



Industrial Fiberglass Specialties, Inc.

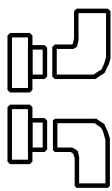
521 Kiser Street
 Dayton, OH 45404-1641
 Tel: 937-222-9000
 Fax: 937-222-9020

Corrosion Guide Series 5800/9800 Furan Pipe & Duct

09-01-2001

Page #1 of 24

Chemical Environment	Concentration %	Temperature (°F) for Furan Resin Series 5800/9800
Acetaldehyde	100	225
Acetaldehyde, Fumes (<40 lbs/cu. ft.)	---	90
Acetic Acid	1	225
Acetic Acid	10	225
Acetic Acid (3-5% solids, pH 2-5)	---	165
Acetic Acid, Glacial	100	240
Acetic Anhydride	100	225
Acetone	1	150
Acetone 4	100	130
Acetone: Toluene	50:50	90
Acetone: Water	10:90	150
Acetonitrile	100	80
Acetyl Chloride	100	180
Acetylsalicylic Acid	100	225
Acrylic Acid	100	80
Acrylonitrile (latex dispersion)	2	225
Acrylonitrile (latex dispersion)	100	225
ADOGEN 442	100	120
ADOGEN 448	100	120
ALIPAL CO433	28	100
ALIPAL CO433, Polymer/Toluene Emulsion (blended together in water)	---	100
Aliphatic Hydrocarbons	100	250
Alkyl Ether Amine Oxide, Non-ionic Surfactant	---	120
Allyl Chloride (HETRON 800 is preferred resin)	100	90
Almond Oil	100	120
Aluminum Bromide (sat'd.)	---	250
Aluminum Chloride	100	250
Aluminum Etchant (5 oz/gal, phosphate free) 1	---	165
Aluminum Fluoride 1	100	225



Industrial Fiberglass Specialties, Inc.

521 Kiser Street
Dayton, OH 45404-1641
Tel: 937-222-9000
Fax: 937-222-9020

Corrosion Guide Series 5800/9800 Furan Pipe & Duct

09-01-2001

Page #2 of 24

Chemical Environment	Concentration %	Temperature (°F) for Furan Resin Series 5800/9800
Aluminum Hydroxide	20	225
Aluminum Hydroxide (sat'd.)	---	225
Aluminum Sulfate	100	250
Aminoethoxy Ethanol	100	LS270
Aminoethyl Piperazine	100	110
Ammonia (trace of pyridine)	5	110
Ammonia Fortified Glass Cleaner (includes trademark glass cleaner)	---	100
Ammonia, Dry Vapors	---	100
Ammonium Bromide (sat'd.)	---	225
Ammonium Carbonate	10	180
Ammonium Carbonate (sat'd.)	---	225
Ammonium Chloride (sat'd.)	---	220
Ammonium Fluoride 1	100	225
Ammonium Hydroxide	1	150
Ammonium Hydroxide	5	100
Ammonium Hydroxide	10	100
Ammonium Hydroxide	20 - 28	NR
Ammonium Nitrate (sat'd.)	---	220
Ammonium Prsulfate (sat'd.)	---	180
Ammonium Phosphate (monobasic)	65	180
Ammonium Phosphate, di-basic (sat'd.)	---	180
Ammonium Sulfate (sat'd.)	---	220
Ammonium Sulfide (sat'd.)	---	250
Ammonium Thiocyanate: Ammonium Thiosulfate: Water (2.3% ammonium sulfate)	4:5.5:88	110
Ammonium Thiocyanate: Ammonium Thiosulfate: Water (2.3% ammonium sulfate)	5.5:4:88	110
Ammonium Tungstate (sat'd.)	---	250
Amyl Acetate	100	200
Amyl Acetate: Xylene	30:70	120



Industrial Fiberglass Specialties, Inc.

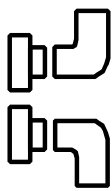
521 Kiser Street
 Dayton, OH 45404-1641
 Tel: 937-222-9000
 Fax: 937-222-9020

Corrosion Guide Series 5800/9800 Furan Pipe & Duct

09-01-2001

Page #3 of 24

Chemical Environment	Concentration %	Temperature (°F) for Furan Resin Series 5800/9800
Amyl Alcohol	100	200
Aniline	100	250
Aniline Hydrochloride	100	225
Bromide: Water (1.5% hydrochloric acid & 1% bromine)	15:4.5:78	140
Antimony Chloride (sat'd.)	---	225
Antimony Oxychloride (sat'd.)	---	225
Aqua Regia (concentrated hydrochloric acid & nitric acid, 3:1) 22	---	NR
Aqua Regia, Fumes (conc.)	---	N/R
Aqueous Isopropanol: Dihydrogenated-Tallow Dimethyl Ammonium Chloride	25:75	120
Aqueous Isopropanol: Dimethyl Distearyl Ammonium Chloride	25:72	120
Aqueous Isopropanol: Quaternary Ammonium (dialkyl dimethyl type)	25:75	120
ARMEEN C (conc.)	---	120
ARMEEN DMCD (conc.)	---	120
Aromatic Solvent: Tributyl Phosphate	65:35	90
ARQUAD C/50 (conc.)	---	120
Barium Chloride	100	200
Barium Hydroxide (sat'd.)	---	200
Barium Sulfate	100	250
Barium Sulfide (sat'd.)	---	150
Beer	100	NR
Benzal Chloride	100	250
Benzaldehyde	100	200
Benzene	1	150
Benzene	100	150
Benzene Sulfonic Acid	30	200
Benzene Sulfonic Acid (sat'd.)	---	200
Benzene Sulfonic Acid: Sulfuric Acid: Water	88:7:5	140



Industrial Fiberglass Specialties, Inc.

