



FYBROC® NM WSB SERIES

ALL NON-METALLIC VALVES FOR CORROSIVE APPLICATIONS

CORROSION RESISTANCE GUIDE

Chemical Environment	Concentration (%)	NM WSB Series Valves					
		Body		Disc		Seat & Seal	
		Proprietary Fybroc® Black Polypropylene (PP)		Polyvinylidene Fluoride (PVDF)		FKM - Fluorocarbon (Viton®)	
		C	F	C	F	C	F
Acetaldehyde	40	60	140	NR		CF	
	100	40	104	NR		CF	
Acetamide	Sat'd	20	68	NR		40	104
Acetic Acid	10	80	176	100	212	CF	
	20	60	140	60	140	CF	
	50	60	140	60	140	CF	
	80	40	104	40	104	CF	
Acetic Acid, Glacial	99	20	68	40	104	CF	
Acetic Anhydride	100	NR		NR		CF	
Acetone	10	80	176	60	140	20	68
Acetonitrile		NR		40	104	CF	
Acetophenone		20	68	NR		CF	
Acetyl Acetone		NR		NR		CF	
Acetyl Bromide		NR		60	140	CF	
Acetyl Chloride		40	104	20	68	CF	
Acetylene		60	140	80	176	80	176
Acrylonitrile		NR		20	68	CF	
Adipic Acid	Sat'd	60	140	120	248	80	176
Allyl Alcohol		40	104	80	176	60	140
Allyl Chloride		NR		20	68	CF	
Alum (Potassium Alum)	Sat'd	80	176	120	248	100	212
Aluminum Acetate	Sat'd	40	104	100	212	20	68
Aluminum Ammonium Sulfate	Sat'd	80	176	120	248	100	212
Aluminum Bromide	Sat'd	80	176	120	248	80	176
Aluminum Chloride	Sat'd	80	176	120	248	100	212
Aluminum Fluoride	Sat'd	80	176	120	248	100	212
Aluminum Hydroxide	Sat'd	80	176	120	248	80	176
Aluminum Nitrate	Sat'd	80	176	120	248	100	212

Chemical Environment	Concentration (%)	NM WSB Series Valves					
		Body		Disc		Seat & Seal	
		Proprietary Fybroc® Black Polypropylene (PP)		Polyvinylidene Fluoride (PVDF)		FKM - Fluorocarbon (Viton®)	
		C	F	C	F	C	F
Aluminum Sulfate	Sat'd	80	176	120	248	80	176
Amber Acid (Succinic Acid)	Sat'd	60	140	120	248	100	212
Aminoacetic Acids	10	40	104	80	176	CF	
Ammonia Gas	100	40	104	80	176	CF	
Ammonium Hydroxide	10	60	140	100	212	CF	
	40	60	140	60	140	CF	
Ammonium Acetate	Sat'd	60	140	100	212	60	140
Ammonium Bicarbonate		80	176	100	212	60	140
Ammonium Carbonate	Sat'd	80	176	120	248	100	212
Ammonium Chloride	Sat'd	60	140	120	248	100	212
Ammonium Fluoride	20	60	140	120	248	60	140
Ammonium Hydrogenfluoride	Sat'd	80	176	120	248	60	140
Ammonium Metaphosphate		80	176	120	248	80	176
Ammonium Nitrate		80	176	120	248	80	176
Ammonium Perchlorate	10	60	140	NR		CF	
Ammonium Persulfate		40	104	60	140	60	140
Ammonium Phosphate		80	176	120	248	80	176
Ammonium Sulfate	Sat'd	80	176	120	248	80	176
Ammonium Sulfide	Sat'd	80	176	120	248	CF	
Ammonium Sulfite		40	104	80	176	40	104
Amyl Acetate	100	NR		40	104	CF	
Amyl Alcohol	100	60	140	120	248	40	104
Amyl Borate	100	NR		120	248	20	68
Amyl Chloride	100	NR		120	248	CF	
Aniline	100	NR		20	68	20	68
Aniline Hydrochloride	100	NR		40	104	60	140
Animal Oil		80	176	120	248	60	140
Antimony Trichloride	Sat'd	40	104	NR		60	140
Antimony Trioxide		20	68	80	176	20	68
Aqua Regia		NR		80	176	CF	
Arsenic Acid	Sat'd	40	104	120	248	60	140
Asphalt		60	140	120	248	80	176
Barium Carbonate	Sat'd	80	176	120	248	120	248
Barium Chloride	Sat'd	80	176	120	248	120	248
Barium Hydroxide	Sat'd	80	176	60	140	120	248
Barium Nitrate	Sat'd	80	176	120	248	120	248
Barium Sulfate	Sat'd	80	176	120	248	120	248

