b.safe Materials - Chemical Resistance

Please note:

All information in our catalogue is based on current technical knowledge, experience and manufacturers' data. Users should check the suitability of parts and materials described in the catalogue before purchase.

BOLA does not accept any warranty claims as to suitability and fitness of purpose of the materials and products described in this catalogue. Users should avoid making any assumptions on, or interpretation of, the data herein. **Therefore we can not provide warranty and cannot accept responsibility for any damage.**

Categories of substances

Classes of substances at +20 °C	PTFE	PFA	FEP	ETFE	ECTFE	PVDF	PP	PA	PS	PMMA
Aldehydes	+	+	+	+	+	+	o	o	–	–
Alcohols	+	+	+	+	+	+	+	–	o	o
Amines	+	+	+	+	+	o	o	o	+	–
Bases/Caustic solutions	+	+	+	+	+	+	+	o	o	–
Esters	+	+	+	+	+	o	+	+	–	–
Ether	+	+	+	o	o	o	o	o	–	–
Glycols	+	+	+	+	+	+	+	+	+	o
Ketones	+	+	+	o	o	o	o	+	–	–
Hydrocarbons, aliphatic	+	+	+	+	+	+	o	+	–	–
Hydrocarbons, aromatic	+	+	+	+	+	+	o	+	–	–
Hydrocarbons, halogenated	o	+	+	+	+	+	o	o	–	–
Mineral oils	+	+	+	+	+	+	–	+	+	o
Oxidizing agents, strong	+	+	+	o	o	+	o	–	–	–
Vegetable oils	+	+	+	+	+	+	o	+	+	o
Acids inorganic	+	+	+	o	o	+	+	–	+	o
Acids organic	+	+	+	o	o	+	+	–	o	+
Lubricating oils	+	+	+	+	+	+	+	+	+	+

Substances

Substance at +20 °C	Conc. in %	PTFE	PFA	FEP	ETFE	ECTFE	PVDF	PP	PA	PS	PMMA
Accumulator acid	20	+	+	+	+	+	+	+	–	+	–
Acetaldehyde	100	+	+	+	+	+	+	o	–	–	o
Acetamide	100	+	+	+	+	+	+	+	+	+	o
Acetic acid	100	+	+	+	+	+	+	+	–	o	–
Acetic acid amide	100	+	+	+	+	+	+	+	+	+	o
Acetic acid anhydride	100	+	+	+	+	+	–	o	–	–	–
Acetic acid butyl ester	100	+	+	+	+	+	+	o	+	–	–
Acetic acid chloride	100	+	+	+	+	+	+	o	o	–	–
Acetic acid ethyl ester	100	+	+	+	+	+	–	o	+	–	–
Acetic acid pentyl ester	100	+	+	+	+	+	+	+	+	–	+
Acetic anhydride	100	+	+	+	+	+	–	o	–	–	–
Acetone	100	+	+	+	+	+	–	+	+	–	–
Acetonitrile	100	+	+	+	+	+	o	+	+	–	–
Acetophenone	100	+	+	+	+	+	+	+	–	–	–
Acetyl benzene	100	+	+	+	+	+	+	+	–	–	–
Acetyl chloride	100	+	+	+	+	+	+	o	o	–	–
Acetylene tetrachloride	100	+	+	+	–	–	+	–	+	–	–
Acetylsalicylic acid	100	+	+	+	+	+	+	+	+	+	–
Acetone-2	100	+	+	+	+	+	–	+	+	–	–
Acrylic acid butyl ester	100	+	+	+	+	+	o	o	+	–	–
Acrylic acid ethylic ester	100	+	+	+	+	+	o	o	+	–	–
Acrylonitrile	100	+	+	+	+	+	o	o	+	–	–
Adipic acid	100	+	+	+	+	+	+	+	+	+	–
Alcohol	100	+	+	+	+	+	+	+	–	o	o
Alcohol denatured	100	+	+	+	+	+	+	+	–	o	o
Alkyl acetone	100	+	+	+	+	+	+	+	–	o	–
Alkyl alcohol	100	+	+	+	+	+	+	+	–	o	–
Alkyl chloride	100	+	+	+	+	+	o	o	–	–	–
Allylether acetate	100	+	+	+	+	+	+	+	–	o	–
Alum	100	+	+	+	+	+	+	+	–	o	–
Alumina	100	+	+	+	+	+	+	+	+	o	o
Aluminium acetate	100	+	+	+	+	+	+	+	+	o	o
Aluminium chloride	100	+	+	+	+	+	+	+	o	+	o
Aluminium fluoride	100	+	+	+	+	+	+	+	+	+	–
Aluminium hydroxide	100	+	+	+	+	+	+	+	+	o	o
Aluminium hydroxidacetate	100	+	+	+	+	+	+	+	+	o	o
Aluminium nitrate	100	+	+	+	+	+	+	+	+	o	o
Aluminium oxide	100	+	+	+	+	+	+	+	+	o	o
Aluminium sulfate	100	+	+	+	+	+	+	+	+	o	o
Amino acid	100	+	+	+	+	+	+	+	+	+	o
Aminoacetic acid	100	+	+	+	+	+	+	+	+	+	o
Aminobenzene	100	+	+	+	o	o	+	+	+	–	o
Amino methane	100	+	+	+	+	+	+	+	–	o	+
Ammonia	100	+	+	+	+	+	+	+	o	o	–
Ammonia solution	100	+	+	+	+	+	+	+	o	o	–
Ammonium acetate	100	+	+	+	+	+	+	+	+	+	+
Ammonium alum	100	+	+	+	+	+	+	+	+	o	–

Definitions and abbreviations:

\+ **Excellent chemical resistance** – continuous exposure for more than 30 days does not cause any damage or only minor damages.

◦ **Limited chemical resistance** – depending on the plastic material, a continuous exposure for a longer period of time may cause damages such as cracks, decrease of mechanical strength, discoloration, etc.

