



Chemical resistance guide for Polyester and Vinylester pipe systems

This guide is prepared to assist potential user of Fiberstrong pipe in determining the suitability of the pipe, which may be exposed to chemical & corrosive environments. The term resistance is used in the sense, which is commonly used in the pipe industry and not as the complete retention of all optical and mechanical properties. The information provided herewith is based on resin coupon testing, corrosion resistance testing, field experience, published literature, resin manufacturers data, case history information and judgment. It is assumed that pipe and pipefitting are installed and used in accordance with normally accepted standard practices. Service life in aggressive chemicals depends upon the presence, type and thickness of the corrosion barrier and total wall thickness, concentration of chemicals, service temperature, and duration of use. It should be noted that the combination of chemicals are sometimes more aggressive than the individual chemical. This guide is intended for use only as reference in evaluating Fiberstrong pipe. It should be used for a general indication of chemical resistance.



FUTURE PIPE INDUSTRIES

Sr. No.	CHEMICAL ENVIRONMENT	Conc. %	Maximum Service Temperature °F		
			Isophthalic Polyester Resin	Vinyl Ester (Bisphenol-A Epoxy resin base)	Vinyl Ester (Novolac Epoxy resin base)
1	Acetic Acid	10	149	210.2	210.2
2	Acetic Acid	25	125.6	210.2	210.2
3	Acetic Acid	50	89.6	179.6	179.6
4	Acetic Acid	75	NR	100.4	150.8
5	Acetic Acid, Glacial	100	NR	NR	100.4
6	Acetone	100	NR	NR	NR
7	Acrylic Acid	10	-	-	-
8	Acrylic Acid	25	NR	100.4	100.4
9	Acrylic Acid	100	NR	120.2	-
10	Alkyl Ether Amine Oxide Surfactant	--	NR	120.2	-
11	Alum	Saturated	249.8	210.2	249.8
12	Alum Potassium	All	159.8	210.2	249.8
13	Aluminum Chloride	All	120.2	210.2	249.8
14	Aluminum Chlorohydroxide	50	NR	210.2	210.2
15	Aluminum Citrate	Saturated	NR	199.4	-
16	Aluminum Fluoride	All	89.6	89.6	89.6
17	Aluminum Hydroxide	Saturated	NR	179.6	NR
18	Aluminum Nitrate	Saturated	NR	179.6	179.6
19	Aluminum Potassium Sulphate	All	159.8	210.2	249.8
20	Aluminum Sulphate	All	249.8	210.2	249.8
21	Ammonia	Gas	89.6	100.4	100.4
22	Ammonium Benzoate	All	-	179.6	-
23	Ammonium Bicarbonate	15	140	159.8	159.8
24	Ammonium Bicarbonate	Saturated	140	150.8	150.8
25	Ammonium Bromide	15	-	-	159.8
26	Ammonium Carbonate	Saturated	120.2	150.8	150.8
27	Ammonium Chloride	Saturated	199.4	210.2	210.2
28	Ammonium Citrate	Saturated	-	150.8	150.8
29	Ammonium Fluoride	All	-	100.4	150.8
30	Ammonium Hydroxide	10	89.6	159.8	NR
31	Ammonium Hydroxide	30	-	-	NR
32	Ammonium Lauryl Sulphate	100	-	129.2	120.2
33	Ammonium Nitrate	Saturated	199.4	210.2	249.8
34	Ammonium Phosphate, Dibasic	Saturated	150.8	210.2	210.2
35	Ammonium Phosphate, Monobasic	65	NR	210.2	210.2
36	Ammonium Sulphate	Saturated	199.4	210.2	249.8
37	Ammonium Sulfide	Saturated	-	-	120.2
38	Ammonium Thiocyanate	20	-	210.2	210.2
39	Ammonium Thiocyanate	Saturated	120.2	120.2	120.2
40	Amyl Alcohol	All	199.4	120.2	210.2
41	Aniline	100	NR	NR	69.8
42	Aniline Sulphate	Saturated	150.8	210.2	210.2
43	Antimony Pentachloride	100	89.6	89.6	-



