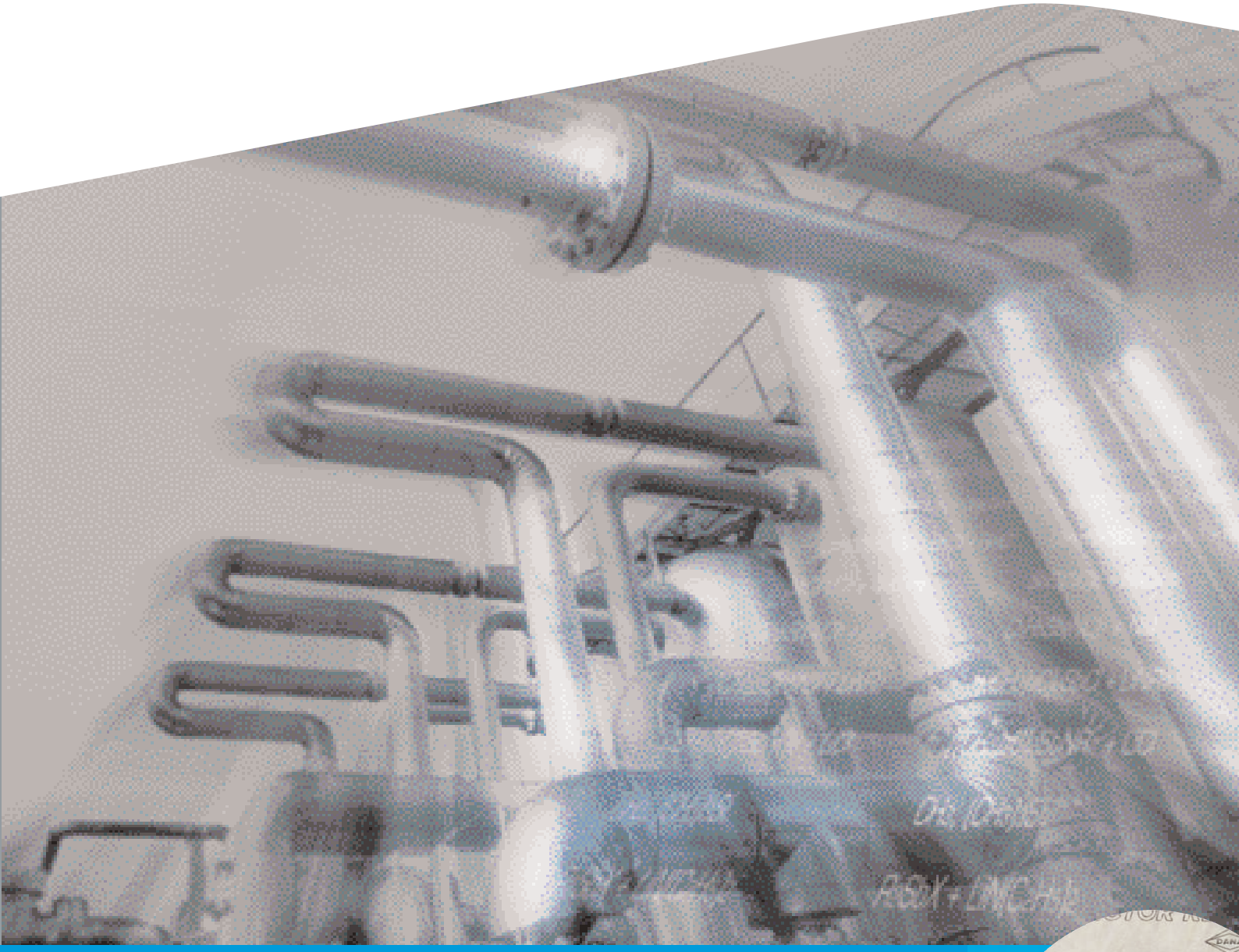

AFM 34

Resistance to Chemical Products

VICTOR REINZ®


R2SbX + LiN(C2H5)2
R2SbN(C2H5)2 + LiX
CH3, C2H5, C6H5
X = Cl, Br
[(CH3)3C]2SbCl + LiNR2
[(CH3)3C]2SbNR2 + LiCl
CH3, [CH3]3Si

Important Instructions for Use

This chart will only give you the resistance of AFM 34 against chemicals. Questions such as sealability are not treated as they depend on the installation conditions.

Source of the data
The data are based on experience and laboratory tests, however most of them are analogous conclusions. Therefore the data cannot be the basis for warranty claims. Chemical suitability depends on the installation. Tongue and groove flanges and/or high seating stress improve operational reliability. Low seating stress and/or gasket thicknesses > 2 mm reduce reliability or operation temperature!

Temperature limits
The specified temperatures at which AFM 34 is described as being resistant, are by no means to be seen as fixed upper limits. They are empirical values that ensure high resistance, also under less optimal conditions. Therefore, in specific cases, the operating temperatures can be considerably higher than specified in the list.

The use of gaskets with inner eyelet of stainless steel (316ti) increases the operation temperature by a maximum of 50 °C, provided that this eyelet is not attacked by the chemical product. However, the maximum operation temperature is 250 °C; for steam or water this is only 200 °C.

The use of gaskets of reinforced AFM 34 METALL with inner eyelet of 316ti increases the operation temperature by 100 °C, provided that this eyelet ist not attacked.

However, the maximum operation temperature is 300 °C; for water and steam this is only 250 °C.

For acids and acid halides at higher temperatures than indicated we recommend the use of PTFE envelopes or of gaskets of PTFE, e.g. creep reduced PTFE like REINZOFLON® 100.