– **Poor resistance** – the plastic material can be deformed or destroyed.

b.safe Materials - Chemical Resistance

Substances

Substance at +20 °C	Conc. in %	PTFE	PFA	FEP	ETFE	ECTFE	PVDF	PP	PA	PS	PMMA
Ammon.aluminiumsulfate	100	+	+	+	+	+	+	+	+	o	–
Ammonium carbonate	100	+	+	+	+	+	+	+	+	+	–
Ammonium chloride	100	+	+	+	+	+	+	+	o	+	–
Ammonium fluoride	100	+	+	+	+	+	+	+	o	+	–
Ammonium hydroxide	25	+	+	+	+	+	+	+	o	o	–
Ammonium nitrate	100	+	+	+	+	+	+	+	o	o	o
Ammonium oxalate	100	+	+	+	+	+	+	+	o	+	o
Ammon. peroxodisulfate	100	+	+	+	+	+	+	+	–	+	–
Ammonium persulfate	100	+	+	+	+	+	+	+	–	+	–
Ammonium phosphate	100	+	+	+	+	+	+	+	–	+	o
Ammonium sulfate	100	+	+	+	+	+	+	+	+	o	o
Ammonium sulfide	100	+	+	+	+	+	+	+	+	o	–
Ammon nitrate	100	+	+	+	+	+	+	+	o	o	o
Ammon salpeter	100	+	+	+	+	+	+	+	o	o	o
Ammon sulfate	100	+	+	+	+	+	+	+	+	o	o
Amyl acetate	100	+	+	+	+	+	+	+	+	–	+
Amyl alcohol	100	+	+	+	+	+	+	+	o	+	o
Aniline	100	+	+	+	o	o	+	+	+	–	o
Anisole	100	+	+	+	+	+	+	o	+	–	–
Anone	100	+	+	+	+	+	+	o	+	–	–
Antichlor	100	+	+	+	+	+	+	+	o	+	+
Antifreezing compound	100	+	+	+	+	+	+	+	+	o	o
Antimonous chloride	100	+	+	+	+	+	+	+	–	+	o
Antimony butter	100	+	+	+	+	+	+	+	–	+	o
Antimony trichloride	100	+	+	+	+	+	+	+	–	+	o
Aqua Regia	100	+	+	+	+	+	o	–	–	–	–
Arsenic acid	100	+	+	+	+	+	+	+	o	+	–
Arsenic (V)-oxide hydrate	100	+	+	+	+	+	+	+	o	+	–
Asphalt	100	+	+	+	+	+	+	o	+	+	o
Aviation gasoline	100	+	+	+	+	+	+	o	+	–	–
Azotic acid	65	+	+	+	+	+	o	–	–	–	–
B											
Barium carbonate	100	+	+	+	+	+	+	+	+	+	+
Barium chloride	100	+	+	+	+	+	+	+	+	+	+
Barium cyanide	100	+	+	+	+	+	+	–	+	+	o
Barium hydroxide	100	+	+	+	+	+	+	o	+	+	–
Barium sulfate	100	+	+	+	+	+	+	+	+	+	o
Barium sulfide	100	+	+	+	+	+	+	o	+	+	o
Baryta hydrate	100	+	+	+	+	+	+	o	+	+	–
Battery acid	20	+	+	+	+	+	+	+	–	+	+
Beer	100	+	+	+	+	+	+	+	+	+	+
Benzaldehyde	100	+	+	+	+	+	+	+	+	–	o
Benzoic acid	100	+	+	+	+	+	+	+	–	o	o
Benzene	100	+	+	+	+	+	+	o	+	–	–
Benzene diol-1,3	50	+	+	+	+	+	+	+	–	o	o
Benzyl acetate	100	+	+	+	+	+	+	+	+	–	o
Benzyl alcohol	100	+	+	+	+	+	+	–	–	–	–

Substance at +20 °C	Conc. in %	PTFE	PFA	FEP	ETFE	ECTFE	PVDF	PP	PA	PS	PMMA
Benzyl chloride	100	+	+	+	+	+	+	–	–	–	–
Benzoic aldehyde	100	+	+	+	+	+	+	+	+	–	o
Benzoyl chloride	100	+	+	+	+	+	+	–	–	–	–
Benzylsulfonic acid	100	+	+	+	+	+	+	o	–	–	–
Benzyl acetate	100	+	+	+	+	+	+	+	+	–	o
Bisulfite SO_2	100	+	+	+	+	+	+	+	o	o	o
Bitumen	100	+	+	+	+	+	+	o	+	+	o
Bone glue	100	+	+	+	+	+	+	+	+	o	o
Borax	100	+	+	+	+	+	+	+	+	+	o
Boric acid	100	+	+	+	+	+	+	+	o	+	o
Bornanone-2	100	+	+	+	+	+	+	+	+	+	o
Brake fluid	100	+	+	+	+	+	+	+	+	+	o
Brine	25	+	+	+	+	+	+	+	+	+	+
Bromine	100	+	+	+	+	+	+	–	–	–	–
Bromomethane	100	+	+	+	+	+	+	o	o	–	–
Butadiene-1,3	100	+	+	+	+	+	+	–	o	–	–
Butane	100	+	+	+	+	+	+	+	+	o	o
Butane acid	100	+	+	+	+	+	+	–	o	–	o
Butane diacid	100	+	+	+	+	+	+	+	+	–	–
Butanol	100	+	+	+	+	+	+	+	o	+	o
Butyl acetate	100	+	+	+	+	+	+	o	+	–	–
Butyl alcohol	100	+	+	+	+	+	+	+	o	+	o
Butyl glycolate	100	+	+	+	+	+	+	+	+	+	+
Butyl ether	100	+	+	+	+	+	+	–	+	–	–
Butyl phenol	100	+	+	+	+	+	+	o	–	–	–
Butyric acid	100	+	+	+	+	+	+	–	o	–	o
C											
Calcium acetate	100	+	+	+	+	+	+	+	+	o	o
Calcium bicarbonate	100	+	+	+	+	+	+	+	+	+	+
Calcium carbonate	100	+	+	+	+	+	+	+	+	+	+
Calcium chloride	100	+	+	+	+	+	+	+	+	o	–
Calcium hydrogen carbonate	100	+	+	+	+	+	+	+	+	+	+
Calcium hydroxide	100	+	+	+	+	+	+	+	+	o	–
Calcium hypochloride	100	+	+	+	+	+	+	+	–	o	–
Calcium nitrate	100	+	+	+	+	+	+	+	+	+	–
Calcium oxide	100	+	+	+	+	+	+	+	+	+	+
Calcium sulfate	100	+	+	+	+	+	+	+	–	–	–
Calcium sulfide	100	+	+	+	+	+	+	+	–	–	–
Camphor	100	+	+	+	+	+	+	+	+	o	o
Camphora	100	+	+	+	+	+	+	+	+	o	o
Camphoric oil	100	+	+	+	+	+	+	+	+	+	o
Carbamide	100	+	+	+	+	+	+	+	+	+	+
Carbolic acid	100	+	+	+	+	+	+	o	–	–	–
Carbon disulfide	100	+	+	+	+	+	+	–	+	–	–
Carbon tetrachloride	100	+	+	+	+	+	+	o	–	–	–
Carbonic acid	100	+	+	+	+	+	+	+	+	o	o
Caustic baryta	100	+	+	+	+	+	+	o	+	+	–

