

4 Chemical Resistance

Chemical resistance of plastics and elastomers used in pipeline construction

1. Introduction

Plastic materials are now widely used in pipeline construction. Pipes made from plastics are used not only for drinking water, water for general use and waste water, but also for the conveyance of aggressive liquids and gases. Expensive pipe materials such as lined metal, ceramic or glass, have been largely superseded by plastic pipes. It is, however, important that the most suitable plastic material is selected for each application.

The Chemical Resistance List in this section serves as a useful guide in this respect. The list is periodically revised to include the latest findings. It contains all plastics and elastomers in the George Fischer product range which can come into direct contact with the media.

The information is based on experiments, immersion and, when available, on data from tests which include temperature and pressure as stress factors. The results achieved in immersion experiments cannot be applied without reservation to pipes under stress, i.e. internal pressure, as the factor "stress corrosion cracking" is not taken into consideration. In certain cases it can be of advantage to test the suitability under the planned working conditions. The tests referred to have been carried out partly by George Fischer and partly by the International Standardisation Organisation (ISO) or national standards organisations.

Pure chemicals were used for the tests. If a mixture of chemicals is to be conveyed in practice this may affect the chemical resistance of the plastic. It is possible in special cases to carry out appropriate tests with the specific mixture. Suitable test equipment is available at George Fischer for this purpose, which we regard as part of our service to the customer. We are always willing to give individual advice at any time.

In this connection it is worth mentioning that George Fischer already possess information concerning the behaviour

towards plastics of a number of chemicals or mixtures of chemicals which are not yet included in this list. The "Chemical Resistance List" gives valuable assistance in the planning of plastic pipelines. Please refer to the following instructions, which are important for the application and evaluation of this list.

2. Instructions for the Use of the Chemical Resistance List

2.1 General

As stated in the introduction, the "Chemical Resistance List" is only intended as a guide. Changes in the composition of the medium or special working conditions could lead to deviations. If there is any doubt, it is advisable to test the behaviour of the material under the specific working conditions, by means of a pilot installation. No guarantees can be given in respect of the information contained in this section. The data shown is based upon information available at the time of printing, but it may, however, be revised from time to time in the light of subsequent research and experience.

2.2 Classification

The customary classifications: **resistant**, **conditionally resistant** and **not recommended** are depicted by the signs +, ○ and –, which allow simple presentation and application. These classifications are defined as:

Resistant: +

The material is unaffected or only insignificantly effected.

Conditionally resistant: ○

The medium can attack the material or cause swelling. Restrictions must be made as regards pressure and/or temperature, taking the expected service life into account. The service life of the installation can be noticeably shortened. Further consultations with George Fischer are recommended.

The technical data given in this publication are for general information purposes only. They imply no warranty of whatever kind. Please consult our General Conditions of Supply.

Not recommended: –

The material cannot be used with the medium at all, or only under special conditions.

2.3 Pipe Joints

2.3.1 Solvent Cement Joints (PVC-U)

Solvent cement joints made with Tangit Cement are generally as resistant as the PVC-U material itself. The following chemicals are, however, an exception: Sulphuric acid H_2SO_4 in concentrations above 70 per cent
Hydrochloric acid HCl in concentrations above 25 per cent
Nitric acid HNO_3 in concentrations above 20 per cent
Hydrofluoric acid in any concentration.

In conjunction with the above media the solvent cement jointing is classified as “conditionally resistant”. In order to obtain “resistant” joints it is necessary to use “DYTEX” solvent cement supplied by Henkel, in accordance with the manufacturer’s instructions.

2.3.2 Fusion Joints

In the case of PP, PB, PE and PVDF (SYGEF®) heat fusion joints have practically the same chemical resistance as the respective material. In conjunction with media which could cause stress cracking, the fused joints can be subjected to an increased risk due to residual stress from the jointing process.

2.3.3 Electro Fusion Joints

Electro Fusion joint must only be used with non-aggressive media such as water. Due to the risk of the media coming into contact with the fusion wire.

2.3.4 Metal Fittings

Metal fittings such as adaptor unions and compression joints are only suitable for use with non-aggressive media or chemicals to which the material is known to be resistant.

2.4 Sealing Materials

Depending upon the working conditions and the stress involved the life span of the sealing materials can differ from that of the pipeline material. Seals in PTFE, which is not included in this list, are resistant to all the chemicals listed. The greater permeability of PTFE should, however, be considered. Under certain working conditions, for example when

conveying highly aggressive media such as hydrochloric acid, this material characteristic must be taken into account. We would also draw attention to ISO TR 7620 “Chemical resistance of rubber material”.

2.5 General Summary and Limits of Application

The following table includes all the materials contained in the George Fischer product range, and their abbreviations. The summary gives preliminary information regarding the general behaviour of the materials and the temperature limits.

2.6 Standards

This list has been compiled with reference to the following ISO standards:

ISO/TR 7473

Unplasticized polyvinyl chloride pipes and fittings – Chemical resistance with respect to fluids.

ISO/TR 7474

High density polyethylene pipes and fittings – Chemical resistance with respect to fluids to be conveyed.

ISO/TR 7471

Polypropylene (PP) pipes and fittings – Chemical resistance with respect to fluids.

ISO TR 10358

Plastic pipes and fittings – Combined chemical resistance classification table.

DVS 2205 Part I

Calculations for thermoplastic containers and appliances.

General Chemical Resistance of Seal Materials

Seal material	Abbreviation	Remarks	Maximum Permissible Temperature (Water)	
			Constant	Short Term
Polytetrafluoroethylene (e.g. Teflon®)	PTFE	Resistant to all chemicals in this list	250°	300°
Nitrile Rubber	NBR	Good resistance to oil and petrol. Unsuitable for oxidising media	90°	120°
Ethylene Propylene Rubber	EPDM	Especially suitable for aggressive chemicals. Unsuitable for oils and fats	90°	120°
Chloroprene Rubber (e.g. Neoprene®)	CR	Chemical resistance very similar to that of PVC-U and between that of Nitrile and Butyl Rubber	80°	110°
Fluorine Rubber (e.g. Viton®)	FPM	Has best chemical resistance to solvents of all elastomers	150°	200°
Chlorine Sulphonyl Polyethylene (e.g. Hypalon®)	CSM	Chemical resistance similar to that of EPDM	100°	140°

® Registered trade name

After the material has been selected with respect to temperature and pressure, the chemical resistance can be determined using the chemical resistance tables on the following pages.

A general summary of the chemical resistance of thermoplastics is provided below. **When using chemical resistance data extreme care should be taken - if in doubt always check with the manufacturer.**

General Chemical Resistance

Chemical		PVC-U	PVC-C	ABS	PP	PB	PE	PVDF
Acids	Inorganic	+	+	○	○	○	○	+
	Organic	+	+	○	+	+	+	+
Bases	Organic	+	+	+	+	+	+	–
Salts		+	+	+	+	+	+	+
Halogens		○	○	–	–	–	–	○
Solvent	Aliphatic Hydrocarbons	○	○	–	+	+	+	+
	Aromatic Hydrocarbons	–	–	–	–	–	–	+
	Chlorinated Hydrocarbons	–	–	–	–	–	–	○
	Ketones	–	–	–	○	○	○	–
	Amines	–	–	–	○	○	○	–
	Alcohols	+	+	–	○	○	○	+
	Furanes	–	–	–	+	+	+	–
	Esters	–	–	–	–	–	–	○
	Aldehydes	+	+	–	○	○	○	+
Phenols		–	–	–	+	+	+	+

+ = Resistant ○ = Conditional – = Not Resistant

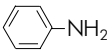
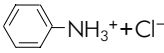
Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEE®)	PB	EPDM	FPM	NBR	CR	CSM
Acetaldehyde	$\text{CH}_3\text{-CHO}$ ($\text{C}_2\text{H}_4\text{O}$)	21	technically pure	20	-	-	-	+	○	-	○	+	○	-	-	○
				40	-	-	-	○	-	-	-	○	-	-	-	-
				60	-	-	-	○	-	-	-	-	-	-	-	-
				80	-	-	-	○	-	-	-	-	-	-	-	-
				100	-	-	-	○	-	-	-	-	-	-	-	-
				120	-	-	-	○	-	-	-	-	-	-	-	-
			40%, aqueous solution	20	○	-	-	+	+	-	+	+	+	-	+	+
				40	-	-	-	+	+	-	+	+	+	-	+	+
				60	-	-	-	○	+	-	+	+	○	-	○	+
				80	-	-	-	○	+	-	○	+	-	-	-	+
				100	-	-	-	○	-	-	-	+	-	-	-	+
				120	-	-	-	○	-	-	-	+	-	-	-	+
Acetic acid	CH_3COOH	118	technically pure, glacial	20	○	○	-	+	+	+	+	○	-	-	○	○
				40	-	-	-	+	+	○	+	○	-	-	-	-
				60	-	-	-	○	○	-	○	-	-	-	-	-
				80	-	-	-	○	-	-	-	-	-	-	-	-
				100	-	-	-	○	-	-	-	-	-	-	-	-
				120	-	-	-	○	-	-	-	-	-	-	-	-
			50%, aqueous	20	+	+	-	+	+	+	+	+	○	-	○	○
				40	+	+	-	+	+	+	+	+	-	-	-	-
				60	+	+	-	+	+	+	+	+	-	-	-	-
				80	+	+	-	+	+	○	+	+	-	-	-	-
				100	+	+	-	+	+	○	+	+	-	-	-	-
				120	+	+	-	+	+	○	+	+	-	-	-	-
Acetic acid anhydride	$\text{CH}_3\text{-CO-O-CH}_3$	139	technically pure	20	-	-	-	+	+	-	-	○	-	-	-	+
				40	-	-	-	○	○	-	-	-	-	-	-	-
				60	-	-	-	○	○	-	-	-	-	-	-	-
				80	-	-	-	○	○	-	-	-	-	-	-	-
				100	-	-	-	○	○	-	-	-	-	-	-	-
				120	-	-	-	○	○	-	-	-	-	-	-	-
			technically pure	20	-	-	-	-	-	-	-	-	-	-	-	-
				40	-	-	-	-	-	-	-	-	-	-	-	-
				60	-	-	-	-	-	-	-	-	-	-	-	-
				80	-	-	-	-	-	-	-	-	-	-	-	-
				100	-	-	-	-	-	-	-	-	-	-	-	-
				120	-	-	-	-	-	-	-	-	-	-	-	-
Acetic acid isobutyl ester	$(\text{CH}_2)_2\text{CH-(CH}_2)_2\text{-CO}_2\text{H}$		technically pure	20	-	-	-	-	-	-	-	-	-	-	-	-
Acetic ether	see Ethyl acetate			20	-	-	-	-	-	-	-	-	-	-	-	-
Acetone	$\text{CH}_3\text{-CO-CH}_3$	56	technically pure	20	-	-	-	+	+	-	+	+	-	-	-	○
				40	-	-	-	+	+	-	+	+	-	-	-	○
				60	-	-	-	+	+	-	+	+	-	-	-	○
				80	-	-	-	+	+	-	+	+	-	-	-	○
				100	-	-	-	+	+	-	+	+	-	-	-	○
				120	-	-	-	+	+	-	+	+	-	-	-	○
			up to 10%, aqueous	20	-	-	○	+	+	○	+	+	○	-	+	○
				40	-	-	○	+	+	○	+	+	○	-	+	○
				60	-	-	○	+	+	○	+	+	○	-	+	○
				80	-	-	○	+	+	○	+	+	○	-	+	○
				100	-	-	○	+	+	○	+	+	○	-	+	○
				120	-	-	○	+	+	○	+	+	○	-	+	○