In mixtures and solutions where no reaction products are formed the application temperature depends on the lowest maximum operation temperature of one of the components, provided the latter is contained in a considerable amount.

Indications:
Acids and acid halides > 1 %
Other chemicals > 5 to 10 %

Media not contained:
analogous conclusions and effects
For chemicals which are not listed in this chart we recommend checking under products of the same homologous series, i.e. products with one CH_2-group more or less, or looking up under isomer products presenting the same number, kind and distribution of the substituents. For example: Instead of nonane you can look under octane, isooctane or decane.
However, instead of ehtyl nitrite you must not look under nitromethane. In order to assure the best reliability you have to consider that every additional phenolic -OH; -ONO; $-NO_2$; $-NH_2$; -Cl or -COOH group can reduce the operation temperature by up to 50 °C.

TA Luft
(Technical Guidelines on Air Quality)
AFM 34 and the version with stainless steel inner bead (AFM 34 ME) have TA Luft certification.
(also see www.reinz.com/datasheet)

Warranty claims
The specified data have been compiled to the best of our knowledge. They are valid for the material „as delivered“, without any additional treatment. In view of the many possible installation and operating conditions, definitive conclusions cannot be drawn regarding the behaviour of a sealed joint in every application. The data cannot be used as a basis for any warranty claims.

Chemical Product	Concentration [%]	Temperature [°C]	Resistance
Abietic acid	100	150	●
Acetal	100	150	●
Acetaldehyde	100	150	●
Acetaldehyde oxime	100	150	●
Acetamide	100	150	●
Acetanilide	100	200	●
Acetic acid	100	100	▲
Acetic acid	100	80	○
Acetic acid	100	50	●
Acetic acid anhydride	100	100	●
Acetoin	100	150	●
Acetone	100	150	●
Acetonitrile	100	100	●
Acetophenone	100	100	●
Acetyl chloride	100	50	●
Acetylene	100	150	●
Acrolein	100	150	●
Acrylamide, aqueous solutions	every	200	●
Acrylic acid	100	100	●
Acrylonitrile	100	150	●
Adipic acid	100	200	●
Adipic acid esters	100	200	●
Adiponitrile	100	150	●
Air, compressed		250	●
Alcohols	100	150	●
Aldehydes	100	150	●
Alkylamines	100	100[1]	●
Alkylphenols	100	100[1]	●
Alkylsulphonic acids	100	50 to 150	●
Allyl acetate	100	150	●
Allyl alcohol	100	150	●
Allylamine	100	100	●
Allyl bromide	100	150	●
Allyl chloride	100	150	●
Allyl chloroformiate	100	80	●
Allyl ether	100	150	●
Allylglycidyl ether	100	150	●
Allyl isothiocyanate	100	100	●
Allyl jodide	100	150	●
Allyltrichlorosilane	100	100	●
Alpha-methylstyrene	100	150	●
Alpha-pinene	100	150	●
Alumens, aqueous solutions	every	200	●
Aluminium salts, aqueous solutions	every	200	●
Amidosulphonic acid	100	150	●
Amines	100	100[1]	●
N-Aminoethylpiperazine	100	100	●
Aminophenols	100	150	●
Ammonia, aqueous solutions	every	150	●
Ammonia, gas	100	150	●
Ammonia, liquid	100	50	●
Ammonium salts, acid or oxidating	every	50	● to ▲
Ammonium salts, aqueous solutions	every	200	●
Amyl acetate	100	150	●
Amyl alcohol	100	150	●
Amylamine	100	150	●
Amyl mercaptan	100	100	●

● = resistant ▲ = not resistant ○ = resistant to a certain extent [1] Resistance up to 150 °C, depending on chemical composition

Chemical Product	Concentration [%]	Temperature [°C]	Resistance
Aniline	100	100	●
Animal oils and fats	100	250	●
Anisidine	100	150	●
Anthranilic acid	100	150	●
Anthraquinone	100	200	●
Antimony chlorides, dry	100	100	●
Antimony salts, strongly acid solutions	every	50	●
Antimony trioxide	100	200	●
Aqua regia	every	20	▲
Argon	100	250	●
Arsenic chlorides, dry	100	100	●
Arsenic salts, acid solutions	every	50	●
Arsenic trioxide	100	200	●
Asphalt	100	200	●
Avivages	every	200	●
Barium salts, aqueous solutions	every	200	●
Barium salts, strongly acid solutions	every	50	●
Bayferrox	100	250	●
Beer, wort	100	150	●
Benzalacetone	100	150	●
Benzaldehyde	100	150	●
Benzene	100	100	●
Benzenesulphonic acid	100	50	●
Benzenesulphonoyl chloride	100	50	●
Benzoic acid	100	150	●
Benzoquinone	100	150	●
Benzotriazol	100	100	●
Benzoyl chloride, dry	100	80	●
Benzyl alcohol	100	150	●
Benzyl bromide	100	150	●
Benzyl chloride	100	150	●
Benzyl chloroformiate	100	100	●
Benzylidene chloride	100	100	●
Benzyl iodide	100	150	●
Benzylphenol	100	100	●
Biological fuel	100	150	●
Biological gas		200	●
Bisphenol A	100	150	●
Bitumen	100	250	●
Blast furnace gas		250	●
Bleach liquor	< 10[1]	50	●
Bleach liquor	> 10[1]	50	○
Bleach liquor	> 20[1]	50	▲
Bor alkyls	100	50	●
Bor trichloride	100	100	●
Borax, aqueous solutions	every	200	●
Boric acid, aqueous solutions	every	200	●
Brake fluids, glycol bases	100	150	●
Brine, not strongly acid or oxidating	every	200	●
Brine, strongly acid or oxidating	every	50	○ to ▲
Bromine, liquid, dry	100	50	●
Bromine water	every	50	●
Butadiene	100	150	●
Butane	100	200	●
Butanediole	100	200	●
Butanone	100	150	●