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Substance at +20 °C	Conc. in %	PTFE	PFA	FEP	ETFE	ECTFE	PVDF	PP	PA	PS	PMMA
Caustic potash	100	+	+	+	+	+	+	+	○	○	○
Caustic potash solution	100	+	+	+	+	+	+	+	○	○	○
Caustic soda	85	+	+	+	+	+	+	+	○	+	–
Cellosolve®	100	+	+	+	+	+	+	+	–	–	–
Cetyl alcohol	100	+	+	+	+	+	+	+	+	+	+
Chalk	100	+	+	+	+	+	+	+	+	+	+
Chlorine	100	+	+	+	+	+	+	○	–	–	–
Chloral hydrate	100	+	+	+	+	+	+	○	–	–	–
Chloric acid	25	+	+	+	+	+	+	+	–	–	–
Chloroacetic acid	100	+	+	+	+	+	+	+	–	○	–
Chlorobenzene	100	+	+	+	+	+	+	○	+	–	–
Chloroethane	100	+	+	+	+	+	+	○	○	–	–
Chloroethanol-2	100	+	+	+	+	+	+	○	–	–	–
Chloroethyl	100	+	+	+	+	+	+	○	○	–	–
Chlorethylene	100	+	+	+	○	○	+	–	–	–	–
Chloroform	100	+	+	+	○	○	+	+	○	–	–
Chlorofluorocarbon (FFC)	100	+	+	+	+	+	+	+	–	○	○
Chloromethane	100	+	+	+	+	+	–	○	○	–	–
Chloropropene-3	100	+	+	+	+	+	○	○	–	–	–
Chlorosulfonic acid	100	+	+	+	+	+	+	–	–	–	–
Chlorotoluene	100	+	+	+	+	+	+	–	–	–	–
Chromium(VI) oxide	100	+	+	+	+	+	+	+	–	○	–
Chromic acid	50	+	+	+	+	+	+	○	–	–	–
Chromic anhydride	100	+	+	+	+	+	+	+	–	○	–
Chromic sulfuric acid	100	+	+	+	+	+	+	○	–	–	–
Chromium trioxide	100	+	+	+	+	+	+	+	–	○	–
Citric acid	10	+	+	+	+	+	+	+	–	+	○
Coal tar particles	100	+	+	+	+	+	+	○	+	+	○
Cod liver oil	100	+	+	+	+	+	+	+	+	+	+
Copper chloride	100	+	+	+	+	+	+	+	–	+	+
Copper(I) cyanide	50	+	+	+	+	+	+	+	+	+	○
Copper(II) nitrate	100	+	+	+	+	+	+	+	○	+	+
Copper(II) sulfate	100	+	+	+	+	+	+	+	+	○	○
Cresol	100	+	+	+	+	+	+	○	–	–	–
Cumene	100	+	+	+	+	+	+	○	+	–	–
Cyclohexane	100	+	+	+	+	+	+	○	+	–	–
Cyclohexanol	100	+	+	+	+	+	+	○	+	–	–
Cyclohexanone	100	+	+	+	+	+	+	○	+	–	–
D											
D-Glucose	100	+	+	+	+	+	+	+	+	+	+
Decahydronaphthalene	100	+	+	+	+	+	+	○	+	–	○
Decalin	100	+	+	+	+	+	+	○	+	–	○
Decane	100	+	+	+	+	+	+	○	+	○	–
Denatured alcohol	100	+	+	+	+	+	+	+	–	○	○
Desiccator grease	100	+	+	+	+	+	+	+	○	–	–
Dextrin	100	+	+	+	+	+	+	+	+	+	+
Dextrose	100	+	+	+	+	+	+	+	+	+	+

