

TYPICAL MATERIAL PROPERTIES

MATERIAL PROPERTIES

PROPERTIES	TEST METHOD	UNIT	VALUE	
PE-3608 SERIES AQUA JET/AQUA PLUS/AQUA BLUE/GEOTHERMAL			AQUA-JET/ AQUA PLUS/ GEOTHERMAL	AQUA-BLUE
Density	ASTM D-1505	gms/cm ³	0.954	0.944
Melt Index	ASTM D-1238 (190/2.16)	gms/10 min	0.10	0.11
Tensile Strength @ Break	ASTM D-638	psi	4500	4500
Tensile Strength @ Yield	ASTM D-638	psi	3200	3300
Ultimate Elongation	ASTM D-638	%	850	>800
Flexural Modulus	ASTM D-790	psi	120,000	120,000
Linear Thermal Expansion	ASTM D-696	inch/inch/F	9x10 ⁻⁵	9x10 ⁻⁵
Hardness	ASTM D-2240	Shore D	58	68
Brittleness Temperature	ASTM D-746	°F	< -148	< -180
Pent	ASTM F-1473	Hours	> 100	>100
Material Designation	PPI-TR4	—	PE-3608	PE-3608
Cell Classification	ASTM D-3350	—	345464C	335464A
HDB@73.4°F (23°C)	ASTM D-2837	psi	1600	1600
HDB@140°F (60°C)	ASTM D-2837	psi	800	800

PE-2708 YELLOW - GAS PIPE

Density (Yellow)	ASTM D-1505	gms/cm ³	0.943
Melt Index	ASTM D-1238 (190/2.16)	gms/10 min	0.20
Tensile Strength @ Break	ASTM D-638	psi	4500
Tensile Strength @ Yield	ASTM D-638	psi	2800
Ultimate Elongation	ASTM D-638	%	800
Flexural Modulus	ASTM D-790	psi	100,000
ESCR Condition (B, 10% & C)	ASTM D-1693	Hours	> 5000
Hardness	ASTM D-2240	Shore D	64
Brittleness Temperature	ASTM D-746	°F	< -180
Pent	ASTM F-1473	Hours	> 100
Material Designation	PPI-TR4	—	PE-2708
Cell Classification	ASTM D-3350	—	234373E
HDB@73.4°F (23°C)	ASTM D-2837	psi	1250
HDB@140°F (60°C)	ASTM D-2837	psi	1000

PE-4710 SERIES AQUA JET/AQUA PLUS/AQUA BLUE/GEOTHERMAL/GAS PIPE

Density (Black)	ASTM D791 ²	gms/cm ³	0.959
Density (Aqua-Blue)	ASTM D791 ¹	gms/cm ²	0.949
Melt Index	ASTM D1238 (190/2.16)	gms/10 min.	0.080
Tensile Strength @ Yield	ASTM D638	psi	> 3500
Ultimate Elongation @ Break	ASTM D638	%	> 500%
Flexural Modulus	ASTM D790	psi	150,000
Hydrostatic Strength	ASTM D1598 ²		
1798 psi @ 68°F			> 8 DAY
725 psi @ 176°F			> 42 DAY
Brittleness Temperature	ASTM D746A	°F	< -103°F
Slow Crack Growth PENT	ASTM F1473 ³	Hours	> 1 YEAR
Material Designation	PPI-TR4	—	PE-4710
Cell Classification	ASTM D3350	BLACK	PE-445574C
HDB@ 73.4°F (23°C)	ASTM D2837	psi	1600
HDB@ 140°F (60°C)	ASTM D2837	psi	1000

- Notes**
- ¹ Natural resin
 - ² Natural resin extruded with carbon black (6.5%)
 - ³ Compression molded parts prepared according to ASTM D4703 Procedure C



CHEMICAL RESISTANCE



S = Satisfactory. M = Marginal. U = Unsatisfactory. = Not known. * = some stress cracking.