● = resistant ▲ = not resistant ○ = resistant to a certain extent [1] free chlorine

Chemical Product	Concentration [%]	Temperature [°C]	Resistance
Butine	100	150	●
Butoxyl (Methoxy butyle acetate)	100	150	●
Butyl acetate	100	150	●
Butyl acrylate	100	150	●
Butyl alcohol	100	200	●
Butylamine	100	150	●
Butylbenzene	100	150	●
Butyl chlorides	100	150	●
Butylcyclohexyl chloroformiate	100	150	●
Butyl mercaptan	100	150	●
Butylphenols	100	100	●
Butyl phosphite	100	150	●
Butyltoluene	100	150	●
Butyltrichlorosilane	100	150	●
Butylvinyl ether	100	150	●
Butyraldehyde	100	150	●
Butyraldoxim	100	100	●
Butyric acid	30	100	●
Cadmium salts, aqueous solutions	every	200	●
Calcium hypochlorite	< 10[1]	50	●
Calcium salts, aqueous solutions	every	200	●
Calcium salts, strongly acid or oxidating	every	50	● to ▲
Calcium stearate	100	250	●
Caproic acid	100	100	●
Caprolactam	100	150	●
Carbon dioxide, carbonic acid	100	250	●
Carbon disulfide	100	50	●
Carbon monoxide	100	200	●
Carbon tetrachloride	100	100	●
Castor oil	100	250	●
Cellosolve	100	100	●
Chlorine dioxide	100	20	▲
Chlorine, dry gas	100	100	●
Chlorine, dry liquid	100	50	●
Chlorine, gas or liquid, humid (water containing)	100	50	●
Chloroacetaldehyde	100	100	●
Chloroacetic acid	100	50	●
Chloroaniline	100	100	●
Chloroanisidin	100	80	●
Chlorobenzaldehyde	100	100	●
Chlorobenzene	100	150	●
Chlorobenzoic acid	100	100	●
Chlorocresols	100	50	●
Chlorodiphenyls	100	150	●
Chloroform	100	100	●
3-Chloro-4-methylphenyl isocyanate	100	100	●
Chloromethylsulphonylaromates	100	180	●
Chloronitroaniline	100	100	●
Chloronitrobenzene	100	150	●
Chloronitrotoluene	100	150	●
Chloroparaffins	100	150	●
Chloropentanes	100	150	●
Chlorophenols	100	50	●
Chloroprene	100	150	●
Chloropropanols	100	100	●
Chloropyridine	100	100	●

● = resistant ▲ = not resistant ○ = resistant to a certain extent [1] free chlorine

Chemical Product	Concentration [%]	Temperature [°C]	Resistance
Chlorosilanes	100	100	●
Chlorosulphonic acid	100	50	●
Chlorotoluenes	100	150	●
Chlorotoluidines	100	100	●
Chocolate	100	200	●
Choline chloride, aqueous solutions	every	100	●
Chrome salts, aqueous solutions	every	200	●
Chrome salts, strongly acid or oxidating	every	50	● to ▲
Chromic acid	every	50	●
Chromyl chloride	100	50	●
Cinnamic acid, aqueous suspension		200	●
Citric acid, aqueous solutions	every	150	●
Clophenes	100	150	●
Cocoa butter	100	200	●
Coconut oil amine	100	150	●
Collodion, aqueous solutions	20	100	●
Condensate	100	200	●
Condensed milk	100	200	●
Cooling water	100	200	●
Copper salts, acid or strongly oxidating	every	50	● to ▲
Copper salts, aqueous solutions	every	200	●
Cresols	100	80	●
Crotonaldehyde	100	150	●
Crude oil	100	250	●
Cumene	100	150	●
Cumene hydroperoxide	95	50	●
Cyanoacetic acid	100	50	●
Cyanur chloride	100	150	●
Cycloheptane	100	150	●
Cycloheptene	100	150	●
Cyclohexane	100	150	●
Cyclohexanol	100	150	●
Cyclohexanone	100	150	●
Cyclohexenyltrichlorosilane	100	100	●
Cyclohexyl isocyanate	100	100	●
Cyclohexyl mercaptan	100	100	●
Cyclohexylamine	100	150	●
Cyclooctadien, -tetraen	100	150	●
Cyclopentane	100	150	●
Cyclopentanol	100	150	●
Cyclopentanone	100	150	●
Decalin	100	150	●
Decane	100	150	●
Decanol	100	150	●
Desalinated water	100	200	●
Diacetone alcohol	100	100	●
Diacetyl	100	150	●
Diallyl ether	100	150	●
Diallylamine	100	150	●
Dibromobenzenes	100	80	●
1,2-Dibromobutan-3-one	100	100	●
1,2-Dibromo-3-chloropropane	100	150	●
Dibromomethane	100	150	●
Dibutylamine	100	150	●
Dibutylethanolamine	100	150	●
Dibutyl maleate	100	150	●