Substance at +20 °C	Conc. in %	PTFE	PFA	FEP	ETFE	ECTFE	PVDF	PP	PA	PS	PMMA
Diacetone	100	+	+	+	+	+	–	+	–	○	○
Diacetone alcohol	100	+	+	+	+	+	–	+	–	○	○
Diaminoethane	100	+	+	+	+	+	+	+	–	–	–
Dibutyl ether	100	+	+	+	+	+	+	–	+	–	–
Dichloroacetic acid	100	+	+	+	+	+	+	+	–	○	–
Dichlorobenzene	100	+	+	+	+	+	+	○	+	–	–
Dichloroethane	100	+	+	+	+	+	+	–	+	–	–
Dichloromethane	100	+	+	+	○	○	–	○	○	–	–
Diesel fuel	100	+	+	+	+	+	+	+	+	–	○
Diethanolamine	100	+	+	+	+	+	–	+	+	○	○
Diethyl ether	100	+	+	+	+	+	+	–	+	–	–
Diethylamine	100	+	+	+	+	+	–	+	+	○	○
Diethyle ketone	100	+	+	+	○	○	–	○	+	–	–
Diethylene glycol	100	+	+	+	+	+	+	+	+	○	○
Diethylene oxide	100	+	+	+	+	+	–	○	+	–	–
Diglycol	100	+	+	+	+	+	+	+	+	○	○
Dihydroxybenzene	100	+	+	+	+	+	+	+	–	–	+
Dihydroxybenzene-1,3	50	+	+	+	+	+	+	+	–	○	○
Diisobuthyl ketone	100	+	+	+	○	○	–	○	+	–	–
Dimethyl benzene	100	+	+	+	+	+	+	○	+	–	–
Dimethyl ether	100	+	+	+	+	+	+	–	+	–	–
Dimethyl formamide	100	+	+	+	○	○	–	+	○	–	–
Dimethyl sulfoxide	100	+	+	+	+	+	–	+	+	+	○
Dimethylamine	100	+	+	+	+	+	–	+	+	○	○
Dioxane	100	+	+	+	+	+	–	○	+	–	–
Diphenyl ether	100	+	+	+	+	+	+	–	+	–	–
Diphenyl oxide	100	+	+	+	+	+	+	–	+	–	–
Dipropylene glycol	100	+	+	+	+	+	+	+	+	+	+
Disodium tetraborate	100	+	+	+	+	+	+	+	+	+	○
Disulfide	100	+	+	+	+	+	+	–	+	–	–
DMSO	100	+	+	+	+	+	–	+	+	+	○
E											
Eau de Javelle	20	+	+	+	+	+	+	○	–	+	–
Ethanal	100	+	+	+	+	+	+	○	–	–	○
Ethane diacid	100	+	+	+	+	+	+	○	+	–	–
Ethane diamine-1,2	100	+	+	+	+	+	+	+	–	–	–
Ethane diol-1,2	100	+	+	+	+	+	+	+	+	+	+
Ethanol	100	+	+	+	+	+	+	+	–	○	○
Ether	100	+	+	+	+	+	+	–	+	–	–
Ethyl acetate	100	+	+	+	+	+	–	○	+	–	–
Ethyl acrylate	100	+	+	+	+	+	○	○	+	–	–
Ethyl alcohol	100	+	+	+	+	+	+	+	–	○	○
Ethyl benzene	100	+	+	+	○	○	○	○	+	–	–
Ethyl chloride	100	+	+	+	+	+	+	○	○	–	–
Ethyl ether	100	+	+	+	+	+	+	–	+	–	–
Ethylene chlorohydrine	100	+	+	+	+	+	+	○	–	–	–
Ethylene glycol	100	+	+	+	+	+	+	+	+	+	+