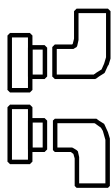
521 Kiser Street
 Dayton, OH 45404-1641
 Tel: 937-222-9000
 Fax: 937-222-9020

Corrosion Guide Series 5800/9800 Furan Pipe & Duct

09-01-2001

Page #4 of 24

Chemical Environment	Concentration %	Temperature (°F) for Furan Resin Series 5800/9800
Benzene: Dimethylformamide: Water (5% tetrahydrofuran)	40:5:50	90
Benzene, Vapors	---	90
BENZOFLEX 9.88	100	120
Benzoic Acid (sat'd.)	---	250
Benzotrichloride	100	250
Benzoyl Chloride	100	100
Benzyl Alcohol	100	200
Benzyl Benzoate	100	120
Benzyl Chloride	100	150
Borax (sat'd.)	---	140
Boric Acid (sat'd.)	---	200
BOWL CLEANSE, mild	---	100
Brine, Salt (sat'd.)	---	220
Brownstock(pulp mil, pH<12)	100	150
Butyl Acetate	100	220
Butyl Alcohol (includes normal, secondary & tertiary)	100	120
Butyl Alcohol: Dilisobutyl Ketone: Ethyl Hexylacetate	5:85:10	100
BUTYL CELLOSOLVE: Monoethanolamine (alkaline film stripper)	57:30	140
Butyl Ether	100	285
Butyric Acid	1	120
Butyric Acid	25	120
Butyric Acid	50	150
Butyric Acid	70	150
Butyric Acid	100	120
C-56	100	200
Calcium Bisulfite (sat'd.)	---	225
Calcium Chloride (sat'd.)	---	250
Calcium Hydroxide	1	225



Industrial Fiberglass Specialties, Inc.

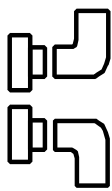
521 Kiser Street
Dayton, OH 45404-1641
Tel: 937-222-9000
Fax: 937-222-9020

Corrosion Guide Series 5800/9800 Furan Pipe & Duct

09-01-2001

Page #5 of 24

Chemical Environment	Concentration %	Temperature (°F) for Furan Resin Series 5800/9800
Calcium Hydroxide	15	225
Calcium Hydroxide	25	225
Calcium Hydroxide (sat'd.)	---	225
Calcium Hypochlorite (sat'd.)	---	NR
Calcium Nitrate (sat'd.)	---	220
Calcium Sulfate (sat'd.)	---	250
Calgon (sat'd. Sodium hexametaphosphate)	---	220
Camphene, Chlorinated 68%: Xylene	90:10	120
Carbamide (sat'd.)	---	225
Carbon Disulfide	100	90
Carbon Monoxide Gas	100	160
Carbon Tetrachloride	100	225
Carbon Tetrachloride, Vapor	100	225
Catechol	100	250
Caustic Spent, Phenolic (refinery, neutralized to pH 5-6)	---	130
Caustic Spent, Sulfidic (petrochemical, neutralized to pH 5-6)	---	130
Cerous Nitrate (sat'd.)	---	90
CHEM-REZ C-2006	100	100
CHEM-REZ C-2009	100	200
CHEM-REZ C-2075	100	100
Chloral (sat'd.)	---	225
Chlorinated 68%, Camphene: Xylene	90:10	120
Chlorine Dioxide (chilled liquid and <1 g/l)	---	NR
Chlorine Dioxide, Fumes	5	NR
Chlorine Gas (coolers & strippers)	---	NR
Chlorine Gas, Dry	100	225
Chlorine Gas, Wet	100	LS150
Chlorobenzene	1	250



Industrial Fiberglass Specialties, Inc.

521 Kiser Street
 Dayton, OH 45404-1641
 Tel: 937-222-9000
 Fax: 937-222-9020

Corrosion Guide Series 5800/9800 Furan Pipe & Duct

09-01-2001

Page #6 of 24

Chemical Environment	Concentration %	Temperature (°F) for Furan Resin Series 5800/9800
Chlorobenzene	100	250
Chloroform, Liquid (trichloromethane)	100	140
Chloroform, Vapor	100	250
Chloronaphthalene (chloromethane)	100	225
Chlorosulfonic Acid	100	80
CHLOROTHENE N.U	100	80
Chrome, Hard (plating baths)	---	NR
Chromic Acid 3	1 - 30	NR
Chromic Acid (HETRON 72 satisfactory 140") 3	40 - 50	NR
Chromic Acid (sat'd.) 3	---	NR
Chromic Acid Evaporator (55 oz/gal vacuum, recovery unit with 20% by volume concentrated sulfuric acid) 3	---	NR
Chromic Acid, Intermittent or Vapor 3	20	NR
Chromic Chloride (sat'd.)	---	220
Chromium Postassium Sulfate (sat'd.)	---	225
Cleaner, Disinfectant PD 64	100	100
Copper Acetate (sat'd.)	---	225
Copper Chloride (sat'd.)	---	250
Copper Sulfate (sat'd.)	---	250
Cresol, Fumes	100	90
Cresols, Mixture	100	150
Cresylics (water, neutral oils, mercaptans, hydrogen sulfide, waste liquor, pH 5-6)	---	130
Crude Sulfate: Turpentine	---	NR
Cyclohexane	1	150
Cyclohexane	100	150
Cyclohexanone	100	100
CYGON 400	4	150
CYGON 400	100	150



Industrial Fiberglass Specialties, Inc.