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Sr. No.	CHEMICAL ENVIRONMENT	Conc. %	Maximum Service Temperature °F		
			Isophthalic Polyester Resin	Vinyl Ester (Bisphenol-A Epoxy resin base)	Vinyl Ester (Novolac Epoxy resin base)
44	Antimony Trichloride	Saturated	179.6	199.4	-
45	Arsenic Acid	0	179.6	179.6	179.6
46	Barium Carbonate	All	179.6	210.2	249.8
47	Barium Chloride	All	199.4	210.2	210.2
48	Barium Hydroxide	10	-	150.8	NR
49	Barium Sulphate	All	150.8	210.2	249.8
50	Barium Sulphide	Saturated	NR	179.6	179.6
51	Bear	100	NR	NR	-
52	Benzaldehyde	100	NR	NR	100.4
53	Benzene	100	89.6	NR	100.4
54	Benzene Sulphonic Acid	30	179.6	210.2	143.6
55	Benzene Sulphonic Acid	Saturated	89.6	210.2	-
56	Benzoic Acid	Saturated	249.8	210.2	210.2
57	Benzyl Alcohol	100	NR	100.4	NR
58	Black Liquor(Pulp Mill)	--	-	179.6	179.6
59	Blench Liquor (Pulp Mill)	100	-	179.6	199.4
60	Blenches Calcium Hypo chloride	Saturated	100.4	159.8	179.6
61	Borax	Saturated	-	210.2	210.2
62	Boric Acid	Saturated	179.6	210.2	210.2
63	Brake Fluid	100	-	120.2	NR
64	Brine, salt	Saturated	179.6	210.2	210.2
65	Bromine, Dry gas	100	89.6	89.6	100.4
66	Bromine, Wet gas	100	89.6	89.6	100.4
67	Bromine liquid	100	NR	NR	NR
68	Butyl Acetate	100	89.6	NR	80.6
69	Butyl Alcohol, Normal	100	89.6	80.6	120.2
70	Butyl Carbitol	100	-	NR	100.4
71	Butyl Cellosolve	100	89.6	100.4	100.4
72	Butyl Glycol	100	159.8	159.8	179.6
73	Butyric Acid	25	150.8	210.2	210.2
74	Butyric Acid	50	150.8	159.8	210.2
75	Butyric Acid	100	-	NR	NR
76	Calcium Bisulphide	Saturated	170.6	179.6	179.6
77	Calcium Carbonate	Saturated	159.8	179.6	179.6
78	Calcium Chlorate	Saturated	179.6	210.2	249.8
79	Calcium Chloride	Saturated	249.8	210.2	267.8
80	Calcium Hydroxide	15	159.8	179.6	NR
81	Calcium Hydroxide	Saturated	159.8	32	32
82	Calcium Hypo chloride	Saturated	100.4	159.8	NR
83	Calcium Nitrate	Saturated	179.6	210.2	210.2
84	Calcium Suphate	Saturated	199.4	210.2	249.8
85	Caprylic Acid	Saturated	159.8	179.6	210.2
86	Carbamide	Saturated	-	159.8	-
87	Carbon Dioxide, Wet, Acidic	100	249.8	210.2	-
88	Carbon Monoxide , Gas	100	199.4	210.2	399.2



