

Flowserve Corporation has been a producer of non-metallic equipment for the handling of corrosive chemicals for over thirty-five years beginning with the introduction of a cast epoxy formulation, DURCON®6. The plastic line has expanded over the years to include PTFE, PFA, and UHMWPE lined equipment, as well as the structural composite materials DURCON 730 and Polycrete. Additionally, many corrosion resistant elastomeric materials, like FKM, CSM, and EPDM, are used in Flowserve's products.

The corrosion chart in this bulletin is intended to be a guide for the selection of the proper corrosion resistant, non-metallic material(s) for a given application. The ratings may be used as a guide for material selection but should not be considered a guarantee or blanket recommendation. The ratings are the compilation of extensive laboratory tests, field tests, operating experience, and best judgment. Many factors must be considered when selecting a non-metallic material for a corrosive service. These include: concentration of chemicals present; harmful contaminants; velocity; solids in suspension; type of equipment; continuous or intermittent operation; maximum, minimum, and normal operating temperature; and any other peculiarities characteristic of the solution.

Non-Metallics

Designation	Symbol	Description	Max. Service Temperature*
PTFE	PTFE	Tetrafluoroethylene polymer	400°F (204°C)
PFA	PFA	Perfluoroalkoxy polymer	400°F (204°C)
FEP	FEP	Fluorinated ethylene propylene	300°F (149°C)
ETFE	ETFE	Ethylene/tetrafluoroethylene copolymer	300°F (149°C)
DURCON 6	DU6	Silica filled epoxy	215°F (102°C)
730	D730	Glass fiber reinforced epoxy	225°F (107°C)
UHMWPE	UHMWPE	Ultra high molecular weight polyethylene	200°F (93°C)
PP	PP	Polypropylene	185°F (85°C)
PSZ	DIPZ	Partially stabilized zirconia	662°F (350°C)
Polycrete	PCVE	Silica filled epoxy vinyl ester	225°F (107°C)
Viton**	FKM	Vinylidene fluoride hexafluoropropylene	275°F (135°C)
Hypalon**	CSM	Chlorosulfonated polyethylene	275°F (135°C)
EPDM	EPDM	Ethylene propylenediene	275°F (135°C)

*Consult Durco bulletins for temperature limits of specific products.

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Nominal Mechanical and Physical Properties at 73°F (23°C)

Designation	Specific Gravity	Flexural Strength		Flexural Modulus		Tensile Strength		Ultimate Elongation %	Coefficient of Linear Thermal Expansion cm/cm/°C x 10 ⁻⁵
		psi	MPa	psi x 10 ⁵	MPa x 10 ²	psi	MPa		
PTFE	2.18	—	—	0.70	4.8	4,000	28	300	12.6 (21-60°C)
PFA	2.15	—	—	1.00	6.9	4,000	28	300	12.06 (21-100°C)
FEP	2.16	—	—	0.90	6.2	3,000	21	290	8.9 (23-75°C)
ETFE	1.70	8,000	56	1.70	11.7	6,000	42	150-300	13 (0-100°C)
DURCON 6	1.98	20,000	138	20.0	138	13,000	90	—	3.6 (23-177°C)
730	1.90	24,000	165	22.0	152	—	—	—	—
UHMWPE	0.94	—	—	1.00	6.9	5,000	34	350	18-21.6 (-18-100°C)
PP	0.91	7,614	52.5	1.95	13.5	3,626	25	15	9 (21-60°C)
PSZ	5.74	115,000	790	—	—	65,000	450	—	1.02 (25-400°C)
Polycrete	2.09	—	—	—	—	—	—	—	—

