



MATERIAL SPECIFICATION SHEET



BRUISER High Density Polyethylene Pipe

SCOPE:

This material specification designates the requirements for Vanguard BRUISER HDPE, PE4710 cold water service tubing products. All BRUISER CTS dimension tubing and IPS-ID dimension piping products meet the respective requirements of CSA B137.1, ASTM D 2737, ASTM D 2239 and AWWA C-901.

MATERIALS:

All BRUISER tubing products are manufactured from PE4710 high density polyethylene resin. The inner layer contains a minimum of 2% carbon black ultraviolet light protection to meet the cell classification 445574C per ASTM D 3350. The outer blue layer contains pigments and ultraviolet stabilizers to meet the cell classification of 445574E per ASTM D 3350. Since both layers are UV protected, BRUISER can be stored outdoors in direct sunlight for up to 5 years with no change to its pressure rating or expected in-service performance.

MARKING & CERTIFICATION:

All BRUISER piping products are marked with the name VPFL as the manufacturer, BRUISER trade name, nominal size, design pressure and temperature ratings, relevant CSA and ASTM standard numbers, manufacturing date and production code, as well as the NSF-pw stamp indicating third-party certification by NSF International. NSF conducts random on-site inspections of Vanguard manufacturing facilities and independently tests BRUISER piping and tubing products for compliance with physical and toxicological standards.

RECOMMENDED USES:

BRUISER pipe and tubing are intended and recommended for use in cold potable water service line and water well applications. Design pressure / temperature rating @ 73.4°F are 200 psi for SDR-9 tubing and SIDR-7 pipe and 160 psi for SIDR-9 pipe. For uses not listed here, consult with your Vanguard representative.

HANDLING & INSTALLATION:

BRUISER high density polyethylene pipe and tubing products are tough yet flexible. However, they are softer than metals and may be damaged by abrasion or by objects with a cutting edge. BRUISER can be stored outdoors for up to 5 years before installation into a sunlight-shielded application with no change to the expected in-service performance. BRUISER may also be installed outdoors where it will be exposed to direct sunlight for up to 5 years. For pipe that is installed or remains outdoors after that limit, Vanguard expresses no in-service performance expectations. Do not drag or roll BRUISER coils across rocks or rough ground. Installation practices for BRUISER in trenched applications should comply with guidelines prepared by the Plastics Pipe Institute, American Water Works Association, Plastic Pipe and Fittings Association, and the manufacturer.

MATERIAL PROPERTIES:

Property	ASTM Test Method	English Units	SI Units
Specific Gravity (Natural)	D792		0.951
Density (Black)	D4883		0.955 g/cc
Melt Index	D1238 (1)		8.5 g/10min
Tensile Strength (Yield)	D638 (2)	3600 psi	24.8 MPa
Tensile Elongation (Break)	D638 (2)	740%	740%
Flexural Modulus	D790B (2/3)	150000 psi	1034 MPa
Slow Crack Growth PENT	F1473	>5000 hr	> 5000hr
Notched Izod Impact	D256A (4)	9.10 ft-lb/in	0.48 kJ/m
Brittleness Temperature	D746A	<-103°F	<-75°C
Carbon Black Concentration	D1603	2.30%	2.30%
Cell Classification	D3350	445574C	445574C

1. 190°C/21600g 2. Condition C 3. Method 1,3 point load 4. 73°F

BRUISER

BRUISER water service tubing provides both simple identification of water lines with its blue skin and long term UV resistance with its black inner core. BRUISER is listed with NSF International to meet the strict purity and performance standards for potable water applications. BRUISER pipe is indent printed for long-term identification requirements and incrementally marked for ease of installation.

QUALITY ASSURANCE

When the product is marked with the CSA B137.1 and ASTM D 2737 or D 2239 designation, it affirms that the product was manufactured, inspected, sampled and tested in accordance with the specification and has been found to meet the specified requirements. BRUISER blue water service tubing is produced with state-of-the-art extrusion equipment to maintain consistency and accuracy.

200 PSI, CTS-OD, SDR-9, CSA B137.1 ASTM D 2737, PE4710

Part Number	Nominal Size	Nominal O.D.	Min. Wall	Weight Per Foot
BEC4	3/4"	0.875	0.097	.103
BEC5	1"	1.125	0.125	.170
BEC6	1 1/4"	1.375	0.153	.255
BEC7	1 1/2"	1.625	0.181	.356
BEC8	2"	2.125	0.236	.608

200PSI, IPS-ID, SIDR-7, CSA B137.1 ASTM D 2239, PE4710

Part Number	Nominal Size	Nominal I.D.	Avg. O.D.	Min. Wall	Weight Per Foot
BFH4	3/4"	0.824	1.060	.118	.159
BFH5	1"	1.049	1.349	.150	.253
BFH6	1 1/4"	1.380	1.774	.197	.434
BFH7	1 1/2"	1.610	2.070	.230	.591
BFH8	2"	2.067	2.657	.295	.973

160 PSI, IPS-ID, SIDR-9, ASTM D 2239, PE4710

Part Number	Nominal Size	Nominal I.D.	Avg. O.D.	Min. Wall	Weight Per Foot
BFL3	1/2"	0.622	0.760	.069	.072
BFL4	3/4"	0.824	1.008	.092	.123
BFL5	1"	1.049	1.283	.117	.195
BFL6	1 1/4"	1.380	1.686	.153	.328
BFL7	1 1/2"	1.610	1.968	.179	.444
BFL8	2"	2.067	2.527	.230	.737

PRESSURE DROP TABLE IPS-ID ALL SIDR'S

Expressed as PSI/FT Pressure Drop

GPM	Size					
	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
5	.085	.022	.007	.002	.001	.000
6	.119	.030	.009	.002	.001	.000
7	.158	.040	.012	.003	.002	.000
8	.202	.051	.016	.004	.002	.001
9	.251	.064	.020	.005	.003	.001
10	.306	.078	.024	.006	.006	.001
15		.165	.051	.013	.011	.002
20		.281	.087	.023	.016	.003
25			.131	.035	.023	.005
30			.184	.048	.030	.007
35				.064	.039	.009
40				.082	.048	.012
45				.103	.059	.014
50				.125	.070	.017
55				.149	.083	.021
60					.096	.024
65					.110	.028
70					.125	.033
75						.037
80						.042
90						.052
100						.063
110						.075
120						.088
125						.095

EXAMPLE: To calculate the pressure drop of a 3/4" line, 40 ft. long, with a 8 gpm flow rate, calculate .051 psi x 40 ft. = 2.04 psi pressure drop.

NOTE: Maximum flow for each size based on 12 FPS velocity.

NSF-pw

NSF International
Performance and
Health Effects
(Standards 14 & 61)

NSF NSF certified to
CSA B137.1

AWWA C901

ANNEX G Lead-free