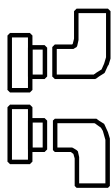
521 Kiser Street
Dayton, OH 45404-1641
Tel: 937-222-9000
Fax: 937-222-9020

Corrosion Guide Series 5800/9800 Furan Pipe & Duct

09-01-2001

Page #7 of 24

Chemical Environment	Concentration %	Temperature (°F) for Furan Resin Series 5800/9800
Detergent (dimethyl benzyl N-alkyl type, 25% phosphoric acid, 75% inerts)	---	100
Detergent (dimethyl benzyl N-alkyl type, 23% hydrochloric acid, 77% inerts)	---	100
Detergent (dimethyl benzyl N-alkyl type, 23% hydrochloric acid, 25% phosphoric acid, inerts)	---	100
Detergent, Organic (pH 10-11)	100	180
Detergents, Germicidal (conc.)	---	100
Detergents, Organic	---	100
DFR-121	---	NR
DI-SYSTON (1-10 dilution)	---	120
Diallylphthalate	100	210
Dibromopropanol (2,3-)	100	105
Dibromopropyl Phosphate	100	105
Dibutyl Phthalate	100	200
Dicalcium Phosphate Gas (liquid, scrubbing, pH 3-4)	---	300
Dichloro(2,6)-Aniline-(4)-, Hydrochloric Acid	32	170
Dichloro-(2)-Propylphosphate	100	105
Dichlorobenzene	1	220
Dichlorobenzene	100	220
Dichloroethane (2,2-)	100	150
Dichloroisopropyl Phosphate	100	105
Dichloronitrobenzene (2,4-) (trace of nitric acid & water)	100	230
Dichlorophenol	1	140
Dichlorophenol	100	140
Dicoco Dimethyl Ammonium Chloride	---	120
Dicoco Dimethyl Quarternary	75	120
Diethanolamine	100	150
Diethylamine	100	225
Diethyl Benzene	100	150



Industrial Fiberglass Specialties, Inc.

521 Kiser Street
Dayton, OH 45404-1641
Tel: 937-222-9000
Fax: 937-222-9020

Corrosion Guide Series 5800/9800 Furan Pipe & Duct

09-01-2001

Page #8 of 24

Chemical Environment	Concentration %	Temperature (°F) for Furan Resin Series 5800/9800
Diethyl Carbonate	100	280
Diethyl Ketone	100	215
Diethylene Glycol	100	225
Deithylene Glycol Monoethyl Ether	100	225
Diethylene Triamine 3	100	100
Diethylene Triamine: Sodium Hydroxide: Water (10% ethylenediamine)	10:10:70	140
Diglycolamine	100	LS270
Diglycolamine (saturated with carbon dioxide & hydrogen sulfide)	100	LS270
Dihydrogenated-Tallow Dimethyl Ammonium Chloride: Aqueous Isopropanol	75:25	120
Diisobutyl Ketone: Butyl Alcohol: Ethyl Hexylacetate	85:5:10	100
Dimethyl Aniline	100	225
Dimethyl Distearyl Ammonium Chloride: Aqueous Isopropanol	72:25	120
Dimethyl Distearyl Quaternary (in neutral organic solvent)	---	190
Dimethyl Formamide	7.2	90
Dimethyl Formamide	30	90
Dimethyl Formamide	100	LS90
Dimethyl Formamide Terephthalic Acid: Hydrochloric Acid: Water (7% dimethylformamide)	14:28:51	100
Dimethyl Phthalate	100	225
Dimethyl Sulfate	100	200
Dimethyl Tin Dichloride	50	80
Dimethylformamide: Benzene: Water (5% tetrahydrofuran)	5:40:50	90
Dioxane	1	125
Dioxane	100	125
Dipropylene Glycol Dibenzoate	100	120
Disinfectant, Cleaner (PD 64)	---	100



Industrial Fiberglass Specialties, Inc.

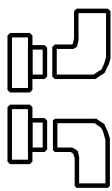
521 Kiser Street
 Dayton, OH 45404-1641
 Tel: 937-222-9000
 Fax: 937-222-9020

Corrosion Guide Series 5800/9800 Furan Pipe & Duct

09-01-2001

Page #9 of 24

Chemical Environment	Concentration %	Temperature (°F) for Furan Resin Series 5800/9800
Dispersant, Anionic (blend)	100	100
DOWCLEN E C	100	120
ELVASE	---	100
EP 52-A65	100	90
EPTAM (concentrated herbicide) 4	---	120
Ethanolamine	100	150
Ehtyl Acetate	1	125
Ethyl Acetate	100	125
Ethyl Acetate: Methylene Chloride: Caustic 50%	16:83:1	LS90
Ethyl Acrylate	100	80
Ethyl Alcohol 17	1	150
Ethyl Alcohol (ethanol) 17	15	150
Ethyl Alcohol 17	50	100
Ethyl Alcohol 17	100	100
Ethyl Amine	100	200
Ethyl Bromide	100	200
Ethyl Chloride	100	220
Ethyl Ether	100	90
Ethyl Hexylacetate: Diisobutyl Ketone: Butyl Alcohol	10:85:5	100
Ethyl Sulfate	100	225
Ethyl Sulfuric Acid (sat'd.)	---	225
Ethylene Chloride (also called ethylene dichloride)	100	100
Ethylene Diamine	100	100
Diethylene Triamine: Sodium Hydroxide: Water (10% ethylenediamine)	10:10:70	140
Ethylene Dibromide	100	85
Ethylene Disulfonic Acid(sat'd.)	---	225
Ethylene Glycol	100	250
Ethylene Oxide	100	250
Ethylene Tetrachloride	100	250



Industrial Fiberglass Specialties, Inc.