Corrosion Resistance

	PTFE/PA/PEP	ETFE	D730	Durcon 6	UHMWPE	PP	PSZ	Polybase	FKM	CSM	EPDM
Acetaldehyde CH ₃ CHO	All ^D	All ^D	10 ^A	10 ^A	All ^A	NR	10 ^A	NR	NR	NR	All ^A
Acetate Solvents	All ^D	All ^D	10 ^B	All ^D	A ^B	NR	All ^D	–	NR	NR	10 ^B
Acetic Acid CH ₃ COOH	All ^E	All ^E	All ^B	All ^B	0-6 ^B	0-9 ^B	All ^D	0-5 ^D , +	NR	0-8 ^A	0-3 ^B
Acetic Anhydride (CH ₃ CO) ₂ O	10 ^E	10 ^E	10 ^B	10 ^B	10 ^A	10 ^A	10 ^D	NR	NR	All ^C	NR
Acetone CH ₃ COCH ₃	10 [*]	10 ^B	10 ^A	10 ^A	10 [*]	All ^B	10 ^A	NR	NR	NR	All ^C
Aluminum Chloride AlCl ₃	All ^E	All ^E	All ^D	All ^D	All ^C	All ^C	All ^D	All ^D	All ^D	All ^A	All ^C
Aluminum Nitrate Al(NO ₃) ₃	All ^E	All ^E	All ^D	All ^D	–	All ^C	–	All ^D	All ^D	All ^A	All ^C
Aluminum Sulfate Al ₂ (SO ₄) ₃	All ^E	All ^E	All ^D	All ^D	All ^B	All ^C	0-6 ^D	All ^D	All ^B	All ^D	All ^B
Ammonia – Anhydrous NH ₃	10 ^E	10 ^E	10 ^B	10 ^B	10 ^A	All ^C	–	–	NR	NR	All ^B
Ammonium Bifluoride NH ₄ HF ₂	All ^E	All ^E	NR	NR	–	10 ^C	–	10 ^C	All ^B	–	All ^B
Ammonium Carbonate (NH ₄)HCO ₃ • (NH ₄)CO ₂ NH ₂	All ^E	All ^E	All ^D	–	All ^B	All ^C	–	All ^C	All ^D	NR	All ^C
Ammonium Chloride NH ₄ Cl	All ^E	All ^E	All ^D	All ^D	All ^B	All ^C	All ^D	All ^D	All ^D	All ^A	All ^C
Ammonium Fluoride NH ₄ F	All ^E	All ^E	NR	NR	0-2 ^B	All ^C	–	All ^C	All ^B	–	All ^B
Ammonium Hydroxide NH ₄ OH	All ^E	All ^E	0-3 ^B	NR	All ^B	All ^C	All ^D	0-3 ^B	All ^A	All ^C	All ^C
Ammonium Nitrate NH ₄ NO ₃	All ^D	All ^D	0-2 ^D	All ^D	All ^C	All ^C	All ^D	All ^D	All ^C	All ^A	All ^C
Ammonium Phosphate (NH ₄) ₂ HPO ₄ or NH ₄ H ₂ PO ₄	All ^E	All ^E	All ^B	All ^D	–	10 ^C	All ^D	All ^D	All ^C	All ^A	All ^C
Ammonium Sulfate (NH ₄) ₂ SO ₄	All ^E	All ^E	All ^D	All ^D	0-4 ^B	All ^C	All ^D	All ^D	All ^C	All ^D	All ^C
Aniline Dyes	All ^E	All ^D	–	NR	10 ^B	10 ^B	All ^D	NR	–	10 ^A	10 ^C
Aniline Hydrochloride C ₆ H ₅ NH ₂ • HCl	All ^D	1 ^B	NR	NR	NR	NR	All ^D	All ^D	NR	NR	NR
Antimony Trichloride SbCl ₃	All ^D	All ^D	10 ^C	All ^D	1 ^A , 10 ^B	10 ^B	All ^D	–	10 ^B	–	10A
Arsenic Acid (H ₃ AsO ₄) ₂ • H ₂ O	10 ^D	10 ^E	10 ^B	10 ^B	10 ^B	10 ^C	All ^D	All ^B	10 ^C	10 ^C	10 ^C
Barium Chloride BaCl ₂	All ^E	All ^E	All ^C	All ^D	All ^B	All ^C	All ^D	All ^D	All ^D	All ^A	All ^C
Barium Sulfate BaSO ₄	All ^E	All ^E	All ^D	All ^D	All ^B	10 ^A	All ^D	All ^D	All ^D	All ^A	All ^C

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3 = 30% weight percent

4 = 40% weight percent
5 = 50% weight percent
6 = 60% weight percent
7 = 70% weight percent

8 = 80% weight percent
9 = 90% weight percent
10 = 100% weight percent
All = All Concentrations

NR = Not Recommended
A = 68°F max. (20°C)
B = 122°F max. (50°C)
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D = 212°F max. (100°C)
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* = To boiling
+ = Blue or Red Polybase may be suitable

Examples: 0-4^B From 0 to 40% (weight percent) the material listed is acceptable to 122°F (50°C).
8^C At 80% the material listed is acceptable to 167°F (75°C).
All^D All concentrations to 212°F (100°C) are acceptable.
1^D 10^D Material is acceptable at 10% to 212°F (100°C) and 100% to 212°F (100°C).

