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Subject to alterations because of engineering progress!

INTRODUCTION

The data of this bulletin are based on either Fiberdur's more than 40 years of field experience on which field or laboratory testing has indicated good expected service life.

For some aggressive chemicals service life and corrosion resistance of a resin largely depend on concentration and maximum service temperature. Therefore this corrosion resistance chart may be considered a basis of recommendation, not a guarantee. Our laboratory is staffed and equipped to assist customers in making final decisions on the suitability of resins for specific uses. In particular, use of the expertise and experience of Fiberdur GmbH & Co. KG. laboratory is suggested when service conditions will be near the maximum temperature shown, where significant amounts of contaminants are known to be present in the basic chemicals.

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8.2 CORROSION RESISTANCE CHART

Corrosion resistance chart

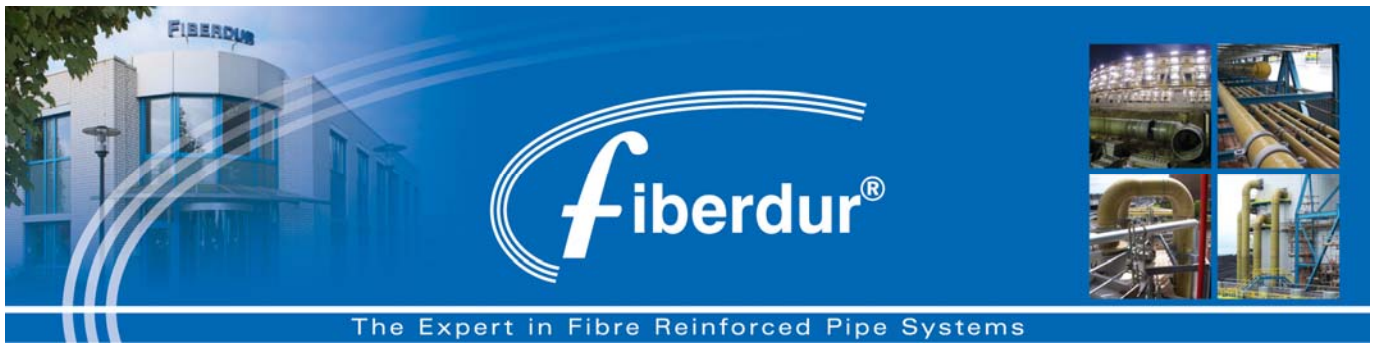
SV= Special manufacturing with synthetic fleece on inquiry
NR= Not Recommended

Medium	types of pipe	Temperature °C						Remarks
		25	40	65	95	110	120	
1. Acetaldehyde (1) CH ₃ CHO	EP							NR
	CSEP							NR
	VE							NR
	CSVE							NR
2. Acetic acid up to 10% (112) CH ₃ COOH	EP							
	CSEP							
	VE							
	CSVE							
3. Acetic acid 10 up to 50% (113) CH ₃ COOH	EP							
	CSEP							
	VE							
	CSVE							
4. Acetic acid acid 50 up to 100% (114) CH ₃ COOH	EP							
	CSEP							
	VE							NR
	CSVE							NR
5. Acetic anhydride (116) (CH ₃ CO) ₂ O	EP							
	CSEP							
	VE							NR
	CSVE							NR
6. Acetone up to 5% (2) CH ₃ COCH ₃	EP							
	CSEP							
	VE							
	CSVE							
7. Acrylic acid up to 10% (3) CH ₂ = CHCOOH	EP							
	CSEP							
	VE							
	CSVE							
8. Acrylic acid up to 30% (4) CH ₂ = CHCOOH	EP							NR
	CSEP							NR
	VE							NR
	CSVE							
9. Adipic acid, solution (5) (CH ₂) ₄ (COOH) ₂	EP							
	CSEP							
	VE							
	CSVE							
10. Air (156)	EP							
	CSEP							
	VE							
	CSVE							

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Medium	types of pipe	Temperature °C						Remarks
		25	40	65	95	110	120	
11. Alcohol, ethyl up to 10% (34) C ₂ H ₅ OH	EP							
	CSEP							
	VE							
	CSVE							
12. Alcohol, isopropyl up to 10% (131) CH ₃ CH(OH)CH ₃	EP				80°C			
	CSEP				80°C			
	VE			50°C				
	CSVE			50°C				
13. Alcohol, methyl up to 100% (165) CH ₃ OH	EP							
	CSEP							
	VE							NR
	CSVE							NR
14. Alcohol, methyl isobutyl up to 10% (167) C ₅ H ₁₀ O	EP							
	CSEP				80°C			
	VE							
	CSVE							
15. Alcohol, secondary butyl up to 10% (69) CH ₃ CH(OH)C ₂ H ₅	EP							
	CSEP							
	VE							
	CSVE							
16. Allyl chloride (7) CH ₂ = CH - CH ₂ Cl	EP							
	CSEP							
	VE							
	CSVE							
17. aluminium chloride (8) AlCl ₃	EP							
	CSEP							
	VE							
	CSVE							
18. Aluminium chloride hexahydrate up to 50% (13) NH ₄ F	EP							NR
	CSEP							NR
	VE							
	CSVE							
19. Aluminium fluoride up to 25% (9) AlF ₃	EP							
	CSEP							
	VE							
	CSVE							
20. Aluminium hydroxide (10) Al (OH) ₃	EP							SV
	CSEP							SV
	VE							SV
	CSVE							SV
21. Aluminium nitrate (11) Al (NO ₃) ₃	EP							
	CSEP							
	VE							
	CSVE							

