

Contents

[Introduction](#)

[Interpretation of Symbols](#)

[References](#)

[Summary of Chemical Resistance Properties of Gasket and Housing Materials](#)

[Chemical Resistance Tables](#)

- [Standard Chemicals](#)
- [Commercial Products](#)
- [Foods and Beverages](#)

Introduction

When dealing with aggressive fluids the user is continuously faced with the problem of finding compatible materials. In order to simplify the selection of suitable materials when using Burkert products for aggressive fluids, the following tables provide useful information on the optimal choice of housing and gasket materials.

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 ingress of water in originally pure chemicals can all lead to accelerated corrosion. Dependent on the purity of the fluid as well as the compounding and nature of vulcanization of the gasket materials, deviations can result which affect the suitability and durability of the plastics and elastomers.

The information quoted 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 of the application.

Where liquid food products are involved, the plastics and elastomers employed must normally conform with 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 in this publication.

Interpretation 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 in the most cases 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 (temperature, pressure) or on the concentration and purity of the chemical then the rating 0 will be given.

References

All the information quoted in these resistance tables is based on industrial experience (for example “DECHEMA -Werkstoff-Tabelle”, Germany or “DECHEMA Corrosion Handbook”) and data of the material manufacturers supplemented by our own laboratory tests.

The following chemical resistance tables are divided into three categories, standard chemicals, commercial products and liquid foods and beverages. Materials used seldom in our products (e.g. aluminium) are not described in detail in the tables. In such cases, chemical resistance information related to a particular application or product should be requested. The same applies to nickel-plated and chromium-plated components. The materials PTFE (Teflon) and epoxy resin are also excluded. Both 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 and Housing Materials

Material	Designation	Chemical Resistance	Permissible Temperatures		
			Neutral Fluids		Aggressive Fluids
			long-term °F (°C)	short-term °F (°C)	long-term °F (°C)
Housing Materials					
Metal					
Stainless steel	1.4401 1.4571 1.4305 1.4104	See resistance tables (also 1.4404,1.4408, 1.4410) (also 1.4581) (also 1.4301,1.4303) (also 1.4105)	-4 (-20) to +752 (+400)		-4 (-20) to +302 (+150)
Grey cast iron	GG 25	For neutral fluids	-4 (-20) to +356 (+180)		
S.G. cast iron	GGG 40.3	For neutral fluids	-4 (-20) to +752 (+400)		
Cast steel	GS-C, C22, C25	For neutral fluids	-4 (-20) to +752 (+400)		
Brass	Ms	See resistance tables	-4 (-20) to +482 (+250)		
Leaded red brass	Rg	See resistance tables			

Chemical Resistance Guide

Material	Designation	Chemical Resistance	Permissible Temperatures		
			Neutral Fluids		Agressive Fluids
			long-term °F (°C)	short-term °F (°C)	long-term °F (°C)
Housing Material					
Plastic					
Rigid polyvinyl chloride	PVC	Most acids and bases salt solutions water-miscible, organic solvents Non-resistant to: aromatic and chlorinated hydrocarbons.	+140 (+60)	+140 (+60)	+104 (+40)
Chlorinated polyvinyl chloride	PVC-HT		+32 (0) to +90 (+194)	+32 (0) to +110 (+230)	+32 (0) to +104 (+40)
Polypropylene	PP	Resistant to: Organic solvents, aqueous solutions of acids, bases and salts. Unsuitable for concentrated, oxidizing acids.	+32 (0) to +194 (+90)	+32 (0) to +230 (+110)	+32 (0) to +176 (+80)
Polyethylene	PE				
Polyamide	PA	Resistant to: fats, oils, waxes, fuels, weak bases, aliphatic and aromatic hydrocarbons.	+32 (0) to +212 (+100)		+32 (0) to +140 (+60)
Polytetrafluoroethylene (Teflon)	PTFE	Resistant to nearly all chemicals. Unsuitable for liquid sodium and fluorine compounds.	-4 (-20) to +392 (+200)	-4 (-20) to +500 (+260)	-4 (-20) to +302 (+150)
Fluorine plastic	PFA				
Polyvinylidene fluoride	PVDF	Unsuitable for hot solvents as well as for ketones, esters, and strong bases.	-4 (-20) to +212 (+100)		
Polyphenylsulfide	PPS	Resistant to: dilute mineral acids bases, aliphatic and aromatic hydrocarbons ketones, alcohols chlorinated hydrocarbons oils, fats, water, hydrolysis	to +392 (+200)	to +500 (+260)	
Polyetheretherketone	PEEK	Resistant to most chemicals. Unsuitable for concentrated sulfuric and nitric acid and certain chlorohydrocarbons	to +482 (+250)	to +572 (+300)	

Chemical Resistance Guide

Material	Designation	Chemical Resistance	Permissible Temperatures		
			Neutral Fluids long-term °C (°F)	short-term °C(°F)	Agressive Fluids long-term °C (°F)
Magnet Encapsulation Materials					
Epoxy resin	EP	Resistant to nearly all chemicals. Unsuitable for short-chain organic acids of high concentration and for strong oxidizing substances.	-20 (-4) to +150 (+302)		
Polyamide	PA	See plastic housing materials			
Gasket and Diaphragm					
Ethylene propylene rubber	EPDM	Good resistance to ozone and weathering. Particularly suitable for aggressive chemicals. Unsatisfactory for oils and fats.	-30 (-22) to +130 (+266)		Dependent on aggressiveness of the fluid and on mechanical load.
Fluorine rubber (Viton)	FKM	Resistant to aliphatic and aromatic hydrocarbons, chlorinated solvents, and petroleum even at high temperature.	-10 (+14) to +150 (+302)	-10 (+14) to +200 (+392)	
Nitrile rubber	NBR	Fairly resistant to oil and petrol. Unsatisfactory with oxidizing fluids.	-10 (+14) to +90 (+194)	-10 (+14) to +120 (+248)	
Chloroprene rubber (Neoprene)	CR	The chemical properties are very similar to those of PVC and are between those of NBR and EPDM	-10 (+14) to +100 (+212)	-10 (+14) to +110 (+230)	
Perfluorinated elastomers (Simnz, Kalrez, Chemraz)	FFKM	Chemical properties superior to all other elastomers.	-50 (-58) to +500 to +260	to +320 (+608)	
Polytetrafluorethylene (Teflon)	PTFE	See plastic housing materials.			
Steel	1.4112		-20 (-4) to +450 (+842)		-20 (-4) to +150 (+302)

