

Introduction

Chemical Resistance List

Resistance of liquid end materials against common chemicals at standard temperature 68°F (20°C). (May differ at other temperatures)

s	= saturated aqueous solution	n	= unknown resistance	] resp. to aqueous solutions
+/0	= conditional resistance	=>	= refer to . . .	
+	= good resistance	A.C.	= any concentration	
0	= limited resistance	S	= saturated solution	
-	= no resistance	Conc.	= concentrated	
+(x%)	= good resistance to x% concentration	D	= weak solution	
*	= With glued fittings, please check the resistance of the glue.			

These classifications are the results of practical experience of the manufacturers of the raw materials. Since the resistance of the materials depends also on other factors (operating conditions, surface quality, etc.), this list cannot be more than a general information for which no responsibility is accepted. It should be particularly noted that, as a rule, the aggressiveness of a mixture is different from that of its individual components. In cases of doubt, suitable tests should be performed.

N.B. PTFE is resistant against most chemicals and solvents (excluding fluorine, metallic sodium and other alkali metals).

PVDF is resistant against most chemicals (excluding ketones, esters).

Chemical	Formula	Concentration	Acrylic	PVC	316 SS	PE	PP	Viton®	EPDM	PVDF	Teflon
Acetaldehyde	CH ₃ CHO	100%	-	-	+	+	0	-	+/-	+	+
Acetamide	CH ₃ CONH ₂	S	+	+	+	+	+	0	+	+	+
Acetic Acid	CH ₃ COOH	100%	-	+(50%)	+	+(70%)	+	-	0	+	+
Acetic Anhydride	(CH ₃ CO) ₂ O	100%	-	-	+	0	0	-	+/-	-	+
Acetone	CH ₃ COCH ₃	100%	-	-	+	+	+	-	-	0	+
Acetophenone	C ₆ H ₅ COCH ₃	100%	-	n	+	+	+	-	+	+	+
Acetyl Chloride	CH ₃ COCl	100%	-	+	0	-	-	+	-	-	+
Acetylacetone	C ₅ H ₈ O ₂	100%	-	-	+	+	+	-	+	-	+
Acetylene Dichloride=>	Dichloroethylene										
Acetylene Tetrachloride=>	Tetrachloroethane										
Acrylonitrile	CH ₂ =CH-CN	100%	-	-	+	+	+	-	-	+	+
Adipic Acid	C ₆ H ₁₀ O ₄	S	+	+	+	+	+	+	+	+	+
Allyl Alcohol	CH ₂ CHCH ₂ OH	96%	-	0	+	+	+	-	+	+	+
Aluminum Acetate	Al(CH ₃ COO) ₃	S	+	+	+	+	+	+	+	+	+
Aluminum Bromide	AlBr ₃	S	+	+	n	+	+	+	+	+	+
Aluminum Chloride	AlCl ₃	S	+	+	-	+	+	+	+	+	+
Aluminum Fluoride	AlF ₃	10%	+	+	-	+	+	+	+	+	+
Aluminum Hydroxide	Al(OH) ₃	S	+	+	+	+	+	+	+	+	+
Aluminum Nitrate	Al(NO ₃) ₃	S	+	+	+	+	+	+	+	+	+
Aluminum Phosphate	AlPO ₄	S	+	+	+	+	+	+	+	+	+
Aluminum Sulfate	Al(SO ₄) ₃	S	+	+	+	+	+	+	+	+	+
Ammonium Acetate	CH ₃ COONH ₄	S	+	+/-	+	+	+	+	+	+	+
Ammonium Aluminum Sulfate	NH ₄ Al(SO ₄) ₂	S	+	+	+	+	+	+	+	+	+
Ammonium Bicarbonate	NH ₄ HCO ₃	S	+	+	+	+	+	+	+	+	+
Ammonium Carbonate	(NH ₄) ₂ CO ₃	40%	+	+	+	+	+	+	+	+	+
Ammonium Chloride	NH ₄ Cl	S	+	+	-	+	+	+	+	+	+
Ammonium Fluoride	NH ₄ F	S	+	0	0	+	+	+	+	+	+
Ammonium Hydrogen Carbonate	NH ₄ HCO ₃	A.C.	+	+	+	+	+	+	+	+	+
Ammonium Hydroxide	NH ₄ OH	S	+	+	+	+	+	-	+	+	+
Ammonium Nitrate	NH ₄ NO ₃	S	+	+	+	+	+	+	+	+	+
Ammonium Oxalate	(NH ₄) ₂ C ₂ O ₄	S	+	+	+	+	+	+	+	+	+
Ammonium Perchlorate	NH ₄ ClO ₄	10%	+	+	+	+	+	+	+	+	+
Ammonium Peroxodisulfate	(NH ₄) ₂ S ₂ O ₈	S	+	+	+(5%)	+	+	+	+	+	+
Ammonium Persulfate	(NH ₄) ₂ S ₂ O ₈	A.C.	+	+	+	+	+	+	+	+	+
Ammonium Phosphate	(NH ₄) ₃ PO ₄	A.C.	+	+	+(10%)	+	+	+	+	+	+
Ammonium Sulfate	(NH ₄) ₂ SO ₄	A.C.	+	+	+(10%)	+	+	+	+	+	+
Ammonium Sulfide	(NH ₄) ₂ S	S	+	+	n	+	+	+	+	+	+
Amyl Alcohol	C ₅ H ₁₁ OH	100%	+	+	+	+	+	-	+	+	+
Aniline	C ₆ H ₅ NH ₂	100%	-	-	+	+	+	-	+/-	+	+
Aniline Hydrochloride	C ₆ H ₅ NH ₂ ·HCl	S	n	+	-	+	+	+/-	+/-	+	+
Antimony Trichloride	SbCl ₃	S	+	+	-	+	+	+	+	+	+
Aqua Regia	3HCl+HNO ₃	100%	-	+	-	-	-	-	0	+	+
Arsenic Acid	H ₃ AsO ₄	S	+	+	+	+	+	+	+	+	+
Barium Carbonate	BaCO ₃	S	+	+	+	+	+	+	+	+	+
Barium Chloride	BaCl ₂	S	+	+	-	+	+	+	+	+	+
Barium Hydroxide	Ba(OH) ₂	S	+	+	+	+	+	+	+	+	+
Barium Nitrate	Ba(NO ₃) ₂	A.C.	+	+	+	+	+	+	+	+	+
Barium Sulfate	BaSO ₄	A.C.	+	+	+	+	+	+	+	+	+
Barium Sulfide	BaS	A.C.	+	+	+	+	+	+	+	+	+
Beer	-	100%	+	+	+	+	+	+	+	+	+

Viton® is a registered trademark of Dupont Dow Elastomers

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resp. to aqueous solutions

N.B. PTFE is resistant against most chemicals and solvents (excluding fluorine, metallic sodium and other alkali metals).