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Substances

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Ethylene glycol ethyl ether	100	+	+	+	+	+	+	+	–	–	–
Ethylene methyl ketone	100	+	+	+	+	+	+	+	+	–	–
Ethylene oxide	100	+	+	+	+	+	+	o	+	–	–
Ethylenediamine	100	+	+	+	+	+	+	+	–	–	–
F											
Fatty acids	100	+	+	+	+	+	+	+	+	+	+
Ferric chloride	100	+	+	+	+	+	+	+	+	+	o
Ferric nitrate	100	+	+	+	+	+	+	+	+	+	+
Ferric sulfate	100	+	+	+	+	+	+	+	+	+	o
Fertilizer	100	+	+	+	+	+	+	+	+	o	o
Fixing baths	100	+	+	+	+	+	o	+	+	–	–
Fluorhydric acid	45	+	+	+	+	+	+	+	–	–	–
Fluorine	100	+	+	+	+	+	+	o	–	–	–
Fluosilicic acid	100	+	+	+	+	+	+	+	–	o	o
Formaldehyde	40	+	+	+	+	+	+	+	o	–	–
Formic acid	100	+	+	+	+	+	+	+	–	+	o
Formic acid amide	100	+	+	+	+	+	+	+	o	–	–
Formalin	40	+	+	+	+	+	+	+	o	–	–
Formamide	100	+	+	+	+	+	+	+	o	–	–
Fruit juice	100	+	+	+	+	+	+	+	+	o	+
Fuel oil	100	+	+	+	+	+	+	+	+	+	+
Furfural	100	+	+	+	+	+	o	–	o	–	–
Furfurol	100	+	+	+	+	+	o	–	o	–	–
Furfuryl aldehyde	100	+	+	+	+	+	o	–	o	–	–
G											
Gasoline, aromatic	100	+	+	+	+	+	+	o	+	–	–
Gasoline, leaded	100	+	+	+	+	+	+	o	+	–	–
Gasoline, test	100	+	+	+	+	+	+	o	+	–	–
Gasoline, unleaded	100	+	+	+	+	+	+	o	+	–	–
Gelatine	100	+	+	+	+	+	+	+	+	+	o
Glacial acetic acid	100	+	+	+	+	+	+	+	–	o	–
Glauber's salt	100	+	+	+	+	+	+	+	o	+	+
Glue	100	+	+	+	+	+	+	+	+	o	o
Glycerin	100	+	+	+	+	+	+	+	+	+	+
Glycine	10	+	+	+	+	+	+	+	+	+	o
Glycocoll	10	+	+	+	+	+	+	+	+	+	o
Glycol	100	+	+	+	+	+	+	+	+	+	+
Glycolic acid	100	+	+	+	+	+	+	+	+	o	o
Grape sugar	100	+	+	+	+	+	+	+	+	+	+
Grease and oil	100	+	+	+	+	+	+	+	+	+	+
Gypsum	100	+	+	+	+	+	+	+	–	–	–
H											
Heptane	100	+	+	+	+	+	+	o	+	–	–
Hexadecanol	100	+	+	+	+	+	+	+	+	+	+
Hexafluorosilicic acid	100	+	+	+	+	+	+	+	–	o	o
Hexane	100	+	+	+	+	+	+	o	+	–	–
Hexane diacid	100	+	+	+	+	+	+	+	+	+	–
Hexane triol-1,2,6	100	+	+	+	+	+	+	+	+	+	+
Hexanol	100	+	+	+	+	+	+	+	o	+	o
Hexyl alcohol	100	+	+	+	+	+	+	+	o	+	o
Hydrazine hydrate	100	+	+	+	o	o	–	–	–	–	o
Hydrobromic acid	100	+	+	+	+	+	+	+	–	–	–
Hydrochloric acid	37	+	+	+	+	+	+	+	–	o	o
Hydrocyanic acid	100	+	+	+	+	+	+	+	o	o	o
Hydrofluorocarbons	100	+	+	+	+	+	+	+	–	o	o
Hydrofluoric acid	45	+	+	+	+	+	+	+	–	–	–
Hydrogen peroxide	90	+	+	+	+	+	+	+	–	+	–
Hydrogen sulfide	100	+	+	+	+	+	+	–	+	–	–
Hydrogen sulfite	100	+	+	+	+	+	+	+	o	o	o
Hydroquinone	100	+	+	+	+	+	+	+	–	–	+
Hydrosulfide	100	+	+	+	+	+	+	–	+	–	–
Hydroxybenzoic acid	100	+	+	+	+	+	+	+	+	+	+
Hydroxyacetic acid	100	+	+	+	+	+	+	+	+	o	o
Hydroxypropionic acid-2	100	+	+	+	+	+	+	+	o	+	o
I											
Iodine	100	+	+	+	+	+	+	o	–	–	–
Iodine tincture	100	+	+	+	+	+	+	o	–	–	–
Isobutyl acetate	100	+	+	+	+	+	+	o	+	–	–
Isobutyl alcohol	100	+	+	+	+	+	+	+	–	o	o
Isooctane	100	+	+	+	+	+	+	+	+	–	o
Isopropanol	100	+	+	+	+	+	+	+	o	+	+
Isopropyl acetate	100	+	+	+	+	+	o	o	+	–	–
Isopropyl alcohol	100	+	+	+	+	+	+	+	o	+	+
Isopropyl benzene	100	+	+	+	+	+	+	o	+	–	–
Isopropyl ether	100	+	+	+	+	+	+	–	+	–	–
Isovaleron	100	+	+	+	o	o	–	o	+	–	–
J											
Javelle water	20	+	+	+	+	+	+	o	–	+	–
K											
Kerosene	100	+	+	+	o	o	+	o	+	–	–
Kerosine	100	+	+	+	o	o	+	o	+	–	–
L											
Lactic acid	100	+	+	+	+	+	+	+	o	+	o
Lanoline	100	+	+	+	+	+	+	+	+	+	+
Lead(II) acetate	100	+	+	+	+	+	+	+	+	o	o
Lead sugar	100	+	+	+	+	+	+	+	+	o	o
Lead tetraethyl	100	+	+	+	+	+	+	+	+	o	–
Lime	100	+	+	+	+	+	+	+	+	+	+
Linseed oil	100	+	+	+	+	+	+	+	+	+	+
Lubricating oil	100	+	+	+	+	+	+	+	+	+	+
M											
Machinery oil	100	+	+	+	+	+	+	+	+	+	o
Magnesium carbonate	100	+	+	+	+	+	+	o	+	+	+
Magnesium chloride	100	+	+	+	+	+	+	+	+	o	o

Definitions and abbreviations:

\+ **Excellent chemical resistance** – continuous exposure for more than 30 days does not cause any damage or only minor damages.

◦ **Limited chemical resistance** – depending on the plastic material, a continuous exposure for a longer period of time may cause damages such as cracks, decrease of mechanical strength, discoloration, etc.

– **Poor resistance** – the plastic material can be deformed or destroyed.

