl ester (ethyl acetate)	-	0	0	+	-	-	0	0	0	+	+	0	+	0	0	+	+
Acetone - pure	-	+	-	+	-	-	0	+	-	+	+	+	+	+	+	+	+
Acetyl chloride	-	-	-	+	-			-	-	+		0	0	0	0	0	0
Acetylene	-	+	-		-	-	0	+		+		+		+	+	+	+
Acrylic acid ethyl ester - pure	-	0	-	+	-	-			0	+				+	+	+	+
Activin - aqueous (chloramine)																	
Albumin solutions	+	+	+		+	+	+	+				0	0	0	0	+	+
Alum - aqueous (potassium aluminium sulfate)	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	+
Aluminium chloride - aqueous	+	+	+	+	+	+	+	0	+	+	+	0	0	0	0	0	0
Aluminium sulfate - aqueous	+	+	+	+	+	+	+	0	+	+	+	-	-	-	-	0	0
Ammonia - anhydrous (liquid) (diffuses through EPDM; attacks epoxy materials)	-	0	0	+	+	0	+	+	-	0	+	0	0	+	+	+	+
Ammonia liquors (ammonium hydroxide + water)	-	+	0	0	+	0	+	+	-	0	+	-	-	+	+	+	+
Ammonium carbonate - aqueous	+	+	+	+	+	+	+	+	+	+		-	-	0	0	+	+
Ammonium citrate - aqueous	+	+	+	+	+	+	+	0		+		0	0	0	0	+	+
Ammonium fluorsilicate - aqueous	+	+	+	+	+	+	+	0		+		0	0	0	0	+	+
Ammonium hydroxide + water (ammonia liquors)	-	+	0	0	+	0	+	+	-	0	+	-	-	+	+	+	+
Ammonium oxalate - aqueous	+	+	+	+	+	+	+	0				0	0	0	0	+	+
Ammonium phosphate - aqueous	+	+	+	+	+	+	+	+	+	+		0	0	+	+	+	+
Ammonium sulfide - aqueous	+	+	0	+	+	+	+	+	+	+		-	-	0	0	+	+
Amyl acetate - pure	-	0	-	+	-	-	0	+	+	+	+	+	+	0	0	+	+

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Standard Chemicals

	NBR	EPDM	FKM	FFKM	CR	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG	GS	1.4401/1.4571	1.4305/1.4104
Amyl alcohols - pure	+	0	+	+	+	+	+	+	+	+		+	+	0	0	+	+
Aniline hydrochloride - aqueous																	
Anisole	0	0	-	+	-	-	-	+		+		+	+	+	+	+	+
Anthracene oil	-	-	-	+	-	-	-	+				+	+	+	+	+	+
Antimony chloride - aqueous (* acid resistant FKM compound)	0	+	+	+	+	+	+	-	+	+	+	0	0	0	0	-	-
Aqua regia	-	-	-	+	-	0	-	-	-	-	-	-	-	-	-	-	-
Argon	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Arsenic trichloride - aqueous	+	+	+	+	+	+	+	-				-	-	0	0	0	0
Aryl silicates - aqueous	0	0	0	+	0							+	+	+	+	+	+
Aspartic acid - aqueous	+	+	+	+	+	+	+	+		+		-	-	0	0	+	+
Barium chlorate - aqueous	+	+	+	+	+	+	+	-		+		+	+	0	0	+	+
Barium hydroxide - aqueous	+	+	+	+	+	+	+	0	+	+		+	+	+	+	+	+
Benzaldehyde - aqueous	0	+	+	+	-	-	+	0	0	0	+	0	0	-		+	
Benzene sulfonic acid - aqueous	+	+	+	+	+	+	+		+	+	-	0	0	0	0	+	+
Benzoic acid - aqueous	+	+	+	+	+	+	+	-	+		+	0	0	0	0	+	+
Benzyl butyl phthalate - aqueous	-	-	-	+	-	-	0	+		0		+	+	+	+	+	+
Bisulfite - aqueous (sodium bisulfite)	0	+	+	+	+	+	+	0	+	+	+	0	0	-	-	+	+
Boric acid - aqueous	+	+	+	+	+	+	+	-	+		0	0	0	0	0	0	0
Brines	+	+	+	+	+	+	+	+	+	+	+	0	0	-	-	+	+
Butadiene	0	0	0	+	+	+	+	+	+			+	0	0	0	+	+
Butanediol - aqueous (10%)	+	+	0	0	0	0	0	+	+	+	+	+	+	+	0	+	+
Butinediol	0	0	0		0	0	+	+		+	+	+	+	+	0	+	+
Butyl acetate - pure	-	+	-	+	-	-	-	+	+	+	+	0	+	0	0	+	+