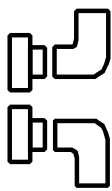
521 Kiser Street
 Dayton, OH 45404-1641
 Tel: 937-222-9000
 Fax: 937-222-9020

Corrosion Guide
Series 5800/9800
Furan Pipe & Duct

09-01-2001

Page #10 of 24

Chemical Environment	Concentration %	Temperature (°F) for Furan Resin Series 5800/9800
EVA	---	100
Exxon Latex (blended in water with trace of ALIPAL CO433)	62	100
Fatty Acids (sat'd.)	---	250
Ferric Chloride (sat'd.)	---	250
Ferric Nitrate (sat'd.)	---	250
Ferric Sulfate (sat'd.)	---	225
Fish Oil & Meal Exhaust Gas	---	175
Flue Gas, Coal Fired or Hog Fuel (trace of hydrochloric acid, pH 3.7-7)	---	NR
Fluoboric Acid (sat'd.) 1	---	200
Fluorine Gas 1	100	LS265
Fluosilicic Acid 1	1	200
Fluosilicic Acid 1	10	200
Fluosilicic Acid 1	25	200
Fluosilicic Acid 1	35	200
Fluosilicic Acid (sat'd.) 1	---	200
Formaldehyde	25	225
Formaldehyde	37	225
Formaldehyde	44	225
Formaldehyde	52	150
Formamide	100	LS100
Formic Acid	1	225
Formic Acid	10	225
Formic Acid	25	160
Formic Acid	50	120
Formic Acid	90	100
Formic Acid	100	100
Freon 2	100	100
Fuel Oil, #1 and #2	100	170



Industrial Fiberglass Specialties, Inc.

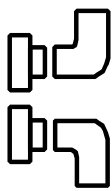
521 Kiser Street
 Dayton, OH 45404-1641
 Tel: 937-222-9000
 Fax: 937-222-9020

Corrosion Guide Series 5800/9800 Furan Pipe & Duct

09-01-2001

Page #11 of 24

Chemical Environment	Concentration %	Temperature (°F) for Furan Resin Series 5800/9800
Fumigant, Soil (sat'd.)	---	120
FUMIGANT,VIDDEN D (conc.) 4	---	120
Fumigants (conc.)	---	120
Furfural	5	225
Furfural	10	225
Furfural	100	225
Furfuryl Alcohol	100	225
Gasoline (Unleaded), Ethanol	90:10	Ambient
Gasoline (Unleaded), Ethanol	80:20	Ambient
Gasoline (Unleaded), Methanol	90:10	Ambient
Gasoline (Unleaded), Methanol	80:20	Ambient
Gallis Acid (sat'd.)	---	250
GLOBRITE X-200	---	100
Glycerine	100	250
Glycerol Dibromohydrin	100	105
Glycerol Dichlorohydrin	100	125
Glycerol Monochlorohydrin	100	125
Glycolic Acid	35	200
Clycolic Acid	70	200
Clyoxylic Acid	25	NR
HALSO 99	100	90
Heptane, normal	100	250
Herbicide, Liquid 4	10	120
Hexachlorocyclopentadiene	100	200
Hexane	100	160
Hexylene Glycol Ammonium Chloride	---	120
Hydrazine	70	LS100
Hydrazine Sulfate (sat'd.)	---	225
Hydriodic Acid	58	250



Industrial Fiberglass Specialties, Inc.

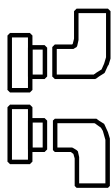
521 Kiser Street
Dayton, OH 45404-1641
Tel: 937-222-9000
Fax: 937-222-9020

Corrosion Guide Series 5800/9800 Furan Pipe & Duct

09-01-2001

Page #12 of 24

Chemical Environment	Concentration %	Temperature (°F) for Furan Resin Series 5800/9800
Hydrobromic Acid	48	NR
Hydrochloric Acid (muriatic acid) 22	1	230
Hydrochloric Acid 22	5	230
Hydrochloric Acid 22	10	230
Hydrochloric Acid 22	15	230
Hydrochloric Acid 22	20	180
Hydrochloric Acid 22	25	150
Hydrochloric Acid 22	32	150
Hydrochloric Acid 22	36	125
Hydrochloric Acid 22	37	NR
Hydrochloric Acid (free chlorine)	100	NR
Hydrochloric Acid: 2,6-Dichloro-4-Aniline	32	170
Hydrochloric Acid: Inerts (traces of alkyl dimethyl benzyl ammonium chloride, tributyl tin chloride/ethylene oxide/amine)	23:77	100
Hydrochloric Acid: Methylamino Ether: Methanol (traces of isobutyronitrile, impurities)	23:74:2	80
Hydrochloric Acid: Terephthalic Acid: Water (7% dimethylformamide)	28:14:51	100
Hydrochloric Acid: Methyl Alcohol: Water, all vapors	2:93:5	100
Hydrofluoric Acid	1 - 40	NR
Hydrogen Bromide: Aniline Hydrochloride: Water (1.5% hydrochloric acid, 1% bromine)	4.5:15:78	140
Hydrogen Peroxide	35 - 50	NR
Hydrogen Peroxide, Vapors	50	140
Hydrogen Sulfide	100	250
Hydrogen Sulfide (sewer gas)	---	90
Hydrogen: Ozone	---	NR
Hypochlorous Acid	10 - 20	NR
Hypochlorous Acid (conc.)	---	NR
Hypophosphorous Acid	50	115



Industrial Fiberglass Specialties, Inc.