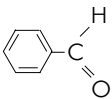
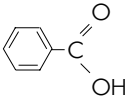
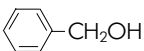
Aggressive Media					Chemical Resistance																									
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEF®)	PB	EPDM	FPM	NBR	CR	CSM														
Acetonitrile	CH ₃ CN	100	technically pure	20	-	-	-			-																				
				40																										
				60																										
				80																										
				100																										
				120																										
Acetophenon	CH ₃ -CO-C ₆ H ₅			20																										
				40																										
				60																										
				80																										
				100																										
				120																										
Acrylic acid methyl ester	CH ₂ =CHCOOCH ₃			20																				+						
				40																										
				60																										
				80																										
		100																												
		120																												
Acrylic ester	CH ₂ =CH-COOCH ₂ CH ₃	77	technically pure	20					-	-		○	-	-	○	+														
				40																										
				60																										
				80																										
				100																										
				120																										
Acrylonitrile	CH ₂ =CH-CN	153*	technically pure	20				+	+	-	+	+	○	-	+	○														
				40				+	○		○	+	○		+	○														
				60				+				○	-		+	-														
				80																										
				100																										
				120																										
Adipic acid	HOOC-(CH ₂) ₄ -COOH	97	saturated, aqueous	20	+	+	-	+	+	+	+	+	+	+	+	+														
				40	+	+		+	+		+	+	+	+	+	+	+													
				60	-	+			+	+		+	+	+	+	+	+													
				80		+				+		+																		
				100																										
				120																										
Alcoholic spirits (Gin, Whisky, etc.)				96%	approx. 40% ethyl alcohol	20	+	+	-	+	+	+	+	+	+	+	+	+												
						40																								
						60																								
						80																								
						100																								
						120																								
Allyl alcohol	H ₂ C=CH-CH ₂ -OH			96%	96%	20	○	○	-	+	+		+	○	○	+	○	+												
						40	-			+	+		+	○	-	+	-	+												
						60				+	+		+	○	+	+	+	+												
						80					+		+			+														
				100								-		+																
				120																										
Alaun	see Potassium/aluminium sulphate																													

* melting point

Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEE®)	PB	EPDM	FPM	NBR	CR	CSM
Aluminium chloride	AlCl_3	115	10%, aqueous	20	+	+	+	+	+	+	+	+	+	+	+	+
				40	+	+	+	+	+	+	+	+	+	+	+	+
				60	+	+	+	+	+	+	+	+	+	○	+	+
				80		+				+			+			+
				100						+			+			
				120						+						
			saturated	20	+	+	+	+	+	+	+	+	+	+	+	+
				40	+	+	+	+	+	+	+	+	+	+	+	+
				60	+	+	+	+	+	+	+	+	+	+	+	+
				80		+			+	+	+	+	+	○	+	+
				100					○	+	○	+	+	—		+
				120						+			+			+
Aluminium sulphate	$\text{Al}_2(\text{SO}_4)_3$		10%, aqueous	20	+	+	+	+	+	+	+	+	+	+	+	+
				40	+	+	+	+	+	+	+	+	+	+	+	+
				60	○	+	+	+	+	+	+	+	+	+	+	+
				80		+			+	+	+	+	+			○
				100					+	+	+		+			
				120						+						
			cold saturated, aqueous	20	+	+	+	+	+	+	+	+	+	+	+	+
				40	+	+	+	+	+	+	+	+	+	+	+	+
				60	+	+	+	+	+	+	+	+	+	+	+	○
				80		+			+	+	+	+	+			○
				100						+						
				120						+						
Ammonia	NH_3	-33	gaseous, technically pure	20	+	+	—	+	+	+	+	+	+	+	+	+
				40	+	+		+	+	+	+		○			
				60	+	+		+	+	○	+					
				80		+				○						
				100						○						
				120												
Ammonium acetate	$\text{CH}_3\text{COONH}_4$		all, aqueous	20	+	+	—	+	+	+	+	+	+	+	+	+
				40	+	+		+	+	+	+	+	+	○	+	+
				60	○	+		+	+	+	+	+	+		○	
				80					+	+	+	○				
				100					+	+	+					
				120						+	+					
Ammonium carbonate	$(\text{NH}_4)_2\text{CO}_3$		50%, aqueous	20	+	+	+	+	+	+	+	+	+	+	+	+
				40	+	+	+	+	+	+	+	+	+	+	+	+
				60	○	+	+	+	+	+	+	+	+	+	+	+
				80		+			+	+	+	+	+			+
				100					+	+	+					
				120						+						
Ammonium chloride	NH_4Cl	115	10%, aqueous	20	+	+	+	+	+	+	+	+	+	+	+	+
				40	+	+	+	+	+	+	+	+	+	+	+	+
				60	○	+	+	+	+	+	+	+	+	+	+	+
				80		+			+	+	+	+	+		+	+
				100					+	+	+	+	+			+
				120						+			+			
			aqueous, cold saturated	20	+	+	+	+	+	+	+	+	+	+	+	+
				40	+	+	+	+	+	+	+	+	+	+	+	+
				60	○	+	+	+	+	+	+	+	+	+	+	+
				80		+			+	+	+	+	+		+	+
				100					+	+	+	+	+			+
				120						+			+			

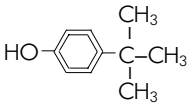
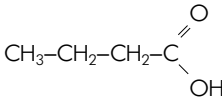
Aggressive Media					Chemical Resistance												
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEF®)	PB	EPDM	FPM	NBR	CR	CSM	
Ammonium hydrogen fluoride	NH ₄ HF ₂	112	50%, aqueous	20 40 60 80 100 120	+ + ○ + + +	+ + + + + +	- + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+	+				
Ammonium hydroxide	NH ₄ OH		aqueous, cold saturated	20 40 60 80 100 120	+ + ○ + + +	+ + + + + +	+ + ○ + + +	+ + + + + +	+ + + + + +	- + + + + +	+ + + + + +	+	+	+	+	+	
Ammonium nitrate	NH ₄ NO ₃		10%, aqueous	20 40 60 80 100 120	+ + ○ + + +	+ + + + + +	+ + + + + +	+ + ○ + + +	+ + + + + +	+ + + + + +	+ + + + + ○	+	+	+	+	+	
			aqueous, saturated	20 40 60 80 100 120	+ + + + + +	+ + + + + +	+ + + ○ + +	+ + + ○ + +	+ + + + + ○	+ + + + + +	+ + + + + +	+	+	+	+	+	+
Ammonium phosphate	NH ₄ H ₂ PO ₄		all, aqueous	20 40 60 80 100 120	+ + + + + +	+ + + + + +	+ + ○ + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+	+	+	+	+
Ammonium sulphate	(NH ₄) ₂ SO ₄		10%, aqueous	20 40 60 80 100 120	+ + ○ + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+	+	+	+	+
			aqueous, saturated	20 40 60 80 100 120	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+	+	+	+	+
Ammonium sulphide	(NH ₄) ₂ S		all, aqueous	20 40 60 80 100 120	+ + ○ + + +	○ ○ ○ + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+	+	+	+	+
							-										
Amyl acetate	CH ₃ (CH ₂) ₄ -OOCCH ₃		141	technically pure	20 40 60 80 100 120	-	-	-	+ + +	○ ○ -	+ ○ ○	○ ○ -	○	-	-	-	-

Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEE®)	PB	EPDM	FPM	NBR	CR	CSM
Amyl alcohol	$\text{CH}_3(\text{CH}_2)_3\text{CH}_2\text{OH}$	137	technically pure	20 40 60 80 100 120	+	+	-	+	+	+	+	+	○	+	+	○
Aniline		182	technically pure	20 40 60 80 100 120	-	-	-	○	○	+	-	-	○	-	-	-
Aniline hydrochloride			aqueous, saturated	20 40 60 80 100 120	+	+	-	+	+	+	-	+	○	○	-	+
Anon	see Cyclohexanone															
Antimony trichloride	SbCl_3		90%, aqueous	20 40 60 80 100 120	+	+	-	+	+	+	+	+	+	-	+	+
Aqua regia	HNO_3+HCl			20 40 60 80 100 120	+	+	-	-	-	○	-	-	○	-	-	○
Arsenic acid	H_3AsO_4		80%, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Barium hydroxide	Ba(OH)_2	102	aqueous, saturated	20 40 60 80 100 120	+	+	+	+	+	-	+	+	+	+	+	+
Barium salts			all, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Battery acid	see Sulphuric acid 40%															

Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEF®)	PB	EPDM	FPM	NBR	CR	CSM
Beef tallow emulsion, sulphonated			usual commercial	20 40 60 80 100 120	+	+	+	+	+	++ ++	+	-	+	+	+	+
Beer			usual commercial	20 40 60 80 100 120	++ ++ +	++ ++ +	++ ++ +	++ ++ +	++ ++ +	++ ++ +	++ ++ +	++ ++ +	++ ++ +	++ ++ +	++ ++ +	++ ++ +
Benzaldehyde		180	saturated, aqueous	20 40 60 80 100 120	-	-	-	++ ++	++ -	++ -	++ +	++ ++ ++	++ ++ ++	○	-	-
Benzene		80	technically pure	20 40 60 80 100 120	-	-	-	○ ○	○ -	++ ○ -	-	-	+	○	-	-
Benzenesulfonic acid	C ₆ H ₅ SO ₃ H		technically pure	20 40 60 80 100 120						++ ++ ++ ++ ++						
Benzine	C ₅ H ₁₂ to C ₁₂ H ₂₆	80–130	free of lead and aromatic compounds	20 40 60 80 100 120	++ ++ ++	++ ++	-	++ ○	○ -	++ ++ ++ ++ ++	-	-	++ ++ ++	++ ++ ++	-	○ -
Benzoic acid		122*	all, aqueous	20 40 60 80 100 120	++ ++ ○	++ ++ ++	++ ++ +	++ ++ ++ ++	++ ++ ++ ++ ++	++ ++ ++ ++ ++	++ ++ ++ ++ ++	-	++ ++ ++ ○	-	-	-
Benzoyl chloride	C ₆ H ₅ CHCl ₂		technically pure	20 40 60 80 100 120						++ ++ ++ ○ -						
Benzyl alcohol		206	technically pure	20 40 60 80 100 120	○	○	-	++ ○	++ ○ - ○	++ ++ ○ +	++ +	-	+	-	++ ++ +	○

