

# Chemical Resistance Ratings

Corrosive Stream	PP		PVDF		PTFE / PFA	
	°F	°C	°F	°C	°F	°C
1,1,2-Trichloroethane	NR	NR	150	65	450	230
1,2-Dibromo propane	--	--	200	95	450	230
1,4-Dioxane	75	25	NR	NR	450	230
1-Chloro-1 nitropropane	--	--	--	--	450	230
2,3,4,6,-Tetrachlorophenol	75	25	150	65	450	230
2,4,5-Trichlorophenol	75	25	150	65	450	230
2-Aminoisobutyric acid	125	50	--	--	450	230
2-Chloro-4-phenylphenol	--	--	--	--	450	230
Acetaldehyde	75	25	NR	NR	450	230
Acetamide	150	65	75	25	450	230
Acetic acid (10%)	200	95	225	110	450	230
Acetic acid (5%)	200	95	225	110	450	230
Acetic acid (50%)	200	95	200	95	450	230
Acetic acid (80%)	125	50	175	80	450	230
Acetic acid-glacial	125	50	125	50	450	230
Acetic anhydride	75	25	NR	NR	450	230
Acetone (10%)	125	50	125	50	450	230
Acetone (100%)	125	50	NR	NR	450	230
Acetonitrile	75	25	125	50	450	230
Acetophenone	75	25	NR	NR	450	230
Acetyl chloride	NR	NR	125	50	450	230
Acetylene	NR	NR	250	120	450	230
Acetylene tetrabromide	NR	NR	250	120	450	230
Acetylene tetrachloride	NR	NR	250	120	450	230
Acrylonitrile	125	50	75	25	450	230
Adipic acid	150	65	150	65	450	230
Air	225	110	275	135	450	230
Allyl alcohol	150	65	125	50	450	230
Allyl chloride	75	25	175	80	450	230
Alum	225	110	275	135	450	230
Alum, ammonium	225	110	275	135	450	230
Alum, chrome	175	80	200	95	450	230
Alum, potassium	225	110	275	135	450	230
Aluminum chloride (aqueous)	225	110	275	135	450	230
Aluminum fluoride	225	110	275	135	450	230
Aluminum hydroxide	200	95	275	135	450	230
Aluminum nitrate	200	95	275	135	450	230
Aluminum oxychloride	125	50	275	135	450	230
Aluminum sulfate	225	110	275	135	450	230
Ammonia (anhydrous gas)	150	65	NR	NR	450	230
Ammonia (anhydrous liquid)	225	110	NR	NR	450	230
Ammonium acetate (saturated)	125	50	175	80	450	230
Ammonium beryllium fluoride	--	--	--	--	450	230
Ammonium bifluoride	200	95	150	65	450	230
Ammonium bromide (50%)	--	--	250	120	450	230
Ammonium carbonate (saturated)	225	110	275	135	450	230
Ammonium chloride (saturated)	225	110	275	135	450	230

Diaphragm valves with the above liners may have different temperature capabilities than shown here, depending on the diaphragm material being used. Please see page 98-101 for maximum temperatures of diaphragm materials.

NR = Not recommended

Corrosive Stream	PP		PVDF		PTFE / PFA	
	F	C	F	C	F	C
Ammonium dichromate	125	50	250	120	450	230
Ammonium fluoride (10%)	200	95	275	135	450	230
Ammonium fluoride (25%)	200	95	275	135	450	230
Ammonium fluoride (saturated)	175	80	275	135	450	230
Ammonium hydroxide (1%)	225	110	225	110	450	230
Ammonium hydroxide (10%)	225	110	225	110	450	230
Ammonium hydroxide (conc.)	225	110	225	110	450	230
Ammonium metaphosphate	150	65	275	135	450	230
Ammonium nitrate (saturated)	150	65	275	135	450	230
Ammonium persulfate	150	65	75	25	450	230
Ammonium phosphate	225	110	275	135	450	230
Ammonium sulfate (saturated)	225	110	275	135	450	230
Ammonium sulfide	150	65	125	50	450	230
Ammonium thiocyanate	150	65	275	135	450	230
Amyl acetate	75	25	125	50	450	230
Amyl alcohol	75	25	275	135	450	230
Amyl chloride	NR	NR	275	135	450	230
Aniline	125	50	125	50	450	230
Aniline hydrochloride (10%)	NR	NR	75	25	450	230
Antimony trichloride	150	65	75	25	450	230
Aqua regia	75	25	75	25	450	230
ar-Tribromoethylbenzene	--	--	--	--	450	230
Arsenic acid	200	95	275	135	450	230
Aryl sulfonic acids	150	65	--	--	450	230
Barium carbonate	200	95	275	135	450	230
Barium chloride	200	95	275	135	450	230
Barium hydroxide	200	95	275	135	450	230
Barium sulfate	200	95	275	135	450	230
Barium sulfide	200	95	275	135	450	230
Beer	175	80	225	110	450	230
Beet sugar liquors	150	65	225	110	450	230
Benzaldehyde	75	25	75	25	450	230
Benzalkonium chloride	--	--	--	--	450	230
Benzene	NR	NR	150	65	450	230
Benzenesulfonic acid	75	25	125	50	450	230
Benzoic acid	150	65	225	110	450	230
Benzoyl chloride	--	--	150	65	450	230
Benzyl alcohol	125	50	250	120	450	230
Benzyl amine	150	65	75	25	450	230
Benzyl chloride	75	25	275	135	450	230
Bis (2-Butoxyethyl) phthalate	--	--	--	--	450	230
Bismuth carbonate	225	110	275	135	450	230
Black liquor	--	--	175	80	450	230
Borax	175	80	275	135	450	230
Boric acid	225	110	275	135	450	230
Brine (acid)	200	95	275	135	450	230
Brine (basic)	175	80	275	135	450	230
Brine (chlorinated acid)	125	50	200	95	450	230
Bromine (dry gas)	NR	NR	150	65	450	230
Bromine (liquid)	NR	NR	150	65	450	230