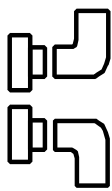
521 Kiser Street
 Dayton, OH 45404-1641
 Tel: 937-222-9000
 Fax: 937-222-9020

Corrosion Guide Series 5800/9800 Furan Pipe & Duct

09-01-2001

Page #13 of 24

Chemical Environment	Concentration %	Temperature (°F) for Furan Resin Series 5800/9800
Inerts: Hydrochloric Acid (traces of alkyl dimethyl benzyl ammonium chloride & tributyl tin chloride/ethylene oxide/amine)	77:23	100
Inerts: Isopropyl Alcohol: Sodium Xylene Sulfate (traces of potassium ricinoleate & o-phenylphenol)	67:10:10	100
Inerts: Phosphoric Acid (trace of alkyl dimethyl benzyl ammonium chloride)	75:25	100
Iso-Decanol	100	180
Isoamyl Alcohol	100	265
ISOCURE 306	100	90
ISOCURE 308	100	90
ISOCURE 608	---	90
ISOPREP 33 (5 oz/gal)	---	165
ISOPREP 44 (10 oz/gal)	---	180
Isopropyl Alcohol	10	150
Isopropyl Alcohol	100	150
Isopropyl Alcohol: Sodium Xylene Sulfate: Inerts (traces of potassium ricinoleate & o-phenylphenol)	10:10:67	100
Isopropyl Amine	100	120
JM-235 & JM-271 (adhesives)	100	100
Kerosene: Organics: Phosphoric Acid (10% isodecanol)	70:20:30	150
Lactic Acid	100	225
LSSO EC	100	80
LASSO HERBICIDE (1 to 10 dilution) 4	---	120
Latex, Dispersion in Water	100	100
Lead Chloride (sat'd.)	---	225
Lead Nitrate (sat'd.)	---	225
Levulinic Acid (sat'd) (4-oxopentanoic acid)	---	225
Lignin: Spent Acid: Tall Oil, Crude (1% sulfuric Acid, pH 3)	60:29:10	200
Magnesium Chloride (sat'd.)	---	220



Industrial Fiberglass Specialties, Inc.

521 Kiser Street
Dayton, OH 45404-1641
Tel: 937-222-9000
Fax: 937-222-9020

Corrosion Guide Series 5800/9800 Furan Pipe & Duct

09-01-2001

Page #14 of 24

Chemical Environment	Concentration %	Temperature (°F) for Furan Resin Series 5800/9800
Magnesium Sulfate (sat'd.)	---	250
Maleic Acid (sat'd.)	---	200
Manganese Chloride (sat'd., also called manganous chloride)	---	225
Manganese Oxide (sat'd.)	---	225
Manganese Sulfate (sat'd., also called manganous sulfate)	---	225
Mercapto-Ethanol	100	80
Mercaptopropionic, Crude Acid	100	200
Mercuric Chloride (sat'd.)	---	220
Metaphosphoric Acid	100	225
Methanamide	100	100
Methane Sulfonic Acid	100	200
Methanol: Hydrochloric Acid: Methylamino Ether (Trace of isobutyronitrile & impurities)	2:23:74	75
Methyl Acetate	100	150
Methyl Alcohol 17	100	150
Methyl Alcohol: Hydrochloric Acid: Water (all Vapors)	93:2:5	100
Methyl Alcohol: Water	80:20	150
Methyl Chloride (chloromethane)	100	NR
Methyl Cyclohexanol	100	200
Methyl Ethyl Ketone	100	150
Methyl Ethyl Ketone: Sulfuric Acid, 50%	10:90	80
Methyl Isobutyl Ketone	100	150
Methyl Sulfate	100	200
Methyl Sulfonic Acid	100	200
Methyl Tertiary Butyl Ether	100	80
Methylamino Ether: Hydrochloric Acid: Methanol (trace of isobutyronitrile & impurities)	74:23:2	75
Methylene Chloride	100	LS90
Methylene Chloride: Toluene	50:50	LS90



Industrial Fiberglass Specialties, Inc.

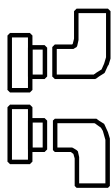
521 Kiser Street
Dayton, OH 45404-1641
Tel: 937-222-9000
Fax: 937-222-9020

Corrosion Guide Series 5800/9800 Furan Pipe & Duct

09-01-2001

Page #15 of 24

Chemical Environment	Concentration %	Temperature (°F) for Furan Resin Series 5800/9800
Minerals Oils	100	180
Mineral Spirits	100	250
Monochlorobenzene	100	250
Monochlorotoluene: Water	50:50	200
Monoethanolamine (also called ethanolamine)	100	150
Monoethanolamine (desulfurizing, sulfur dioxide & hydrogen sulfate)	100	270
Monoethanolamine, Butyl Cellosolve (alkaline film stripper)	30:57	140
Morpholine	100	150
Naphthalene	100	210
Naphthalene Sulfonic Acid	100	225
Naphthanol Sulfonic Acid	100	225
Nickel Chloride (sat'd.)	---	220
Nickel Nitrate (sat'd.)	---	220
Nickel Sulfate (sat'd.)	---	230
Nitrating Acid (spent & strong)	---	NR
Nitric Acid	5	90
Nitric Acid	10	90
Nitric Acid	20 - 52.4	NR
Nitric Acid, Vapor	24 - 48	NR
Nitric-Dinitro-Toluene: Sulfuric Acid, all fumes	---	200
Nitrobenzene	100	225
Nitrophenol	100	225
Nonyl Phenol (monoalkyl phenol)	100	110
Nonylphenoxytriethanol Sulfate (sodium salt)	28	100
Oil, Waste (various ketones & aromatics)	---	90
Oils (animal, mineral or vegetable)	100	250
Oleic Acid	100	225
Organics (fluorinated, chlorinated acids neutralized with lime effluent) 1	---	100



Industrial Fiberglass Specialties, Inc.

