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Chemical Resistance Chart

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 HITEGLA products for aggressive fluids, the following tables provide useful information on the optimal choice of housing and gasket materials for a multitude of media.

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 vulcanisation 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.

HITEGLA does not assume any liability for your selection. No claims on the basis of an incorrect advice can be made from the use of the Chemical Resistance Chart. Neither warranty claims, guarantee claims nor claims for damages can be derived. We also reserve the right to change, update or modify all information in this chart without notice.



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Structure and content of the chemical resistance charts

The following chemical resistance tables are divided into three categories. These are basic chemicals (chapter 2.2), liquid commercial products (chapter 2.3) and liquid food ingredients (chapter 2.4).

The resistance of these fluids is rated in detail for the elastomeric materials, plastics and metallic materials commonly used in HITEGLA products. Rarely used materials such as CSM as well as aluminum are not described in the tables. Epoxy resin, which is commonly used in the construction of our products, but which is not mentioned, is resistant to most common chemicals.

Information regarding the chemical resistance of the unlisted materials is available on request, including chrome and nickel-plated parts.

Please see the overview in chapter 2.1 for additional information regarding general chemical resistance of seal and body materials. For the most commonly used chemical substances the chemical formula is added in the charts. The suffix "pure" means the technical pureness of the fluid, which in most cases exceeds 95% purity. As a rule, organic fluidic or gaseous media have this supplement. "Acetic acid - pure" means for example a 98% acetic acid. The suffix "aqueous" is mostly used for water miscible substances (such as Ethanol) but also for aqueous solutions of inorganic salts.

Due to the great number of possible concentrations, an average concentration is always assumed. Saturated aqueous solutions are described only if explicitly noted and the reference temperature for all statements is room temperature. At higher temperatures a reduced chemical resistance must be considered.

Interpretation of Symbols

- + material is not affected or is slightly affected by the chemical: suitable
- various attack level depending on prevailing conditions: limited suitability
- material exhibits severe attack: unsuitable

If materials are rated as "limited suitability", the time of impact has to be considered. At a long period of impact these materials can be heavily attacked or even destroyed. Therefore these parts are rated as wear parts and are not included in the standard warranty conditions.

In many cases it is not possible to make a clear statement due to different service conditions. In these cases the rating should also be "limited suitability".

References

All the information quoted in these resistance tables is based on industrial experience. The data of our material and compound manufacturers and HITEGLA's own stringent laboratory tests.

Chemical resistance properties gasket and housing materials

Overview

Material	Designation	General information on chemical resistance	Permissible temperatures		
			Neutral fluids long-term °C(°F)	Neutral fluids short-term °C(°F)	Aggressive fluids long-term °C(°F)
Gasket and diaphragm materials					
Ethylene propylene diene rubber	EPDM	Good resistance to ozone and weathering. Particularly suitable for aggressive chemicals. Unsatisfactory for oils and fats.	-30 (-22) to +130 (+266)		Dependant on aggressiveness of the fluid and on mechanical load.
Fluorine rubber	FKM	Chemical properties are superior to all other elastomers.	0 (+32) to +150 (+302)	0 (+32) to +200 (+392)	
Nitrile rubber	NBR	Fairly resistant to oil and petrol. Unsatisfactory with oxidising fluids.	-10 (+14) to +90 (+194)	-10 (+14) to +120 (+248)	
Chloroprene rubber	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	FFKM	Similar to PTFE (dependent on blend)	+5 (+41) to +230 (+446)	+5 (+41) to +230 (446)	
Polytetrafluorethylene	PTFE	See plastic housing materials			

Material	Designation	General information on chemical resistance	Permissible temperatures		
			Neutral fluids long-term °C(°F)	Neutral fluids short-term °C(°F)	Aggressive fluids long-term °C(°F)
Housing materials - Metal					
Stainless steel	1.4401	Also applies for 1.4404, 1.4408, 1.4409	-20 (-4) to +400 (+752)		-20 (-4) to +150 (+302)
	1.4571	Also applies for 1.4581	-20 (-4) to +400 (+752)		-20 (-4) to +150 (+302)
	1.4305	Also applies for 1.4301, 1.4303	-20 (-4) to +400 (+752)		-20 (-4) to +150 (+302)
	1.4105	Also applies for 1.4113	-20 (-4) to +400 (+752)		-20 (-4) to +150 (+302)
Grey cast iron	GG	For neutral fluids	-20 (-4) to +180 (+356)		
Cast steel	GS	For neutral fluids	-20 (-4) to +400 (+752)		
Brass	MS	See individual resistance	-20 (-4) to +250 (+482)		
Red bronze	RG	See individual resistance	-20 (-4) to +250 (+482)		
Housing materials - Plastic					
Polyvinyl chlorid	PVC	Resistant to most acids, bases and salt solutions.	0 (+32) to +60 (+140)	0 (+32) to +60 (+140)	0 (+32) to +40 (+104)
Polypropylene	PP	Resistant to organic solvents as well as aqueous solutions of acids, bases and salts. Unsuitable for concentrated, oxidising acids	0 (+32) to +100 (+212)		0 (+32) to +60 (+140)
Polyamide	PA	Resistant to fats, oils, waxes, fuels, weak bases, aliphatic and aromatic hydrocarbons.	0 (+32) to +100 (+212)		0 (+32) to +60 (+140)
Ethylene tetrafluoroethylene copolymer	ETFE	Good resistance to many aggressive media (acids, aromatic hydrocarbons), not resistant against fuming nitric acid and sulphuric acid	-20 (-4) to +200 (+392)	-20 (-4) to +260 (+500)	-20 (-4) to +150 (+302)
Polytetrafluor-ethylene	PTFE	Resistant to nearly all chemicals. Unsuitable for liquid sodium and fluorine compounds.	-20 (-4) to +200 (+392)	-20 (-4) to +260 (+500)	-20 (-4) to +150 (+302)
Polyvinylidene-fluoride	PVDF	Unsuitable for hot solvents as well as for ketones, esters, and strong bases.	-20 (-4) to +100 (+212)		
Polyphenylene sulfide	PPS	Resistant to dilute mineral acids, bases, aliphatic and aromatic hydrocarbons, oils, fats, water, and to hydrolysis.	-40 (-40) to +200 (+392)	-40 (-40) to +260 (+500)	
Polyetherether-ketone	PEEK	Resistant to most chemicals. Unsuitable for concentrated sulfuric and nitric acid and certain chlorohydrocarbons.	-20 (-4) to +150 (+302)	-20 (-4) to +170 (+338)	

Resistance in basic chemicals

Name	Formula	NBR	EPDM	FKM	FFKM	CR	PTFE	ETFE	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG, GS	1.4401/1.4571	1.4305/1.4105
Chemicals																			
A																			
Acetaldehyde - aqueous	CH ₃ CHO	-	+	O	O	O	+	+	O	+	O	O	O	+	+	+	O	+	+
Acetaldehyde - pure	CH ₃ CHO	-	+	-	O	-	+	+	-	O	O	O	O	+	+	+	O	+	+
Acetic acid - pure	CH ₃ COOH	-	O	-	O	-	+	+	O	-	O	+	+	+	-	-	-	O	O
Acetic anhydride - pure	CH ₃ COOCOCH ₃	-	O	-	O	-	+	+	-	-	-	-	+	-	-	-	O	O	O
Acetoacetic ester (acid-free) - pure	CH ₃ COCH ₂ COOC ₂ H ₅	-	-	-	+	-	+	O	-	-	+	-	+	-	O	O	O	+	+
Acetone - pure	CH ₃ COCH ₃	-	+	-	+	-	+	+	-	O	+	-	+	+	+	+	+	+	+
Acetophenone - pure	C ₆ H ₅ COCH ₃	-	-	+	-	+	O	-	-	+	O	O	-	+	+	+	+	+	+
Acetylacetone - pure	CH ₃ COCH ₂ COCH ₃	-	-	-	+	-	+	-	-	+	-	-	-	-	-	-	O	+	+
Acetylchloride - pure	CH ₃ COCl	-	-	-	+	-	+	+	-	-	+	-	-	+	O	O	O	O	O
Acetylene - technical	HCCH	- ¹	+ ¹	- ¹	+ ¹	- ¹	+	+	O	O	+	+	+	+	+ ²	-	+	+	+
Acrylonitrile - pure	CH ₂ CHCN	-	-	-	+	-	+	+	-	+	O	O	+	+	+	+	+	+	+
Adipic acid - aqueous	HOOC(CH ₂) ₄ COOH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Albumin - pure		+	+	+	+	+	+	+	+	+	+	+	+	+	O	O	O	+	+
Allyl alcohol - pure	CH ₂ CHCH ₂ OH	+	+	O	+	O	+	+	-	+	+	+	+	+	+	+	+	+	+
Alum (potassium aluminium sulphate) - aqueous	KAl(SO ₄) ₂ · 12 H ₂ O	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	+	O
Aluminium acetate - aqueous	Al(OOCCH ₃) ₃	O	+	+	+	+	+	+	O	+	+	+	+	+	O	O	-	+	+
Aluminium chloride - aqueous	AlCl ₃	+	+	+	+	+	+	+	+	+	O	+	+	+	O	O	O	O	O
Aluminium fluoride - aqueous	AlF ₃	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	O	-	-