Diaphragm valves with the above liners may have different temperature capabilities than shown here, depending on the diaphragm material being used. Please see page 98-101 for maximum temperatures of diaphragm materials.

NR = Not recommended

Corrosive Stream	PP		PVDF		PTFE / PFA	
	°F	°C	°F	°C	°F	°C
Bromine (water-3% saturated)	75	25	200	95	450	230
Bromine chloride (dry gas)	NR	NR	150	120		135
Bromine chloride (liquid)	--	--	200	95	450	230
Bromine chloride water (8%)	75	25	200	95	450	230
Bromoform	NR	NR	150	65	450	230
Butadiene	NR	NR	250	120	450	230
Butane	NR	NR	250	120	450	230
Butanediol	175	80	250	120	450	230
Butanol (Butyl alcohol)	200	95	250	120	450	230
Butyl acetate	NR	NR	75	25	450	230
Butyl acrylate	NR	NR	120	50	450	230
Butyl bromide	NR	NR	275	135	450	230
Butyl chloride	NR	NR	275	135	450	230
Butyl mercaptan	--	--	275	135	450	230
Butyl phenol	NR	NR	225	110	450	230
Butyl phthalate	125	50	NR	NR	450	230
Butylene (butadiene)	NR	--	250	120	450	230
Butyraldehyde	--	--	150	65	450	230
Butyric acid	175	80	225	110	450	230
Calcium bisulfide	200	95	275	135	450	230
Calcium bisulfite	200	95	275	135	450	230
Calcium bisulfite bleach liquor (6% total SO2 5% free)	175	80	200	95	450	230
Calcium carbonate	225	110	275	135	450	230
Calcium chlorate	200	95	275	135	450	230
Calcium chloride (saturated)	225	110	275	135	450	230
Calcium chlorite	150	65	200	95	450	230
Calcium hydroxide (saturated)	225	110	275	135	450	230
Calcium hypochlorite	175	80	200	95	450	230
Calcium nitrate	200	95	275	135	450	230
Calcium oxide	225	110	250	120	450	230
Calcium oxide-sulfur	--	--	250	120	450	230
Calcium sulfate	225	110	275	135	450	230
Calcium sulfide	--	--	225	110	450	230
Cane sugar liquors	75	25	275	135	450	230
Caprylic acid	125	50	175	80	450	230
CARBITOL ethylene glycol ethers	125	50	275	135	450	230
Carbolic acid (see Phenol)	--	--	--	--	450	230
Carbon bisulfide	NR	NR	75	25	450	230
Carbon dioxide (gas)	225	110	275	135	450	230
Carbon disulfide (liquid)	NR	NR	75	25	450	230
Carbon monoxide	225	110	275	135	450	230
Carbon tetrachloride	NR	NR	275	135	450	230
Carbon Tetrachloride (wet gases)	NR	NR	275	135	450	230
Carbonic acid	225	110	275	135	450	230
Castor oil	125	50	175	80	450	230
Chloral (10%)	NR	NR	125	50	450	230
Chloral hydrate	NR	NR	75	25	450	230
Chlorinated phenol	--	--	150	65	450	230

<sup>1</sup>Above 275°F, pressure of an equilibrium mixture of bromine chloride exceeds maximum pressure allowed for Class 300 pipe and fittings. Diaphragm valves with the above liners may have different temperature capabilities than shown here, depending on the diaphragm material being used. Please see page 98-101 for maximum temperatures of diaphragm materials.