521 Kiser Street
 Dayton, OH 45404-1641
 Tel: 937-222-9000
 Fax: 937-222-9020

Corrosion Guide Series 5800/9800 Furan Pipe & Duct

09-01-2001

Page #16 of 24

Chemical Environment	Concentration %	Temperature (°F) for Furan Resin Series 5800/9800
Organics, 20%: Kerosene, 70%: Phosphoric Acid, 30% (10% isodecanol)	---	150
Oxalic Acid	100	200
Ozone (wet, sewage treatment, concentration in ppm)	---	NR
Ozone: Hydrogen	---	NR
Parrafin Wax	100	220
Pentachloroethene	100	225
PET SET 1505 and 2590	100	90
Perchloroethylene	100	250
Phenol (carbolic acid)	2	180
Phenol	5	180
Phenol	10	180
Phenol	15	120
Phenol	85	90
Phenol	100	LS120
Phenol Sulfonic Acid (sat'd.)	---	220
Phenols (some sulfates, hydrogen sulfide, water & waste liquor, pH 5-6)	---	130
Phenolic Spent Caustic, Refinery	---	130
Phenyl Carbinol	100	120
Phenyl Ether	100	200
Phosphoric Acid	85	250
Phosphoric Acid, 30%: Kerosene, 70%: Organics, 20% (isodecanol, 10%)	---	150
Phosphoric Acid: Inerts (trace of alkyl dimethyl benzyl ammonium chloride)	25:75	100
Phosphorus Acid (conc.)	---	225
Phosphorus Oxychloride 4	100	NR
Phosphorus Trichloride 4	100	100
Phthalic Acid	100	225
Picric Acid (sat'd.)	---	165



Industrial Fiberglass Specialties, Inc.

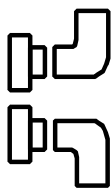
521 Kiser Street
Dayton, OH 45404-1641
Tel: 937-222-9000
Fax: 937-222-9020

Corrosion Guide Series 5800/9800 Furan Pipe & Duct

09-01-2001

Page #17 of 24

Chemical Environment	Concentration %	Temperature (°F) for Furan Resin Series 5800/9800
Polymer/Toluene Emulsion, ALIPAL CO433 (blended in water)	---	100
Potassium Bromate	10	150
Potassium Bromide (sat'd.)	---	200
Potassium Carbonate	10	200
Potassium Carbonate	25	200
Potassium Carbonate (sat'd.)	---	200
Potassium Chloride	100	250
Potassium Cyanide (sat'd.)	---	80
Potassium Ferricyanide (sat'd.)	---	180
Potassium Ferrocyanide (sat'd.)	---	200
Potassium Hydroxide	10	200
Potassium Hydroxide	25	200
Potassium Hydroxide	45	200
Potassium Hydroxide	50	150
Potassium Nitrate	100	250
Potassium Oxalate (sat'd.)	---	225
Potassium Persulfate	100	225
Potassium Sulfate	100	250
Propionic Acid	1	80
Quaternary (dimethyl, distearyl in "neutral" organic solvent)	---	190
Quaternary (includes Hexylene & methosulfate types)	---	120
Quaternary Ammonium Compound (in isopropanol, cationic)	---	120
Quaternary Ammonium: Aqueous Isopropanol (dialkyl dimethyl type)	75:25	120
Quaternary Softener (difatty complex)	---	80
Rayon Spin Bath, Fumes	---	LS200
Resorcinol	100	250
Salicylic Acid (sat'd.)	---	250



Industrial Fiberglass Specialties, Inc.

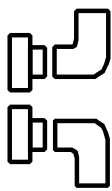
521 Kiser Street
Dayton, OH 45404-1641
Tel: 937-222-9000
Fax: 937-222-9020

Corrosion Guide Series 5800/9800 Furan Pipe & Duct

09-01-2001

Page #18 of 24

Chemical Environment	Concentration %	Temperature (°F) for Furan Resin Series 5800/9800
Septic System	---	90
Sewage Gas; H ₂ S	---	90
Sewage, Municipal (treated & untreated)	---	90
Silicone Tetrachloride	100	140
Soap Plant Fumes	---	90
Sodium Acetate	100	225
Sodium Aluminate (sat'd.)	---	150
Sodium Bicarbonate	10	225
Sodium Bicarbonate (sat'd.)	---	225
Sodium Bisulfate	100	225
Sodium Bisulfide	15	140
Sodium Bisulfide	45	140
Sodium Bisulfide: Sodium Hydroxide	15:15	140
Sodium Bisulfite (sat'd.)	---	225
Sodium Borate (sat'd.)	---	140
Sodium Bromate	20	150
Sodium Carbonate	2	160
Sodium Carbonate	10	160
Sodium Carbonate	25	160
Sodium Carbonate	32	220
Sodium Carbonate (sat'd.)	---	225
Sodium Chloride (sat'd.)	---	250
Sodium Chlorosulfonate (sat'd.)	---	225
Sodium Cyanide (sat'd.)	---	225
Sodium Hexametaphosphate (sat'd.)	---	150
Sodium Hydrosulfide	65	140
Sodium Hydrosulfide: Sodium Hydroxide	15:15	140
Sodium Hydroxide	0.5	180
Sodium Hydroxide	1	180



Industrial Fiberglass Specialties, Inc.

