

TABLE 1 - Chemical Compatibility Comparison (Maximum Use Temperatures)

| CHEMICAL | PermaShield ¹ °F | FRP ² °F | CPVC ³ °F | PP ⁴ °F | PVC ⁵ °F |
|---------------------------|--------------------------------|------------------------|-------------------------|-----------------------|------------------------|
| Acetaldehyde | 100 | | | 120 | NR |
| Acetamide | 200 | NR | | 73 | |
| Acetic Acid Vapors | 212 | NR | 73 | 180 | 140 |
| Acetic Acid (10%) | 212* | 210 | | 70 | 70 |
| Acetic Acid (20%) | 212* | 210 | | 70 | 70 |
| Acetic Acid (50%) | 212* | 175 | | 70 | 70 |
| Acetic Acid (80%) | 300 | 175 | | 70 | 70 |
| Acetic Acid (90%) | 300 | 100 | | 70 | 70 |
| Acetic Acid (Glacial) | 212* | NR | NR | 120 | 73 |
| Acetic Anhydride | 200* | NR | | 75 | NR |
| Acetone | 212 | | NR | 73 | NR |
| Acetone Cyanohydrin | 122 | | | | |
| Acetonitrile | 300 | NR | | 70 | NR |
| Acetophenone | 200 | NR | | 120 | NR |
| Acetyl Chloride | 122* | | | | |
| Acetylene | 212* | | | 73 | 140 |
| Acrylonitrile | 212* | NR | NR | 120 | NR |
| Acrylic Acid | 212 | | | | |
| Adipic Acid | 122* | 70 | 185 | 140 | 140 |
| Alcohols General | 200 | 100 | NR | 170 | NR |
| Alcohols, Amyl | 300 | 200 | 185 | 170 | 140 |
| Alcohol, Benzyl | 300 | | | | |
| Alcohol, Butyl, Primary | 300 | 120 | | 70 | 70 |
| Alcohol, Butyl, Secondary | 300 | 120 | | 70 | 70 |
| Alcohol, Diacetone | 122 | | | | |
| Alcohol, Ethyl (Ethanol) | 300 | 100 | | 140 | 70 |
| Alcohol, Hexyl | 70* | | | | |
| Alcohol, Isopentyl | 122 | | | | |
| Alcohol, Isopropyl | 300 | | | | |
| Alcohol, Menthyl | 300 | | | | |
| Alcohol, Propyl | 300 | | | | |
| Allyl Alcohol | 212 | 140 | | 140 | 73 |
| Allyl Chloride | 300 | 80 | | 80 | NR |
| Alum | 300 | | | | |
| Alum, Ammonium | 300 | | | | |
| Alum, Chrome | 212* | | | | |
| Alum, Potassium | 300 | | | | |
| Aluminum Chloride | 300 | 210 | 185 | 180 | 140 |
| Aluminum Fluoride | 300 | 80 w/mat | | 225 | 73 |
| Aluminum Hydroxide | 300 | 180 | 185 | | 140 |

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| Aluminum Nitrate | 300 | 160 | 185 | 180 | 140 |
| Aluminum Oxychloride | 300 | | | | 140 |
| Aluminum Sulfate | 300 | 140 | | 225 | 150 |
| Ammonia, Gas | 212* | | | | |
| Ammonia (Anhydrous) | 200 | | | | |
| Ammonia (Aqueous 30%) | 200 | NR | | 73 | NR |
| Ammonium Acetate | 122* | | | | |
| Ammonium Bifluoride | 300 | | 185 | | 140 |
| Ammonium Bisulfide | 300 | | | | |
| Ammonium Carbonate | 300 | 150 w/mat | | 180 | 140 |
| Ammonium Chloride | 300 | 210 | 185 | 180 | 140 |
| Ammonium Dichromate | 250* | | | | 73 |
| Ammonium Fluoride 10% | 300 | 150 w/mat | | | |
| Ammonium Fluoride 25% | 300 | 140 | | 212 | 73 |
| Ammonium Hydroxide (30%) | 300 | 150 w/mat | 185 | 180 | 140 |
| Ammonium Metaphosphate | 300 | | | | |
| Ammonium Nitrate | 300 | 180 | 185 | 180 | 140 |
| Ammonium Persulphate | 122* | 180 | 73 | 150 | 140 |
| Ammonium Phosphate | 300 | 210 | | 225 | 140 |
| Ammonium Sulfate | 300 | 210 | 185 | 180 | 140 |
| Ammonium Sulfide | 300 | 120 | | | |
| Amyl Acetate | 122 | NR | | NR | NR |
| Amyl Chloride | 300 | 120 | | NR | NR |
| Aniline | 212* | | NR | 180 | NR |
| Anisole | 122 | | | | |
| Anthraquinone | 122* | | | | 140 |
| Anthraquinone Sulfonic Acid | 122* | | | | 140 |
| Antimony Trichloride | 70* | 220 | | 180 | 140 |
| Aqua Regia | 212* | | 73 | | NR |
| Aqua Regia (Fumes) | 212 | 150 | | 70 | 100 |
| Arsenic Acid | 300 | 80 | 185 | 225 | 140 |
| Barium Carbonate | 300 | 210 | | 225 | 140 |
| Barium Chloride | 300 | 210 | | 212 | 140 |
| Barium Hydroxide | 300 | 160 | | 212 | 140 |
| Barium Nitrate | 300 | | | 70 | 70 |
| Barium Sulfate | 300 | 210 | 185 | 70 | 140 |
| Barium Sulfide | 300 | 180 | | 225 | 140 |
| Beer | 300 | | | | |
| Beet Sugar Liquors | 300 | 180 | | 140 | 150 |

