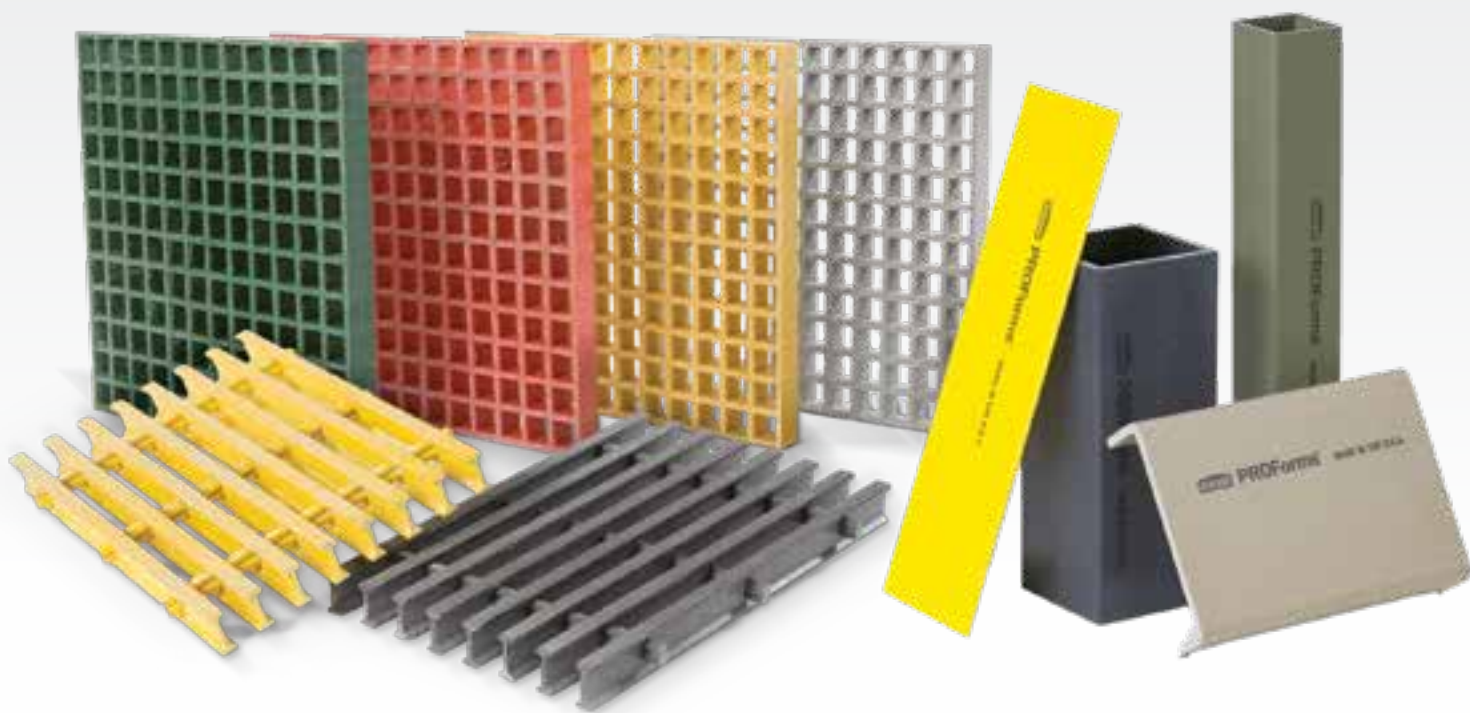




CORROSION RESISTANCE GUIDE

FOR PROFORMS® STRUCTURAL SHAPES AND PROGRID®
AND PROGRATE® FIBERGLASS GRATING



STRONG, LIGHTWEIGHT AND CORROSION-RESISTANT

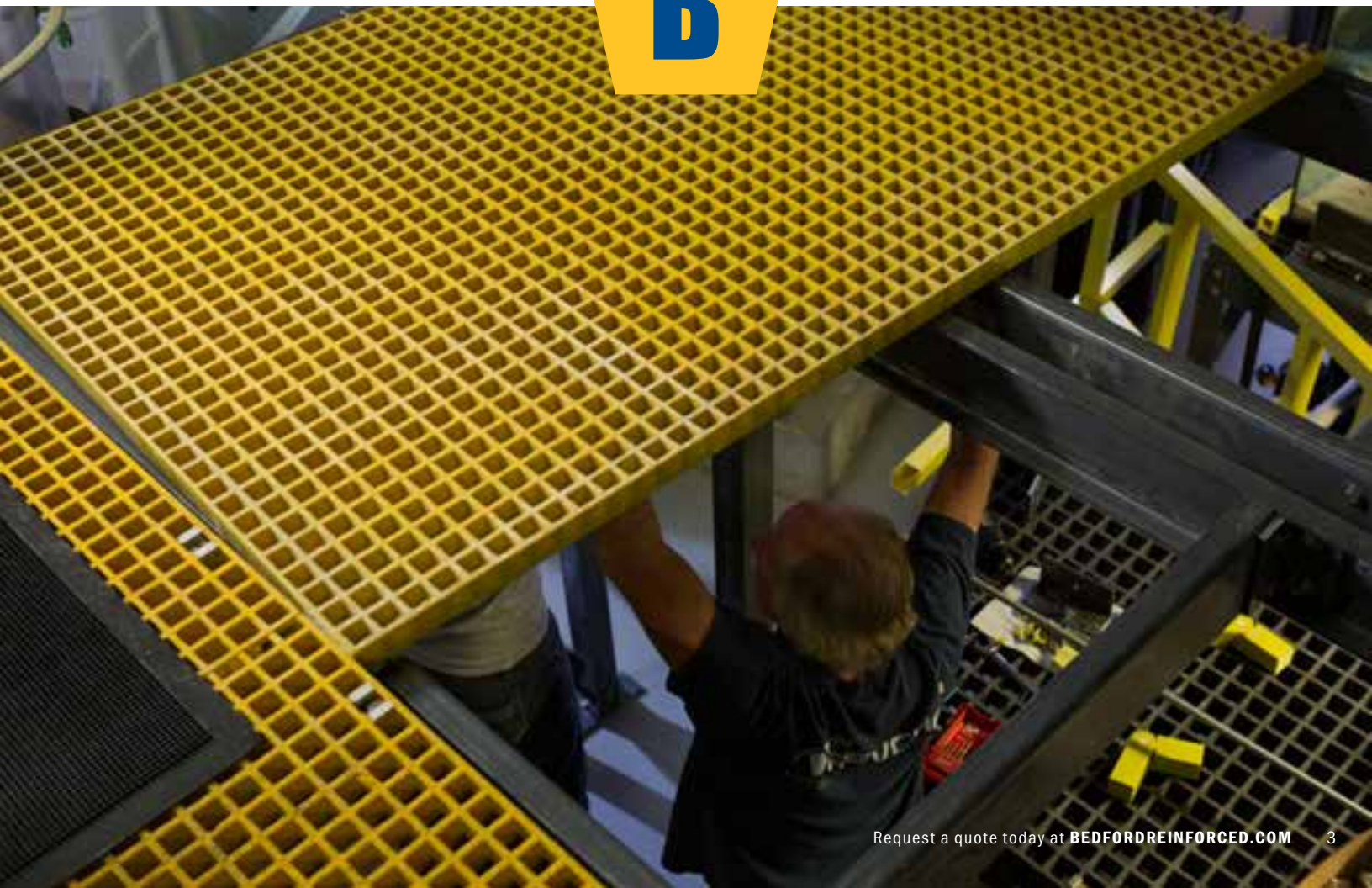
Want the strength of steel without the weight? Bedford's fiberglass-reinforced polymer (FRP) structural shapes and grating products have the advantage. Our materials are corrosion-resistant, fire-retardant, have low conductivity, and are easy to install with standard tools.

Whether you need grating panels, structural shapes or a complete FRP system with handrails, stairs and platforms, Bedford has the solution to match. In addition to our products, we offer in-house design, engineering and fabrication capabilities to meet your project needs.

Corrosion Data

The data in this corrosion guide is based on field service performance, laboratory testing and extrapolated values from our resin manufacturers' recommendations. Data shown is intended as a guide only. It is recommended that for a specific application, testing be done in the actual chemical environment. The following conditions will effect the suitability of a specific resin laminate:

- Periodic changes in temperature
- Changes in chemical concentrations
- Exposure to vapors only
- Exposure to intermittent or frequent splashes and spills
- Load bearing or non-load bearing requirements
- Temperature spikes
- Combinations of chemicals
- Frequency of maintenance wash down