Chemical Environment	Concentration (%)	NM WSB Series Valves					
		Body		Disc		Seat & Seal	
		Proprietary Fybroc® Black Polypropylene (PP)		Polyvinylidene Fluoride (PVDF)		FKM - Fluorocarbon (Viton®)	
		C	F	C	F	C	F
Barium Sulfide	Sat'd	80	176	120	248	120	248
Beer		80	176	120	248	80	176
Beet Sugar Liquor		80	176	120	248	80	176
Benzaldehyde	Sat'd	20	68	40	104	CF	
Benzene	100	NR		20	68	20	68
Benzene Sulfonic Acid	10	NR		20	68	60	140
Benzine	100	20	68	40	104	60	140
Benzoic Acid	100	40	104	100	212	80	176
Benzyl Alcohol	100	60	140	120	248	60	140
Benzyl Benzoate	Sat'd	NR		20	68	CF	
Benzyl Chloride	100	20	68	80	176	CF	
Bismuth Carbonate		60	140	100	212	80	176
Black Liquor	Sat'd	60	140	100	212	100	212
Bleaching Agent	5	NR		120	248	40	104
	12	NR		120	248	40	104
Borax	Sat'd	80	176	120	248	80	176
Boric Acid	Sat'd	80	176	120	248	80	176
Boron Trichloride		80	176	100	212	80	176
Bromic Acid	100	NR		100	212	CF	
Bromine Vapor	25	NR		80	176	60	140
Bromine Water	Sat'd	NR		80	176	40	104
Butadiene	Gas	NR		120	248	60	140
Butane	Gas	80	176	80	176	80	176
Butyl Acetate	100	NR		20	68	CF	
Butyl Acrylate	100	NR		20	68	CF	
Butyl Alcohol	100	80	176	120	248	20	68
Butyl Amine	Sat'd	NR		CF		20	68
Butyl Bromide	100	NR		120	248	CF	
Butyl Carbitol		NR		20	68	CF	
Butyl Cellosolve	100	NR		40	104	CF	
Butyl Chloride		NR		120	248	CF	
Butyl Ether		NR		40	104	CF	
Butyl Mercaptan	100	NR		80	176	CF	
Butyl Phenol		20	68	60	140	CF	
Butyl Phthalate		60	140	20	68	CF	
Butyl Stearate	100	NR		80	176	60	140
Butylene	100	NR		120	248	60	140
Butyn Diol		60	140	80	176	60	140
Butyric Acid	100	80	176	100	212	CF	

Chemical Environment	Concentration (%)	NM WSB Series Valves					
		Body		Disc		Seat & Seal	
		Proprietary Fybroc® Black Polypropylene (PP)		Polyvinylidene Fluoride (PVDF)		FKM - Fluorocarbon (Viton®)	
		C	F	C	F	C	F
Caffeine Citrate		NR		80	176	CF	
Calcium Acetate	Sat'd	60	140	100	212	80	176
Calcium Bisulfite (Calcium Hydrogen Sulfite)	Sat'd	80	176	100	212	80	176
Calcium Bromide	Sat'd	60	140	100	212	60	140
Calcium Carbonate	Sat'd	80	176	120	248	120	248
Calcium Chlorate	Sat'd	80	176	120	248	60	140
Calcium Chloride	Sat'd	80	176	120	248	100	212
Calcium Hydroxide	Sat'd	80	176	120	248	100	212
Calcium Hypochlorite	Sat'd	40	104	80	176	60	140
Calcium Nitrate	Sat'd	80	176	120	248	100	212
Calcium Sulfate	Sat'd	80	176	120	248	100	212
Calcium Sulfide	Sat'd	80	176	120	248	100	212
Cane Sugar Liquor & Sweetwater		80	176	120	248	100	212
Caprylic Acid (Octanoic Acid)		NR		120	248	CF	
Carbitol	100	NR		20	68	20	68
Carbon Dioxide (Wet)		80	176	120	248	120	248
Carbon Dioxide (Dry)		80	176	120	248	120	248
Carbon Disulfide	100	NR		20	68	CF	
Carbon Monoxide	Gas	80	176	120	248	100	212
Carbon Tetrachloride	100	NR		100	212	CF	
Carbonic Acid	Sat'd	60	140	120	248	80	176
Cascin		60	140	120	248	80	176
Castor Oil (Ricinus Oil)	100	80	176	120	248	60	140
Caustic Potash (Sodium Hydroxide)	25	80	176	40	104	CF	
Chloric Acid	20	NR		80	176	20	68
Chlorine Dioxide	100	NR		80	176	CF	
Chlorine Gas (Wet)		NR		120	248	CF	
Chlorine Gas (Dry)		NR		120	248	CF	
Chlorine Water	400 ppm	NR		120	248	CF	
Chloroform	100	NR		40	104	CF	
Chlorosulfonic Acid	100	NR		NR		CF	
Chromic Acid Anhydride	10	NR		100	212	60	140
	20	NR		100	212	60	140
	30	NR		60	140	60	140
	50	NR		60	140	40	104

