Technical Data Sheet

CONTINUUM™ DGDA-2490 NT Bimodal Polyethylene Resin

Overview

CONTINUUM™ DGDA-2490 NT Bimodal Polyethylene Resin is produced using UNIPOL™ II process technology. This product may be utilized for pipe applications where long-term hydrostatic strength combined with outstanding resistance to slow crack growth and rapid crack propagation is desired. Suitable applications include natural gas distribution pipes, industrial piping, mining, sewage, and municipal water service lines.

Industrial Standards Compliance:

- ASTM D 3350: cell classification
  - Natural - PE445576A CC2 (MRS)
  - Black - PE445576C CC2 (MRS) (See NOTES A)
  - Natural - PE445574A CC2 (HDB)
  - Black - PE445574C CC2 (HDB) (See NOTES A)
- Plastics Pipe Institute (PPI): TR-4
  - Natural Pipe - CONTINUUM™ DGDA-2490 NT Bimodal Polyethylene Resin
    - ASTM PE4710 pipe grade – 1600 psi HDB and 1000 psi HDS @ 73°F
  - Black Pipe - CONTINUUM™ DGDA-2490 BK (See NOTES A)
    - ISO PE100 pipe grade - MRS 10 @ 20°C; CRS 10 @ 20°C, 100 yr; CRS 8 @ 40°C, 90 yr; CRS 6.3 @ 60°C, 11 yr; CRS 11.2 @ 14°C, 50 yr
    - ASTM PE4710 pipe grade – 1600 psi HDB and 1000 psi HDS @ 73°F, and 1000 psi HDB @ 140°F
    - NSF International
    - NSF/ANSI Standard 14
    - NSF/ANS/CAN Standard 61
  - Natural Pipe - DGDA-2490 NT
  - Black Pipe - DGDA-2490 BK (See NOTES A)
- U.S. FDA 21 CFR 177.1520(c)3.2a

Consult the regulations for complete details.

NOTES:

A. The first five numbers of the cell classification are based on natural resin. The last number and letter are based on black resin (natural resin plus 6.5% DFNF-0092 BK).

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Properties

Physical	Nominal Value	Unit (English)	Nominal Value	Unit (SI)	Test Method[1]
Density					ASTM D792
Natural	0.949	g/cm^3	0.949	g/cm^3	
Black[2]	0.959	g/cm^3	0.959	g/cm^3	
Melt Index					ASTM D1238
190°C/2.16 kg	0.080	g/10 min	0.080	g/10 min	
190°C/21.6 kg	7.0	g/10 min	7.0	g/10 min	
Mechanical					
Tensile Strength[3] (Yield)	> 3500	psi	> 24.1	MPa	ASTM D638
Tensile Elongation[3] (Break)	> 500	%	> 500	%	ASTM D638
Flexural Modulus[3,4]	150000	psi	1030	MPa	ASTM D790B
Creep Rupture Strength - 1798 psi (12.4 MPa) (68°F (20°C))	> 200	hr	> 200	hr	ISO 1167
Hydrostatic Strength					ISO 4427
1798 psi (12.4 MPa) : 68°F (20°C)	> 200	hr	> 200	hr	
725 psi (5.0 MPa) : 176°F (80°C)	> 1000	hr	> 1000	hr	
Resistance to Rapid Crack Propagation, Pc					
Calculated, Full Scale : 32°F (0°C)[5]	> 663	psi	> 45.7	bar	ISO 13478
S-4 : 32°F (0°C)[6]	> 174	psi	> 12.0	bar	ISO 13477
Resistance to Rapid Crack Propagation, Tc					
S-4 @ 10 bar[6]	< 2	°F	< -17	°C	ISO 13477
Mechanical					
Slow Crack Growth PENT[3]	10000	hr	10000	hr	ASTM F1473
Impact					
Notched Izod Impact[3] (73°F (23°C))	9.1	ft-lb/in	490	J/m	ASTM D256A
Thermal					
Brittleness Temperature[3]	< -103	°F	< -75.0	°C	ASTM D746A
Thermal Stability	> 428	°F	> 220	°C	ASTM D3350

1. ASTM: American Society for Testing and Materials
   ISO: International Standardization Organization
2. Natural resin extruded under proper conditions with carbon black masterbatch DFNF-0092 BK(6.5%).
3. Compression molded parts prepared according to ASTM D 4703 Procedure C unless otherwise noted in the test method. Properties will vary with changes in molding conditions and aging time. Data generated based on ASTM F1473 at Dow facility. Pent data projected based on representative test samples and conditions.
4. Method I (3 point load)
5. Calculated value, determined by the equation in ISO 4437 based on S-4 test data. Pipe diameter of 10 inch IPS (25.4 cm) and Standard Diameter Ratio (SDR) 11.
6. Pipe diameter of 10 inch IPS (25.4 cm) and Standard Diameter Ratio (SDR) 11.

These are typical properties only and are not to be construed as specifications. Users should confirm results by their own tests.

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