● = resistant ▲ = not resistant ○ = resistant to a certain extent

Chemical Product	Concentration [%]	Temperature [°C]	Resistance
Di-tert-butylphenol	100	150	●
Dibutyl phthalate	100	150	●
Dibutyltin chloride	100	150	●
Dibutyltin oxide	100	150	●
Dichloroacetic acid	100	50	●
Dichloroacetone	100	100	●
Dichloroacetyl chloride	100	50	●
Dichloroaniline	100	100	●
Dichloroanthraquinone	100	150	●
Dichlorobenzene	100	150	●
Dichlorobutane	100	150	●
Dichlorodiphenylsilane	100	150	●
Dichloroethane	100	150	●
Dichloroisopropyl ether	100	100	●
Dichloromethane	100	150	●
Dichlorophenols	100	50	●
Dichlorophenyl isocyanate	100	80	●
Dichlorophenyltrichlorosilane	100	100	●
Dichlorotoluene	100	150	●
Dicocosylamine	100	150	●
Dicycloheptadiene (Norbornadiene)	100	150	●
Dicyclohexylamine	100	150	●
Dicyclopentadiene	100	150	●
Diethanolamine	100	150	●
3,3-Diethoxypropane	100	100	●
Diethylamine	100	150	●
N,N-Diethylaminoethanol	100	150	●
N,N-Diethylaniline	100	100	●
Diethyldichlorosilane	100	100	●
Diethylenediamine	100	100	●
Diethyleneglycol	100	200	●
Diethyleneglycol ether	100	150	●
Diethylenetriamine	100	100	●
Diethyl ether	100	150	●
Di-2-ethylhexylamine	100	150	●
Diethyl sulfate	100	150	●
Diethyl sulfide	100	100	●
Diethylthiophosphoryl chloride	100	80	●
Diisobutene	100	150	●
Diisobutylamine	100	150	●
Diisobutyl ketone	100	150	●
Diisobutyl phosphate	100	150	●
Diisodecyl phthalate	100	150	●
Diisopropyl hydroperoxide	100	50	●
Diisopropylamine	100	150	●
Diisopropylbenzene	100	150	●
Diketen	100	100	●
Dimethoxymethane	100	150	●
Dimethyl adipate	100	150	●
Dimethylacetamide	100	100	●
Dimethylamine	100	150	●
Dimethylaminoacetonitrile	100	100	●
N,N-Dimethylaniline	100	100	●
Dimethylcyclohexylamine	100	150	●
Dimethyldichlorosilane	100	150	●
Dimethyldiethoxysilane	100	150	●
Dimethyl disulfide	100	150	●

● = resistant ▲ = not resistant ○ = resistant to a certain extent

Chemical Product	Concentration [%]	Temperature [°C]	Resistance
Dimethylformamide (DMF)	100	100	○
Dimethylformamide (DMF)	100	50	●
Dimethylhydrazine	100	100	●
Dimethyl malonate	100	150	●
Dimethylpropylamine	100	150	●
Dimethylsiloxane	100	150	●
Dimethyl sulfate	100	150	●
Dimethyl sulfide	100	100	●
Dimethyl terephthalate	100	150	●
Dinitroaniline	100	80	●
Dinitroanthraquinone	100	120	●
Dinitrobenzenes	100	120	●
Dinitrocresols	100	50	●
Dinitrotoluenes	100	120	●
Dinonylphenol	100	100	●
Dioctyl phthalate (DOP)	100	150	●
Dioctyltin chloride	100	150	●
Dioxan	100	150	●
Dipentene	100	200	●
Diphenyl	100	150	●
Diphenylamine	100	150	●
Diphenyl ether (= Diphenyl oxide)	100	150	●
Diphenylmethane-4,4'-diisocyanate	100	150	●
Diphenyl phosphate	100	100	●
Dipropylamine	100	150	●
Dipropyl ether	100	150	●
Dipropyl ketone	100	150	●
Dithiophosphoric acid	100	150	●
Divinylbenzene	100	150	●
Dodecanol	100	150	●
Dodecylbenzenesulphonic acid	100	100	●
Dodecylbenzenesulphonic acid, Na salt	100	200	●
Dodecyl mercaptan	100	150	●
Dodecyl thiopropionate	100	150	●
Dodecyltrichlorosilane	100	100	●
Dyer's bath, acid or alkaline	every	80	●
Dyer's bath, neutral	every	150	●
Epibromohydrine	100	80	●
Epichlorohydrine	100	100	●
Essential oils	100	150	●
Ethane	100	150	●
Ethanol	100	150	●
Ethanolamines	100	150	●
Ether ketones	100	80[1]	●
Ethers	100	150	●
Ethyl acetate	100	150	●
Ethyl acetoacetate	100	150	●
Ethyl acrylate	100	150	●
2-Ethylaniline	100	150	●
N-Ethylaniline	100	100	●
Ethylbenzene	100	150	●
N-Ethyl-N-benzylaniline	100	150	●
N-Ethyl-N-benzyltoluidines	100	150	●
Ethyl bromide	100	150	●
Ethyl bromoacetate	100	150	●
Ethylbutanol	100	150	●

● = resistant ▲ = not resistant ○ = resistant to a certain extent [1] Resistance up to 150 °C, depending on chemical composition