Corrosion Resistance

continued

	PTFE/PA/PEP	ETFE	D730	Durcon 6	UHMWPE	PP	PSZ	Polybase	FKM	CSM	EPDM
Sodium Bisulfate NaHSO ₄	All ^E	All ^E	10 ^D	All ^D	All ^B	10 ^C	All ^D	All ^D	All ^D	All ^C	All ^C
Sodium Bisulfite NaHSO ₃	All ^E	All ^E	10 ^B	All ^D	All ^B	10 ^C	All ^D	All ^D	All ^D	All ^A	All ^C
Sodium Chlorate (pH ≥7) NaClO ₃	All ^E	All ^E	10 ^D	All ^D	All ^B	All ^C	All ^D	All ^D	All ^C	All ^B	All ^B
Sodium Chloride NaCl	All ^E	All ^E	All ^D	All ^D	All ^C	All ^C	All ^D	All ^D	All ^D	All ^B	All ^C
Sodium Cyanide NaCN	All ^E	All ^E	10 ^D	10 ^D	—	All ^C	—	All ^D	All ^C	All ^C	All ^C
Sodium Dichromate Na ₂ Cr ₂ O ₇	All ^E	All ^D	10 ^D	10 ^D	All ^B	—	All ^D	All ^D	2-10 ^A	2 ^B	2-10 ^A
Sodium Ferrocyanide Na ₃ Fe(CN) ₆	All ^E	All ^E	—	—	All ^B	All ^C	—	All ^D	10 ^B	10 ^A	10 ^B
Sodium Fluoride NaF	All ^E	All ^E	NR	NR	All ^B	All ^C	—	All ^C	All ^B	All ^A	All ^B
Sodium Hydroxide NaOH	All ^E	All ^B	0-3 ^B	NR	All ^C	All ^C	0-6*	0-5 ^C , +	0-4 ^A	All ^E	0-7 ^A
Sodium Hypochlorite NaOCl	All ^E	All ^E	—	—	All ^B	1 ^B	All ^D	0-2 ^C , +	0-2 ^A	0-2 ^C	0-2 ^A
Sodium Nitrate NaNO ₃	All ^E	All ^E	10 ^D	All ^D	All ^B	10 ^C	All ^D	All ^D	All ^D	All ^C	All ^C
Sodium Peroxide Na ₂ O ₂	All*	All ^E	0-5 ^A	0-5 ^A	1 ^A	10 ^C	0-1*	—	All ^D	All ^D	All ^B
Sodium Phosphate Na ₂ HPO ₄ (dibasic) NaH ₂ PO ₄ (monobasic)	All ^E	All ^E	NR	All ^D	—	10 ^C	All ^D	All ^D	All ^C	All ^A	All ^C
Sodium Silicate 2Na ₂ O • SiO ₂	All ^E	All ^E	10 ^C	10 ^C	All ^B	10 ^C	—	All ^D	All ^B	All ^A	All ^C
Sodium Sulfate Na ₂ SO ₄	All ^E	All ^E	10 ^D	All ^D	All ^B	All ^C	All ^D	All ^D	All ^D	All ^A	All ^C
Sodium Sulfide Na ₂ S	All ^E	All ^E	1 ^D	All ^D	All ^B	All ^C	All ^D	All ^D	All ^C	All ^A	All ^C
Sodium Sulfite Na ₂ SO ₃	All ^E	All ^E	1 ^D	All ^D	All ^B	All ^B	All ^D	All ^D	All ^B	All ^A	All ^B
Sodium Thiosulfate Na ₂ S ₂ O ₃ • 5HOH	All ^E	All ^E	All ^D	All ^D	10 ^B	—	All ^D	All ^D	—	10 ^A	10 ^A
Stannic Chloride SnCl ₄	All ^E	All ^E	All ^D	All ^D	All ^B	10 ^C	All ^D	All ^D	All ^B	NR	All ^B
Stannous Chloride SnCl ₄	All ^E	All ^E	10 ^B	All ^D	All ^B	All ^B	All ^D	All ^D	2 ^A	2 ^C	NR
Stearic Acid CH ₃ (CH ₂) ₁₆ COOH	All ^E	All ^E	10 ^B	10 ^B	10 ^B	NR	All ^D	All ^D	All ^B	NR	NR
Sulfur S	All ^D	All ^D	10 ^B	—	10 ^B	10 ^A	All ^D	—	10 ^E	10 ^E	10 ^E
Sulfur Chloride S ₂ Cl ₂	All ^E	—	All ^B	—	—	NR	All ^D	—	All ^B	NR	NR
Sulfur Dioxide SO ₂	All ^E	All ^D	10 ^A	10 ^A	10 ^B	NR	All ^D	—	—	NR	—
Sulfuric Acid, 0-50% H ₂ SO ₄	All*	All ^E	0-1 ^B	0-5 ^B	0-5 ^B	0-5 ^C	0-5*	0-5 ^D , +	0-5 ^E	0-5 ^E	1 ^B