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			Isophthalic Polyester Resin	Vinyl Ester (Bisphenol-A Epoxy resin base)	Vinyl Ester (Novolac Epoxy resin base)
89	Carbom Tetrachloride	100	-	89.6	179.6
90	Carbon Tetrachloride, vapours	100	89.6	89.6	199.4
91	Carbonic Acid	Saturated	159.8	89.6	-
95	Castor Oil	100	-	75.2	159.8
96	Cerous Nitrate	Saturated	-	89.6	-
97	Chlorine, Dry Gas	100	199.4	179.6	249.8
98	Chlorine, Wet gas	100	89.6	179.6	249.8
99	Chlorine, water	Saturated	125.6	179.6	210.2
100	Chloroacetic Acid	25	NR	120.2	120.2
101	Chloroacetic Acid	50	NR	100.4	100.4
102	Chloroacetic Acid	Conc.	NR	NR	NR
103	Chlorobenzene	100	NR	NR	100.4
104	Chrome bath, 19 % Chromic Acid with Sodium	--	-	-	-
105	Fluorosilicate and Sulphate	--	NR	120.2	149
106	Chromic Acid	5	-	100.4	150.8
107	Chromic Acid	20	-	NR	150.8
108	Chromic Acid	Saturated	NR	NR	NR
109	Citric Acid	Saturated	199.4	210.2	210.2
110	Coconut oil	100	-	150.8	199.4
111	Cooling Towers	--	89.6	89.6	-
112	Copper Acetate	Saturated	120.2	159.8	-
113	Copper Chloride	Saturated	249.8	210.2	249.8
114	Copper Cyanide	Saturated	89.6	210.2	210.2
115	Copper Nitrate	Saturated	159.8	210.2	210.2
116	Copper Sulphate	100	249.8	210.2	249.8
117	Crude Oil	100	-	210.2	249.8
118	Cyclohexane	100	174.2	-	179.6
119	Cyclohexane	100	-	120.2	150.8
120	Deionised water	100	-	210.2	179.6
121	Demineralised water	0	100.4	210.2	179.6
122	Detergents, Bio-Degradable, Liquid	--	-	100.4	-
123	Detergents, Organic, pH=10-11	100	-	-	179.6
124	Detergent, Organic	--	-	100.4	199.4
125	Diallyl Phthalate	All	-	179.6	210.2
126	Dibutyl Ether	100	80.6	80.6	210.2
127	Dibutyl Phthalate	100	-	150.8	210.2
128	Di Coco Di Methyl Ammonium Chloride	--	-	120.2	-
129	Dichloro Benzene	100	NR	NR	120.2
130	Dichloro Ethane	100	NR	NR	80.6
131	Diesel Fuel	100	100.4	174.2	210.2
132	Diethanol Amine	30	89.6	80.6	120.2
133	Diethanol Amine	100	-	80.6	150.8
134	Diethyl Benzene	100	-	80.6	150.8
135	Diethyl Carbonate	100	NR	NR	100.4



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			Isophthalic Polyester Resin	Vinyl Ester (Bisphenol-A Epoxy resin base)	Vinyl Ester (Novolac Epoxy resin base)
136	Diethyl Sulphate	100	-	NR	120.2
137	Diethylene Glycol	20	249.8	210.2	210.2
138	Diethyl hexyl Phosphoric Acid (in Kerosene)	100	-	120.2	179.6
139	Diisopropanol Amine	100	-	80.6	150.8
140	Dimethyl Phthalate	100	NR	120.2	179.6
141	Dioctyl Phthalate	100	NR	120.2	210.2
142	Diphenyl Oxide	100	NR	80.6	120.2
143	Dipropylene Glycol	100	159.8	179.6	210.2
144	Distilled water	100	-	199.4	179.6
145	Epichlorohydrin	100	-	NR	179.6
146	Epoxide Soya bean oil	100	-	120.2	150.8
147	Esters, Fatty Acid	100	-	179.6	179.6
148	Ethanol Amine	100	-	NR	75.2
149	Ethyl Alcohol	95-100	NR	NR	100.4
150	Ethyl Acetate	100	NR	NR	69.8
151	Ethyl Sulphate	100	NR	80.6	100.4
152	Ethylene Dichloride	100	NR	NR	80.6
153	Ethylene Glycol	All	249.8	210.2	210.2
154	Ethylene Glycol Mono Butyl Glycol	100	89.6	150.8	150.8
155	Ethylene Diamine Tetra Acetic acid	38	-	89.6	100.4
156	Fatty Acids	Saturated	249.8	210.2	249.8
157	Ferric Acetate	Saturated	-	179.6	179.6
158	Ferric Chloride	Saturated	249.8	210.2	210.2
159	Ferric Nitrate	Saturated	249.8	210.2	210.2
160	Ferric Sulphate	Saturated	199.4	210.2	210.2
161	Ferrous Sulphate	Saturated	219.2	210.2	210.2
161	Flue Gas @ 171 C	--	179.6	-	399.2
162	Flue Gas @ 138 C	--	179.6	-	399.2
163	Flue Gas, Boiler @ 171 C	--	179.6	-	399.2
164	Flue Gas, Coal Fired @ 171 C	--	179.6	-	-
165	Fluboric Acid	10	179.6	210.2	210.2
166	Fluboric Acid	Saturated	89.6	179.6	210.2
167	Fluosilicic Acid	10	100.4	150.8	179.6
168	Fluosilicic Acid	25	89.6	120.2	100.4
169	Fluosilicic Acid	Saturated	-	100.4	100.4
170	Formaldehyde	25	199.4	150.8	150.8
171	Formaldehyde	25-37	89.6	150.8	150.8
172	Formaldehyde	50-52	89.6	150.8	150.8
173	Formic Acid	10	199.4	179.6	179.6
174	Formic Acid	50	89.6	120.2	100.4
175	Formic Acid	Saturated	NR	-	100.4
176	Fuel Oil # 1 & #2	100	-	170.6	210.2
177	Furfural	5	89.6	120.2	150.8
178	Furfural	10	-	100.4	120.2