Name	Formula	NBR	EPDM	FKM	FFKM	CR	PTFE	ETFE	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG, GS	1.4401/1.4571	1.4305/1.4105
Aluminium sulphate - aqueous	Al(SO ₄) ₃	+	+	+	+	+	+	+	+	+	O	+	+	+	-	-	-	O	O
Aminoacetic acid (glycine) - aqueous	NH ₂ CH ₂ COOH	O	+	+	+	+	+	+	+	+	O	+	+	+	O	O	O	+	+
Ammonia (gaseous) - pure	NH ₃	-	+	O	O	+	+	+	+	+	O	+	O	+	-	-	+	+	+
Ammonia (liquid) - pure	NH ₃	-	O ³	O	O	+	+	+	O	O	+	-	O	+	O	O	+	+	+
Ammonia water (ammonia solution, ammonium hydroxide)	NH ₄ OH	-	+	O	O	+	+	+	+	+	O	O	O	+	-	-	+	+	+
Ammonium acetate - aqueous	CH ₃ COONH ₄	+	+	+	+	+	+	+	+	+	+	+	+	+	O	O	O	+	+
Ammonium carbonate - aqueous	(NH ₄) ₂ CO ₃	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	O	+	+
Ammonium chloride - aqueous	NH ₄ Cl	+	+	+	+	+	+	+	+	+	+	+	+	+	O	O	O	O	O
Ammonium citrate - aqueous		+	+	+	+	+	+	+	+	+	O	+	+	+	O	O	O	+	+
Ammonium fluoride - aqueous	NH ₄ F	+	+	+	O	O	+	+	+	+	+	+	+	+	O	O	O	O	O
Ammonium fluosilicate - aqueous		+	+	+	+	+	+	+	+	+	O	+	+	+	O	O	O	+	+
Ammonium formate - aqueous	HNCOONH ₄	+	+	+	+	+	+	+	+	+	+	+	+	+	O	O	O	+	+
Ammonium hydroxide (ammonia solution, ammonia water) - aqueous	NH ₄ OH	-	+	O	O	+	+	+	+	+	O	O	O	+	-	-	+	+	+
Ammonium nitrate - aqueous	NH ₄ NO ₃	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	O	+	+
Ammonium oxalate - aqueous	NH ₄ OOC ₂ COONH ₄	+	+	+	+	+	+	+	+	+	O	+	+	+	O	O	O	+	+
Ammonium persulphate - aqueous	(NH ₄) ₂ S ₂ O ₈	-	+	+	+	O	+	+	O	+	-	+	+	+	O	O	-	O	O
Ammonium phosphate - aqueous	(NH ₄) ₂ HPO ₄	+	+	+	+	+	+	+	+	+	+	+	+	+	O	O	+	+	+
Ammonium sulphate - aqueous	(NH ₄) ₂ SO ₄	+	+	+	+	+	+	+	+	+	O	+	+	+	-	-	O	O	O
Ammonium sulphide - aqueous	(NH ₄) ₂ S	+	+	O	+	+	+	+	+	+	+	+	+	+	-	-	O	+	+
Ammonium sulphite - aqueous	(NH ₄) ₂ SO ₃	+	+	+	+	+	+	O	+	+	+	+	+	+	-	-	O	+	O

Resistance in basic chemicals

Name	Formula	NBR	EPDM	FKM	FFKM	CR	PTFE	ETFE	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG, GS	1.4401/1.4571	1.4305/1.4105
Ammonium thiocyanate - aqueous	NH ₄ NCS	+	+	+		+	+	+	+	+	+				-	-	O	+	+
Amyl acetate - pure	CH ₃ COO(CH ₂) ₄ CH ₃	-	O	-	+	-	+	+	-	O	+	+	+	+	+	+	O	+	+
Amyl alcohol - pure	H ₃ C(CH ₂) ₄ OH	+	O	+	+	+	+	+	+	+	+	+	+		+	+	O	+	+
Aniline hydrochloride - aqueous	C ₆ H ₅ NH ₃ Cl	O	+	O ⁵	+	O	+	O	O	O	-	+			-	-	-	-	-
Aniline - pure	C ₆ H ₅ NH ₂	-	O	O	+	-	+	+	-	O	-	+	O	+	-	-	O	+	+
Anisole (methoxybenzene) - pure	C ₆ H ₅ OCH ₃	O	O	-	+	-	+		-	-	+		+		+	+	+	+	+
Anone (cyclohexanone) - pure	C ₆ H ₁₀ O	-	-	-	+	-	+	+	-	-	+	O	+	+	O	O	O	+	+
Anthracene oil - pure		-	-	-	+	-	+		-	-	+				+	+	+	+	+
Anthraquinone sulphonic acid - aqueous	C ₆ H ₄ COCOC ₆ H ₄ SO ₃ H	O	+	+	+	+	+	O	+	+	O				O	O	O	O	O
Antimony chloride - aqueous	SbCl ₃	O	+	+ ⁵	+	+	+		+	+	-	+	+	+	O	O	O	-	-
Aqua regia	HNO ₃ + HCl	-	-	-	+	-	+	O	O	-	-	-	-	-	-	-	-	-	-
Arabic acid - aqueous		+	+	+	+	+	+		+	+					-	-	-	+	+
Argon - pure	Ar	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Arsenic acid - aqueous	H ₃ AsO ₄	+	+	+	+	+	+	O	+	+	O	+			-	O	-	+	+
Arsenic trichloride - aqueous	AsCl ₃	+	+	+	+	+	+		+	+	-				-	-	O	O	O
Arsenious acid - aqueous	H ₃ AsO ₃	+	+	+	+	+	+		+	+					O	O	-	+	+
Arylsilicate - aqueous		O	O	O	+	O	+								+	+	+	+	+
Ascorbic acid - aqueous	C ₆ H ₈ O ₆	+	+	+	+	+	+		+	+			+		-	-	-		
Aspartic acid - aqueous	HOOCCHNH ₂ CH ₂ -COOH	+	+	+	+	+	+		+	+	+		+		-	-	O	+	+

Name	Formula	NBR	EPDM	FKM	FFKM	CR	PTFE	ETFE	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG, GS	1.4401/1.4571	1.4305/1.4105
B																			
Barium chlorate - aqueous	Ba(ClO ₃) ₂	+	+	+	+	+	+		+	+	-		+		+	+	O	+	+
Barium chloride - aqueous	BaCl ₂	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	O	+	O
Barium hydroxide - aqueous	Ba(OH) ₂	+	+	+	+	+	+	+	+	+	O	+	+		+	+	+	+	+
Barium sulphide and polysulfide - aqueous	BaS	+	+	+	+	+	+	+	+	+	-	+	+	+	O	O	O	+	+
Battery acid (sulphuric acid 20%)	H ₂ SO ₄	O	+	+	+	O	+	+	+	+	-	+	+	O	-	-	-	+	O
Benzaldehyde - aqueous	C ₆ H ₅ CHO	O	+	+	+	-	+	+	-	+	O	O	O	+	O	O	-	+	
Benzene - pure	C ₆ H ₆	-	-	-	+	-	+	O	-	-	+	O	O	+	O	O	O	+	+
Benzenesulfonic acid - aqueous	C ₆ H ₅ SO ₃ H	+	+	+	+	+	+	+	+	+		+	+	-	O	O	O	+	+
Benzidine sulphonic acids - aqueous	NH ₂ C ₆ H ₄ C ₆ H ₃ -SO ₃ HNH ₂	+	+	+	+	+	+		+	+	+				+	+	+	+	+
Benzine (heptane, hexane) - pure		+	-	+	+	+	+	+	+	O	+	+	+	+	+	+	+	+	+
Benzoic acid - aqueous	C ₆ H ₅ COOH	+	+	+	+	+	+	+	+	+	-	+		+	O	O	O	+	+
Benzyl alcohol - pure	C ₆ H ₅ CH ₂ OH	-	+	O	+	O	+	+		+	O	+		+	+	+	O	+	+
Bergamot oil		-	-	-		-	+		-	-	-		+		O	O	O	+	+
Bisulphite (sodium bisulphite, sodium hydrogen sulphide) - aqueous	NaHSO ₃	O	+	+	+	+	+	+	+	+	O	+	+	+	O	O	-	+	O
Borax - aqueous	N ₂ B ₄ O ₇	+	+	+	+	+	+	+	+	+	+	+	+	+	+	O	+	+	+
Boron hydrofluoric acid (fluoroboric acid) - pure	HF ₄	+	+	+	O	+	+	+	+	+	-	+	+		-	-	-	-	-
Boric acid - aqueous	H ₃ BO ₃	+	+	+	+	+	+	+	+	+	-	+		O	O	O	O	O	O
Brine (cooling brine)		+	+	+	+	+	+	+	+	+	+	+	+	+	O	O	-	O	O