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Standard Chemicals

	NBR	EPDM	FKM	FFKM	CR	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG	GS	1.4401/1.4571	1.4305/1.4104
Butyl phthalate	-	-	-	+	-	-	0	+		+		+	+	0	0	+	+
Butyric acid - aqueous	0	0	0	0	0	0	-	0	+	+	+	0	0	-	-	+	0
Calcium bisulfite - aqueous	+	+	+	+	+	+	+	-		+	+	-	-	0	-	+	0
Calcium hydroxide - aqueous	+	+	+	+	+	+	+	+	0	+	+	+	+	+	+	+	+
Calcium nitrate - aqueous	+	+	+	+	+	+	+	+	+	+	+	0	0	0	0	0	0
Camphor oil	+	-	+	0	-	+	-			0		0	0	0	0	+	+
Carbitol	0	0	0	+	0	+		+		+		+	+	+	+	+	+
Carbolineum	0	0	0	+	0	+	-	+				+	+	+	+	+	+
Carbon dioxide - wet	+	+	+	+	+	+	+	0	+	+	+	0	0	0	0	+	0
Carbon monoxide	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carbonic acid - aqueous	+	+	+	+	+	+	+	0	+	+	+	0	0	0	0	+	+
Caustic potash - aqueous (potassium hydroxide)	0	+	0	+	+	0	+	0	-	0	+	0	0	0	0	+	+
Cellosolve (glycol ethyl ether)	-	-	-	+	-	-	-	+	+	+		+	+	+	+	+	+
Chloramines - aqueous (activin)	-	0	-	+	-	-		-		0				+	+	+	+
Chloric acid - aqueous	-	0	-	+	-	+	-	-	+			-	-	-	-	-	-
Chlorinated water (chlorine gas - wet)	-	-	0	0	-	+	-	-	+	-	-	-	-	-	-	-	-
Chlorine (gas) - wet (chlorinated water)	-	-	0	0	-	+	-	-	0	-	-	-	-	-	-	-	-
Chlorine dioxide - aqueous	-	-	-	0	-	=	0	-	0			-	-	0	0	0	0
Chloroacetic acid - aqueous	-	0	-	+	-	0	-	-	+	+	+	0	-	0	0	0	-
Chloroform - pure (trichloromethane)	-	-	0	+	-	-	-	-	+	0	+	0	0	0	0	+	0
Chlorophenol	-	-	-	+	-	0				0		+	+	0	0	+	+
Chlorosulfonic acid - pure	-	-	-	+	-	0	-	-	0	-	-	0	0	0	0	0	0
Choline chloride - aqueous	+	+	+		+	0	0					-	-	0	0		