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| Benzaldehyde 10% | 200 | | | 70 | 73 |
| Benzaldehyde above 10% | 122 | NR | | 70 | NR |
| Benzene | 200 | NR | NR | NR | NR |
| Benzene Sulfonic Acid | 200 | 210 | | 70 | 70 |
| Benzene Sulfonic Acid 10% | 200 | | | 180 | 40 |
| Benzoic Acid | 250* | 210 | | 73 | 140 |
| Benzyl Alcohol | 200 | NR | | 150 | NR |
| Benzyl Chloride | 100 | 80 | | 250 | 70 |
| Benzonitrile | 200 | | | | |
| Bismuth Carbonate | 300 | | | | 140 |
| Black Liquor | 300 | | 185 | | 140 |
| Bleach 12.5% Active Cl ₂ | 300 | | 185 | 120 | 140 |
| Bleach 5.5% Active Cl ₂ | 300 | | | | |
| Borax | 300 | 210 | | 180 | 140 |
| Boric Acid | 300 | 210 | 185 | 180 | 140 |
| Brine Acid | 300 | | | | |
| Bromine, Liquid | 122 | NR | | | |
| Bromine, Vapor 25% | 122 | NR | | NR | NR |
| Bromine, Water | 212* | | | NR | |
| Bromobenzene | 122 | | | | NR |
| Bromotoluene | 122 | | | NR | NR |
| Butadiene | 250* | | 73 | NR | 140 |
| Butane | 250* | | | 73 | 140 |
| Butanol n | 250 | | | | |
| Butyl Acetate | 100 | NR | 73 | NR | NR |
| Butyl Alcohol | 300 | 120 | 73 | 180 | 140 |
| Butylaldehyde | 122 | | | | |
| Butyl Acrylate | 122 | | | | |
| Butyl Amine | 122 | NR | | 70 | NR |
| Butyl Cellosolve | 70* | | | | |
| Butyl Lactate | 122 | | | | |
| Butylene | 300 | | | | 140 |
| Butyl Phenol | 212* | | | | 73 |
| Butyl Phthalate | 212* | 190 | | 180 | NR |
| Butyl Stearate | 212* | | | | |
| Butyric Acid | 250* | 100 | | 180 | 73 |
| Cadmium Cyanide | 122* | | | | |
| Calcium Bisulfide | 300 | 180 | | | |
| Calcium Bisulfite | 300 | 140 | | 212 | 150 |

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| Calcium Carbonate | 300 | 180 w/mat | 185 | 180 | 140 |
| Calcium Chlorate | 300 | 210 | | | 140 |
| Calcium Chloride Saturated | 300 | 210 | 185 | 180 | 140 |
| Calcium Hydroxide Saturated | 300 | 180 | 185 | 180 | 140 |
| Calcium Hypochlorite | 300 | 160 w/mat | | 140 | 140 |
| Calcium Nitrate | 300 | 300 | | 180 | 140 |
| Calcium Oxide | 300 | | | | |
| Calcium Sulfate | 300 | 210 | | 225 | 140 |
| Cane Sugar Liquors | 212* | | | | |
| Caprylic Acid | 122* | 180 | | | |
| Carbolic Acid (Phenol) | 212 | NR | | 140 | 70 |
| Carbon Dioxide (Dry) | 300 | | 185 | 150 | 140 |
| Carbon Dioxide (Wet) | 300 | | 185 | 150 | 140 |
| Carbon Dioxide (Gas) | 300 | 210 | | | |
| Carbon Disulfide | 200* | NR | | NR | NR |
| Carbon Monoxide | 300 | 210 | 185 | 225 | 140 |
| Carbon Tetrachloride (Liquid) | 300 | 100 | | 70 | NR |
| Carbon Tetrachloride (Vapor) | 300 | 175 | | 70 | NR |
| Carbonic Acid | 300 | 210 | 185 | | 140 |
| Castor Oil | 300 | | 185 | | 140 |
| Caustic Potash (10% & 50%) | 300 | 150 | 185 | 140 | 140 |
| Caustic Soda (10% & 50%) | 212 | 210 | 210 | 180 | 100 |
| Cellosolve® | 300 | 210 | | 70 | NR |
| Cellosolv Acetate | 212 | | | | |
| Chloracetic Acid 50% | 212* | | | | |
| Chloral Hydrate | 121* | | | | 140 |
| Chloramine | 70* | | | | |
| Chlorine Dioxide | 212* | | | | |
| Chlorine Gas, Dry | 212* | 210 | | NR | 73 |
| Chlorine Gas, Wet | 212* | 210 | | NR | NR |
| Chlorine, Liquid | 212* | NR | | | |
| Chlorine (Dry) | 212 | 210 | | NR | 73 |
| Chlorinated Water Saturated | 212 | 195 | | 150 | 140 |
| Chlorobenzene | 122 | NR | | 73 | NR |
| Chlorobenzyl Chloride | 70 | | | | |
| Chloroethanol | 200 | 100 | | NR | NR |
| Chloroform | 200* | NR | NR | NR | NR |
| Chlorosulfonic Acid 5% | 200 | NR | | NR | 73 |
| Chlorotoluene | 122 | | | | |
| Chromic Acid 10% | 212* | | | | |