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Medium	types of pipe	Temperature °C						Remarks
		25	40	65	95	110	120	
22. Aluminium sulphate (12) Al ₂ (SO ₄) ₃	EP							
	CSEP							
	VE							
	CSVE							
23. Alum (6)	EP							
	CSEP							
	VE							
	CSVE							
24. Ammonia gas dry (15) NH ₃	EP							
	CSEP							
	VE							
	CSVE							
25. Ammonia-wet (16) NH ₃	EP							
	CSEP							
	VE							
	CSVE							
26. Ammonium carbonate (22) (NH ₄) ₂ CO ₃	EP							
	CSEP							
	VE							
	CSVE							
27. Ammonium chloride (17) NH ₄ Cl	EP							
	CSEP							
	VE							
	CSVE							
28. Ammonium fluoride up to 25% (18) NH ₄ F	EP							SV
	CSEP							SV
	VE							SV
	CSVE							SV
29. Ammonium hydroxide up to 10% (19) NH ₄ OH	EP							
	CSEP							
	VE							
	CSVE							
30. Ammonium hydroxide 10 up to 20% (20) NH ₄ OH	EP							
	CSEP							
	VE							
	CSVE							
31. Ammonium hydroxide 20 up to 30% (21) NH ₄ OH	EP							
	CSEP							
	VE							
	CSVE							
32. Ammonium nitrate (23) NH ₄ NO ₃	EP							
	CSEP							
	VE							
	CSVE							

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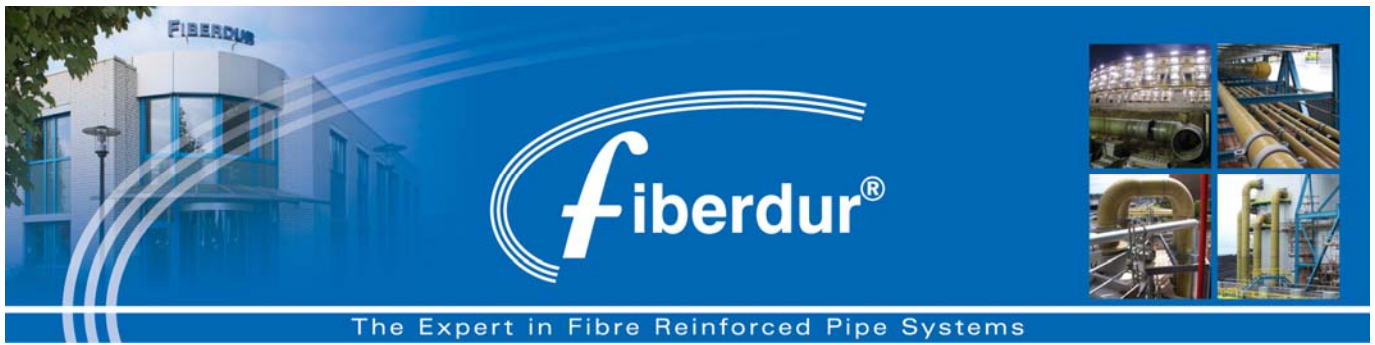
Temperature °C

Medium	types of pipe	25	40	65	95	110	120	Remarks
33. Ammonium persulfate (24) (NH ₄) ₂ S ₂ O ₈	EP							NR
	CSEP							NR
	VE							
	CSVE				80°C			
34. Ammonium phosphate (25) (NH ₄) ₃ PO ₄	EP							
	CSEP							
	VE							
	CSVE							
35. Ammonium sulfate (27) C ₂ H ₅ OH	EP							
	CSEP							
	VE							
	CSVE							
36. Ammonium thiocyanate (26) NH ₄ SCN	EP							
	CSEP							
	VE							
	CSVE							
37. Amyl acetate up to 29% (28) C ₅ H ₁₁ OOCCH ₃	EP							
	CSEP							
	VE							
	CSVE							
38. Amyl alcohol (30) C ₅ H ₁₁ OH	EP							
	CSEP				80°C			
	VE							
	CSVE							
39. Amyl chloride (29) C ₅ H ₁₁ Cl	EP							
	CSEP							
	VE							
	CSVE							
40. Aniline (31) C ₆ H ₅ NH ₂	EP							
	CSEP							
	VE							NR
	CSVE							NR
41. Antimony trichloride (32) SbCl ₃	EP							
	CSEP							
	VE							
	CSVE							
42. Barium carbonate (43) BaCO ₃	EP							
	CSEP							
	VE							
	CSVE							
43. Barium chloride (44) BaCl ₂	EP							
	CSEP							
	VE							
	CSVE							

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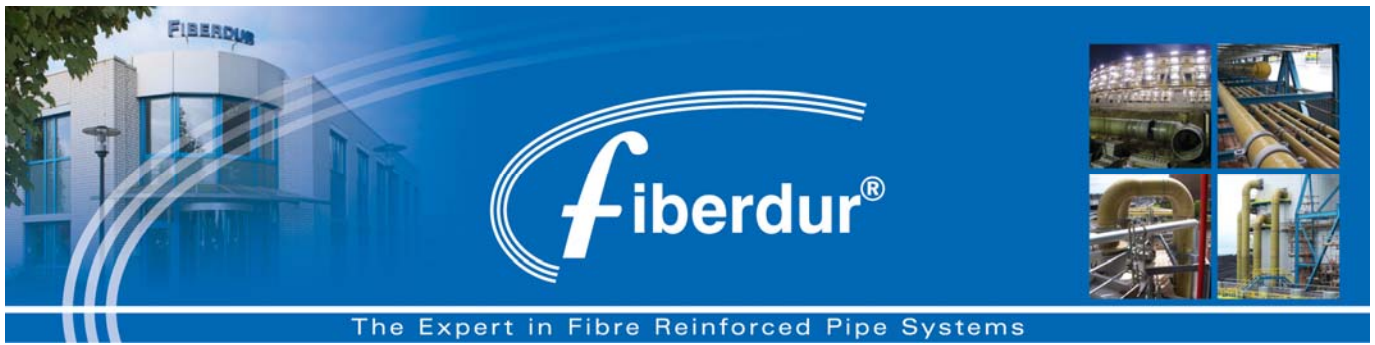
Temperature °C