Chemical Product	Concentration [%]	Temperature [°C]	Resistance
Ethylbutyl acetate	100	150	●
Ethylbutyl ether	100	150	●
Ethylbutyraldehyde	100	150	●
Ethyl butyrate	100	150	●
Ethyl carbonate	100	150	●
Ethyl chloride	100	150	●
Ethyl chloroacetate	100	100	●
Ethyl chloroformiate	100	100	●
Ethyl chloropropionate	100	150	●
Ethyl crotonate	100	150	●
Ethyl cyanoacetate	100	150	●
Ethyldichloroarsine	100	100	●
Ethyldichlorosilane	100	100	●
Ethylene	100	150	●
Ethylene chloride	100	150	●
Ethylenediamine	100	100	●
Ethylene glycol	100	150	●
Ethylene glycol diethyl ether	100	150	●
Ethylene glycol monobutyl ether	100	150	●
Ethyleneimine	100	50	●
Ethylene oxide	100	50	●
Ethylene tetrachloride	100	100	●
Ethyl ether	100	150	●
Ethylglycol	100	150	●
Ethylglycol acetate	100	150	●
2-Ethylhexanal	100	150	●
2-Ethylhexanol	100	150	●
2-Ethylhexoic acid	100	150	●
2-Ethylhexyl acrylate	100	150	●
2-Ethylhexylamine	100	150	●
2-Ethylhexyl chloroformiate	100	150	●
Ethyl isobutyrate	100	150	●
Ethyl mercaptan	100	50	●
Ethyl methacrylate	100	150	●
Ethyl orthoformiate	100	150	●
Ethyl oxalate	100	150	●
Ethylphenyldichlorosilane	100	150	●
1-Ethylpiperidine	100	100	●
Ethyl silicate	100	150	●
Ethyltoluidines	100	150	●
Ethyltrichlorosilane	100	100	●
Exhaust gas		250	●
Fatty acids above C 12	100	200[1]	●
Fatty alcohols above C 12	100	200[1]	●
Feed water for boilers	100	200	●
Flue gas	every	150	○
Fluorine	100	50	▲
Fluoraniline	100	80	●
Fluorbenzene	100	100	●
Fluorboric acid, aqueous solutions	78	50	○
Fluorsulphonic acid	100	50	○
Fluortoluene	100	100	●
Formaldehyde, aqueous solutions	< 40	150	●
Formamide	100	150	●
Formanilide	100	150	●
Formic acid	100	100	▲

● = resistant ▲ = not resistant ○ = resistant to a certain extent [1] Resistance up to 250 °C, depending on chain length

Chemical Product	Concentration [%]	Temperature [°C]	Resistance
Formic acid	100	50	○
Formic acid	100	50	●
Formic acid	70	50	●
Freons, Frigens (CFC, BrCFC)	100	150	●
Fruit juices	100	150	●
Fuel B	100	150	●
Fuel oil	100	250	●
Fuels	100	150	●
Fumaric acid	100	150	●
Furane	100	100	●
Furfurol	100	100	●
Furfuryl alcohol	100	100	●
Furfurylamine	100	100	●
Gallic acid	100	200	●
Gasoline	100	200	●
Gear box oil	100	250	●
Gelatin	100	200	●
Generator gas	100	250	●
Gilotherme	100	250	●
Glucose, aqueous solutions	every	200	●
Glue	every	200	●
Glutaraldehyde	60	150	●
Glycerol	100	200	●
Glycerol stearates	100	200	●
Glycidylaldehyde	100	150	●
Glycols, above C3	100	200	●
Halones	100	150	●
Heat transfer oils	100	250	●
Helium	100	250	●
Heptanes	100	150	●
Heptenes	100	150	●
Hexachloroacetone	100	80	●
Hexachlorobenzene	100	100	●
Hexachlorobutadiene	100	100	●
Hexachlorocyclopentadiene	100	100	●
Hexachloropentadiene	100	100	●
Hexadecyltrichlorosilane	100	100	●
Hexadiene	100	150	●
Hexafluoracetone hydrate	100	80	●
Hexafluorphosphoric acid	100	50	○
Hexafluorpropene	100	100	●
Hexahydrophthalic acid anhydride	100	150	●
Hexaldehyde	100	150	●
Hexamethylene diisocyanate	100	100	●
Hexamethylenediamine	100	150	●
Hexamethyleneimin	100	150	●
Hexane	100	150	●
Hexanedicarbonic acid	100	150	●
Hexanols	100	150	●
Hexenes	100	150	●
Hot water	100	200	●
Hydraulic fluids, biologically degradable	100	150	●
Hydraulic fluids, glycol basis	100	200	●
Hydraulic fluids, mineral oil basis	100	250	●
Hydraulic fluids, phosphoric ester basis	100	150	○

● = resistant ▲ = not resistant ○ = resistant to a certain extent

Chemical Product	Concentration [%]	Temperature [°C]	Resistance
Hydraulic fluids, rapeseed oil ester basis	100	150	●
Hydraulic fluids, totally synthetic	100	150	●
Hydrazine hydrate	64	100	●
Hydrobromic acid	47	80	●
Hydrochloric acid	every	100	▲
Hydrochloric acid	every	50	○
Hydrochloric acid	every	20	●
Hydrocyanic acid	100	150	●
Hydrofluoric acid	10	50	○
Hydrofluoric acid	40	50	▲
Hydrofluorsilic acid, aqueous solutions	every	50	○
Hydrogen	100	150	●
Hydrogen bromide, dry gas	100	100	●
Hydrogen chloride, dry gas	100	100	●
Hydrogen chloride, humid gas	every	50	●
Hydrogen peroxide	< 3	150	●
Hydrogen peroxide	10 to 30	50	○
Hydrogen sulfide	100	150	●
Hydroiodic acid	every	50	○
Hydroquinone	100	150	●
Hydroxyethyl acetate	100	150	●
Hydroxylamine sulfate	100	100	●
4-Hydroxypentamethylpiperidine	100	150	●
4-Hydroxytetramethylpiperidine	100	150	●
IRM test-oil 902 and 903	100	200	●
Iron pentacarbonyl	100	150	●
Iron salts, aqueous solutions	every	200	●
Iron salts, strongly acid solutions	every	50	●
Isobutanol	100	150	●
Isobutene	100	150	●
Isobutyric acid	100	100	●
Isodecylalcohol	100	150	●
Isononylalcohol	100	150	●
Isooctane	100	200	●
Isophorone	100	150	●
Isopropanol	100	150	●
Isopropyl acetate	100	150	●
Isopropylbenzene	100	150	●
Isopropyl chloride	100	100	●
Isopropyl chloropropionate	100	150	●
Isopropyl ether	100	150	●
Isopropyl isocyanate	100	100	●
Isopropyl nitrate	100	50	●
Isopropylphenol	100	100	●
Isotridecanol	100	200	●
Kerosene	100	150	●
Ketones	100	150	●
Lactic acid ester	100	150	●
Latex	every	200	●
Lauric acid	100	150	●
Lauryl alcohol	100	150	●
Lead alkyls	100	80	●
Lead salts, aqueous solutions	every	200	●
Lead salts, strongly acid solutions	every	50	●