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		Proprietary Fybroc® Black Polypropylene (PP)		Polyvinylidene Fluoride (PVDF)		FKM - Fluorocarbon (Viton®)	
		C	F	C	F	C	F
Chromic Potassium Alum	Sat'd	80	176	100	212	100	212
Citric Acid	10	80	176	100	212	100	212
Coconut Oil		80	176	120	248	60	140
Copper Acetate	Sat'd	20	68	100	212	60	140
Copper Botoflouride		20	68	120	248	20	68
Copper Carbonate	Sat'd	20	68	120	248	20	68
Copper Chloride	Sat'd	80	176	120	248	100	212
Copper Cyanide	Sat'd	60	140	80	176	20	68
Copper Flouride	Sat'd	40	104	100	212	40	104
Copper Nitrate		60	140	120	248	100	212
Copper Sulfate	Sat'd	80	176	120	248	100	212
Corn Oil		60	120	120	248	60	140
Corn Sugar/Syrup (Glucose)		80	176	120	248	100	212
Cottonseed Oil		60	140	120	248	60	140
Cresol	100	20	68	40	104	40	104
Creosote		20	68	60	140	20	68
Croton Aldehyde	100	20	68	40	104	20	68
Cryolite		80	176	120	248	CF	
Cupric Fluoride	Sat'd	60	140	120	248	60	140
Cuprous Chloride	Sat'd	80	176	120	248	100	212
Cyclohexane	100	NR		120	248	40	104
Cyclohexanol	100	20	68	60	140	40	104
Cyclohexanone	100	NR		40	104	CF	
Decalin	100	NR		80	176	20	68
Decane	100	NR		80	176	CF	
Dextrine	Sat'd	80	176	120	248	100	212
Dextrose (Glucose)		80	176	120	248	100	212
Diacetone Alcohol	100	20	68	20	68	CF	
Dibenzyl Ether	100	NR		20	68	CF	
Dibutyl Amine	100	NR		20	68	CF	
Dibutyl Ether	100	NR		40	104	CF	
Dibutyl Phthalate	100	NR		20	68	CF	
Dibutyl Sebacate		NR		20	68	CF	
Dichloroacetic Acid, (See Chloroacetic Acid)		NR		80	176	CF	
Dichlorobenzene (Ortho and Para)	100	NR		60	140	CF	
Dichloroethylene	100	NR		60	140	CF	

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		Proprietary Fybroc® Black Polypropylene (PP)		Polyvinylidene Fluoride (PVDF)		FKM - Fluorocarbon (Viton®)	
		C	F	C	F	C	F
Dichloroisopropyl Ether	100	NR		20	68	CF	
Diethylamine	100	20	68	CF		CF	
Diethylene Triamine		NR		20	68	CF	
Diethylether	100	NR		20	68	CF	
Diglycolic Acid	Sat'd	60	140	80	176	20	68
Diisobutyl Ketone	100	20	68	40	104	CF	
Diisobutylene	100	NR		120	248	60	140
Diisopropyl Ketone	100	NR		NR		CF	
Dimethyl Acetamide		NR		NR		CF	
Dimethyl Amine	100	20	68	NR		CF	
Dimethyl Aniline	100	NR		20	68		
Dimethyl Ether		NR		20	68	CF	
Dimethyl Formamide	100	40	104	NR		20	68
Dimethyl Phthalate		CF		CF		CF	
Dimethyl Sulfoxide		NR		NR		CF	
Dioctyl Phthalate		NR		20	68	20	68
Dioxane	100	CF		CF		CF	
Dioxolane		NR		CF		CF	
Dipotassium Phosphate							
Diphenyl Oxide	Sat'd	NR		NR		20	68
Disodium Hydrogen Ortho Phosphate		NR		120	248	CF	
Epichlorohydrin	100	CF		CF		CF	
Ethanol (Ethyl Alcohol)	100	40	104	120	248	80	176
Ethanolamine	100	NR		CF		CF	
Ethyl Acetate	100	CF		CF		CF	
Ethyl Acetoacetate	100	CF		20	68	CF	
Ethyl Acrylate	100	20	68	10	50	CF	
Ethyl Alcohol	100	40	104	120	248	80	176
Ethyl Benzene		NR		60	140	20	68
Ethyl Chloride		CF		120	248	60	140
Ethyl Ether	100	CF		CF		CF	
Ethyl Formate	100	NR		20	68	CF	
Ethyl Hexanol		NR		60	140	CF	
Ethyl Mercaptan	100	NR		20	68	60	140
Ethyl Monochloroacetate	100	60	140	20	68	CF	
Ethyl Oxalate		NR		CF		CF	
Ethylene Bromide	100	NR		80	176	CF	
Ethylene Chloride		CF		80	176	20	68

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		Proprietary Fybroc® Black Polypropylene (PP)		Polyvinylidene Fluoride (PVDF)		FKM - Fluorocarbon (Viton®)	
		C	F	C	F	C	F
Ethylene Chlorohydrin	100	20	68	CF		CF	
Ethylene Diamine	100	CF		CF		CF	
Ethylene Dichloride (See Dichloroethane)		CF		80	176	20	68
Ethylene Glycol	100	80	176	120	248	100	212
Ethylene Glycol Monoethyl Ether (Cellosolve)		40	104	80	176	CF	
Ethylene Oxide		NR		CF		CF	
Fatty Acids		20	68	120	248	20	68
Ferrous Chloride	Sat'd	80	176	120	248	80	176
Ferric Hydroxide	Sat'd	80	176	120	248	80	176
Ferric Nitrate	Sat'd	60	140	120	248	100	212
Ferric Sulfate		80	176	120	248	80	176
Ferric Sulfide		60	140	120	248	80	176
Ferrous Chloride	Sat'd	80	176	120	248	80	176
Ferrous Hydroxide	Sat'd	80	176	120	248	100	212
Ferrous Nitrate	Sat'd	80	176	120	248	100	212
Ferrous Sulfate		80	176	120	248	80	176
Fluoroboric Acid	100	60	140	120	248	80	176
Fluorine Gas (Wet)		CF		60	140	40	104
Fluosilicic Acid (Hydrosilicoflouric Acid)	50	60	140	120	248	100	212
Formaldehyde	35	60	140	40	104	80	176
	37	60	140	40	104	80	176
	50	60	140	40	104	CF	
Formic Acid	90	20	68	80	176	CF	
FREON 11 and 12 Refrigerant		NR		120	248	CF	
FREON 21 and 22 Refrigerant		NR		120	248	CF	
Flon Gas R113		NR		120	248	CF	
Flon Gas R114		NR		120	248	40	104
Fructose (Fruit Sugar)		80	176	120	248	100	212
Fruit Juice	100	80	176	120	248	80	176
Furan (Furfuran)		NR		CF		CF	
Furfural	100	CF		CF		CF	
Furfural Alcohol	100	NR		40	104	CF	
Gallic Acid		NR		20	68	20	68
Gasoline, Leaden		CF		80	176	CF	