PVDF is resistant against most chemicals (excluding ketones, esters).

Chemical	Formula	Concen- tration	Acrylic	PVC	316 SS	PE	PP	Viton®	EPDM	PDVF	Teflon
Benzaldehyde	C ₆ H ₅ CHO	100%	–	–	+	0	+	+	+	+	+
Benzene	C ₆ H ₆	100%	–	–	+	0	0	0	–	+	+
Benzene Sulfonic Acid	C ₆ H ₅ SO ₃ H	10%	n	n	+	n	+	+	–	+	+
Benzoic Acid	C ₆ H ₅ COOH	S	+	+	+	+	+	+	+	+	+
Benzoyl Chloride	C ₆ H ₅ COCl	100%	–	n	0	0	0	+	+	n	+
Benzyl Alcohol	C ₆ H ₅ CH ₂ OH	100%	–	–	+	+	+	+	–	+	+
Benzyl Benzoate	C ₆ H ₅ COOC ₆ H ₅	100%	–	–	+	0	+	+	–	0	+
Benzyl Chloride	C ₆ H ₅ CH ₂ Cl	90%	–	n	+	0	0	+	–	+	+
Bleach=>	Sodium Hypochlorite										
Bleaching Powder	Ca(OCl) ₂	S	+	+	–	+	+	+	+	+	+
Borax	Na ₂ B ₄ O ₇	A.C.	+	+	+	+	+	+	+	+	+
Boric Acid	H ₃ BO ₃	S	+	+	+	+	+	+	+	+	+
Brine		S	+	+/0	+/0	+	+	+	+	+	+
Bromine	Br ₂	100%	–	–	–	–	–	–	–	+	+
Bromine Liquid	Br ₂	100%	–	–	–	–	–	–	–	+	+
Bromine Water	–	S	–	+	–	–	–	–	–	+	+
Bromo Benzene	C ₆ H ₅ Br	100%	n	n	+	0	0	0	–	+	+
Bromochloro Methane	CH ₂ BrCl	100%	–	–	+	0	–	n	+/0	+	+
Bromochlorotrifluoroethane	HCClBrCF ₃	100%	–	–	+	0	0	+	–	+	+
Butanediol	HOC ₄ H ₈ OH	10%	n	+	+	+	+	0	+	+	+
Butanetriol	C ₄ H ₁₀ O ₃	S	+	+	+	+	+	0	+	+	+
Butanol	C ₄ H ₉ OH	100%	–	+	+	+	+	0	+/0	+	+
Butyl Acetate	CH ₃ COOC ₄ H ₉	100%	–	–	+	–	0	–	+/0	+	+
Butyl Acrylate	C ₇ H ₁₃ O ₂	100%	–	–	+	+	+	–	–	+	+
Butyl Amine	C ₄ H ₉ NH ₂	100%	n	n	+	+	n	–	–	0	+
Butyl Benzoate	C ₆ H ₅ COOC ₄ H ₉	100%	–	–	+	0	0	+	+	n	+
Butyl Ether	(C ₄ H ₉) ₂ O	100%	–	–	+	+	+	–	0	+	+
Butyl Mercaptan	C ₄ H ₉ SH	100%	n	n	n	n	n	+	–	+	+
Butyl Oleate	C ₂₂ H ₄₂ O ₂	100%	n	n	+	n	n	+	+/0	+	+
Butyl Stearate	C ₂₂ H ₄₄ O ₂	100%	0	n	+	n	n	+	–	+	+
Butylaldehyde	C ₃ H ₇ CHO	100%	–	n	+	+	+	–	+/0	n	+
Butyric Acid	C ₃ H ₇ COOH	100%	+(5%)	+(20%)	+	+	+	+	+	+	+
Calcium Acetate	(CH ₃ COO) ₂ Ca	S	+	+	+	+	+	+	+	+	+
Calcium Bisulfite	Ca(HSO ₃) ₂	S	+	+	+	+	+	+	+	+	+
Calcium Carbonate	CaCO ₃	A.C.	+	+	+	+	+	+	+	+	+
Calcium Chloride	CaCl ₂	S	+	+	–	+	+	+	+	+	+
Calcium Cyanide	Ca(CN) ₂	S	+	+	n	+	+	+	+	+	+
Calcium Hydrogen Sulfite	CaHSO ₃	S	+	+	+	+	+	+	+	+	+
*Calcium Hydroxide	Ca(OH) ₂	S	+	+	+	+	+	+	+	+	+
Calcium Hypochlorite	Ca(OCl) ₂	S	+	+	–	+	0	0	+	+	+
Calcium Nitrate	Ca(NO ₃) ₂	S	+	+(50%)	+	+	+(50%)	+	+	+	+
Calcium Phosphate	Ca ₃ (PO ₄) ₂	S	+	+	+	+	+	+	+	+	+
Calcium Sulfate	CaSO ₄	S	+	+	+	+	+	+	+	+	+
Calcium Sulfide	CaS	S	+	+	n	+	+	+	+	+	+
Calcium Sulfite	CaSO ₃	S	+	+	+	+	+	+	+	+	+
Calcium Thiosulfate	CaS ₂ O ₃	S	+	+	–	+	+	+	+	+	+
Camphor	C ₁₀ H ₁₆ O	100%	–	–	+	–	+	0	–	+	+
Carbolic Acid (see Phenol)	C ₆ H ₅ OH	100%	–	0	+	0	+	+	–	+	+
Carbon Disulfide	CS ₂	100%	–	–	+	0	0	+	–	+	+
Carbon Tetrachloride	CCl ₄	100%	0	–	+	0	–	+	–	+	+
Carbonic Acid	H ₂ CO ₃	S	+	+	+	+	+	+	+	+	+

* Requires flushing.