b.safe Materials - Chemical Resistance

Substance at +20 °C	Conc. in %	PTFE	PFA	FEP	ETFE	ECTFE	PVDF	PP	PA	PS	PMMA
Magnesium hydroxide	100	+	+	+	+	+	+	+	+	o	o
Magnesium nitrate	100	+	+	+	+	+	+	+	+	o	o
Magnesium sulfate	100	+	+	+	+	+	+	+	+	o	o
Maleic acid	100	+	+	+	+	+	+	+	o	o	o
Marble lime hydrate	100	+	+	+	+	+	+	+	+	o	–
MEK	100	+	+	+	+	+	+	+	+	–	–
Menthol	100	+	+	+	+	+	+	+	o	o	+
Mercury	100	+	+	+	+	+	+	o	+	o	+
Mercury(II)-chloride	100	+	+	+	+	+	+	+	+	+	+
Mercury(II)-cyanide	50	+	+	+	+	+	+	+	+	+	o
Mercury(II)-nitrate	100	+	+	+	+	+	+	+	o	+	+
Methacrylic ester	100	+	+	+	o	o	o	–	+	–	–
Methanal	40	+	+	+	+	+	+	+	o	–	–
Methanol	100	+	+	+	+	+	+	+	–	o	o
Methoxyethanol	100	+	+	+	+	+	+	+	+	+	+
Methoxybenzene	100	+	+	+	+	+	+	o	+	–	–
Methoxybutanol	100	+	+	+	o	o	o	o	+	–	–
Methyl acetate	100	+	+	+	+	+	–	o	+	–	–
Methyl alcohol	100	+	+	+	+	+	+	+	–	o	o
Methyl amine	100	+	+	+	+	+	+	+	–	o	+
Methyl benzene	100	+	+	+	+	+	+	o	+	–	–
Methyl bromide	100	+	+	+	+	+	+	o	o	–	–
Methyl butyl ketone	100	+	+	+	o	o	o	o	+	–	–
Methyl cellosolve	100	+	+	+	+	+	+	+	+	+	+
Methyl chloride	100	+	+	+	+	+	–	o	o	–	–
Methyl cyanide	100	+	+	+	+	+	o	+	+	–	–
Methyl ether	100	+	+	+	+	+	+	–	+	–	–
Methyl ethyl ether	100	+	+	+	+	+	+	–	+	–	–
Methyl ethyl ketone	100	+	+	+	+	+	+	+	+	–	–
Methyl ethyl ketone-2	100	+	+	+	+	+	+	+	+	–	–
Methyl glycol	100	+	+	+	+	+	+	+	+	+	+
Methyl isobutyl ketone	100	+	+	+	o	o	+	o	+	–	–
Methyl methacrylate	100	+	+	+	o	o	o	–	+	–	–
Methyl phenylketone	100	+	+	+	+	+	+	+	–	–	–
Methylenchlorid	100	+	+	+	o	o	–	o	o	–	–
Methyl pentanone	100	+	+	+	o	o	+	o	+	–	–
Milk	100	+	+	+	+	+	+	+	+	+	+
Mineral oil	100	+	+	+	+	+	+	+	+	+	+
Mineral oil, non-aromatic	100	+	+	+	+	+	+	+	+	+	o
Monochloroacetic acid	100	+	+	+	+	+	+	+	–	o	–
Montanic wax	100	+	+	+	+	+	+	o	+	+	o
N											
Naphta	100	+	+	+	o	o	+	o	+	–	–
Nickel chloride	100	+	+	+	+	+	+	+	o	+	+
Nickel sulfate	100	+	+	+	+	+	+	+	o	+	+
Nitrate of sodium	100	+	+	+	+	+	+	+	o	+	+
Nitril triethanol	100	+	+	+	+	+	+	+	+	+	+

Substance at +20 °C	Conc. in %	PTFE	PFA	FEP	ETFE	ECTFE	PVDF	PP	PA	PS
Nitrobenzene	100	+	+	+	+	+	+	–	o	–
Nitrogen monoxide	100	+	+	+	+	+	+	+	+	+
Nitromethane	100	+	+	+	+	+	+	o	o	–
Nitrous acid	50	+	+	+	+	+	+	+	–	o
Nitrous oxide	100	+	+	+	+	+	+	+	o	–
Nonyl alcohol	100	+	+	+	+	+	+	+	o	+
O										
Octadecan acid	100	+	+	+	+	+	+	+	+	+
Octane	100	+	+	+	+	+	+	+	+	–
Oil, essential	100	+	+	+	+	+	+	o	+	–
Oleic acid	100	+	+	+	+	+	+	o	+	–
Oleum	100	+	+	+	–	–	–	–	–	–
Oleum Jecoris	100	+	+	+	+	+	+	+	+	+
Oxalic acid	100	+	+	+	+	+	+	o	+	–
Oxalic acid diammonium salt	100	+	+	+	+	+	+	+	o	+
Oxidiethanol	100	+	+	+	+	+	+	+	+	o
Oxirane	100	+	+	+	+	+	+	o	+	–
Oxolane	100	+	+	+	o	o	o	o	+	–
Ozocerite	100	+	+	+	+	+	+	o	+	+
Ozone	100	+	+	+	+	+	+	+	+	o
P										
Palmitic acid	100	+	+	+	+	+	+	o	+	–
Paraffins	100	+	+	+	+	+	+	+	+	+
Pentanol	100	+	+	+	+	+	+	+	o	+
Pentanol-1	100	+	+	+	+	+	+	+	o	+
Pentanone-3	100	+	+	+	o	o	–	o	+	–
Pentyl acetate	100	+	+	+	+	+	+	+	+	–
Perchloric acid	100	o	o	o	o	o	+	o	–	o
Perchloroethylene	100	+	+	+	–	–	+	–	+	–
Perfume	100	+	+	+	+	+	+	o	+	–
Peroxide of hydrogen	90	+	+	+	+	+	+	+	–	+
Petroleum	100	+	+	+	o	o	+	o	+	–
Petroleum ether	100	+	+	+	+	+	+	–	+	–
Phenol	100	+	+	+	+	+	+	o	–	–
Phenyl ether	100	+	+	+	+	+	+	–	+	–
Phenylamine	100	+	+	+	o	o	+	+	+	–
Phenylethanon-1	100	+	+	+	+	+	+	+	–	–
Phenylmethanol	100	+	+	+	+	+	+	–	–	–
Phosphoric acid	85	+	+	+	+	+	+	+	–	o
Phosphorous chloride	100	+	+	+	+	+	+	o	o	–
Phosphorus trichloride	100	+	+	+	+	+	+	o	o	–
Phthalate	100	+	+	+	+	+	+	+	+	–
Phthalate ester	100	+	+	+	+	+	+	+	+	–
Pikric acid	100	+	+	+	o	o	+	+	–	o
Potash	100	+	+	+	+	+	+	+	o	o
Potassium acetate	100	+	+	+	+	+	+	+	o	o
Potass. aluminium sulfate	100	+	+	+	+	+	+	+	–	o

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– **Poor resistance** – the plastic material can be deformed or destroyed.