CORROSION RESISTANCE GUIDE FOR MOLDED AND PULTRUDED GRATING

			PROGrid® Molded Grating			PROGrate® Pultruded Grating	
Chemical Environment	% Concentration	Temp °F	VFR	IFR	GP	VFR	IFR
Acetic Acid	25	MAX	C	C	S	C	C
Acetic Acid	50	MAX	C	C	S	C	C
Aluminum Hydroxide	ALL	MAX	C	C	C	C	C
Ammonium Chloride	ALL	120	C	C	C	C	C
Ammonium Bicarbonate	15	120	C	C	S	C	S
Ammonium Bicarbonate	50	120	C	C	S	S	I
Ammonium Hydroxide	20	80	S	N	N	I	N
Ammonium Sulfate	ALL	120	C	C	C	C	S
Benzene	100	150	I	I	N	I	N
Benzoic Acid (SAT)	SAT	MAX	C	C	S	C	C
Borax (SAT)	SAT	MAX	C	C	S	C	S
Calcium Carbonate	ALL	MAX	C	C	S	C	C
Calcium Nitrate	ALL	MAX	C	C	C	C	C
Carbon Tetrachloride	100	80	I	N	N	I	N
Chlorine, Dry Gas	ALL	MAX	C	C	S	C	S
Chlorine Water (SAT)	SAT	120	C	I	N	I	N
Chromic Acid	50	150	I	N	N	I	N
Citric Acid	ALL	MAX	C	C	C	C	C
Copper Chloride	ALL	MAX	C	C	C	C	C
Copper Cyanide	ALL	140	C	S	I	S	I
Copper Nitrate	ALL	MAX	C	C	C	C	C
Ethanol	10	120	C	S	S	C	S
Ethanol	50	120	C	I	I	C	I
Ethylene Glycol	ALL	ISO	C	C	S	C	S
Ferric Chloride	100	MAX	C	C	C	C	C
Ferrous Chloride	ALL	MAX	C	C	C	C	C
Formaldehyde 0-50%	50	120	S	I	I	S	I
Gasoline	ALL	120	C	C	S	C	S
Glucose	ALL	120	C	C	C	C	C
Glycerin	100	MAX	C	C	S	C	S
Hydrobromic Acid	50	MAX	S	S	I	I	N
Hydrochloric Acid	10	MAX	C	S	S	S	S
Hydrochloric Acid	37	MAX	I	S	I	I	I
Hydrogen Peroxide	30	80	C	N	N	S	N
Lactic Acid	100	MAX	C	C	C	C	C
Lithium Chloride (SAT)	SAT	MAX	N	N	N	N	N
Magnesium Chloride	ALL	MAX	C	C	C	C	C
Magnesium Nitrate	ALL	MAX	C	C	C	C	C

CORROSION RESISTANCE GUIDE FOR MOLDED AND PULTRUDED GRATING

			PROGrid® Molded Grating			PROGrate® Pultruded Grating	
Chemical Environment	% Concentration	Temp °F	VFR	IFR	GP	VFR	IFR
Magnesium Sulfate	ALL	MAX	C	C	C	C	C
Mercuric Chloride	ALL	MAX	C	C	C	C	C
Mercurous Chloride	ALL	MAX	C	C	S	C	S
Nickel Chloride	ALL	MAX	C	C	C	C	C
Nickel Sulfate	ALL	MAX	C	C	C	C	C
Nitric Acid	20	120	S	S	I	I	I
Oxalic Acid	ALL	150	C	C	S	C	S
Perchloric Acid	30	90	S	I	I	I	I
Phosphoric Acid	80	MAX	C	C	C	C	S
Potassium Chloride	ALL	MAX	C	C	C	C	C
Potassium Dichromate	ALL	MAX	C	C	C	C	C
Potassium Nitrate	ALL	MAX	C	C	C	C	C
Potassium Sulfate	ALL	MAX	C	C	C	C	C
Propylene Glycol	ALL	MAX	C	C	S	C	S
Sodium Acetate	ALL	MAX	C	C	C	C	C
Sodium Bisulfate	ALL	80	S	S	I	C	I
Sodium Bromide	ALL	80	C	C	C	C	C
Sodium Cyanide	ALL	80	C	I	I	S	I
Sodium Hydroxide	10	MAX	C	I	N	I	N
Sodium Hydroxide	50	MAX	S	N	N	N	N
Sodium Nitrate	ALL	MAX	C	C	C	C	C
Sodium Sulfate	ALL	MAX	C	C	C	C	C
Sulfuric Acid	10	MAX	C	S	S	C	S
Sulfuric Acid	25	MAX	C	S	S	S	I
Sulfuric Acid	75	100	C	I	I	I	N
Tartaric Acid	ALL	MAX	C	C	S	C	S
Vinegar	ALL	MAX	C	C	S	C	S
Water, Distilled	ALL	MAX	C	C	C	C	C
Zinc Nitrate	100	MAX	C	C	C	C	C
Zinc Sulfate	100	MAX	C	C	C	C	C

C = Continuous exposure of the grating to the chemical environment listed at the given temperature.