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Chemical	Formula	Concentration	Acrylic	PVC	316 SS	PE	PP	Viton®	EPDM	PVDF	Teflon
Caustic Soda=>	Sodium Hydroxide										
Chloric Acid	HClO ₃	20%	+	+	-	+10%	-	0	0	+	+
Chlorine Dioxide Solution	ClO ₂ +H ₂ O	0.5%	0	+	-	0	0	0	-	+	+
Chloroacetic Acid	CH ₂ ClCOOH	A.C.	-	-	-	-	+	+	+	+	+
Chlorine Water	Cl ₂ +H ₂ O	S	+	+	-	0	0	+	+	+	+
Chlorobenzene	C ₆ H ₅ Cl	100%	-	-	+	0	+	+	-	+	+
Chloroethanol	ClCH ₂ CH ₂ OH	100%	-	-	+	+	+	-	0	0	+
Chloroethylbenzene	C ₆ H ₄ ClC ₂ H ₅	100%	-	-	+	0	0	0	-	n	+
Chlorophenol	C ₆ H ₄ OHCl	100%	n	n	+	+	+	n	-	+	+
Chlorotoluene	C ₇ H ₈ Cl	100%	-	-	+	n	n	+	-	+	+
Chloroacetone	ClCH ₂ COCH ₃	100%	-	-	+	n	n	-	+	n	+
Chlorobutadiene	C ₄ H ₆ Cl	100%	-	-	+	n	n	+	-	n	+
Chloroform	CHCl ₃	100%	-	-	+	-	0	+	-	+	+
Chlorohydrin	C ₂ H ₄ O ₂ Cl	100%	n	n	+	+	+	+	0	-	+
Chloroprene=>	Chlorobutadiene										
Chlorosulfonic Acid	SO ₂ (OH)Cl	100%	-	-	-	-	-	-	-	-	+
Chrome Sulfate	Cr ₂ (SO ₄) ₃	S	+	+	+	+	+	+	+	+	+
Chromic Acid	H ₂ CrO ₄	50%	-	+	+(10%)	+	0	+	-	+	+
Chromic Sulfuric Acid	K ₂ CrO ₄ +H ₂ SO ₄	S	-	+	n	-	-	n	n	+	+
Citric Acid	C ₆ H ₈ O ₇	S	+	+	+	+	+	+	+	+	+
Cobalt Chloride	CoCl ₂	S	+	+	-	+	+	+	+	+	+
Copper II Acetate	Cu(CH ₃ COO) ₂	S	+	+	+	+	+	+	+	+	+
Copper II Arsenite	Cu ₃ (AsO ₃) ₂	S	+	+	+	+	+	+	+	+	+
Copper II Carbonate	CuCO ₃	S	+	+	+	+	+	+	+	+	+
Copper II Chloride	CuCl ₂	S	+	+	+(1%)	+	+	+	+	+	+
Copper II Cyanide	Cu(CN) ₂	S	+	+	+	+	+	+	+	+	+
Copper II Fluoride	CuF ₂	S	+	+	+	+	+	+	+	+	+
Copper II Nitrate	Cu(NO ₃) ₂	S	+	+	+	+	+	+	+	+	+
Copper II Sulfate	CuSO ₄	S	+	+	+	+	+	+	+	+	+
Cresole	C ₆ H ₄ CH ₃ OH	100%	0	0	+	+	+	+	-	+	+
Crotonaldehyde	CH ₃ C ₂ H ₂ CHO	100%	n	-	+	+	+	-	+	+	+
Cyclohexane	C ₆ H ₁₂	100%	+	-	+	+	+	+	-	+	+
Cyclohexanol	C ₆ H ₁₁ OH	100%	0	+/0	+	+	+	+	-	+	+
Cyclohexanone	C ₆ H ₁₀ O	100%	-	-	+	+	+	-	+/0	+	+
Cyclohexyl Alcohol=>	Cyclohexanol										
Cyclohexylamine	C ₆ H ₁₃ N	100%	0	0	+	n	n	-	n	n	+
Decahydronaphthalene	C ₁₀ H ₁₈	100%	-	+/0	n	0	0	0	-	+	+
Decalin=>	Decahydronaphthalene										
Diisononyl Phthalate	C ₂₆ H ₄₂ O ₄	100%	-	-	+	+	+	n	n	+	+
Diacetone Alcohol	C ₆ H ₁₂ O ₂	100%	-	-	+	+	+	-	+	+	+
Diamine Ethylene	(CH ₂ NH ₂) ₂	100%	n	0	0	+	+	-	+	+	+
Dibromoethane	C ₂ H ₄ Br ₂	100%	-	-	+	-	n	+	-	+	+
Dibutyl Ether	C ₄ H ₉ OC ₄ H ₉	100%	0	-	+	0	0	-	0	+	+
Dibutyl Phthalate	C ₁₆ H ₂₂ O ₄	100%	-	-	+	0	+	+	+/0	+	+
Dibutylamine	(C ₄ H ₉) ₂ NH	100%	n	n	+	+	+	-	-	+	+
Dichloro Acetic Acid	Cl ₂ CHCOOH	100%	-	+	+	+	+	-	+	+	+
Dichloro Benzene	C ₆ H ₄ Cl ₂	100%	-	-	+	0	0	+	-	+	+
Dichloro Butane	C ₄ H ₈ Cl ₂	100%	-	-	+	0	0	+	-	+	+
Dichloro Butene	C ₄ H ₆ Cl ₂	100%	-	-	+	0	0	0	-	+	+
Dextrose	C ₆ H ₁₂ O ₆	A.C.	+	+	+	+	+	+	+	+	+
Dichloroethane	C ₂ H ₄ Cl ₂	100%	-	-	+	-	0	+	-	+	+
Dichloroethylene	C ₂ H ₂ Cl ₂	100%	-	-	+	-	0	0	-	+	+
Dichloroisopropyl Ether	(C ₃ H ₆ Cl) ₂ O	100%	-	-	+	0	0	0	0	n	+
Dicyclohexylamine	C ₁₂ H ₂₃ N	100%	0	0	+	+	+	-	+	n	+