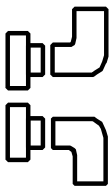
521 Kiser Street
 Dayton, OH 45404-1641
 Tel: 937-222-9000
 Fax: 937-222-9020

Corrosion Guide Series 5800/9800 Furan Pipe & Duct

09-01-2001

Page #19 of 24

Chemical Environment	Concentration %	Temperature (°F) for Furan Resin Series 5800/9800
Sodium Hydroxide	5	160
Sodium Hydroxide	10	160
Sodium Hydroxide	25	150
Sodium Hydroxide	50	180
Sodium Hydroxide (scrubbing chlorine blow gas)	20	NR
Sodium Hydroxide (scrubbing chlorine & chlorine dioxide)	5	NR
Sodium Hydroxide: Diethylene Triamine: Water (10% ethylenediamine)	10:10:70	140
Sodium Hydroxide: Sodium Bisulfide	15:15	140
Sodium Hydroxide: Sodium Hydrosulfide	15:15	140
Sodium Hydroxide: Sodium Thiosulfate: Sodium Sulfide	30:2:2	160
Sodium Hypochlorite (stable) 3	2 - 15	NR
Sodium Hypochlorite, Vapors (concentration above 5.25%)	---	140
Sodium Oxalate (sat'd.)	---	225
Sodium Silicate 1	6	160
Sodium Sulfate	100	250
Sodium Sulfhydrate	15	140
Sodium Sulfhydrate	45	140
Sodium Sulfide	10	220
Sodium Sulfide (sat'd.)	---	220
Sodium Sulfide: Sodium Thiosulfate: Sodium Hydroxide	2:2:30	160
Sodium Tartrate (sat'd.)	---	225
Sodium Tetraborate (sat'd.)	---	200
Sodium Thiosulfate	100	220
Sodium Thiosulfate: Sodium Hydroxide: Sodium Sulfide	2:30:2	160
Sodium Xylene Sulfate: Isopropyl Alcohol: Inerts (trace potassium recinoleate & o-phenylphenol)	10:10:67	100



Industrial Fiberglass Specialties, Inc.

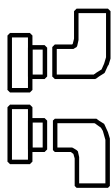
521 Kiser Street
Dayton, OH 45404-1641
Tel: 937-222-9000
Fax: 937-222-9020

Corrosion Guide Series 5800/9800 Furan Pipe & Duct

09-01-2001

Page #20 of 24

Chemical Environment	Concentration %	Temperature (°F) for Furan Resin Series 5800/9800
SOFTENER B	---	190
Soil, Fumigant (dilute)	---	120
Spent Acid (excess sulfuric acid, pH 1)	2	200
Spent Acid: Legnin: Tall Oil: Crude (1% sulfuric acid, pH 3)	29:60:10	200
Spent Acid: Tall Oil (lignin, pH 1)	2	200
Spent Acid: Tall Oil, Crude (lignin, pH 4.3)	2	200
Stannic Chloride	100	225
Stearic Acid	100	250
Sulfur Chloride	100	225
Sulfur Dichloride	100	100
Sulfur Dichloride, Vapor	---	80
Sulfur Dioxide (desulfurizing, hydrogen sulfide with monoethanolamine)	100	270
Sulfur Dioxide (dry or wet)	100	250
Sulfur Dioxide, Fumes (pulp mill)	---	NR
Sulfur, Molten (trace hydrogen sulfide, sulfur dioxide, sulfur trioxide & water)	100	260
Sulfuric Acid	1	210
Sulfuric Acid	5	210
Sulfuric Acid	25	210
Sulfuric Acid	50	200
Sulfuric Acid	70	190
Sulfuric Acid	75	150
Sulfuric Acid	80	NR
Sulfuric Acid (2% excess sulfuric acid, spent acid, pH 1)	---	200
Sulfuric Acid (trace dichlorides)	30	165
Sulfuric Acid (trace dichlorides)	76	165
Sulfuric Acid (trace organics)	30	165
Sulfuric Acid (trace organics)	76	165



Industrial Fiberglass Specialties, Inc.