Resistance in basic chemicals

Name	Formula	NBR	EPDM	FKM	FFKM	CR	PTFE	ETFE	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG, GS	1.4401/1.4571	1.4305/1.4105
Bromine (liquid) - pure	Br ₂	-	-	-	+	-	+	O	O	-	-	+	-	-	-	O	O	O	O
Butadiene - pure	CH ₂ (CH) ₂ CH ₂	O	O	O	+	+	+	+	+	+	+	+	+	+	+	O	O	+	+
Butane (gaseous and liquid) - pure	C ₄ H ₁₀	+	-	+	+	+	+	+	O	O	+	+	+	+	+	O	O	+	+
Butanediol - aqueous (10%)	HO(CH ₂) ₄ OH	+	+	O	O	O	+	+	O	O	+	+	+	+	+	+	+	+	+
Butanol (butyl alcohol) - pure	CH ₃ (CH ₂) ₃ OH	O	+	+	+	O	+	+	O	+	+	+	+	+	+	+	O	+	+
Butoxyl (methoxybutyl acetate) - pure	CH ₃ OC ₄ H ₉ O ₂ CCH ₃	+	O	O		+	+		-	+					O	O	O	+	+
Butyl acetate - pure	CH ₃ (CH ₂) ₃ O ₂ CCH ₃	-	+	-	+	-	+	O	-	-	+	+	+	+	+	O	+	O	+
Butyl alcohol (butanol) - pure	CH ₃ (CH ₂) ₃ OH	O	+	+	+	O	+	+	O	+	+	+	+	+	+	+	O	+	+
Butylbenzyl phthalate - aqueous		-	-	-	+	-	+		-	O	+		O		+	+	+	+	+
Butylene (liquid) - pure	H ₃ CCH ₂ CHCH ₂	+	O	+	+	+	+	+	+	+	+	+	+	+	+	+	O	+	+
Butyl phthalate - pure	C ₆ H ₄ (CO) ₂ (O(CH ₂) ₃ CH ₃) ₂	-	-	-	+	-	+		-	O	+		+		+	+	O	+	+
Butynediol - pure	HOCH ₂ C ₂ CH ₂ OH	O	O	O		O	+		O	+	+		+	+	+	+	+	O	+
Butyric acid - aqueous	H ₃ C(CH ₂) ₂ COOH	O	O	O	O	O	+	+	O	-	O	+	+	+	O	O	-	+	O
C																			
Calcium chloride - aqueous	CaCl ₂	+	+	+	+	+	+	+	O	+	O	+	+	+	-	-	O	O	O
Calciumhydrogensulphite - aqueous	Ca(HSO ₃) ₂	+	+	+	+	+	+	+	+	-		+	+	-	-	-	+	O	
Calcium hydroxide (lime water) - aqueous	Ca(OH) ₂	+	+	+	+	+	+	+	+	O	O	+	+	-	-	-	+	+	+
Calcium hypochlorite (chlorinated lime) - aqueous	Ca(OCl) ₂	-	+	O	+	O	+	+	O	+	-	+	+	+	-	-	O	O	O
Calcium nitrate - aqueous	Ca(NO ₃) ₂	+	+	+	+	+	+	+	+	+	+	+	+	+	O	O	O	O	O
Carbitol (2-(2-ethoxyethoxy)ethanol) - pure	CH ₃ CH ₂ O(CH ₂) ₂ O(CH ₂) ₂ OH	O	O	O	+	O	+	+	+		+				+	+	+	+	+

Name	Formula	NBR	EPDM	FKM	FFKM	CR	PTFE	ETFE	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG, GS	1.4401/1.4571	1.4305/1.4105
Carbolineum (creosote) - pure		O	O	O	+	O	+		+	-	+				+	+	+	+	+
Carbolic acid (phenol, hydroxybenzene) - aqueous	C ₆ H ₅ OH	O	O	O	+	O	+	+	+	+	-	+	+	O	O	O	O	+	+
Carbon dioxide (dry) - pure	CO ₂	+	O	+	+	O	+	+	+	+	+	+	+	+	+	+	+	+	+
Carbon dioxide (humid)	CO ₂	+	O	O	+	O	+	+	O	O	O	+	+	+	O	O	O	+	+
Carbon disulphide - pure	CS ₂	-	-	+	+	-	+	+	-	+	O	+	+		-	-	-	+	O
Carbonic acid - aqueous	H ₂ CO ₃	+	+	+	+	+	+	+	O	+	O	+	+	+	O	O	O	+	+
Carbonyl chloride (phosgene) [liquid] - pure	COCl ₂		-	O	+	-	+		O	O	O				+	+	+	+	+
Carbonyl chloride (phosgene) [gaseous] - pure	COCl ₂		-	+	+	-	+	+	+	-	O	+			+	+	+	+	+
Carbon monoxide - pure	CO	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carbon tetrachloride - pure	CCl ₄	-	-	+	O	-	+	+	-	-	+	+	O	+	O	O	-	+	+
Caustic potash (potassium hydroxide) - aqueous	KOH	-	+	-	+	O	+	+	+	+	O	O	O	+	-	-	O	+	+
Cellosolve (glycol ethyl ether) - pure	HO(CH ₂) ₂ OCH ₂ CH ₃	-	-	-	+	-	+	+	-	-	+	+	+		+	+	+	+	+
Champhor oil - pure		+	-	+	O	-	+		+	-			O		O	O	O	+	+
Chloral hydrate (chloral) - aqueous	CCl ₃ CH(OH) ₂	-	O	O	+	-	+	+	-	-	-	-	O		O	O	O	O	O
Chloric acid - aqueous	HClO ₃	-	O	-	+	-	+		+	-	-	+			-	-	-	-	-
Chlorinated lime (calcium hypochlorite) - aqueous	Ca(OCl) ₂	-	+	O	+	O	+	+	O	+	-	+	+	+	-	-	O	O	O
Chlorine bleaching lye (sodium hypochlorite) - aqueous	NaOCl	-	O	O	+	-	+	+	+	O	-	O	-	+	O	O	O	O	O
Chlorine dioxide - aqueous	ClO ₂	-	-	O	+	-	+	+	+	O	-	O			-	-	O	O	O
Chlorine (gaseous and dry)	Cl ₂	-	-	O	+	O	+	+	O	-	-	+	-	+	-	-	O	O	O
Chlorine (gaseous and humid)	Cl ₂	-	-	O	O	-	+	+	O	-	-	O	-	-	-	-	-	-	-

Resistance in basic chemicals

Name	Formula	NBR	EPDM	FKM	FFKM	CR	PTFE	ETFE	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG, GS	1.4401/1.4571	1.4305/1.4105
Chlorine (liquid) - pure	Cl ₂	-	-	O	+	-	+	+	-	-	-	+	-	-	-	-	-	+	+
Chlorine water (humid)	Cl ₂	-	-	O	O	-	+	+	+	-	-	O	-	-	-	-	-	-	-
Chloroacetic acid - aqueous	ClCH ₂ COOH	-	O	-	+	-	+	+	O	-	-	+	+	+	O	-	O	O	-
Chlorobenzene - pure	C ₆ H ₅ Cl	-	-	-	+	-	+	+	-	-	+	+	-	+	+	+	+	+	+
Chloroethanol (ethylene chlorohydrine) - pure	ClCH ₂ CH ₂ OH	-	-	O	+	-	+	+	-	+	O	+	O	O	+	+	+	+	+
Chlorofluorocarbons (frigenes)							+				+	O	O	+					
Chloroform (trichloromethane) - pure	CHCl ₃	-	-	O	+	-	+	O	-	-	-	+	O	+	+	+	-	+	+
Chloromethane (methyl chloride) - pure	CH ₃ Cl	-	-	O	+	-	+	+	-	-	+	+	O	+	O	O	O	+	+
Chloronaphthalone - pure	C ₁₀ H ₇ Cl	-	-	O	+	-	+		-	-	+		O		+	+	+	+	+
Chlorophenole - pure	C ₆ H ₄ OCl	-	-	-	+	-	+	+	O				O		+	+	O	+	+
Chlorophenoxyacetic acid - aqueous	ClC ₆ H ₄ OCHOOH	+	+	+		+	+		+	+							O	+	+
Chlorosulfonic acid - pure	ClSO ₃ H	-	-	-	+	-	+	O	O	-	-	O	-	-	O	O	O	O	O
Chloroxylenol (4-Chloro-3,5-dimethylphenol) - pure	C ₆ H ₂ OH(CH ₃) ₂ Cl	-	-	-	+	-	+		O						+	+	O	+	+
Choline chloride - aqueous	[HOCH ₂ CH ₂ N(CH ₃) ₃]Cl	+	+	+		+	+		O	O					-	-	O		
Chrome alum (chromium(III) - potassium sulphate) - aqueous	KCr(SO ₄) ₂ x 12 H ₂ O	+	+	+	+	+	+		O	+	O	+			O	O	-	O	O
Chromic acid - aqueous	H ₂ CrO ₄	-	O	+	+	O	+	O	+	O	-	+	-	O	-	-	O	O	O
Chromium sulphate - aqueous	Cr ₂ (SO ₄) ₃	+	+	+	+	+	+		+	+	O		+		O	O	-	O	O
Citral (citronella oil) - pure		-	-	-		-	+			-	+		+		+	+	O	+	+
Citric acid - aqueous	C ₆ H ₈ O ₇	+	+	+	+	+	+	+	+	+	+	+	+	+	O	+	-	+	O
Colophonium (tall oil) (liquid)		O	O	O		O	+		+	+	+	+			-	-	-	+	O