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		Body		Disc		Seat & Seal	
		Proprietary Fybroc® Black Polypropylene (PP)		Polyvinylidene Fluoride (PVDF)		FKM - Fluorocarbon (Viton®)	
		C	F	C	F	C	F
Gasoline, Sour		CF		80	176	CF	
Gasoline, Unleaden		CF		80	176	CF	
Gelatin & Glue		80	176	120	248	100	212
Gin		40	104	80	176	100	212
Glycerol (Glycerine)	100	80	176	120	248	80	176
Glycolic Acid (Hydroxyacetic Acid)	Sat'd	60	140	CF		20	68
Heavy Oil		CF		60	140	CF	
Heptane		20	68	120	248	60	140
Hexane		20	68	120	248	20	68
Hexanoic Acid							
Hexyl Alcohol	100	20	68	60	140	100	212
Hydrazine	100	CF		CF		CF	
Hydrobromic Acid	20	80	176	100	212	60	140
	47	80	176	100	212	40	104
Hydrochloric Acid	25	80	176	100	212	60	140
	35	60	140	100	212	20	68
	38	60	140	80	176	CF	
Hydrocyanic Acid		60	140	120	248	20	68
Hydrofluoric Acid	10	80	176	100	212	100	212
	30	60	140	100	212	60	140
	40	60	140	100	212	60	140
	55	60	140	100	212	60	140
Hydrogen		80	176	80	176	80	176
Hydrogen Flouride (Anhydrous)		20	68	120	248	CF	
Hydrogen Peroxide	20	60	140	100	212	80	176
	35	20	68	100	212	40	104
	50	CF		80	176	CF	
Hydrogen Sulfide (Dry)		80	176	120	248	100	212
Hydrogen Sulfide, Aqueous		80	176	120	248	40	104
Hydrogen Sulfide, Dry Gas							
Hydroiodic Acid		40	104	120	248	40	104
Hydroquinone	Sat'd	80	176	100	212	40	104
Hypochlorous Acid	10	20	68	100	212	60	140
Iodine		20	68	80	176	CF	
Isobutyl Alcohol	100	60	140	100	212	20	68
Iso-octane		20	68	100	212	20	68
Isophorone	100	NR		NR		CF	

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		Proprietary Fybroc® Black Polypropylene (PP)		Polyvinylidene Fluoride (PVDF)		FKM - Fluorocarbon (Viton®)	
		C	F	C	F	C	F
Isopropyl Acetate	100	NR		NR		CF	
Isopropyl Alcohol (Isopropanol)	100	60	140	80	176	80	176
Isopropyl Chloride		NR		40	104	20	68
Isopropyl Ether	100	NR		20	68	CF	
Jet Fuel, Jp-4		CF		80	176	20	68
Jet Fuel, Jp-5		CF		100	212	20	68
Kerosene		20	68	100	212	20	68
Lacquer (Nitrocellulose Lacquer)		20	68	20	68	CF	
Lactic Acid	25	80	176	120	248	100	212
	80	60	140	80	176	80	176
Lard Oil		20	68	120	248	60	140
Lauric Acid		60	140	120	248	20	68
Lauroyl Chloride	100	NR		120	248	CF	
Lead Acetate	Sat'd	80	176	120	248	40	104
Lead Chloride		80	176	120	248	100	212
Lead Nitrate	Sat'd	80	176	100	212	100	212
Lead Sulfate		80	176	120	248	100	212
Lemon Oil		CF		120	248	20	68
Light Oil		20	68	100	212	60	140
Linolenic Acid		CF		120	248	20	68
Linolenic Oil		NR		120	248	20	68
Linseed Oil		60	140	120	248	40	104
Lithium Bromide	60	80	176	120	248	100	212
Lithium Chloride	Sat'd	80	176	100	212	80	176
Lithium Hydroxide		80	176	100	212	60	140
Lubricating Oil (ASTM 1)		CF		120	248	100	212
Lubricating Oil (ASTM 2)		CF		120	248	80	176
Lubricating Oil (ASTM 3)		CF		120	248	80	176
Machine Oil		20	68	100	212	60	140
Magnesium Carbonate		80	176	120	248	100	212
Magnesium Chloride	Sat'd	80	176	120	248	80	176
Magnesium Citrate		80	176	120	248	100	212
Magnesium Fluoride		80	176	100	212	100	212
Magnesium Hydroxide		80	176	80	176	100	212
Magnesium Nitrate		80	176	120	248	100	212
Magnesium Sulfate		80	176	120	248	100	212