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| Chromic Acid 30% | 212* | | | | |
| Chromic Acid 40% | 212* | | | | |
| Chromic Acid 50% | 212* | NR | 210 | 180 | NR |
| Citric Acid | 300 | 140 | | 225 | 150 |
| Coconut Oil | 300 | | | | |
| Coke Oven Gas | 212* | | | | |
| Copper Carbonate | 300 | | | | |
| Copper Chloride | 300 | 210 | 185 | | 140 |
| Copper Cyanide | 300 | 210 w/mat | 185 | 225 | 140 |
| Copper Fluoride | 300 | 210 w/mat | | 225 | 150 |
| Copper Nitrate | 300 | 210 | | 225 | 150 |
| Copper Sulfate | 300 | 210 | 185 | 120 | 140 |
| Corn Syrup | 300 | | | | |
| Cottonseed Oil | 300 | | | 225 | 150 |
| Creosote Hot (wood & coal tar) | 212 | | | NR | 70 |
| Cresol (crude) | 212 | 140 | | 73 | NR |
| Cresylic Acid 50% | 70 | NR | | NR | 140 |
| Croton Aldehyde | 70 | | | | |
| Crude Oil | 300 | 210 | 185 | 150 | 150 |
| Cupric Chloride | 300 | 140 | | 140 | 150 |
| Cupric Fluoride | 300 | | | | |
| Cupric Sulfate | 300 | | | | |
| Cuprous Chloride | 300 | | | | |
| Cyclohexane | 212 | 120 | NR | NR | NR |
| Cyclohexanol | 122 | | NR | 120 | NR |
| Cyclohexanone | 200 | 85 | NR | NR | NR |
| Cyclohexylamine | 122 | | | | |
| Detergents General | 300 | 140 | | 200 | 140 |
| Detergent Solution (Heavy Duty) | 300 | | | | |
| Dexron (Trans Fluid) | 300 | | | | |
| Dexron II (Auto Trans Fluid) | 300 | | | | |
| Dextrin | 300 | | | | 140 |
| Dextrose | 300 | | | | |
| Diacetone Alcohol | 122 | | NR | 120 | NR |
| Dibutyl Sebacate | 212* | | | | |
| Dibutyl Phthalate | 122 | 180 | | 120 | NR |
| Dichlorobenzene | 122 | 100 | | 70 | NR |
| Dichloropropane | 70 | | | | |
| Dichlorotoluene | 70 | | | | |

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| Dichlorodifluoro Methane (F-12) | 70 | | | 80 | 80 |
| Dichloroethane | 70 | 80 | | 70 | NR |
| Dichloroethylene | 100 | NR | | NR | NR |
| Dichloropropane | 212 | | | | |
| Dichlorotoluene a, a | 250 | | | | |
| Diesel Fuels | 300 | 180 | | 200 | 140 |
| Diethyl Cellosolve | 300 | | | | |
| Diethylene Glycol | 70 | 140 | | 225 | 70 |
| Diethylamine | 122 | NR | | 120 | NR |
| Diethylene Glycol Butyl Ether Acetate | 122 | | | | |
| Diethylene Glycol Meno Butyl Ether | 122 | | | | |
| Diethylene Triamine | 122 | | | | |
| N, N Diethylethanolamine | 122 | | | | |
| Diethyl Ether | 200* | NR | | NR | 73 |
| Diethyl Hydroxy Amine 85% | 86 | | | | |
| Diethyl Phthalate | 122 | | | | |
| Diglycolic Acid | 70* | | | | 140 |
| Diisobutyl Ketone | 122* | | | | |
| Diisopropyl Acetate | 70 | | | | |
| Diisopropyl Ketone | 212 | | | | |
| Dimethyl Acetamide N, N | 212 | | | | |
| Dimethylamine | 70 | | | 120 | 140 |
| Dimethyl Aniline | 200 | | | NR | NR |
| Dimethyl Formamide | 100 | NR | NR | 120 | NR |
| Dimethyl Hydrazine | 70 | | | | |
| Dimethyl Phthalate | 212* | 150 | | NR | NR |
| Dimethyl Sulfoxide | 212* | NR | | 125 | NR |
| Diocetyl Phthalate | 200 | 180 | NR | NR | NR |
| Dioxane 1,4- | 122 | | | | |
| Dioxane 2,4 | 212 | | | | |
| p-Dioxane | 200 | NR | | 73 | NR |
| Dipropylene Glycol Methyl Ether | 122 | | | | |
| Disodium Phosphate | 300 | | | | |
| Divinylbenzene | 70 | | | | |
| Dow Therm | 200 | 150 | | NR | NR |
| Epichlorhydrin Dry | 200 | NR | | 120 | 70 |
| Epsom Salt | 300 | | | | |
| Ethanol | 284 | | | | |
| Ethers | 212 | 180 | | NR | NR |