Name	Formula	NBR	EPDM	FKM	FFKM	CR	PTFE	ETFE	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG, GS	1.4401/1.4571	1.4305/1.4105
Cooling brine (brine)		+	+	+	+	+	+	+	+	+	+	+	+	+	O	O	-	O	O
Copper acetate - aqueous	Cu(CH ₃ COO) ₂	O	+	+	+	+	+		+	+	O	+	+	+	O	-	O	+	+
Copper chloride - aqueous	CuCl ₂	+	+	+	+	+	+	+	+	+	O	+	+	+	O	O	O	-	-
Copper sulphate - aqueous	CuSO ₄	+	+	+	+	+	+	+	+	+	O	+	+	+	O	O	O	O	O
Creosote (carbolineum) - pure		O	O	O	+	O	+		+	-	+				+	+	+	+	+
Cresol - aqueous	C ₆ H ₄ (OH)(CH ₃)	-	-	O	+	-	+	+	O	O	-	O	+	+	+	+	+	O	+
Cyclohexane - pure	C ₆ H ₁₂	-	-	O	+	-	+	+	+	-	+	+	+	+	+	+	+	+	+
Cyclohexanol - pure	C ₆ H ₁₁ OH	-	-	+	+	+	+	+	+	O	+	+	+	+	+	+	+	+	+
Cyclohexanone (anone) - pure	C ₆ H ₁₀ O	-	-	-	+	-	+	+	-	-	+	O	+	+	O	O	O	+	+
Cymene - pure	C ₆ H ₄ (CH ₃)[CH(CH ₃) ₂]	-	-	-		-	+		-	-	+		O		+	+	+	+	+
D																			
Decahydronaphthalene (decalin) - pure	C ₁₀ H ₁₈	-	-	+	+	-	+	+	+	O	+		O		+	+	+	+	+
Dextrose (glycose) - aqueous	C ₆ H ₁₂ O ₆	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Diacetone alcohol (anhydrous) - pure	(CH ₃) ₂ COHCH ₂ COCH ₃	-	+	-	+	O	+	+			O		+		O	+	O	+	+
Dibutyl phthalate - pure	C ₆ H ₄ (COOC ₄ H ₉) ₂	-	O	-	+	-	+	+	O	O	+	-	+		+	+	+	+	+
Dibutyl sebacate (DBS) - pure	(C ₄ H ₉ COO)(CH ₂) ₈ (OOC ₄ H ₉)	-	O	-	+	-	+		-	+	+	-	+		+	+	+	+	+
Dichloroethane (ethylene chloride) - pure	ClCH ₂ CH ₂ Cl	-	-	-	+	-	+	+	-	-	+	+	O	+	-	-	-	+	-
Dichloroethene - pure	Cl ₂ CHCH ₃	-	-	O	+	-	+	+	-	-	+	+	O	+	+	+	O	+	+
Dichloromethane (methylene chloride) - pure	CH ₂ Cl ₂	-	-	O	+	-	+	+	-	-	-	-	O	O	+	+	-	+	+
Dicyclohexylammonium nitrate - pure	[(C ₆ H ₁₁) ₂ NH ₂]NO ₂	+	+	+	+	+	+								O	O	O	+	+

Resistance in basic chemicals

Name	Formula	NBR	EPDM	FKM	FFKM	CR	PTFE	ETFE	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG, GS	1.4401/1.4571	1.4305/1.4105
Diethyl ether (ether) - pure	CH ₃ CH ₂ OCH ₂ CH ₃	-	-	-	+	O	+	O	-	-	+	+	+	+	+	+	+	+	+
Dimethylamine - pure	(CH ₃) ₂ NH	-	O	-	+	-	+	+	-	O	-	-	O		O	O	O	+	+
Dimethylformamide (DMF) - pure	HCON(CH ₃) ₂	-	-	-	+	-	+	O	-	+	-	-	O	+	O	O	O	+	+
Dimethyl sulfoxide (DMSO) - pure	(CH ₃) ₂ SO				+		+				O	-	+	O					
Dinitrogen monoxide (laughing gas, nitrous oxide) - pure	N ₂ O	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Di-octyl-phthalate (DOP) - pure	C ₈ H ₄ (COOC ₈ H ₁₇) ₂	-	O	O	+	-	+	+	-	+	+	O	+		+	+	+	+	+
Dioxane - pure	C ₄ H ₈ O	-	O	-	+	-	+	O	-	-	+	-	+		+	+	+	+	+
Diphenyl + diphenyl oxide - pure		-	-	-	+	-	+	+	-	-	+		+		+	+	+	+	+
Dissous gas (acetylene + acetone)	C ₂ H ₂ + CH ₃ COCH ₃	-	+	-		-	+	+	-	O	+		+		+		+	+	+
E																			
Essential oils		-	-	-	+	-	+		-	-	-		O		O	O	O	+	+
Ethane - pure	CH ₃ CH ₃	+	-	+	+	+	+	+	-	-	+	-	+	+	+	+	+	+	+
Ethanedioic acid - aqueous (saturated)	HOOC ₂ COOH	O	+	+	+	+	+	+	+	+	-	+	+	+	-	-	-	+	O
Ethanol (ethyl alcohol) - pure	CH ₃ CH ₂ OH	O	+	O	+	+	+	+	O	+	O	+	+	+	+	+	+	+	+
Ethanolamine - pure	NH ₂ CH ₂ CH ₂ OH	O	O	-	+	O	+		O	+	+	O	O		-	-	+	+	+
Ether (diethyl ether) - pure	CH ₃ CH ₂ OCH ₂ CH ₃	-	-	-	+	-	+	O	-	-	+	+	+	+	+	+	+	+	+
Ethyl acetate - pure	CH ₃ CO ₂ CH ₂ CH ₃	-	O	-	O	-	+	O	-	-	O	O	+	+	-	+	+	+	+
Ethyl acrylate - pure	CH ₂ CHCOOC ₂ H ₅	-	O	-	+	-	+		-			O	+				+	+	+
Ethyl alcohol (ethanol) - pure	CH ₃ CH ₂ OH	O	+	O	+	+	+	+	O	+	O	+	+	+	+	+	+	+	+
Ethyl alcohol + acetic acid	CH ₃ CH ₂ OH+ CH ₃ COOH	O	+	O	+	O	+	+	O	+	-	+	+	+	O	O	O	+	+