Medium	types of pipe	25	40	65	95	110	120	Remarks
44. Barium hydroxide up to 10% (45) Ba(OH) ₂	EP							
	CSEP							
	VE							
	CSVE							
45. Barium sulphide (47) BaS	EP							
	CSEP							
	VE							
	CSVE							
46. Barium sulphate (46) BaSO ₄	EP							
	CSEP							
	VE							
	CSVE							
47. Beer (57)	EP							
	CSEP							
	VE				80°C			
	CSVE				80°C			
48. Benzene (48) C ₆ H ₆	EP							
	CSEP							
	VE							NR
	CSVE							NR
49. Benzene up to 5% in Kerosene (49)	EP							
	CSEP							
	VE							NR
	CSVE							NR
50. Benzene silfonic acid up to 10% (52) C ₆ H ₅ SO ₃ H	EP							
	CSEP							
	VE							
	CSVE							
51. Benzene sulfoniic acid chloride (53) C ₆ H ₅ SO ₂ Cl	EP							
	CSEP							
	VE							
	CSVE							
52. Benzoic acid (56) C ₆ H ₅ COOH	EP							
	CSEP							
	VE							
	CSVE							
53. Benzyl alcohol (55) C ₆ H ₅ CH ₂ OH	EP							NR
	CSEP							NR
	VE							NR
	CSVE							NR
54. Benzyl chloride (54) C ₆ H ₅ CH ₂ Cl	EP							
	CSEP							
	VE							NR
	CSVE							NR

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Temperature °C

Medium	types of pipe	25	40	65	95	110	120	Remarks
55. Borax (60) C ₆ H ₅ CH ₂ OH	EP							
	CSEP							
	VE							
	CSVE							
56. Boric acid (61) H ₃ BO ₃	EP							
	CSEP							
	VE							
	CSVE							
57. Bromic acid (63) HBrO ₃	EP							
	CSEP							
	VE							
	CSVE							
58. Bromine liquid (62) Br ₂	EP							NR
	CSEP							NR
	VE							NR
	CSVE							NR
59. Bromine water up to 4% (64) Br ₂ /H ₂ O(HOBr)	EP							
	CSEP							
	VE							
	CSVE							
60. Butane (66) C ₄ H ₁₀	EP							
	CSEP							
	VE							
	CSVE							
61. Butadiene (67) CH ₂ CHCHCH ₂	EP							
	CSEP							
	VE							
	CSVE							
62. Butyl acetate (68) C ₆ H ₁₂ O ₂	EP							
	CSEP							
	VE							NR
	CSVE							NR
63. Butyl cellosolve (70) C ₆ H ₁₄ O ₂	EP							
	CSEP							
	VE							
	CSVE							
64. Butyric acid up to 15% (71) CH ₃ (CH ₂) ₂ COOH	EP							
	CSEP							
	VE							
	CSVE							

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Medium	types of pipe	Temperature °C						Remarks
		25	40	65	95	110	120	
65. Butyric acid 15 up to 50% (72) CH ₃ (CH ₂) ₂ COOH	EP							
	CSEP							
	VE							
	CSVE							
66. Calcium bisulfite (73) Ca(HSO ₃) ₂	EP							
	CSEP							
	VE							
	CSVE							
67. Calcium carbonate (78) CaCO ₃	EP							
	CSEP							
	VE							
	CSVE							
68. Calcium chlorate (74) Ca(ClO ₃) ₂	EP							
	CSEP							
	VE							
	CSVE							
69. Calcium chloride (75) CaCl ₂	EP							
	CSEP							
	VE							
	CSVE							
70. Calcium hydroxide up to 50% (76) Ca(OH) ₂	EP							SV
	CSEP							SV
	VE							SV
	CSVE							SV
71. Calcium hypochlorite up to 20% (77) Ca(OCl) ₂	EP							SV
	CSEP							SV
	VE							SV
	CSVE							SV
72. Calcium nitrate (79) Ca(NO ₃) ₂	EP							
	CSEP							
	VE							
	CSVE							
73. Calcium sulfate (80) CaSO ₄ · 2H ₂ O	EP							
	CSEP							
	VE							
	CSVE							
74. Carbon bisulfide (235) CS ₂	EP							NR
	CSEP							NR
	VE							NR
	CSVE							NR
75. Carbon dioxide (146) CO ₂	EP							
	CSEP							
	VE							
	CSVE							

