CONTINUUM™ Bimodal Polyethylene Resins

PE4710 & PE2708 for Gas Distribution Pipe

Strength Under Pressure: Why Bimodal Polyethylene Outperforms

When it comes to natural gas distribution pipelines, you need materials that produce durable, long lasting pipe. Pipe that resists cracking and leakage, maintains performance under pressure, and stays reliable in demanding environments.

CONTINUUM™ Bimodal Polyethylene Resins are engineered to meet and exceed the capabilities of traditional materials, helping offer the durability you want and the confidence you need in pressure pipe performance.

Long-Term Durability in Extreme Climates

Aging, deteriorating infrastructure is a major global concern. CONTINUUM™ Resins offer extremely high levels of toughness and durability for exceptional, long-term pressure pipe performance in virtually any climate.

Available in both bimodal high density polyethylene (HDPE) and bimodal medium density polyethylene (MDPE) grades, they are designed to outlast conditions that defeat conventional pipe materials.

The difference starts at the molecular level. Bimodal polyethylene technology produces a resin with a dual molecular weight distribution, helping pipe resist cracking while maintaining processability for efficient manufacturing. Unimodal resins offer one or the other. CONTINUUM™ Resins offer both.

Performance, Safety & Sustainability Benefits

Pipe produced with CONTINUUM™ Bimodal Polyethylene Resins does not just address common industry requirements. They exceed them in the categories that matter to the gas utilities and engineers who depend on them.

- **Bimodal polyethylene technology designed for consistent performance**
  - CONTINUUM™ DGDA-2490 HDPE BK Bimodal Polyethylene Resin (HDPE) for PE4710/PE4710 PLUS pipe
  - CONTINUUM™ DGDA-2420 YL2 Bimodal Polyethylene Resin (MDPE) for PE2708/PE2708 PLUS pipe
- **Exceptional scratch and slow crack growth (SCG) resistance** help extend service life, support pipeline integrity and reduce installation costs by allowing the use of natural backfill[1] with no sand bedding
- **Remarkable rapid crack propagation (RCP) resistance** helps prolong life expectancy with improved strength and durability in cold weather while maintaining flexibility during installation
- **Excellent high temperature pressure ratings** for use in stringent high temperature applications
- **Broader processing capabilities** with potential for increased production output, improved recyclability, and lower costs compared to other resins
- **Large diameter and thick wall capabilities** – including diameters up to 12 inches for PE2708 and 24 inches for PE4710
- **High fusion integrity** – MDPE and HDPE pipe made with CONTINUUM™ Resins can be securely fused together without mechanical fittings or gaskets that can corrode and/or leak[2]
- **Trench or trenchless installation** – Use of trenchless horizontal directional drilling (HDD) can help reduce installation costs

Pipe made with CONTINUUM™ Resins also offers a more sustainable option than metal pipe.[3]

Why? Durable performance, corrosion and leak resistance, and less disruptive installation techniques mean that PE pipe typically has a longer installed lifetime with less need for maintenance and replacement. This can help lower life cycle costs too.

And, by helping reduce the likelihood of leakage, it can also help reduce greenhouse gas emissions, lowering environmental impact even further.

[1] Up to ¾-inch size.
[2] For more information, view Bimodal MDPE/HDPE Gas Pipe with ATCO: Case Study.
[3] Source: Comparative Environmental Assessment of Plastic and Ductile Iron (DICL) Pipes in Infrastructure Applications.

Heavy Metal Free Yellow Formulations

CONTINUUM™ DGDA-2490 Resin and CONTINUUM™ DGDA-2420 Resin are available in heavy metal-free (HMF) yellow formulations featuring:

- **No lead or cadmium-based pigments**, which helps reduce impact on the environment while promoting workplace safety and health
- **Excellent weatherability** that meets and exceeds UV resistance requirements
- **More continuous processing** with less die drool, which typically reduces the need for shutdown and cleaning

Table 1 includes more details on how CONTINUUM™ Resins perform under pressure.