Name	Formula	NBR	EPDM	FKM	FFKM	CR	PTFE	ETFE	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG, GS	1.4401/1.4571	1.4305/1.4105
Ethyl alcohol - fermented mash		+	+	+	+	+	+	+	+	+	O	+	+	+	+	+	O	+	+
Ethyl alcohol - methylated (spirit)		O	O	O	+	O	+	+	+	+	O		+	+	O	O	+	+	+
Ethylbenzene - pure	C ₆ H ₅ CH ₂ CH ₃	-	-	O	+	-	+	O	-	-	+	+	O		+	+	+	+	+
Ethyl chloride - pure	CH ₃ CH ₂ Cl	+	+	+	+	+	+	+	+	-	-	+	+	O	-	-	-	+	+
Ethylene - pure	CH ₂ CH ₂	+	-	+	+	-	+		+	+	+	+	+	+	+	+	+	+	+
Ethylene bromide (anhydrous) - pure	CH ₂ CHBr	-	-	-	+	-	+	+	-	-	+	+	O	-	+	+	O	+	+
Ethylene chlorohydrin (chloroethanol) - pure	ClCH ₂ CH ₂ OH	-	-	O	+	-	+	+	-	+	O	+	O	O	+	+	+	+	+
Ethylene chloride (dichloroethane) - pure	ClCH ₂ CH ₂ Cl	-	-	-	+	-	+	+	-	-	+	+	O	+	-	-	-	+	-
Ethylenediamine - pure	NH ₂ CH ₂ CH ₂ NH ₂	O	+	O	O	+	+	+	-	+	O	+	O		-	-	O	+	O
Ethylene glycol (glycol) - pure	HOCH ₂ CH ₂ OH	+	+	+	+	+	+	+	+	+	O	+	+	+	O	O	O	+	+
Ethylene oxide - pure	CH ₂ CH ₂ O	-	-	-	O	-	+	+	-	-	-	+			-	-	-	+	+
Ethyl formate - pure	HCOOCH ₂ CH ₃	-	O	-	+	-	+		-	O	+	+	+		+	+	O	+	+
Exhaust fumes - containing hydrogen fluoride		+	+	+	+	+	+		+	+	O	+	-	-	O	O	O	O	O
Exhaust fumes - containing carbon dioxide		+	+	+	+	+	+		+	+	+	+	+	+	+	+	+	O	+
Exhaust fumes - containing carbon monoxide		+	+	+	+	+	+		+	+	+	+	+	+	+	+	+	+	+
Exhaust fumes - containing nitrous gases		O	+	+	+	+	+		+	+	-	+		+	-	-	O	+	+
Exhaust fumes - containing hydrochloric acid		+	+	+	+	+	+		+	+	-	+	-	O	O	O	-	O	-
Exhaust fumes - containing sulphur dioxide (dry)		O	+	+	+	+	+		+	+	O	+	+	+	+	+	+	+	+
Exhaust fumes - containing sulphuric acid (humid)		O	+	+	+	+	+		+	+	-	+	O	-	-	-	-	+	O

Resistance in basic chemicals

Name	Formula	Resistance																	
		NBR	EPDM	FKM	FFKM	CR	PTFE	ETFE	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG, GS	1.4401/1.4571	1.4305/1.4105
Exhaust fumes - containing sulphur trioxide (dry)		O	+	+	+	+	+	+	+	+	+	+	+	O	O	O	+	+	
F																			
Fatty alcohols		+	O	+	+	+	+	+	+	O	+	+	+	+	+	O	+	O	
Fatty alcohol sulphates - aqueous		+	O	+	+	+	+	+	+	O	+	+	+	+	O	O	O	+	+
Ferric chloride - aqueous (saturated)	FeCl ₃	+	+	+	+	+	+	+	+	-	+	+	+	-	-	-	-	-	
Fluorine (dry) - pure	F ₂	-	-	O	O	-	O	O	O	-	-	-	-	O	O	-	+	+	
Fluorine (humid) - pure	F ₂	-	-	-	-	-	+	O	O	-	-	O	-	-	-	-	O	O	
Fluoroboric acid (boron hydrofluoric acid)	HBF ₄	+	+	+	O	+	+	+	+	-	+	+	-	-	-	-	-	-	
Fluosilicic acid - aqueous	H ₂ SiF ₆	O	O	O	+	O	+	+	+	-	+	-	-	-	-	O	O		
Formaldehyde solution (formalin) - aqueous	CH ₂ O	O	O	O	+	O	+	+	+	+	+	O	O	-	+	-	+	+	
Formamide - pure	HCONH ₂	+	+	O	O	+	+	+	O	O	O	O	O	O	O	O	+	O	
Formic acid - pure	HCOOH	-	O	-	O	O	+	+	O	O	-	O	O	-	-	-	+	O	
Formic acid - aqueous	HCOOH	-	O	O	O	O	+	+	O	O	-	O	O	+	-	-	-	O	
Frigene 12 (R-12) - pure	CCl ₂ F ₂	+	-	O	O	O	+	+	O	O	+	O	O	+	+	+	+	+	
Frigene 13 (R-13) - pure	CClF ₃	+	-	O	O	+	+	+	-	-	-	+	+	+	+	O	+	+	
Frigene 13 B 1 (R-13B1; halon 1301) - pure	CBrF ₃	+	-	O	+	+	+	-	-	+	O	+	+	+	+	+	+	+	
Frigene 22 (R-22) - pure	CHClF ₂	-	-	-	O	-	+	+	-	-	+	-	+	+	+	+	+	+	
Frigene 23 (R-23) - pure	CHF ₃	+	-	O	-	+	+	-	-	-	O	+	+	+	O	+	+	+	
Frigene 113 (R-113) - pure	Cl ₂ FC ₂ Cl	+	-	-	-	+	+	O	-	-	+	+	O	+	+	+	+	+	
Frigene 502 (R-502) - pure	C ₂ F ₅ Cl+CHF ₂ Cl	-	-	-	O	O	+	+	O	+	O	+	+	+	+	+	+	+	

Name	Formula	Resistance																	
		NBR	EPDM	FKM	FFKM	CR	PTFE	ETFE	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG, GS	1.4401/1.4571	1.4305/1.4105
Frigene substitute HFCKW 123 (R-123) - pure	F ₃ CCHCl ₂	-	-	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	
Frigene substitute HFCKW 134a (R-134a) - pure	F ₃ CCH ₂ F			-	-		+						+	+	+	+	+	+	
Fuming sulphuric acid (Oleum) - pure	H ₂ SO ₄	-	-	O	+	-	+	+	O	O	-	-	O	-	-	-	O	+	O
G																			
Glycerine - aqueous	HOCH ₂ CH(OH)-CH ₂ OH	+	+	+	+	+	+	+	O	O	+	+	+	+	O	O	O	+	O
Glycerine - pure	HOCH ₂ CH(OH)-CH ₂ OH	O	+	+	+	O	+	+	O	O	+	+	+	+	O	O	O	+	O
Glycine (aminoacetic acid) - aqueous	NH ₂ CH ₂ COOH	O	+	+		+	+	+	+	+	O	+	+		O	O	O	+	+
Glycol (ethylene glycol) - pure	HOCH ₂ CH ₂ OH	+	+	+	+	+	+	+	+	+	+	+	+	+	O	O	O	+	+
Glycol ethyl ether (cellosolve) - pure	HO(CH ₂) ₂ OCH ₂ CH ₃	-	-	-	+	-	+	+	-	-	+	+	+	+	+	+	+	+	+
Glycolic acid - aqueous	HOCH ₂ COOH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Glucose (dextrose) - aqueous	C ₆ H ₁₂ O ₆	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Grid gas (illuminating gas, town gas)		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
H																			
Helium - pure	He	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Heptane (hexane, benzine) - pure		+	-	+	+	+	+	+	+	O	+	+	+	+	+	+	+	+	+
Hexamethylene tetramine (Urotropin) - aqueous	C ₆ H ₁₂ N ₄	+	+	+	+	+	+	+	+	+	+	+	+	+	O	O	O	+	+
Humic acids		+	+	+		+	+	+	+	+	-			+	+	O	+	+	
Hydrazine hydrate - aqueous	NH ₂ NH ₂ x 2H ₂ O	-	+	+	+	-	+	+	+	-	O		+	-	-	-	-	O	
Hydrobromid acid - aqueous	HBr	-	+	+	+	O	+	+	+	+	-	+	-	-	-	-	O	-	-
Hydrochloric acid - aqueous (36%)	HCl	-	O	+ ⁵	+	-	+	+	+	+	-	+	-	O	-	-	-	O	O