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			Isophthalic Polyester Resin	Vinyl Ester (Bisphenol-A Epoxy resin base)	Vinyl Ester (Novolac Epoxy resin base)
179	Furfural alcohol	100	-	-	80.6
180	Gasoline	100	-	179.6	179.6
181	Globrite 15	--	-	179.6	-
182	Globrite X-200	--	-	100.4	-
183	Gluconic Acid	50	120.2	100.4	-
184	Glucose	100	179.6	210.2	249.8
185	Glycerine	100	199.4	210.2	210.2
186	Glycolic Acid	35	140	179.6	100.4
187	Glycolic Acid	70	120.2	100.4	100.4
188	Gold Pickling, Sulfuric	35	-	150.8	-
189	Golden Glo 12	--	-	100.4	-
190	Green Liquor	--	-	179.6	-
191	Heptane, Normal	100	120.2	199.4	210.2
192	Heptane, Vapor and Condensate	100	120.2	120.2	210.2
193	Hexachloropentadiene	100	-	179.6	-
194	Hexamethylene Tetramine	28	80.6	-	-
195	Hexane	100	-	159.8	159.8
196	Hexylene Glycol Ammonium Chloride	--	-	120.2	-
197	Humid Air, Trace Sulfur fumes	--	-	199.4	-
198	Humid Atmosphere	100 RH	120.2	120.2	-
199	Hydraulic Fluid	100	-	150.8	179.6
200	Hydroiodic Acid	10--58	-	-	150.8
201	Hydrobromic Acid	18	159.8	210.2	179.6
202	Hydrobromic Acid	25	159.8	199.4	179.6
203	Hydrobromic Acid	48	-	159.8	150.8
204	Hydrochloric Acid	5	-	210.2	230
205	Hydrochloric Acid	15	230	210.2	230
206	Hydrochloric Acid	36-37	-	100.4	179.6
207	Hydrochloric Acid, Fumes	0	NR	-	350.6
208	Hydrochloric Acid + Free Chlorine	All	-	210.2	230
209	Hydrochloric Acid Inhibitor	15	230	210.2	230
210	Hydrocyanic Acid	Saturated	199.4	150.8	210.2
211	Hydrofluoric Acid	5	-	-	150.8
212	Hydrofluoric Acid	15	100.4	100.4	100.4
213	Hydrofluosilicic Acid	15	100.4	150.8	179.6
214	Hydrofluosilicic Acid	10	100.4	150.8	179.6
215	Hydrogen	100	249.8	210.2	-
216	Hydrogen Bromide, Dry gas	100	89.6	179.6	179.6
217	Hydrogen Bromide, wet gas	100	89.6	179.6	179.6
218	Hydrogen Chloride, Dry gas	100	-	210.2	350.6
219	Hydrogen Chloride, wet gas	100	120.2	210.2	350.6
220	Hydrogen Fluoride, vapor	35	95	-	179.6
221	Hydrogen Fluoride, wet	12	89.6	179.6	179.6
222	Hydrogen Fluoride, wet	100	89.6	89.6	89.6
223	Hydrogen Peroxide	5	-	150.8	150.8