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Chemical	Formula	Concen- tration	Acrylic	PVC	316 SS	PE	PP	Viton®	EPDM	PVDF	Teflon
Diethylamine	(C ₂ H ₅) ₂ NH	100%	-	-	+	0	+	-	+	+	+
Diethylene Glycol	C ₆ H ₁₀ O ₃	100%	+	+	+	+	+	+	+	+	+
Diethyleneglydolethyl Ether	C ₈ H ₁₈ O ₃	100%	n	n	+	+	+	n	+/0	+	+
Diethyl Ether	(C ₂ H ₅) ₂ O	100%	-	-	+	0	0	-	-	+	+
Diglycolic Acid	C ₄ H ₆ O ₅	30%	+	+	+	+	+	+	n	+	+
Dihexyl Phthalate	C ₂₀ H ₂₆ O ₄	100%	-	-	+	+	+	-	n	+	+
Diisobutylketone	C ₈ H ₁₆ O	100%	-	-	+	+	+	-	+	+	+
Diisopropylketone	C ₇ H ₁₄ O	100%	-	-	+	+	+	-	+	+	+
Dimethyl Carbonate	(CH ₃ O) ₂ CO	100%	n	n	+	-	+	+	-	+	+
Dimethyl Phthalate	C ₁₀ H ₁₀ O ₄	100%	-	-	+	+	+	-	+/0	+	+
Dimethylformamide	HCON(CH ₃) ₂	100%	-	-	+	+	+	-	+	-	+
Dimethylhydrazine	H ₂ NN(CH ₃) ₂	100%	n	n	+	+	+	-	+	+	+
Diethyl Phthalate	C ₈ H ₈ (COOC ₂ H ₅) ₂	100%	-	-	+	+	+	-	+/0	+	+
Dioxane	C ₆ H ₈ O ₂	100%	-	-	+	+	0	-	+/0	0	+
Dimethyl Formic Amide	HCON(CH ₃) ₂	100%	-	-	-	0	+	0	0	-	+
Disodium Hydrogen Phosphate	Na ₂ HPO ₄	S	+	+	+	+	+	+	+	+	+
Disulfur Dichloride	S ₂ Cl ₂	100%	+	+	+	+	+	+	-	+	+
DMF=>	Dimethylformamide										
Engine Oils		100%	n	+/0	+	+	+	+	-	+	+
Ethanol	C ₂ H ₅ OH	100%	-	+	+	+	+	-	+	+	+
Ethanol Amine	HOC ₂ H ₄ NH ₂	100%	0	n	+	+	+	-	+/0	+	+
Ethyl Acetate	CH ₃ COOC ₂ H ₅	100%	-	-	+	+	+35%	-	+/0	-	+
Ethyl Acrylate	C ₂ H ₃ COOC ₂ H ₅	100%	-	-	+	+	+	-	+/0	0	+
Ethyl Benzene	C ₆ H ₅ C ₂ H ₅	100%	-	-	+	0	0	0	-	+	+
Ethyl Benzoate	C ₆ H ₅ COOC ₂ H ₅	100%	n	-	+	+	+	+	-	0	+
Ethyl Bromide	C ₂ H ₅ Br	100%	n	n	n	+	+	+	-	+	+
Ethyl Chloride	C ₂ H ₅ Cl	100%	-	-	+	-	-	+	-	+	+
Ethyl Chloroacetate	ClCH ₂ COOC ₂ H ₅	100%	-	0	+	+	+	+	-	+	+
Ethyl Chlorocarbonate	ClCO ₂ C ₂ H ₅	100%	n	n	n	n	+	+	-	n	+
Ethylacetylacetate	C ₆ H ₁₀ O ₃	100%	n	-	+	+	+	+	-	+	+
Ethylacrylic Acid	C ₄ H ₇ COOH	100%	n	n	+	+	+	n	+/0	+	+
Ethylene Dibromide	C ₂ H ₄ Br ₂	100%	-	-	+	-	0	+	-	+	+
Ethylene Dichloride	C ₂ H ₄ Cl ₂	100%	-	-	+	-	0	+	-	+	+
Ethylene Glycol	C ₂ H ₄ (OH) ₂	100%	+	+	+	+	+	+	+	+	+
Ethylenglycol Ethylether	HOC ₂ H ₄ OC ₂ H ₅	100%	n	n	+	+	+	n	+/0	+	+
Ethylhexanol	C ₈ H ₁₆ O	100%	n	+/0	+	+	+	+	+	+	+
Fatty Acids	-	100%	0	0	+	+	+	+	0	+	+
Ferric Chloride	FeCl ₃	S	+	+	-	+	+	+	+	+	+
Ferric Nitrate	Fe(NO ₃) ₃	S	+	+	+	+	+	+	+	+	+
Ferric Phosphate	FePO ₄	S	+	+	+	+	+	+	+	+	+
Ferric Sulfate	Fe ₂ (SO ₄) ₃	S	+	+	0	+	+	+	+	+	+
Ferrous Chloride	FeCl ₂	S	+	+	-	+	+	+	+	+	+
Ferrous Sulfate	FeSO ₄	S	+	+	+	+	+	+	+	+	+
Fluoro Benzene	C ₆ H ₅ F	100%	-	-	+	0	+	0	-	+	+
Fluoroboric Acid	HF ₄	35%	+	+	0	+	+	+	+	+	+
Formaldehyde	CH ₂ O	40%	+	+	+	+	+	-	+/0	+	+
Formamide	HCONH ₂	100%	+	-	+	+	+	+	+	+	+
Formic Acid	HCOOH	S	-	+/0	+	+	+	-	-	+	+
Freon 12,13,22,114,115	-	100%	-	+	-	-	-	-	-	0	+
Furan	C ₄ H ₄ O	100%	-	-	+	+	+	-	n	-	+
Furane Aldehyde	C ₅ H ₅ O ₂	100%	n	n	n	n	n	-	+/0	0	+
Furfuryl Alcohol	OC ₄ H ₃ CH ₂ OH	100%	-	-	+	+	+	n	+/0	0	+

Introduction

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o	= limited resistance	S	= saturated solution	
-	= no resistance	Conc.	= concentrated	
+(x%)	= good resistance to x% concentration	D	= weak solution	
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N.B. PTFE is resistant against most chemicals and solvents (excluding fluorine, metallic sodium and other alkali metals).

PVDF is resistant against most chemicals (excluding ketones, esters).