Chemical Resistance Tables

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
A																	
Acetaldehyde - aqueous	-	+	0	0	0	0	+	0	0	0	+	+	+	0	0	+	+
Acetaldehyde - pure	-	+	-	0	-	-	0	0	-	0	+	+	+	0	0	+	+
Acetic acid - aqueous	-	0	-	0	-	0	0	0	+	+	+	-	0	0	0	0	0
Acetic anhydride - pure	-	0	-	0	-	-	-	-	-	+		-	0	0	0	0	0
Acetic acid ethyl ester (ethyl acetate)	-	0	-	+	-	-	0	0	0	+	+	0	+	0	0	+	+
Acetoacetic ester - acid free	-	-	-	+	-	-	-	+	-	+		0	0	0	0	+	+
Acetone - pure	-	+	-	+	-	-	0	+	-	+	+	+	+	+	+	+	+
Acetophenone	-		-	+	-	-		+	0	0		+	+	+	+	+	+
Acetyl chloride	-	-	-	+	-			-	-	+		0	0	0	0	0	0
Acetylacetone	-	-	-	+	-	-	-	+	-			-	-	0	0	+	+
Acetylene	-	+	-		-	-	0	+		+		+		+	+	+	+
Acetylene (* do not use Ms with >70% Cu)	+	+	+	+	+	0	0	+	+	+	+	+	*		+	+	+
Acrylic acid ethyl ester - pure	-	0	-	+	-	-			0	+				+	+	+	+
Acrylonitrile - pure	-	-	-	+	-	-	+	0	0	+	+	+	+	+	+	+	+
Activin - aqueous (chloramine)	-	0	-	+	-	-		-		+				+	+	+	+
Adipic acid - aqueous	+	+	+	+	+	+	+	+	+	+				+	+	+	+
Albumin solutions	+	+	+		+	+	+	+				0	0	0	0	+	+
Allyl alcohol - aqueous	+	0	0	+	0	-	+	+	0	+		+	+	+	+	+	+
Alum - aqueous (potassium aluminium sulfate)	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	+	0
Aluminium acetate - aqueous	0	+	+	+	+	0	+	+	+	+		0	0	-	-	+	+
Aluminium chloride - aqueous	+	+	+	+	+	+	+	0	+	+	+	0	0	0	0	0	0
Aluminium fluoride - aqueous	+	+	+	+	+	+	+	+	+	+		+	+	0	0	-	-
Aluminium sulfate - aqueous	+	+	+	+	+	+	+	0	+	+	+	-	-	-	-	0	0
Aminoacetic acid (glycocoll)	0	+	+		+	+	+	0	+	+		0	0	0	0	+	+
Ammonia - anhydrous (liquid) (diffuses through EPDM; attacks epoxy materials)	-	0	0	+	+	0	+	+	-	0	+	0	0	+	+	+	+
Ammonia (gas) - pure	-	+	-	+	+	+	+	+	+	0	+	0	0	+	+	+	+
Ammonia liquors (ammonium hydroxide + water)	-	+	0	0	+	0	+	+	-	0	+	-	-	+	+	+	+
Ammonium acetate - aqueous	+	+	+	+	+	+	+		+	+		0	0	0	0	+	+
Ammonium carbonate - aqueous	+	+	+	+	+	+	+	+	+	+		-	-	0	0	+	+
Ammonium chloride - aqueous	+	+	+	+	+	+	+	+	+	+	+	0	0	0	0	0	0
Ammonium citrate - aqueous	+	+	+	+	+	+	+	0		+		0	0	0	0	+	+
Ammonium fluoride - aqueous	+	+	+	0	0	+	+		+	+		0	0	0	0	0	0
Ammonium fluorsilicate - aqueous	+	+	+	+	+	+	+	0		+		0	0	0	0	+	+
Ammonium formiate - aqueous	+	+	+	+	+	+	+	+		+		0	0	0	0	+	+
Ammonium hydroxide + water (ammonia liquors)	-	+	0	0	+	0	+	+	-	0	+	-	-	+	+	+	+
Ammonium nitrate - aqueous	+	+	+	+	+	+	+	+	+	+	+	-	-	0	0	+	+
Ammonium oxalate - aqueous	+	+	+	+	+	+	+	0				0	0	0	0	+	+
Ammonium persulfate - aqueous	-	+	+	+	0	0	+	-		+		0	0	-	-	0	0
Ammonium phosphate - aqueous	+	+	+	+	+	+	+	+	+	+		0	0	+	+	+	+
Ammonium sulfate - aqueous	+	+	+	+	+	+	+	0	+	+	+	-	-	0	0	0	0
Ammonium sulfide - aqueous	+	+	0	+	+	+	+	+	+	+		-	-	0	0	+	+
Ammonium sulfite - aqueous	+	+	+	+	+	+	+	+		+		-	-	0	0	+	0
Ammonium thiocyanate - aqueous	+	+	+		+	+	+	+				-	-	0	0	+	+
Amyl acetate - pure	-	0	-	+	-	-	0	+	+	+	+	+	+	0	0	+	+

Chemical Resistance Tables

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 - pure	-	-	0	+	-	-	-	-	+	0	+	0	0	0	0	+	+
Aniline hydrochloride - aqueous (* acid resistant FKM compound)	0	+	0*	+	0	0	0	-	+			-	-	-	-	-	-
Anisole	0	0	-	+	-	-	-	+		+		+	+	+	+	+	+
Anone (cyclohexanone)	-	-	-	+	-	-	-	+	+	+	+	0	0	0	0	+	+
Anthracene oil	-	-	-	+	-	-	-	+				+	+	+	+	+	+
Anthraquinone sulfonic acid - aqueous	0	+	+	+	+	+	+	0				0	0	0	0	0	0
Antimony chloride - aqueous (* acid resistant FKM compound)	0	+	+	+	+	+	+	-	+	+	+	0	0	0	0	-	-
Apple acid - aqueous	+	+	+	+	+	+	+	+	+	+		-	-	-	-	+	+
Aqua regia	-	-	-	+	-	0	-	-	-	-	-	-	-	-	-	-	-
Arabic acid - aqueous	+	+	+	+	+	+	+					-	-	-	-	+	+
Argon	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Arsenic acid - aqueous	+	+	+	+	+	+	+	0	+			-	0	-	0	+	+
Arsenic trichloride - aqueous	+	+	+	+	+	+	+	-				-	-	0	0	0	0
Arsenious acid - aqueous	+	+	+	+	+	+	+					0	0	-	-	+	+
Aryl silicates - aqueous	0	0	0	+	0							+	+	+	+	+	+
Ascorbic acid - aqueous	+	+	+	+	+	+	+		+			-	-	-	-		
Aspartic acid - aqueous	+	+	+	+	+	+	+	+		+		-	-	0	0	+	+
B																	
Barium chlorate - aqueous	+	+	+	+	+	+	+	-		+		+	+	0	0	+	+
Barium chloride - aqueous	+	+	+	+	+	+	+	+	+	+	+	+	+	0	0	+	0
Barium hydroxide - aqueous	+	+	+	+	+	+	+	0	+	+		+	+	+	+	+	+
Barium sulfide and polysulfide - aqueous	+	+	+	+	+	+	+	-	+	+	+	0	0	0	0	+	+
Benzaldehyde - aqueous	0	+	+	+	-	-	+	0	0	0	+	0	0	-		+	
Benzene - pure	0	-	-	+	-	-	0	+	+	0	+	0	0	0	0	+	+
Benzene sulfonic acid - aqueous	+	+	+	+	+	+	+		+	+	-	0	0	0	0	+	+
Benzidine sulfonic acid - aqueous	+	+	+	+	+	+	+	+				+	+	+	+	+	+
Benzoic acid - aqueous	+	+	+	+	+	+	+	-	+		+	0	0	0	0	+	+
Benzyl alcohol - pure	-	+	0	+	0		+	0	+		+	+	+	0	0	+	+
Benzyl butyl phtalate - aqueous	-	-	-	+	-	-	0	+		0		+	+	+	+	+	+
Bergamot essence	-	-	-		-	-	-	-		+		0	0	0	0	+	+
Bisulfite - aqueous (sodium bisulfite)	0	+	+	+	+	+	+	0	+	+	+	0	0	-	-	+	0
Borax - aqueous	+	+	+	+	+	+	+	+	+	+	+	+	0	+	+	+	+
Boric acid - aqueous	+	+	+	+	+	+	+	-	+		0	0	0	0	0	0	0
Borofluoric acid	+	+	+	0	+	+	+	-	+			-	-	-	-	-	-
Brines	+	+	+	+	+	+	+	+	+	+	+	0	0	-	-	0	0
Bromine (liquid) - pure	-	-	-	+	-	0	-	-	+	-	-	-	0	0	0	0	0
Butadiene	0	0	0	+	+	+	+	+	+	+		+	0	0	0	+	+
Butane (gas and liquid)	0	-	+	+	+	+	+	+	+	+	+	0	0	0	0	+	+
Butanediol - aqueous (10%)	+	+	0	0	0	0	0	+	+	+	+	+	+	+	0	+	+
Butanol - aqueous (butylalcohol)	+	+	0	+	0	0	+	+	+	+	+	+	+	0	0	+	+
Butinediol	0	0	0		0	0	+	+		+	+	+	+	+	0	+	+
Butoxyl (methoxybutyl acetate)	+	0	0		+	-	+					0	0	0	0	+	+
Butyl acetate - pure	-	+	-	+	-	-	-	+	+	+	+	0	+	0	0	+	+
Butyl alcohol (butanol) - aqueous	+	+	0	+	0	0	+	+	+	+	+	+	+	0	0	+	+