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		Body		Disc		Seat & Seal	
		Proprietary Fybroc® Black Polypropylene (PP)		Polyvinylidene Fluoride (PVDF)		FKM - Fluorocarbon (Viton®)	
		C	F	C	F	C	F
Manganese Chloride (Manganous Chloride)		60	140	120	248	80	176
Manganese Sulfate (Manganous Sulfate)		80	176	120	248	100	212
Maleic Acid		80	176	120	248	40	104
Malic Acid		80	176	120	248	40	104
Mercuric Chloride		80	176	120	248	60	140
Mercuric Cyanide		80	176	120	248	60	140
Mercuric Nitrate		60	140	80	176	80	176
Mercuric Sulfate		80	176	120	248	100	212
Mercurous Nitrate	Sat'd	20	68	120	248	20	68
Mercury		80	176	120	248	80	176
Methane		40	104	120	248	80	176
Methane Sulfonic Acid	50	NR		80	176	CF	
Methyl Acetate	100	CF		20	68	CF	
Methyl Acrylate	100	NR		20	68	CF	
Methyl Alcohol	100	60	140	120	248	CF	
Methyl Amine		CF		CF		20	68
Methyl Bromide		CF		80	176	20	68
Methyl Cellosolve		20	68	60	140	CF	
Methyl Chloride		CF		120	248	CF	
Methyl Chloroform		CF		20	68	CF	
Methyl Ethyl Ketone		20	68	CF		CF	
Methyl Formate		NR		20	68	CF	
Methyl Isobutyl Carbinol		40	104	40	104	CF	
Methyl Isobutyl Ketone (MIBK)		20	68	CF		CF	
Methyl Isopropyl Ketone		NR		CF		CF	
Methyl Methacrylate		NR		20	68	CF	
Methyl Monochloroacetate	100	60	140	20	68	CF	
Methyl Salicylate		20	68	20	68	20	68
Methylene Bromide		NR		60	140	20	68
Methylene Chloride		CF		CF		CF	
Methylene Iodine		NR		60	140	20	68
Monochloroacetic Acid (See Chloroacetic Acid)	50	CF		80	176	CF	
Monochlorobenzene		CF		60	140	CF	
Monomethylaniline		NR		20	68	20	68

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		Body		Disc		Seat & Seal	
		Proprietary Fybroc® Black Polypropylene (PP)		Polyvinylidene Fluoride (PVDF)		FKM - Fluorocarbon (Viton®)	
		C	F	C	F	C	F
Morpholine	100	60	140	40	104	20	68
Naphtha		20	68	120	248	20	68
Naphthalene		CF		120	248	80	176
Natural Gas		NR		80	176	20	68
Nickel Acetate	Sat'd	80	176	80	176	CF	
Nickel Dichloride	Sat'd	80	176	80	176	100	212
Nickel Nitrate	Sat'd	80	176	120	248	120	248
Nickel Sulfate	Sat'd	60	140	120	248	80	176
Nicotine		40	104	20	68	CF	
Nicotinic Acid		80	176	120	248	CF	
Nitric Acid	10	60	140	120	248	100	212
	30	40	104	100	212	40	104
	50	20	68	80	176	20	68
	70	CF		40	104	CF	
	98	NR		20	68	CF	
Nitrobenzene		20	68	CF		CF	
Nitroethane		NR		20	68	CF	
Nitrogen Dioxide		20	68	80	176	20	68
Nitromethane		NR		40	104	CF	
Nitrotoluene	100	40	104	60	140	CF	
Nitrous Acid	10	CF		80	176	20	68
Nitrous Oxide		80	176	100	212	80	176
Octane		NR		120	248	20	68
Octene	100	NR		120	248	20	68
Oleic Acid		80	176	100	212	100	212
Oleum (Fuming Sulfuric Acid)		NR		NR		CF	
Olive Oils		80	176	120	248	80	176
Organic Phosphorus Series Insecticide (Sumition)		40	104	80	176	60	140
Oxalic Acid	20	80	176	60	140	CF	
	50	80	176	40	104	CF	
Oxygen Gas		20	68	80	176	80	176
Ozone	0.5 mg/l	CF		80	176	40	104
	7000 ppm	NR		CF		CF	
Palmitic Acid	100	60	140	120	248	20	68
Paraffin Oil		40	104	120	248	60	140