* melting point

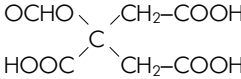
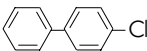
Aggressive Media					Chemical Resistance													
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEF®)	PB	EPDM	FPM	NBR	CR	CSM		
Bleaching lye	see Sodium hypochlorite	59	all, aqueous	20	+	+	+	+	+	+	+	+	+	+	+	+		
Borax	Na ₂ B ₄ O ₇			40	+	+	+	+	+	+	+	+	+	+	+	+	+	
Boric acid	H ₃ BO ₃			60	○	+		+		+	+	+	+	+	+	+	+	○
				80		+			+	+	+	+	+	+		+		
				100					+	+	+	+	+	+				
				120						+	+	+		+				
				20	+	+	+	+	+	+	+	+	+	+	+	+	+	+
				40	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Brine, sea water				60	○	+	+	+		+	+	+	+	+	+	+	+	+
				80					+	+	+	+	+	+	+	+	○	○
				100					+	+	+	+	+	+	○	+	—	—
				120						+		+		○	+	—		
				20	—	—	—	—	—	+	—	—	—	—	+	—	—	—
				40	—	—	—	—	—	+	—	—	—	—	+	—	—	—
Bromine, liquid	Br ₂			60	○	+	+	+	+	+	+	+	+	+	+	+	+	+
				80					+	+	+	+	+	+	+	○	—	—
				100					+	+	+	+	+	+	+	+	—	—
				120						+		+		○	+	—		
				20	—	—	—	—	—	+	—	—	—	—	+	—	—	—
				40	—	—	—	—	—	+	—	—	—	—	+	—	—	—
Bromine, vapours	Br ₂			60					+	+	+	+	+	+	+	—	—	—
				80					+	+	+	+	+	+	+	—	—	—
				100					+	+	+	+	+	+	+	—	—	—
				120						+		+		○	+	—		
		20	+	+	—	—	—	+	—	—	—	—	+	—	—	—		
		40						+	—	—	—	—	+	—	—	—		
Bromine water	saturated, aqueous	60					+	+	+	+	+	+	+	—	—	—		
		80					+	+	+	+	+	+	+	—	—	—		
		100					+	+	+	+	+	+	+	—	—	—		
		120						+		+								
		20	+	+	—	+	+	+	+	+	+	—	—	—	—	—		
		40						+	—	—	—	—	+	—	—	—		
Butadiene	H ₂ C=CH—CH=CH ₂	60					+	+	+	+	+	—	○	—	+	+		
		80					+	+	+	+	+	+	—	—	+	+		
		100					+	+	+	+	+	+	—	—	+	+		
		120						+		+					○	—		
		20	+	+	—	+	+	+	+	+	+	—	—	—	+	+		
		40						+	—	—	—	—	+	—	+	+		
Butane	C ₄ H ₁₀	60					+	+	+	+	+	—	+	+	+	+		
		80					+	+	+	+	+	—	+	+	+	+		
		100					+	+	+	+	+	—	+	+	+	+		
		120						+		+								
		20	+	+	—	+	+	+	+	+	—	—	+	+	+	+		
		40	○	+		+	+	+	+	+	+	+	+	+	—	+		
Butanediol	HO—(CH ₂) ₄ —OH	60					+	+	+	+	+	+	+	+	○	+		
		80					+	+	+	+	+	+	+	+	—	+		
		100					+	+	+	+	+	+	+	+	—	+		
		120						+		+								
		20	+	+	—	+	+	+	+	+	—	—	+	+	+	+		
		40	○	+		+	+	+	+	+	+	+	+	+	—	+		

Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEF [®])	PB	EPDM	FPM	NBR	CR	CSM
Butanol	C ₄ H ₉ OH	117	technically pure	20 40 60 80 100 120	+ + ○ + + +	+ + ○ + + +	- 	+ + + 	+ + - ○ + ○	+ + + + ○ +	+ + ○ ○ ○ +	+ + + - 	+ ○ - + 	+ + + + 	+ + ○ + 	+ + ○ +
Butyl acetate	CH ₃ COOCH ₂ CH ₂ CH ₂ CH ₃	126	technically pure	20 40 60 80 100 120	- 	- 	- 	+ 	○ ○ + ○	+ ○ - + ○ +	○ ○ ○ ○	+ - - - 	○ - - - 	- - 	○ - - - 	○ - - -
Butyl phenol, p-tertiary		237	technically pure	20 40 60 80 100 120	○ - 	○ - 	- 	○ 	+ 	+ + + + + +	+ 	- 	○ 	- 	- 	-
Butylene glycol	HO-CH ₂ -CH=CH-CH ₂ -OH	235	technically pure	20 40 60 80 100 120	+ + ○ 	+ + + 	+ + + 	+ + + 	+ + + + + +	+ + + + + +	+ + + + + +	+ + + ○ + +	+ + ○ + + +	- 	+ + + + + +	○ -
Butylene liquid	C ₄ H ₈		technically pure	20 40 60 80 100 120	+ 	 	 	- 	- 	+ + + ○	- - - ○	○ ○ ○ ○	+ + + +	+ + + +	+ + + +	○ ○ ○ ○
Butyric acid		163	technically pure	20 40 60 80 100 120	+ 	+ 	- 	+ + ○ + + +	+ + + ○	+ + + + ○ +	+ + + ○	○ ○ ○ ○	○ ○ ○ ○	- - - -	○ ○ ○ ○	○ ○ ○ ○
Calciumbisulphite	Ca(HSO ₃) ₂		cold saturated, aqueous	20 40 60 80 100 120	+ 	+ 	+ + 	 	 	+ + + + + +	 	+ + + + +	+ + + + + +	- 	○ 	+
Calcium chloride	CaCl ₂	125	saturated, aqueous, all	20 40 60 80 100 120	+ + ○ 	+ + + + 	+ + + 	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + ○ +	+ + + + + +	+ + + ○ + +	+ + + ○ + +	+ + + + + +
Calcium hydroxide	Ca(OH) ₂	100	aqueous, saturated	20 40 60 80 100 120	+ + + 	+ + + + 	+ + + + 	+ + + + + +	+ + - + + +	○ - + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ ○ + + + +	+ + + + + +	+ + + + + +

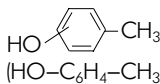
Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEE®)	PB	EPDM	FPM	NBR	CR	CSM
Calcium hypochlorite	Ca(OCl) ₂		cold saturated, aqueous	20 40 60 80 100 120	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	○ - - - - -	+ + + + + +	+ + + + + +	+ ○ - - - -	+ + + + + +	- - - - - -	+ + ○ - - -
Calcium nitrate	Ca(NO ₃) ₂	115	50%, aqueous	20 40 60 80 100 120	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +
Carbon dioxide (carbonic acid)	CO ₂		technically pure, anhydrous	20 40 60 80 100 120	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +
			technically pure, moist	20 40 60 80 100 120	+ + ○ + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +
Carbon disulphide	CS ₂	46	technically pure	20 40 60 80 100 120	- - - - - -	- - - - - -	- - - - - -	○ ○ ○ ○ ○ ○	○ ○ ○ ○ ○ ○	+ + + + + +	- - - - - -	- - - - - -	+ + + + + +	- - - - - -	- - - - - -	- - - - - -
Carbon tetrachloride	CCl ₄	77	technically pure	20 40 60 80 100 120	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	+ + + + + +	- - - - - -	- - - - - -	+ + + + + +	- - - - - -	- - - - - -	- - - - - -
Caustic potash solution (potassium hydroxide)	KOH	131	50%, aqueous	20 40 60 80 100 120	+ + ○ + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	- - - - - -	+ + + + + +	+ + + + + +	- - - - - -	○ - - - - -	- - - - - -	+ ○ ○ - - -
Caustic soda solution	NaOH		up to 10%, aqueous	20 40 60 80 100 120	+ + ○ + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	- - - - - -	+ + + + + +	+ + + + + +	○ ○ ○ ○ ○ ○	+ + + + + +	+ + + + + +	+ + + + + +
			up to 40%, aqueous	20 40 60 80 100 120	+ + ○ + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	- - - - - -	+ + + + + +	+ + + + + +	○ - - - - -	+ ○ - - - -	+ + ○ + + +	+ ○ - - - -

Aggressive Media					Chemical Resistance														
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEE®)	PB	EPDM	FPM	NBR	CR	CSM			
Caustiic soda solution (continued)			50%, aqueous	20	+	+	+	+	+	-	+	+	-	○	-	+			
				40	+	+	+	+	+	+	+	+	+	+	+	+			
				60	+	+	+	+	+	+	+	+	+	+	+	+			
				80					+	+	+	+	+	+	+	+			
				100					+		+		+						
120								+											
Chloral hydrate	CCl ₃ -CH(OH) ₂	98	technically pure	20	-		-	+	○	-	-	○	○	-	○	+			
				40				+											
				60				+	-										
				80															
				100															
120																			
Chlorethanol	ClCH ₂ -CH ₂ OH	129	technically pure	20	-		-	+	+	+	+	○	-	+	-	○			
				40				+	+	○	+								
				60				+	+	○	+								
				80					+	○	+								
				100						-	+								
120																			
Chloric acid	HClO ₃		10%, aqueous	20	+	+	-	+	-	+	-	+	-	-	-	+			
				40	+	+		+		+		+	-	-	+				
				60	○	+					+	+			+				
				80															
				100															
			120																
			20%, aqueous	20	+	+	-	○	-	+	-	+	-	+	-	-	-	+	
				40	+	+								+	-	-	-	+	
				60	○	+								+		-	-	+	
				80												-	-	+	
100													-	-	+				
120													-	-	+				
Chlorine	Cl ₂		moist, 97%, gaseous	20	-	+	-	-	-	-	-	○	+	-	-	-	○		
				40															
				60															
				80															
				100															
			120																
			anhydrous, technically pure	20	○	+	○	○	-	+	-	○	+	-	○	+	-	-	○
				40				○		+			+			+	-	-	○
				60						-		+	+				-	-	○
				80								+	+				-	-	○
				100								○					-	-	○
			120													-	-	○	
			liquid, technically pure	20	-	+	○	-	-	+	-	+	-	-	○	○	-	-	-
				40												○	-	-	-
60														-	-	-			
80														-	-	-			
100														-	-	-			
120													-	-	-				
Chlorine water			saturated	20	○	+	○	○	○	○	○	○	○	-	○	-			
				40	○			○											
				60															
				80															
				100															
120																			