Chemical Resistance Tables

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	+	+
Butylene (liquid) - pure	+	0	+	+	+	+	+	+	+	+	+	+	+	0	0	+	+
Butyric acid - aqueous	0	0	0	0	0	0	-	0	+	+	+	0	0	-	-	+	0
C																	
Calcium bisulfite - aqueous	+	+	+	+	+	+	+	-	+	+	+	-	-	0	-	+	0
Calcium chloride - aqueous	+	+	+	+	+	0	+	0	+	+	+	-	-	0	0	0	0
Calcium hydroxide - aqueous	+	+	+	+	+	+	+	+	0	+	+	+	+	+	+	+	+
Calcium hypochlorite - aqueous	-	+	0	+	0	0	+	-	+	-	+	-	-	0	0	0	0
Calcium nitrate - aqueous	+	+	+	+	+	+	+	+	+	+	+	0	0	0	0	0	0
Calcium sulfamate - aqueous	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Camphor oil	+	-	+	0	-	+	-	-	0	0	0	0	0	0	0	+	+
Car-battery fluid (20% sulfuric acid)	0	+	+	+	0	+	+	-	+	+	0	-	-	-	-	+	0
Carbitol	0	0	0	+	0	+	+	+	+	+	+	+	+	+	+	+	+
Carbolic acid - aqueous (phenol)	0	0	0	+	0	+	+	-	+	+	+	0	0	0	0	+	+
Carbolineum	0	0	0	+	0	+	-	+	+	+	+	+	+	+	+	+	+
Carbon dioxide - dry	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	0
Carbon dioxide - wet	+	+	+	+	+	+	+	0	+	+	+	0	0	0	0	+	0
Carbon disulfide	-	-	0	+	0	-	0	0	+	+	+	0	0	+	+	+	+
Carbon monoxide	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carbon tetrachloride - pure	-	-	0	-	-	0	-	+	+	0	+	0	0	0	0	+	+
Carbonic acid - aqueous	+	+	+	+	+	+	+	0	+	+	+	0	0	0	0	+	+
Caro's acid - aqueous	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Caustic potash - aqueous (potassium hydroxide)	0	+	0	+	+	0	+	0	-	0	+	0	0	0	0	+	+
Caustic soda - aqueous (sodium hydroxide)	0	+	0	+	+	0	+	0	-	0	+	0	0	0	0	+	+
Cellosolve (glycol ethyl ether)	-	-	-	+	-	-	-	+	+	+	+	+	+	+	+	+	+
Chloral hydrate (Chloral) - aqueous	-	0	0	+	-	-	-	-	-	0	0	0	0	0	0	0	0
Chloramines - aqueous (activin)	-	0	-	+	-	-	-	-	0	0	0	0	0	0	0	+	+
Chlorbenzenes - pure	-	-	-	+	-	-	-	+	+	-	+	+	+	+	0	+	+
Chloric acid - aqueous	-	0	-	+	-	+	-	-	+	+	+	-	-	-	-	-	-
Chloride of lime - aqueous (calcium hypochlorite)	-	+	0	+	0	0	+	-	+	+	+	-	-	0	0	0	0
Chlorinated water (chlorine gas - wet)	-	-	0	0	-	+	-	-	+	-	-	-	-	-	-	-	-
Chlorine (gas) - dry	-	-	0	+	0	+	-	-	+	-	+	+	+	+	+	+	+
Chlorine (gas) - wet (chlorinated water)	-	-	0	0	-	+	-	-	0	-	-	-	-	-	-	-	-
Chlorine (liquid) - pure	-	-	0	+	-	-	-	-	+	-	-	+	+	+	+	+	+
Chlorine dioxide - aqueous	-	-	-	0	-	+	0	-	0	0	0	-	-	0	0	0	0
Chlormethane (methyl chloride)	-	-	-	+	-	-	-	+	+	0	0	0	0	0	0	0	0
Chloroacetic acid - aqueous	-	0	-	+	-	0	-	-	+	+	+	0	-	0	0	0	-
Chloroethanol (ethylene chlorhydrine)	-	-	0	+	-	-	+	0	+	0	0	+	+	+	+	+	+
Chloroform - pure (trichloromethane)	-	-	0	+	-	-	-	-	+	0	+	0	0	0	0	+	0
Chloronaphtalene	-	-	0	+	-	-	-	+	0	0	0	+	+	+	+	+	+
Chlorophenol	-	-	-	+	-	0	0	0	0	0	0	+	+	0	0	+	+
Chlorophenoxyacetic acid	+	+	+	+	+	+	+	+	+	+	+	0	0	0	0	+	+
Chlorosulfonic acid - pure	-	-	-	+	-	0	-	-	0	-	-	0	0	0	0	0	0
Chlorxylenol	-	-	-	+	-	0	0	0	0	0	0	+	+	0	0	+	+
Choline chloride - aqueous	+	+	+	+	+	0	0	0	0	0	0	-	-	0	0	0	0
Chromic acid - aqueous	-	0	+	+	0	+	0	-	+	-	0	-	-	0	0	0	0