CONTINUUM™ Resins Performance Data

The strength, durability, and versatility of CONTINUUM™ Resins creates opportunities to produce pipe with long service life expectancy, lower total life cycle costs, and improved operational safety – both today and as systems expand.

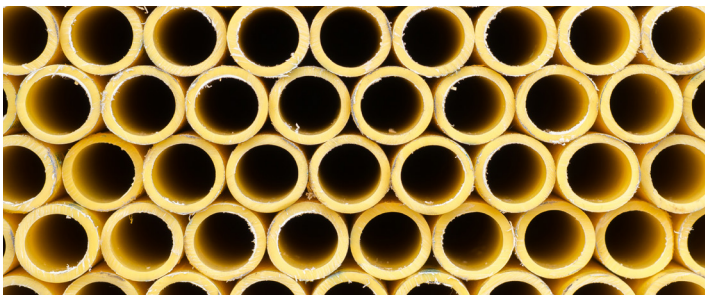

Table 1: CONTINUUM™ Bimodal Polyethylene Resins surpass industry standards[1]

Attribute/Standard	CONTINUUM™ DGDA-2490 Bimodal Resin - HDPE	CONTINUUM™ DGDA-2420 Bimodal Resin - MDPE
ASTM D2513	• Meets and exceeds • Tested for UV resistance under both ASTM G155 lab conditions and up to five years of unprotected direct sunlight exposure evaluation at four representative geographic locations in the U.S.	• Meets and exceeds • Tested for UV resistance under both ASTM G155 lab conditions and up to five years of unprotected direct sunlight exposure evaluation at four representative geographic locations in the U.S.
DOT CFR title 49, chapter I, part 192	• Meets and exceeds	• Meets and exceeds
CSA B137.4	• Meets CSA Z662-23 (PE4710 PLUS material)	• Meets CSA Z662-23 (PE2708 PLUS material)
Operating temperature window	• Up to 60°C (140°F)	• Up to 60°C (140°F)
Slow Crack Growth (SCG) Resistance		
Pennsylvania notch test (PENT [ASTM F1473])	• 10,000 hours	• 15,000 hours
ASTM D2513 PE4710/PE2708	• Up to 20 times the minimum requirement	• Up to 30 times the minimum requirement
Rapid Crack Propagation (RCP) Resistance		
Critical temperature (Tc) [ISO 13477 S4]	• -17°C (~1°F)[2] [Typical unimodal HDPE resins only offer protection above 9°C (48°F)[3]]	• -2°C (28°F)[4] [Typical unimodal MDPE resins only offer protection above 18°C (64°F)[3]]
Critical pressure (Pc) [ISO 13477 S4]		
Small scale steady state RCP (at 0°C)	• > 12 bar (174 psig)[2]	• > 10 bar (145 psig)[4]
Full scale RCP	• > 46 bar (664 psig)[5]	• > 39 bar (560 psig)[6]
High Temperature Pressure Rating		
HDB at 60°C (140°F)	• 1,000 psi[7]	• 1,000 psi[7]
ASTM and ISO	• Meets or exceeds ASTM PE4710 and ISO PE100	• Meets or exceeds ASTM PE2708
PE100+ association	• Meets PE100+ material test requirements	–

[1] Typical values, not to be construed as specifications. Users should confirm results by their own tests.
[2] RCP data generated using 10" SDR 11 pipe tested at 10 bar and 0°C.
[3] GRI Report 5092-260-2356, 1998.
[4] RCP data generated using 12" SDR 11.5 pipe tested at 0°C.
[5] 10" SDR 11 pipe, Full Scale Critical Pressure at 0°C, calculated from S4 RCP data.
[6] 12" SDR 11.5 pipe, Full Scale Critical Pressure at 0°C, calculated from S4 RCP data.
[7] Contact your Dow representative regarding other elevated temperature categorized required strength (CRS) listings for CONTINUUM™ Bimodal Polyethylene Resins.

For more information about CONTINUUM™ Bimodal Polyethylene Resins, please visit **www.dow.com**, or contact your Dow representative.

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