Chemical	Formula	Concentration	Acrylic	PVC	316 SS	PE	PP	Viton®	EPDM	PVDF	Teflon
Gallic Acid	$C_6H_2(OH)_3COOH$	5%	+	+	+	+	+	+	+/-0	+	+
Gasoline	-	100%	-	-	+	+	+	+	-	+	+
Glucose	$C_6H_{12}O_6$	S	+	+	+	+	+	+	+	+	+
Glycerol Triacetate	$C_9H_5(CH_3COO)_3$	100%	n	n	+	+	+	-	+	+	+
Glycerol	$C_3H_5(OH)_3$	100%	+	+	+	+	+	+	+	+	+
Glycine	NH_2CH_2COOH	10%	+	+	+	+	+	+	+	+	+
Glycol	$C_2H_4(OH)_2$	100%	+	+	+	+	+	+	+	+	+
Glycolic Acid	$CH_2OH COOH$	70%	+	+(37%)	-	+	+	+	+	+	+
Heptane	C_7H_{16}	100%	+	+	+	+	+	+	-	+	+
Hexanal	$C_6H_{11}CHO$	100%	n	n	+	+	+	-	+/-0	+	+
Hexane	C_6H_{14}	100%	+	+	+	+	+	+	-	+	+
Hexanol	$C_6H_{11}OH$	100%	-	-	+	+	+	n	+	+	+
Hexene	C_6H_{12}	100%	n	+	+	+	+	+	-	+	+
Hydrazine Hydrate	$N_2H_4 \cdot H_2O$	S	+	+	+	+	+	n	+	+	+
Hydrazine	N_2H_4	Conc.	0	0	+	+	+	+	+	+	+
Hydrobromic Acid	HBr	50%	+	+	-	+	+	-	+	+	+
Hydrochloric Acid	HCl	38%	+(32%)	+	-	+	+	-	+	+	+
Hydrofluoric Acid	HF	80%	-	+(40%)*	-	+(40%)	+(40%)	+	0	+	+
Hydrofluosilicic Acid	H_2SiF_6	30%	+	+	0	+	+	+	+	+	+
Hydrogen Cyanide	HCN	S	+	+	+	+	+	+	+	+	+
Hydrogen Peroxide	H_2O_2	90%	+(40%)	+(40%)	+	+	+(30%)	+(30%)	+(30%)	+	+
Hydroiodic Acid	HI	S	+	+	-	+	+	-	n	+	+
Hydroquinone	$C_6H_4(OH)_2$	S	+	+	+	+	+	+	-	+	+
Hydrogen Sulfide	H_2S	S	+	+	0	+	+	+	+	+	+
Hydroxylamine Sulfate	$(NH_2OH)_2 \cdot H_2SO_4$	10%	+	+	+	+	+	+	+	+	+
Hypochlorous Acid	HOCl	S	+	+	-	0	0	+	+/-0	+	+
Iodine	I_2	S	0	-	-	0	+	+	+/-0	+	+
Isobutyl Alcohol	$C_4H_9CH(OH)CH_3$	100%	-	+	+	+	+	+	+	+	+
Isopropyl Chloride	$CH_3CHClCH_3$	80%	-	-	+	0	0	+	-	+	+
Isopropyl Acetate	$CH_3COOCH(CH_3)_2$	100%	-	-	+	+	+	-	+/-0	+	+
Isopropyl Alcohol	$(CH_3)_2CHOH$	100%	0	+/-0	+	+	+	+	+	+	+
Isopropyl Benzene	$C_6H_5CH(CH_3)_2$	100%	-	-	+	0	0	+	-	+	+
Isopropyl Ether	$C_6H_{14}O$	100%	-	-	+	0	0	-	-	+	+
Isopropanol=>	Isopropyl Alcohol										
Lactic Acid	$C_3H_5O_3$	100%	-	+	+/-0	+	+	+	+(10%)	+	+
Lead II Acetate	$Pb(CH_3COO)_2$	S	+	+	+	+	+	+	+	+	+
Lead Nitrate	$Pb(NO_3)_2$	50%	+	+	+	+	+	+	+	+	+
Lead Sulfate	$PbSO_4$	S	+	+	+	+	+	+	+	+	+
Lead Tetraethyl	$Pb(C_2H_5)_4$	100%	0	+	+	+	+	+	-	+	+
Lime Milk=>	Calcium Hydroxide										
*Lime Slurry	$Ca(OH)_2$	S	+	+	+	+	+	+	+	+	+
Lithium Bromide	LiBr	S	+	+	+	+	+	+	+	+	+
Lithium Chloride	LiCl	S	+	+	+	+	+	+	+	+	+
Magnesium Carbonate	$MgCO_3$	S	+	+	+	+	+	+	+	+	+
Magnesium Chloride	$MgCl_2$	S	+	+	0	+	+	+	+	+	+
*Magnesium Hydroxide	$Mg(OH)_2$	S	+	+	+	+	+	+	+	+	+
Magnesium Nitrate	$Mg(NO_3)_2$	S	+	+	+	+	+	+	+	+	+
Magnesium Sulfate	$MgSO_4$	S	+	+	+	+	+	+	+	+	+
Maleic Acid	$C_4H_4O_4$	S	+	+	+	+	+	+	+	+	+
Malic Acid	$C_4H_6O_5$	S	+	+	+	+	+	+	+	+	+
Manganese II Chloride	$MnCl_2$	S	+	+	+	+	+	+	+	+	+

*Requires flushing.

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PVDF is resistant against most chemicals (excluding ketones, esters).