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			Isophthalic Polyester Resin	Vinyl Ester (Bisphenol-A Epoxy resin base)	Vinyl Ester (Novolac Epoxy resin base)
224	Hydrogen Peroxide	30	NR	100.4	150.8
225	Hydrogen Peroxide	35	120.2	105.8	-
226	Hydrogen Sulphide	All	249.8	210.2	210.2
227	Hydroxyacetic Acid	35	140	179.6	100.4
228	Hydroxyacetic Acid	70	120.2	100.4	100.4
229	Hypochlorous Acid	10	105.8	150.8	-
230	Hypochlorous Acid	20	89.6	120.2	-
231	Hypochlorous Acid	Conc.	89.6	89.6	-
232	Iodine Vapor	100	179.6	-	179.6
233	Iron & Steel cleaning bath (9% HCl, 23%	--	-	199.4	210.2
234	Isobutyl Alcohol	All	-	100.4	120.2
235	Iso- Decanol	All	-	80.6	120.2
236	Isopropyl Alcohol	10	-	80.6	120.2
237	Isopropyl Alcohol	100	-	80.6	120.2
239	Isopropyl Palmitate	100	179.6	210.2	230
240	Itaconic Acid	25	-	120.2	120.2
241	Kerosene	100	120.2	174.2	179.6
241	Kerosene vapor and condensate	100	120.2	-	-
243	Lactic Acid	All	199.4	100.4	120.2
244	Latex Dispersion in water	All	-	100.4	120.2
245	Lauric Acid	100	-	120.2	-
245	Lauryl Alcohol	100	-	120.2	179.6
246	Lauryl Chloride	100	-	-	120.2
247	Lauryl Mercaptan	100	-	-	150.8
248	Lead Acetate	All	159.8	210.2	230
249	Lead Chloride	Saturated	-	210.2	-
250	Lead Nitrate	Saturated	-	210.2	-
251	Levulinic Acid	Saturated	-	210.2	230
252	Lime Slurry	Saturated	179.6	170.6	-
253	Linseed Oil	100	-	210.2	230
254	Lithium Bromide	100	-	210.2	249.8
255	Lithium Carbonate	Saturated	-	150.8	179.6
256	Lithium Chloride	45	-	210.2	210.2
257	Lithium Chloride	Saturated	159.8	210.2	210.2
258	Lithium Sulphate	All	-	210.2	-
259	Magnesium Bicarbonate	Saturated	150.8	179.6	-
260	Magnesium Bisulphite	All	-	179.6	179.6
261	Magnesium Carbonate	Saturated	159.8	179.6	179.6
262	Magnesium Chloride	Saturated	219.2	210.2	249.8
263	Magnesium Hydroxide	Saturated	-	210.2	NR
264	Magnesium Nitrate	Saturated	159.8	159.8	210.2
265	Magnesium Sulphate	Saturated	199.4	210.2	249.8
266	Maleic Acid	5	-	210.2	249.8
267	Maleic Acid	Saturated	-	210.2	249.8
268	Maleic Acid	10	-	-	249.8



