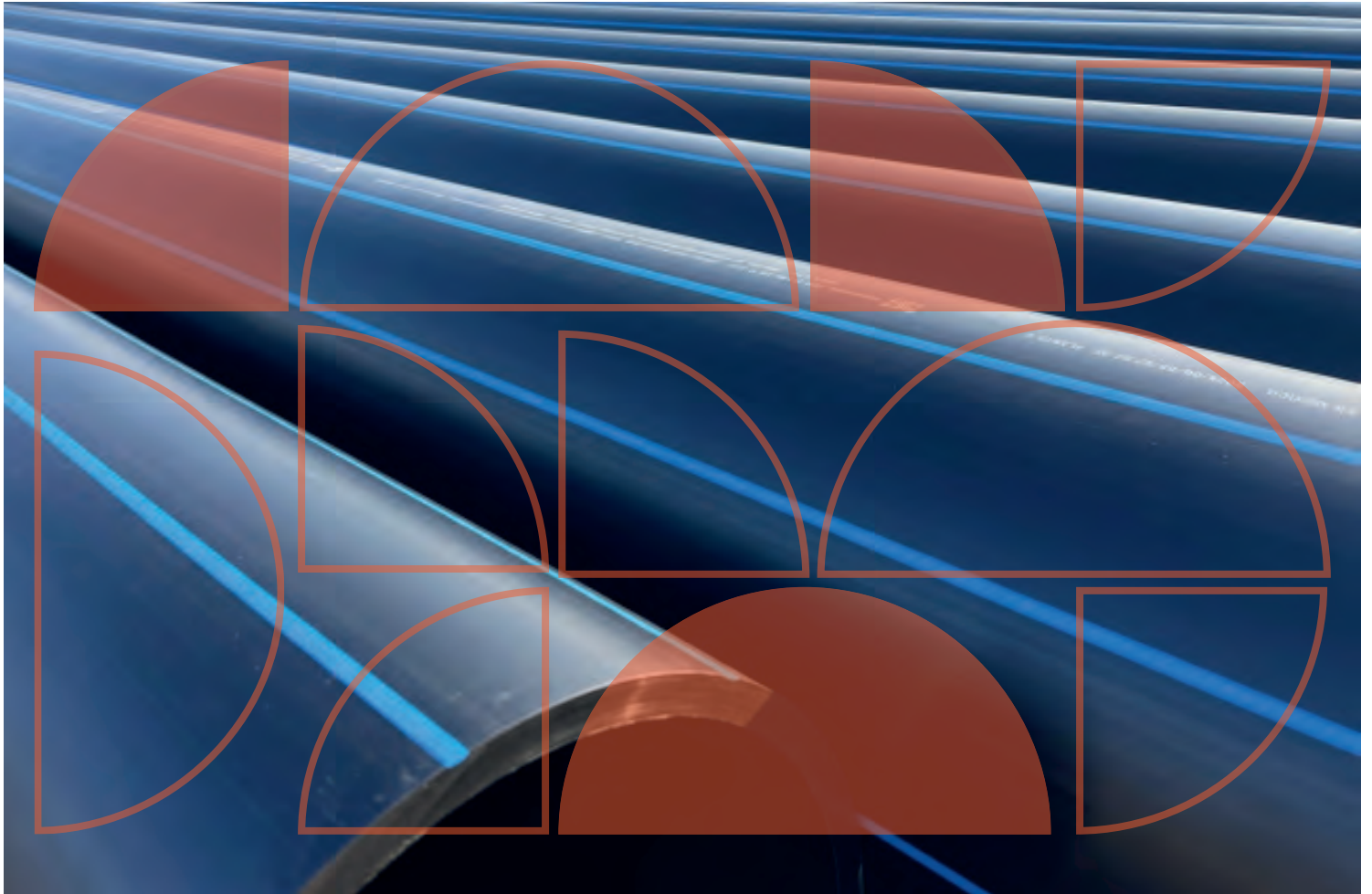




TDR FORZA® is a high-performance HDPE pressure pipe product line engineered for demanding applications. It utilizes high-quality certified and listed materials combined with state-of-the-art production technology to deliver superior strength and reliability.

PIPE CHARACTERISTICS

TDR FORZA® delivers high-performance reliability through the following key attributes:

- Bimodal HDPE construction for optimized strength-to-weight ratio
- Superior resistance to corrosion, abrasion, and a wide range of chemicals
- Smooth interior walls minimize scale and deposit accumulation, maintaining optimal flow characteristics and reducing maintenance requirements.
- Leak-free heat-fused joint system providing integral structural continuity
- Suitable for both potable water and industrial applications under pressure
- Available in various color options (standard black, gray for inspection, or custom color stripes per application requirements).