Medium	types of pipe	Temperature °C						Remarks
		25	40	65	95	110	120	
76. Carbon monoxide (148) CO	EP							
	CSEP							
	VE							
	CSVE							
77. Carbon tetrachloride (249) CCl ₄	EP							
	CSEP							
	VE							
	CSVE							
78. Carbonic acid (147) H ₂ CO ₃	EP							
	CSEP							
	VE							
	CSVE							
79. Castor oil (224)	EP							
	CSEP							
	VE							
	CSVE							
80. Chloral hydrate (85) CCl ₃ CH(OH) ₂	EP							
	CSEP							
	VE							
	CSVE							
81. Chlorine, dry (81) Cl ₂	EP							NR
	CSEP							NR
	VE							
	CSVE							
82. Chlorine, water (83) Cl ₂ (H ₂ O)(HOCl)	EP							NR
	CSEP							NR
	VE							
	CSVE							
83. Chlorine, wet (82) Cl ₂ (H ₂ O)	EP							NR
	CSEP							NR
	VE							
	CSVE							
84. Chlorine acetyl chloride (84) CH ₂ CIClOCl	EP							NR
	CSEP							NR
	VE							NR
	CSVE							NR
85. Chlorine dioxide up to 15% (87) ClO ₂	EP							
	CSEP							
	VE							
	CSVE							
86. Chloroacetic acid up to 25% (88) CH ₂ CICOOH	EP							
	CSEP							
	VE							
	CSVE			50°C				

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Medium	types of pipe	Temperature °C						Remarks
		25	40	65	95	110	120	
87. Chlorobenzene (86) C ₆ H ₅ Cl	EP							
	CSEP							
	VE							NR
	CSVE							NR
88. Chloroform (89) CHCl ₃	EP							
	CSEP							
	VE							NR
	CSVE							NR
89. Chromic acid up to 5% (91) H ₂ CrO ₄	EP							
	CSEP							
	VE							
	CSVE							
90. Chromic acid up to 10% (92) H ₂ CrO ₄	EP							
	CSEP							
	VE							
	CSVE							
91. Chromic acid up to 20% (93) H ₂ CrO ₄	EP							
	CSEP							
	VE							
	CSVE							
92. Chromic fluoride (90) CrF ₃	EP							
	CSEP							
	VE							
	CSVE							
93. Citric acid (94) (CH ₂ COOH) ₂ COHCOOH	EP							
	CSEP							
	VE							
	CSVE							
94. Copper chloride (149) CuCl ₂	EP							
	CSEP							
	VE							
	CSVE							
95. Copper cyanide (153) Cu(CN) ₂	EP							
	CSEP							
	VE							
	CSVE							
96. Copper fluoride (150) CuF ₂	EP							
	CSEP							
	VE							
	CSVE							
97. Copper nitrate (151) Cu(NO ₃) ₂	EP							
	CSEP							
	VE							
	CSVE							

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Medium	types of pipe	Temperature °C						Remarks
		25	40	65	95	110	120	
98. Copper sulphate (152) CuSO ₄	EP							
	CSEP							
	VE							
	CSVE							
99. Crude oil sour (225)	EP							
	CSEP							
	VE							
	CSVE							
100. Crude oil sweet (226)	EP							
	CSEP							
	VE							
	CSVE							
101. Dekalin (96) C ₁₀ H ₁₈	EP							
	CSEP							
	VE							NR
	CSVE							NR
102. Diacetone alcohol (97) (CH ₃) ₂ COHCH ₂ COCH ₃	EP							
	CSEP							
	VE							NR
	CSVE							NR
103. Dibutyl phthalate (99) C ₆ H ₄ (COO C ₄ H ₉) ₂	EP							
	CSEP							
	VE							
	CSVE							
104. Dichlorobenzene (101) (C ₆ H ₄)Cl ₂	EP							
	CSEP							
	VE							NR
	CSVE							NR
105. Dichloroethylene (100) C ₂ H ₂ Cl ₂	EP							
	CSEP							
	VE							NR
	CSVE							NR
106. Diethylene triamine up to 100% (98) H ₂ N · CH ₂ · CH ₂ · NH · CH ₂ · CH ₂ · NH ₂	EP							NR
	CSEP							NR
	VE							NR
	CSVE							NR
107. Dimethylamine (102) CH ₃ NHCH ₃	EP							NR
	CSEP							NR
	VE							NR
	CSVE							NR
108. Dioxane up to 10% (103) C ₄ H ₈ O ₂	EP							
	CSEP							
	VE							NR
	CSVE							NR

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Medium	types of pipe	Temperature °C						Remarks
		25	40	65	95	110	120	
109. Ethanol up to 95% (35) C ₂ H ₅ OH	EP							
	CSEP							
	VE							
	CSVE							
110. Ethyl acetate (115) CH ₃ COOC ₂ H ₅	EP							
	CSEP							
	VE							NR
	CSVE							NR
111. Etyl cellulsolve (36) C ₄ H ₁₀ O ₂	EP							
	CSEP							
	VE							NR
	CSVE							NR
112. Ethyl chloride (37) C ₂ H ₅ Cl	EP							
	CSEP							
	VE							NR
	CSVE							NR
113. Ethyl ether (40) (C ₂ H ₅) ₂ O	EP							
	CSEP							
	VE							NR
	CSVE							NR
114. Ethylamine up to 100% (33) NH ₂ C ₂ H ₄ OH	EP							NR
	CSEP							NR
	VE							NR
	CSVE							NR
115. Ethylene chlorohydrins (38) ClCH ₂ CH ₂ OH	EP							NR
	CSEP							NR
	VE							
	CSVE							
116. Etylene diamine (39) C ₂ H ₈ N ₂	EP							NR
	CSEP							NR
	VE							NR
	CSVE							NR
117. Etylene glycol (41) (CH ₂ OH) ₂	EP							
	CSEP							
	VE							
	CSVE							
118. Ethylene oxide (42) (CH ₂) ₂ O	EP							NR
	CSEP							NR
	VE							NR
	CSVE							NR
119. Fatty acids (117) CH ₃ (CH ₂) _n COOH	EP							
	CSEP							
	VE							
	CSVE							