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Standard Chemicals

	NBR	EPDM	FKM	FFKM	CR	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG	GS	1.4401/1.4571	1.4305/1.4104
Chromium alum - aqueous	+	+	+	+	+	0	+	0	+			0	0	-	-	0	0
Citral (citronella oil)	-	-	-		-		-	+		+		+	+	0	0	+	0
Copper acetate - aqueous	0	+	+	+	+	+	+	0	+	+	+	0	-	0	0	+	+
Copper sulfate - aqueous	+	+	+	+	+	+	+	0+	+	+	0	0	0	0	0	0	0
Cyclohexane - pure	-	-	0	+	-	+	-	+	+	+	+	+	+	+	+	+	+
Cyclohexanone - pure (anone)	-	-	-	+	-	-	-	+	0	+	+	0	0	0	0	+	+
Decahydronaphthalene (decalin) - pure	-	-	+	+	-	+	0	+		0		+	+	+	+	+	+
Diacetone alcohol - anhydrous	-	+	-	+	0			0		+		0	+	0	0	+	+
Dibutyl sebacate - pure	-	0	-	+	-	-	+	+	-	+		+	+	+	+	+	+
Dichlorethylene - pure	-	-	0	+	-	-	-	+	+	0	+	+	+	0	0	+	+
Dicyclohexyl-ammonium nitrite	+	+	+	+	+							0	0	0	+	+	+
Dimethyl amine	-	0	-	+	-	-	0	-	-	0		0	0	0	0	+	+
Dimethyl sulfoxide				+			0	-	+	0							
Dioxane - pure	-	0	-	+	-	-	-	+	-	+		+	+	+	+	+	+
Essential oils	-	-	-	+	-	-	-	-		0		0	0	0	0	+	+
Ethanol - aqueous (ethyl alcohol)	+	+	0	+	+	+	+	0	+	+	+	+	+	+	+	+	+
Ether (diethyl ether)	-	-	-	+	0	-	+	+	+	+	+	+	+	+	+	+	+
Ethyl alcohol - aqueous (ethanol)	+	+	0	+	+	+	+	0	+	+	+	+	+	+	+	+	+
Ethyl alcohol - fermentation mash	+	+	+	+	+	+	+	0	+	+	+	+	+	0	0	+	+
Ethyl benzene - pure	-	-	0	+	-	-	-	+	+	0		+	+	+	+	+	+
Ethyl formiate	-	0	-	+	-	-	0	=	+	+		+	+	0	0	+	+
Ethylene diamine - pure	0	+	0	0	+	-	+	0	+	0		-	-	0	0	+	0

Standard Chemicals

	NBR	EPDM	FKM	FFKM	CR	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG	GS	1.4401/1.4571	1.4305/1.4104
Ethylene dichloride (dichloroethane)	-	-	-	+	0	-	0	+	+	0	0	+	+	+	+	+	+
Ethylene oxide - liquid, pure	-	-	-	+	-	-	-	-	+			+	+	+	+	+	+
Fat alcohol sulfates - aqueous	+	0	+	+	+	+	+	0	+			0	0	0	0	+	+
Ferrous/ferric chloride - aqueous	+	+	+	+	+	+	+	+	+	+	+	-	-	-	0	-	-
Fluoboric acid (borofluoric acid)	+	+	+	0	+	+	+	-	+	0		-	-	-	-	-	-
Fluorine (wet) - pure	-	-	-	0	-	0	-	-	-	-	-	-	-	-	0	0	0
Fluosilicic acid - aqueous	0	0	0	+	0	+	+	-	+	-		-	-	-	-	0	0
Formamide - pure	+	=	0	+	+	+	0	0		0		0	0	0	0	+	0
Formic acid - concentrated	-	0	-	0	+	+	+	-	+	+	0	0	0	-	-	+	0
Freon 113	+	+	+	0	+	+	0	+	+	+	+	+	+	+	+	+	+
Freon 13	+	0	0	0	0												
Freon 22	-	-	-	0	+	+	0	+		+	+	+	+	+	+	+	+
Freon 502	-	-	-	0	0	+	0	+	0		+	+	+	+	+	+	+
Freon substitute HFCKW 134a			-	-						+	+	+	+	+	+	+	+
Gas liquor	+	-	0		-	0						-	-	0	0	+	+
Glucose - aqueous	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Glycocoll - aqueous (aminoacetic acid)	0	+	+		+	+	+	0	+	+		0	0	0	0	+	+
Glycol ethyl ether (cellosolve)	-	-	-	+	-	-	-	+	+	+		+	+	+	+	+	+
Grape sugar - aqueous	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Helium	+	+	+	+	+	0	0	0	+	+		0	0	0	0	+	+
Hexamethylene tetramine - aqueous	+	+	+	+	+	+	+	+		0		0	0	0	0	+	+
Hydrazine hydrate - aqueous	-	+	+	+	-	+	+		0		+	-	0	0	0	0	0
Hydrochloric acid - aqueous	-	0	0	+	-	+	+	-	+	-	0	-	-	-	-	-	-