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| 2 Ethoxy-ethanol 99% | 122 | | | | |
| Ethyl Acetate | 200 | NR | | 120 | NR |
| Ethyl Acetoacetate | 72* | | | | |
| Ethyl Acrylate | 212 | | | | |
| Ethyl Chloride | 300 | NR | | 73 | NR |
| Ethyl Ether | 200* | NR | | 73 | NR |
| Ethyl Formate | 212 | | | | |
| Ethylene Bromide | 300 | NR | | NR | NR |
| Ethylene Chlorohydrin | 72 | 200 | | NR | NR |
| Ethylene Diamine | 72 | 100 | | 120 | NR |
| Ethylene Dichloride | 200 | NR | 140 | NR | NR |
| Ethylene Glycol | 300 | 140 | 185 | 120 | 140 |
| Ethylene Oxide | 212* | | | NR | NR |
| Fatty Acids | 300 | 210 | 73 | 120 | 140 |
| Ferric Chloride | 300 | 210 | 185 | 180 | 140 |
| Ferric Nitrate | 300 | 210 | 140 | 180 | 140 |
| Ferric Sulfate | 300 | 210 | | 180 | 140 |
| Ferrous Chloride | 300 | 210 | 185 | 180 | 140 |
| Ferrous Nitrate | 300 | 210 | 140 | 140 | 73 |
| Ferrous Sulfate | 300 | 210 | 185 | 180 | 140 |
| Fluorine Gas, Wet | 72* | | 73 | NR | 73 |
| Fluoroboric Acid | 250* | 180 w/mat | 73 | 73 | 140 |
| Fluorosilicic Acid | 300 | | 73 | | 140 |
| Formaldehyde (Formalin) | 200* | 150 | | 140 | 70 |
| Formic Acid | 250 | 100 | 73 | 73 | 73 |
| Freon Dry | 200 | | | NR | |
| Freon Wet | 200 | | | 70 | NR |
| Freon F-11 | 122* | 75 | 73 | | 140 |
| Freon F-12 | 122* | | 73 | 73 | 140 |
| Freon F-21 | 122* | | | | |
| Freon F-22 | 122* | | | 73 | NR |
| Freon F-113 | 122* | | | | |
| Freon F-114 | 122* | | | | |
| Fruit Juices, Pulp | 300 | | | | |
| Fuel Oils | 300 | 70 | | 80 | 150 |
| Fuming Sulfuric Acid | 122 | | | | |
| Furan | 100 | | | | |
| Furfural (Furfuraldehyde) | 212 | NR | | NR | NR |

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| Gallic Acid | 122* | | 73 | 225 | 140 |
| Gas-Natural | 300 | 210 | | 80 | 150 |
| Gasoline, Leaded Refined | 300 | 140 | | NR | 140 |
| Gasoline, Unleaded Refined | 300 | 140 | | NR | 140 |
| Gasoline, Sour | 300 | | | | |
| Gelatin | 212* | 120 | | 225 | 150 |
| Gin | 300 | | | | |
| Glucose | 300 | 220 | | 225 | 150 |
| Glycerine, Glycerol | 300 | 220 | | 225 | 125 |
| Glycol (Ethylene Glycol) | 200 | 140 | 185 | 225 | 140 |
| Glycolic Acid (Hydroxy Acetic) | 122* | 100 | 73 | 225 | 140 |
| Glycolis | 300 | | | | |
| | | | | | |
| Heptane | 300 | 140 | | NR | 140 |
| Hexane | 250 | 100 | | 70 | 70 |
| Hydrochloric Acid (20%) | 300 | 140 | | 70 | NR |
| Hydrobromic Acid (50%) | 300 | 100 | | 120 | |
| Hydrochloric Acid (up to 37%) | 300 | 180 | 210 | 150 | 140 |
| Hydrochloric Acid (Conc.) | 200 | | | | |
| Hydrochloric Acid (Gas) | 200 | 210 | | | |
| Hydrocyanic Acid | 300 | 150 | | 225 | 150 |
| Hydrocyanic Acid, 10% | 300 | 180 | | 73 | 140 |
| Hydrofluoric Acid (35%) | 300 | 100 w/mat | | 125 | 70 |
| Hydrofluoric Acid (50%) | 300 | NR | NR | 73 | 73 |
| Hydrofluosilicic Acid | 300 | 180 w/mat | | 225 | 70 |
| Hydrogen Gas | 300 | 250 | 73 | 73 | 140 |
| Hydrogen Cyanide | 300 | | | 225 | 140 |
| Hydrogen Peroxide (50%) | 140* | 100 | 185 | 150 | 140 |
| Hydrogen Peroxide (90%) | 140* | 100 | | 70 | 140 |
| Hydrogen Phosphide | 122* | | | | 140 |
| Hydrogen Sulfide (Dry) | 300 | 210 | 185 | 150 | 140 |
| Hydrogen Sulfide (Wet) | 200* | 210 | | | 140 |
| Hydroquinone | 212* | | | | 140 |
| 4 Hydroxybenzene Sulfonic Acid | 158 | | | | |
| Hypochlorous Acid | 300 | 140 | 140 | 73 | 140 |
| | | | | | |
| Iodine (Dry) | 212* | 150 | | | |
| Iodine Solution 10% | 212* | 150 | | 170 | 70 |
| Isopropyl Ether | 122* | | | | |
| Isooctane | 300 | | | | |