REAGENT	70°F	140°F	REAGENT	70°F	140°F	REAGENT	70°F	140°F	REAGENT	70°F	140°F
Acetic Acid* 1-10%	S	S	Copper Chloride Sat'd	S	S	Lactic Acid* 90%	S	S	Potassium Ferri/Ferro Cyanide Sat'd	S	S
Acetic Acid* 10-60%	S	M	Copper Cyanide Sat'd	S	S	Latex*	S	S	Potassium Fluoride	S	S
Acetic Acid* 80-100%	S	M	Copper Fluoride 2%	S	S	Lead Acetate Sat'd	S	S	Potassium Hydroxide 20%	S	S
Acetone	M	U	Copper Nitrate Sat'd	S	S	Low Pressure Gas	S	S	Potassium Hydroxide Conc.	S	S
Acrylic Emulsions*	S	S	Copper Sulfate Dilute	S	S	Lube Oil	S	M	Potassium Nitrate Sat'd	S	S
Aluminum Chloride - Dilute	S	S	Copper Sulfate Sat'd	S	S	Magnesium Carbonated Sat'd	S	S	Potassium Perborate Sat'd	S	S
Aluminum Chloride Conc.	S	S	Cottonseed Oil*	S	S	Magnesium Chloride Sat'd	S	S	Potassium Perchlorate 10%	S	S
Aluminum Fluoride Conc.	S	S	Cuprous Chloride Sat'd	S	S	Magnesium Hydroxide Sat'd	S	S	Potassium Sulfate Conc.	S	S
Aluminum Sulfate Conc.	S	S	Cyclohexanol	S	S	Magnesium Nitrate Sat'd	S	S	Potassium Sulfide Conc.	S	S
Alums (all types) Conc.	S	S	Cyclohexane	M	U	Magnesium Sulphate Sat'd	S	S	Potassium Persulfate Sat'd	S	S
Ammonia 100% Dry Gas	S	S	Detergents Synthetic*	S	S	Mercuric Chloride Sat'd	S	S	Propane	S	S
Ammonium Carbonate	S	S	Developers Photographic	S	S	Mercuric Cyanide Sat'd	S	S	Propargyl Alcohol*	S	S
Ammonium Chloride Sat'd	S	S	Dextrin Sat'd	S	S	Mercurous Nitrate Sat'd	S	S	Propyl Alcohol*	S	S
Ammonium Fluoride 20%	S	S	Dextrene Sat'd	S	S	Mercury	S	S	Propylene Dichloride 100%	U	U
Ammonium Hydroxide 0.888 S.Q.	S	S	Dibutylphthalate	S	M	Methyl Alcohol* 100%	S	S	Propylene Glycol*	S	S
Ammonium Metaphosphate Sat'd	S	S	Disodium Phosphate	S	S	Methyl Bromide	M	U	Rayon Coagulating Bath*	S	S
Ammonium Nitrate Sat'd	S	S	Diaso Salts	S	S	Methyl Chloride	M	U	Salt Water	S	S
Ammonium Persulfate Sat'd	S	S	Diethylene Glycol*	S	S	Methyl Ethyl Ketone 100%	M	U	Salt Water Cont. 20% Crude Oil	S	S
Ammonium Sulfate Sat'd	S	S	Diglycolic Acid*	S	S	Methylsulfuric Acid*	S	S	Sea Water	S	S
Ammonium Sulfide Sat'd	S	S	Dimethylamine	M	U	Methylene Chloride 100%	M	U	Selenic Acid	S	S
Ammonium Thiocyanate Sat'd	S	S	Emulsions, Photographic*	S	S	Milk	S	S	Shortening*	S	S
Amyl Acetate	M	U	Ethyl Acetate 100%	N	U	Mineral Oils	S	U	Silicic Acid	S	S
Amyl Alcohol* 100%	S	S	Ethyl Alcohol* 100%	S	S	Molasses Comm.	S	S	Silver Nitrate Sol	S	S
Amyl Chloride 100%	M	U	Ethyl Alcohol* 35%	S	S	Natural Gas, Wet	S	S	Soap Solution* Any Conc's	S	S