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Medium	types of pipe	Temperature °C						Remarks
		25	40	65	95	110	120	
120. Ferric chloride (III), (105) FeCl ₃	EP							
	CSEP							
	VE							
	CSVE							
121. Ferric nitrate (III), (106) Fe(NO ₃) ₃	EP							
	CSEP							
	VE							
	CSVE							
122. Ferric sulfate (III), (107) Fe ₂ (SO ₄) ₃	EP							
	CSEP							
	VE							
	CSVE							
123. Ferrous (II) chloride, (108) FeCl ₂	EP							
	CSEP							
	VE							
	CSVE							
124. Ferrous (II) sulfate, (110) FeSO ₄	EP							
	CSEP							
	VE							
	CSVE							
125. Ferrous (II) nitrate (109) Fe(NO ₃) ₂	EP							
	CSEP							
	VE							
	CSVE							
126. Fluorine gas wet (118) F ₂	EP							NR
	CSEP							NR
	VE							NR
	CSVE							NR
127. Fluoroboric acid (119) HBF ₄	EP							NR
	CSEP							NR
	VE							
	CSVE							
128. Fluosilicic acid up to 10% (243) H ₂ SiF ₆	EP							SV
	CSEP							SV
	VE							SV
	CSVE							SV
129. Formaldehyde up to 40% (121) HCHO	EP							
	CSEP							
	VE							
	CSVE							
130. Formic acid up to 25% (14) HCOOH	EP							
	CSEP							
	VE							
	CSVE							

Medium	types of pipe	Temperature °C						Remarks
		25	40	65	95	110	120	
131. Freon (122) CF ₂ Cl ₂	EP							
	CSEP							
	VE							
	CSVE							
132. Gas natural (196)	EP				80°C			
	CSEP				80°C			
	VE							
	CSVE							
133. Gasoline, refined, 108 octane (51)	EP							
	CSEP							
	VE							
	CSVE							
134. Gasoline sour (50)	EP							
	CSEP							
	VE							NR
	CSVE							NR
135. Glucose (123) C ₆ H ₁₂ O ₆	EP							
	CSEP							
	VE							
	CSVE							
136. Glycerine (124) (CH ₂ OH) ₂ CHOH	EP							
	CSEP							
	VE							
	CSVE							
137. Glycol, propylene (220) C ₃ H ₈ O ₂	EP							
	CSEP							
	VE							
	CSVE							
138. Heptane (127) C ₇ H ₁₆	EP							
	CSEP							
	VE							
	CSVE							
139. Hexane (128) C ₆ H ₁₄	EP							
	CSEP							
	VE							
	CSVE							
140. Hexylene glycol (129) CH ₃) ₂ C(OH)CH ₂ CH(OH)CH ₃	EP							
	CSEP							
	VE							
	CSVE							
141. Hydrolic fluid (130)	EP							
	CSEP							
	VE							
	CSVE							

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Medium	types of pipe	Temperature °C						Remarks
		25	40	65	95	110	120	
142. Hydrobromic acid up to 50% (65) HBr	EP			50°C				
	CSEP			50°C				
	VE							
	CSVE							
143. Hydrochloric acid up to 37% (232) HCl	EP							
	CSEP							
	VE							Only with special union
	CSVE							Typ CSS-VE
144. Hydrochloric acid up to 37% plus chlorine gas up to 50% (233) HCl + Cl ₂	EP							NR
	CSEP							NR
	VE							Only with special union
	CSVE							Typ CSS-VE
145. Hydrochloric acid up to 5% (230) HCl	EP				80°C			
	CSEP							
	VE				80°C			Only with special union
	CSVE							Typ CSS-VE
146. Hydrochloric acid up to 20% (231) HCl	EP							
	CSEP							
	VE							Only with special union
	CSVE				80°C			Typ CSS-VE
147. Hydrocyanic acid up to 10% (95) HCN	EP							NR
	CSEP							NR
	VE							
	CSVE							
148. Hydrofluoric acid up to 4% (120) HF	EP							NR
	CSEP							NR
	VE							SV
	CSVE							SV
149. Hydrogen (264) H ₂	EP							
	CSEP							
	VE							
	CSVE							
150. Hydrogen peroxide up to 10% (265) H ₂ O ₂	EP							NR
	CSEP							NR
	VE							
	CSVE							
151. Hydrogen sulfide-aqueous (240) H ₂ S · H ₂ O	EP							
	CSEP							
	VE							
	CSVE							
152. Hypochloric acid up to 10% (257) HOCl	EP							NR
	CSEP							NR
	VE							NR
	CSVE							NR

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Medium	types of pipe	Temperature °C						Remarks
		25	40	65	95	110	120	
153. Jet Fuel (104)	EP							
	CSEP							
	VE							
	CSVE							
154. Kerosene (144)	EP				70°C			
	CSEP				70°C			
	VE							
	CSVE							
155. Lactic acid (171) CH ₃ CHOHCOOH	EP							
	CSEP							
	VE							
	CSVE							
156. Lauric acid (155) CH ₃ (CH ₂) ₁₀ COOH	EP							
	CSEP							
	VE							
	CSVE							
157. Lead acetate (58) Pb(CH ₃ COO) ₂	EP							
	CSEP							
	VE							
	CSVE							
158. Levulinic acid up to 25% (154) CH ₃ -CO(CH ₂) ₂ COOH	EP							
	CSEP							
	VE							
	CSVE							
159. Linseed oil (157)	EP							
	CSEP							
	VE							
	CSVE							
160. Magnesium carbonate (158) MgCO ₃	EP							
	CSEP							
	VE							
	CSVE				70°C			
161. Magnesium chloride (159) MgCl ₂	EP							
	CSEP							
	VE							
	CSVE							
162. Magnesium Hydroxide (160) Mg(OH) ₂	EP							
	CSEP							
	VE							
	CSVE							
163. Magnesium nitrate (161) Mg(NO ₃) ₂	EP							
	CSEP							
	VE							
	CSVE							