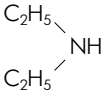
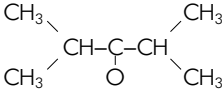
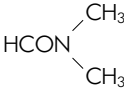
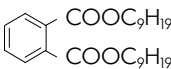
Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEF®)	PB	EPDM	FPM	NBR	CR	CSM
Chloroacetic acid, mono	ClCH ₂ COOH	188	50%, aqueous	20 40 60 80 100 120	+	+	-	+	+	+	-	○	-	-	-	○
			technically pure	20 40 60 80 100 120	+	+	-	+	+	-	-	○	-	-	-	○
					○	+		+	+							
Chlorobenzene		132	technically pure	20 40 60 80 100 120	-	-	-	○	+	+	-	-	-	-	-	○
										○						
Chloro ethanol	CH ₂ Cl-CH ₂ -OH		technically pure	20 40 60 80 100 120			-			-						
Chloroform – Trichloromethane	CHCl ₃	62	technically pure	20 40 60 80 100 120	-	-	-	-	○	+	○	-	○	-	-	-
										+						
										+						
										+						
Chloromethane	see Methyl chloride															
Chlorosulphonic acid	ClSO ₃ H	158	technically pure	20 40 60 80 100 120	○	○	-	-	-	○	-	-	-	-	-	-
										-						
Chrome alum (chromium potassium sulphate)	KCr(SO ₄) ₂		cold saturated, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
					+	+		+	+		+	+	+	+	+	+
					+	+		+	+		+	+	+	+	+	+
Chromic acid	CrO ₃ +H ₂ O		up to 50%, aqueous	20 40 60 80 100 120	○	+	-	○	○	+	○	○	+	-	-	○
					○	+		-	-	+	-	○	+			○
						+				+		○	+			○
						+				+		○	+			○
						+				○			+			○
						+				○			+			○
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						+				○			+			○

Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEF®)	PB	EPDM	FPM	NBR	CR	CSM
Chromic acid + sulphuric acid + water	CrO ₃ H ₂ SO ₄ H ₂ O		50 g 15 g 35 g	20 40 60 80 100 120	+	+	-	-	-	+	-	○	+	-	-	○
					+	+				+		○	+			○
					○	+				○			+			
Cider				20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
						+	+			+						
										+						
										+						
										+						
										+						
Citric acid		153*	10%, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
					+	+	+	+	+	+	+	+	+	+	+	+
					○	+	+	+	+	+	+	+	+	○	+	+
									+	+	+					
									+	+	+					
Clophenes		2	technically pure	20 40 60 80 100 120	-		-					-	+	-	-	-
Coal gas, benzene free				20 40 60 80 100 120	+	+	+	+	+	+	+	-	+	+	○	+
Coconut fat alcohol			technically pure	20 40 60 80 100 120	+	+		+	+	+	+	-	+	+	+	+
					+	+		○	+	+	+		+	+	○	○
					○	+			○	+	○		+	+		
Coconut oil			technically pure	20 40 60 80 100 120	+	+		+	+	+	+	-	+	+	○	○
					+	+		+	+	+	+		+	+	-	
					○	+		○	+	+	+		+	+		-
										+	+					
										+	+					
										+	+					
										+	+					
Compressed air containing oil				20 40 60 80 100 120	○	○	○	+	○	+	+	-	+	+	+	+
								+		+	+					
										+	+					
										+	+					
										+	+					
										+	+					
Cooking salt	see Sodium chloride															
Copper salts			all, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
					+	+	+	+	○	+	○	+	+	+	+	+
					○	+	+	+	-	+	-	+	+	○	+	○
										+		+	+			
										+		+	+			
										+		+	+			
										+		+	+			

* melting point

Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEF®)	PB	EPDM	FPM	NBR	CR	CSM
Corn oil			technically pure	20 40 60 80 100 120	○ + ○ + + +	+ ○ + + + +	○ + ○ + + +	+ + ○ + + +	+ + ○ + + +	+ + + + + +	+ + ○ + + +	○ + + + + +	+ + + + + +	+ + + + + +	○ + + + + +	+ + ○ + + +
Cresol	 (HO-C ₆ H ₄ -CH ₃)		cold saturated, aqueous	20 40 60 80 100 120	○ ○ - + + +	○ ○ - + + +	- + + + + +	+ + + + + +	+ + + + + ○	+ + + + + ○	- - - - - +	- - - - - +	+ + + + + +	○ ○ ○ ○ ○ +	- - - - - +	○ ○ ○ ○ ○ +
Crotonic aldehyde	CH ₃ -CH=CH-CHO	102	technically pure	20 40 60 80 100 120	- - - - - -	- - - - - -	- - - - - -	+ + + + + +	+ + + + + ○	+ + + + + - +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +
Cyclohexane		81	technically pure	20 40 60 80 100 120	- - - - - -	- - - - - -	- - - - - -	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	- - - - - +	+ + + + + +	+ + + + + +	- - - - - +	- - - - - +
Cyclohexanol		161	technically pure	20 40 60 80 100 120	+ + + + + +	+ + + + + +	- - - - - -	+ + + + + +	+ + + + + ○	+ + + + + ○	+ + + + + ○	- - - - - +	+ + + + + +	○ ○ ○ ○ ○ +	+ + + + + +	+ + + + + +
Cyclohexanone		155	technically pure	20 40 60 80 100 120	- - - - - -	- - - - - -	- - - - - -	+ ○ ○ ○ ○ +	+ ○ ○ ○ ○ +	+ ○ ○ ○ ○ +	- - - - - +	○ ○ ○ ○ ○ +	- - - - - +	- - - - - +	- - - - - +	- - - - - +
Densodrine W				20 40 60 80 100 120	+ + + + + +	+ + + + + +	- - - - - -	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +
Detergents (washing powder)			for usual washing lathers	20 40 60 80 100 120	+ + ○ + + +	+ + + + + +	- - - - - -	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +
Dextrine (starch gum)			usual commercial	20 40 60 80 100 120	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +

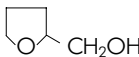
Aggressive Media					Chemical Resistance												
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEF®)	PB	EPDM	FPM	NBR	CR	CSM	
Dextrose	see Glucose																
p-Dibromo benzene	C ₆ H ₅ Br ₂		technically pure	20													
				40													
				60													
				80													
				100													
				120													
Dibutyl ether	C ₄ H ₉ OC ₄ H ₉	142	technicaly pure	20	–		–	○			○	–	+	+	–	○	
				40							+	+	–	○	○		
				60			–	–			○	–	○	○			
				80											○		
				100													
				120													
Dibutyl phthalate		340	technically pure	20	–		–	+	+	+	+	○	○	–	–	–	
				40			○	○	+	○							
				60			○	○	○	○							
				80					○	○							
				100													
				120													
Dibutyl sebacate	C ₈ H ₁₆ (COOC ₄ H ₉) ₂	344	technically pure	20	–		–	+	+	+	+	+	+	–	–	–	
				40													
				60													
				80													
				100													
				120													
Dichloroacetic acid	Cl ₂ CHCOOH	194	technically pure	20	+		–	+	+	+	+	+	+	–	–	○	
				40	+			+	+	+	+	+	–	–	+		
				60	○			○	○	–	○	+			–	–	
				80					–							–	
				100													
				120													
			50%, aqueous	20	+		–	+	+	+	+	+	+	+	–	+	+
				40	+			+	+	+	+	+	+	○	–	+	+
				60	○			+	+	+	+	+	–		–	○	○
				80					○								
				100					–								
				120													
Dichloroacetic acid methyl ester	Cl ₂ CHCOOCH ₃	143	technically pure	20	–		–	+	+	○	+	+	–	–	–	+	
				40			+	+		+	+				+	+	
				60			+	+		+	○					○	
				80													
				100													
				120													
Dichlorobenzene		180	technically pure	20	–		–	○	○	+	○	–	+	–	–	–	
				40					+	+							
				60						+							
				80						○							
				100													
				120													
Dichloroethane	see Ethylene chloride																

Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEF®)	PB	EPDM	FPM	NBR	CR	CSM
Dichloroethylene	ClHC=CH.Cl	60	technically pure	20 40 60 80 100 120	-	-	-	-	○	+ +	○	-	○	-	-	-
Diesel oil				20 40 60 80 100 120	+ +	+ +	○	+ ○	○	+ + + + + +	○	-	+ +	+ +	○	○ -
Diethylamine		56	technically pure	20 40 60 80 100 120	○	○	-		+ +	+ ○ -	+	○		-	-	-
Diglycolic acid	HOOC-CH ₂ -O-CH ₂ -COOH	148*	30%, aqueous	20 40 60 80 100 120	+ + ○	+ + +	+ +	+ + +	+ +	+ + +	+					
Di-isobutyl ketone		124	technically pure	20 40 60 80 100 120	-	-	-	+ -	+ -	+ + ○	+	○	-	-	-	-
N,N-Dimethylaniline	C ₆ H ₅ N(CH ₃) ₂		technically pure	20 40 60 80 100 120						+ +						
Dimethyl formamide – Methylpyrrolidone		153	technically pure	20 40 60 80 100 120	-	-	-	+ + ○	+ + +	- + +	+	○	+	○	+	+
Dimethylamine		7	technically pure	20 40 60 80 100 120	○	○	-	+ ○	+ +	○ -	-	○	-	-	-	-
Dinonyl phthalate			technically pure	20 40 60 80 100 120	-	-	-	○	+		+	○	+	-	-	-