Chemical Resistance Tables

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
Chromium sulfate - aqueous	+	+	+	+	+	+	+	0		+		0	0	-	-	0	0
Citral (citronella oil)	-	-	-		-		-	+		+		+	+	0	0	+	+
Citric acid - aqueous	+	+	+	+	+	+	+	+	+	+	+	0	+	-	-	+	0
Copper acetate - aqueous	0	+	+	+	+	+	+	0	+	+	+	0	-	0	0	+	+
Copper chloride - aqueous	+	+	+	+	+	+	+	0	+	+	+	0	0	0	0	-	-
Copper sulfate - aqueous	+	+	+	+	+	+	+	0	+	+	+	0	0	0	0	0	0
Cresol - aqueous (lysol)	-	-	0	+	-	0	0	-	0	+	+	+	+	0	0	+	0
Cyclohexane - pure	-	-	0	+	-	+	-	+	+	+	+	+	+	+	+	+	+
Cyclohexanol - pure	-	-	+	+	+	0	+	+	+	+	+	+	+	+	+	+	+
Cyclohexanone - pure (anone)	-	-	-	+	-	-	-	+	0	+	+	0	0	0	0	+	+
Cymene	-	-	-		-	-	-	+		0		+	+	+	0	+	+
D																	
Decahydronaphtalene (decalin) - pure	-	-	+	+	-	+	0	+		0		+	+	+	+	+	+
Dextrose - aqueous	+	+	+	+	+	+	+	+		+		+	+	0	0	+	+
Diacetone alcohol - anhydrous	-	+	-	+	0			0		+		0	+	0	0	+	+
Dibutyl phthalate - pure	-	0	-	+	-	0	0	+	-	+		+	+	+	+	+	+
Dibutyl sebacate - pure	-	0	-	+	-	-	+	+	-	+		+	+	+	+	+	+
Dichlorethane (ethylene chloride)	-	-	-	+	0	-	0	+	+	0	+	+	+	+	+	+	+
Dichlorethylene - pure	-	-	0	+	-	-	-	+	+	0	+	+	+	0	0	+	+
Dichlormethane (methylene chloride)	-	-	0	+	-	-	0	0	+	0	+	0	0	0	0	0	0
Dicyclohexyl-ammonium nitrite	+	+	+	+	+							0	0	0	+	+	+
Diethyl ether	-	-	-	+	0	-	+	+	+	+	+	+	+	+	+	+	+
Dimethyl amine	-	0	-	+	-	-	0	-	-	0		0	0	0	0	+	+
Dimethyl formamide - pure	-	-	-	+	-	-	+	-	-	0	+	0	0	0	0	+	+
Dimethyl sulfoxide				+				0	-	+	0						
Dioctyl phthalate - pure	-	0	0	+	-	-	+	+	0	+		+	+	+	+	+	+
Dioxane - pure	-	0	-	+	-	-	-	+	-	+		+	+	+	+	+	+
Diphenyl + diphenyloxide	-	-	-	+	-	-	-	+		+		+	+	+	+	+	+
E																	
Essential oils	-	-	-	+	-	-	-	-		0		0	0	0	0	+	+
Ethane	+	+	+	+	+	+	+	+		+	+	+	+	+	+	+	+
Ethanol - aqueous (ethyl alcohol)	+	+	0	+	+	+	+	0	+	+	+	+	+	+	+	+	+
Ethanolamine	0	0	-	+	0	0	+	+	0	0		-	-	+	+	+	+
Ether (diethyl ether)	-	-	-	+	0	-	+	+	+	+	+	+	+	+	+	+	+
Ethyl acetate - pure (acetic acid ethyl ester)	-	0	-	+	-	-	0	0	0	+	+	0	+	0	0	+	+
Ethyl alcohol - aqueous (ethanol)	+	+	0	+	+	+	+	0	+	+	+	+	+	+	+	+	+
Ethyl alcohol – denaturated (depending on denaturant)	0	0	0	+	0	+	+	0		+	+	0	0	+	+	+	+
Ethyl alcohol - fermentation mash	+	+	+	+	+	+	+	0	+	+	+	+	+	0	0	+	+
Ethyl alcohol + acetic acid	0	+	0	+	0	+	+	-	+	+	+	0	0	0	0	+	+
Ethyl benzene - pure	-	-	0	+	-	-	-	+	+	0		+	+	+	+	+	+
Ethyl chloride - pure	-	-	0	+	-	-	0	+	+	0		0	+	0	0	+	0
Ethyl formiate	-	0	-	+	-	-	0	+	+	+		+	+	0	0	+	+
Ethylene	+	+	+	+	+	+	+	+		+		+	+	+	+	+	+
Ethylene chlorhydrine (chloroethanol)	-	-	0	0	-	-	+	0	+	0	0	+	+	+	+	+	+
Ethylene diamine - pure	0	+	0	0	+	-	+	0	+	0		-	-	0	0	+	0

Chemical Resistance Tables

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 dibromide - anhydrous	-	-	-	+	-	-	-	+	+	0	-	+	+	0	0	+	+
Ethylene dichloride (dichloroethane)	-	-	-	+	0	-	0	+	+	0	0	+	+	+	+	+	+
Ethylene glycol - aqueous (glycol)	+	+	+	+	+	0	0	0	+	+	+	0	0	0	0	+	0
Ethylene oxide - liquid, pure	-	-	-	+	-	-	-	-	+			+	+	+	+	+	+
F																	
Fat alcohol sulfates - aqueous	+	0	+	+	+	+	+	0	+			0	0	0	0	+	+
Fat alcohols	+	0	+	+	+	+	0	+		+		+	+	0	0	+	0
Ferrous/ferric chloride - aqueous	+	+	+	+	+	+	+	-	+	+	+	-	-	-	0	-	-
Ferrous/ferric sulfate - aqueous	+	+	+	+	+	+	+	+	+	+	+	0	0	-	0	+	+
Fluoboric acid (borofluoric acid)	+	+	+	0	+	+	+	-	+	0		-	-	-	-	-	-
Fluorine (dry) - pure	-	-	0	0	-	0	-	-	-	-	-	0	0	-	0	0	0
Fluorine (wet) - pure	-	-	-	0	-	0	-	-	-	-	-	-	-	-	0	0	0
Fluorocarbons (see Freon)								+	0	0	+						
Fluosilicic acid - aqueous	0	0	0	+	0	+	+	-	+	-		-	-	-	-	0	0
Formaldehyde - aqueous	0	+	+	0	+	0	0	+	+	0	0	0	0	0	0	+	0
Formamide - pure	+	+	0	+	+	+	0	0		0		0	0	0	0	+	0
Formic acid - aqueous	-	0	+	0	+	+	+	-	+	+	+	0	0	-	-	+	0
Formic acid - concentrated	-	0	-	0	+	+	+	-	+	+	0	0	0	-	-	+	0
Freon TF (Freon 113)	+	+	+	0	+	+	0	+	+	0	+	+	+	+	+	+	+
Freon 113	+	+	+	0	+	+	0	+	+	+	+	+	+	+	+	+	+
Freon 12	+	0	0	0	0	+	0	+	0	+	+	+	+	+	+	+	+
Freon 13	+	0	0	0	0												
Freon 13 B 1 (Halon)	+	0	0	0	0	+	0	+				+	+	+	+	+	+
Freon 22	-	-	-	0	+	+	0	+		+	+	+	+	+	+	+	+
Freon 23	0	0	0	0	+												
Freon 502	-	-	-	0	0	+	0	+	0		+	+	+	+	+	+	+
Freon substitute HFCKW 123	-	-	-	-	-							+	+	+	+	+	+
Freon substitute HFCKW 134a			-	-						+	+	+	+	+	+	+	+
G																	
Gas liquor	+	-	0		-	0						-	-	0	0	+	+
Gasoline (petrol)	+	-	+	+	+	+	0	+	+	+	+	+	+	0	0	+	+
Glucose - aqueous	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Glycerin - aqueous	+	+	+	+	+	0	0	+	+	+	+	0	0	0	0	+	0
Glycocoll - aqueous (aminoacetic acid)	0	+	+		+	+	+	0	+	+		0	0	0	0	+	+
Glycol - aqueous	+	+	+	+	+	0	0	0	+	+	+	0	0	0	0	+	0
Glycol ethyl ether (cellosolve)	-	-	-	+	-	-	-	+	+	+		+	+	+	+	+	+
Glycolic acid - aqueous	+	+	+	+	+	+	+	-	+	+		0	0	0	0	0	0
Grape sugar - aqueous	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
H																	
Helium	+	+	+	+	+	0	0	0	+	+	+	0	0	0	0	+	+
Heptane, Hexane (petrol) - pure	+	-	+	+	+	+	-	+	+	+	+	+	+	+	+	0	0
Hexamethylene tetramine - aqueous	+	+	+	+	+	+	+	+		0		0	0	0	0	+	+
Humic acids	+	+	+		+	+	+	-				+	+	0	0	+	+
Hydrazine hydrate - aqueous	-	+	+	+	-	+	+		0		+	-	0	0	0	0	0
Hydrobromic acid - aqueous	-	+	+	+	0	+	+	-	+	-	-	-	-	0	0	-	
Hydrochloric acid - aqueous	-	0	0	+	-	+	+	-	+	-	0	-	-	-	-	-	-