Medium	types of pipe	Temperature °C						Remarks
		25	40	65	95	110	120	
164. Magnesium sulphate (162) MgSO ₄	EP							
	CSEP							
	VE							
	CSVE							
165. Maleic acid up to 100% (163) (HC·COOH) ₂	EP							
	CSEP							
	VE							
	CSVE							
166. Mercury (221) Hg	EP							
	CSEP							
	VE							
	CSVE							
167. Mercury-(I)-chloride (222) HgCl ₂	EP							
	CSEP							
	VE							
	CSVE							
168. Mercury-(II)-chloride (223) Hg ₂ Cl ₂	EP							
	CSEP							
	VE							
	CSVE							
169. Methyl alcohol up to 10% (164) CH ₃ OH	EP							
	CSEP							
	VE							
	CSVE							
170. Methyl ethyl ketone (166) C ₂ H ₅ COCH ₃	EP							
	CSEP							
	VE							NR
	CSVE							NR
171. Methyl isobutyl ketone (168) C ₆ H ₁₂ O	EP							
	CSEP							
	VE							NR
	CSVE							NR
172. Methyl isobutyl carbinol (169) C ₅ H ₁₀ CHCH ₃	EP							
	CSEP							
	VE							NR
	CSVE							NR
173. Methylene chloride (170) CH ₂ Cl ₂	EP							NR
	CSEP							NR
	VE							NR
	CSVE							NR
174. Mineral oils (172)	EP							
	CSEP							
	VE							
	CSVE							

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Medium	types of pipe	Temperature °C					Remarks	
		25	40	65	95	110		120
175. Naphta (173)	EP							
	CSEP							
	VE				70°C			
	CSVE				70°C			
176. Naphtahalene (174) C ₁₀ H ₈	EP							
	CSEP							
	VE							
	CSVE							
177. Nickel chloride (197) NiCl ₂	EP							
	CSEP							
	VE							
	CSVE							
178. Nickel nitrate (198) Ni(NO ₃) ₂	EP							
	CSEP							
	VE							
	CSVE							
179. Nickel sulfate (199) NiSO ₄	EP							
	CSEP							
	VE							
	CSVE							
180. Nitric acid up to 5% (227) HNO ₃	EP							NR
	CSEP							NR
	VE							
	CSVE							
181. Nitric acid up to 15% (228) HNO ₃	EP							NR
	CSEP							NR
	VE							
	CSVE							
182. Nitric acid up to 20% (229) HNO ₃	EP							NR
	CSEP							NR
	VE							
	CSVE							
183. Nitrobenzene (200) C ₆ H ₅ - NO ₂	EP							NR
	CSEP							NR
	VE							NR
	CSVE							NR
184. Oleic acid (201) C ₁₇ H ₃₃ COOH	EP							
	CSEP							
	VE							
	CSVE							

Medium	types of pipe	Temperature °C						Remarks
		25	40	65	95	110	120	
185. Oxalic acid (202) (COOH) ₂	EP							
	CSEP							
	VE							
	CSVE							
186. Ozon (203) O ₃	EP							NR
	CSEP							NR
	VE							NR
	CSVE							NR
187. Paratoluol sulphonic acid up to 50% C ₆ H ₄ SO ₃ HCH ₃ (204)	EP							
	CSEP							
	VE							
	CSVE							
188. Perchlorate of ethylene (205) CCl ₂ =CCl ₂	EP			50°C				
	CSEP			50°C				
	VE							
	CSVE							
189. Perchloric acid up to 30% (206) HClO ₄	EP							NR
	CSEP							NR
	VE							
	CSVE							
190. Phenol up to 1% (207) C ₆ H ₅ OH	EP							
	CSEP							
	VE							NR
	CSVE							NR
191. Phenol sulphonic acid up to 5% (208) HOC ₆ H ₄ SO ₃ H	EP							
	CSEP							
	VE							
	CSVE							
192. Phenol sulphonic acid up to 65% (209) HOC ₆ H ₄ SO ₃ H	EP							
	CSEP							
	VE							NR
	CSVE							NR
193. Phosphoric acid up to 75% (211) H ₃ PO ₄	EP							
	CSEP							
	VE							
	CSVE							
194. Phosphoric acid 75 up to 85% (212) H ₃ PO ₄	EP							NR
	CSEP							NR
	VE							
	CSVE							
195. Phosphoric acid 85 up to 110% (213) H ₃ PO ₄	EP							NR
	CSEP							NR
	VE							
	CSVE							