b.safe Materials - Chemical Resistance

Substances

Substance at +20 °C	Conc. in %	PTFE	PFA	FEP	ETFE	ECTFE	PVDF	PP	PA	PS	PMMA
Potassium bicarbonate	100	+	+	+	+	+	+	+	+	+	+
Potassium bichromate	100	+	+	+	+	+	+	+	o	o	o
Potassium bromide	100	+	+	+	+	+	+	+	o	o	+
Potassium carbonate	100	+	+	+	+	+	+	+	o	o	+
Potassium chlorate	100	+	+	+	+	+	+	+	+	+	+
Potassium chloride	100	+	+	+	+	+	+	+	+	+	+
Potassium chromate	100	+	+	+	+	+	+	+	o	+	+
Potassium cyanide	50	+	+	+	+	+	+	+	+	+	o
Potassium dichromate	100	+	+	+	+	+	+	+	o	o	o
Potassium ferrocyanide	100	+	+	+	+	+	+	+	o	+	o
Potassium ferricyanide	100	+	+	+	+	+	+	+	o	+	o
Pota. hexacyanoferrate(II)	100	+	+	+	+	+	+	+	o	+	o
Pota. hexacyanoferrate(III)	100	+	+	+	+	+	+	+	o	+	o
Potassium hydroxide	100	+	+	+	+	+	+	+	o	o	o
Potassium hypochlorite	20	+	+	+	+	+	+	o	–	+	–
Potassium iodide	100	+	+	+	+	+	+	+	+	o	+
Potassium nitrate	100	+	+	+	+	+	+	+	o	+	+
Potassium perchlorate	25	+	+	+	+	+	+	+	+	+	+
Potassium permanganate	100	+	+	+	+	+	+	+	–	o	+
Potassium persulfate	100	+	+	+	+	+	+	+	+	o	o
Propane	100	+	+	+	+	+	+	–	o	–	–
Propanediol-1,2	100	+	+	+	+	+	+	+	+	+	+
Propanoic acid	100	+	+	+	+	+	+	+	–	o	o
Propanol	100	+	+	+	+	+	+	+	o	+	+
Propan-2-ol	100	+	+	+	+	+	+	+	o	+	+
Propantriol	100	+	+	+	+	+	+	+	+	+	+
Propen-2-ol-1	100	+	+	+	+	+	+	+	–	o	–
Propyl alcohol	100	+	+	+	+	+	+	+	o	+	+
Propylene glycol	100	+	+	+	+	+	+	+	+	+	+
Propylene oxide	100	+	+	+	o	o	o	+	+	–	o
Prussiate of potash , red	100	+	+	+	+	+	+	+	o	+	o
Prussiate of potash , yell.	100	+	+	+	+	+	+	+	o	+	o
Pyridine	100	+	+	+	o	o	–	+	–	–	–
Q											
Quinol	100	+	+	+	+	+	+	+	–	–	+
R											
Resorcinol	50	+	+	+	+	+	+	+	–	o	o
S											
Salicylic acid	100	+	+	+	+	+	+	+	+	+	+
Salmiac	100	+	+	+	+	+	+	+	o	o	–
Salt, red	100	+	+	+	+	+	+	+	o	o	o
Selenite	100	+	+	+	+	+	+	+	–	–	–
Silicic acid	100	+	+	+	+	+	+	+	+	o	o
Silicone oils	100	+	+	+	+	+	+	+	+	+	+
Silver acetate	100	+	+	+	+	+	+	+	o	o	o
Silver cyanide	50	+	+	+	+	+	+	+	+	+	o
Silver nitrate	100	+	+	+	+	+	+	+	o	+	+

Substance at +20 °C	Conc. in %	PTFE	PFA	FEP	ETFE	ECTFE	PVDF	PP	PA	PS	PMMA
Soda ash	100	+	+	+	+	+	+	+	o	o	+
Soda lye	85	+	+	+	+	+	+	+	o	+	–
Sodium acetate	100	+	+	+	+	+	+	+	o	o	o
Sodium benzoate	100	+	+	+	+	+	+	+	o	o	o
Sodium bicarbonate	100	+	+	+	+	+	+	+	+	+	+
Sodium bisulfate	100	+	+	+	+	+	+	+	+	+	o
Sodium bisulfite	100	+	+	+	+	+	+	+	o	+	–
Sodium bromide	100	+	+	+	+	+	+	+	o	o	+
Sodium carbonate	100	+	+	+	+	+	+	+	o	o	+
Sodium chromate	100	+	+	+	+	+	+	+	o	+	o
Sodium chlorate	100	+	+	+	+	+	+	+	–	+	+
Sodium chloride	100	+	+	+	+	+	+	+	+	+	+
Sodium chlorite	100	+	+	+	+	+	+	+	–	+	+
Sodium cyanide	50	+	+	+	+	+	+	+	+	+	o
Sodium dithionite	100	+	+	+	+	+	+	+	o	+	+
Sodium fluoride	100	+	+	+	o	o	+	+	o	+	+
Sodiu. hydrogen carbonate	100	+	+	+	+	+	+	+	+	+	+
Sodiu. hydrogen sulfate	100	+	+	+	+	+		+	+	+	o
Sodiu. hydrogen sulfite	100	+	+	+	+	+		+	o	+	–
Sodium hydroxide	85	+	+	+	+	+	+	+	o	+	–
Sodium hyposulfite	100	+	+	+	+	+	+	+	o	+	+
Sodium nitrate	100	+	+	+	+	+	+	+	o	+	+
Sodium nitrite	100	+	+	+	+	+	+	+	o	+	+
Sodiu. perborate Tetrahydrate	100	+	+	+	+	+	+	+	o	+	–
Sodium perchlorate	25	+	+	+	+	+	+	+	+	+	+
Sodium peroxide	100	+	+	+	+	+	+	o	+	+	o
Sodium peroxodisulfate	100	+	+	+	+	+	+	+	o	+	+
Sodium persulfate	100	+	+	+	+	+	+	+	o	+	+
Sodium phosphate	100	+	+	+	+	+	+	+	o	+	+
Sodium silicate	100	+	+	+	+	+	+	+	o	+	+
Sodium sulfate Decahydrate	100	+	+	+	+	+	+	+	o	+	+
Sodium sulfide	100	+	+	+	+	+	+	+	o	+	+
Sodium sulfite	100	+	+	+	+	+	+	+	o	+	+
Sodium superoxide	100	+	+	+	+	+	+	o	+	+	o
Sodiu. tetraborate Decahydra.	100	+	+	+	+	+	+	+	+	+	o
Sodium thiosulfate	100	+	+	+	+	+	+	+	o	+	+
Soft soap	25	+	+	+	+	+	+	+	o	+	+
Stearic acid	100	+	+	+	+	+	+	+	+	+	+
Styrene	100	+	+	+	+	+	+	o	+	–	–
Styrolene	100	+	+	+	+	+	+	o	+	–	–
Sublimate	100	+	+	+	+	+	+	+	+	+	+
Succinic acid	100	+	+	+	+	+	+	+	+	–	–
Sulfuric acid	98	+	+	+	+	+	+	o	–	–	–
Sulfuric acid fuming	100	+	+	+	–	–	–	–	–	–	–
Sulfur dioxide	100	+	+	+	+	+	+	+	–	o	o
T											
Table salt	100	+	+	+	+	+	+	+	+	+	+