Chemical Resistance Tables

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
Hydrocyanic acid	0	0	+	+	+	+	+	-	+	+	+	+	+	0	0	+	0
Hydrofluoric acid - aqueous (* acid resistant FKM compound))	0	0	0*	0	0	0	+	-	+	-	-	-	-	-	-	0	-
Hydrogen - pure	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Hydrogen peroxide 0,5%	0	+	+	+	-	+	+	+	+	0	+	-	-	-	-	0	+
Hydrogen peroxide 30% (* acid resistant FKM compound)	-	0	+	+	-	+	+	-	+	0	+	-	-	-	-	-	0
Hydrogen sulfide - aqueous	0	+	+	+	0	0	0	-	+	0	+	0	0	0	0	+	0
Hydroquinone - aqueous	+	+	+	+	0	+	+	-	+	0				0	0	+	+
Hydroxylamine sulfate - aqueous	+	+	+	+	0	+	+	+				-	-	+	+	+	+
I																	
Illuminating gas	+	+	+	+	+	+		+	+			+	+	+	+	+	+
Inert Gases	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Iodine+Potassium Iodide - aqueous	0	0	0	+	0	0	0	-	+	-	0	-	-	0	0	0	0
Isobutyl alcohol - pure	0	+	+	+	+	0	+	+	+	+	+	+	+	+	+	+	+
Isooctane - pure	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Isopropanol - pure (propanol)	+	+	+	+	+	+	+	0	+	+	+	+	+	+	+	+	+
K																	
Kerosene	+	-	+	+	+	+	0	+	+	+	+	+	+	0	0	+	+
L																	
Lactic acid	0	0	+	+	+	0	+	0	+	+	+	0	0	0	0	0	0
Laughing gas (nitrous oxide)	+	+	0	+	+	+	+	+	-	0		+	+	+	+	+	+
Lead acetate - aqueous	0	+	+	+	+	+	+	+	+	+	+	0	0	-	-	+	+
Lead nitrate - aqueous	+	+	+	+	+	+	+			+		-	-	0	0	+	+
Lead tetraethyl - pure (tetraethyl lead)	0	0	+	+	0	+	+	+	+			0	0	+	+	+	+
Linoleic acid	0	-	0	+	-	+	-		+	+		0	0	0	0	+	0
Lithium chloride - aqueous	+	+	+	+	0	+	+	0	+	+		0	0	0	0	0	0
M																	
Magnesium chloride - aqueous	+	+	+	+	0	+	+	0	+	+	+	0	0	0	0	0	0
Magnesium sulfate - aqueous	+	+	+	+	0	0	+	0	+	+	+	+	+	0	0	0	0
Maleic acid - aqueous	+	+	+	+	+	+	+	0	+	+	+	0	0	0	0	+	0
Manganese chloride	+	+	+	+	+	+	+	+		+		0	0	0	0	0	0
Manganese sulfate	+	+	+	+	+	+	+	+	+	+		0	+	0	0	+	0
Marsh gas (methane)	+	-	+	+	+	+	0	+	+	+	+	+	+	0	0	+	+
Mercaptanes	-	-	0	+	-	+		+	0			0	0	-	-	+	+
Mercury	+	+	+	+	+	+	+	+	+	+	+	-	-	+	0	0	+
Mercury chloride	+	+	+	+	+	0	+	-	+	+	+	-	-	-	-	0	0
Mercury salts - aqueous	+	+	+	+	+	+	+	-	+	+	+	-	-	-	-	+	+
Methane - pure	+	-	+	+	+	+	0	+	+	+	+	+	+	0	0	+	+
Methanol (methyl alcohol)	-	0	-	+	0	0	0	0	0	+	+	0	+	0	0	+	+
Methoxybutanol	+	+	+	+	0	+	+			+		+	+	+	+	+	+
Methyl acetate - pure	-	0	-	+	-	-	+	+	0	+	+	0	+	0	0	0	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 chloride (chloromethane)	-	-	-	+	-	-	-	0	+	0	+	0	0	0	0	0	0
Methyl ethyl ketone - pure	-	0	-	+	-	-	-	0	-	0	0	+	+	0	0	+	+
Methylene chloride (dichloromethane)	-	-	0	+	-	-	0	-	-	0	+	0	0	0	0	0	0
Morpholine - pure	-	0	0	+	0	-	+		+	0		+	+	+	+	+	+

Chemical Resistance Tables

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
N																	
Natural gas	+	-	+	+	+	+	0	+	+	+	+	0	0	0	0	+	+
Nickel sulfate - aqueous	+	+	+	+	+	+	+	+	+	+	+	-	0	-	0	0	0
Nitric acid - aqueous (40%)	-	0	+	+	-	0	0	-	+	-	0	-	-	-	-	0	0
Nitrobenzenes - pure	-	-	0	+	-	-	0	-	0	0	0	+	+	0	+	+	+
Nitrobenzoic acids - wässrig	+	+	+	+	+	+	+	+	+	+	+	+	+	0	0	+	+
Nitrogen	+	+	+	+	+	0	0	+	+	+	+	+	+	+	+	+	+
Nitrogen oxides - gaseous, wet and dry (NO, NO ₂ , N ₂ O ₄)	-	0	-	0	-	0	0	-	0	+	+	-	-	-	0	+	+
Nitrotoluenes (0-, m-, p) - pure	0	-	0	+	-	-	+	-	+	0	0	+	+	+	+	+	+
Nitrous oxide	+	+	0	+	+	+	+	+	-	+	+	+	+	+	+	+	+
O																	
Oleum (fuming sulfuric acid)	-	-	0	+	-	0	0	-	-	0	-	-	-	0	0	+	0
Oxalic acid - aqueous	+	+	+	+	+	+	+	-	+	+	+	0	0	0	0	0	0
Oxygen (under pressure not permitted)	+	0	+	+	0	+	+	+	+	+	+	+	+	+	+	+	+
Ozone - wet and dry	-	0	0	+	0	0	0	-	+	-	0	0	0	0	0	+	+
P																	
Paraffin oil	+	-	+	+	0	0	+	+	+	+	+	+	+	+	+	+	+
Peracetic acid - aqueous (6%)	-	+	+	+	+	+	+	-	-	-	-	-	-	-	-	+	+
Perchloroethylene (tetrachlorethylene) - pure	-	-	0	0	-	0	0	0	+	0	+	0	0	+	0	0	0
Petrol (gasoline)	+	-	+	+	+	+	0	+	+	+	+	+	+	0	0	+	+
Petrolether	+	-	+	+	+	+	0	+	+	+	+	+	+	0	0	+	+
Phenol - aqueous	0	0	0	+	0	+	+	-	0	+	0	0	0	0	0	+	+
Phosgene (gaseous) - pure		-	+	+	-	+	-	0	+	+	+	+	+	+	+	+	+
Phosgene (liquid) - pure		-	0	+	-	0	0	0	+	+	+	+	+	+	+	+	+
Phosphor chloride - pure	-	-	0	+	-	-	+	-	+	+	+	0	0	0	0	0	0
Phosphoric acid - aqueous	0	+	+	+	+	0	0	-	+	+	+	0	0	0	0	0	0
Picric acid (trinitrophenol)	0	-	0	+	-	-	+	+	+	+	+	+	+	+	+	+	+
Pinene (turpentine oil)	0	-	0	+	-	0	-	+	+	+	+	0	0	+	+	+	+
Potash (potassium carbonate)	+	+	+	+	0	+	+	0	-	+	+	0	0	0	0	+	+
Potassium aluminium sulfate - aqueous (alum)	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	+	0
Potassium bifluoride - aqueous	+	+	+	+	+	+	+	-	+	+	+	0	0	0	0	+	+
Potassium bromate - aqueous	+	+	+	+	+	+	+	+	-	+	+	-	0	0	0	+	0
Potassium bromide - aqueous	+	+	+	+	+	+	+	-	+	+	+	+	+	0	0	0	0
Potassium carbonate - aqueous (potash)	+	+	+	+	0	+	+	0	-	+	+	0	0	0	0	+	+
Potassium chlorate - aqueous	0	0	0	+	0	+	+	0	0	-	+	0	0	0	0	0	0
Potassium chloride - aqueous	+	+	+	+	+	+	+	+	+	+	+	0	0	0	0	0	0
Potassium chromate - aqueous	0	+	0	+	0	+	+	-	+	+	+	+	+	0	0	0	0
Potassium cyanide - aqueous	+	+	+	+	+	+	+	+	+	0	+	-	-	0	0	+	+
Potassium dichromate - aqueous	0	0	0	+	0	+	+	-	+	-	+	0	0	0	0	+	+
Potassium ferricyanide (red potassium prussiate) - aqueous	+	+	+	+	+	+	+	+	+	0	+	-	-	0	0	+	+
Potassium ferrocyanide (yellow potassium prussiate) - aqueous	+	+	+	+	+	+	+	+	+	+	+	+	+	0	0	0	-
Potassium hydroxide - aqueous (caustic potash)	0	+	0	+	+	0	+	0	-	0	+	0	0	0	0	+	+
Potassium hypochlorite - aqueous	-	0	0	+	-	+	0	-	+	-	+	0	0	0	0	0	0
Potassium iodide - aqueous	+	+	+	+	+	0	+	+	+	+	+	0	0	0	0	0	0
Potassium nitrate - aqueous	+	+	+	+	0	0	+	+	+	+	+	0	0	0	0	0	0
Potassium nitrite - aqueous	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