Aniline 100%	S	N	Ethyl Butyrate	M	U	Natural Gas, Dry	S	S	Sodium Acetate Sat'd	S	S
Antimony Chloride	S	S	Ethyl Chloride	M	U	Nickel Chloride, Sat'd	S	S	Sodium Benzoate 35%	S	S
Aqua Regis	U	U	Ethyl Ether	U	U	Nickel Nitrate Conc.	S	S	Sodium Bicarbonate Sat'd	S	S
Barium Carbonate Sat'd	S	S	Ethylene Chloride	U	U	Nickel Sulfate Sat'd	S	S	Sodium Bisulfate Sat'd	S	S
Barium Chloride	S	S	Ethylene Chlorohydrin	U	U	Nicotine* Dilute	S	S	Sodium Bisulfite Sat'd	S	S
Barium Hydroxide	S	S	Ethylene Dichloride	N	U	Nicoftinic Acid*	S	S	Sodium Borate	S	S
Barium Sulfate Sat'd	S	S	Ethylene Glycol*	S	S	Nitric Acid 0-30%	S	S	Sodium Bromide Dilute Sol.	S	S
Barium Sulfide Sat'd	S	S	Ferris Chloride Sat'd	S	S	Nitric Acid 30-50%	S	M	Sodium Carbonate Conc.	S	S
Beer	S	S	Ferris Nitrate Sat'd	S	S	Nitric Acid 70%	S	M	Sodium Carbonate	S	S
Benzene	M	U	Ferrous Chloride Sat'd	S	S	Nitric Acid 95-98%	U	U	Sodium Chlorate Sat'd	S	S
Benzene Sulfonic Acid*	S	S	Ferrous Sulphate	S	S	Nitrobenzene 100%	U	U	Sodium Chloride Sat'd	S	S
Bismuth Carbonate Sat'd	S	S	Fish Solubles*	S	S	Octyl Gresol	S	U	Sodium Cyanide	S	S
Bleach Lye 10%	S	S	Fluoboric Acid	S	S	Oils and Fats	S	U	Sodium Dichromate Sat'd	S	S
Black Liquor	S	S	Fluorine	S	U	Olseic Acid Conc.	S	U	Sodium Ferricyanide Sat'd	S	S
Borax Cold Sat'd	S	S	Fluosilicic Acid 32%	S	S	Olsum Conc.	U	U	Sodium Ferrocyanide Sat'd	S	S
Boric Acid Dilute	S	S	Fluosilicic Acid Conc.	S	S	Orange Extract	S	S	Sodium Fluoride Sat'd	S	S
Boric Acid Conc.	S	S	Formaldehyde* 40%	S	M	Oxalic Acid* Dilute	S	S	Sodium Hydroxide Conc.	S	S
Bromic Acid 10%	S	S	Formic Acid* 0-20%	S	S	Oxalic Acid* Sat'd	S	S	Sodium Hypochlorite	S	S
Bromine Liquid 100%	M	U	Formic Acid* 20-50%	S	S	Ozone 100%	S	U	Sodium Nitrate	S	S
Butane	S	S	Formic Acid* 100%	S	S	Perchloric Acid 10%	S	S	Sodium Nitrate	S	S
Butanedial* 10%	S	S	Fructose Sat'd	S	S	Petroleum Ether	U	U	Sodium Sulfate	S	S
Butanedial* 60%	S	S	Fruit Pulp	S	S	Phenol 90%	U	U	Sodium Sulfide 2%	S	S
Butanedial* 100%	S	S	Fuel Oil	S	U	Phosphoric Acid up to 30%	S	S	Sodium Sulfide Sat'd Sol.	S	S
Butyl Alcohol* 100%	S	S	Furfural 100%	M	U	Phosphoric Acid Over 30%	S	S	Sodium Sulfide Sat'd	S	S
Calcium Bisulfide	S	S	Furfuryl Alcohol	M	U	Phosphoric Acid 90%	S	S	Stannous Chloride Sat'd Sol.	S	S
Calcium Carbonate Sat'd	S	S	Gallic Acid* Sat'd	S	S	Phosphorous (Yellow) 100%	S	N	Stannic Chloride Sat'd	S	S
Calcium Chloride Sat'd	S	S	Gasolene	M	U	Phosphorus Pentoxide 100%	S	N	Starch Solution* Sat'd	S	S