NR = Not recommended

Corrosive Stream	PP		PVDF		PTFE / PFA	
	F	C	F	C	F	C
Chlorine (5% in CCL <sub>4</sub> )	NR	NR	200	95	450	230
Chlorine dioxide	NR	NR	150	65	450	230
Chlorine gas (dry)	NR	NR	200	95	300	150
Chlorine gas (wet)	NR	NR	200	95	300	150
Chlorine liquid (pressurized)	NR	NR	200	95	300	150
Chlorine water (saturated)	<sup>1</sup> 150	65	225	110	450	230
Chloroacetic acid	125	50	NR	NR	450	230
Chloroacetyl chloride	NR	NR	125	50	450	230
Chlorobenzene	NR	NR	175	80	450	230
Chlorobenzyl chloride	NR	NR	125	50	450	230
Chloroform	NR	NR	125	50	450	230
Chlorohydrin (liquid)	NR	NR	125	50	450	230
Chloropicrin	NR	NR	150	65	450	230
Chlorosulfonic acid (100%)	NR	NR	NR	NR	450	230
Chromic acid (50%)	125	50	125	50	450	230
Chromium plating solution	125	50	175	80	450	230
Chromium trioxide (30%)	125	50	175	80	450	230
Chromyl chloride	125	50	125	50	450	230
Citric acid	225	110	275	135	450	230
CLOROX <sup>2</sup> bleach solution (5.5% NaOCl)	<sup>1</sup> 150	65	275	135	450	230
Coal gas	150	65	225	110	450	230
Coconut oil	125	50	275	135	450	230
Copper carbonate, basic	200	95	275	135	450	230
Copper chloride (saturated)	200	95	275	135	450	230
Copper cyanide (10%)	200	95	275	135	450	230
Copper fluoride	200	95	275	135	450	230
Copper nitrate	200	95	275	135	450	230
Copper sulfate (saturated)	200	95	275	135	450	230
Corn oil	175	80	275	135	450	230
Cottonseed oil	150	65	275	135	450	230
Cresol	NR	NR	150	65	450	230
Cresylic acid (50%)	NR	NR	150	65	450	230
Croton aldehyde	NR	NR	125	50	450	230
Crude oil	150	65	275	135	450	230
Cupric Chloride (saturated)	200	95	275	135	450	230
Cyanoacetic acid	--	--	--	--	450	230
Cyclohexane	NR	NR	275	135	450	230
Cyclohexanol	75	25	150	65	450	230
Cyclohexanone	NR	NR	75	25	450	230
Desoxyephedrine hydrochloride	--	--	--	--	450	230
Dextrose	225	110	275	135	450	230
Di-B (3,4-dihydroxyphenol aniline)	--	--	--	--	450	230
Di-isobutylene	125	50	275	135	450	230
Di-isobutylketone	75	25	125	50	450	230
Diacetone alcohol	125	50	75	25	450	230
Diazo salts	225	110	275	135	450	230
Dibutoxy ethyl phthalate	--	--	--	--	450	230
Dibutyl phthalate	125	50	NR	NR	450	230
Dibutyl sebacate	--	--	NR	NR	450	230

<sup>1</sup>If decomposition to free chlorine is possible, PP should not be used. PVDF is the preferred liner.

<sup>2</sup>Trademark of The Clorox Company.

Diaphragm valves with the above liners may have different temperature capabilities than shown here, depending on the diaphragm material being used. Please see page 98-101 for maximum temperatures of diaphragm materials.

NR = Not recommended

Corrosive Stream	PP		PVDF		PTFE / PFA	
	F	C	F	C	F	C
Dichloroacetic acid	125	50	125	50	450	230
Dichloroethane	75	25	175	80	450	230
Dichloroethylene	125	50	225	110	450	230
Dichloropropionic acid	--	--	125	50	450	230
Diesel fuels	75	25	275	135	450	230
Diethanol amine	150	65	NR	NR	450	230
Diethyl amine (aqueous)	75	25	75	25	450	230
Diethyl ether	NR	NR	125	50	450	230
Diethyl malonate	--	--	NR	NR	450	230
Diethylene glycol ethers	150	65	200	95	450	230
Diethylene triamine	125	50	125	50	450	230
Diglycolic acid	75	25	75	25	450	230
Dimethanolamine	150	65	NR	NR	450	230
Dimethyl acetamide	125	50	NR	NR	450	230
Dimethyl amine (aqueous)	75	25	75	25	450	230
Dimethyl aniline	NR	NR	75	25	450	230
Dimethyl formamide	125	50	NR	NR	450	230
Dimethyl phthalate	75	25	75	25	450	230
Dimethyl sulfate	--	--	75	25	450	230
Dimethyl sulfoxide	--	--	NR	NR	450	230
Diocetyl phthalate	NR	NR	75	25	450	230
Diphenyl oxide			125	50	450	230
Dipropylene glycol methyl ether	150	65	75	25	450	230
Disodium phosphate	200	95	200	95	450	230
Distilled water	212	100	212	100	212	100
Divinyl benzene	--	--	125	50	450	230
DOWANOL <sup>1</sup> glycol ethers	150	65	200	95	450	230
Epichlorohydrin	125	50	NR	NR	450	230
Ethyl acetate	125	50	NR	NR	450	230
Ethyl acetoacetate	NR	NR	75	25	450	230
Ethyl acrylate	75	25	75	25	450	230
Ethyl alcohol	175	80	275	135	450	230
Ethyl benzene (acidic)	NR	NR	125	50	450	230
Ethyl chloride	NR	NR	275	135	450	230
Ethyl chloroacetate	125	50	75	25	450	230
Ethyl cyanoacetate	125	50	75	25	450	230
Ethyl ether	NR	NR	125	50	450	230
Ethylene bromide	NR	NR	275	135	450	230
Ethylene chloride	NR	NR	275	135	450	230
Ethylene chlorohydrin	125	50	75	25	450	230
Ethylene diamine	150	65	75	25	450	230
Ethylene dibromide	75	25	225	110	450	230
Ethylene dichloride	75	25	275	135	450	230
Ethylene glycol	125	50	275	135	450	230
Ethylene oxide (5% aqueous)	NR	NR	200	95	450	230
Ethylene trichloride	NR	NR	275	135	450	230
Fatty acids	150	65	275	135	450	230
Ferric chloride	200	95	275	135	450	230
Ferric chloride + HCL	175	80	275	135	450	230