APPLICATIONS

- | | | |
|-------------------------|-------------------------------|--|
| ▪ Potable Water Systems | ▪ Mining Industry | ▪ Storm and Sanitary Water Sewage |
| ▪ Oil and Gas Industry | ▪ Pressure Irrigation Systems | ▪ Pipe Bursting and rehabilitation Lines |



STANDARDS AND CERTIFICATIONS

TDR FORZA[®] HDPE pressure pipe and fittings shall comply with and be certified to the following standards:

- ASTM F714 – Standard Specification for Polyethylene (PE) Plastic Pipe (SDR, DIPS) Based on Outside Diameter
- STM F2619 – Standard Specification for High-Density Polyethylene (PE)
- Pressure Pipe and Fittings Based on Controlled Outside Diameter
- NSF/ANSI/CAN 61 – Drinking Water System Components – Health Effects (potable water certification)
- PPI TR4 HSB Program – Hydrostatic Stress Board certification for pressure rating validity

MATERIAL SPECIFICATION

TDR FORZA[®] is manufactured from PE 4710 HDPE resin meeting ASTM D3350 Cell Classification 445472C with the following physical properties:

Property	Specification	Test Method	Property	Specification	Test Method
Resin Type	PE 4710	ASTM F714	Tensile Strength @ Yield	21~<24 MPa (3,000~<3,500 psi)	ASTM D638
Cell Classification	445472C	ASTM D3350	Slow Crack Growth Resistance (PENT Test)	>500 hours @ 80°C, 2.4 MPa	ASTM F1473
Density (g/cm ³)	>0.947~0.955	ASTM D1505	Hydrostatic Design Basis (HDS) Mpa (psi) @23°C	6.9 MPa (1,000 psi)	ASTM D2837
Melt Index @ 190°C/2.16 kg	<0.15 g/10 min	ASTM D1238	Minimum HDB @ 140°F (60°C)	5.5 MPa (800 psi)	ASTM D 2837
Flexural Modulus	758~1,103 MPa (110,000~160,000 psi)	ASTM D790	Color & UV Stabilization	2~3% carbon black	ASTM D4218

TECHNICAL DATA

The following table provides minimum wall thickness and working pressure ratings for TDR FORZA[®] HDPE pressure pipe at standard operating temperature of 73.4°F (23°C). Pressure ratings are based on PE 4710 resin with 1,000 psi HDS and assume continuous water service. Design temperatures above 140°F (60°C) or special chemical applications require consultation with TDR technical representatives.

Nominal Size	Actual OD	DR 7 (335 psi)	DR 7.3 (317 psi)	DR 9 (250 psi)	DR 11 (200 psi)	DR 13.5 (160 psi)	DR 15.5 (138 psi)	DR 17 (125 psi)	DR 21 (100 psi)	DR 26 (80 psi)	DR 32.5 (63 psi)	DR 41 (50 psi)
4"	4.5"	0.643"	0.616"	0.5"	0.409"	0.333"	0.29"	0.265"	0.214"	0.173"	0.138"	0.11"
6"	6.625"	0.946"	0.908"	0.736"	0.602"	0.491"	0.427"	0.39"	0.315"	0.255"	0.204"	0.162"
8"	8.625"	1.232"	1.182"	0.958"	0.784"	0.639"	0.556"	0.507"	0.411"	0.332"	0.265"	0.21"
10"	10.75"	1.536"	1.473"	1.194"	0.977"	0.796"	0.694"	0.632"	0.512"	0.413"	0.331"	0.262"
12"	12.75"	1.821"	1.747"	1.417"	1.159"	0.944"	0.823"	0.75"	0.607"	0.49"	0.392"	0.31"
14"	14"	2"	1.918"	1.556"	1.273"	1.037"	0.903"	0.824"	0.667"	0.538"	0.431"	0.341"
16"	16"	2.286"	2.192"	1.778"	1.455"	1.185"	1.032"	0.941"	0.762"	0.615"	0.492"	0.39"
18"	18"	2.571"	2.466"	2"	1.636"	1.333"	1.161"	1.059"	0.857"	0.692"	0.554"	0.439"
20"	20"	2.857"	2.74"	2.222"	1.818"	1.481"	1.29"	1.176"	0.952"	0.769"	0.615"	0.488"
22"	22"	3.143"	3.014"	2.444"	2.000"	1.63"	1.419"	1.294"	1.048"	0.846"	0.677"	0.537"
24"	24"	3.429"	3.288"	2.667"	2.182"	1.778"	1.548"	1.412"	1.143"	0.923"	0.738"	0.585"
26"	26"	-	-	2.889"	2.364"	1.926"	1.677"	1.529"	1.238"	1"	0.8"	-
28"	28"	-	-	3.111"	2.545"	2.074"	1.806"	1.647"	1.333"	1.077"	0.862"	-
30"	30"	-	-	3.333"	2.727"	2.222"	1.935"	1.765"	1.429"	1.154"	0.923"	-
32"	32"	-	-	3.556"	2.909"	2.37"	2.065"	1.882"	1.524"	1.231"	0.985"	-
34"	34"	-	-	-	3.091"	2.519"	2.194"	2"	1.619"	1.308"	1.046"	-
36"	36"	-	-	-	3.273"	2.667"	2.323"	2.118"	1.714"	1.385"	1.108"	-
42"	42"	-	-	-	-	3.111"	2.71"	2.471"	2"	1.615"	1.292"	1.024"
48"	48"	-	-	-	-	3.556	3.097	2.824"	2.286"	1.846"	1.477"	1.171"

Pressure ratings for water@ 73.4°F (23°C)

Dash (-) indicates size/DR combination not available. Contact TDR for custom

sizing or specific application requirements. *Nominal Values are typical results and are not guaranteed or intended to be used as a product specification or engineering values

**Pressure Ratings are dependent upon temperature, environmental, and/or chemical considerations which may require the use of additional service factors. The listed pressure ratings are based on PE 4710 materials with 1,000 psi HDS in Maximum design temperature is 140°F.

Federal design requirements will take precedence for regulated piping systems.