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Standard Chemicals

	NBR	EPDM	FKM	FFKM	CR	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG	GS	1.4401/1.4571	1.4305/1.4104
Hydrochloric acid (gas) - pure	0	0	0	+	0	+	+	-	+	-	+	0	0	0	0	0	0
Hydrofluoric acid - aqueous (* acid resistant FKM compound)	0	0	0*	0	0	0	+	-	+	-	-	-	-	-	-	0	-
Hydrogen peroxide 0,5%	0	+	+	+	-	+	+	+	+	0	+	-	-	-	-	0	+
Hydrogen sulfide - aqueous	0	+	+	+	0	0	0	-	+	0	+	0	0	0	0	+	0
Hydroxylamine sulfate - aqueous	+	+	+	+	0	+	+	+				-	-	+	+	+	+
Illuminating gas	+	+	+	+	+	+		+	+			+	+	+	+	+	+
Iodine+Potassium Iodide - aqueous	0	0	0	+	0	0	0	-	+	-	0	-	-	0	0	0	0
Isooctane - pure	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Kerosene	+	-	+	+	+	+	0	+	+	+	+	+	+	0	0	+	+
Lactic acid	0	0	+	+	+	0	+	-	+	+	+	0	0	0	0	0	0
Lead acetate - aqueous	0	+	+	+	+	+	+	+	+	+	+	0	0	-	-	+	+
Lead tetraethyl - pure (tetraethyl lead)	0	0	+	+	0	+	+	+	+			0	0	+	+	+	+
Lithium chloride - aqueous	+	+	+	+	0	+	+	0	+	+		0	0	0	0	0	0
Magnesium chloride - aqueous	+	+	+	+	0	+	+	0	+	+	+	0	0	0	0	0	0
Maleic acid - aqueous	+	+	+	+	+	+	+	0	+	+	+	0	0	0	0	+	0
Manganese sulfate	+	+	+	+	+	+	+	+	+	+		0	+	0	0	+	0
Mercaptanes	-	-	0	+	-	+		+	0			0	0	-	-	+	+
Mercury chloride	+	+	+	+	+	0	+	-	+	=	+	-	-	-	-	0	0
Methane - pure	+	-	+	+	+	+	0	+	+	+	+	+	+	0	0	+	+
Methoxybutanol	+	+	+	+	0	+	+		+			+	+	+	+	+	+
Methyl alcohol (methanol)	-	0	-	+	0	0	0	0	0	+	+	0	+	0	0	+	+
Methyl amine - aqueous	-	0	0	+	0	0	+	0	-	0	+	-	-	0	0	0	0
Methyl ethyl ketone - pure	-	0	-	+	-	-	-	0	-	0	0	+	+	0	0	+	+
Morpholine - pure	-	0	0	+	0	-	+		+	0		+	+	+	+	+	+

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Standard Chemicals

	NBR	EPDM	FKM	FFKM	CR	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG	GS	1.4401/1.4571	1.4305/1.4104
Natural gas	+	-	+	+	+	+	0	+	+	+	+	0	0	0	0	+	+
Nitric acid - aqueous (40%)	-	0	+	+	-	0	0	-	+	-	0	-	-	-	-	0	0
Nitrobenzoic acids - wässrig	+	+	+	+	+	+	+	+	+	+	+	+	+	0	0	+	+
Nitrogen oxides - gaseous, wet and dry (NO, NO ₂ , N ₂ O)	-	0	-	0	-	0	0	-	0	+	+	-	-	-	0	+	+
Nitrous oxide	+	+	0	+	+	+	+	+	-	+	+	+	+	+	+	+	+
Oleum (fuming sulfuric acid)	-	-	0	+	-	0	0	-	-	0	-	-	-	0	0	+	0
Oxygen (under pressure not permitted)	+	0	+	+	0	+	+	+	+	+	+	+	+	+	+	+	+
Paraffin oil	+	-	+	+	0	0	+	+	+	+	+	+	+	+	+	+	+
Perchloroethylene (tetrachlorethylene) - pure	-	-	0	0	-	0	0	0	+	0	+	0	0	+	0	0	0
Petrolether	+	-	+	=	+	+	0	+	+	+	+	+	+	0	0	+	+
Phosgene (gaseous) - pure		-	+	+	-	+	-	0	+			+	+	+	+	+	+
Phosphor chloride - pure	-	-	0	+	-	-	+	-	+		+		0	0	0	0	0
Picric acid (trinitrophenol)	0	-	0	+	-	-	+		+		+	+	+	+	+	+	+
Potash (potassium carbonate)	+	+	+	+	0	+	+	0	-	+	+	0	0	0	0	+	+
Potassium bifluoride - aqueous	+	+	+		+	+	+	-				0	0	0	0	+	+
Potassium bromide - aqueous	+	+	+	+	+	+	+	-	+	+	+	+	+	0	0	0	0
Potassium chlorate - aqueous	0	0	0	+	0	+	+	0	0	-	+	0	0	0	0	0	0
Potassium chromate - aqueous	0	+	0	+	0	+	+	-	+	+		+	+	0	0	0	0
Potassium dichromate - aqueous	0	0	0	+	0	+	+	-	+	-	+	0	0	0	0	+	+
Potassium ferrocyanide (yellow potassium prussiate) - aqueous	+	+	+	+	+	+	+	+	+		+	+	+	0	0	0	-
Potassium hypochlorite - aqueous	-	0	0	+	-	+	0	-	+	-	+	0	0	0	0	0	0
Potassium nitrate - aqueous	+	+	+	+	0	0	+	+	+	+	+	0	0	0	0	0	0