<sup>1</sup>Trademark of The Dow Chemical Company.

Diaphragm valves with the above liners may have different temperature capabilities than shown here, depending on the diaphragm material being used. Please see page 98-101 for maximum temperatures of diaphragm materials.

NR = Not recommended

Corrosive Stream	PP		PVDF		PTFE / PFA	
	F	C	F	C	F	C
Ferric nitrate	200	95	275	135	450	230
Ferric sulfate	200	95	275	135	450	230
Ferrous chloride	200	95	275	135	450	230
Ferrous chloride + HCL	175	80	275	135	450	230
Ferrous nitrate	200	95	275	135	450	230
Ferrous sulfate	200	95	275	135	450	230
Fish solubles	75	25	150	65	450	230
Fluorine (gaseous)	NR	NR	75	25	NR	NR
Fluoroboric acid	150	65	275	135	450	230
Fluorosilicic acid	150	65	275	135	450	230
Formaldehyde (37%)	175	80	125	50	450	230
Formaldehyde (50%)	175	80	125	50	450	230
Formic acid	125	50	250	120	450	230
FREON <sup>1</sup> Fluorocarbons	NR	NR	200	95	450	230
Fructose	225	110	275	135	450	230
Fruit juices, pulp	225	110	200	95	450	230
Fuel oil	75	25	275	135	450	230
Furfural	NR	NR	75	25	450	230
Gallic acid	175	80	75	25	450	230
Gas (manufactured)	150	65	275	135	450	230
Gas (natural)	150	65	275	135	450	230
Gasoline (leaded)	75	25	275	135	450	230
Gasoline (unleaded)	75	25	275	135	450	230
Gelatin	175	80	250	120	450	230
Gin	200	95	200	95	450	230
Glucose	225	110	275	135	450	230
Glycerin	225	110	275	135	450	230
Glycerol triacetate	--	--	--	--	450	230
Glycine (saturated)	--	--	75	25	450	230
Glycolic acid	150	65	75	25	450	230
Heptane	NR	NR	275	135	450	230
Hexane	75	25	275	135	450	230
Hydrazine dihydrochloride	--	--	75	25	450	230
Hydriodic acid	200	95	275	135	450	230
Hydrobromic acid (10%)	225	110	275	135	450	230
Hydrobromic acid (50%)	175	80	275	135	450	230
Hydrochloric acid (10%)	200	95	275	135	450	230
Hydrochloric acid (20%)	200	95	275	135	450	230
Hydrochloric acid (35%)	200	95	275	135	450	230
Hydrocyanic acid	150	65	275	135	450	230
Hydrofluoric acid (100%)	NR	NR	200	95	450	230
Hydrofluoric acid (20%)	200	95	250	120	450	230
Hydrofluoric acid (30%)	200	95	250	120	450	230
Hydrofluoric acid (37%)	200	95	250	120	450	230
Hydrofluoric acid (48%)	200	95	225	110	450	230
Hydrofluoric acid (60%)	200	95	200	95	450	230
Hydrofluorosilicic acid	150	65	275	135	450	230
Hydrogen	225	110	275	135	450	230
Hydrogen chloride (dry gas)	225	110	275	135	450	230

<sup>1</sup>Trademark of E.I. duPont de Nemours & Company, Inc.

Diaphragm valves with the above liners may have different temperature capabilities than shown here, depending on the diaphragm material being used. Please see page 98-101 for maximum temperatures of diaphragm materials.