S = Frequent exposure of the grating to splashes and spills from the chemical environment listed at the given temperature.

I = Infrequent exposure of the grating to splashes and spills from the chemical environment at the given temperature and the spill immediately cleaned up or washed from the grating.

N = Not recommended for the concentrations and temperatures listed.

T = Test

MAX temperature is 185°F for molded VFR and pultruded VFR grating, 160°F for molded IFR and pultruded IFR grating, 150°F for molded GP grating.

If the chemical environment involves a combination of two or more chemicals, the above guidelines shall not apply.

CORROSION RESISTANCE GUIDE FOR PULTRUDED STRUCTURAL SHAPES

Maximum Recommended Service		
Chemical Environment	Temp °F	
	Vinylester	Polyester
Acetic Acid, to 10%	170	80
Acetic Acid, to 50%	180	NR
Acetic Acid, Glacial	NR	NR
Acetone	NR	NR
Aluminum Chloride	170	120
Aluminum Hydroxide	140	120
Aluminum Nitrate	140	120
Aluminum Sulfate	170	120
Ammonium Chloride	170	120
Ammonium Hydroxide, to 5%	140	NR
Ammonium Nitrate, to 50%	170	120
Ammonium Nitrate, Saturated	170	NR
Ammonium Persulfate, to 25%	140	90
Ammonium Phosphate	170	120
Ammonium Sulfate	170	120
Amyl Alcohol	80	NR
Barium Carbonate	170	120
Barium Chloride	170	120
Barium Sulfate	170	120
Benzene	NR	NR
Benzene Sulfonic Acid, to 50%	110	NR
Benzoic Acid	170	120
Benzyl Alcohol	NR	NR
Borax	170	120
Brine (Sodium Chloride Solution)	170	120
Bromine, Liquid or Vapor	NR	NR
Butyl Acetate	NR	NR
Butyl Alcohol	80	NR
Calcium Carbonate	170	120
Calcium Hydroxide	140	120
Calcium Hypochlorite	120	NR
Calcium Nitrate	170	120
Calcium Sulfate	170	120
Carbon Disulfide	NR	NR
Carbon Monoxide Gas	170	160
Carbon Dioxide Gas	170	160
Carbon Tetrachloride	70	NR
Chlorine, Dry Gas	170	NR
Chlorine, Wet Gas	170	NR
Chlorine Water	140	NR
Chloroform	140	NR

Maximum Recommended Service		
Chemical Environment	Temp °F	
	Vinylester	Polyester
Chromic Acid, to 5%	110	NR
Chromous Sulfate	140	120
Citric Acid	170	120
Copper Chloride	170	170
Copper Cyanide	170	170
Copper Nitrate	170	170
Crude Oil, Sour	170	170
Cyclohexane, Liquid and Vapor	170	NR
Diesel Fuel	140	90
Ethyl Acetate	NR	NR
Ethyl Alcohol	NR	NR
Ethylene Glycol	170	120
Fatty Acids	170	80
Ferric Chloride	170	110
Ferric Sulfate	170	110
Formaldehyde	110	NR
Fuel Oil	140	80
Gasoline, Aviation and Ethyl	140	80
Glucose	170	100
Glycerine	170	100
Hexane	120	90
Hydraulic Fluid (Glycol Based)	140	NR
Hydraulic Fluid Skydrol	140	NR
Hydrobromic Acid	110	NR
Hydrochloric Acid, to 15%	140	80
Hydrochloric Acid, Concentrated	110	NR
Hydrogen Bromide, Dry Gas	140	80
Hydrogen Bromine, Wet Gas	140	NR
Hydrogen Chloride, Dry Gas	170	80
Hydrogen Chloride, Wet Gas	170	80
Hydrogen Fluoride, Solid or Vapor	NR	NR
Hydrogen Peroxide, to 10%	110	NR
Hydrogen Sulfide, Dry Gas	140	80
Hydrogen Sulfide, Wet Gas	140	80
Isopropyl Alcohol	80	NR
JP-4	140	80
Kerosine	140	110
Lactic Acid	170	120
Lead Acetate	170	120
Linseed Oil	170	100
Lithium Chloride	170	120