* melting point

Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEF®)	PB	EPDM	FPM	NBR	CR	CSM
Diocetyl phthalate	 $\text{COOC}_8\text{H}_{17}$ $\text{COOC}_8\text{H}_{17}$		technically pure	20 40 60 80 100 120	-	-	-	○	+		+	○	+	-	-	-
Dioxane		101	technically pure	20 40 60 80 100 120	-		-	+	○	-	○	+	-	○	-	-
Drinking water	see Water															
Ethyl acetate	$\text{CH}_3\text{COOCH}_2\text{-CH}_3$	77	technically pure	20 40 60 80 100 120	-		-	+	+	○	+	○	-	-	-	-
Ethyl alcohol	$\text{CH}_3\text{-CH}_2\text{-OH}$	78	technically pure, 96%	20 40 60 80 100 120	+		-	+	+	+	+	+	○	+	+	+
Ethyl alcohol + acetic acid (fermentation mixture)			technically pure	20 40 60 80 100 120	+	+	-	+	+	+	+	+	○	○	+	+
Ethyl benzene	 $\text{-CH}_2\text{-CH}_3$	136	technically pure	20 40 60 80 100 120	-		-		○	+	○	-	○	-	-	-
Ethyl chloride	$\text{CH}_3\text{-CH}_2\text{Cl}$	12	technically pure	20 40 60 80 100 120	-	-	-	○	○	+	○	-	○	-	-	-
Ethyl ether	$\text{CH}_3\text{CH}_2\text{-O-CH}_2\text{CH}_3$	35	technically pure	20 40 60 80 100 120	-	-	-	○	+	+	-	-	-	-	○	○
Ethylene chloride	$\text{ClCH}_2\text{-CH}_2\text{Cl}$	83	technically pure	20 40 60 80 100 120	-	-	-	○	○	+	-	○	+	○	○	-

Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEE®)	PB	EPDM	FPM	NBR	CR	CSM
Ethylene diamine	$\text{H}_2\text{N}-\text{CH}_2-\text{CH}_2-\text{NH}_2$	117	technically pure	20 40 60 80 100 120	○	○	—	+	+	○ ○ ○	+	+	○ ○ ○	○ ○ ○	+	○
Ethylene glycol	$\text{HO}-\text{CH}_2-\text{CH}_2-\text{OH}$	198	technically pure	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Ethylene oxide		10	technically pure, liquid	20 40 60 80 100 120	—	—	—	—	○	+	○	○	—	—	—	—
Fatty acids >C ₆	R—COOH		technically pure	20 40 60 80 100 120	+	+	—	+	+	+	+	—	+	○	○	—
Fatty alcohol sulphonates			aqueous	20 40 60 80 100 120	+	+		+	+	+	+	+	+	+	+	+
Fertilizer salts			aqueous	20 40 60 80 100 120	+	+		+	+	+	+	+	+	+	+	+
Fluorine	F ₂		technically pure	20 40 60 80 100 120	—	—	—	—	—	—	—	—	○	—	—	○
Fluorosilicic acid	H ₂ SiF ₆		32%, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	○	—	○	○	+
Formaldehyde	HCHO		40%, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+

Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEF®)	PB	EPDM	FPM	NBR	CR	CSM
Formamide	HCONH ₂	210	technically pure	20 40 60 80 100 120	-		-	+	+		+	+	○	+	+	
Formic acid	HCOOH	101	up to 50%, aqueous	20 40 60 80 100 120	+	+	○	+	+	+	+	+	+	-	+	+
			technically pure	20 40 60 80 100 120	○	+		+	○	+	○	+	+		○	+
Freon 113	see 1,1,2-trifluoro, 1,2,2-trichloroethane															
Frigen 12 (Freon 12)	CF ₂ Cl ₂		technically pure	20 40 60 80 100 120	+	+	+	-	-	○	-	○	○	○	+	○
Fruit juices				20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Fruit pulp				20 40 60 80 100 120	+	+	+	+	+		+	+	+	+	+	+
Fuel oil				20 40 60 80 100 120	+			○	○	+	○	-	+	+	+	-
Furfuryl alcohol	 CH ₂ OH	171	technically pure	20 40 60 80 100 120	-		-	+	+	+	+	○	-	-	○	○

Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEE®)	PB	EPDM	FPM	NBR	CR	CSM
Gelatine			all, aqueous sol. aqueuse	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Glucose	C ₆ H ₁₂ O ₆	148*	all, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Glycerine	HO-CH ₂ -CH-CH ₂ OH OH	290	technically pure	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
			all, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Glycocoll	NH ₂ -CH ₂ -COOH	233*	10%, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Glycol	see Ethylene glycol															
Glycolic acid	HO-CH ₂ -COOH	80*	37%, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Heptane	C ₇ H ₁₆	98	technically pure	20 40 60 80 100 120	+	+	+	+	+	+	-	-	+	+	+	+
Hexane	C ₆ H ₁₄	69	technically pure	20 40 60 80 100 120	+	+	+	+	+	+	-	-	+	+	+	+
Hydrazine hydrate	H ₂ N-NH ₂ · H ₂ O	113	aqueous	20 40 60 80 100 120	+	+		+	+	-	+	+	+	-	-	+

* melting point

4.24 GEORGE FISCHER +GF+

Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEF®)	PB	EPDM	FPM	NBR	CR	CSM
Hydrogen	H ₂	−253	technically pure	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Hydrogen chloride	HCl	−85	technically pure, gaseous	20 40 60 80 100 120	+	+	−	+	+	+	+	+	+	+	○	○
Hydrogen peroxide	H ₂ O ₂		10%, aqueous	20 40 60 80 100 120	+	+	−	+	+	○	−	+	+	○	−	+
			30%, aqueous	20 40 60 80 100 120	+	+	−	+	+	○	−	○	+	−	−	+
			90%, aqueous	20 40 60 80 100 120	+	+	−	+	−	○	−	○	○	−	−	○
Hydrogen sulphide	H ₂ S		technically pure	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	○	+
			saturated, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	○	○	+
Hydroxylamine sulphate	(H ₂ N · OH) ₂ H ₂ SO ₄		all, aqueous	20 40 60 80 100 120	+	+	−	+	+		+	+	+	+	○	+
Hyposulphite	see Sodium dithionite															
Iodine solution			6.5% iodine in ethanol	20 40 60 80 100 120	−	−	−	+	+	+	+	+	+	+	−	+

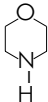
Aggressive Media					Chemical Resistance												
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEF®)	PB	EPDM	FPM	NBR	CR	CSM	
Iron salts			all, aqueous	20 40 60 80 100 120	+ + ○ 	+ + + 	+ + 	+ + + 	+ + + + 	+ + + + + +	+ + + + 	+ + + + + 	+ + + + 	+ + + 	+ + + 	+ + + 	
Iso-octane	(CH ₃) ₃ –C–CH ₂ –CH–(CH ₃) ₂	99	technically pure	20 40 60 80 100 120	+ 	 	– 	+ ○ 	+ ○ 	+ + + + + +	+ ○ 	– 	+ 	+ 	+ 	○ 	
Isophorone	C ₉ H ₁₄ O		technically pure	20 40 60 80 100 120	 	 	 	 	 	– 	 	 	 	 	 	 	
Isopropyl alcohol	(CH ₃) ₂ · CH · OH	82	technically pure	20 40 60 80 100 120	+ 	+ + + 	– 	+ + + 	+ + + + 	+ + + ○ + +	+ + + + + +	+ + + ○ ○ 	+ + + 	+ ○ 	+ + ○ 	+ + + 	
Isopropyl ether	(CH ₃) ₂ · CH–O–CH–(CH ₃) ₂	68	technically pure	20 40 60 80 100 120	– 	 	– 	○ – 	○ – 	+ + + 	○ – 	– 	– 	– 	– 	– 	
Lactic acid	CH ₃ CHOHCOOH		10%, aqueous	20 40 60 80 100 120	+ ○ – 	+ + + 	+ ○ – 	+ + + 	+ + + + + +	+ + + ○ – +	+ + + + + +	○ ○ ○ ○ – 	+ + + ○ ○ 	– 	– 	○ ○ ○ 	
Lanolin			technically pure	20 40 60 80 100 120	+ ○ 	+ + 	+ + + 	+ + + 	+ + + 	+ + + + + +	+ + + + + +	○ – 	+ + + 	+ + + 	+ + + 	○ ○ – 	○ –
Linseed oil			technically pure	20 40 60 80 100 120	+ + ○ 	+ + 	+ – 	+ + + 	+ + + + + +	+ + + + + +	+ + + + + +	○ – 	+ + + 	+ + + 	○ – 	+ ○ – 	+
Liqueurs				20 40 60 80 100 120	+ + 	 	 	+ + 	+ 	+ + + + + +	+ 	+ + + 	+ 	+ 	+ 	+ 	+

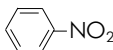
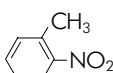
Aggressive Media					Chemical Resistance												
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEF®)	PB	EPDM	FPM	NBR	CR	CSM	
Lead acetate	Pb(CH ₃ COO) ₂	131*	aqueous, saturated	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+	
Lubricating oils			20 40 60 80 100 120	+	+	○	+	○	+	○	—	+	+	+	+	○	+
Lubricating oils, free of aromatic compounds			20 40 60 80 100 120	+	+	+	+	○	○	+	○	—	+	+	+	—	○
M agnesium salts	MgCl ₂		all, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+	+
Maleic acid	CH-COOH CH-COOH		cold saturated, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	○	+	—	—	—
Marmelade				20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+	+
Mercury	Hg		pure	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+	+
Mercury salts			cold saturated, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	○	○	○
Methane (natural gaz)	CH ₄		−161	technically pure	20 40 60 80 100 120	+	+	+	+	+	+	+	—	+	+	—	—

* melting point

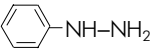
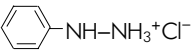
Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEF®)	PB	EPDM	FPM	NBR	CR	CSM
Methanol	CH ₃ OH	65	all	20 40 60 80 100 120	+	+	-	+	+	+	+	+	○	+	+	+
Methyl acetate	CH ₃ COOCH ₃	56	technically pure	20 40 60 80 100 120	-	-	-	+	+	+	+	○	-	-	-	-
Methyl amine	CH ₃ NH ₂	-6	32%, aqueous	20 40 60 80 100 120	○	○	-	+	+	○	+	+	+	-	+	+
Methyl bromide	CH ₃ Br	4	technically pure	20 40 60 80 100 120	-	-	-	○	-	+	+	-	○	-	-	○
Methyl chloride	CH ₃ Cl	-24	technically pure	20 40 60 80 100 120	-	-	-	○	-	+	+	○	-	-	-	-
Methylene chloride	CH ₂ Cl ₂	40	technically pure	20 40 60 80 100 120	-	-	-	○	○	+	-	-	○	-	-	-
Methyl ethyl ketone	CH ₃ COC ₂ H ₅	80	technically pure	20 40 60 80 100 120	-	-	-	+	+	-	+	+	-	-	-	-
Milk				20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Mineral water				20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+