Chemical Environment	Concentration (%)	NM WSB Series Valves					
		Body		Disc		Seat & Seal	
		Proprietary Fybroc® Black Polypropylene (PP)		Polyvinylidene Fluoride (PVDF)		FKM - Fluorocarbon (Viton®)	
		C	F	C	F	C	F
Perchloroethylene	100	CF		100	212	40	104
Perchloric Acid	10	40	104	100	212	60	140
	70	CF		80	176	60	140
Petroleum Oils		CF		120	248	20	68
Phenol (Carbolic Acid)	100	40	104	40	104	20	68
Phenylhydrazine		CF		60	140	CF	
Phenylhydrazine Hydrochloride		20	68	60	140	40	104
Phosgene Gas		NR		NR		NR	
Phosphoric Acid	10	80	176	120	248	100	212
	50	60	140	120	248	100	212
	85	60	140	120	248	100	212
Phosphorus Oxychlorid (Phosphoryl Chloride)		NR		NR		NR	
Phosphorus Pentoxide	100	20	68	100	212	60	140
Phosphorous Red		20	68	120	248	CF	
Phosphorus Trichloride	100	NR		100	212	CF	
Phosphorous Yellow		20	68	120	248	CF	
Photographic Solution (Sodium Thiosulfate)		80	176	120	248	60	140
Phthalic Acid		20	68	80	176	20	68
Picric Acid (Alcoholic)	10	80	176	100	212	60	140
Polyethylene Glycol		60	140	120	248	100	212
Poly Aluminum Chloride		60	140	60	140	60	140
Polyvinyl Acetate (PVA)		20	68	120	248	20	68
Polyvinyl Alcohol		80	176	120	248	60	140
Potassium Acetate	Sat'd	20	68	120	248	20	68
Potassium Carbonate		80	176	120	248	100	212
Potassium Aluminum Silicate		80	176	120	248	100	212
Potassium Bicarbonate	Sat'd	80	176	120	248	100	212
Potassium Bichromate	Sat'd	60	140	120	248	100	212
Potassium Bisulfate (Potassium Hydrogen Sulfate)		80	176	120	248	100	212
Potassium Borate		80	176	120	248	100	212
Potassium Bromate		60	140	120	248	60	140
Potassium Bromide		80	176	100	212	100	212

Chemical Environment	Concentration (%)	NM WSB Series Valves					
		Body		Disc		Seat & Seal	
		Proprietary Fybroc® Black Polypropylene (PP)		Polyvinylidene Fluoride (PVDF)		FKM - Fluorocarbon (Viton®)	
		C	F	C	F	C	F
Potassium Chlorate (Aqueous)		60	140	120	248	60	140
Potassium Chloride		80	176	120	248	100	212
Potassium Chromate		60	140	100	212	100	212
Potassium Cyanide		60	140	120	248	80	176
Potassium Ferricyanide		80	176	120	248	60	140
Potassium Ferrocyanide		80	176	120	248	60	140
Potassium Flouride		80	176	120	248	100	212
Potassium Hypochlorite		60	140	60	140	60	140
Potassium Iodide		80	176	120	248	100	212
Potassium Nitrate		80	176	120	248	100	212
Potassium Perborate		80	176	80	176	CF	
Potassium Perchlorate		60	140	120	248	CF	
Potassium Permanganate	10	60	140	120	248	60	140
	25	60	140	120	248	60	140
Potassium Persulfate		60	140	120	248	60	140
Potassium Phosphate		80	176	100	212	100	212
Potassium Sulfate	100	80	176	120	248	100	212
Potassium Sulfide		80	176	120	248	100	212
Potassium Sulfite		60	140	100	212	60	140
Potassium Thiocyanate		60	140	120	248	80	176
Propane		40	104	120	248	20	68
Propionic Acid	50	60	140	60	140	CF	
Propyl Acetate	100	NR		20	68	CF	
Propyl Alcohol	100	60	140	60	140	100	212
Propyl Nitrate		NR		20	68	CF	
Propylene Dichloride		NR		40	104	CF	
Propylene Oxide		NR		CF		CF	
Pyridine		40	104	CF		CF	
Radium Chloride		60	140	100	212	60	140
Rhodium Chloride		40	104	80	176	60	140
Salicylaldehyde		NR		40	104	40	104
Salicylic Acid		NR		80	176	80	176
Salicic Acid		80	176	120	248	100	212
Silicon Oil		80	176	120	248	80	176
Silver Acetate		20	68	120	248	60	140
Silver Chloride		80	176	120	248	100	212
Silver Cyanide		80	176	120	248	60	140

Chemical Environment	Concentration (%)	NM WSB Series Valves					
		Body		Disc		Seat & Seal	
		Proprietary Fybroc® Black Polypropylene (PP)		Polyvinylidene Fluoride (PVDF)		FKM - Fluorocarbon (Viton®)	
		C	F	C	F	C	F
Silver Nitrate		80	176	120	248	80	176
Silver Sulfate		80	176	120	248	100	212
Sodium Acetate	Sat'd	80	176	120	248	20	68
Sodium Alum	Sat'd	80	176	120	248	100	212
Sodium Benzoate		80	176	120	248	CF	
Sodium Bicarbonate		80	176	120	248	100	212
Sodium Bichromate	Sat'd	40	104	120	248	100	212
Sodium Bisulfate		60	140	120	248	100	212
Sodium Bisulfite		60	140	120	248	100	212
Sodium Bromate		20	68	100	212	60	140
Sodium Bromide	Sat'd	80	176	120	248	60	140
Sodium Carbonate		80	176	120	248	100	212
Sodium Chlorate	Sat'd	40	104	120	248	60	140
Sodium Chloride	Sat'd	80	176	100	212	100	212
Sodium Chlorite	25	NR		20	68	CF	
Sodium Cyanide (Solution)		60	140	120	248	80	176
Sodium Dithionite	10	60	140	60	140	60	140
Sodium Ferricyanide	Sat'd	60	140	120	248	60	140
Sodium Ferrocyanide	Sat'd	60	140	120	248	60	140
Sodium Flouride		100	212	120	248	60	140
Sodium Hydroxide	5	60	140	CF		CF	
	10	60	140	CF		CF	
	15	60	140	40	104	CF	
	30	80	176	40	104	CF	
	50	80	176	20	68	CF	
Sodium Hypochlorite	3	CF		60	140	40	104
	5	CF		40	104	40	104
	7	CF		40	104	40	104
	10	CF		40	104	40	104
	13	CF		40	104	40	104
Sodium Iodine		40	104	40	104	60	140
Sodium Metasilicate		80	176	120	248	100	212
Sodium Nitrate	Sat'd	80	176	120	248	100	212
Sodium Nitrite	Sat'd	80	176	120	248	100	212
Sodiumpalmitate	5	20	68	120	248	CF	
Sodium Perborate		80	176	120	248	80	176
Sodium Perchlorate		60	140	120	248	80	176
Sodium Peroxide		80	176	120	248	80	176