● = resistant ▲ = not resistant ○ = resistant to a certain extent

Chemical Product	Concentration [%]	Temperature [°C]	Resistance
Levoxin	every	100	●
Lighting gas	100	150	●
Lignin sulphonate, aqueous solutions	every	150	●
Limonene	100	150	●
Linseed oil	100	150	●
Liquid gas	100	50	●
Liquor	100	150	●
Lithium alkyls	100	80	●
Lithium hydroxide, aqueous solutions	every	100	●
Lithium salts, aqueous solutions	every	200	●
Lubricating oils	100	250	●
Machine oils	100	250	●
Magnesium salts, acid or strongly oxidating	every	50	● to ▲
Magnesium salts, aqueous solutions	every	200	●
Magnesium stearate	100	250	●
Maleic acid anhydride	100	150	●
Maleic acid ester	100	150	●
Malt	100	200	●
Marlotherm	100	250	●
Mayonnaise	100	200	●
Melamine	100	150	●
Mercaptanes, mercaptides	100	50[1]	●
Mercaptobenzimidazol	100	150	●
Mercury salts, aqueous solutions	every	200	●
Mercury salts, strongly acid	every	50	●
Mesityl alcohol	100	150	●
Mesityl oxide	100	100	●
Mesitylene (1, 3 ,5-Trimethylbenzene)	100	150	●
Methacrylic acid	100	100	●
Methane	100	200	●
Methanol	100	150	●
Methoxybenzaldehyde	100	150	●
Methoxyethanol	100	150	●
Methoxymethyl isocyanate	100	100	●
Methyl acetate	100	150	●
Methyl acrylate	100	150	●
Methylbutyl ether	100	150	●
Methyl chloride	100	150	●
Methyl chloroformiate	100	100	●
Methylchloropyridine	100	50	●
Methylcyclohexanol	100	150	●
Methyl dichloroacetate	100	100	●
Methyldichlorosilane	100	100	●
Methylene bromide	100	150	●
Methylene chloride	100	150	●
Methylethyl ketone (MEK)	100	150	●
Methyl formiate	100	150	●
Methylglycol	100	150	●
Methylglycol acetate	100	150	●
Methylhydrazine	100	100	●
Methylisobutyl ketone	100	150	●
Methyl isocyanate	100	100	●
Methylisopropenyl ketone	100	150	●
Methyl methacrylate	100	150	●
Methylolacrylamide	100	150	●
Methylpyridine	100	150	●

● = resistant ▲ = not resistant ○ = resistant to a certain extent [1] Resistance up to 150 °C, depending on chemical composition

Chemical Product	Concentration [%]	Temperature [°C]	Resistance
N-Methylpyrrolidone (NMP)	100	50	●
N-Methylpyrrolidone (NMP)	100	100	○
Methylsalicylate	100	150	●
Methyluracile	100	200	●
Milk	100	200	●
Mineral oil	100	250	●
Mixed acids	every	50	○ to ▲
Mobiltherm	100	250	●
Molasses, acid or alcaline	100	100	●
Monochloroacetic acid	100	50	●
Monochloroacetonitril	100	100	●
Monochloroanilines	100	100	●
Monochlorobenzene	100	150	●
Monochloronaphthaline	100	150	●
Mononitroaniline	100	100	●
Mononitrobenzene	100	150	●
Morpholine	100	150	●
Motor oils	100	250	●
Naphtha	100	250	●
Naphthalene	100	150	●
Naphtholic acid	100	150	●
Naphthols	100	150	●
Naphthylamine	100	150	●
Natural gas	100	150	●
Nickel salts, aqueous solutions	every	200	●
Nickel salts, strongly acid	every	50	●
Nickeltetracarbonyl	100	100	●
Nitrogen	100	250	●
Nitric acid	< 10	100	▲
Nitric acid	< 10	50	●
Nitric acid	> 20	20	▲
Nitroaniline	100	100	●
Nitroanthraquinone	100	150	●
Nitrobenzene	100	150	●
Nitrochlorobenzene	100	150	●
Nitrocresols	100	50	●
Nitromethane	100	100	●
Nitronaphthalene	100	150	●
Nitrophenols	100	50	●
Nitropropanes	100	100	●
Nitrotoluene	100	150	●
Nitrotrichlorobenzene	100	120	●
Nitrous gases, dry	100	150	●
Nitrous gases, humid	every	50	○
NO_X, dry	100	150	●
NO_X, humid	every	50	○
Nonylphenol	100	100	●
Norbornadiene	100	150	●
Octadiene	100	150	●
Octane	100	200	●
Octanol	100	150	●
Octyl chloride	100	150	●
Octyl mercaptan	100	100	●
Oleic acid	100	200	●
Oleine	100	200	●