NR = Not recommended

Corrosive Stream	PP		PVDF		PTFE / PFA	
	F	C	F	C	F	C
Hydrogen cyanide	NR	NR	NR	NR	450	230
Hydrogen fluoride gas	75	25	200	95	450	230
Hydrogen peroxide (3-8%) <sup>1</sup>	NR	NR	200	95	450	230
Hydrogen peroxide (30%) <sup>1</sup>	NR	NR	200	95	450	230
Hydrogen peroxide (90%) <sup>1</sup>	NR	NR	70	20	450	230
Hydrogen sulfide (dry)	175	80	275	135	450	230
Hydrogen sulfide (water sol.)	175	80	225	110	450	230
Hydrogen sulfide (wet)	175	80	225	110	450	230
Hydroquinone	150	65	250	120	450	230
Hypo (sodium thiosulfate)	150	65	275	135	450	230
Hypochlorous acid	150	65	75	25	450	230
Idoform	75	25	200	95	450	230
Iodine (10%)	75	25	150	65	450	230
Iodine (gas)	--	--	150	65	450	230
Isopropyl alcohol	200	95	150	65	450	230
Isopropyl ether	NR	NR	125	50	450	230
Isopropylamine	150	65	125	50	450	230
Jet fuel (JP4, JP5)	75	25	200	95	450	230
Kerosene	75	25	275	135	450	230
Lactic acid (80%)	150	65	125	50	450	230
Lard oil	125	50	275	135	450	230
Lauric acid	175	80	225	110	450	230
Lauryl chloride	175	80	250	120	450	230
Lauryl sulfate (saturated)	175	80	250	120	450	230
Lead acetate	175	80	275	135	450	230
Lemon oil	75	25	250	120	450	230
Lime sulfur solution	150	65	200	95	450	230
Linoleic acid	125	50	250	120	450	230
Linseed oil	150	65	275	135	450	230
Lithium bromide (saturated)	--	--	225	110	450	230
Lubricating oil	125	50	275	135	450	230
m-Bromotoluene	NR	NR	175	80	450	230
Magnesium carbonate	225	110	275	135	450	230
Magnesium chloride	225	110	275	135	450	230
Magnesium hydroxide	225	110	275	135	450	230
Magnesium nitrate	225	110	275	135	450	230
Magnesium sulfate (10%-saturated)	225	110	275	135	450	230
Maleic acid (10%)	150	65	250	120	450	230
Maleic anhydride	75	25	75	25	450	230
Malic acid	125	50	250	120	450	230
Manganese sulfate (10% to saturated)	75	25	250	120	450	230
Manganese sulfate (saturated)	75	25	--	--	450	230
Mercuric chloride	175	80	250	120	450	230
Mercuric cyanide	150	65	250	120	450	230
Mercuric nitrate	175	80	275	135	450	230
Mercury	150	65	275	135	450	230
Methacrylic acid	--	--	125	50	450	230
Methane	75	25	275	135	450	230
Methane sulfonic acid	125	50	200	95	450	230

<sup>1</sup>Stainless steel shell is necessary.

Diaphragm valves with the above liners may have different temperature capabilities than shown here, depending on the diaphragm material being used. Please see page 98-101 for maximum temperatures of diaphragm materials.

NR = Not recommended

Corrosive Stream	PP		PVDF		PTFE / PFA	
	°F	°C	°F	°C	°F	°C
Methoxy ethyl oleate	--	--	--	--	450	230
Methyl alcohol	200	95	275	135	450	230
Methyl bromide	NR	NR	275	135	450	230
Methyl CELLOSOLVE ethers	75	25	200	95	450	230
Methyl chloride	NR	NR	275	135	450	230
Methyl chloroform	NR	NR	125	50	450	230
Methyl chloromethyl ether	--	--	75	25	450	230
Methyl cyanoacetate	125	50	--	--	450	230
Methyl ethyl ketone	125	50	NR	NR	450	230
Methyl isobutyl ketone	75	25	NR	NR	450	230
Methyl methacrylate	225	110	125	50	450	230
Methyl salicylate	125	50	150	65	450	230
Methyl sulfuric acid	125	50	125	50	450	230
Methyl trichlorosilane	--	--	150	65	450	230
Methylene bromide	--	--	175	80	450	230
Methylene chloride	NR	NR	125	50	450	230
Methylene iodide	--	--	200	95	450	230
Milk	225	110	250	120	450	230
Mineral oil	125	50	275	135	450	230
Molasses	225	110	150	65	450	230
mono-Bromobenzene	NR	NR	150	65	450	230
Monoethanolamine	175	80	NR	NR	450	230
Morpholine	150	65	75	25	450	230
Naphtha	125	50	275	135	450	230
Naphthalene	225	110	200	95	450	230
Nickel chloride	200	95	275	135	450	230
Nickel nitrate	225	110	275	135	450	230
Nickel sulfate	200	95	275	135	450	230
Nicotinic acid	125	50	250	120	450	230
Nitric acid (30%) <sup>1</sup>	150	65	125	50	450	230
Nitric acid (5-10%) <sup>1</sup>	175	80	175	80	450	230
Nitric acid (50%) <sup>1</sup>	75	25	125	50	450	230
Nitric acid (70%-fuming)	NR	NR	NR	NR	450	230
Nitrobenzene <sup>1</sup>	125	50	75	25	450	230
Nitrogen	225	110	275	135	450	230
Nitrogen dioxide	--	--	175	80	450	230
Nitroglycerine	--	--	125	50	450	230
Nitromethane	125	50	125	50	450	230
Nitrous acid (10%)	NR	NR	200	95	450	230
Nitrous oxide	75	25	NR	NR	450	230
Nonyl isophenyl sulfide	--	--	--	--	450	230
o-Dichlorobenzene	NR	NR	150	65	450	230
o-Phenylphenol	--	--	175	80	450	230
Octane	75	25	275	135	450	230
Oils and fats	175	80	250	120	450	230
Oleic acid	150	65	250	120	450	230
Oleum	NR	NR	NR	NR	450	230
Oxalic acid	125	50	125	50	450	230