Corrosion Resistance

continued

	PTFE/PA/PEP	ETFE	D730	Durcon 6	UHMWPE	PP	PSZ	Polybase	FKM	CSM	EPDM
Methyl Ethyl Ketone $\text{CH}_3\text{COCH}_2\text{CH}_3$	All*	All ^D	NR	NR	NR	10 ^A	–	NR	NR	NR	All ^C
Nickel Chloride NiCl_2	All ^E	All ^E	All ^D	All ^D	All ^B	All ^C	All ^D	All ^D	All ^D	All ^B	All ^C
Nickel Nitrate $\text{Ni}(\text{NO}_3)_2$	All ^E	All ^E	10 ^C	10 ^C	All ^B	All ^C	10 ^A	All ^D	All ^E	All ^A	All ^D
Nickel Sulfate NiSO_4	All ^E	All ^E	10 ^C	All ^D	All ^B	All ^C	10 ^C	All ^D	All ^E	All ^C	All ^C
Nitric Acid HNO_3	All*	0-5 ^B	1 ^B	NR	NR	NR	All ^D	0-2 ^B , +	0-5 ^B	0-3 ^A	NR
Nitric Acid + 3-5% HF	All ^D	–	NR	NR	NR	NR	NR	All ^B , +	–	–	–
Nitrobenzene $\text{C}_6\text{H}_5\text{NO}_2$	All ^E	All ^E	NR	NR	NR	NR	10 ^A	NR	–	NR	10 ^A
Oleic Acid $\text{CH}_3(\text{CH}_2)_7\text{CH} : \text{CH}(\text{CH}_2)_7\text{COOH}$	All ^E	All ^E	10 ^D	10 ^D	All ^A	10 ^A	All ^D	All ^D	10 ^D	NR	NR
Oleum $\text{H}_2\text{SO}_4 + \text{SO}_3$	All ^E	All ^B	NR	NR	NR	NR	All*	NR	–	NR	NR
Oxalic Acid $(\text{HOOC})_2 \cdot 2\text{H}_2\text{O}$	All ^D	All ^D	10 ^D	10 ^D	All ^B	10 ^B	All ^D	All ^B	0-5 ^C	All ^B	All ^E
Phenol $\text{C}_6\text{H}_5\text{OH}$	All ^D	All ^D	NR	All ^D	NR	1 ^D	All ^D	NR	All ^D	NR	NR
Phosphoric Acid H_3PO_4	All*	All ^E	0-5 ^B	0-5 ^B	All ^B	0-9 ^C	All ^D	All ^D	6 ^D 10 ^B	0-8 ^D	All ^B
Phthalic Acid $\text{C}_6\text{H}_4(\text{COOH})_2$	All ^E	All ^D	–	–	5 ^B	10 ^A	All ^D	All ^D	–	–	–
Picric Acid $\text{C}_6\text{H}_2(\text{NO}_2)_3\text{OH}$	All ^D	All ^B	10 ^A	10 ^A	–	–	All ^D	NR	1 ^B	1 ^A	1 ^B
Potassium Chloride KCl	All ^E	All ^E	All ^D	All ^D	All ^B	All ^C	All ^D	All ^D	All ^D	All ^B	All ^C
Potassium Hydroxide KOH	All ^E	All ^B	All ^C	0-3 ^B	All ^B	All ^B	0-5 ^C	0-5 ^C	NR	All ^B	All ^C
Potassium Iodide KI	All ^E	–	–	–	10 ^A	10 ^C	All ^D	All ^B	10 ^D	10 ^A	10 ^C
Potassium Nitrate KNO_3	All ^E	All ^E	All ^D	All ^D	All ^B	All ^C	All ^D	All ^D	All ^D	All ^C	All ^C
Potassium Sulfate K_2SO_4	All ^E	All ^E	1 ^C , 10 ^C	All ^D	All ^B	10 ^C	All ^D	All ^D	All ^D	All ^C	All ^C
Propane C_3H_8	All ^E	All ^E	10 ^B	10 ^B	10 ^B	NR	–	–	All ^B	NR	NR
Sea Water	10 ^E	10 ^E	10 ^B	10 ^A	10 ^B	10 ^C	10 ^D	10 ^D	All ^D	All ^C	All ^C
Sodium Acetate $\text{NaC}_2\text{H}_3\text{O}_2$	All ^E	All ^E	10 ^D	10 ^D	All ^B	10 ^C	–	All ^D	NR	NR	All ^C
Sodium Bicarbonate NaHCO_3	All ^E	All ^E	2 ^D , 10 ^C	All ^D	All ^B	10 ^C	All ^D	All ^D	All ^D	All ^C	All ^C