Chemical	Formula	Concentration	Acrylic	PVC	316 SS	PE	PP	Viton®	EPDM	PVDF	Teflon
Manganese Sulfate	MnSO ₄	S	+	+	+	+	+	+	+	+	+
Mercuric Chloride	HgCl ₂	S	-	+	-	+	+	+	+	+	+
Mercury	Hg	100%	+	+	+	+	+	+	+	+	+
Mercury II Chloride	HgCl ₂	S	+	+	-	+	+	+	+	+	+
Mercury II Cyanide	Hg(CN) ₂	S	+	+	+	+	+	+	+	+	+
Mercury II Nitrate	Hg(NO ₃) ₂	S	+	+	+	+	+	+	+	+	+
Mesityl Oxide	C ₈ H ₁₀ O	100%	-	-	+	n	n	-	+/-	n	+
Methacrylic Acid	C ₅ H ₈ COOH	100%	n	n	+	+	+	0	+/-	+	+
Methanol	CH ₃ OH	100%	-	+	+	+	+	+	+	+	+
Methoxybutanol	CH ₃ O(CH ₂) ₄ OH	100%	-	-	+	+	+	+	0	+	+
Methyl Acetate	CH ₃ COOCH ₃	60%	-	-	+	+	+	-	+/-	+	+
Methyl Acrylate	C ₅ H ₈ COOCH ₃	100%	-	-	+	+	+	-	+/-	+	+
Methyl Benzoate	C ₈ H ₈ COOCH ₃	100%	-	-	+	+	+	+	-	0	+
Methyl Catechol	C ₆ H ₃ (OH) ₂ CH ₃	S	+	+	+	+	+	+	-	+	+
Methyl Cellulose		S	+	+	+	+	+	+	+	+	+
Methyl Chloroacetate	ClCH ₂ COOCH ₃	100%	-	0	+	+	+	0	-	+	+
Methyl Cyclopentane	C ₅ H ₉ CH ₃	100%	+	+	+	+	+	+	-	+	+
Methyl Dichloroacetate	Cl ₂ CHCOOCH ₃	100%	-	-	+	+	+	-	n	n	+
Methyl Ethyl Ketone (MEK)	CH ₃ COC ₂ H ₅	100%	-	-	+	+	+	-	+	-	+
Methyl Glycol	C ₃ H ₈ O ₂	100%	+	+	+	+	+	-	+/-	+	+
Methyl Isobutyl Ketone	CH ₃ COC ₄ H ₉	100%	-	-	+	+	+	-	0	-	+
Methyl Isopropyl Ketone	CH ₃ COC ₃ H ₇	100%	-	-	+	+	+	-	+/-	-	+
Methyl Methacrylate	C ₅ H ₈ COOCH ₃	100%	-	-	+	+	+	-	-	+	+
Methyl Oleate	C ₁₇ H ₃₃ COOCH ₃	100%	n	n	+	+	+	+	+/-	+	+
Methyl Salicylate	HOC ₆ H ₄ COOCH ₃	100%	-	-	+	+	+	n	+/-	+	+
Methylacetyl Acetate	C ₇ H ₁₂ O ₃	100%	-	-	+	+	+	-	+/-	+	+
Methylamine	CH ₃ NH ₂	32%	+	0	+	+	+	-	+	0	+
Methylene Chloride	CH ₂ Cl ₂	100%	-	-	0	-	0	+	-	0	+
Milk	-	-	+	+	+	+	+	+	+	+	+
Morpholine	C ₄ H ₉ NO	100%	-	-	+	+	+	n	n	+	+
Naphthalene	C ₁₀ H ₈	S	-	-	+	-	+	+	-	+	+
Nickel II Acetate	(CH ₃ COO) ₂ Ni	S	+	+	+	+	+	-	+	+	+
Nickel Chloride	NiCl ₂	S	+	+	-	+	+	+	+	+	+
Nickel Nitrate	Ni(NO ₃) ₂	S	+	+	+	+	+	+	+	+	+
Nickel Sulfate	NiSO ₄	S	+	+	+	+	+	+	+	+	+
Nitric Acid	HNO ₃	99%	n	+(50%)	+(90%)	+(50%)	+(50%)	+(65%)	+(40%)	0	+
Nitro Benzene	C ₆ H ₅ NO ₂	100%	-	-	+	-	+	-	-	+	+
Nitro Methane	CH ₃ NO ₂	100%	-	-	+	+	+	-	+/-	0	+
Nitro Propane	(CH ₃) ₂ CHNO ₂	100%	-	-	+	+	+	-	+/-	n	+
Nitro Toluene	C ₆ H ₄ NO ₂ CH ₃	100%	-	-	+	+	+	0	-	+	+
Oxalic Acid	(COOH) ₂	S	+	+	+(10%)	+	+	+	+	+	+
Octane	C ₈ H ₁₈	100%	+	+	+	+	+	+	-	+	+
Octanol	C ₈ H ₁₇ OH	100%	-	-	+	+	+	+	+	+	+
Octyl Cresole	C ₈ H ₁₆ O	100%	-	-	+	+	+	0	n	+	+
Oleum	H ₂ SO ₄ +SO ₃	10%	n	-	+	-	-	+	-	-	+
Perchloric Acid	HClO ₄	70%	-	+(10%)	-	+	+(10%)	+	+/-	+	+
Pentane	C ₅ H ₁₂	100%	+	+	+	+	+	+	-	+	+
Pentanol=>	Amyl Alcohol										
Peracetic Acid	C ₂ H ₄ O ₃	50%	-	0	+	0	+	+	0	+	+
Petroleum Ether	C ₆ H ₁₄	100%	+	+/-	+	+	+	+	-	+	+
Phenol	C ₆ H ₅ OH	100%	-	-	+	+	+	+	-	+	+
Phenyl Ethyl Ether	C ₆ H ₅ OC ₂ H ₅	100%	-	-	+	+	+	-	-	n	+
Phenyl Hydrazine	C ₆ H ₅ NHNH ₂	100%	-	-	+	0	0	0	-	+	+
Phosphoric Acid	H ₃ PO ₄	85%	+(50%)	+	+	+	+	+	+	+	+

