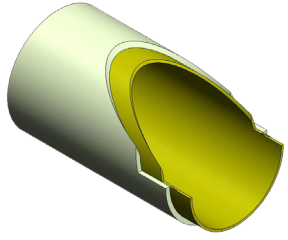
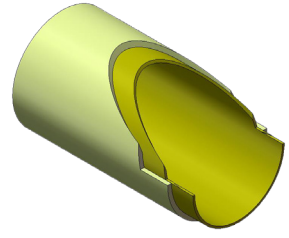
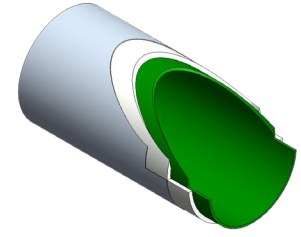
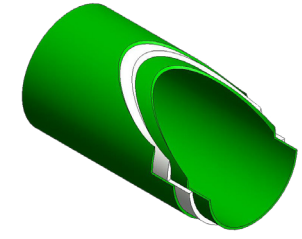
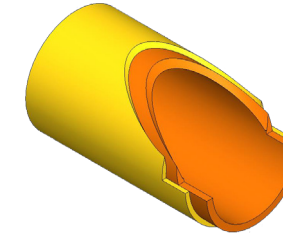
Pipe Selection Guide

FRP Piping Systems

RPS COMPOSITES

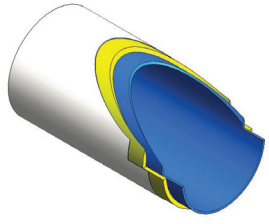
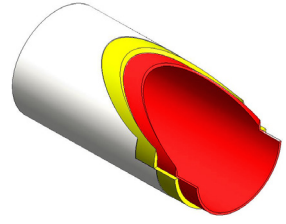
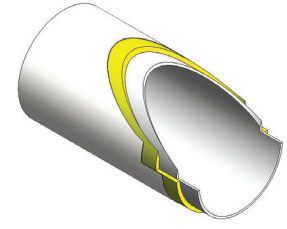
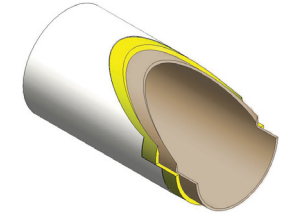
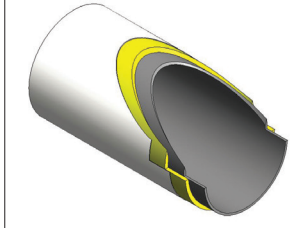
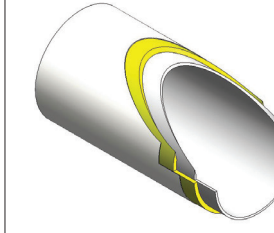
TYPE	HPPE P-150	HPPE H-150 HPPE H-150-200	HPPE A-150	AA-series (Internally and Externally Abrasion Resistant)	Custom
	Highly corrosion resistant pipe system. Reinforced chemical resistant barrier in pipe and fittings. Available with RPS Tapered Adhesive joint (sizes 1" – 12") for maximum chemical resistance at lowest installed cost. ASME NM.2 compliant. 	Improved resistance to strong acids, solvents, and oxidizing agents. Higher temperature capability, to 220°F. H-series offers maximum chemical resistance. ASME NM.2 compliant. 	Corrosion resistant pipe system with the proprietary RPS A-series, abrasion/corrosion resistant liner in pipe and fittings. A-series outperforms standard FRP and rubber lined carbon steel in fine particle slurries (eg. limestone, gypsum, lime). ASME NM.2 compliant. 	Custom designed spray piping system incorporating an internal and external RPS A-series, abrasion/ corrosion resistant liner. The preferred material for Flue Gas Desulphurization (FGD) spray pipe. 	Piping system designed and built to specific customer or service condition. Custom designed pipe systems can optimize the cost:performance relationship. 
Size (Diameter)	1" – 120"	1" – 120"	1" – 120"	1" – 60"	1" – 120"
Corrosion Barrier	0.100"	0.100" or 0.200"	0.100"	0.050" TO 0.500" (inside & outside)	0.050" to 0.500"
Pipe Structure	Filament Wound	Filament Wound	Filament Wound	Filament Wound or Contact Molded	Filament Wound or Contact Molded
Flange	Laminated	Laminated	Laminated	Laminated	Laminated
Resin System	Bisphenol A epoxy vinyl ester	Brominated epoxy novolac vinyl ester	Vinyl ester	Vinyl ester	Vinyl ester Brominated epoxy novolac vinyl ester Bisphenol A Isophthalic
Fire Retardance	Optional	Standard	Optional	Optional	Optional
Joint Types	Tapered Adhesive Butt & Wrap O-Ring	Tapered Adhesive Butt & Wrap	Tapered Adhesive Butt & Wrap	Tapered Adhesive Butt & Wrap	Butt & Wrap
Pressure Ratings	50 – 150 psi	50 – 150 psi	50 – 150 psi	50 – 150 psi (full vacuum rating available)	25 – 150 psi (full vacuum rating available)
Temp. Range	-40°F (-40°C) to 180°F (82°C)	-40°F (-40°C) to 220°F (104°C) *	-40°F (-40°C) to 180°F (82°C)	-40°F (-40°C) to 180°F (82°C)	
Typical Applications**	Caustics, acids, brine solutions, industrial chemicals, sewer and effluent lines, chlorine dioxide, pickling lines, and other services demanding highly corrosion resistant resins.	Higher Temperature Capabilities As P-series, H-series is capable of handling a wide range of acids and oxidizing agents. H-series has improved performance with solvents, and at elevated temperatures.	Enhanced Erosion Resistance Excellent performance in handling lime, limestone, and gypsum slurries; as found in wet limstone scrubber systems. Suitable for other fine particle slurries (eg. TiO_2).	Internal & External Erosion Resistance Wet limestone FGD Spray Piping, and other applications where both internal and external erosion are a concern.	Chlorine and custom applications.