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| Isopentyl Alcohol | 122* | | | | |
| Isophorone | 122 | | | | |
| Isopropyl Alcohol | 230 | 100 | | 225 | 70 |
| Jet Fuel-JP4 | 300 | 120 | 73 | 70 | 140 |
| Jet Fuel-JP5 | 300 | 120 | 73 | 70 | 140 |
| Kerosene | 300 | 150 | 73 | 150 | 140 |
| Keytones | 200 | NR | | 70 | NR |
| Lactic Acid | 300 | 210 | | 150 | 73 |
| Laquers & Laquer Solvents | 70 | | | NR | NR |
| Lard Oil | 300 | | 185 | 73 | 140 |
| Lauric Acid | 212* | | | | 140 |
| Lauryl Chloride | 212* | | | | |
| Lead Acetate | 300 | 210 | 185 | 180 | 140 |
| Lead Chloride | 300 | | | | |
| Lead Nitrate | 300 | 220 | | 125 | 140 |
| Lead Sulfate | 300 | | | | |
| Lemon Oil | 300 | | | | |
| Lime Sulfur | 122* | | | 225 | 150 |
| Linoleic Acid | 212* | 210 | | 80 | 140 |
| Linoleic Oil | 250* | | | | |
| Linseed Oil | 300 | 210 | | 225 | 150 |
| Linseed Oil, Blue | 300 | | | | |
| Lithium Bromide | 212* | 210 | | | |
| Lithium Hydroxide Saturated | 300 | | | 70 | 140 |
| LPG (Propane) | 70 | 44 | | 120 | 140 |
| Lubricating Oil, ASTM #1 | 300 | 200 | | 70 | 140 |
| Lubricating Oil, ASTM #2 | 300 | 200 | | 70 | 140 |
| Lubricating Oil, ASTM #3 | 300 | 200 | | 70 | 140 |
| Lye | | | | | |
| Calcium Hydroxide 50% | 200 | 180 | | 140 | 70 |
| Potassium Hydroxide 50% | 200 | 180 | | 140 | 70 |
| Sodium Hydroxide 50% | 200 | 180 | | 140 | 70 |
| Magnesium Carbonate | 300 | 180 | | | 140 |
| Magnesium Chloride | 300 | 210 | 185 | 180 | 140 |
| Magnesium Hydroxide | 300 | 210 | 185 | 180 | 140 |
| Magnesium Nitrate | 300 | 210 | 185 | 180 | 140 |

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| CHEMICAL | PermaShield ¹ °F | FRP ² °F | CPVC ³ °F | PP ⁴ °F | PVC ⁵ °F |
|----------------------------------|--------------------------------|------------------------|-------------------------|-----------------------|------------------------|
| Magnesium Sulfate | 300 | 210 | 185 | 180 | 140 |
| Maleic Acid | 250* | 200 | 185 | 180 | 140 |
| Malic Acid | 250* | 140 | 185 | 150 | 140 |
| Mercuric Chloride | 250* | 210 | 140 | 180 | 140 |
| Mercuric Cyanide | 250* | 140 | | 225 | 140 |
| Mercuric Sulfate | 250* | | | | |
| Mercurous Nitrate | 250* | 140 | | | 140 |
| Mercury | 300 | 210 | 185 | 150 | 140 |
| Mesityloxiide | 122 | | | | |
| Methane | 300 | | | 70 | 140 |
| Methane Sulfuric Acid 50% | 151 | | | | |
| Methyl Acetate | 122 | | | 70 | NR |
| Methyl Acrylate | 122 | | | | |
| Methyl Alcohol (Methanol) | 70 | 100 | | 180 | 140 |
| Methylamine | 70 | NR | | 70 | NR |
| Methyl Bromide | 300 | | | NR | NR |
| Methyl Cellosolve | 300 | NR | | 70 | NR |
| Methyl Chloride | 300 | NR | | NR | NR |
| Methyl Chloroform | 122 | | NR | | |
| Methyl Ethyl Keytone | 122 | NR | NR | NR | NR |
| Methyl Formate | 212 | | | | |
| 5 Methyl 2 Hexanone | 122 | | | | |
| Methyl Isobutyl Keytone | 122 | | NR | NR | NR |
| Methyl Methacrylate | 122 | | | | 73 |
| Methyl Sulfate | 300 | | | | |
| Methyl Sulfuric Acid | 122* | | | | |
| 1 Methyl 2 Pyrrolidinone | 70 | | | | |
| Methylene Bromide | 122 | | | | NR |
| Methylene Chloride | 122 | NR | | 70 | NR |
| Methylene Iodine | 70 | | | | NR |
| Milk | 300 | 140 | | 212 | 150 |
| Mineral Oil | 300 | 210 | 185 | 120 | 140 |
| Molasses | 300 | 140 | | 225 | 150 |
| Monochlorobenzene | 100 | NR | 73 | | |
| Monochlorodifluoromethane (F-22) | 70 | | | 70 | NR |
| Monoethanolamine | 150 | 75 | | 175 | NR |
| Morpholine | 200 | 80 | | 150 | |
| Motor Oil | 300 | 220 | | 140 | 150 |
| N, N Dimethyldodecylamine | 167 | | | | |