Resistance in basic chemicals

Name	Formula	NBR	EPDM	FKM	FFKM	CR	PTFE	ETFE	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG, GS	1.4401/1.4571	1.4305/1.4105
Phosgene (carbonyl chloride) [gaseous] - pure	COCl ₂	-	+	+	-	+	+	+	-	O	+			+	+	+	+	+	+
Phosphoric acid - aqueous	H ₃ PO ₄	O	O	+	+	-	+	+	+	+	-	+	+	+	-	-	-	+	-
Phosphorus chlorides - pure	PCl ₂ , PCl ₃ , PCl ₅	-	-	O	+	-	+	+	-	+	-	+		+		O	O	O	O
Picric acid (trinitrophenol) - pure	C ₆ H ₂ (OH)(NO ₂) ₃	O	-	O	+	-	+	+	-	+		+		+	+	+	+	+	+
Pinene (turpentine oil) - pure		O	-	O	+	-	+		O	-	+	+	+	+	O	O	+	+	+
Potash (potassium carbonate) - aqueous	K ₂ CO ₃	+	+	+	+	O	+	+	+	+	O	O	+	+	O	O	O	+	+
Potassium aluminium sulphate (alum) - aqueous	KAl(SO ₄) ₂ x 12 H ₂ O	+	+	+	+	+	+		+	+	+	+	+	+	-	-	-	+	O
Potassium bromate - aqueous	KBrO ₃	+	+	+	+	+	+	+	+	+		+	-	-	O	O	+	O	
Potassium bromide - aqueous	KBr	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	O	O	O
Potassium carbonate (potash) - aqueous	K ₂ CO ₃	+	+	+	+	O	+	+	+	+	O	O	+	+	O	O	O	+	+
Potassium chlorate - aqueous	KClO ₃	O	O	O	+	O	+	+	+	+	O	O	-	+	O	O	O	O	O
Potassium chloride - aqueous	KCl	+	+	+	+	+	+	+	+	+	+	+	+	+	O	O	O	O	O
Potassium chromate - aqueous	K ₂ CrO ₄	O	+	O	+	O	+	+	+	+	-	+	+		+	+	O	O	O
Potassium cyanide - aqueous	KCN	+	+	+	+	+	+	+	+	+	+		+	-	-	O	+	+	
Potassium dichromate - aqueous	K ₂ Cr ₂ O ₇	O	O	O	+	O	+		+	+	-	+	-	+	O	O	O	+	+
Potassium ferrocyanide (II) (yellow prussiate of potash) - aqueous	K ₄ [Fe(CN) ₆]	+	+	+	+	+	+		+	+	+	+		+	+	+	O	O	-
Potassium ferrocyanide (III) (red prussiate of potash) - aqueous	K ₃ [Fe(CN) ₆]	+	+	+	+	+	+		+	+	+	O	+	-	-	O	+	+	
Potassium hydrogen fluoride - aqueous	KHF ₂	+	+	+		+	+		+	+	-				O	O	O	+	+

Name	Formula	NBR	EPDM	FKM	FFKM	CR	PTFE	ETFE	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG, GS	1.4401/1.4571	1.4305/1.4105
Potassium hydroxide (caustic potash) - aqueous	KOH	-	+	-	+	O	+	+	+	+	O	O	O	+	-	-	O	+	+
Potassium hypochlorite - aqueous	KOCl	-	+	O	+	-	+	+	+	O	-	+	-	+	O	O	O	O	O
Potassium iodide - aqueous	KI	+	+	+	+	+	+	+	O	+		+			O	O	O	O	O
Potassium nitrate - aqueous	KNO ₃	+	+	+	+	O	+	+	O	+	+	+	+	+	O	O	O	O	O
Potassium nitrite - aqueous	KNO ₂	+	+	+	+	+	+		+	+	+	+		+	+	+	+	+	+
Potassium permanganate - aqueous	KMnO ₄	-	-	-	+	O	+	+	+	O	-	+	-	+	O	O	O	+	O
Potassium peroxide - aqueous	K ₂ O ₂	-	-	-	+	-	+		O	O	-		-	+	-	-	O	+	+
Potassium persulphate - aqueous	K ₂ S ₂ O ₈	-	+	O	+	O	+	+	+	+	-	O	-	+	-	-	-	+	+
Potassium phosphate - aqueous	K ₃ PO ₄	+	+	+	+	+	+		+	+	O	+		+	O	O	O	+	+
Potassium sulphate - aqueous	K ₂ SO ₄	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	O	+	+
Potassium sulphide - aqueous	K ₂ S	+	+	+	+	+	+	+	+	+	O	O	+	+	O	-	O	+	+
Potassium sulphite - aqueous	K ₂ SO ₃	+	+	+	+	+	+		O	+	+			+	O	+	O	+	O
Propane (liquid and gaseous) - pure	C ₃ H ₈	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Propanol - pure	CH ₃ CH ₂ CH ₂ OH	-	+	+	+	+	+	+	+	+	O	+	+	+	+	+	+	+	+
Propylene glycol - pure	HOCH ₂ CH ₂ CH ₂ OH	+	+	+	+	+	+	+	+	+	O	+	+	+	+	O	+	+	+
Protein solutions		+	+	+		+	+		+	+					O	O	O	+	+
Pyridine - pure	C ₅ H ₅ N	-	-	-	+	-	+	+	-	O	+	O	O	+	+	+	+	+	O
R																			
Red prussiate of potash (Potassium ferrocyanide (III)) - aqueous	K ₃ [Fe(CN) ₆]	+	+	+	+	+	+		+	+	+	+	O	+	-	-	O	+	+

Resistance in basic chemicals

Name	Formula	Resistance																
		NBR	EPDM	FKM	FFKM	CR	PTFE	ETFE	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG, GS	1.4401/1.4571
S																		
Shellsol D (turpentine substitute, white spirit) - pure		O	-	O	+	O	+		O	O	+	+	+	+	+	+	+	+
Silicone oil		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Silver nitrate - aqueous	AgNO ₃	O	+	+	+	+	+	+	O	+	+	+	+	+	-	-	-	+
Soda lye (sodium hydroxide) - aqueous	NaOH	O	+	O	+	+	+	+	+	O	-	O	+	-	-	O	O	O
Sodium arsenate - aqueous	Na ₃ AsO ₄	+	+	+	+	+	+	+	+	+				+	+	+	+	+
Sodium arsenite - aqueous	Na ₃ AsO ₃	+	+	+	+	+	+	+	+	+				+	+	+	+	+
Sodium benzoate - aqueous	C ₆ H ₅ COONa	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sodium bicarbonate (sodium hydrogen carbonate) - aqueous	NaHCO ₃	+	+	+	+	+	+	+	+	+	+	+	+	+	O	+	O	+
Sodium bisulphate (sodium hydrogen sulphate) - aqueous	NaHSO ₄	+	+	+	+	+	+	+	+	+	+	+	+		O	O	O	O
Sodium bisulphite (bisulphite, sodium hydrogen sulphide) - aqueous	NaHSO ₃	O	+	+	+	+	+	+	+	O	+	+	+	O	O	-	+	O
Sodium bromate - aqueous	NaBrO ₃	+	+	+	+	+	+	+	+	O	+	+	+	-	O	O	+	O
Sodium bromide - aqueous	NaBr	+	+	+	+	+	+	+	+	-	+	+	+	O	O	O	O	O
Sodium carbonate (soda) - aqueous	Na ₂ CO ₃	+	+	+	+	O	+	+	+	+	O	+	+	O	O	O	+	+
Sodium chlorate - aqueous	NaClO ₃	O	O	O	+	O	+	+	+	O	+	-	+	O	O	O	O	O
Sodium chloride (table salt) - aqueous	NaCl	+	+	+	+	+	+	+	+	+	+	+	+	+	-	O	-	O
Sodium chlorite - aqueous	NaClO ₂	-	O	O	+	-	+	+	O	O	-	+		O	O	-	O	-
Sodium chloroacetate - aqueous	NaCH ₂ ClCOO	+	+	+	+	+	+		+	+				O	+	O	+	+
Sodium chromate - aqueous	NaCrO ₄	O	+	O	+	O	+	+	+	-	+	+	O	+	+	O	O	O
Sodium cyanide - aqueous	NaCN	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	O	+

Name	Formula	Resistance																
		NBR	EPDM	FKM	FFKM	CR	PTFE	ETFE	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG, GS	1.4401/1.4571
Sodium disulphite (sodium metabisulphite) - aqueous	Na ₂ S ₂ O ₅	O	+	+		+	+	+	+	+	+	+	+		O	O	-	+
Sodium dodecylbenzenesulfonate - aqueous	C ₁₈ H ₂₉ NaO ₃ S	+	+	+		+	+		+	O	+				O	O	O	+
Sodium fluoride - aqueous	NaF	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	O	+
Sodium hydrogen carbonate (sodium bicarbonate) - aqueous	NaHCO ₃	+	+	+	+	+	+	+	+	+	+	+	+	+	O	+	O	+
Sodium hydrogen sulphate (sodium bisulphate) - aqueous	NaHSO ₄	+	+	+	+	+	+	+	+	+	+	+	+		O	O	O	O
Sodium hydrogen sulphide (sodium bisulphite, bisulphite) - aqueous	NaHSO ₃	O	+	+	+	+	+	+	+	O	+	+	+	O	O	-	+	O
Sodium hydroxide (soda lye) - aqueous	NaOH	O	+	O	+	+	+	+	+	+	O	-	O	+	-	-	O	O
Sodium hypochlorite (chlorine bleaching lye) - aqueous	NaOCl	-	O	O	+	-	+	+	+	O	-	O	-	+	O	O	O	O
Sodium iodide - aqueous	NaI	+	+	+	+	+	+	+	+	O	+		+	O		O	O	O
Sodium mercaptobenzothiazole - pure	C ₇ H ₅ NS ₂	O	O	+	+	O	+		+	+				+	+	+	+	+
Sodium metabisulphite (sodium disulphite) - aqueous	Na ₂ S ₂ O ₅	O	+	+		+	+	+	+	+	+	+	+		O	O	-	+
Sodium nitrate - aqueous	NaNO ₃	+	+	+	+	+	+	+	+	O	O	+	+	+	-	-	-	+
Sodium nitrite - aqueous	NaNO ₂	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sodium pentachlorophenolate - aqueous	C ₆ Cl ₅ NaO	+	+	+		+	+		+	+	+			+	+	O	+	+
Sodium perborate - aqueous	NaBO ₃ x nH ₂ O	O	+	+	+	+	+	+	+	+	+	+	+	+	O	O	O	+
Sodium peroxodisulphate - aqueous	Na ₂ S ₂ O ₄	O	+	+	+	+	+		+	+	-	+	-	-	-	-	+	O
Sodium phosphate - aqueous	Na ₃ PO ₄	+	+	+	+	+	+	+	+	+	+	+	+	+	O	O	O	O
Sodium propionate - aqueous	CH ₃ CH ₂ COONa	+	+	+		+	+		+	+	+	+	+	+	+	+	+	+
Sodium silicate (soluble glass) - aqueous		+	+	+	+	+	+	+	+	+	+	+	+	+	O	O	+	+