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Corrosion Resistance

continued

	PTFE/PA/PEP	ETFE	D730	Durcon 6	UHMWPE	PP	PSZ	Polybase	FKM	CSM	EPDM
Benzaldehyde C ₆ H ₅ CHO	All ^E	All ^E	10 ^B	10 ^B	NR	10 ^A	–	NR	NR	NR	NR
Benzene C ₆ H ₆	10 ^D	10 ^D	10 ^B	10 ^D	NR	NR	10 ^A	NR, +	NR	NR	NR
Benzoic Acid C ₆ H ₅ COOH	All ^E	All ^E	10 ^D	10 ^D	All ^B	NR	All ^D	All ^D	All ^C	NR	NR
Black Liquor (slurry)	–	–	–	–	10 ^B	NR	All ^D	All ^D	10 ^D	10 ^A	10 ^C
Boric Acid H ₃ BO ₃	All ^E	All ^E	All ^C	All ^C	All ^B	10 ^C	All ^D	All ^D	All ^C	All ^D	All ^B
Brine, pH 3-7	All ^E	All ^E	All ^D	All ^D	All ^D	–	All ^D	All ^D	All ^B	All ^B	All ^B
Brine, pH 7-12	All ^E	All ^E	All ^D	All ^D	All ^D	–	All ^D	All ^D	All ^B	All ^B	All ^B
Bromine, dry Br	10 ^D	10 ^B	NR	NR	NR	NR	All ^D	–	All ^C	NR	NR
Bromine, wet Br	All ^D	All ^D	NR	NR	–	NR	All ^D	–	All ^B	NR	NR
Butane CH ₃ CH ₂ CH ₂ CH ₃	All ^E	All ^E	10 ^B	10 ^B	10 ^B	NR	–	–	All ^C	All ^A	NR
Butyric Acid CH ₃ CH ₂ CH ₂ COOH	All ^D	All ^D	NR	NR	NR	All ^A	10 [*]	0-5 ^D	All ^B	NR	All ^B
Calcium Carbonate CaCO ₃	All ^E	All ^E	10 ^C	10 ^C	1 ^B	10 ^C	–	All ^D	All ^E	All ^A	All ^B
Calcium Chlorate Ca(ClO ₃) ₂	All ^E	All ^E	All ^B	All ^B	10 ^B	–	–	All ^D	All ^B	All ^A	All ^B
Calcium Chloride CaCl ₂	All ^E	All ^E	All ^D	All ^D	All ^B	All ^C	All ^D	All ^D	All ^B	All ^A	All ^C
Calcium Hydroxide Ca(OH) ₂	All ^E	All ^E	0-5 ^C	0-5 ^C	All ^B	All ^B	–	All ^D	All ^D	All ^D	All ^C
Calcium Hypochlorite Ca(OCl) ₂	All ^E	All ^E	NR	–	–	All ^B	All ^D	All ^C	All ^A	0-3 ^D	All ^E
Calcium Nitrate Ca(NO ₃) ₂	All ^E	All ^E	10 ^D	10 ^D	0-5 ^B	10 ^C	10 ^A	All ^D	All ^D	All ^A	All ^C
Calcium Sulfate CaSO ₄	All ^E	All ^E	10 ^D	10 ^D	10 ^B	10 ^C	0-1 [*]	All ^D	All ^B	All ^A	All ^C
Carbon Disulfide CS ₂	All ^D	All ^B	–	All ^D	NR	NR	All ^D	NR	All ^B	NR	NR
Carbonic Acid H ₂ CO ₃	All ^E	All ^E	10 ^C	All ^D	All ^B	10 ^C	All ^D	–	10 ^D	10 ^C	10 ^C
Carbon Tetrachloride CCl ₄	All ^D	All ^B	NR	All ^D	NR	NR	All ^D	10 ^C	All ^C	NR	NR
Chlorinated Water	All ^D	–	–	–	All ^A	NR	All ^D	All ^D	NR	NR	NR
Chlorine Dioxide ClO ₂	All ^E	All ^E	NR	–	–	NR	All ^D	All ^C	All ^A	NR	NR
Chlorine, Wet Cl ₂	–	–	NR	NR	NR	NR	All ^D	10 ^D	All ^A	NR	NR
Chloroacetic Acid CH ₂ ClCOOH	All ^E	All ^D	NR	NR	NR	10 ^B	All ^D	0-5 ^B	NR	All ^E	All ^B