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Medium	types of pipe	Temperature °C						Remarks
		25	40	65	95	110	120	
196. Phosphorus oxytrichloride (210) $C_{17}H_{33}COOH$	EP							
	CSEP							
	VE							NR
	CSVE							NR
197. Phosphorus pentoxide up to 54% (214) P_2O_5	EP							
	CSEP							
	VE							
	CSVE							
198. Phtalic acid (215) $C_6H_4(COOH)_2$	EP							
	CSEP							
	VE							
	CSVE							
199. Picric acid up to 10% (217) $C_6H_2(OH)(NO_2)_3$	EP							
	CSEP							
	VE							NR
	CSVE							NR
200. Plating solutions (218)	EP							
	CSEP							
	VE							
	CSVE							
201. Potassium bicarbonate (132) $KHCO_3$	EP							SV
	CSEP							SV
	VE							SV
	CSVE							SV
202. Potassium bromide (133) KBr	EP							
	CSEP							
	VE							
	CSVE							
203. Potassium carbonate up to 50% (134) K_2CO_3	EP							
	CSEP							
	VE				70°C			
	CSVE				70°C			
204. Potassium chloride (135) KCl	EP							
	CSEP							
	VE							
	CSVE							
205. Potassium dichromate (136) $K_2Cr_2O_7$	EP							
	CSEP							
	VE							
	CSVE							
206. Potassium ferrocyanide (143) $K_4[Fe(CN)_6] \cdot 3H_2O$	EP							
	CSEP							
	VE							
	CSVE							

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Medium	types of pipe	Temperature °C						Remarks
		25	40	65	95	110	120	
207. Potassium hydroxide up to 50% (137) KOH	EP							SV
	CSEP							SV
	VE							SV
	CSVE							SV
208. Potassium nitrate (138) KNO ₃	EP							
	CSEP							
	VE							
	CSVE							
209. Potassium permanganate up to 10% KMnO ₄ (139)	EP							
	CSEP							
	VE							
	CSVE							
210. Potassium permanganate up to 25% KMnO ₄ (140)	EP							
	CSEP							
	VE							
	CSVE							
211. Potassium peroxydisulfate (142) K ₂ S ₂ O ₈	EP							
	CSEP							
	VE				80°C			
	CSVE				80°C			
212. Potassium sulfate (141) K ₂ SO ₄	EP							
	CSEP							
	VE							
	CSVE							
213. Propane (219) (CH ₃) ₂ CH ₂	EP							
	CSEP							
	VE							
	CSVE							
214. Propionic acid up to 50% (216) C ₂ H ₅ - COOH	EP							
	CSEP							
	VE							
	CSVE							
215. Silicic acid (145) SiO ₂ . XH ₂ O	EP							
	CSEP							
	VE							
	CSVE							
216. Silver nitrate (242) AgNO ₃	EP							
	CSEP							
	VE							
	CSVE							
217. Soaps (241)	EP							
	CSEP							
	VE							
	CSVE							

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Medium	types of pipe	Temperature °C						Remarks
		25	40	65	95	110	120	
218. Sodium acetate (175) CH ₃ COONa	EP							
	CSEP							
	VE							
	CSVE							
219. Sodium bicarbonate (176) NaHCO ₃	EP							
	CSEP							
	VE							
	CSVE							
220. Sodium bisulfate (177) NaHSO ₄	EP							
	CSEP							
	VE							
	CSVE							
221. Sodium bromide (178) NaBr	EP							SV
	CSEP							SV
	VE							SV
	CSVE							SV
222. Sodium carbonate up to 37% (187) Na ₂ CO ₃	EP							SV
	CSEP							SV
	VE							SV
	CSVE							SV
223. Sodium chlorate up to 50% (179) NaClO ₃	EP							
	CSEP							
	VE							
	CSVE							
224. Sodium chloride (180) NaCl	EP							saturated
	CSEP							saturated
	VE							saturated
	CSVE							saturated
225. Sodium cyanide (181) NaCN	EP							
	CSEP							
	VE							
	CSVE							
226. Sodium dichromate (182) Na ₂ Cr ₂ O ₇	EP							
	CSEP							
	VE							
	CSVE							
227. Sodium ferrocyanide (183) Na ₄ [Fe (CN) ₆] · 3H ₂ O	EP							
	CSEP							
	VE							
	CSVE							
228. Sodium fluoride (184) NaF	EP							SV
	CSEP							SV
	VE							SV
	CSVE							SV

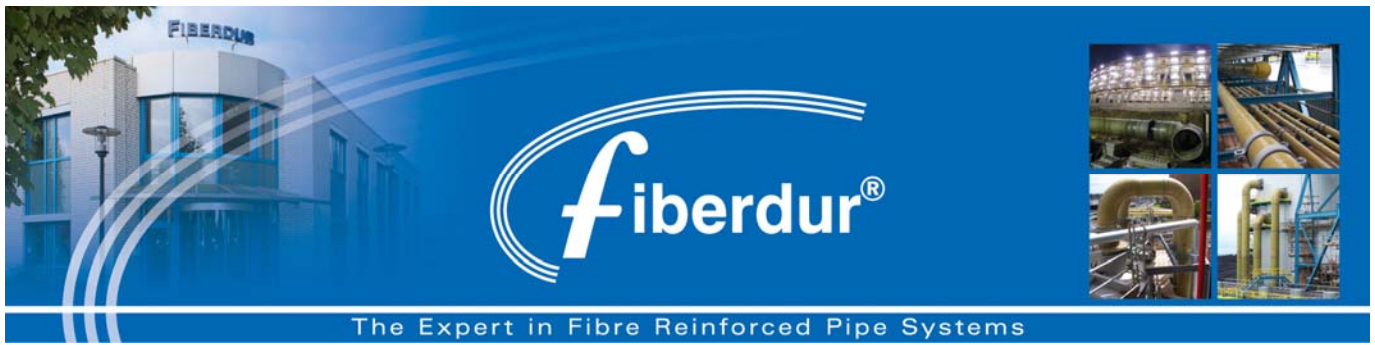
Medium	types of pipe	Temperature °C						Remarks
		25	40	65	95	110	120	
229. Sodium hydroxide up to 50% (185) NaOH	EP							SV
	CSEP							SV
	VE							SV
	CSVE							SV
230. Sodium hypochlorite up to 10% (186) NaOCl	EP							NR
	CSEP							NR
	VE							SV
	CSVE							SV
231. Sodium methoxide up to 40% (188) CH ₃ ONa	EP							
	CSEP							
	VE							NR
	CSVE							NR
232. Sodium nitrate (189) NaNO ₃	EP							
	CSEP							
	VE							
	CSVE							
233. Sodium peroxide (190) Na ₂ O ₂	EP							NR
	CSEP							NR
	VE							NR
	CSVE							NR
234. Sodium phosphate (191) Na ₂ HPO ₄	EP							
	CSEP							
	VE							
	CSVE							
235. Sodium silicate (192) Na ₂ Si ₄ O ₉	EP							
	CSEP							
	VE							
	CSVE							
236. Sodium sulfaten (193) Na ₂ SO ₄	EP							
	CSEP							
	VE							
	CSVE							
237. Sodium sulfite (194) Na ₂ SO ₃	EP							
	CSEP							
	VE							
	CSVE							
238. Sodium thiosulfate (195) Na ₂ S ₂ O ₃	EP							
	CSEP							
	VE							
	CSVE							
239. Sorbite solution (246) C ₆ H ₁₄ O ₆	EP							NR
	CSEP							NR
	VE							
	CSVE							