Resistance in basic chemicals

Name	Formula	NBR	EPDM	FKM	FFKM	CR	PTFE	ETFE	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG, GS	1.4401/1.4571	1.4305/1.4105	
U																				
Uranium hexafluoride - pure	UF ₆	+	+	+	O	+	+		+	+	-						-	+	O	
Urea - aqueous	NH ₂ CONH ₂	+	+	+	+	+	+	+	+	+	+	+	+	+	O	O	O	O	O	O
Urotropin (hexamethylene tetramine) - aqueous	C ₆ H ₁₂ N ₄	+	+	+	+	+	+	+	+	+	+		O		O	O	O	+	+	
V																				
Vinyl acetate - pure	CH ₂ CHOOCH ₂ CH ₃	+	+	+	+	+	+	+	-	+		O	+		O	O	O	+	+	
Vinyl chloride - pure	CH ₂ CHCl	-	O	+	+	-	+	+	-	O	+	+	O		-	-	O	O	O	
W																				
Water - distilled	H ₂ O	+	+	+	+	+	+	+	+	+	+	+	O	+	O	+	-	+	O	
Water (seawater)	H ₂ O	+	+	+	+	+	+	+	+	+	+	+	+	+	O	O	O	O	O	
Water vapour (130 °C)	H ₂ O	O	+	+5	+	O	+	+	-	-	-	+	O	+	O	+	+	+	+	
White spirit (Shellsol D, turpentine substitute) - pure		O	-	O	+	O	+		O	O	+	+	+	+	+	+	+	+	+	
Wood tar (impregnating oils)		-	-	-	+	-	+		O	-			+		+	+	O	+	+	
X																				
Xenon - pure	Xe	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
Xylene - pure	C ₆ H ₄ (CH ₃) ₂	-	-	O	+	-	+	+	-	-	+	O	O	+	+	+	+	+	+	
Y																				
Yeast - aqueous		+	+	+	+	+	+	+	+	+	+			+	O	O	O	+	+	
Yellow prussiate of potash (Potassium ferrocyanide (II)) - aqueous	K ₄ [Fe(CN) ₆]	+	+	+	+	+	+		+	+	+	+		+	+	+	O	O	-	

Name	Formula	NBR	EPDM	FKM	FFKM	CR	PTFE	ETFE	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG, GS	1.4401/1.4571	1.4305/1.4105
Z																			
Zinc chloride - aqueous	ZnCl ₂	+	+	+	+	+	+	+	+	+	-	+	+	+	-	-	-	O	-
Zinc sulphate - aqueous	ZnSO ₄	+	+	+	+	+	+	+	+	+		+	+	+	-	-	-	+	-

HITEGLA

Resistance in commercial products

Name	NBR	EPDM	FKM	FFKM	CR	PTFE	ETFE	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG, GS	1,4401/1,4571	1,4305/1,4105
Commercial products																		
A																		
Acronal dispersions (polyacrylates)	-	+	+		+	+		-	+	O		+		O	O	O	+	+
Acronal solutions	-	O	-		-	+		-	O	O		+		O	O	O	+	+
Alkane sulfonic acid chlorides (mersoles)	+	O	+		+	+		+	O					O	O	O	O	O
Anise oil	O				-	+		-	-	+		O		+	+	O	+	+
Antifrogen-N	+	+	+		+	+		+	+	+		O		O	O	O	+	+
ASTM fuel A	O	-	O	+	O	+		+	O	+				+	+	+	+	+
ASTM fuel B	O	-	O	+	-	+		O	O	+				+	+	+	+	+
ASTM fuel C	O	-	O	+	-	+		O	O	+		+		+	+	+	+	+
ASTM oil IRM 901	+	-	+	+	+	+		+	O	+				+	+	+	+	+
ASTM oil IRM 902	O	-	+	+	+	+		+	O	+				+	+	+	+	+
ASTM oil IRM 903	O	-	O	+	+	+		+	O	+		+		+	+	+	+	+
ATE brake fluid (brake fluid)	-	+	-	+	O	+		O	O	+		+	+	O	O	+	+	+
B																		
Beeswax	+	+	+		+	+		+	+	-		+		+	+	O	+	+
Biodiesel (fatty acid methyl ester)	O	-	+	+	O	+	+	+	O	O	+	+	+	-	-	-	+	+
Bone oil	O	-	+	+	O	+		O	+	+		+		+	+	+	+	+
Brake fluid (ATE brake fluids)	-	+	-	+	O	+		O	O	+		+	+	O	O	+	+	+

Name	NBR	EPDM	FKM	FFKM	CR	PTFE	ETFE	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG, GS	1,4401/1,4571	1,4305/1,4105
C																		
Car antifreeze	O	+	+	+	+	+		+	+		+	O	+	+	O	+		
Cellulose lacquers	-	O	-	+	-	+		-	O	+		+		O	O	O	+	+
Chlophene (chlorodiphenyl)	+	O	+		-	+		-	+					+	+	O	+	+
Coconut oil	O	-	O	+	O	+	+	O	O	+	+	+	+	O	O	O	+	+
Cotton seed oil	O	-	+	+	O	+		+	-		+	+		+	+		+	+
Cutting oil (drilling oil)	O	-	O	+	O	+		+	O	O				+	+	+	+	+
Cyclanone (fatty alcohol sulfonate)	+	+	+		+	+		+	+	+						O	+	+
D																		
Desmodur T	-	-	+		-	+								+	+	+	+	+
Desmophen	+	+	+		+	+										+	+	+
Detergent (synth. laundry detergent)	O	+	O	+	+	+		+	O	O	+	+		O	O	O	+	+
Dextrin - aqueous	+	+	+	+	+	+	+	+	+	+	+	+		+	+	+	+	+
Diesel oil - pure	O	-	+	+	-	+	+	O	O	+	+	+	+	+	+	+	+	+
Drilling oil (cutting oil)	O	-	O	+	O	+		+	O	O				+	+	+	+	+
Dyeworks wetting agent (Nekal BX)	+	+	+	O	+	+		+	+			O		O	O	O	+	+
E																		
Engine oils (machine oils, paraffin oils, mineral oils)	+	-	+	+	O	+	+	O	+	+	+	+	+	+	+	+	+	+
F																		
Fatty acid methyl ester (biodiesel)	O	-	+	+	O	+	+	O	O	+	+	+	+	-	-	-	+	+