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Chemical Product	Concentration [%]	Temperature [°C]	Resistance
Oxalic acid, aqueous solutions	every	100	●
Oxygen gas, (BAM-approval)	100	100	●
Palm oil methyl ester	100	200	●
Paraffins	100	200	●
Pentaerythritol	100	150	●
Pentane	100	150	●
Pentanedicarbonic acid, aqueous solutions	every	150	●
Pentanedione (acetyl acetone)	100	150	●
Perchloric acid, aqueous solutions	every	50	○
Perchloroehtylene	100	100	●
Perchloromethyl mercaptan	100	50	●
Petrolatum	100	200	●
Phenol	100	80	●
Phenyl ether	100	150	●
Phenylhydrazine	100	150	●
Phenylenediamine	100	150	●
Phenylthiophosphoryl dichloride	100	50	○
Phosgene	100	50	●
Phosphonopropionic acid	40	150	●
Phosphonosuccinic acid	50	150	●
Phosphonosuccinic acid esters	100	150	●
Phosphoric acid	30	150	●
Phosphoric acid	75	100	●
Phosphoric acid anhydride, dry	100	150	●
Phosphoric acid monoesters	100	100	●
Phosphoric acid sulphochloride, dry	100	50	●
Phosphorus	100	150	●
Phosphorus oxybromide, dry	100	50	●
Phosphorus oxychloride, dry	100	50	●
Phosphorus pentachloride, dry	100	50	●
Phosphorus sulfides	100	100	●
Phosphorus tribromide, dry	100	50	●
Phosphorus trichloride, dry	100	50	●
Phthalic acid	100	150	●
Phthalic acid anhydride	100	150	●
Phthalic acid esters	100	150	●
Piperazine	100	100	●
Piperidine	100	100	●
Plasticizers	100	100[1]	●
Polyacrylnitrile	100	250	●
Polyamide	100	250	●
Polybutadiene	100	250	●
Polybutylene terephthalate	200	250	●
Polychlorinated biphenyls	100	150	●
Polyether	100	250	●
Polyethylene	100	250	●
Polytribromostyrene	100	250	●
Potassium dichromate, acid aqueous solutions	every	50	●
Potassium hydroxide, aqueous solutions	< 28	80	●
Potassium hydroxide, aqueous solutions	< 50	50	●
Potassium hypochlorite	< 5[2]	100	●
Potassium hypochlorite	< 10[2]	50	○
Potassium permanganate	every	50	●
Potassium persulfate	every	50	●
Potassium salts, aqueous solutions	every	200	●
Potassium salts, strongly oxidating	every	50	● to ▲

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Chemical Product	Concentration [%]	Temperature [°C]	Resistance
Propane	100	150	●
Propanols	100	150	●
Propionaldehyde	100	150	●
Propionic acid	100	100	●
Propionyl chloride	100	50	●
Propylene glycol	100	150	●
Propyleneimine	100	50	●
Propylene oxide	100	50	●
Propyltrichlorosilane	100	100	●
Pyridine	100	100	●
Pyrrolidine	100	100	●
Quinoline	100	100	●
Rape seed oil	100	250	●
Rape seed oil methyl ester	100	150	●
Refrigerant R 134 a	100	150	●
Refrigerants (CFC, BrCFC, FC)	100	150	●
Resin acids	100	150	●
Resin oil	100	150	●
Rheoplast	100	150	●
Rongalit	100	200	●
Salicylic acid, aqueous solutions	every	150	●
Sea water		200	●
Sebacic acid	100	200	●
Sebacic acid esters	100	200	●
Selenates	every	200	●
Seleneoxy chloride	100	50	●
Silane A 187	100	150	●
Silicone oil	100	250	●
Silicon tetrachloride	100	100	●
Silver salts, aqueous solutions	every	200	●
Silver salts, strongly acid or oxidating	every	50	○ to ▲
Skydrol 500	100	150	●
SO_2, dry	100	250	●
SO_2, humid	every	200	●
SO_3	100	20	○
SO_3	100	50	▲
Soap solution	every	200	●
Soda, aqueous solutions	every	150	●
Sodium aluminate liquor	every	100	●
Sodium dichromates, acid aqueous solutions	every	50	○ to ▲
Sodium hydroxide, aqueous solution	25	100	●
Sodium hydroxide, aqueous solution	50	100	▲
Sodium hydroxide, aqueous solution	50	50	●
Sodium hydroxide, aqueous solution	50	80	○
Sodium hypochlorite	< 5[1]	100	●
Sodium hypochlorite	5 to 10[1]	50	●
Sodium hypochlorite	> 10[1]	50	○
Sodium hypochlorite	> 20[1]	50	▲
Sodium methylate	every	50	●
Sodium salts, aqueous solutions	every	200	●
Sodium salts, strongly acid or oxidating	every	50	○ to ▲
Solvesso	100	150	●
Soya seed oil	100	200	●
Spindle oil	100	250	●