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Medium	types of pipe	Temperature °C						Remarks
		25	40	65	95	110	120	
240. Stannic chloride (269) SnCl ₂	EP							
	CSEP							
	VE							
	CSVE							
241. Stearic acid (244) C ₁₇ H ₃₅ COOH	EP							
	CSEP							
	VE							
	CSVE							
242. Sulfamic acid up to 10% (245) SO ₂ (OH)NH ₂	EP							
	CSEP							
	VE							
	CSVE							
243. Sulfite liquors (238)	EP							NR
	CSEP							NR
	VE							
	CSVE							
244. Sulfur dioxide wet and dry (234) SO ₂	EP							NR
	CSEP							NR
	VE							
	CSVE							
245. Sulfuric acid up to 10% (236) H ₂ SO ₄	EP							
	CSEP							
	VE							
	CSVE							
246. Sulfic acid up to 25% (237) H ₂ SO ₄	EP							
	CSEP							
	VE							
	CSVE							
247. Sulfoous acid up to 7% (239) H ₂ SO ₃	EP				80°C			
	CSEP				80°C			
	VE							
	CSVE							
248. Tannic acid (247) C ₇₆ H ₅₂ O ₄₆	EP							
	CSEP							
	VE							
	CSVE							
249. Tartaric acid (266) (HOCHCOOH) ₂	EP							
	CSEP							
	VE							
	CSVE							
250. Tetraetyl lead (59) Pb(C ₂ H ₅) ₄	EP							
	CSEP							
	VE							NR
	CSVE							NR



Medium	types of pipe	Temperature °C						Remarks
		25	40	65	95	110	120	
251. Tin (IV) chloride (269) SnCl ₄	EP							
	CSEP							
	VE							
	CSVE							
252. Tobias acid (256) H ₂ N · C ₁₀ H ₆ · SO ₃ H	EP							NR
	CSEP							NR
	VE							
	CSVE							
253. Toluene (250) C ₆ H ₅ CH ₃	EP							
	CSEP							
	VE							
	CSVE							
254. Trichloroacetic acid up to 50% (253) CCl ₃ COOH	EP							NR
	CSEP							NR
	VE							NR
	CSVE							NR
255. Trichloroethylene (252) ClCH ₂ CHCl ₂	EP							
	CSEP							
	VE							NR
	CSVE							NR
256. Triethylamine (251)	EP							
	CSEP							
	VE							
	CSVE							
257. Trisodium phosphate (254) Na ₃ PO ₄	EP							
	CSEP							
	VE							
	CSVE							
258. Tung oil (255)	EP							
	CSEP							
	VE							
	CSVE							
259. Turpentine (248)	EP			50°C				
	CSEP			50°C				
	VE							
	CSVE							
260. Urea (125) CO(NH ₂) ₂	EP							
	CSEP							
	VE							
	CSVE							
261. Urea ammonium nitrate (126) CO(NH ₂) ₂ · NH ₄ NO ₃	EP							
	CSEP							
	VE							
	CSVE							

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Medium	types of pipe	Temperature °C						Remarks
		25	40	65	95	110	120	
262. Vinegar (111)	EP							
	CSEP							
	VE							
	CSVE							
263. Vinyl acetate (258) CH ₃ COOCH = CH ₂	EP							
	CSEP							
	VE							NR
	CSVE							NR
264. Water, deionized (259) H ₂ O	EP							
	CSEP							
	VE							
	CSVE							
265. Water, distilled (260) H ₂ O	EP							
	CSEP							
	VE							
	CSVE							
266. Water, fresh (261) H ₂ O	EP							
	CSEP							
	VE							
	CSVE							
267. Water, salt (262) H ₂ O	EP							
	CSEP							
	VE							
	CSVE							
268. Water, sea (263) H ₂ O	EP							
	CSEP							
	VE							
	CSVE							
269. Xylene (267) C ₆ H ₄ (CH ₃) ₂	EP							
	CSEP							
	VE							
	CSVE							
270. Zinc chloride (270) ZnCl ₂	EP							
	CSEP							
	VE							
	CSVE							
271. Zinc sulfate (271) ZnSO ₄	EP							
	CSEP							
	VE							
	CSVE							
272. dimethyl formamide (272) C ₃ H ₇ NO	EP							NR
	CSEP							NR
	VE							NR
	CSVE							NR

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