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			Isophthalic Polyester Resin	Vinyl Ester (Bisphenol-A Epoxy resin base)	Vinyl Ester (Novolac Epoxy resin base)
269	Manganese Chloride	Saturated	-	-	210.2
270	Manganese Sulphate	Saturated	-	210.2	210.2
271	Mercuric Chloride	Saturated	210.2	210.2	210.2
272	Mercurous Chloride	Saturated	210.2	210.2	210.2
273	Mercury	100	249.8	-	249.8
274	Methanol	100	89.6	NR	100.4
275	Methyl Alcohol: Water	3.3472222	-	-	140
276	Methyl Ethyl Ketone	100	NR	NR	69.8
277	Methylene Chloride	100	NR	NR	NR
278	Methyl Styrene	100	-	NR	120.2
279	Mineral Oils	100	179.6	199.4	249.8
280	Motor Oils	100	NR	210.2	249.8
281	Naphtha	100	199.4	179.6	210.2
282	Naphthalene	100	129.2	179.6	210.2
283	Nickel Chloride	Saturated	219.2	210.2	210.2
284	Nickel Nitrate	Saturated	219.2	210.2	210.2
285	Nickel Sulphate	Saturated	219.2	210.2	210.2
286	Nitric Acid	5	199.4	159.8	179.6
287	Nitric Acid	10	174.2	120.2	150.8
288	Nitric Acid	28	-	100.4	89.6
289	Nitric Acid	40	-	-	80.6
290	Nitric Benzene	100	NR	NR	100.4
291	Octanoic Acid	Saturated	NR	179.6	210.2
292	Oil Crude Storage Tank Bottoms	--	-	199.4	-
293	Oil Sour Crude	--	-	210.2	210.2
294	Oil Sweet Crude	--	-	210.2	210.2
295	Oils Animals	100	-	199.4	-
296	Oil Minerals	100	-	199.4	-
297	Oil Vegetables	100	-	199.4	-
298	Oleic Acid	100	-	199.4	199.4
299	Olegomeric dispersant	100	-	129.2	-
300	Olive oil	100	-	199.4	249.8
301	Oleum (Fuming Sulphuric Acid)	100	NR	NR	NR
302	Oxalic Acid	All	219.2	210.2	210.2
303	Ozone	3	-	-	140
304	Palmitic Acid	Saturated	159.8	210.2	249.8
305	Peanut oil	100	-	-	179.6
306	Perchloric Acid	100	-	179.6	150.8
307	Perchloric Acid	5	-	150.8	150.8
308	Phenol	10	-	80.6	120.2
309	Phenol	2	-	-	120.2
310	Phenolic Spent, Caustic Refinery	0	-	129.2	-
311	Phosphoric Acid	70	-	179.6	100.4
312	Phosphoric Acid	85	219.2	210.2	210.2
313	Phosphoric Acid, Super	100	-	210.2	210.2



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314	Super Phosphoric Acid 76 %	100	-	210.2	210.2
315	Phthalic Acid	All	-	210.2	210.2
316	Phthalic Anhydride	Saturated	150.8	210.2	-
317	Picric Acid	10	100.4	-	100.4
318	Picric Acid, Alcoholic	10	-	100.4	100.4
319	Polychlorophenate, Alcohol	--	-	-	-
320	Polyphosphoric Acid	115	-	-	210.2
321	Polyvinyl Acetate Adhesives	0	100.4	210.2	-
322	Polyvinyl Alcohol	10	-	179.6	-
323	Polyvinyl Alcohol	100	89.6	120.2	120.2
324	Potassium Aluminum Sulphate	Saturated	159.8	210.2	249.8
325	Potassium Bicarbonate	10	89.6	159.8	150.8
326	Potassium Bicarbonate	Saturated	89.6	159.8	179.6
327	Potassium Bromide	Saturated	-	159.8	120.2
328	Potassium Carbonate	10	89.6	179.6	150.8
329	Potassium Carbonate	25	89.6	179.6	150.8
330	Potassium Chloride	All	199.4	210.2	210.2
331	Potassium Dichromate	All	-	210.2	210.2
332	Potassium Ferricyanide	Saturated	199.4	210.2	210.2
333	Potassium Ferrocyanide	Saturated	199.4	210.2	210.2
334	Potassium Fluoride	Saturated	-	210.2	210.2
335	Potassium Hydroxide	10	-	150.8	-
336	Potassium Hydroxide	25	-	150.8	NR
337	Potassium Hydroxide	45	-	150.8	NR
338	Potassium Nitrate	All	199.4	210.2	210.2
339	Potassium Permanganate	All	150.8	210.2	210.2
340	Potassium Persulphate	All	89.6	210.2	210.2
341	Potassium Pyrophosphate	100	-	100.4	150.8
342	Potassium Sulphate	All	199.4	210.2	210.2
343	Propylene Glycol	All	170.6	210.2	210.2
344	Sea Water	100	-	210.2	210.2
345	Selenious Acid	All	-	210.2	210.2
346	Sequestering Agents	100	-	125.6	-
347	Silver Nitrate	All	199.4	210.2	210.2
348	Sodium Acetate	100	150.8	210.2	210.2
349	Sodium Aluminates	Saturated	NR	159.8	120.2
350	Sodium Benzoate	Saturated	174.2	210.2	179.6
351	Sodium Bicarbonate	10	-	179.6	179.6
352	Sodium Bicarbonate	Saturated	140	179.6	179.6
353	Sodium Bisulphate	All	199.4	210.2	210.2
354	Sodium Bisulphite	Saturated	199.4	210.2	210.2
355	Sodium Borate	Saturated	170.6	210.2	210.2
356	Sodium Bromide	All	219.2	210.2	210.2
357	Sodium Carbonate	Saturated	89.6	159.8	179.6
358	Sodium Chlorate	90	-	210.2	210.2