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Chemical Product	Concentration [%]	Temperature [°C]	Resistance
Starch, aqueous solutions	every	200	●
Steam	100	200	●
Steam, saturated	100	200	●
Stearic acid	100	200	●
Stearyl alcohol	100	200	●
Styrene	100	100	●
Succinic esters	100	200	●
Sugar sirup	every	200	●
Sulphanilic acid	100	150	●
Sulphur	100	100	●
Sulphur chloride	100	50	○
Sulphur dioxide, dry	100	250	●
Sulphur dioxide, humid	every	200	●
Sulphur hexafluoride	100	250	●
Sulphur trioxide	100	20	○
Sulphur trioxide	100	50	▲
Sulphuric acid	5	100	●
Sulphuric acid	25	20	●
Sulphuric acid	25	80	○
Sulphuric acid	96	20	●
Sulphuric acid	96	50	○
Sulphurous acid	every	100	●
Sulphuryl chloride	100	50	●
Synthetic resins, aqueous dispersion	every	200	●
Tall oil	100	50	●
Tannic acid	100	150	●
Tar	100	200	●
Tar oil	100	150	●
Tartaric acid	every	150	●
Terpineol	100	150	●
Test oil IRM 902 and 903	100	200	●
Tetrabromomethane	100	100	●
Tetrabutyl tin	100	150	●
Tetrachloroacetophenone	100	100	●
Tetrachlorobenzene	100	50	●
Tetrachloroethane	100	100	●
Tetrachloroethylene	100	100	●
Tetrachlorophenol	100	50	●
Tetradecyl chloride	100	150	●
Tetrahydrobenzaldehyde	100	150	●
Tetrahydrofurane	100	100	●
Tetrahydrophthalic acid anhydride	100	150	●
Tetrahydrothiophene	100	100	●
Tetraisopropyl titanate	100	150	●
Tetraline	100	150	●
Tetramethylammonium hydroxide	100	150	●
Tetramethyl lead	100	80	●
Tetramethylsilane	100	150	●
Tetraoctyl tin	100	150	●
Tetrapropylene	100	150	●
Thioacetic acid	100	50	●
Thioalcohols	100	50[1]	●
Thiodipropionitrile	100	150	●
Thioglycolic acid, esters	100	150	●
Thioglycols	100	150	●
Thionyl chloride	100	50	●

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Chemical Product	Concentration [%]	Temperature [°C]	Resistance
Thiophene	100	150	●
Thiourea	100	200	●
Tin salts, aqueous solutions	every	200	●
Tin salts, strongly acid solutions	every	50	●
Tin tetrachloride, dry	100	100	●
Titanium dioxide	100	250	●
Titanium dioxide, aqueous suspension		200	●
Titanium tetrachloride	100	100	●
Toluene	100	150	●
Toluenesulphonic acid	100	50	●
Toluidines	100	100	●
Tolylene diisocyanate	100	100	●
Tolyl isocyanate	100	100	●
Tolyltriazol	100	100	●
Transformer oils, based on mineral oils	100	250	●
Triacetoneamine	100	150	●
Triallylamine	100	150	●
Triallyl borate	100	150	●
Tribromomethane	100	150	●
Tributene	100	200	●
Tributyl phosphate	100	200	●
Trichloroacetic acid	100	50	○
Trichlorobenzene	100	150	●
Trichlorobutene	100	100	●
Trichloroethylene	100	100	●
Trichlorophenol	100	50	●
Trichlorosilane	100	150	●
Tricresyl phosphate	100	200	●
Triethanolamine	100	200	●
Triethylaluminium	100	50	●
Triethylamine	100	150	●
Triethyleneglycol	100	150	●
Triethyl borate	100	150	●
Triethyl phosphate	100	150	●
Triethyl phosphite	100	150	●
Trifluoracetic acid	100	50	▲
Trifluorethane	100	150	●
Trifluormethylaniline	100	100	●
Triglycol dichloride	100	150	●
Triisopropylbenzene	100	150	●
Trimethylamine	100	150	●
Trimethylolpropane	100	200	●
Trinonylphenyl phosphite	100	150	●
Trioctyl phosphate	100	150	●
Trioxane	100	150	●
Turbine oil (mineral oil)	100	250	●
Turbine oil (phosphoric acid ester)	100	100	●
Tylose, aqueous solutions	every	200	●
Ultramarine	100	150	●
Undecane	100	200	●
Urea, aqueous solutions	every	200	●
Valeraldehyde	100	150	●
Valeroyl chloride	100	50	●
Vanadiumoxy trichloride	100	50	●
Vanadium pentoxide	100	200	●

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Chemical Product	Concentration [%]	Temperature [°C]	Resistance
Vanadium trichloride	100	50	●
Vegetable oils	100	250	●
Vinyl acetate	100	150	●
Vinylbenzene	100	150	●
Vinyl bromide	100	150	●
Vinyl butyrate	100	150	●
Vinyl chloride	100	100	●
Vinyl chloroacetate	100	100	●
Vinylethyl ether	100	150	●
Vinylidene chloride	100	150	●
Vinylidene fluoride	100	150	●
Vinylmethyl ether	100	150	●
Vinylpyridins	100	100	●
Vinyltoluenes	100	150	●
Vinyltrichlorosilane	100	100	●
Waste gas, containing HCl		150	●
Waste gas, containing solvent		150	●
Waste water		150	●
Waste water, acid		80	●
Waste water, alkaline		100	○
Water, fully demineralizable	100	200	●
Water glass	every	200	●
Wax	100	150	●
Xylene bromide	100	150	●
Xylenes	100	150	●
Xylenol	100	100	●
Xylidines	100	100	●
Zinc alkyles	100	50	●
Zinc salts, aqueous solutions	every	200	●
Zinc salts, strongly acid solutions	every	50	●
Zirconium tetrachloride, dry	100	100	●

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