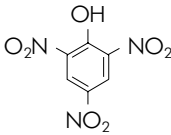
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEE®)	PB	EPDM	FPM	NBR	CR	CSM
Mixed acids – sulphuric – nitric – water	H ₂ SO ₄ HNO ₃ H ₂ O		48% 49% 3%	20	+	+	–	–	–	+	–	○	–	–	–	–
				40	○	+	–	–	–	+	–	○	–	–	–	–
				60	–	–	–	–	–	–	–	–	–	–	–	–
				80	–	–	–	–	–	–	–	–	–	–	–	–
				100	–	–	–	–	–	–	–	–	–	–	–	–
				120	–	–	–	–	–	–	–	–	–	–	–	–
	H ₂ SO ₄ HNO ₃ H ₂ O		50% 50% 0%	20	○	+	–	–	–	+	–	○	–	–	–	–
				40	–	–	–	–	–	–	–	–	–	–	–	–
				60	–	–	–	–	–	–	–	–	–	–	–	–
				80	–	–	–	–	–	–	–	–	–	–	–	–
				100	–	–	–	–	–	–	–	–	–	–	–	–
				120	–	–	–	–	–	–	–	–	–	–	–	–
	H ₂ SO ₄ HNO ₃ H ₂ O		10% 87% 3%	20	○	+	–	–	–	○	–	–	–	–	–	–
				40	–	–	–	–	–	–	–	–	–	–	–	–
				60	–	–	–	–	–	–	–	–	–	–	–	–
				80	–	–	–	–	–	–	–	–	–	–	–	–
				100	–	–	–	–	–	–	–	–	–	–	–	–
				120	–	–	–	–	–	–	–	–	–	–	–	–
	H ₂ SO ₄ HNO ₃ H ₂ O		50% 31% 19%	20	+	+	–	–	–	+	–	○	+	–	○	○
				40	–	–	–	–	–	–	–	–	–	–	–	–
				60	–	–	–	–	–	–	–	–	–	–	–	–
				80	–	–	–	–	–	–	–	–	–	–	–	–
				100	–	–	–	–	–	–	–	–	–	–	–	–
				120	–	–	–	–	–	–	–	–	–	–	–	–
	H ₂ SO ₄ HNO ₃ H ₂ O		50% 33% 17%	20	+	+	–	–	–	+	–	○	+	–	–	○
				40	○	–	–	–	–	–	–	–	–	–	–	–
				60	–	–	–	–	–	–	–	–	–	–	–	–
				80	–	–	–	–	–	–	–	–	–	–	–	–
				100	–	–	–	–	–	–	–	–	–	–	–	–
				120	–	–	–	–	–	–	–	–	–	–	–	–
	H ₂ SO ₄ HNO ₃ H ₂ O		10% 20% 70%	20	+	+	–	○	–	+	–	+	+	–	○	+
				40	+	–	–	–	–	+	–	+	+	–	–	+
				60	–	–	–	–	–	+	–	+	+	–	–	–
				80	–	–	–	–	–	+	–	+	+	–	–	–
				100	–	–	–	–	–	+	–	+	+	–	–	–
				120	–	–	–	–	–	+	–	+	+	–	–	–
Mixed acids – nitric – hydrofluoric – sulphuric	15% pure HNO ₃ 5% pure HF 18% pure H ₂ SO ₄		3 parts 1 part 2 parts	20	○	○	–	○	–	+	–	+	+	–	–	+
				40	–	–	–	–	–	+	–	○	○	–	–	○
				60	–	–	–	–	–	+	–	–	–	–	–	–
				80	–	–	–	–	–	+	–	–	–	–	–	–
				100	–	–	–	–	–	–	–	–	–	–	–	–
				120	–	–	–	–	–	–	–	–	–	–	–	–
Mixed acids – sulphuric – phosphoric – water	H ₂ SO ₄ H ₃ PO ₄ H ₂ O		30% 60% 10%	20	+	+	–	+	+	+	+	+	+	–	+	+
				40	+	–	–	○	○	+	○	+	+	–	○	○
				60	–	–	–	–	–	+	–	+	+	–	–	–
				80	–	–	–	–	–	+	–	+	+	–	–	–
				100	–	–	–	–	–	+	–	+	+	–	–	–
				120	–	–	–	–	–	+	–	+	+	–	–	–

Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEF®)	PB	EPDM	FPM	NBR	CR	CSM
Molasses				20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Molasses wort				20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Monochloroacetic acid ethyl ester	ClCH ₂ COOC ₂ H ₅	144	technically pure	20 40 60 80 100 120	○	+	—	+	+	○	+	+	○	—	—	—
Monochloroacetic acid methyl ester	ClCH ₂ COOCH ₃	130	technically pure	20 40 60 80 100 120	○	+	—	+	+	+	+	+	○	—	—	—
Morpholin		129	technically pure	20 40 60 80 100 120	—		—	+	+	+	+	○	+	—	○	○
Mowilith D			usual commercial	20 40 60 80 100 120	+	+		+	+	+	+	+	+	+	+	+
Naphthalene		218	technically pure	20 40 60 80 100 120	—		—	+	+	+	+	—	+	+	—	○
Nickle salts			cold saturated, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Nitric acid (see note 2.3.1 on jointing)	HNO ₃		6.3%, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	—	—	+

Aggressive Media					Chemical Resistance														
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEE®)	PB	EPDM	FPM	NBR	CR	CSM			
Nitric acid (continued)			up to 40%, aqueous	20	+	+	–	○	○	+	–	+	+	–	–	○			
				40	+	+	–	–	+	+	+	+	+	–	○				
				60	○	+	–	–	+	+	+	+	+	–	–				
				80		+	–	–	+	+	+	+	+	–	–				
				100			–	–	+	+	+	+	+	–	–				
				120															
			65%, aqueous	20	○	+	–	○	–	–	–	–	–	–	–	+	–	–	○
				40	○	+	–	–	–	–	–	–	–	–	–	+	–	–	○
				60	–		–	–	–	–	–	–	–	–	–	–	–	–	–
				80			–	–	–	–	–	–	–	–	–	–	–	–	–
				100															
				120															
			85%	20									+						
				40									+						
				60															
				80															
				100															
				120															
			100%	20	–		–	–	–	–	–	–	–		–	–	–	–	–
				40			–	–	–	–	–	–	–		–	–	–	–	–
				60			–	–	–	–	–	–	–		–	–	–	–	–
				80			–	–	–	–	–	–	–		–	–	–	–	–
				100			–	–	–	–	–	–	–		–	–	–	–	–
				120			–	–	–	–	–	–	–		–	–	–	–	–
Nitric oxide	see Nitrous gases																		
Nitrobenzene		209	technically pure	20	–	–	–	+	+	+	+	–	○	–	–	–			
			40				+	+	○	+									
			60				○	+	–	+									
			80								+								
			100																
			120																
Nitrotoluene (o-, m-, p-)		222– 238	technically pure	20	–	–	–	+	+	+	+	–	○	○	–	–			
			40				+	+	+	+	+		–	–					
			60				○	○	+	+	○		–	–					
			80					○	+	+	+			–					
			100						+	+	○								
			120																
Nitrous gases – Nitric oxide	NO _x		diluted, moist, anhydrous	20	+	+	–	+	+	+	+	+	+	○	+	+			
			40					+	○	+	○	+	+	–	○	+			
			60		○			+	–	+	–	○	+		–	○			
			80							+									
			100							+									
			120							+									
Oleic acid	C ₁₇ H ₃₃ COOH	16*	technically pure	20	+	+	+	+	+	+	+	–	+	○	–	–			
				40	+	+	○	+	+	+	+		○	–	–	–			
				60	+	+		○	○	+	○		–	–	–	–			
				80		○			+	+	+			–	–	–			
				100					+	+	+					–			
				120						+	+	+							
Oleum	H ₂ SO ₄ +SO ₃		10% SO ₃	20	–	○	–	–	–	–	–	–	–	–	–	–			
			40																
			60																
			80																
			100																
			120																

*melting point

Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEF [®])	PB	EPDM	FPM	NBR	CR	CSM
Phenylhydrazine		243	technically pure	20 40 60 80 100 120	-	-	-	○	○	+	○	○	+	-	-	-
Phenylhydrazine hydrochloride			aqueous	20 40 60 80 100 120	○	○	-		+	+	+	+	+	○	○	+
Phosgene	COCl ₂	8	liquid, technically pure	20 40 60 80 100 120	-	-	-		○		○	+	+	○	+	+
			gaseous, technically pure	20 40 60 80 100 120	+	+	-	○	○	+	○	+	+	+	+	+
Phosphoric acid	H ₃ PO ₄		up to 30%, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	○	+	+
			50%, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	○	+	+
			85%, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	-	+	+
Phosphorous chlorides:																
– Phosphorous trichloride	PCl ₃	75	technically pure	20 40 60 80 100 120	-	-	-	+	+	-	+	+	+	-	-	+
– Phosphorous pentachloride	PCl ₅	162						○	○		○					
– Phosphorous oxychloride	POCl ₃	105														
Phosphorous pentoxide	P ₂ O ₅		technically pure	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	○	+	+

Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEE®)	PB	EPDM	FPM	NBR	CR	CSM
Photographic emulsion				20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	○	+	+
Photographic developer			usual commercial	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	○	+	+
Photographic fixer			usual commercial	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Phthalic acid		208*	saturated, aqueous	20 40 60 80 100 120	+	+	-	+	+	+	+	+	-	-	+	+
Picric acid		122*	1%, aqueous	20 40 60 80 100 120	+	+	-	+	+	+	+	+	+	○	○	+
Potash (potassium carbonate)	K_2CO_3		cold saturated, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Potassium/aluminium sulphates (alum)	$K_2SO_4-Al_2(SO_4)_3 \cdot 12H_2O$	106	50%, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Potassium bichromate	$K_2Cr_2O_7$	107	saturated, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	○	+
Potassium borate	K_3BO_3		10%, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+