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b.safe Materials - Chemical Resistance

Substance at +20 °C	Conc. in %	PTFE	PFA	FEP	ETFE	ECTFE	PVDF	PP	PA	PS	PMMA
Tallow	100	+	+	+	+	+	+	+	+	+	+
Tannic acid	100	+	+	+	+	+	+	+	+	o	–
Tannins	100	+	+	+	+	+	+	+	+	o	–
Tartaric acid	100	+	+	+	+	+	+	+	+	o	o
Tensides, non alkaline	5	+	+	+	+	+	+	+	+	+	+
Tetrachloroethane	100	+	+	+	–	–	+	–	+	–	–
Tetrachloroethylene	100	+	+	+	–	–	+	–	+	–	–
Tetrachloromethane	100	+	+	+	+	+	+	o	–	–	–
Tetraethyl lead	100	+	+	+	+	+	+	+	+	o	–
Tetrahydrofuran	100	+	+	+	o	o	o	o	+	–	–
Tetrahydronaphtalene	100	+	+	+	+	+	+	o	+	–	o
Tetralin	100	+	+	+	+	+	+	o	+	–	o
Tetramethylene oxide	100	+	+	+	o	o	o	o	+	–	–
THF	100	+	+	+	o	o	o	o	+	–	–
Thionyl chloride	100	+	+	+	+	+	o	–	–	–	–
Thinner (Solvol)	100	+	+	+	+	+	+	+	o	–	–
Toluol	100	+	+	+	+	+	+	o	+	–	–
Transformer oil	100	+	+	+	+	+	+	+	+	+	+
Trichlorobenzene	100	+	+	+	+	+	+	–	o	–	–
Trichloroacetic acid	100	+	+	+	+	+	+	o	–	o	o
Trichloroethylene	100	+	+	+	+	+	+	–	+	–	–
Trichloromethane	100	+	+	+	o	o	+	+	o	–	–
Triethanolamine	100	+	+	+	+	+	+	+	+	+	+
Triethylene glycol	100	+	+	+	+	+	+	+	+	+	+
Trifluorotrichloroethane	100	+	+	+	+	+	+	–	o	–	–
Triglycerides	100	+	+	+	+	+	+	+	+	+	+
Triglycol	100	+	+	+	+	+	+	+	+	+	+
Trimethylpentane-2,2,4	100	+	+	+	+	+	+	+	+	–	o
Trinitrophenol-2,4,6	100	+	+	+	o	o	+	+	–	o	–
Turpentine	100	+	+	+	+	+	+	o	+	–	–
Turpentine substitute	100	+	+	+	+	+	+	o	+	–	o
U											
Urea	100	+	+	+	+	+	+	+	+	+	+
Uric acid	100	+	+	+	+	+	+	+	+	+	o
Urine	100	+	+	+	+	+	+	+	+	+	+
V											
Vaseline	100	+	+	+	+	+	+	+	+	+	+
Vinyl acetate	100	+	+	+	o	o	+	–	–	–	–
Vinegar	100	+	+	+	+	+	+	+	o	+	–
Vinyl acetate	100	+	+	+	o	o	+	–	–	–	–
Vinyl chloride	100	+	+	+	o	o	+	–	–	–	–
Vinylbenzene	100	+	+	+	+	+	+	o	+	–	–
Vinyl cyanide	100	+	+	+	+	+	o	o	+	–	–
Vinylidene chloride	100	+	+	+	o	o	+	–	–	–	–
W											
Washing agents	5	+	+	+	+	+	+	+	+	+	+
Washing-up liquid	5	+	+	+	+	+	+	+	+	+	+

Substance at +20 °C	Conc. in %	PTFE	PFA	FEP	ETFE	ECTFE	PVDF	PP	PA	PS	PMMA
Water	100	+	+	+	+	+	+	+	+	+	+
Water demineralized	100	+	+	+	+	+	+	+	+	+	+
Water glass	100	+	+	+	+	+	+	+	+	+	+
Wine spirit	100	+	+	+	+	+	+	+	–	o	o
Woll fat	100	+	+	+	+	+	+	+	+	+	+
Woll wax	100	+	+	+	+	+	+	+	+	+	+
X											
Xylol	100	+	+	+	+	+	+	o	+	–	–
Y											
Yeasts	100	+	+	+	+	+	+	+	+	+	+
Z											
Zinc carbonate	100	+	+	+	+	+	+	+	o	o	+
Zinc chloride	100	+	+	+	+	+	+	+	+	+	+
Zinc nitrate	100	+	+	+	+	+	+	+	o	+	+

Definitions and abbreviations:

\+ **Excellent chemical resistance** – continuous exposure for more than 30 days does not cause any damage or only minor damages.

◦ **Limited chemical resistance** – depending on the plastic material, a continuous exposure for a longer period of time may cause damages such as cracks, decrease of mechanical strength, discoloration, etc.

– **Poor resistance** – the plastic material can be deformed or destroyed.