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Chemical	Formula	Concen- tration	Acrylic	PVC	316 SS	PE	PP	Viton®	EPDM	PVDF	Teflon
Phosphorous Oxychloride	POCl ₃	100%	-	-	n	+	+	+	+	+	+
Phosphorous Trichloride	PCl ₃	100%	-	-	+	+	+	0	0	+	+
Phthalic Acid	C ₆ H ₄ (COOH) ₂	S	+	+	+	+	+	+	+	+	+
Picric Acid	C ₆ H ₃ (NO ₃) ₃ OH	S	+	+	+	+	+	+	+	+	+
Piperidine	C ₅ H ₁₁ N	100%	-	-	+	n	n	-	-	n	+
Polyphosphate=>	Sodium Tripolyphosphate										
Potassium Acetate	CH ₃ COOK	S	+	+	+	+	+	+	+	+	+
Potassium Aluminum Sulfate	KAl(SO ₄) ₂	S	+	+	+	+	+	+	+	+	+
Potassium Bicarbonate	KHCO ₃	40%	+	+	+	+	+	+	+	+	+
Potassium Bifluoride	KHF ₂	S	n	+	+	+	+	+	+	+	+
Potassium Bisulfate	KHSO ₄	5%	+	+	+	+	+	+	+	+	+
Potassium Bitartrate	KC ₄ H ₅ O ₆	S	+	+	+	+	+	+	+	+	+
Potassium Borate	KBO ₂	S	+	+	+	+	+	+	+	+	+
Potassium Bromate	KBrO ₃	S	+	+	+	+	+	+	+	+	+
Potassium Bromide	KBr	S	+	+	+(10%)	+	+	+	+	+	+
Potassium Carbonate	K ₂ CO ₃	S	+	+	+	+	+	+	+	+	+
Potassium Chlorate	KClO ₃	S	+	+	+	+	+	+	+	+	+
Potassium Chloride	KCl	S	+	+	-	+	+	+	+	+	+
Potassium Chromate	K ₂ CrO ₄	10%	+	+	+	+	+	+	+	+	+
Potassium Chrome Sulfate	KCr(SO ₄) ₂	S	+	+	+	+	+	+	+	+	+
Potassium Cyanate	KOCN	S	+	+	+	+	+	+	+	+	+
Potassium Cyanide	KCN	S	+	+	+(5%)	+	+	+	+	+	+
Potassium Cyanoferrate II	K ₃ Fe(CN) ₆	S	+	+	+	+	+	+	+	+	+
Potassium Cyanoferrate III	K ₃ Fe(CN) ₆	S	+	+	+	+	+	+	+	+	+
Potassium Dichromate	K ₂ Cr ₂ O ₇	S	+	+	+(25%)	+	+	+	+	+	+
Potassium Ferricyanide	K ₃ Fe(CN) ₆	S	+	+	+	+	+	+	+	+	+
Potassium Ferrocyanide	K ₄ Fe(CN) ₆	S	+	+	+	+	+	+	+	+	+
Potassium Fluoride	KF	S	+	+	+	+	+	+	+	+	+
Potassium Hydroxide	KOH	50%	n	+	+	+	+	-	+	+	+
Potassium Iodide	KI	S	+	+	+	+	+	+	+	+	+
Potassium Nitrate	KNO ₃	S	+	+	+	+	+	+	+	+	+
Potassium Perchlorate	KClO ₄	S	+	+	n	+	+	+	+	+	+
Potassium Permanganate	KMnO ₄	S	+	+	+	+	+	+	+	+	+
Potassium Persulfate	K ₂ SO ₈	S	+	+	+	+	+	+	+	+	+
Potassium Phosphate	KH ₂ PO ₄	S	+	+	+	+	+	+	+	+	+
Potassium Sulfate	K ₂ SO ₄	S	+	+	+	+	+	+	+	+	+
Potassium Sulfite	K ₂ SO ₃	S	+	+	+	+	+	+	+	+	+
Propanol	C ₂ H ₅ OH	100%	-	+	+	+	+	+	+	+	+
Propionic Acid	C ₂ H ₅ COOH	100%	0	+	+	+	+	+	+	+	+
Propionitrile	CH ₃ CH ₂ CN	100%	n	n	+	+	+	+	-	+	+
Propyl Acetate	CH ₃ COOC ₃ H ₇	100%	-	-	+	+	+	-	+/0	+	+
Propylene Glycol	CH ₃ CHOHCH ₂ OH	100%	+	+	+	+	+	+	+	+	+
Pyridine	C ₅ H ₅ N	100%	-	-	+	+	0	-	-	-	+
Pyrrole	C ₄ H ₄ N	100%	n	n	+	+	+	-	-	n	+
Salicylic Acid	HOC ₆ H ₄ COOH	S	+	+	+	+	+	+	+	+	+
Sea Water	-		+	+	0	+	+	+	+	+	+
Silic Acid	SiO ₂ +H ₂ O	S	+	+	+	+	+	+	+	+	+
Silver Bromide	AgBr	S	+	+	+/0	+	+	+	+	+	+
Silver Chloride	AgCl	S	+	+	-	+	+	+	+	+	+
Silver Nitrate	AgNO ₃	S	+	+	+	+	+	+	-	+	+
Soda Ash=>	Sodium Carbonate										
Sodium Acetate	CH ₃ COONa	S	+	+	+	+	+	+	+	+	+
Sodium Benzoate	C ₆ H ₅ COONa	S	+	+	+	+	+	+	+	+	+
Sodium Bicarbonate	NaHCO ₃	S	+	+	+	+	+	+	+	+	+
Sodium Bisulfate	NaHSO ₄	S	+	+	+	+	+	+	+	+	+

