

Technical Data Sheet

Hyperzone HY4008



High Density Polyethylene

Product Description

Hyperzone HY4008 is a bimodal, high molecular weight, high density polyethylene resin with excellent processing characteristics produced with LyondellBasell's new proprietary *Hyperzone* PE process technology. HY4008 is selected by customers for pressure pipe applications including gas distribution, industrial piping, mining, oil & gas gathering, municipal water lines and sewers. Customers typically use HY4008 in applications requiring an excellent balance of processability and toughness, along with high resistance to pipe failure by rapid crack propagation and slow crack growth mechanisms. When HY4008 is combined with a LyondellBasell approved color or black masterbatch at the correct use level, this compound may meet the following standards or requirements (see Technical Data Sheet for limitations and more information):

- ASTM D2513-18a for Polyethylene (PE) Gas Pressure Pipe, Tubing and Fitting, Category C per Table 5
- ASTM D3350 Cell Classifications: **PE445574C** and **PE445576C**. For Oxidative Resistance Classification Categorization values (CC) please contact your LyondellBasell Technical Service Engineer or Sales Manager.
- CSA B137.1 for Pipe, Tubing and Fittings for Cold-Water Pressure Services
- CSA B137.4 for Polyethylene Piping Systems for Gas Services: PE4710 PLUS & PE 100
- NSF Standard 14 and Standard 61 for Potable Water Pipe and Fittings
- NSF Standard 14 for Gas Distribution Applications
- NSF Standard 358-1 for PE Pipe and Fittings for "Geothermal" Heat Pump Systems
- Plastics Pipe Institute (PPI) PE4710 and PE 100 per PPI TR-3

Application	Drainage Pipe; Drinking Water Pipe; Gas Pipe; Industrial; Soil & Waste Pipe
Market	Industrial, Building & Construction; Pipe
Processing Method	Pipe

Typical Properties	Nominal Value	English Units	Nominal Value	SI Units	Test Method
Physical					
Melt Flow Rate					
(190 °C/5.0 kg)	0.25	g/10 min	0.25	g/10 min	ASTM D1238
(190 °C/21.6 kg)	7.5	g/10 min	7.5	g/10 min	ASTM D1238
Density, (23 °C)	0.9495	g/cm ³	0.9495	g/cm ³	ASTM D1505
Mechanical					
Flexural Modulus, (2% Secant)	145000	psi	1000	MPa	ASTM D790
Tensile Stress at Break	5400	psi	37.2	MPa	ASTM D638
Tensile Stress at Yield	3720	psi	25.6	MPa	ASTM D638
Tensile Elongation at Break	570	%	570	%	ASTM D638

PENT on Natural Resin, (2.4 MPa, 80 °C, Air)	>10000 hr	>10000 hr	ASTM F1473
Values were determined on natural HY4008 resin.			
PENT on Black Compound, (2.4 MPa, 80 °C, Air)	>10000 hr	>10000 hr	ASTM F1473
Values were obtained from HY4008 compounded with an approved masterbatch.			
Thermal			
Low Temperature Brittleness, F ₅₀	<-105 °F	<-76 °C	ASTM D746
DSC Induction Temperature	500 °F	260 °C	ASTM D3350
Oxidative-Induction Time, (200 °C)	140 min	140 min	ASTM D3895
Conformance Testing			
Hydrostatic Design Basis			
(73 °F)	1600 psi		ASTM D2837
(140 °F)	1000 psi		ASTM D2837
Minimum Required Strength, (20 °C)		10 MPa	ISO 12162
Creep Rupture Strength, (20 °C, 12.4 MPa)	>500 hr	>500 hr	ISO 1167-1, -2
Resistance to Rapid Crack Propagation, Pc @ 32 °F	>12 bar	>12 bar	ISO 13477
Values were obtained on 12" SDR11 pipe made with HY4008 and an approved masterbatch.			
Resistance to Rapid Crack Propagation, Tc @ 5 bar (12")	<15.8 °F	<-9 °C	ISO 13477
Values were obtained on 12" SDR11 pipe made with HY4008 and an approved masterbatch.			
Resistance to Rapid Crack Propagation, Tc @ 5 bar (4")	<-6 °F	<-21 °C	ISO 13477
Values were obtained on 4" SDR11 pipe made with HY4008 and an approved masterbatch.			
Notched Pipe Test, (80°C, 0.92 MPa)	>500 hr	>500 hr	ISO 13479
Values were obtained on 4" SDR11 pipe made with HY4008 and an approved masterbatch.			

Notes

Typical Property values were determined on natural HY4008 resin, unless otherwise noted. Conformance Test values were determined from HY4008 compounded with an approved masterbatch.

These are typical property values not to be construed as specification limits.

Processing Techniques

Specific recommendations for resin type and processing conditions can only be made when the end use, required properties and fabrication equipment are known.

Caution

If an approved masterbatch is not used in the manufacture of pipe or fittings, the customer assumes all responsibility for determining that the final article meets the applicable material and pipe or fittings standards.

Approved Masterbatches

Please contact your Equistar pressure pipe contact for a list of approved masterbatches and dosing levels.

Certifications



Certified as meeting requirements of Plastics Pipe Institute and NSF International, as stated above.

Company Information

For further information regarding the LyondellBasell company, please visit <http://www.lyb.com/>.

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