FUTURE PIPE INDUSTRIES

Sr. No.	CHEMICAL ENVIRONMENT	Conc. %	Maximum Service Temperature °F		
			Isophthalic Polyester Resin	Vinyl Ester (Bisphenol-A Epoxy resin base)	Vinyl Ester (Novolac Epoxy resin base)
359	Sodium Chlorate	Saturated	89.6	210.2	235.4
360	Sodium Chloride	Saturated	199.4	210.2	-
361	Sodium Chlorite	25	174.2	210.2	120.2
362	Sodium Chromate	Saturated	-	210.2	210.2
363	Sodium Cyanide	Saturated	100.4	219.2	219.2
364	Sodium Dichromate	Saturated	-	219.2	219.2
365	Sodium Diphosphate	Saturated	-	-	159.8
366	Sodium Ferricyanide	Saturated	219.2	210.2	210.2
367	Sodium Ferrocyanide	Saturated	219.2	210.2	210.2
368	Sodium Hydroxide	10	-	150.8	NR
369	Sodium Hydroxide	50	-	179.6	NR
370	Sodium Hypochlorite	15	NR	150.8	NR
371	Sodium Lauryl Sulphate	100	-	179.6	159.8
372	Sodium Nitrate	Saturated	219.2	210.2	210.2
373	Sodium Persulphate	20	-	120.2	-
374	Sodium Polyacrylate	25	-	150.8	179.6
375	Sodium Silicate	6	-	210.2	210.2
376	Sodium Sulphite	All	179.6	210.2	210.2
377	Sodium Sulfide	Saturated	89.6	210.2	210.2
378	Sodium Sulfite	All	-	210.2	210.2
379	Sodium Thiosulphate	All	89.6	120.2	179.6
380	Sodium Tripolyphosphate	Saturated	125.6	210.2	210.2
381	Soya bean oil	100	NR	179.6	210.2
382	Stannic Chloride	All	179.6	179.6	210.2
383	Stannous Chloride	All	199.4	210.2	210.2
384	Stearic Acid	All	199.4	210.2	210.2
385	Styrene	100	NR	NR	120.2
386	Styrene Acrylic Emulsion	--	-	-	120.2
387	Sulfanilic Acid	All	NR	210.2	210.2
388	Sulphated Detergents	0--50	NR	210.2	179.6
389	Sulphites, Sulphates Liquors	--	159.8	210.2	-
390	Sulphonated Detergents neutralization	--	NR	210.2	179.6
391	Sulphur Molten	100	-	-	-
392	Sulphur Trioxide Dry	100	NR	210.2	300.2
393	Sulphuric Acid	25	199.4	210.2	210.2
394	Sulphuric Acid	50	199.4	199.4	199.4
395	Sulphuric Acid	70	150.8	199.4	179.6
396	Sulphuric Acid	93	NR	NR	NR
397	Sulphuric Acid Vapor	50	140	-	350.6
398	Sulphuric Acid Vapors	80	140	-	350.6
399	Sulphuric Acid Vapors	98	-	179.6	350.6
400	Sulfurous Acid	10	89.6	100.4	120.2
401	Super Phosphoric Acid	76	-	210.2	210.2
402	Super Phosphoric Acid	100	-	210.2	-
403	Surfactant, Anionic	58	-	159.8	-