Corrosion Resistance

continued

	PTFE/PA/PEP	ETFE	D730	Durcon 6	UHMWPE	PP	PSZ	Polybase	FKM	CSM	EPDM
Chlorobenzene C ₆ H ₅ Cl	All ^D	All ^D	All ^B	All ^B	NR	NR	10*	NR	All ^D	NR	NR
Chloroform CHCl ₃	All ^D	All ^D	NR	All ^A	NR	NR	–	NR	All ^C	NR	NR
Chlorosulfonic Acid ClSO ₂ OH	All ^D	All ^A	NR	NR	NR	NR	10*	NR	NR	NR	NR
Chromic Acid CrO ₃	All ^E	All ^B	NR	NR	0-8 ^B	NR	All ^D	0-2 ^B , +	All ^A	0-5 ^C	NR
Citric Acid	All ^D	All ^D	All ^D	All ^D	10 ^C	All ^C	All ^D	All ^D	All [*]	10 ^A	All [*]
Copper Nitrate Cu(NO ₃) ₂	All ^E	All ^E	10 ^D	All ^D	10 ^B	10 ^C	All ^D	All ^D	All ^D	All ^C	All ^C
Copper Sulfate CuSO ₄	All ^E	All ^E	All ^D	All ^D	10 ^B	All ^C	All ^D	All ^D	All ^D	All ^C	All ^C
Cupric Chloride CuCl ₂	All ^E	All ^E	All ^D	All ^D	All ^B	All ^C	All ^D	–	All ^D	All ^C	All ^C
Cuprous Chloride CuCl or Cu ₂ Cl ₂	All ^D	All ^D	–	All ^D	All ^B	–	All ^D	–	–	–	–
Cyclohexane C ₆ H ₁₂	All ^E	All ^E	10 ^B	10 ^B	10 ^A	NR	–	10 ^B	All ^D	NR	NR
Diethyl Ether (C ₂ H ₅) ₂ O	All ^E	All ^D	NR	NR	NR	NR	–	NR	NR	NR	NR
Ethyl Acetate CH ₃ COOC ₂ H ₅	All ^E	All ^C	10 ^C	10 ^C	10 ^A	–	10 ^A	NR	NR	NR	All ^B
Ethyl Alcohol C ₂ H ₅ OH	All ^E	All ^E	All [*]	All ^A	All ^B	10 ^C	10 ^A	All ^B	All ^A	All ^D	All ^D
Ethyl Benzene C ₆ H ₅ C ₂ H ₅	All ^D	–	NR	NR	NR	NR	–	10 ^A	All ^A	NR	NR
Ethyl Chloride C ₂ H ₅ Cl	All ^E	All ^E	–	–	NR	NR	10 ^A	NR	All ^A	NR	NR
Ethylene Dichloride ClCH ₂ CH ₂ Cl	All ^D	All ^D	All ^B	All ^D	NR	NR	All ^D	NR	All ^B	NR	NR
Fatty Acids	All ^E	All ^E	10 ^D	All ^D	10 ^B	10 ^B	All ^D	All ^D	10 ^B	NR	NR
Ferric Chloride FeCl ₃	All ^E	All ^E	All ^D	All ^D	All ^B	All ^C	All ^D	All ^D	All ^C	All ^D	All ^C
Ferric Nitrate Fe(NO ₃) ₃	All ^E	All ^E	0-5 ^D	10 ^D	–	10 ^C	All ^D	–	All ^D	All ^B	All ^C
Ferric Sulfate Fe ₂ (SO ₄) ₃	All ^E	All ^E	10 ^D	All ^D	10 ^B	10 ^C	All ^D	All ^D	All ^C	All ^B	All ^B
Ferrous Chloride FeCl ₂	All ^E	All ^E	0-2 ^D	0-2 ^D	All ^B	NR	All ^D	All ^D	All ^C	All ^C	All ^C
Ferrous Sulfate FeSO ₄	All ^E	–	10 ^D	All ^D	10 ^B	10 ^C	All ^D	All ^D	All ^C	All ^C	All ^C
Formaldehyde HCHO	All ^E	All ^D	10 ^A	All ^D	0-5 ^B	All ^C	All ^D	All ^C	All ^C	All ^A	All ^B