Chemical Resistance Tables

Standard Chemicals

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Potassium permanganate - aqueous	-	-	-	+	0	+	0	-	+	-	+	0	0	0	0	+	0
Potassium peroxide - aqueous	-	-	-	+	-	0	0	-	-	-	+	-	-	0	0	+	+
Potassium persulfate - aqueous	-	+	0	+	0	+	+	-	0	-	+	-	-	-	-	+	+
Potassium phosphate - aqueous	+	+	+	+	+	+	+	0	+	-	+	0	0	0	0	+	+
Potassium sulfate - aqueous	+	+	+	+	+	+	+	+	+	+	+	+	+	0	0	+	+
Potassium sulfide - aqueous	+	+	+	+	+	+	+	0	0	+	+	0	-	0	0	+	+
Potassium sulfite - aqueous	+	+	+	+	+	0	+	+	-	-	+	0	+	0	0	+	0
Propane (liquid and gas) - pure	+	-	+	+	+	+	+	+	+	+	+	0	0	0	0	+	+
Propanol (isopropanol)	+	+	+	+	+	+	+	0	+	+	+	+	+	+	+	+	+
Propylenglykol - pure	+	+	+	+	+	+	+	0	+	+	+	+	0	+	+	+	+
Pyridine - pure	-	-	-	+	-	-	0	0	0	0	+	+	+	+	+	+	0
S																	
Silicon oil	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Silver nitrate - aqueous	0	+	+	+	+	0	+	+	+	+	+	-	-	-	-	+	+
Sodium arsenate, sodium arsenite	+	+	+	+	+	+	+	-	-	-	-	+	+	+	+	+	+
Sodium benzoate - aqueous	+	+	+	+	+	+	+	+	+	-	-	+	+	+	+	+	+
Sodium bicarbonate - aqueous	+	+	+	+	+	+	+	+	+	+	+	0	+	0	0	+	+
Sodium bisulfate - aqueous	+	+	+	+	+	+	+	+	+	-	-	0	0	0	0	0	0
Sodium bisulfite - aqueous (bisulfite)	0	+	+	+	+	+	+	+	+	-	-	0	0	-	-	+	0
Sodium bromate - aqueous	+	+	+	+	+	+	+	0	+	-	0	-	0	0	0	+	0
Sodium bromide - aqueous	+	+	+	+	+	+	+	-	+	+	+	0	0	0	0	0	0
Sodium chlorate - aqueous	0	0	0	+	0	+	+	0	+	-	+	0	0	0	0	0	0
Sodium chloride - aqueous (common salt)	+	+	+	+	+	+	+	+	+	+	+	0	0	0	0	0	0
Sodium chlorite - aqueous	-	0	0	+	-	0	0	-	+	-	-	0	0	-	-	0	-
Sodium chloroacetates	+	+	+	+	+	+	+	-	-	-	-	0	+	0	0	+	+
Sodium chromate - aqueous	0	+	0	+	0	+	+	-	+	+	0	+	+	0	0	0	0
Sodium cyanide - aqueous	+	+	+	+	+	+	+	+	+	-	-	+	-	0	0	+	+
Sodium dodecylbenzene sulfonate	+	+	+	-	+	+	0	+	-	-	-	0	0	0	0	+	+
Sodium fluoride - aqueous	+	+	+	+	+	+	+	+	+	-	-	+	+	0	0	+	0
Sodium glutamate	+	+	+	+	+	+	+	-	-	-	-	-	0	0	+	+	+
Sodium hydroxide - aqueous (caustic soda)	0	+	0	+	+	0	+	0	-	0	+	0	0	0	0	+	+
Sodium hypochlorite (chlorine bleach)	-	0	0	+	-	+	0	-	-	-	+	0	0	0	0	0	0
Sodium iodide - aqueous	+	+	+	+	+	0	+	-	+	0	-	0	0	0	0	0	0
Sodium mercaptobenzothiazol	0	0	+	+	0	+	+	-	-	-	-	+	+	+	+	+	+
Sodium nitrate - aqueous	+	+	+	+	0	0	+	+	+	+	+	0	0	0	0	0	0
Sodium nitrite - aqueous	+	+	+	+	+	+	+	+	+	0	+	+	+	+	+	+	+
Sodium pentachlorphenolate	+	+	+	-	+	+	+	+	-	-	-	+	+	0	0	+	+
Sodium perborate - aqueous	0	+	+	+	+	+	+	-	+	-	-	0	0	0	0	+	+
Sodium persulfate - aqueous	0	+	+	+	+	+	+	-	+	-	-	-	-	-	-	+	0
Sodium phosphate - aqueous	+	+	+	+	+	+	+	+	+	-	-	0	0	0	0	0	0
Sodium propionate	+	+	+	-	+	+	+	+	+	-	-	+	+	+	+	+	+
Sodium pyrosulfite	0	+	+	-	+	+	+	+	-	-	-	0	0	-	-	+	0
Sodium silicate - aqueous	+	+	+	+	+	+	+	+	+	+	+	0	0	+	+	+	+
Sodium stannate	+	+	+	+	+	+	+	0	-	-	-	0	0	+	+	+	+
Sodium sulfate - aqueous	+	+	+	+	+	+	+	+	+	+	+	+	+	0	0	+	+
Sodium sulfide - aqueous	+	+	+	+	+	+	+	+	0	+	+	0	-	0	0	+	+