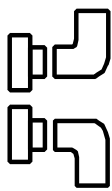
521 Kiser Street
 Dayton, OH 45404-1641
 Tel: 937-222-9000
 Fax: 937-222-9020

Corrosion Guide Series 5800/9800 Furan Pipe & Duct

09-01-2001

Page #21 of 24

Chemical Environment	Concentration %	Temperature (°F) for Furan Resin Series 5800/9800
Sulfuric Acid (with lime, used for treating waste oils, gear, cutting, etc.)	93	180
Sulfuric Acid (xylene derivative, t-amine & alkaline metal salt)	20	100
Sulfuric Acid Vapor	10	250
Sulfuric Acid Vapor	50	180
Sulfuric Acid, 50%: Methyl Ethyl Ketone	90:10	80
Sulfuric Acid: Benzene Sulfonic Acid: Water	7:88:5	140
Sulfuric Acid, Fumes: Nitric-Dinitro-Toluene, Fumes 3	---	200
Sulfurous Acid	10	200
Surfactant (nonyl phenoxytriethoxy ethanol type)	28	100
Surfactant, Alkyl Ether Amine Oxide (nonionic)	---	120
Tall Oil, Crude: Spent Acid (Ligin, pH 4.3)	2	200
Tall Oil, Crude: Spent Acid: Ligin (1% sulfuric acid, pH 3)	10:29:60	200
Tall Oil: Spent Acid (lignin, pH 1)	2	200
Tartaric Acid (sat'd.)	---	250
TELONET, Fumigant (conc.) 4	---	120
Terephthalic Acid: Hydrochloric Acid: Water (7% dimethylformamide)	14:28:51	100
Tetrachloroethane	100	225
Tetrahydrofuran	100	100
Tetrahydrofuryl Alcohol	100	225
Thioglycol, Mono	100	80
TINOFIX QF	50	90
Titanium Chloride (sat'd.)	---	225
Titanium Sulfate (sat'd.)	---	225
Toluene	100	225
Toluene Sulfonic Acid	65	100
Toluene Sulfonic Acid	100	225
Toluene: Acetone	50:50	90



Industrial Fiberglass Specialties, Inc.

521 Kiser Street
Dayton, OH 45404-1641
Tel: 937-222-9000
Fax: 937-222-9020

Corrosion Guide Series 5800/9800 Furan Pipe & Duct

09-01-2001

Page #22 of 24

Chemical Environment	Concentration %	Temperature (°F) for Furan Resin Series 5800/9800
Toluene, Vapor	100	200
Toluene, Vapor & Condensate	100	120
Toluene, Vapor & Reflux	100	230
Toxaphene, Xylene	90:10	120
Tributyl Phosphate: Aromatic Solvent	35:65	90
Trichloroacetonitrile (trace acetonitrile, hydrochloric acid)	100	85
Trichlorobenzene	100	225
Trichloroethane, (1,1,1-)	100	120
Trichloroethylene 4	100	180
Trichloroethylene, (1,1,2-)	100	185
Trichloroethylene, Fumes (22% hydrochloric acid, 10% chlorine, 9% oxygen, 6% carbon monoxide, 4% hydrogen)	---	175
Tricresyl Phosphate	100	160
Triethylamine	100	150
Trihydroxybenzoic Acid (sat'd.)	---	250
Turpentine: Crude Sulfate	---	NR
Urea (sat'd.)	---	225
Uric Acid (conc.)	---	225
VARIQUAT K-300	---	120
VAROX 222-90	---	120
VAROX 185E	---	120
VIDDEN D, Fumigant (conc.) 4	---	120
Water: Acetone	90:10	150
Water: Ammonium Thiosulfate: Ammonium Thiocyanate (2.3% ammonium sulfate)	88:5.5:4	110
Water: Aniline Hydrochloride: Hydrogen Bromide (1.5% hydrochloric acid, 1% bromine)	78:15:4.5	140
Water: Benzene Sulfonic Acid: Sulfuric Acid	5:88:7	140
Water: Benzene: Dimethylformamide (5% tetrahydrofuran)	50:40:5	90



Industrial Fiberglass Specialties, Inc.

521 Kiser Street
Dayton, OH 45404-1641
Tel: 937-222-9000
Fax: 937-222-9020

Corrosion Guide Series 5800/9800 Furan Pipe & Duct

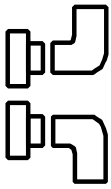
09-01-2001

Page #23 of 24

Chemical Environment	Concentration %	Temperature (°F) for Furan Resin Series 5800/9800
Water, Cooling Tower	---	90
Water: Diethylene Triamine: Sodium Hydroxide (10% ethylenediamine)	70:10:10	140
Water, Distilled	100	200
Water: Hydrochloric Acid: Terephthalic Acid (7% dimethylformamide)	51:28:14	100
Water: Irrigation	---	90
Water: Methyl Alcohol	20:80	150
Water: Monochlorotoluene	50:50	200
Water: Hydrochloric Acid: Methyl Alcohol, all vapors 17	5:2:93	100
Water, Waste (with pine oil, kerosene, methoxychlor, melathion, xylene, detergents, chlorophyll, surface active agents & other oils)	---	80
Water, Waste (with solids, oils & grease, also trickling filters)	---	80
Xylene	100	225
Xylene: Amyl Acetate	70:30	120
Xylene: 68% Chlorinated Camphene	10:90	120
Xylene: Toxaphene	10:90	120
Zinc Sulfate	100	250

Footnotes:

- 1 Synthetic surfacing veil generally used.
- 3 Post-cure strongly recommended.
- 4 Solution may discolor.
- 17 Lower than normally acceptable surface hardness can occur in service. Drying the surface can restore hardness.
- 22 Double C-veil recommended.
- NR Not Recommended - Data Not Available
- LS Limited Service
- Sat'd. Saturated



The following definitions apply:

Temperature - Temperature data is NOT necessarily the maximum service temperature. It is the upper temperature at which the resin has been tested, used or evaluated. A resin may be suitable for higher temperature operation but additional information or testing would be required in order to establish such performance.

LS - Indicates that limited service life can be expected. This means that greater than normally acceptable chemical attack will occur. FRP may be the most economical material of construction for this type of equipment, but further study, including life-cycle cost analysis comparisons with other materials of construction, is recommended.