CORROSION RESISTANCE GUIDE FOR PULTRUDED STRUCTURAL SHAPES

Maximum Recommended Service		
Chemical Environment	Temp °F	
	Vinylester	Polyester
Magnesium Carbonate	170	120
Magnesium Chloride	170	120
Magnesium Hydroxide	170	100
Magnesium Nitrate	140	120
Magnesium Sulfate	170	120
Mercuric Chloride	170	120
Mercury Metal	170	120
Methyl Ethyl Ketone	NR	NR
Mineral Oil	170	120
Monochlorobenzene	NR	NR
Naphtha	140	120
Nickel Chloride	170	120
Nitric Acid, to 5%	110	130
Nitric Acid, Concentrated	NR	NR
Nitric Acid, Vapor	140	100
Oleic Acid	170	120
Oxalic Acid	170	120
Paper Mill Liquor	100	100
Phenol Solution or Vapor	NR	NR
Phosphoric Acid	170	100
Phosphoric Acid, Salts thereof	170	120
Phosphoric Acid, Vapor	170	120
Potassium Aluminum Sulfate	170	120
Potassium Bicarbonate	110	100
Potassium Carbonate, to 10%	110	NR
Potassium Chloride	170	120
Potassium Hydroxide	140	NR
Potassium Nitrate	170	120
Potassium Sulfate	170	120
Propylene Glycol	170	120
Sodium Acetate	170	120
Sodium Benzoate	140	120
Sodium Bicarbonate	140	120
Sodium Bisulfate	170	120
Sodium Bisulfite	170	120
Sodium Borate	170	120
Sodium Bromide	170	120
Sodium Carbonate, to 10%	140	70
Sodium Chloride	170	120
Sodium Cyanide	170	120
Sodium Dichromate	170	120

Maximum Recommended Service		
Chemical Environment	Temp °F	
	Vinylester	Polyester
Sodium Di-Phosphate	170	120
Sodium Hydroxide, 10%	140	NR
Sodium Hypochlorite, to 5.25%	110	70
Sodium Monophosphate	170	120
Sodium Nitrate	170	120
Sodium Nitrite	170	120
Sodium Sulfate	170	120
Sodium Tetraborate	140	120
Sodium Thiosulfate	140	120
Soy Oil	170	100
Stearic Acid	170	120
Styrene	NR	NR
Sulfamic Acid	170	120
Sulfated Detergents	NR	120
Sulfite Liquor	160	100
Sulfur Dioxide, Dry Gas	170	120
Sulfur Dioxide, Wet Gas	170	70
Sulfur Trioxide, Wet Gas or Dry Gas	170	NR
Sulfuric Acid, to 25%	170	80
Tartaric Acid	170	120
Tetrachloroethylene	NR	NR
Toluene	NR	NR
Trichloroethylene Vapor	NR	NR
Trisodium Phosphate	170	NR
Urea, to 35%	110	NR
Vinegar	170	150
Water, Distilled	180	150
Water, Tap	180	150
Zinc Chloride	170	120
Zinc Nitrate	170	120
Zinc Sulfate	170	120



EXPLORE OUR FULL LINE OF FRP SOLUTIONS

Bedford offers a wide variety of structural products made of fiberglass-reinforced polymer, including PROForms® structural shapes, PROGrid® molded grating and PROGrate® pultruded grating. Our staff of skilled design, engineering and manufacturing professionals is dedicated to helping our customers maximize the benefits of FRP.

PRODUCTS

- Structural shapes
- Grating
- Decking
- Stairs and handrails
- Ladders and cages
- Fabricated structures

SERVICES

- Design and drafting
- Engineering
- Fabrication and CNC machining
- Secondary coating and painting
- Assembly and kitting
- In-house testing



When you receive a ready-to-ship date from Bedford, it's guaranteed*. If we miss the promised ship date, we pay significant penalties back to you. We also offer Express Response options with shorter, guaranteed lead times.



BEDFORD REINFORCED PLASTICS: ONE CORPORATE DRIVE, SUITE 106, BEDFORD, PA 15522 USA

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* Terms and conditions apply. Download our complete guarantee at bedfordreinforced.com or contact us for details. Ship date guarantees available in most areas.

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