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Chemical	Formula	Concentration	Acrylic	PVC	316 SS	PE	PP	Viton®	EPDM	PVDF	Teflon
Sodium Borate	NaBO ₂	S	+	+	+	+	+	+	+	+	+
Sodium Bromate	NaBrO ₃	S	+	+	+	+	+	+	+	+	+
Sodium Bromide	NaBr	S	+	+	+	+	+	+	+	+	+
Sodium Carbonate	Na ₂ CO ₃	S	+	+	+/-	+	+	+	+	+	+
Sodium Chlorate	NaClO ₃	S	+	+	+	+	+	+	+	+	+
Sodium Chloride	NaCl	S	+	+	-	+	+	+	+	+	+
Sodium Chlorite	NaClO ₂	24%	+	+	+(10%)	+	+	+	+	+	+
Sodium Chromate	Na ₂ CrO ₄	S	+	+	+	+	+	+	+	+	+
Sodium Cyanide	NaCN	S	+	+	+	+	+	+	+	+	+
Sodium Dichromate	NaCr ₂ O ₇	S	+	+	+	+	+	+	+	+	+
Sodium Dithionite	Na ₂ S ₂ O ₄	S	+	+10%	+	+10%	+10%	n	n	+	+
Sodium Fluoride	NaF	S	+	+	+(10%)	+	+	+	+	+	+
Sodium Hydrogen Sulfate	NaHSO ₄	S	+	+	+	+	+	+	+	+	+
Sodium Hydrogen Sulfide	NaHSO ₃	S	+	+	+	+	+	+	+	+	+
Sodium Hydroxide	NaOH	50%	+	+	+	+	+	-	+	+	+
Sodium Hypochlorite	NaOCl	12-15%	+	+	-	+	0	0	+	+	+
Sodium Iodide	NaI	S	+	+	+	+	+	+	+	+	+
Sodium Metaphosphate	(NaPO ₃) _n	S	+	+	+	+	+	+	+	+	+
Sodium Nitrate	NaNO ₃	S	+	+	+	+	+	+	+	+	+
Sodium Nitrite	NaNO ₂	S	+	+	+	+	+	+	+	+	+
Sodium Oxalate	Na ₂ C ₂ O ₄	S	+	+	+	+	+	+	+	+	+
Sodium Perborate	NaBO ₂ ·H ₂ O ₂	S	+	+/-	+	+	+	+	+	+	+
Sodium Perchlorate	NaClO ₄	S	+	+	+(10%)	+	+	+	+	+	+
Sodium Peroxide	Na ₂ O ₂	S	+	+	+	-	+	+	+	+	+
Sodium Persulfate	Na ₂ S ₂ O ₈	S	n	+	+	+	+	+	+	+	+
Sodium Pyrosulfite	Na ₂ S ₂ O ₅	S	+	+	+	+	+	n	n	+	+
Sodium Salicylate	C ₆ H ₄ (OH)COONa	S	+	+/-	+	+	+	+	+	+	+
Sodium Silicate	Na ₂ SiO ₃	S	+	+	+	+	+	+	+	+	+
Sodium Sulfate	Na ₂ SO ₄	S	+	+	+	+	+	+	+	+	+
Sodium Sulfide	Na ₂ S	S	+	+	+	+	+	+	+	+	+
Sodium Sulfite	Na ₂ SO ₃	S	+	+	+(50%)	+	+	+	+	+	+
Sodium Tetraborate	Na ₂ B ₄ O ₇ ·10H ₂ O	S	+	+	+	+	+	+	+	+	+
Sodium Thiosulfate	Na ₂ S ₂ O ₃	S	+	+	+(25%)	+	+	+	+	+	+
Sodium Tripolyphosphate	Na ₅ P ₃ O ₁₀	S	+	+	+	+	+	+/-	+	+	+
Stannic Chloride	SnCl ₄	100%	+	+	-	+	+	+	+	+	+
Stannous Chloride	SnCl ₂	S	+	+	-	+	+	+	+	+	+
Starch	(C ₆ H ₁₀ O ₅) _n	S	+	+	+	+	+	+	+	+	+
Stearic Acid	C ₁₇ H ₃₅ COOH	100%	+	+	+	+	+	+	-	+	+
Styrene	C ₆ H ₅ CHCH ₂	100%	-	-	+	0	0	0	-	+	+
Succinic Acid	C ₄ H ₆ O ₄	S	+	+	+	+	+	+	+	+	+
Sugar Syrup		S	+	+	+	+	+	+	+	+	+
Sulfuric Acid	H ₂ SO ₄	98%	+30%	+50%	+20%	+50%	+85%	+	+	+	+
Sulfurous Acid	H ₂ SO ₃	A.C.	+	+	+(10%)	+	+	+	+	+	+
Sulfuryl Chloride	SO ₂ Cl ₂	100%	-	-	n	-	-	+	0	n	+
Tannic Acid	C ₇₆ H ₅₂ O ₄₆	50%	+	+	+	+	+	+	+	+	+
Tartaric Acid	C ₄ H ₆ O ₆	S	+(50%)	+	+	+	+	+	+/-	+	+
Tetrachloroethane	C ₂ H ₂ Cl ₄	100%	-	-	+	0	0	0	-	+	+
Tetrachloroethene	C ₂ Cl ₄	100%	-	-	+	0	0	0	-	+	+
Tetrahydrofuran	C ₄ H ₈ O	100%	-	-	+	0	0	-	-	-	+
Tetrahydro Naphthalene	C ₁₀ H ₈	100%	-	-	+	0	-	+	-	+	+
Thionyl Chloride	SOCl ₂	100%	-	-	n	-	-	+	+	-	+
Thiophene	C ₄ H ₄ S	100%	n	-	+	0	0	-	-	n	+
Tin II Chloride	SnCl ₂	S	+	0	-	+	+	+	+	+	+
Tin II Sulfate	SnSO ₄	S	+	+	+	+	+	+	+	+	+
Tin IV Chloride	SnCl ₄	S	n	+	-	+	+	+	+	+	+

Introduction

Chemical Resistance List

Resistance of liquid end materials against common chemicals **at standard temperature 68°F (20°C)**. (May differ at other temperatures)

s	= saturated aqueous solution	n	= unknown resistance	] resp. to aqueous solutions
+/o	= conditional resistance	=>	= refer to . . .	
+	= good resistance	A.C.	= any concentration	
o	= limited resistance	S	= saturated solution	
-	= no resistance	Conc.	= concentrated	
+(x%)	= good resistance to x% concentration	D	= weak solution	
*	= With glued fittings, please check the resistance of the glue.			

N.B. PTFE is resistant against most chemicals and solvents (excluding fluorine, metallic sodium and other alkali metals).

PVDF is resistant against most chemicals (excluding ketones, esters).

Chemical	Formula	Concen- tration	Acrylic	PVC	316 SS	PE	PP	Viton®	EPDM	PVDF	Teflon
Titanium Tetrachloride	TiCl ₄	100%	n	n	n	n	n	0	-	+	+
Toluene	C ₆ H ₅ CH ₃	100%	-	-	+	0	0	0	-	+	+
Toluene Diisocyanate	C ₇ H ₈ (NCO) ₂	100%	n	n	+	+	+	-	+/-	n	+
Tributyl Phosphate	(C ₄ H ₉) ₃ PO ₄	100%	n	-	+	+	+	-	+	+	+
Trichloroacetaldehyde Hydr.	CCl ₃ CH(OH) ₂	S	-	-	+	+	0	0	0	-	+
Trichloroethane	CCl ₃ CH ₃	100%	-	-	+	0	0	+	-	+	+
Trichloroethene	C ₂ HCl ₃	100%	-	-	+/-	0	0	0	-	+	+
Trichloroethylene	C ₂ HCl ₃	100%	-	-	+	0	0	0	-	+	+
Trichloroacetic Acid	CCl ₃ COOH	50%	-	+	-	+	+	-	0	+	+
Tricresyl Phosphate	(C ₆ H ₄) ₃ PO	90%	n	-	+	+	+	0	+	n	+
Triethanolamine	N(C ₂ H ₄ OH) ₃	100%	-	0	+	+	+	-	+/-	+	+
Trioctyl Phosphate	(C ₈ H ₁₇) ₃ PO ₄	100%	n	-	+	+	+	0	+	+	+
Trisodium Phosphate	Na ₃ PO ₄	S	+	+	+	+	+	+	+	+	+
Urea	CO(NH ₂) ₂	S	+	+/-	+	+	+	+	+	+	+
Vinyl Acetate	CH ₂ CHOOCCCH ₃	100%	-	-	+	0	-	0	-	+	+
Xylene	C ₆ H ₄ (CH ₃) ₂	100%	-	-	+	0	-	0	-	0	+
Zinc Acetate	(CH ₃ COO) ₂ Zn	S	+	+	+	+	+	-	+	+	+
Zinc Chloride	ZnCl ₂	S	+	+	-	+	+	+	+	+	+
Zinc Sulfate	ZnSO ₄	S	+	+	+	+	+	+	+	+	+