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Standard Chemicals

	NBR	EPDM	FKM	FFKM	CR	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG	GS	1.4401/1.4571	1.4305/1.4104
Potassium permanganate - aqueous	-	-	-	+	0	+	0	+	+	-	+	0	0	0	0	+	0
Potassium persulfate - aqueous	-	+	0	+	0	+	+	-	0	-	+	-	-	-	-	+	+
Potassium sulfate - aqueous	+	+	+	+	+	+	+	+	+	+	+	+	+	0	0	+	+
Potassium sulfite - aqueous	+	+	+	+	+	0	+	+			+	0	+	0	0	+	0
Propanol (isopropanol)	+	+	+	+	+	+	+	0	+	+	+	+	+	+	+	+	+
Pyridine - pure	-	-	-	+	-	-	0	0	0	0	+	+	+	+	+	+	0
Silicon oil	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sodium arsenate, sodium arsenite	+	+	+	+	+	+	+					+	+	+	+	+	+
Sodium bicarbonate - aqueous	+	+	+	+	+	+	+	+	+	+	+	0	+	0	0	+	+
Sodium bisulfite - aqueous (bisulfite)	0	+	+	+	+	+	+	+	+		+	0	0	-	-	+	0
Sodium bromide - aqueous	+	+	+	+	+	+	+	-	+	+	+	0	0	0	0	0	0
Sodium chloride - aqueous (common salt)	+	+	+	+	+	+	+	+	+	+	+	0	0	0	0	0	0
Sodium chloroacetates	+	+	+	+	+	+	+					0	+	0	0	+	+
Sodium cyanide - aqueous	+	+	+	+	+	+	+	+	+		+	-	-	0	0	+	0
Sodium fluoride - aqueous	+	+	+	+	+	+	+	+	+			+	+	0	0	+	0
Sodium hydroxide - aqueous (caustic soda)	0	+	0	+	+	0	+	0	-	0	+	0	0	0	0	+	+
Sodium iodide - aqueous	+	+	+	+	+	0	+		+	0		0	0	0	0	0	0
Sodium nitrate - aqueous	+	+	+	+	0	0	+	+	+	+	+	0	0	0	0	0	0
Sodium pentachlorophenolate	+	+	+		+	+	+	+				+	+	0	0	+	+
Sodium persulfate - aqueous	0	+	+	+	+	+	+	-	+	-		-	-	-	-	+	0
Sodium pyrosulfite	0	+	+		+	+	+	+				0	0	-	-	+	0
Sodium stannate	+	+	+	+	+	+	+	0				0	0	+	+	+	+
Sodium sulfide - aqueous	+	+	+	+	+	+	+	+	0	+	+	0	-	0	0	+	+