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| CHEMICAL | PermaShield ¹ °F | FRP ² °F | CPVC ³ °F | PP ⁴ °F | PVC ⁵ °F |
|----------------------------|--------------------------------|------------------------|-------------------------|-----------------------|------------------------|
| Naphtha | 300 | 200 | 73 | 120 | 140 |
| Naphthalene | 300 | 180 | | | NR |
| Natural Gas | 122 | | | | |
| Nickel Chloride | 300 | 210 | 185 | 180 | 140 |
| Nickel Nitrate | 300 | 210 | | | 140 |
| Nickel Sulfate | 300 | 210 | 185 | 180 | 140 |
| Nicotine | 122* | | | | 140 |
| Nicotinic Acid | 212* | | | | 140 |
| Nitric Acid 10% | 250* | | | | |
| Nitric Acid 30% | 212* | | | | |
| Nitric Acid 40% | 212* | | | | |
| Nitric Acid 50% | 122* | NR | 73 | NR | 100 |
| Nitric Acid 70% | 122 | | | | |
| Nitric Acid 90% | 122 | | | | |
| Nitrobenzene | 122 | 100 | | 73 | NR |
| Nitrogen Gas | | | | | 70 |
| Nitrous Acid 10% | 212* | 150 | | NR | 73 |
| Nitrous Oxide | 122* | | | 70 | 70 |
| Nitromethane | 200 | | | | |
| N Methylpyrrolidinone | 70 | | | | |
| Nonyl Phenol | 122 | | | | |
| 2 Octanol | 122 | | | | |
| Oils, Crude | 200 | 210 | | 70 | 150 |
| Oils, Mineral | 300 | 210 | | 140 | 70 |
| Oils, Vegetable | 300 | 210 | | 140 | 140 |
| Oleic Acid | 250* | 210 | | 170 | 150 |
| Oleum 30% | 72 | | | NR | NR |
| Oleum 30% in Sulfuric Acid | 72 | | | NR | NR |
| Oxalic Acid | 122 | 210 | | 140 | 70 |
| Oxalic Acid 50% | 122 | | 185 | 180 | 140 |
| Oxygen, Gas | 300 | | | | |
| Ozone | 212* | 220 | | NR | NR |
| Palmitic Acid, 10% | 250 | 210 | 73 | 180 | 140 |
| Paraffin | 300 | 150 | | 70 | 140 |
| Pentanedione 2, 4 | 212 | | | | |
| Pentyl Acetate | 122 | | | | |
| Perchloroethylene | 200 | 100 | | NR | NR |
| Perchloric Acid (10%) | 200* | 150 | | NR | NR |

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|-------------------------------------|--------------------------------|------------------------|-------------------------|-----------------------|------------------------|
| Perchloric Acid (72%) | 200* | | | 200* | 200* |
| Perchloric Acid (up to 30%) | 200 | 80 | | 80 | 80 |
| Petroleum Oils, Sour | 212* | 200 | | 70 | 150 |
| Petroleum Oils, Refined | 212* | 200 | | 70 | 150 |
| Phenol | 122 | | NR | NR | NR |
| Phenylhydrazine | 122* | | | | NR |
| Phosphoric Acid 10% | 300 | | | | |
| Phosphoric Acid 30% | 300 | | | | |
| Phosphoric Acid 50% | 300 | | | | |
| Phosphoric Acid 85% | 300 | 210 | 73 | 180 | 140 |
| Phosphorous Oxychloride | 122 | | | | |
| Phosphorous Pentoxide | 212* | | 73 | 73 | 73 |
| Phosphorous Trichloride | 212* | NR | | NR | NR |
| Phosphorous Yellow | 70* | | | | |
| Photographic Solutions (Developers) | 300 | 70 | | 150 | 140 |
| Picric Acid | 70* | 120 | | 70 | NR |
| Potash | 300 | | | | |
| Potassium Alum | 300 | | | | |
| Potassium Aluminum Sulfate | 300 | 210 | | 225 | 150 |
| Potassium Acetate | 70 | | | 70 | 150 |
| Potassium Bichromate | 250* | 210 | | 225 | 150 |
| Potassium Bisulfate | 250* | | | | |
| Potassium Borate | 250* | | | | 140 |
| Potassium Bromide | 250 | 210 | | 180 | 140 |
| Potassium Carbonate Saturated | 300 | 150 | | 225 | 150 |
| Potassium Chlorate Aqueous | 300 | | | | |
| Potassium Chloride | 300 | 210 | 185 | 180 | 140 |
| Potassium Chromate | 300 | 140 | | 225 | 140 |
| Potassium Chlorate | 300 | 140 | | 180 | 140 |
| Potassium Cyanide | 300 | 140 | 185 | 225 | 140 |
| Potassium Dichromate | 300 | 210 | 185 | 225 | 140 |
| Potassium Ferricyanide | 300 | 210 | | 225 | 140 |
| Potassium Ferrocyanide | 300 | 210 | | 140 | 150 |
| Potassium Hydroxide (50%) | 300 | 150 w/mat | 185 | 150 | 140 |
| Potassium Iodide | 250* | 200 | | 176 | 140 |
| Potassium Nitrate | 300 | 210 | | 225 | 140 |
| Potassium Perchlorate | 122* | | | | 140 |
| Potassium Permanganate 10% | 300 | 210 | | 150 | 140 |
| Potassium Permanganate 25% | 300 | 210 | | 150 | 140 |
| Potassium Persulfate | 122* | 210 | | 140 | |