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8 = 80% weight percent
9 = 90% weight percent
10 = 100% weight percent
All = All Concentrations

NR = Not Recommended
A = 68°F max. (20°C)
B = 122°F max. (50°C)
C = 167°F max. (75°C)

D = 212°F max. (100°C)
E = 257°F max. (125°C)
* = To boiling
+ = Blue or Red Polybase may be suitable

Examples: 0- 4^B From 0 to 40% (weight percent) the material listed is acceptable to 122°F (50°C).
8^C At 80% the material listed is acceptable to 167°F (75°C).
All^D All concentrations to 212°F (100°C) are acceptable.
1^D 10^D Material is acceptable at 10% to 212°F (100°C) and 100% to 212°F (100°C).

Corrosion Resistance

continued

	PTFE/PA/PEP	ETFE	D730	Durcon 6	UHMWPE	PP	PSZ	Polybase	FKM	CSM	EPDM
Formic Acid HCOOH	All ^C	All ^E	0-2 ^A	0-2 ^A	All ^B	All ^C	All ^D	1 ^C	NR	All ^C	All ^D
Furfural C ₄ H ₃ OCHO	All ^E	All ^D	10 ^C	10 ^C	10 ^A	NR	All ^A	NR	NR	NR	All ^B
Gasoline	All ^E	All ^E	10 ^B	10 ^B	NR	NR	–	10 ^C	All ^C	NR	NR
Glycerol (Glycerine) C ₃ H ₅ (OH) ₃	All ^E	All ^E	10 ^D	10 ^D	All ^C	10 ^C	All ^D	10 ^D	All ^E	All ^D	All ^C
Heptane CH ₃ (CH ₂) ₅ CH ₃	All ^D	All ^E	10 ^B	10 ^B	All ^A	NR	–	10 ^D	All ^C	All ^A	NR
Hydrobromic Acid HBr	0-5 ^D	0-5 ^D	0-4 ^C	0-5 ^B	0-5 ^B	0-5 ^C	0-5 [*]	0-5 ^C	–	2 ^D , 10 ^A	–
Hydrochloric Acid HCL	All [*]	All [*]	All [*]	All ^D	All ^B	NR	All ^D	All ^C , +	2 ^D , 4 ^B	2 ^D , 4 ^B	2 ^B , 4 ^A
HCl Waste Pickle Liquor (no solids)	All ^D	All ^D	All ^C	All ^C	All ^B	NR	All ^D	–	–	–	–
Hydrofluoric Acid HF	All [*]	All ^D	–	–	0-7 ^B	0-6 ^C	NR	0-2 ^B , +	0-5 ^C	All ^A	0-5 ^A
Hydrofluosilicic Acid H ₂ SiF ₆	All ^D	All ^D	–	–	All ^B	0-5 ^C	–	0-4 ^B	All ^C	All ^E	All ^B
Hydrogen Peroxide H ₂ O ₂	All ^D	All ^B	0-5 ^B	0-5 ^A	All ^B	NR	All ^D	3 ^B	All ^A	All ^A	NR
Hydrogen Sulfide H ₂ S	All ^E	All ^E	All ^C	All ^C	10 ^B	All ^C	–	All ^C	NR	All ^A	All ^B
Iodine, Dry I	All ^E	All ^D	NR	NR	NR	NR	All ^D	10 ^C	All ^B	All ^B	10 ^A
Isopropyl Alcohol (CH ₃) ₂ CHOH	All [*]	All ^B	All [*]	All [*]	10 ^B	10 ^C	–	All ^B	All ^C	All ^D	All ^C
Kerosene	10 ^E	10 ^E	10 ^C	10 ^C	NR	10 ^A	–	10 ^C	All ^C	NR	NR
Lactic Acid CH ₃ CHOHCOOH	All ^E	All ^D	10 ^C	10 ^C	All ^B	All ^B	All ^D	All ^D	All ^C	All ^A	All ^C
Lead Acetate Pb(C ₂ H ₃ O ₂) ₂	All ^E	All ^E	10 ^D	All ^D	All ^B	All ^B	All ^D	All ^D	All ^B	NR	All ^D
Magnesium Chloride MgCl ₂	All ^E	All ^E	All ^D	All ^D	All ^B	10 ^C	All ^D	All ^D	All ^C	All ^C	All ^C
Magnesium Sulfate MgSO ₄	All ^E	All ^E	All ^D	All ^D	All ^B	All ^C	All ^D	All ^D	All [*]	All ^C	All ^C
Maleic Acid COOH(CH) ₂ COOH	All ^E	All ^E	10 ^B	10 ^B	All ^B	1 ^B	All ^D	10 ^D	10 ^B	NR	10 ^B
Malic Acid COOHCH ₂ CH(OH)COOH	All ^E	All ^E	–	–	5 ^B	–	All ^D	–	10 ^A	NR	NR
Manganese Chloride MnCl ₂	All ^E	All ^D	–	All ^D	10 ^A	10 ^B	All ^D	All ^D	10 ^A	NR	NR
Mercuric Chloride HgCl ₂	All ^E	All ^E	–	All ^D	All ^B	10 ^C	All ^D	10 ^D	All ^B	All ^A	All ^B
Mercuric Nitrate Hg(NO ₃) ₂	All ^E	All ^E	10 ^A	10 ^A	10 ^A	–	All ^D	–	10 ^A	10 ^A	10 ^A
Methyl Alcohol CH ₃ OH	All [*]	All [*]	10 ^B	10 ^B	10 ^B	10 ^C	All [*]	NR	NR	All ^B	All ^D