Aggressive Media					Chemical Resistance												
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEF [®])	PB	EPDM	FPM	NBR	CR	CSM	
Potassium bromate	K BrO ₃		cold saturated, aqueous	20 40 60 80 100 120	++ ++ ○+ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ○+ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ + ++	++ ++ ++ ++ ○+ ○+	++ ++ ++ ++ ○+ ++	
Potassium bromide	K Br		all, aqueous	20 40 60 80 100 120	++ ++ ○+ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ○+ ○+	++ ++ ++ ++ ○+ ○+	++ ++ ++ ++ ++ ++	
Potassium carbonate	see Potash																
Potassium chlorate	K ClO ₃		cold saturated, aqueous	20 40 60 80 100 120	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ -	○+ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ○+
Potassium chloride	KCl		all, aqueous	20 40 60 80 100 120	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++
Potassium chromate	K ₂ CrO ₄		cold saturated, aqueous	20 40 60 80 100 120	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++
Potassium cyanide	KCN		cold saturated, aqueous	20 40 60 80 100 120	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ○+	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++
Potassium hydroxide	see Caustic potash solution																
Potassium iodide	KJ		cold saturated, aqueous	20 40 60 80 100 120	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++
Potassium nitrate	KNO ₃		50%, aqueous	20 40 60 80 100 120	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++	++ ++ ++ ++ ++ ++

Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEE®)	PB	EPDM	FPM	NBR	CR	CSM
Potassium perchlorate	KClO ₄		cold saturated, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Potassium permanganate	KMnO ₄		cold saturated, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	○	○	+
Potassium persulphate	K ₂ S ₂ O ₈		all, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	—	+	+
Potassium phosphates	KH ₂ PO ₄ and K ₂ HPO ₄		all, aqueous	20 40 60 80 100 120	+	+	○	+	+	+	+	+	+	+	+	+
Potassium sulphate	K ₂ SO ₄		all, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Propane	C ₃ H ₈	−42	technically pure, liquid	20 40 60 80 100 120	+	+	+	+	+	+	+	—	+	+	+	—
			technically pure, gaseous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	○
Propanol, n- and iso-	C ₃ H ₇ OH	97 and 82 resp.	technically pure	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	○	+	○
Propargyl alcohol	CH≡C-CH ₂ -OH	114	7%, aqueous	20 40 60 80 100 120	+	+	—	+	+	+	+	+	+	+	+	+

Aggressive Media					Chemical Resistance													
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEF®)	PB	EPDM	FPM	NBR	CR	CSM		
Propionic acid	CH ₃ CH ₂ COOH	141	50%, aqueous	20	+	+	-	+	+	+	+	+	+	-	○	○		
				40	+	+		+	+	+	+	+	+	+	+			
				60	○	+		+	+	+	+	○						
				80														
				100														
				120														
			technically pure	20	+	+	-	+	+	+	+	+	+	+	+	-	-	-
				40	○	+		○	○	○	+	○	+	+	+			
				60		○									+			
				80											○			
				100														
				120														
Propylene glycol	CH₃CH-CH₂ OH OH	188	technically pure	20	+	+	○	+	+	+	+	+	+	+	+	+		
				40	+	+		+	+	+	+	+	+	+	+	+		
				60	+	+		+	+	+	+	○	-					
				80														
				100														
				120														
Propylene oxide	CH₂-CH-CH₃ O	35	technically pure	20	○		-	+	+	+	+	+	-	-	-	-		
				40						○								
				60														
				80														
				100														
				120														
Prussic acid	see Hydrocyanic acid																	
Pyridine		115	technically pure	20	-	-	-	+	○	+	○	+	○	-	-	○		
				40				○	○	-	○	○	-			-		
				60														
				80														
				100														
				120														
Ramasit fabric water-proofing agents			usual commercial	20	+					+		-	+	+	+	+		
				40	+					+								
				60	+					+								
				80														
				100														
				120														
Salpetre	see Potassium nitrate																	
Silico fluoric acid	see Fluosilicic acid																	
Silicone oil				20	+	+	+	+	+		+	○	+	+	+	-		
				40	○	+		+	+		+	-	+	+	+			
				60	-			+	+		+		+	+	○			
				80					+		+							
				100					+		+							
				120							+							
Silver salts	AgNO ₃		cold saturated, aqueous	20	+	+	+	+	+	+	+	+	+	+	+	+		
				40	+	+	+	+	+	+	+	+	+	+	+	+		
				60	○	+	+	+	+	+	+	+	+	+	+	+		
				80						+								
				100						+								
				120														

Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEF®)	PB	EPDM	FPM	NBR	CR	CSM
Soap solution			all, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Soda	see Sodium carbonate															
Sodium acetate	CH ₃ COONa		all, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	○
Sodium benzoate	 -COONa		cold saturated, aqueous	20 40 60 80 100 120	+	+	—	+	+	+	+	+	+	+	+	+
Sodium bicarbonate	NaHCO ₃		cold saturated, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Sodium bisulphate	NaHSO ₄		10%, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Sodium bisulphite	NaHSO ₃		all, aqueous	20 40 60 80 100 120	+	+		+	+	+	+	+	○	○	+	+
Sodium bromate	NaBrO ₃		all, aqueous	20 40 60 80 100 120	+	+		+	+	+	+	+	+	+	+	+
Sodium bromide	NaBr		all, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Sodium carbonate (soda)	Na ₂ CO ₃		cold saturated, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+

Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEE®)	PB	EPDM	FPM	NBR	CR	CSM
Sodium chlorate	NaClO ₃		all, aqueous	20 40 60 80 100 120	+	+	+	+	+	○	+	+	+	+	+	+
Sodium chloride (cooking salt)	NaCl		all, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Sodium chlorite	NaClO ₂		diluted, aqueous	20 40 60 80 100 120	○	+	+	+	+	+	+	+	+	-	○	+
Sodium chromate	Na ₂ CrO ₄		diluted, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Sodium disulphite	Na ₂ S ₂ O ₅		all, aqueous	20 40 60 80 100 120	+	+		+	+	+	+	+	+	○	+	+
Sodium dithionite (hyposulphite)	Na ₂ S ₂ O ₄		up to 10%, aqueous	20 40 60 80 100 120	+	+		+	+	+	+	+	+	+	+	+
Sodium fluoride	NaF		cold saturated, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Sodium hydroxide	see Caustic soda solution															
Sodium hypochlorite	NaOCl stabilized with NaOH		12.5% active chlorine, aqueous	20 40 60 80 100 120	+	+	-	○	○	○	○	+	+	-	-	+
Sodium iodide	NaI		all, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+

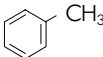
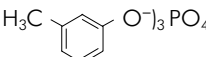
Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEE®)	PB	EPDM	FPM	NBR	CR	CSM
Sodium nitrate	NaNO ₃		cold saturated, aqueous	20 40 60 80 100 120	+ + ○ + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +
Sodium nitrite	NaNO ₂		cold saturated, aqueous	20 40 60 80 100 120	+ + ○ + + +	+ ○ + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ ○ + + + +	+ + + + + +	+ + + + + +
Sodium oxalate	Na ₂ C ₂ O ₄		cold saturated, aqueous	20 40 60 80 100 120	+ + ○ + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + ○ + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +
Sodium persulphate	Na ₂ S ₂ O ₈		cold saturated, aqueous	20 40 60 80 100 120	+ + ○ + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	- + + + + +	+ + + ○ + +	+ + + ○ + +
Sodium phosphate	Na ₃ PO ₄		cold saturated, aqueous	20 40 60 80 100 120	+ + ○ + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + ○ + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +
Sodium silicate	Na ₂ SiO ₃		all, aqueous	20 40 60 80 100 120	+ + ○ + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + ○ + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +
Sodium sulphate	Na ₂ SO ₄		cold saturated, aqueous	20 40 60 80 100 120	+ + ○ + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + ○ + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +
Sodium sulphide	Na ₂ S		cold saturated, aqueous	20 40 60 80 100 120	+ + ○ + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	○ ○ ○ + + +	+ + + + + +	+ + + + + +	- + + + + +	+ + + + + +	- + + + + +	+ + + + + +
Sodium sulphite	Na ₂ SO ₃		cold saturated, aqueous	20 40 60 80 100 120	+ + ○ + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ ○ - + + +	+ + ○ + + +	+ + + + + +

Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEF®)	PB	EPDM	FPM	NBR	CR	CSM
Sodium thiosulphate	Na ₂ S ₂ O ₃		cold saturated, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Spindle oil				20 40 60 80 100 120	○			○	+	+	+	—	+	+	○	+
Spinning bath acids containing carbon disulphide			100 mg CS ₂ /l	20 40 60 80 100 120	+	+		+	+	+	+	+	+	—	—	○
			200 mg CS ₂ /l	20 40 60 80 100 120	○			+	+	+	+	+	+	—	—	○
			700 mg CS ₂ /l	20 40 60 80 100 120	—			+	+	+	+	○	+	—	—	—
			usual commercial	20 40 60 80 100 120	+			+	+	+	+	+	+	+	+	+
			cold saturated, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
			all, aqueous	20 40 60 80 100 120	+		+	+	+	+	+	+	+	+	+	+
			usual commercial	20 40 60 80 100 120	+		+	+	+	+	+	+	+	+	+	+

Aggressive Media					Chemical Resistance														
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEF®)	PB	EPDM	FPM	NBR	CR	CSM			
Sulphuric acid (continued)			up to 60%, aqueous	20	+	+	–	+	+	+	–	+	+	–	–	+			
				40	+	+		+	+	+	+	+	+	+	–	–	+		
				60	+	+		+	+	+	+	+	+	+	+	–	–	+	
				80		+				+	+	+	+	+	+	–	–	+	
				100						+	+	+	+	+	+	–	–	+	
				120						+	+	+	+	+	+	–	–	+	
			up to 80%, aqueous	20	+	+	–	+	+	+	+	+	+	–	+	+	–	–	+
				40	+	+		+	+	+	+	+	+	+	+	+	–	–	+
				60	+	+		○	○	+	+	+	+	+	+	+	–	–	+
				80					○	+	+	+	+	+	+	+	–	–	+
				100						+	+	+	+	+	+	+	–	–	+
				120						○	+	+	+	+	+	+	–	–	+
			90%, aqueous	20	+	+	–	○	○	+	+	+	+	–	○	+	–	–	–
				40	+	+				+	+	+	+	+	+	+	–	–	–
				60		+				+	+	+	+	+	+	+	–	–	–
				80						+	+	+	+	+	+	+	–	–	–
				100						○	+	+	+	+	+	+	–	–	–
				120						○	+	+	+	+	+	+	–	–	–
			96%, aqueous	20	+	+	–	–	–	+		–	+		–	+	–	–	–
				40	+	+				+		–	+		–	+	–	–	–
				60	○	+				–		–	–				–	–	–
				80													–	–	–
				100													–	–	–
				120													–	–	–
			97%	20	+	+	–					○							
				40		+													
				60		+													
				80		+													
				100															
				120															
			98%	20	+	+						–							
				40		+													
				60		+													
				80		+													
				100															
				120															
Sulphurous acid	H ₂ SO ₃	69	saturated, aqueous	20	+	+	+	+	+	+	+	+	+	–	–	○			
40	+			+	+	+	+	+	+	+	○	+	–	–	○				
60	○			+		+	+	+	+	+	–	+	○	–	–	○			
80								+	+	+			–						
100								+	+	+									
120										+									
Sulphuryl chloride	SO ₂ Cl ₂		technically pure	20	–	–	–	–	–	○	–	○	+	–	–	○	+		
				40															
				60															
				80															
				100															
				120															
Tallow			technically pure	20	+	+	+	+	+	+	+	+	+	+	+	+	+		
				40	+	+	+	+	+	+	+	+	+	+	+	+	+		
				60	+	+		+	+	+	+	+	+	+	+	+	+		
				80						+									
				100						+									
				120															

Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEE®)	PB	EPDM	FPM	NBR	CR	CSM
Tannic acid			all, aqueous	20 40 60 80 100 120	+	+	+	+	+		+	+	+	+	+	+
Tanning extracts from plants			usual	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Tartaric acid	$ \begin{array}{c} \text{OH} \quad \text{OH} \\ \quad \\ \text{HOOC}-\text{CH}-\text{CH}-\text{COOH} \end{array} $	170*	all, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Tetrachloroethane	$\text{Cl}_2\text{CH}-\text{CHCl}_2$	146	technically pure	20 40 60 80 100 120	-	-	-	○	○	+	○	-	○	-	-	-
Tetrachloroethylene	see Perchloroethylene															
Tetraethyl lead	$(\text{C}_2\text{H}_5)_4\text{Pb}$		technically pure	20 40 60 80 100 120	+	+	-	+	+	+	+	○	+	+	○	+
Tetrahydrofurane		66	technically pure	20 40 60 80 100 120	-	-	-	○	-	○	-	-	-	-	-	-
Tetrahydronaphthalene (Teralin)		207	technically pure	20 40 60 80 100 120	-	-	-	○	-	+	-	-	+	-	-	-
Thionyl chloride	SOCl_2	79	technically pure	20 40 60 80 100 120	-	-	-	-	-	-	-	-	-	-	-	-
Tin dichloride	see Stannous chloride															

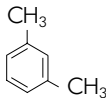
* melting point

Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEF®)	PB	EPDM	FPM	NBR	CR	CSM
Toluene		111	technically pure	20 40 60 80 100 120	-	-	-	○ - 	○ - - 	+ + ○ + 	-	-	○ - 	-	-	-
Tributylphosphate	(C ₄ H ₉) ₃ PO ₄	289	technically pure	20 40 60 80 100 120	-	-	-	+ + + 	+ + + 	+ 	+ + + 	+	-	-	-	-
Trichloroethylene	Cl ₂ C=CHCl	87	technically pure	20 40 60 80 100 120	-	-	-	-	○ + + +	+ + + + 	-	-	+	-	-	-
Trichloroacetic acid	Cl ₃ C-COOH	196	technically pure	20 40 60 80 100 120	○	-	-	+ ○ - 	+ + + 	○ 	+ + + 	○	-	-	-	-
			50%, aqueous	20 40 60 80 100 120	+ ○	+ +	-	+ + + 	+ + + ○ - 	+ + + 	○	-	-	-	-	
Trichloroethane (Methylchloroform)	Cl ₃ -C-CH ₃	74	technically pure	20 40 60 80 100 120	-	-	-	○	○ + - 	+ + ○ - 	-	-	+	-	-	-
Trichloromethane	see Chloroform															
1,1,2-Trifluoro, 1,2,2-Trichloroethane (Freon 113)	FCl ₂ C-CClF ₂	47	technically pure	20 40 60 80 100 120	+ +		-			+ 		-	+	+	+	+
Tricresyl phosphate			technically pure	20 40 60 80 100 120	-		-	+ + +	+ ○		+ ○	-	-	○ - 	-	-

Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEE®)	PB	EPDM	FPM	NBR	CR	CSM
Triethanolamine	$N(CH_2-CH_2-OH)_3$	21*	technically pure	20 40 60 80 100 120	○	+	+	+	+	+	+	-	+	○	+	-
Triethylamine	$N(CH_2-CH_3)_3$	89	technically pure	20 40 60 80 100 120			-			○		-		-		
Trioctyl phosphate	$(C_8H_{17})_3PO_4$		technically pure	20 40 60 80 100 120	-	-	-	○	+		+	-	-	○	-	-
Turpentine oil			technically pure	20 40 60 80 100 120	+	+	-	○	-	+	-	-	+	+	-	-
Urea	$H_2N-CO-NH_2$	133*	up to 30%, aqueous	20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Urine				20 40 60 80 100 120	+	+	+	+	+	+	+	+	+	+	+	+
Vegetable oils and fats				20 40 60 80 100 120	+	+	+	+	+	+	+	-	+	+	○	○
Vinegar	see Wine vinegar															
Vinyl acetate	$CH_2=CHOOCH_3$	73	technically pure	20 40 60 80 100 120	-	-	-		+	+	+	+	+	+	+	+
Vinyl chloride	$CH_2=CHCl$	-14	technically pure	20 40 60 80 100 120	-	-				+		○	+	-	-	

* melting point

Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEF®)	PB	EPDM	FPM	NBR	CR	CSM
Viscose spinning solution				20 40 60 80 100 120	+ + +			+ + +	+ + +	+ + +	+ + +	+ + +	+ + +	-	○ ○ -	+ + +
W aste gases containing – Alkaline				20 40 60 80 100 120	+ + + + + +	+ + + + + +		+ + + + + +	+ + + + + +	+ ○ + + + +	+ + + + + +	+ + + + + +	+ + + ○ + +	+ + + + + +	+ + + ○ + +	+ + + - + +
– Carbon oxides			all	20 40 60 80 100 120	+ + + + + +	+ + + + + +		+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +
– Hydrochloric acid			all	20 40 60 80 100 120	+ + + + + +	+ + + + + +		+ + + + + +	+ + + ○ + +	+ + + + + +	+ + + ○ + +	+ + + ○ + +	+ + + + + +	○ - + + + +	+ + + + + +	+ + + + + +
– Hydrogen fluoride			traces	20 40 60 80 100 120	+ + + + + +	+ + + + + +		+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + ○ + + +	+ + + + + +	+ ○ - + + +	+ + ○ + + +	+ + + + + +
– Nitrous gases			traces	20 40 60 80 100 120	+ + + + + +	+ + + + + +		+ + + + + +	+ + ○ + + +	+ + + + + +	+ + ○ + + +	+ + + ○ + +	+ + + + ○ +	○ - + + + +	+ + ○ + + +	+ + + ○ + +
– Sulphur dioxide			traces	20 40 60 80 100 120	+ + + + + +	+ + + + + +		+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	+ + + + + +	○ - + + + +	+ + + + + +	+ + + + + +
– Sulphur trioxide			traces	20 40 60 80 100 120	+ + + + + +	+ + + + + +		+ + + + + +	+ + ○ + + +	+ + + + + +	+ + ○ + + +	+ + + + + +	+ + + + + +	○ - + + + +	+ + + + + +	+ + + + + +
– Sulphuric acid			all	20 40 60 80 100 120	+ + + + + +	+ + + + + +		+ + + + + +	+ + ○ + + +	+ + + + + +	+ + ○ + + +	+ + + ○ + +	+ + + + + +	○ - + + + +	+ + + + + +	+ + + + + +

Aggressive Media					Chemical Resistance														
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEF®)	PB	EPDM	FPM	NBR	CR	CSM			
Water, condensed	H ₂ O	100		20	+	+	+	+	+	+	+	+	+	+	+	+			
40				+	+	+	+	+	+	+	+	+	+	+	+	+	+		
60				○	+	+	+	+	+	+	+	+	○	+	+	+	+	+	
80					+			+	+	+	+	+		+	○	+	+	+	
100											+	+	+		+				
120												+			+				
Water distilled, deionised				20	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
40				+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
60				+	+	+	+	+	+	+	+	+	+	+	○	+	+	+	+
80					+					+	+	+	+	+	+	+	+		+
100											+	+	+	+	+	+	+		
120												+	+	+		+			
Water, drinking				20	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
40				+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
60				+	+	+	+	+	+	+	+	+	+	+	○	+	+	+	+
80						+					+	+	+	+		+	○		+
100												+	+	+		+			
120													+			+			
Water, waste water without organic solvent and surfactants				20	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
40				+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
60						+	+		+	+	+	+	+	+	○	+	+	+	+
80						+					+	+	+	+		+	+		+
100												+	+	+		+	○		
120													+						
Wax alcohol	C ₃₁ H ₆₃ OH		technically pure	20	+	+		○	○	+	○	—	+	+	+	+	—		
40				+	+		—	—	+	—		+	+	+	+				
60				+	+				+				+	+	+	+			
80																			
100																			
120																			
Wetting agents			up to 5%, aqueous	20	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
				40	+	+			+	+	+	+	+						
				60	○	+				+	+	+	+						
				80						+	+	+							
				100															
				120															
Wines, red and white			usual commercial	20	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
				40		+	+	+	+	+	+	+	+						
				60		+		+	+	+	+	+							
				80					+	+	+	+							
				100						+	+	+							
				120								+							
Wine vinegar			usual commercial	20	+	+	+	+	+	+	+	+	+	+	○	—	—	○	+
				40	+	+	+	+	+	+	+	+	+	+	—	—	—	—	○
				60	+	+		+	+	+	+	+	+	—					—
				80					+	+	+	+							
				100						+	+	+							
				120								+							
Xylene		138–144	technically pure	20	—	—	—	—	—	+	—	—	+	—	—	—			
40							+			○									
60							○			—									
80																			
100																			
120																			

Aggressive Media					Chemical Resistance											
Medium	Formula	Boiling point °C	Concentration	Temperature °C	PVC-U	PVC-C	ABS	PE	PP	PVDF (SYGEF [®])	PB	EPDM	FPM	NBR	CR	CSM
Yeast			all, aqueous	20	+	+		+	+	+	+	+	+	+	+	+
				40	+	+										
				60				+	+	+	+					
				80						+						
				100												
				120												
Zinc salts	ZnCl ₂		all, aqueous	20	+	+	+	+	+	+	+	+	+	+	+	+
				40	+	+	+	+	+	+	+	+	+	+	+	+
				60	○	+	+	+	+	+	+	+	+	+	+	+
				80												
				100												
				120												