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|----------------------------|--------------------------------|------------------------|-------------------------|-----------------------|------------------------|
| Potassium Sulfate | 300 | 210 | | 225 | 150 |
| Propane | 300 | 44 | 73 | 70 | 70 |
| Propyl Acetate | 122 | | | | |
| Propyl Alcohol (Propanol) | 122 | 100 | | 225 | |
| Pydravl | 70 | | | | 70 |
| Pyridine | 200 | NR | | 140 | NR |
| Pyrogallic Acid | 122* | | | 70 | 140 |
| Pyroligneous Acid | 100 | | | | |
| Pyroligneous Acid 10% | 200 | 100 | | 70 | 70 |
| Salicyclic Acid | 250* | 160 | | 70 | 140 |
| Salicylaldehyde | 122 | | | | NR |
| Salt Brine 10% | 250 | 210 | | 225 | 140 |
| Sea Water | 250 | 210 | | 225 | 140 |
| Silicic Acid | 300 | | | | |
| Silicone Oil | 300 | | | 150 | 70 |
| Silver Nitrate | 300 | 210 | | 70 | 70 |
| Silver Sulfate | 300 | | | | |
| Soap Solutions | 300 | 140 | | 225 | 140 |
| Skydrol 500 & 7000 | 70 | | | | 70 |
| Sodium Acetate | 300 | 210 | 185 | 180 | 140 |
| Sodium Alum | 300 | | | | |
| Sodium Benzoate | 300 | 180 | 140 | 170 | 140 |
| Sodium Bicarbonate | 300 | 210 | 185 | 180 | 140 |
| Sodium Bichromate | 212* | 210 | | 140 | 70 |
| Sodium Bisulfate | 300 | 210 | | 180 | 140 |
| Sodium Bisulfite | 300 | 210 | 185 | 180 | 140 |
| Sodium Borate (Borax) | 300 | 210 | | 140 | 150 |
| Sodium Bromide | 300 | 210 | 180 | 180 | 140 |
| Sodium Carbonate Saturated | 300 | 150 | 185 | 180 | 140 |
| Sodium Chlorate | 300 | 210 | | 180 | 70 |
| Sodium Chloride | 300 | 200 | 210 | 225 | 150 |
| Sodium Chlorite Saturated | 250* | | | | |
| Sodium Chromate 10% | 100 | 210 | | 140 | |
| Sodium Cyanide | 300 | 210 w/mat | 185 | 180 | 140 |
| Sodium Dichromate | 212* | 210 | | 140 | 70 |
| Sodium Fluoride | 300 | 180 | 140 | 185 | 140 |
| Sodium Hydrosulfide 50% | 300 | | | | |
| Sodium Hydroxide 15% | 300 | 150 w/mat | | | |
| Sodium Hydroxide 30% | 250 | | | | |

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|--------------------------------------|--------------------------------|------------------------|-------------------------|-----------------------|------------------------|
| Sodium Hydroxide (50%)(Caustic Soda) | 250 | 180 w/mat | 210 | 180 | 100 |
| Sodium Hypochlorite 5% | 250 | 150 w/mat | 185 | 120 | 73 |
| Sodium Iodide | 300 | | | | |
| Sodium Metaphosphate | 300 | | | 70 | 150 |
| Sodium Nitrate | 300 | 210 | | 225 | 150 |
| Sodium Nitrite | 300 | 210 | 185 | 180 | 140 |
| Sodium Perchlorate | 250* | | 170 | | 140 |
| Sodium Peroxide | 300 | 80 | | 212 | 120 |
| Sodium Phosphate, Alkaline | 300 | 210 | | 225 | 70 |
| Sodium Phosphate, Acid | 300 | 210 | | 180 | 70 |
| Sodium Phosphate, Neutral | 300 | 210 | | 225 | 70 |
| Sodium Silicate | 300 | 210 w/mat | | 180 | 150 |
| Sodium Sulfate | 300 | 210 | 185 | 150 | 140 |
| Sodium Sulfide | 300 | 210 | 185 | 150 | 140 |
| Sodium Sulfite | 300 | 210 | 185 | 150 | 140 |
| Sodium Tetraborate (Borax) | 300 | 210 | | 140 | 150 |
| Sodium Thiosulfate (Hypo) | 300 | 70 | | 150 | 150 |
| Sour Crude Oil | 300 | 210 | | | 140 |
| Stannic Chloride | 300 | 180 | 185 | 225 | 150 |
| Starch | 300 | | | | |
| Stearic Acid | 300 | 210 | 185 | 73 | 140 |
| Stearoyl Chloride | 250 | | | | |
| Steam | 300 | 220 | 185 | | NR |
| Stoddard's Solvent | 300 | 210 | | 70 | 125 |
| Succinic Acid | 212* | | | | |
| Sulfate Liquors | 212* | | | | |
| Sulfite Liquor | 212* | | | | |
| Sulfolane | 200 | | | | |
| Sulfur | 300 | 250 | | 225 | 140 |
| Sulfur Chloride | 70* | NR | | NR | 70 |
| Sulfur (Molten) | 250 | | | NR | NR |
| Sulfur Dioxide Gas Wet & Dry | 300 | 210 | NR | 73 | 73 |
| Sulfuric Acid 10% | 300 | | | | |
| Sulfuric Acid 50% | 300 | 180 | 210 | 150 | 140 |
| Sulfuric Acid 90% | 300 | NR | 210 | 73 | 140 |
| Sulfuric Acid 93% | 300 | | | | |
| Sulfuric Acid 96% | 300 | | | | |
| Sulfuric Acid 98% | 300 | | | | |
| Sulfuric Acid (Conc.) | 300 | NR | | NR | NR |
| Sulfuric Acid (Fuming-Oleum) | 300 | | | | |