Corrosion Resistance

continued

	PTFE/PFA/PEP	ETFE	D730	Durcon 6	UHMWPE	PP	PSZ	Polybase	FKM	CSM	EPDM
Sulfuric Acid, 50-100% H ₂ SO ₄	All*	All ^E	NR	5-7 ^B	5-10 ^A	5-9 ^B	5-9 ^A	5-7 ^C , +	5-10 ^E	5-10 ^C	NR
Sulfurous Acid H ₂ SO ₃	All ^D	All ^D	0-2 ^D	—	1 ^A , 10 ^A	10 ^C	10 ^A	1 ^B	NR	All ^C	NR
Tannic Acid C ₇₆ H ₅₂ O ₄₆	All ^E	All ^E	10 ^C	All ^D	1 ^B	1 ^B , 10 ^B	All ^D	All ^D	All ^C	All ^C	All ^C
Tartaric Acid COOH(CHOH) ₂ COOH	All ^E	All ^E	1 ^B , 10 ^B	10 ^C	10 ^B	10 ^B	All ^D	All ^D	All ^A	All ^D	NR
Thionyl Chloride SOCl ₂	All ^E	All ^D	NR	—	NR	NR	—	NR	All ^A	—	NR
Titanium Tetrachloride TiCl ₄	All ^E	All ^D	10 ^A	—	—	NR	All ^D	—	All ^C	NR	NR
Toluene C ₆ H ₅ CH ₃	10 ^E	10 ^D	10 ^B	10 ^B	NR	NR	10 ^D	10 ^A	NR	NR	NR
Tributyl Phosphate (C ₄ H ₉) ₃ PO ₄	All ^E	All ^B	—	—	10 ^B	—	—	10 ^B	NR	NR	NR
Trichloroethylene CHCl : CCl ₂	All ^E	All ^E	10 ^B	10 ^B	NR	NR	—	NR	All ^A	NR	NR
Triethanolamine (HOCH ₂ CH ₂) ₃ N	All*	—	10 ^B	10 ^B	10 ^A	10 ^C	—	10 ^B	NR	All ^C	All ^A
Vinyl Acetate CH ₃ COOCH : CH ₂	All ^E	All ^E	10 ^B	10 ^B	NR	—	10 ^C	—	All ^A	NR	All ^A
Xylene C ₆ H ₄ (CH ₃) ₂	All ^E	All ^D	10 ^B	10 ^B	NR	NR	10 ^C	10 ^A	All ^B	NR	NR
Zinc Chloride ZnCl ₂	All ^E	All ^E	All ^D	All ^D	All ^B	All ^C	All ^D	0-7 ^D	All ^D	All ^D	All ^C
Zinc Sulfate ZnSO ₄	All ^E	All ^E	All ^D	All ^D	All ^B	All ^C	All ^D	All ^D	All ^D	All ^B	All ^C

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For further assistance with materials recommendations, call the Materials Engineering Department at [REDACTED] or fax your request to [REDACTED]. You may also e-mail us at [REDACTED]@flowserve.com.



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