<sup>1</sup>304 Stainless steel shell should be considered.

Diaphragm valves with the above liners may have different temperature capabilities than shown here, depending on the diaphragm material being used. Please see page 98-101 for maximum temperatures of diaphragm materials.

NR = Not recommended



Corrosive Stream	PP		PVDF		PTFE / PFA	
	F	C	F	C	F	C
Oxygen	125	50	275	135	450	230
Ozone	NR	NR	225	110	450	230
Palmitic acid	175	80	250	120	450	230
Perchloric acid (10%)	150	65	200	95	450	230
Perchloric acid (70%)	75	25	125	50	450	230
Perchloroethylene	NR	NR	275	135	450	230
Petrolatum	175	80	275	135	450	230
Petroleum ether	NR	NR	150	65	450	230
Petroleum oils	125	50	250	120	450	230
Phenol (5%)	200	95	175	80	450	230
Phenol (90-100%)	150	65	125	50	450	230
Phenolsulfonic acid (65%)	--	--	125	50	450	230
Phenyl glycine potassium salt	--	--	--	--	450	230
Phenylhydrazine	NR	NR	125	50	450	230
Phenylhydrazine hydrochloride	--	--	125	50	450	230
Phosgene (wet or dry)	NR	NR	175	80	450	230
Phosphoric acid (10-50%)	225	110	275	135	450	230
Phosphoric acid (50-85%)	225	110	225	110	450	230
Phosphorus oxychloride	NR	NR	NR	NR	450	230
Phosphorus pentachloride	125	50	200	95	450	230
Phosphorus pentoxide	175	80	200	95	450	230
Phosphorus trichloride	NR	NR	200	95	450	230
Phosphorus-red	75	25	75	25	450	230
Phosphorus-yellow	75	25	--	--	450	230
Photographic solutions	150	65	275	135	450	230
Phthalic acid	75	25	200	95	450	230
Picric acid	75	25	75	25	450	230
Plating solutions (Brass)	150	65	200	95	450	230
Plating solutions (Cadmium)	150	65	200	95	450	230
Plating solutions (Chrome)	125	50	200	95	450	230
Plating solutions (Copper)	150	65	200	95	450	230
Plating solutions (Gold)	150	65	200	95	450	230
Plating solutions (Iron)	150	65	200	95	450	230
Plating solutions (Lead)	150	65	200	95	450	230
Plating solutions (Nickel)	150	65	200	95	450	230
Plating solutions (Rhodium)	150	65	200	95	450	230
Plating solutions (Silver)	150	65	200	95	450	230
Plating solutions (Speculum)	150	65	200	95	450	230
Plating solutions (Tin)	150	65	200	95	450	230
Plating solutions (Zinc)	150	65	200	95	450	230
Polyglycol	175	80	200	95	450	230
Polyvinyl acetate	75	25	275	135	450	230
Polyvinyl alcohol	125	50	275	135	450	230
Potassium acetate	125	50	275	135	--	--
Potassium aluminum chloride	225	110	275	135	450	230
Potassium aluminum sulfate 50%	225	110	275	135	450	230
Potassium bicarbonate	225	110	200	95	450	230
Potassium borate	200	95	275	135	450	230
Potassium bromate	225	110	275	135	450	230
Potassium bromide	225	110	275	135	450	230

Diaphragm valves with the above liners may have different temperature capabilities than shown here, depending on the diaphragm material being used. Please see page 98-101 for maximum temperatures of diaphragm materials.