Calcium Chlorate Sat'd	S	S	Gin	S	U	Photographic Solutions	S	S	Stearic Acid* 100%	S	S
Calcium Hydroxide	S	S	Glucose	S	S	Pickling	S	S	Sulfuric Acid 0-50%	S	S
Calcium Mypochlorite Bleach Sol.	S	S	Glycerine*	S	S	Sulfuric Acid*	S	S	Sulfuric Acid 70%	S	M
Calcium Nitrate 50%	S	S	Glycol*	S	S	Sulfuric Acid*	S	S	Sulfuric Acid 80%	S	U
Calcium Sulfate	S	S	Glycolic Acid* 30%	S	S	Sulfuric-Nitric*	S	U	Sulfuric Acid 96%	M	U
Camphor Oil	M	U	Grape Sugar Sat'd Aq.	S	S	Sulfur-Nitric*	S	U	Sulfuric Acid 98%	M	U
Carbon Dioxide 100% Dry	S	S	Hexanol, Tart*	S	S	Plating Solutions	S	S	Sulfuric Acid, Fuming	M	U
Carbon Dioxide 100% Wet	S	S	Hydrobromic Acid 50%	S	S	Brass*	S	S	Sulfurous Acid	S	S
Carbon Dioxide Cold Sat'd	S	S	Hydrocyanic Acid Sat'd	S	S	Cadmium*	S	S	Tallow	S	M
Carbon Disulphide	M	U	Hydrochloric Acid 10%	S	S	Chromium*	N	N	Tanic Acid* 10%	S	S
Carbon Monoxide	S	S	Hydrochloric Acid 30%	S	S	Copper*	S	S	Tanning Extracts* Conc.	S	S
Carbon Tetrachloride	M	U	Hydrochloric Acid 35%	S	S	Gold*	S	S	Tartaric Acid Sat's	N	N
Carbonic Acid	S	S	Hydrochloric Acid Conc.	S	S	Indium*	S	S	Tetrahydrofurane	N	U
Castor Oil* Conc.	S	S	Hydrofluoric Acid 40%	S	S	Lead*	S	S	Titanium Tetrachloride Sat'd	N	U
Chlorine Dry Gas 100%	S	M	Hydrofluoric Acid 60%	S	S	Nickel*	S	S	Toulene	M	U
Chlorine Moist Gas	M	U	Hydrofluoric Acid 75%	S	S	Rhodium*	S	S	Transformer Oil	S	M
Chlorine Liquid	M	U	Hydrogren 100%	S	S	Silver*	S	S	Trisodium Phosphate Sat'd	S	S
Chlorobenzene	M	U	Hydrogen Bromide 10%	S	S	Tin*	S	S	Trichloroethylene	U	U
Chloroform	M	U	Hydrogen Chloride Gas Dry	S	S	Zinc*	S	S	Urea* Up to 30%	S	S
Chlorosulfonic Acid 100%	M	U	Hydrogen Peroxide 30%	S	S	Potassium Bicarbonate Sat'd	S	S	Urine	S	S
Chrome Alum Sat'd	S	S	Hydrogen Peroxide 90%	S	M	Potassium Berate 1%	S	S	Vinegar conc.	S	S
Chromic Acid 20%	S	S	Hydrogen Peroxide 100%	S	S	Potassium Bromate 10%	S	S	Vanilla Extract*	S	S
Chromic Acid up to 50%	S	S	Hydroquinone	S	S	Potassium Bromate Sat'd	S	S	Wetting Agents*	S	S
Chromic Acid and Sulfuric Acid	S	M	Hydrogen Sulfide	S	S	Potassium Carbonate	S	S	Whiskey*	S	N
Cider*	S	S	Hypochlorus Acid Cons.	S	S	Potassium Chlorate Sat'd	S	S	Wines	S	S
Citric Acid* Sat'd	S	S	Inks*	S	S	Potassium Chloride Sat'd	S	S	Xylene	M	U
Coconut Oil Alcohols*	S	S	Iodine (ink l sol.) Conc.	S	U	Potassium Chromate 40%	S	S	Yeast	S	S
Cola Concentrates*	S	S	Lactic Acid* 10%	S	S	Potassium Cyanide Sat'd	S	S	Zinc Chloride Sat'd	S	S
						Potassium Dichromate 40%	S	S	Zinc Sulfate Sat'd	S	S