Chemical Environment	Concentration (%)	NM WSB Series Valves					
		Body		Disc		Seat & Seal	
		Proprietary Fybroc® Black Polypropylene (PP)		Polyvinylidene Fluoride (PVDF)		FKM - Fluorocarbon (Viton®)	
		C	F	C	F	C	F
Sodium Persulfate	Sat'd	60	140	100	212	100	212
Sodium Phosphate	Acidity	60	140	120	248	100	212
	Alkaline	80	176	120	248	100	212
	Neutral	80	176	120	248	100	212
Sodium Silicofluoride		80	176	100	212	60	140
Sodium Sulfate	Sat'd	80	176	120	248	100	212
Sodium Sulfide		80	176	120	248	80	176
Sodium Sulfite		80	176	120	248	60	140
Sodium Thiocyanate		60	140	100	212	80	176
Soybean Oil		60	140	120	248	80	176
Stannic Chloride (Tin (IV) Chloride)		60	140	120	248	80	176
Stannous Chloride (Tin (II) Chloride)		60	140	120	248	80	176
Stearic Acid		20	68	120	248	40	104
Styrene		NR		20	68	20	68
Succinic Acid		60	140	100	212	80	176
Sulfamic Acid	20	60	140	80	176	CF	
Sulfonated Oil		20	68	20	68	20	68
Sulfur	100	NR		40	104	20	68
Sulfur Chloride		CF		40	104	20	68
Sulfur Dichloride		CF		40	104	20	68
Sulfur Dioxide	Dry	80	176	120	248	40	104
	Wet	60	140	120	248	60	140
Sulfur Trioxide		NR		NR		NR	
Sulfuric Acid	10	80	176	120	248	120	248
	30	80	176	120	248	120	248
	50	80	176	120	248	100	212
	60	80	176	100	212	80	176
	70	60	140	100	212	80	176
	80	40	104	80	176	60	140
	90	40	104	80	176	60	140
	93	40	104	80	176	40	104
	94	CF		60	140	20	68
	95	CF		60	140	20	68
	96	NR		60	140	CF	
	98	NR		40	104	CF	
	100	NR		NR		NR	

Chemical Environment	Concentration (%)	NM WSB Series Valves					
		Body		Disc		Seat & Seal	
		Proprietary Fybroc® Black Polypropylene (PP)		Polyvinylidene Fluoride (PVDF)		FKM - Fluorocarbon (Viton®)	
		C	F	C	F	C	F
Sulfurous Acid		80	176	100	212	60	140
Sulfuryl Chloride	100	NR		CF		20	68
Tall Oil		NR		120	248	60	140
Tannic Acid (Tannin)		80	176	120	248	20	68
Tartaric Acid (Dioxysuccinic Acid)		60	140	120	248	80	176
Tertiary Butyl Alcohol		20	68	80	176	20	68
Tetrachloroethane	100	CF		80	176	20	68
Tetraethyl Lead	100	20	68	120	248	60	140
Tetrahydrofuran	100	CF		CF		CF	
Tetralin (Tetrahydronaphthalene)	100	NR		40	104	20	68
Tetramethyl Ammonium Hydroxide	50	CF		40	104	CF	
Titanic Sulfate		80	176	120	248	40	104
Titanium Dioxide		80	176	120	248	100	212
Titanous Sulfate		80	176	120	248	40	104
Titanium Tetrachloride		20	68	NR		60	140
Toluene (Toluol)		20	68	40	104	20	68
Triacetin		NR		NR		CF	
Tributyl Phosphate		20	68	40	104	CF	
Trichloroacetic Acid		40	104	20	68	CF	
Trichloroethylene		CF		100	212	80	176
Tricresyl Phosphate	100	CF		20	68	20	68
Triethanolamine		20	68	20	68	CF	
Triethylamine		NR		CF		20	68
Trimethyl Propane		80	176	100	212	80	176
Turpentine		CF		120	248	80	176
Uranium Oxide		20	68	80	176	40	104
Urea	50	80	176	120	248	60	140
Urine		80	176	120	248	60	140
Vaseline (Petrolatum)		60	140	120	248	20	68
Vinegar		80	176	80	176	60	140
Vinyl Acetate		NR		120	248	CF	
Water (Potable Water)		80	176	120	248	80	176
Xylene		CF		100	212	CF	
Zinc Acetate		80	176	120	248	100	212
Zinc Bromide	Sat'd	60	140	80	176	60	140