NR = Not recommended

Corrosive Stream	PP		PVDF		PTFE / PFA	
	F	C	F	C	F	C
Potassium carbonate	225	110	275	135	450	230
Potassium chlorate (aqueous) <sup>1</sup>	225	110	200	95	450	230
Potassium chloride	200	95	275	135	450	230
Potassium chromate	225	110	275	135	450	230
Potassium cyanide	225	110	275	135	450	230
Potassium dichromate	225	110	275	135	450	230
Potassium ferricyanide (saturated)	225	110	275	135	450	230
Potassium ferrocyanide	225	110	275	135	450	230
Potassium fluoride	175	80	275	135	450	230
Potassium hydroxide (10%)	225	110	NR	NR	450	230
Potassium hydroxide (50%)	175	80	NR	NR	450	230
Potassium hydroxide (60-90%)	150	65	NR	NR	450	230
Potassium hypochlorite <sup>1</sup>	175	80	200	95	450	230
Potassium iodide	125	50	225	110	450	230
Potassium nitrate	175	80	275	135	450	230
Potassium perborate	225	110	275	135	450	230
Potassium perchlorate	150	65	200	95	450	230
Potassium permanganate (saturated)	150	65	250	120	450	230
Potassium persulfate	--	--	125	50	450	230
Potassium sulfate	225	110	275	135	450	230
Potassium sulfide	175	80	275	135	450	230
Propane	75	25	275	135	450	230
Propyl alcohol	175	80	150	65	450	230
Propylene chlorohydrin	175	80	NR	NR	450	230
Propylene dibromide	75	25	200	95	450	230
Propylene dichloride	75	25	200	95	450	230
Propylene glycol	125	50	150	65	450	230
Propylene oxide	125	50	NR	NR	450	230
Pyridene	150	65	NR	NR	450	230
Salicyladehyde	75	25	125	50	450	230
Salicylic acid	125	50	200	95	450	230
Sea water	212	100	212	100	212	100
Selenic acid (aqueous)	75	25	150	65	450	230
Silicone oil	150	65	250	120	450	230
Silver cyanide	200	95	275	135	450	230
Silver nitrate	225	110	275	135	450	230
Soap solution (saturated)	175	80	125	50	450	230
Sodium acetate	200	95	275	135	450	230
Sodium benzoate	200	95	275	135	450	230
Sodium bicarbonate	225	110	275	135	450	230
Sodium bisulfate	225	110	275	135	450	230
Sodium bisulfite	225	110	275	135	450	230
Sodium borate (borax)	175	80	275	135	450	230
Sodium bromide	225	110	275	135	450	230
Sodium carbonate	225	110	275	135	450	230
Sodium chlorate	200	95	250	120	450	230
Sodium chloride	225	110	275	135	450	230
Sodium chlorite solutions	175	80	250	120	450	230
Sodium cyanide (saturated)	175	80	275	135	450	230

<sup>1</sup>If decomposition to free chlorine is possible (pH<7), PP should not be used. PVDF is the preferred liner.

Diaphragm valves with the above liners may have different temperature capabilities than shown here, depending on the diaphragm material being used. Please see page 98-101 for maximum temperatures of diaphragm materials.

NR = Not recommended

Corrosive Stream	PP		PVDF		PTFE / PFA	
	°F	°C	°F	°C	°F	°C
Sodium dichromate	225	110	200	95	450	230
Sodium dodecyl benzene (30%)	--	--	250	120	450	230
Sodium ferricyanide	150	65	275	135	450	230
Sodium ferrocyanide	150	65	275	135	450	230
Sodium fluoride (saturated)	175	80	275	135	450	230
Sodium hydroxide (<10%) <sup>1</sup> & <sup>2</sup>	200	95	100	40	450	230
Sodium hydroxide (>50%)	150	65	NR	NR	450	230
Sodium hydroxide (10-50%)	200	95	NR	NR	450	230
Sodium hydroxide (50%)	200	95	NR	NR	450	230
Sodium hypochlorite (>15%) <sup>3</sup>	125	50	125	50	450	230
Sodium hypochlorite (5%) <sup>3</sup>	125	50	250	120	450	230
Sodium hypochlorite (5-15%) <sup>3</sup>	125	50	175	80	450	230
Sodium iodide	175	80	275	135	450	230
Sodium nitrate	175	80	275	135	450	230
Sodium nitrite	175	80	275	135	450	230
Sodium peroxide	125	50	200	95	450	230
Sodium phosphate	175	80	275	135	450	230
Sodium silicate	225	110	275	135	450	230
Sodium sulfate	225	110	275	135	450	230
Sodium sulfide	150	65	275	135	450	230
Sodium sulfite	150	65	275	135	450	230
Sodium thiosulfate (Hypo)	150	65	275	135	450	230
Sour crude oil	150	65	275	135	450	230
Stannic chloride	225	110	275	135	450	230
Stannous chloride (50%)	175	80	275	135	450	230
Steam	NR	NR	275	135	450	230
Stearic acid	175	80	275	135	450	230
Stoddard solvent	125	50	250	120	450	230
Styrene monomer	--	--	175	80	450	230
Succinic acid	150	65	150	65	450	230
Sugar syrup	200	95	275	135	450	230
Sulfamic acid	175	80	125	50	450	230
Sulfur	150	65	250	120	450	230
Sulfur chloride	75	25	75	25	450	230
Sulfur dichloride	75	25	75	25	450	230
Sulfur dioxide (dry or wet gas)	125	50	175	80	450	230
Sulfur dioxide (liquid)	--	--	175	80	450	230
Sulfur trioxide (liquid or gas)	NR	NR	NR	NR	450	230
Sulfuric acid (>98%-fuming)	NR	NR	NR	NR	450	230
Sulfuric acid (10%)	225	110	250	120	450	230
Sulfuric acid (16%)	200	95	250	120	450	230
Sulfuric acid (30%)	200	95	250	120	450	230
Sulfuric acid (60%)	200	95	250	120	450	230
Sulfuric acid (60%-sat. with CL <sub>2</sub> )	75	25	200	95	450	230
Sulfuric acid (85%)	175	80	200	95	450	230
Sulfuric acid (93%)	NR	NR	200	95	450	230
Sulfuric acid (96%)	NR	NR	175	80	450	230
Sulfuric acid (98%)	NR	NR	150	65	450	230