Resistance in commercial products

Name	NBR	EPDM	FKM	FFKM	CR	PTFE	ETFE	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG, GS	1,4401/1,4571	1,4305/1,4105
Fatty alcohol sulfonate (cyclanone)	+	+	+		+	+		+	+	+						O	+	+
Fatty oils (greases)	O	-	O	+	O	+	+	O	O	+	+	+	+	O	O	O	+	+
Fish liver oil	O	O	+	+	+	+		+	+			+		O	O	O	+	+
Fruit tree carbolineum	O	O	O	+	O	+		+	-	+		O		+	+	+	+	+
Fuel oils	O	-	+	+	O	+		O	O	+	+	+		+	+	+	+	+
G																		
Gelatine - aqueous	+	+	+	+	+	+		+	+	+	+		+	O	O	O	+	+
Greases (fatty oils)	O	-	O	+	O	+	+	O	O	+	+	+	+	O	O	O	+	+
H																		
Hair shampoo	O	O	O		O	+		+	O	+		+		O	O	O	+	+
Hydraulic fluid (Skydrol 500)	-	+	O	+	-	+		-		O		+	+	-	O	O	+	+
Hydraulic fluid (Skydrol 7000)	-	+	-	+	-	+		-		O				-	O	O	+	+
Hydraulic fluids - chlorinated hydrocarbons	-	O	+		-	+				+				-	O	O	+	
Hydraulic fluids - mineral oil based (H, H-L, H-LP)	O	-	O	+	O	+		+	+	+		+		+	+	+	+	+
Hydraulic fluids - phosphoric acid ester (HSD)	-	O	-	+	-	+		-	-	+		+		+	+	+	+	+
Hydraulic fluid - polyglykol water (HSC)	+	+	+	+	O	+		+	+	+				+	+	+	+	+
Hydraulic fluids - water in oil (HSB)	O	-	+	+	O	+		+	+	+		+		+	+	+	+	+
Hydraulic fluids - water-oil emulsions (HSA)	O	-	+	+	O	+		+	+	+		+		+	+	+	+	+
I																		
Impregnating oils (wood tar)	-	-	-	+	-	+		O	-			+		+	+	O	+	+

Name	NBR	EPDM	FKM	FFKM	CR	PTFE	ETFE	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG, GS	1,4401/1,4571	1,4305/1,4105
Iodine tincture	O	O	O	O	O	+		-	O	-	+		O	O	O	O	O	O
L																		
Linseed oil	O	-	O	+	O	+		O	O	+	+	+	+	O	O	O	+	+
Lubricating oils	+	-	+	+	O	+	+	O	+	+	+	+	+	+	+	+	+	+
Lysol	-	-	O	+	-	+		O	O	-	O	+	+	+	+	O	+	O
M																		
Machine oils (paraffin oils, mineral oils, engine oils)	+	-	+	+	O	+	+	O	+	+	+	+	+	+	+	+	+	+
Mersoles (alkane sulfonic acid chlorides)	+	O	+		+	+		+	O					O	O	O	O	O
Mineral oils (paraffin oils, machine oils, engine oils)	+	-	+	+	O	+	+	O	+	+	+	+	+	+	+	+	+	+
Molasses (molasses-based flavour)	+	+	+	+	+	+	+	+	+	+	+	+	+	O	O	O	+	+
N																		
Nekal BX (dyeworks wetting agent) - aqueous	+	+	+	O	+	+		+	+			O		O	O	O	+	+
Nickel baths	+	+	+		+	+		+	+	+				-	-	-	+	O
P																		
Paraffin oils (machine oils, mineral oils, engine oils)	+	-	+	+	O	+	+	O	+	+	+	+	+	+	+	+	+	+
Petroleum - pure	+	-	+	+	O	+		+	+	+	+	+	+	+	+	+	+	+
Petroleum benzole spirit (premium grade petrol-ethanol mixture)	-	-	O	+	-	+	+	-	-	O		+	+	O	O	+	+	+
Photograph emulsions, developers, fixing baths	O	O	O	+	O	+		+	+		+	O						
Pine needle oil (spruce needle oil)	O	-	+	+	-	+		O	+			O		O	O		+	+
Polyacrylates (acronal dispersions)	-	+	+		+	+		-	+	O		+		O	O	O	+	+

Resistance in commercial products

Name	NBR	EPDM	FKM	FFKM	CR	PTFE	ETFE	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG, GS	1,4401/1,4571	1,4305/1,4105
Premium grade petrol-ethanol mixture (petroleum benzole spirit)	-	-	O	+	-	+	+	-	-	O		+	+	O	O	+	+	+
S																		
Skydrol 500 (hydraulic fluid)	-	+	O	+	-	+		-		O		+	+	-	O	O	+	+
Skydrol 7000 (hydraulic fluid)	-	+	-	+	-	+		-		O				-	O	O	+	+
Soap solution - aqueous	O	O	O	+	O	+	+	O	O	O	+	+		O	+	O	+	+
Soda (sodium carbonate) - aqueous	+	+	+	+	O	+	+	+	+	+	O	+	+	O	O	O	+	+
Soluble glass (sodium silicates)	+	+	+	+	+	+	+	+	+	+	+	+	+	O	O	+	+	+
Spindle oils	+	-	+	+	O	+	+	O	+	+	+	+	+	+	+	+	+	+
Spruce needle oil	O	-	+	+	-	+		O	+			O		O	O		+	+
Synth. Laundry detergent (detergent)	O	+	O	+	+	+		+	O	O	+	+		O	O	O	+	+
T																		
Table salt (sodium chloride)	+	+	+	+	+	+	+	+	+	+	+	+	+	-	O	-	O	O
Transformer oil	+	-	+	+	O	+		O	O	+	+	+	+	+	+	+	+	+
Turpentine oil (pinene) - pure	O	-	O	+	-	+		O	-	+	+	+	+	O	O	+	+	+
Turpentine substitute (white spirit, Shellsol D) - pure	O	-	O	+	O	+		O	O	+	+	+	+	+	+	+	+	+
U																		
UV paint	-	+	-		-	+												
V																		
Varnishes	O	-	+	+	+	+		+	-	+		+		+	+	O	+	+
Vinegar 5% (grape vinegar)	-	+	O	O	-	+	+	O	+	O	+	+	+	-	O	O	O	+

Resistance in liquid foods and beverages

Name	NBR	EPDM	FKM	FFKM	CR	PTFE	ETFE	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG, GS	1,4401/1,4571	1,4305/1,4105
Foodstuff																		
A																		
Apple juice (apple sauce)						+		+	+	+			+	-			+	+
Apricot juice						+								+	+		+	+
B																		
Beer	+	+	+		+	+	+	+	+	+	+	+	+	+	+	-	+	+
Butter	+	+	+		+	+	+	+	+	+	+	+		-	-	-	+	+
Buttermilk	+	+	+		+	+	+	+	O	-		+		O	O	-	+	+
C																		
Cider	+	+	+			+		+	+	+	+	+				-	+	+
Corn oil	O	-	O	+	O	+	+	O	O	+	+	+	+	O	O	O	+	+
E																		
Edible oil	O	-	O	+	O	+	+	O	O	+	+	+	+	O	O	O	+	+
F																		
Fruit juices	O	O	O		O	+		O	O	O			+	-	-	-	+	+
Food fats and oils	O	-	O	+	O	+	+	O	O	+	+	+	+	O	O	O	+	+
G																		
Grape vinegar (vinegar 5%)	-	+	O	O	-	+	+	O	+	O	+	+	+	-	O	O	O	+
L																		
Lemon juice	O	+	+		+	+		+	+	+			+	O	O	-	+	O

Resistance in liquid foods and beverages

Name	NBR	EPDM	FKM	FFKM	CR	PTFE	ETFE	PVC	PP	PA	PVDF	PPS	PEEK	MS	RG	GG, GS	1.4401/1.4571	1.4305/1.4105
M																		
Milk	+	+	+		+	+		+	+	+	+	+	+	O	+	-	+	+
Mineral water	+	+	+	+	+	+	+	+	+	+	+	+	+	O	O	O	O	O
O																		
Olive oil	O	-	O	+	O	+	+	O	O	+	+	+	+	O	O	O	+	+
Orange juice						+		+										+
P																		
Pineapple juice					-	+		+						-	-	-	+	+
R																		
Rape seed oil	O	-	O	+	O	+	+	O	O	+	+	+	+	O	O	O	+	+
S																		
Saccharine (sweetener)	+	+	+		+	+		+	+			O		+	+	O	+	+
Soybean oil	O	-	O	+	O	+	+	O	O	+	+	+	+	O	O	O	+	+
Spirits (dependent on their ingredients)	O	O	O		O	+		+	+		+	+	+	-	-	O	+	+
Sugar solutions	+	+	+		+	+		+	+	+	+	+	+	+	+	O	+	+
Sweetener (saccharine)	+	+	+		+	+		+	+			O		+	+	O	+	+
W																		
Wines	+	+	+		+	+	+	+	+	-	+	+	+	-	-	-	+	+

HITEGLA

¹ Technical acetylene contains solvents like alkanes, dimethyl formamide or acetone. HITEGLA generally does not know what solvent lack is used in the gas suppliers acetylene. The chemical resistance of the gasket materials has to be proved according to the german specification DIN 9539.

² Brass with up to 58% Cu.

³ Diffuses through EPDM

⁴ Most of the polymer materials get damaged by ozone. Therefore the resistances have to be put into perspective.

⁵ Only for acid resistant FKM compound.

⁶ Under pressure permitted according to the BAM (Federal Institute for Materials Research and Testing).

⁷ Hydrogen can lead to an embrittlement of metals.



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