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|-----------------------------------|--------------------------------|------------------------|-------------------------|-----------------------|------------------------|
| Sulfurous Acid | 212* | 120 | | 225 | 150 |
| Tall Oil | 300 | 150 | | 175 | 140 |
| Tannic Acid | 300 | 210 | 185 | 180 | 140 |
| Tanning Liquors | 250* | | | 225 | 150 |
| Tar | 300 | | | 70 | 70 |
| Tartaric Acid | 250* | 210 | | 150 | 140 |
| Tetrachloroethylene | 200 | 120 | | 70 | 70 |
| Tetraethyl Lead | 300 | | | 150 | 140 |
| Tetrahydrofuran | 100 | | NR | NR | NR |
| Tetramethyl Ammonium Hydroxide | 212 | | | | |
| Thionyl Chloride | 122* | NR | | 120 | 70 |
| Thread Cutting Oils | 300 | | | | |
| Toluene (Tolvol) | 200 | 140 | NR | NR | NR |
| Toluenesulfonic Acid (sol. sat.) | 158 | | | | |
| Tomato Juice | 212* | 210 | 185 | 180 | 70 |
| Transformer Oil | 212* | 210 | | 150 | 70 |
| Tricresyl Phosphate | 212* | 140 | | 150 | 70 |
| Tributyl Phosphate | 122 | | | | NR |
| Trichloroacetic Acid | 122 | | | 150 | 140 |
| Trichlorobenzene | 122 | | | | |
| Trichloroethylene | 100 | | NR | NR | NR |
| Trichloroethylene 1, 1, 1 | 70 | 140 | | 125 | 70 |
| Trichloroethylene and Nitric Acid | 122 | | | | |
| Trichloroethylene in Methanol | 122 | | | | |
| Trichlorotrifluoroethane (F-113) | 70 | | | 70 | 73 |
| Triethanolamine | 75 | 120 | | 170 | 140 |
| Triethylamine | 122 | | | | |
| Triethylene Tetramine | 122 | | | | |
| Triethyl Phosphate | 212* | | | | |
| Triphenyl Phosphite | 100 | | | | |
| Trisodium Phosphate | 300 | 210 | 185 | 225 | 150 |
| Turpentine | 300 | 100 | 73 | NR | 125 |
| Urea | 212* | 140 | 185 | 225 | 70 |
| Vaseline | 300 | | | | |
| Vinegar | 212* | 210 | | 225 | 150 |
| Vinyl Acetate | 122 | NR | | NR | NR |

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|----------------------------|--------------------------------|------------------------|-------------------------|-----------------------|------------------------|
| Water | 300 | 210 | 210 | 180 | 140 |
| Water, Acid Mine | 300 | 210 | | 225 | 150 |
| Water, Brackish | 300 | | | | |
| Water, Deionized | 300 | 210 | | 225 | 150 |
| Water, Demineralized | 300 | 210 | | 225 | 150 |
| Water, Distilled or Fresh | 300 | 210 | | 225 | 150 |
| Water, Salt | 300 | 210 | | 225 | 150 |
| Water, Sea | 300 | 210 | | 225 | 150 |
| Water, Sewage | 300 | | | | |
| Whiskey | 300 | 80 | | 225 | 150 |
| White Liquor | 212* | 180 | | 140 | 150 |
| Wines | 212* | 180 | | 225 | 150 |
| Xylene (Xylol Xylole) | 200 | 70 | NR | NR | NR |
| Zinc Chloride | 300 | 210 | 185 | 225 | 140 |
| Zinc Nitrate | 300 | 210 | | 225 | 140 |
| Zinc Sulfate | 300 | 210 | 185 | 225 | 140 |
| Plating Solutions | | | | | |
| Plating Solutions, Brass | 212* | 180 | 185 | 180 | 140 |
| Plating Solutions, Cadmium | 212* | 220 | 185 | 180 | 140 |
| Plating Solutions, Chrome | 212* | 140 | 210 | 180 | 140 |
| Plating Solutions, Copper | 212* | 120 | 210 | 180 | 120 |
| Plating Solutions, Gold | 212* | 180 | 185 | 180 | 125 |
| Plating Solutions, Lead | 212* | 160 | | 225 | 140 |
| Plating Solutions, Nickel | 212* | 180 | | 225 | 140 |
| Plating Solutions, Rhodium | 212* | | | | |
| Plating Solutions, Silver | 212* | 180 | | 225 | 150 |
| Plating Solutions, Tin | 212* | 210 | | 225 | 150 |
| Plating Solutions, Zinc | 212* | 180 | | 225 | 150 |

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1 PermaShield Fluoropolymer Barrier Coating. From Fab-Tech, Inc. Colchester, VT.

2 Vinyl Ester. From Koppers Company, Inc. Pittsburgh, PA.

3 Chlorinated Polyvinyl Chloride. Class 23447-B.

4 Polypropylene. Type 1. Polyolefin.

5 Polyvinyl Chloride. Class 12454-B.

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