CN958572/240399

High-Density Polyethylene (HDPE) Piping Division

SPPI
SINCE 1981

Technical Data

PE 100 Black High-Density Polyethylene (for Pressure Pipe)		
DESCRIPTION: PE 100 is a black, bimodal, High-Density Polyethylene, classified as a MRS 10.0 material, produced by an advanced technology. Well-dispersed carbon black gives outstanding UV-resistance. Long term stability is ensured by an optimized stabilization system.		
APPLICATIONS: PE 100 is recommended for pressure pipe systems in the applications field of drinking water, natural gas, pressure sewerage relining, sea outfall and industrial pipes. It is specially designed for production of larger diameter, thick wall pipe, but can be processed for the whole range diameters. It also shows excellent resistance to rapid crack propagation and slow crack growth.		
Property	**Test Method**	**Typical Value**
Density Compound	ISO 1183/ISO 1872-2B	959 kg/m³
Melt Flow Rate (2.16 kg/190 °C)	ISO 1133	< 0.1 g/10 min.
Melt Flow Rate(5.0 kg/190 °C)	ISO 1133	0.25 g/10 min.
Tensile stress @ yield 50 mm/min	ISO 527-2	21-24 MPa
Hardness, shore D	ISO 868	60
Elongation @ break	ISO 527-2	> 600 %
Charpy impact strength, Notched 0° C	ISO 179/1eA	16 kJ/m²
Carbon black content	ASTM D 1603	≥ 2 %
Brittleness temperature	ASTM D 746	<- 70° C
ESCR 10%, Igepal, F50	ASTM D 1693-A	> 10,000 h
Thermal stability @ 210° C, min.	EN 728	> 20 min.

NOTES:

1. Data shown in this table represent typical values only to be used for reference purposes and should not be regarded as specification for the product.
2. The information contained in this table is subject to change without prior notice. SPPI believes the information contained to be reliable but no representations as to its accuracy or completeness.

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Designation of Material per ISO Standards		
Designation of Materials	Min. required strength @ 50 years and 20° C MPa	Max. allowable hydrostatic design stress, σ_s MPa
PE 100	10	8.0

Relationship between MRS σs and Design Coefficient C @ 20° C					
Hydrostatic design stress σ_s of pipe MPa	Min. required strength of material MPa				
	10	8	6.3	4	3.2
	Design Coefficient, C				
8	1.25	-	-	-	-
6.3	1.60	1.25	-	-	-
5	2.00	1.60	1.25	-	-
4	2.50	2.00	1.60	-	-
3.2	3.20	2.50	2.00	1.25	-
2.5	-	3.20	2.50	1.60	1.25

Note:
The design stress σ_s of a pipe shall be obtained by applying a design coefficient C of not less than 1.25 to the MRS value for the material.

Hydrostatic Strength of Pipe			
Pipe Material	Test Stress, MPa		
	100 h @ 20° C	165 h @ 80° C	1000 h @ 80° C
PE 100	12.4	5.5	5.0

Hydrostatic Strength @ 80° C	
PE 100	
Stress MPa	Min. Failure Time, h
5.5	165
5.4	233
5.3	332
5.2	476
5.1	688
5.0	1000

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