Chemical Resistance Tables

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 sulfite - aqueous	+	+	+	+	+	+	+	+	+		+	0	-	0	0	+	+
Sodium tartrate	+	+	+	+	+	+	+	+				+	+	0	0	+	+
Sodium thiosulfate - aqueous	+	+	+	+	+	+	+	+	+	+		0	-	0	0	0	0
Sodium zincate	0	+	+		+									+	+	+	+
Sodium carbonate (soda)	+	+	+	+	0	+	+	+	0	+	+	0	0	0	0	+	+
Solvent naphtha (Shellsol D 60 and D 70)	0	-	0	+	0	0	0	+	+	+	+	+	+	+	+	+	+
Starch solutions	+	+	+	+	+	+	+	+	+	+	+	0	0	0	0	+	+
Steam (Rubber seals up to 130 °C, *acid resistant FKM compound)	0	+	+	+	0	-	-	-	+	0	+	0	+	+	+	+	+
Stearic acid	+	+	+	+	+	+	+	+	+	+		0	+	-	-	+	+
Styrene	-	-	0	+	-	-	0	+	+		+	0	0	0	0	+	+
Succinic acid - aqueous	+	+	+	+	+	+	+		+	+		+	+	0	0	+	+
Sulfur chlorides and oxychlorides	-	-	+	+	-	-	-	-	+		+	0	0	0	0	+	-
Sulfur dioxide (gas) - dry	-	+	+	+	-	+	+	+	+	+	+	0	0	+	0	+	0
Sulfur dioxide (gas) - wet	-	+	+	+	-	+	+	0	+	0	+	-	-	-	0	+	0
Sulfur dioxide (liquid) - anhydrous	-	0	0	+	0	0	0		0	+	+	0	0	0	0	+	0
Sulfur hexafluoride	+		+	0	+	+	+	+	+		+	+	+	+	+	+	+
Sulfuric acid - aqueous	0	+	+	+	0	+	+	-	+	0	0	-	-	-	-	+	0
Sulfuric acid - concentrated	-	-	0	+	-	+	+	-	+	0	-	-	-	+	+	+	0
Sulfurous acid - aqueous	0	+	+	+	+	+	+	-	+	0	+	-	-	-	-	0	-
T																	
Tall oil	0	0	0		0	+	+	+	+			-	-	-	-	+	0
Tannic acid	+	+	+	+	+	+	+	+	+	+		0	0	0	0	+	+
Tar oil (carbolineum)	0	0	0	+	0	+	-	+				+	+	+	+	+	+
Tartaric acid - aqueous	+	+	+	+	+	+	+	0	+	+	+	-	-	-	-	+	+
Tetrachloroethylene (perchloroethylene)	-	-	0	0	-	0	0	-	+	0	+	0	0	+	0	0	0
Tetraethyl lead	0	0	+	+	0	+	+	+	+	0	+	0	0	+	+	+	+
Tetrahydrofuran - pure	+	-	-	+	-	-	0	+	-	0	+					+	+
Tetrahydronaphtalene (tetralin) - pure	-	-	+	+	-	-	-	+		0		+	+	+	+	+	+
Thiophene - pure	-	-	-	+	-	-	0					0	0	0	0	+	+
Tin chlorides (stannous and stannic chlorides) - aqueous	+	+	+	+	+	+	+	0	+	+	+	-	-	0	0	0	-
Toluene - pure	-	-	-	+	-	-	0	+	0	0	+	0	0	0	0	+	+
Tributyl phosphate – pure (phosphoric acid tributylester)	-	-	-	+	-	-	+		+	+		+	+	+	+	+	+
Trichloroacetic acid - aqueous	0	0	-	+	0	+	0	-	0	+		-	-	-	-	-	-
Trichloroethylene - pure	-	-	0	0	-	0	0	-	+	0	+	+	+	+	+	+	+
Trichloromethane (chloroform)	-	-	0	+	-	-	-	-	+	0	+	0	0	0	0	+	0
Tricresyl phosphate - pure	-	-	-	+	-	-	0	+	-	+		0	0	0	+	+	+
Triethanolamine - pure	-	-	-	+	+	-	+	0	+			0	0	0	0	+	+
U																	
Uranium hexafluoride	+	+	+	0	+	+	+	-						-	-	+	0
Urea - aqueous	+	+	+	+	+	+	+	+	+		+	0	0	0	0	0	0
V																	
Vinyl acetate - pure	+	+	+	+	+	-	+		0	+		0	0	0	0	+	+
Vinyl chloride - pure	-	0	+	+	-	-	0	+	+	0		-	-	0	0	0	0

Chemical Resistance Tables

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
W																	
Waste gases- with nitrous gases	0	+	+	+	+	+	+	-	+			-	-	0	0	+	+
Waste gases- with carbon dioxide	+	+	+	+	+	+	+	+		+		+	+	0	0	+	0
Waste gases- with carbon monoxide	+	+	+	+	+	+	+	+	+	+		+	+	+	+	+	+
Waste gases- with hydrochloric acid	+	+	+	+	+	+	+	-	+	-		0	0	-	-	0	-
Waste gases- with hydrogen fluoride	+	+	+	+	+	+	+	0	+	-		0	0	0	0	0	0
Waste gases- with sulfur dioxide (dry)	0	+	+	+	+	+	+	0	+	+		+	+	+	+	+	+
Waste gases- with sulfur trioxide (dry)	0	+	+	+	+	+	+	+	+			0	0	0	+	+	+
Waste gases- with sulfuric acid - (sulfur trioxide wet)	0	+	+	+	+	+	+	-	+	0		-	-	-	+	+	0
Water - distilled	0	0	0	+	0	+	+	+	+	0	+	0	+	-	-	+	0
Water - seawater	+	+	+	+	+	+	+	+	+	+	+	0	0	0	0	0	0
Wood tar, Wood oil (impregnating oils)	-	-	-	+	-	0	-	+		+		+	+	0	0	+	+
X																	
Xenon	+	+	+	+	-	-	-	+	+	+	+	+	+	-	-	+	+
Xylene - pure	-	-	-	+	-	-	-	+	0	0	+	0	0	0	+	+	0
Y																	
Yeast - aqueous	+	+	+	+	+	+	+	+	+		+	0	0	0	0	+	+
Z																	
Zinc chloride - aqueous	+	+	+	+	+	+	+	-	+	+	+	-	-	-	-	0	-
Zinc sulfate - aqueous	+	+	+	+	+	+	+		+	+	+	-	-	-	-	+	-

Chemical Resistance Tables

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
A																	
Acronal dispersions (polyacrylic acid esters for adhesives)	-	+	+		+	-	+	0		+		0	0	0	0	+	+
Acronal solutions	-	0	-		-	-	0	0		+		0	0	0	0	+	+
Aniseed oil	0				-	-	-	+		0		+	+	0	0	+	+
Anti-freeze (ethylene glycol)	0	+	+	+	+	+	+		+	0	+	+	0	+			
Antifrogen-N	+	+	+		+	+	+	+		0		0	0	0	0	+	+
ASTM-fuel A	0	-	0	+	0	+	0	+				+	+	+	+	+	+
ASTM-fuel B	0	-	0	+	-	0	0	+				+	+	+	+	+	+
ASTM-fuel C	0	-	0	+	-	0	0	+		+		+	+	+	+	+	+
ASTM-oil no. 1	+	-	+	+	+	+	0	+				+	+	+	+	+	+
ASTM-oil no. 2	0	-	+	+	+	+	0	+				+	+	+	+	+	+
ASTM-oil no. 3	0	-	0	+	+	+	0	+		+		+	+	+	+	+	+
ATE Brake fluid	-	+	-	+	0	0	0	+		+	+	0	0	+	+	+	+
B																	
Beeswax	+	+	+		+	+	+	-		+		+	+	0	0	+	+
Bone oil	0	-	+	+	0	0	+	+		+		+	+	+	+	+	+
Brake fluid (ATE Brake fluid)	-	+	-	+	0	0	0	+		+	+	0	0	+	+	+	+
C																	
Castor oil	0	-	0	+	0	0	0	+	+	+	+	0	0	0	0	+	+
Cellulose varnishes	-	0	-	+	-	-	0	+		+		0	0	0	0	+	+
Chlophene (chlorinated diphenyl)	+	0	+		-	-	+					+	+	0	+	+	+
Chlorine bleach (sodium hypochlorite)	-	0	0	+	-	+	0	-	-	-	+	0	0	0	0	0	0
Coconut oil	0	-	0	+	0	0	0	+	+	+	+	0	0	0	0	+	+
Cod-liver oil	0	0	+	+	+	+	+			+		0	0	0	0	+	+
Common salt (sodium chloride)	+	+	+	+	+	+	+	+	+	+	+	0	0	0	0	0	0
Cottonseed oil	0	-	0	+	0	+	-		+	+		+	+		0	+	+
Cyclanone (fatty alcohol sulfonate)	+	+	+		+	+	+	+						0	0	+	+
D																	
Desmodur T (polyisocyanate)	-	-	+		-							+	+	+	+	+	+
Desmophen (saturated polyester)	+	+	+		+									+	+	+	+
Detergents (synt. detergents)	0	+	0	+	+	+	0	0	+	+		0	0	0	0	+	+
Dextrin - aqueous	+	+	+	+	+	+	+	+	+	+		+	+	+	+	+	+
Diesel fuel - pure	+	-	+	+	0	0	0	+	+	+	+	+	+	+	+	+	+
F																	
Fats, fatty oils	0	-	0	+	0	0	0	+	+	+	+	0	0	0	0	+	+
Fruit tree carbolineum	0	0	0	+	0	+	-	+		0		+	+	+	+	+	+
Fuel oils	0	-	0	+	0	0	0	+	+	+		0	0	0	0	+	+
G																	
Gelatine - aqueous	+	+	+	+	+	+	+	+	+		+	0	0	0	0	+	+
H																	
Hair shampoo	0	0	0		0	+	0	+		+		0	0	0	0	+	+
Hydraulic fluids, mineral oils (H, H-L, H-LP)	0	-	0	+	0	+	+	+		+		+	+	+	+	+	+
Hydraulic fluids, oil-in-water emulsions (HSA)	0	-	+	+	0	+	+	+		+		+	+	+	+	+	+
Hydraulic fluids, phosphoric ester (HSD)	-	0	0	+	-	-	-	-		+		+	+	+	+	+	+
Hydraulic fluids, polyglycol-water solutions (HSC)	+	+	+	+	0	+	+	+				+	+	+	+	+	+
Hydraulic fluids, water-in-oil emulsions (HSB)	0	-	+	+	0	+	+	+		+		+	+	+	+	+	+