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Standard Chemicals

	NBR	EPDM	FKM	FFKM	CR	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG	GS	1.4401/1.4571	1.4305/1.4104
Sodium tartrate	+	+	+	+	+	+	+	+				+	+	0	0	+	+
Sodium zincate	0	+	+		+									+	+	+	+
Solvent naphtha (Shellsol D 60 and D 70)	0	-	0	+	0	0	0	+	+	+	+	+	+	+	+	+	+
Steam (Rubber seals up to 130 °C, *acid resistant FKM compound)	0	+	+	+	0	-	-	-	+	0	+	0	+	+	+	+	+
Styrene	-	-	0	+	-	-	0	+	+		+	0	0	0	0	+	+
Sulfur chlorides and oxychlorides	-	-	+	+	-	-	-	-	+		+	0	0	0	0	+	-
Sulfur dioxide (gas) - wet	-	+	+	+	-	+	+	0	+	0	+	-	-	-	0	+	0
Sulfur hexafluoride	+		+	0	+	+	+	+	+		+	+	+	+	+	+	+
Sulfuric acid - concentrated	-	-	0	+	-	+	+	-	+	0	-	-	-	+	+	+	0
Tall oil	0	0	0		0	+	+	+	+			-	-	-	-	+	0
Tar oil (carbolineum)	0	0	0	+	0	+	-	+				+	+	+	+	+	+
Tetrachloroethylene (perchloroethylene)	-	-	0	0	-	0	0	-	+	0	+	0	0	+	0	0	0
Tetrahydrofuran - pure	+	-	-	+	-	-	0	+	-	0	+					+	+
Thiophene - pure	-	-	-	+	-	-	0					0	0	0	0	+	+
Toluene - pure	-	-	-	+	-	-	0	+	0	0	+	0	0	0	0	+	+
Trichloroacetic acid - aqueous	0	0	-	+	0	+	0	-	0	+		-	-	-	-	-	-
Trichloromethane (chloroform)	-	-	0	+	-	-	-	-	+	0	+	0	0	0	0	+	0
Triethanolamine - pure	-	-	-	+	+	-	+	0	+			0	0	0	0	+	+
Uranium hexafluoride	+	+	+	0	+	+	+	-						-	-	+	0
Vinyl acetate - pure	+	+	=	+	+	-	+		0	+		0	0	0	0	+	+

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Standard Chemicals

	NBR	EPDM	FKM	FFKM	CR	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG	GS	1.4401/1.4571	1.4305/1.4104
Waste gases- with nitrous gases	0	+	+	+	+	+	+	-	+			-	-	0	0	+	+
Waste gases- with carbon monoxide	+	+	+	+	+	+	+	+	+	+		+	+	+	+	+	+
Waste gases- with hydrogen fluoride	+	+	+	+	+	+	+	0	+	-		0	0	0	0	0	0
Waste gases- with sulfur trioxide (dry)	0	+	+	+	+	+	+	+	+			0	0	0	+	+	+
Water - distilled	0	0	0	+	0	+	+	+	+	0	+	0	+	-	-	+	0
Wood tar, Wood oil (impregnating oils)	-	-	-	+	-	0	-	+		+		+	+	0	0	+	+
Xenon	+	+	+	+	-	-	-	+	+	+	+	+	+	-	-	+	+
Yeast - aqueous	+	+	+	+	+	+	+	+	+		+	0	0	0	0	+	+
Zinc chloride - aqueous	+	+	+	+	+	+	+	-	+	+	+	-	-	-	-	0	0

Commercial Chemicals

	NBR	EPDM	FKM	FFKM	CR	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG	GS	1.4401/1.4571	1.4305/1.4104
Acronal dispersions (polyacrylic acid esters for adhesives)	-	+	+		+	-	+	0		+		0	0	0	0	+	+
Aniseed oil	0				-	-	-	+		0		+	+	0	0	+	+
Antifrogen-N	+	+	+		+	+	+	+		0		0	0	0	0	+	+
ASTM-fuel B	0	-	0	+	-	0	0	+				+	+	+	+	+	+
STM-oil no. 1	+	-	+	+	+	+	0	+				+	+	+	+	+	+
ASTM-oil no. 3	0	-	0	+	+	+	0	+		+		+	+	+	+	+	+
Beeswax	+	+	+		+	+	+	-		+		+	+	0	0	+	+
Brake fluid (ATE Brake fluid)	-	+	-	+	0	0	0	+		+	+	0	0	+	+	+	+
Castor oil	0	-	0	+	0	0	0	+	+	+	+	0	0	0	0	+	+
Chlophene (chlorinated diphenyl)	+	0	+		-	-	+					+	+	0	+	+	+
Coconut oil	0	-	0	+	0	0	0	+	+	+	+	0	0	0	0	+	+
Common salt (sodium chloride)	+	+	+	+	+	+	+	+	+	+	+	0	0	0	0	0	0
Cyclanone (fatty alcohol sulfonate)	+	+	+		+	+	+	+						0	0	+	+
Desmodur T (polyisocyanate)	-	-	+		-							+	+	+	+	+	+
Detergents (synt. detergents)	0	+	0	+	+	+	0	0	+	+		0	0	0	0	+	+
Diesel fuel - pure	+	-	+	+	0	0	0	+	+	+	+	+	+	+	+	+	+
Fats, fatty oils	0	-	0	+	0	0	0	+	+	+	+	0	0	0	0	+	+
Fuel oils	0	-	0	+	0	0	0	+	+	+		0	0	0	0	+	+
Gelatine - aqueous	+	+	+	+	+	+	+	+	+		+	0	0	0	0	+	+
Hair shampoo	0	0	0		0	+	0	+		+		0	0	0	0	+	+
Hydraulic fluids, oil-in-water emulsions (HSA)	0	-	+	+	0	+	+	+		+		+	+	+	+	+	+
Hydraulic fluids, polyglycol-water solutions (HSC)	+	+	+	+	0	+	+	+				+	+	+	+	+	+