<sup>1</sup>Solution pH should not exceed 11.0.

<sup>2</sup>If mercury amalgam is present, rating drops to NR.

<sup>3</sup>If decomposition to free chlorine is possible (pH<7), PP should not be used. PVDF is the preferred liner.

Diaphragm valves with the above liners may have different temperature capabilities than shown here, depending on the diaphragm material being used. Please see page 98-101 for maximum temperatures of diaphragm materials.

NR = Not recommended

Corrosive Stream	PP		PVDF		PTFE / PFA	
	F	C	F	C	F	C
Sulfurous acid	175	80	200	95	450	230
Sulfuryl fluoride	NR	NR	75	25	450	230
Tall oil	175	80	275	135	450	230
Tallow	150	65	275	135	450	230
Tannic acid	150	65	225	110	450	230
Tartaric acid	150	65	250	120	450	230
Tetraethyl lead	75	25	275	135	450	230
Tetrahydrofuran	NR	NR	NR	NR	450	230
Thionyl chloride	NR	NR	NR	NR	450	230
Thread cutting oils	125	50	200	95	450	230
Titanium tetrachloride	NR	NR	150	65	450	230
Toluene	NR	NR	175	80	450	230
Toluene (25%) + kerosene (75%)	NR	NR	175	80	450	230
Tomato juice	225	110	200	95	450	230
Toxaphene (90%) + xylene (10%)	NR	NR	--	--	450	230
Tributyl citrate	--	--	--	--	450	230
Tributyl phosphate	125	50	75	25	450	230
Trichloroacetic acid (10%)	150	65	200	95	450	230
Trichloroacetic acid (100%)	125	50	125	50	450	230
Trichloroethylene	NR	NR	275	135	450	230
Trichloromethane (chloroform)	NR	NR	125	50	450	230
Tricresyl phosphate	125	50	NR	NR	450	230
Triethanolamine	150	65	125	50	450	230
Triethylamine	75	25	125	50	450	230
Trimethyl propane	75	25	200	95	450	230
Trimethylamine	--	--	150	65	450	230
Tripropylene glycol methyl ether	150	65	--	--	450	230
Trisodium phosphate	175	80	275	135	450	230
Turpentine	NR	NR	275	135	450	230
Urea	225	110	250	120	450	230
Urine	200	95	275	135	450	230
Vegetable oil	125	50	275	135	450	230
Vinegar	200	95	225	110	450	230
Vinyl acetate	75	25	250	120	450	230
Vinyl chloride monomer (liquid)	NR	NR	200	95	450	230
Vinylidene chloride (monomer)	NR	NR	200	95	450	230
Water-acid mine	212	100	212	100	212	100
Water-deionized	212	100	212	100	212	100
Water-demineralized	212	100	212	100	212	100
Water-distilled	212	100	212	100	212	100
Water-fresh	212	100	212	100	212	100
Water-salt	212	100	212	100	212	100
Water-sewage	212	100	212	100	212	100
Whiskey	225	110	225	110	450	230
Wine	200	95	225	110	450	230
Xylene	NR	NR	200	95	450	230
Zinc chloride	175	80	275	135	450	230
Zinc hydrosulfite (10%)	--	--	200	95	450	230
Zinc nitrate	200	95	275	135	450	230
Zinc sulfate	200	95	275	135	450	230

Diaphragm valves with the above liners may have different temperature capabilities than shown here, depending on the diaphragm material being used. Please see page 98-101 for maximum temperatures of diaphragm materials.

NR = Not recommended