FUTURE PIPE INDUSTRIES

Sr. No.	CHEMICAL ENVIRONMENT	Conc. %	Maximum Service Temperature °F		
			Isophthalic Polyester Resin	Vinyl Ester (Bisphenol-A Epoxy resin base)	Vinyl Ester (Novolac Epoxy resin base)
404	Sweet Crude Oil	100	-	210.2	210.2
405	Sweet water	--	-	-	179.6
406	Sulphuric Acid + Nitric Acid (50:50)	30	-	-	179.6
407	Tall Oil	--	-	150.8	219.2
408	Tannic Acid	Saturated	199.4	210.2	210.2
409	Tartaric Acid	Saturated	219.2	210.2	210.2
410	Tetrachloro Ethylene	100	-	-	120.2
411	Tetrachloro Pyridine	100	-	120.2	120.2
412	Tetra Potassium Pyrophosphate	60	125.6	100.4	150.8
413	Tetra Sodium Pyrophosphate	5	125.6	150.8	-
414	Tobias Acid	All	-	210.2	210.2
415	Toluene	100	89.6	NR	NR
416	Toluene Sulphonic Acid	65	-	210.2	210.2
417	Toluene Sulphonic Acid	100	-	210.2	210.2
418	Transformer Oils	100	-	210.2	300.2
419	Trichloroacetic Acid	50	-	210.2	210.2
420	Tricrysil Phosphate	100	-	80.6	159.8
421	TriEthanol Amine	100	-	-	150.8
422	Trimethyl Amine Hydrochloride	100	-	129.2	-
423	Trisodium Phosphate	25	-	210.2	249.8
424	Trisodium Phosphate	Saturated	-	210.2	249.8
425	Turpentine, Pure Gum	100	89.6	89.6	-
426	Urea	Saturated	89.6	179.6	120.2
427	Varsol	100	-	199.4	-
428	Vegetable Oil	--	-	179.6	-
429	Vinegar	100	-	210.2	210.2
430	Vinyl Toluene	100	-	80.6	120.2
431	Water, City (10-60 psi)	100	-	179.6	-
432	Water, Deionised	100	140	210.2	179.6
433	Water, Demineralised	100	140	210.2	179.6
434	Water, Distilled	100	140	199.4	179.6
435	Water, Irrigation	--	150.8	89.6	-
436	Water, Sea	--	150.8	210.2	210.2
437	Water, Sea desalination Ph 7.5	--	150.8	-	179.6
438	Water, Steam, Condensate	100	120.2	-	179.6
439	Wax Chlorinated	100	-	179.6	-
440	Whisky	--	NR	80.6	-
441	White liquor (Pulp Mill)	--	-	150.8	179.6
442	Xylene	100	89.6	NR	120.2
443	Zinc Chloride	70	-	-	309.2
444	Zinc Chloride	Saturated	199.4	210.2	309.2
445	Zinc Electrolytic Cells	0	-	-	150.8
446	Zinc Flu borate	50	-	210.2	-
447	Zinc Hydrosulfite	Saturated	159.8	-	-
448	Zinc Nitrate	Saturated	179.6	210.2	249.8



FUTURE PIPE INDUSTRIES

Sr. No.	CHEMICAL ENVIRONMENT	Conc. %	Maximum Service Temperature °F		
			Isophthalic Polyester Resin	Vinyl Ester (Bisphenol-A Epoxy resin base)	Vinyl Ester (Novolac Epoxy resin base)
449	Zinc Sulphate	All	199.4	210.2	249.8
450	Zinc Sulphite	Saturated	150.8	179.6	-



FUTURE PIPE INDUSTRIES

Sr. No.	CHEMICAL ENVIRONMENT	Conc. %	Maximum Service Temperature °F		
			Isophthalic Polyester Resin	Vinyl Ester (Bisphenol-A Epoxy resin base)	Vinyl Ester (Novolac Epoxy resin base)

NR
Conc.
--
"100" in concentration

Not Recommended,
Concentrated,
Data Not Available
Refers to the pure chemical.