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Commercial Chemicals	NBR	EPDM	FKM	FFKM	CR	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG	GS	1.4401/1.4571	1.4305/1.4104
Impregnating oils (wood tar)	-	-	-	+	-	0	-	+		+		+	+	0	0	+	+
Kerosene - pure	+	-	+	+	0	+	+	+	+	+	+	+	+	+	+	+	+
Linseed oil	0	-	0	+	0	0	0	+	+	+	+	0	0	0	0	+	+
Lubricating oils for drills and saws	0	-	0	+	0	+	0	0				+	+	+	+	+	+
Machine oils (see a) paraffin oil b) mineral oils; lubricating oil	+	-	+	+	0	0	+	+	+	+	+	+	+	+	+	+	+
Mineral oils - free from aromatic hydrocarbons	+	-	+	+	0	0	+	+	+	+	+	+	+	+	+	+	+
Nekal BX - aqueous (wetting agents for textiles)	+	+	+	0	+	+	+			0		0	0	0		+	+
Olive oil	0	-	0	+	0	0	0	+	+	+	+	0	0	0	0	+	+
Petrol (gasoline)-benzene mix (super/premium fuel + methanol)	-	-	0	+	-	-	-	0		+	+	0	0	+	+	+	+
Pine-needle oil	0	-	+	+	-	0	+			0		0	0			+	+
Pydraul-A 200	-	0	+		-			+				-	0	0		+	
Pydraul-F-9	-	+	+		-			-				-	0	0		+	
Sagrotan (phenols)	0	0	0	+	0	+	+	-	0	+	0	0	0	0	0	+	+
Skydrol 7000	-	+	-	+	-	-		0				-	0	0	0	+	+
Soda (sodium carbonate)	+	+	+	+	0	+	+	+	0	+	+	0	0	0	0	+	+
Spruce oil	0	-	+	+	-	0	+			0		0	0			+	+
Transformer oil (see mineral oils or if applicable chlophene)																	
Turpentine substitute	0	-	0	+	0	0	0	+	+	+	+	+	+	+	+	+	+
UV - protective	-	+	-		-												
Vaseline oil (mineral oils)	+	-	+	+	0	0	+	+	+	+	+	+	+	+	+	+	+
Water-glass (sodium silicate)	+	+	+	+	+	+	+	+	+	+	+	0	0	+	+	+	+

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Food & Beverages

	NBR	EPDM	FKM	FFKM	CR	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG	GS	1.4401/1.4571	1.4305/1.4104	
Apple juice, apple puree						+	+	+			+	-				-	+	+
Beer	+	+	+		+	+	+	+	+	+	+	+	+	-	-		+	+
Buttermilk	+	+	+		+	+	0	-	+	+		0	0	-	-		+	+
Corn (maize) oil	0	-	0	+	0	0	0	+	+	+	+	0	0	0	0		+	+
Fruit juices	0	0	0		0	0	0	0	+		+	-	-	-	-		+	+
Milk	+	+	+		+	+	+	+	+	+	+	0	+	-	-		+	+
Orange juice						+												+
Rape-seed oil	0	-	0	+	0	0	0	+	+	+	+	0	0	0	0		+	+
Soya oil	0	-	0	+	0	0	0	+	+	+	+	0	0	0	0		+	+
Sugar solutions	+	+	+		+	+	+	+	+	+		+	+	0	0		+	+
Wines	+	+	+		+	+	+	-	+	+	+	-	-	-	-		+	+

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