Chemical Environment	Concentration (%)	NM WSB Series Valves					
		Body		Disc		Seat & Seal	
		Proprietary Fybroc® Black Polypropylene (PP)		Polyvinylidene Fluoride (PVDF)		FKM - Fluorocarbon (Viton®)	
		C	F	C	F	C	F
Zinc Chloride		80	176	120	248	100	212
Zinc Cyanide		20	68	60	140	20	68
Zinc Nitrate		80	176	120	248	100	212
Zinc Sulfate		80	176	120	248	100	212
COMBINATIONS							
Hydrochloric Acid	36	CF		80	176	CF	
Allyl Chloride	12 ppm						
Hydrochloric Acid	36	CF		80	176	CF	
Benzene	54 ppm						
Hydrochloric Acid	18	20	68	100	212	CF	
Chlorobenzene	490 ppm						
Hydrochloric Acid	36	CF		80	176	CF	
Chlorobenzene	890 ppm						
Hydrochloric Acid	25	80	176	100	212	60	140
Ferric Chloride	28						
Hydrochloric Acid	20	CF		120	248	60	140
Ferrous Chloride	28						
Hydrochloric Acid	25	CF		120	248	CF	
Ferrous Chloride	28						
Hydrochloric Acid	10	CF		120	248	CF	
Hydrofluoric Acid	15						
Hydrochloric Acid	18	CF		100	212	CF	
Hydrofluoric Acid	20						
Hydrochloric Acid	20 (100 g)	CF		100	212	20	68
Nitric Acid	50 (5 g)						
Hydrochloric Acid	36	CF		80	176	CF	
Orthochlorophenol	170 ppm						
Hydrochloric Acid	36	CF		60	140	CF	
Sulfuric Acid	98						
Hydrochloric Acid	20 (100 g)	60	140	120	248	80	176
Sulfuric Acid	5 (5 g)						
Hydrochloric Acid	36 (144 g)	40	104	100	212	CF	
Sulfuric Acid	98 (13 g)						
Chromic Anhydride	250 g/l	CF		120	248	CF	
Ammonium Fluoride	8 g/l						
Chromic Anhydride	220 g/l	CF		120	248	CF	
Chromium Sulfate	1 g/l						
Sodium Silicofluoride	12 g/l						

Chemical Environment	Concentration (%)	NM WSB Series Valves					
		Body		Disc		Seat & Seal	
		Proprietary Fybroc® Black Polypropylene (PP)		Polyvinylidene Fluoride (PVDF)		FKM - Fluorocarbon (Viton®)	
		C	F	C	F	C	F
Chromic Anhydride	350 g/l						
Sodium Silicofluoride	17 g/l	CF		120	248	CF	
Oxalic Acid	1 g/l						
Nitric Acid	15	40	104	120	248	CF	
Hydrofluoric Acid	3						
Nitric Acid	15	40	104	100	212	40	104
Hydrofluoric Acid	5						
Nitric Acid	15	CF		100	212	CF	
Hydrofluoric Acid	10						
Nitric Acid	15	CF		80	176	CF	
Hydrofluoric Acid	15						
Nitric Acid	5	20	68	80	176	CF	
Hydrofluoric Acid	20						
Nitric Acid	50 (100 g)	CF		120	248	CF	
Sulfuric Acid	50 (100 g)						
Sulfuric Acid	2	CF		120	248	20	68
Chromic Anhydride	1						
Sulfuric Acid	10	CF		120	248	20	68
Chromic Anhydride	10						
Sulfuric Acid	10	CF		100	212	CF	
Chromic Anhydride	25						
Sulfuric Acid	4 g/l	CF		100	212	CF	
Chromic Anhydride	400 g/l						
Sulfuric Acid	15 Parts	CF		120	248	40	104
Chromic Anhydride	5 Parts						
Phosphoric Acid	80 Parts						
Sulfuric Acid	2 Parts	CF		120	248	20	68
Chromic Anhydride	10 Parts						
Water	80 Parts						
Sulfuric Acid	0.7 g/l	CF		120	248	CF	
Chromic Anhydride	250 g/l						
Sodium Silicofluoride	1 g/l						
Sulfuric Acid	20	CF		100	212	20	68
Hydrofluoric Acid	10						
Sulfuric Acid	25	CF		80	176	CF	
Hydrofluoric Acid	15						
Sulfuric Acid	75						
Nitric Acid	5	CF		80	176	CF	
Chlorine Gas	Little						

Chemical Environment	Concentration (%)	NM WSB Series Valves					
		Body		Disc		Seat & Seal	
		Proprietary Fybroc® Black Polypropylene (PP)		Polyvinylidene Fluoride (PVDF)		FKM - Fluorocarbon (Viton®)	
		C	F	C	F	C	F
Sulfuric Acid	75	20	68	120	248	20	68
Sulfurous Acid	4						
Sulfuric Acid	150 g/l	60	140	120	248	60	140
Spelter (Zn)	80 g/l						
Manganese Sulfate	2 g/l						
Sodium Sulfate	200-250 g/l	60	140	60	140	100	212
Sulfuric Acid	200-250 g/l						
Formaldehyde	40-60 g/l						
Sulfuric Acid	98	NR		40	104	CF	
Phosphoric Acid	80						
Nitric Acid	100	NR		CF		CF	
Hydrofluoric Acid	55						
Phosphoric Acid	100						

NR: Not Recommended
CF: Consult Factory