Chemical Resistance Tables

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
I																	
Impregnating oils (wood tar)	-	-	-	+	-	0	-	+		+		+	+	0	0	+	+
Iodine tincture	0	0	0	0	0	-	0	-	+		0	0	0	0	0	0	0
K																	
Kerosene - pure	+	-	+	+	0	+	+	+	+	+	+	+	+	+	+	+	+
L																	
Linseed oil	0	-	0	+	0	0	0	+	+	+	+	0	0	0	0	+	+
Lubricating oil (mineral oils; machine oils)	+	-	+	+	0	0	+	+	+	+	+	+	+	+	+	+	+
Lubricating oils for drills and saws	0	-	0	+	0	+	0	0				+	+	+	+	+	+
Lysol (cresols)	-	-	0	+	-	0	0	-	0	+	+	+	+	0	0	+	0
M																	
Machine oils (see a) paraffin oil b) mineral oils; lubricating oils)	+	-	+	+	0	0	+	+	+	+	+	+	+	+	+	+	+
Mersols (alkane sulfonic acid chloride)	+	0	+		+	+	0					0	0	0	0	0	0
Mineral oils - free from aromatic hydrocarbons	+	-	+	+	0	0	+	+	+	+	+	+	+	+	+	+	+
Molasses	+	+	+	+	+	+	+	+	+	+	+	0	0	0	0	+	+
N																	
Nekal BX - aqueous (wetting agents for textiles)	+	+	+	0	+	+	+			0		0	0	0		+	+
Nickel baths	+	+	+		+	+	+	+				-	-	-	0	+	0
O																	
Olive oil	0	-	0	+	0	0	0	+	+	+	+	0	0	0	0	+	+
P																	
Petrol (gasoline)-benzene mix (super/premium fuel + methanol)	-	-	0	+	-	-	-	0		+	+	0	0	+	+	+	+
Photo-emulsions, developers, fixers	0	0	0	+	0	+	+		+	0							
Pine-needle oil	0	-	+	+	-	0	+			0		0	0			+	+
Pydraul-A 150	-	0	+		-			+				-	0	0		+	
Pydraul-A 200	-	0	+		-			+				-	0	0		+	
Pydraul-AG	-	+	+		-			+				-	0	0		+	
Pydraul-F-9	-	+	+		-			-				-	0	0		+	
S																	
Sagrotan (phenols)	0	0	0	+	0	+	+	-	0	+	0	0	0	0	0	+	+
Skydrol 500	-	+	0	+	-	-		0		+	+	-	0	0	0	+	+
Skydrol 7000	-	+	-	+	-	-		0				-	0	0	0	+	+
Soap solution - aqueous	0	0	0	+	0	0	0	0	+	+		0	+	0	0	+	+
Soda (sodium carbonate)	+	+	+	+	0	+	+	+	0	+	+	0	0	0	0	+	+
Spindle oil (mineral oils)	+	-	+	+	0	0	+	+	+	+	+	+	+	+	+	+	+
Spruce oil	0	-	+	+	-	0	+			0		0	0			+	+
T																	
Transformer oil (see mineral oils or if applicable chlophene)																	
Turpentine (oil of turpentine) - pure	0	-	0	+	-	0	-	+	+	+	+	0	0	+	+	+	+
Turpentine substitute	0	-	0	+	0	0	0	+	+	+	+	+	+	+	+	+	+
U - Z																	
UV - protective	-	+	-		-												
Varnishes	0	-	+	+	+	+	-	+		+		+	+	0	0	+	+
Vaseline oil (mineral oils)	+	-	+	+	0	0	+	+	+	+	+	+	+	+	+	+	+
Vinegar	+	+	+	+	+	+	+	-	+	+	+	-	-	0	0	+	+
Water-glass (sodium silicate)	+	+	+	+	+	+	+	+	+	+	+	0	0	+	+	+	+
Wetting agents for textiles (Nekal BX)	+	+	+		+	+	+					0	0	0		+	+

Chemical Resistance Tables

Food and 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						+	+	+			+	-			-	+	+
Apricot juice												+	+		-	+	+
Beer	+	+	+		+	+	+	+	+	+	+	+	+	-	-	+	+
Butter	+	+	+		+	+	+	+	+	+		-	-	-	-	+	+
Buttermilk	+	+	+		+	+	0	-	+	+		0	0	-	-	+	+
Cider	+	+	+			+	+	+	+	+				-	-	+	+
Corn (maize) oil	0	-	0	+	0	0	0	+	+	+	+	0	0	0	0	+	+
Edible fats and oils	0	-	0	+	0	0	0	+	+	+	+	0	0	0	0	+	+
Fruit juices	0	0	0		0	0	0	0	+		+	-	-	-	-	+	+
Lemon juice	0	+	+		+	+	+	+				0	0	-	-	+	0
Milk	+	+	+		+	+	+	+	+	+	+	0	+	-	-	+	+
Mineral water	+	+	+		+	+	+	+	+	+	+	0	0	0	0	0	0
Orange juice						+											+
Pineapple juice					-	+						-	-	-	-	+	+
Rape-seed oil	0	-	0	+	0	0	0	+	+	+	+	0	0	0	0	+	+
Saccharin (sweetener)	+	+	+		+	+	+			0		+	+	0	0	+	+
Soya oil	0	-	0	+	0	0	0	+	+	+	+	0	0	0	0	+	+
Spirits - depending on constituents and aroma additives	0	0	0		0	+	+		+	+	+	-	-	0	0	+	
Sugar solutions	+	+	+		+	+	+	+	+	+		+	+	0	0	+	+
Wine vinegar (acetic acid)	-	0	-	0	-	0	0	0	+	+	+	-	0	0	0	0	0
Wines	+	+	+		+	+	+	-	+	+	+	-	-	-	-	+	+