* H series piping systems with a continuous operating temperature above 210°F (99°C) should be evaluated by RPS engineering to determine if the process conditions are acceptable.
** Please consult our Chemical Resistance Guide for specific recommendations, available at RPSComposites.com/Company-Literature.

Pipe Selection Guide

Dual Laminate Piping Systems

RPS COMPOSITES

	Fluoropolymers			Polyolefin	Vinyls	
TYPE	**FEP/FRP (MAXAR Blue)**	**PVDF/FRP (MAXAR Red)**	**PFA/FRP (MAXAR White)**	**PP/FRP**	**CPVC/FRP**	**PVC/FRP**
	MAXAR Blue (fluorinated ethylene propylene) piping products exhibit excellent chemical resistance at elevated temperatures. A fully bonded liner reinforced with a premium vinyl ester resin offering seamless flanged spools up to 20 ft. The improved impact and elongation properties have proven beneficial for many applications. Field spooling can be done by maintenance crews with MAXAR*Flex*. 	**MAXAR Red** (polyvinylidene flouride) is valued for its toughness, high abrasion resistance and low permeability to most gases and liquids. These qualities offer additional chemical benefits in high pH solutions, increased impact strength at ambient and colder temperatures. Field spooling can be done by maintenance crews with MAXAR*Flex*. 	**MAXAR White** (perfluoroalkoxy) provides excellent chemical / solvent resistance and is the most temperature resistant of all our dual laminate piping systems. Field spooling can be done by maintenance crews with MAXAR*Flex*. 	Polypropylene has many advantageous in process piping. Strength, low weight, abrasion resistance, and broad temperature range provides numerous chemical applications. 	CPVC has physical properties at 73°F similar to PVC and chemical resistance generally better than that of PVC. CPVC has proven to be an excellent piping material for hot corrosive liquids, hot and cold water distribution and similar applications above the temperature range of PVC. 	Known as the most frequently specified of all thermoplastics materials, PVC is characterized by distinctive physical properties, and is resistant to corrosion and chemical attack by acids, alkalis, salt solutions etc. 
Size (Diameter)	1" – 24" (Seamless thru 20")	1" – 24" (Seamless thru 12")	1" – 24" (Seamless thru 10")	1" – 24" (Seamless thru 20")	1" – 24"	1" – 24"
Pipe Structure	Filament Wound or Contact Molded	Filament Wound or Contact Molded	Filament Wound or Contact Molded	Filament Wound or Contact Molded	Filament Wound or Contact Molded	Filament Wound or Contact Molded
Flange	Filament Wound or Contact Molded	Filament Wound or Contact Molded	Filament Wound or Contact Molded	Filament Wound or Contact Molded	Filament Wound or Contact Molded	Filament Wound or Contact Molded
Resin System	Vinyl Ester	Vinyl Ester	Vinyl Ester	Vinyl Ester	Vinyl Ester	Vinyl Ester
Fire Retardance	Optional	Optional	Optional	Optional	Optional	Optional
Joint Types	Flow fusion or hot air/gas FRP Overwrap	Hot plate butt weld, flow fusion or hot air/gas FRP Overwrap	Flow fusion or hot air/gas FRP Overwrap	Hot plate butt weld or hot air/gas FRP Overwrap	Solvent/Socket, hot plate butt weld or hot air/gas; FRP Overwrap	Solvent/Socket, hot plate butt weld or hot air/gas; FRP Overwrap
Pressure Ratings	100 psi - 150 psi (full vacuum rated)	100 psi - 150 psi (full vacuum rated)	100 psi - 150 psi (full vacuum rated)	100 psi - 150 psi (full vacuum rated)	100 psi - 150 psi (full vacuum rated)	100 psi - 150 psi (full vacuum rated)
Temp. Range	-5°F (-20°C) to 220°F (104°C)	-5°F (-20°C) to 220°F (104°C)	-5°F (-20°C) to 220°F (104°C)	15°F (-10°C) up to 200°F (93°C)	0°F (-18°C) up to 200°F (93°C)	0°F (-18°C) up to 170°F (77°C)
Typical Applications	**MAXAR Blue's** FEP liner is chemically inert to a broad range of commercial chemicals including: acids, chlorides, sulfates, bleach solutions and caustics, etc.	Some common chemicals handled by PVDF piping are: acetic acid, chlorine, hydrochloric acid, sodium hypochlorite, sulfuric acid etc. It's often used for pump parts, tank liners, and seals.	Our PFA dual laminate is inert to a broad range of chemicals and solvents, at higher temperatures.	Polypropylene liners are chemically inert to mineral acids, alkalis, salt solutions, alcohols, and strong caustic streams including potassium hydroxide and sodium hydroxide solutions.	Generally resistant to most acids, bases, oxidants and halogens.	Generally resistant to most acids, bases, oxidants and halogens.

Notes:
1. The information in this chart is provided as general reference. The details of a user's specific process may have a profound effect on material selection. Please consult our Chemical Resistance Guide for more precise recommendations, available at RPSComposites.com/Company-Literature.
2. RPS Dual Laminate piping systems with a maximum continuous operating temperature above 180°F should be evaluated by RPS engineering to determine if the process conditions are acceptable.
3. Other liners, including HDPE (high density polyethylene) and ECTFE (ethylene chlorotrifluoroethylene), are available.

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