

SUBMITTAL FOR ATLANTA PIPE POLYETHYLENE (PE) PIPES FOR WATER SUPPLY

SCOPE

This standard specifies the required properties of pipes made from polyethylene (PE) to be used for buried water mains and service and for water supply above ground both inside and outside buildings. In addition, it specifies some general properties of the material from which these pipes are made, including a classification scheme. This standard applies to pipes with a nominal pressure of PN 6, PN 8, PN 10, PN 12.5 and PN 16, and nominal outside diameters from 20 mm to 630 mm, intended to be used for the conveyance of water under pressure at temperatures between 0° C and 40° C for general purposes, as well as for the supply of drinking water.

SPECIFICATION

The pipes shall be manufactured from polyethylene containing only those antioxidants, UV stabilisers and pigments necessary for the manufacture of pipes conforming to this specification and for its end use, including weldability when it is possible. The pipes for drinking water shall be either black or blue or black with blue stripes. For black pipes, the carbon black content in the compound shall be $(2.25 \pm 0.25\%)$ by mass, when measured in accordance with ISO 6964. The use of colour blue or black with blue stripes shall be specified in accordance with national requirements. The material for the stripes shall be of the same type of resin as used in the base compound for the pipe. The product is conforming to the PNS/ ISO 4427 (Philippine National Standard/ International Organization for Standardization), the governing manufacturing quality standards. All pipe and fittings shall be manufactured in the Philippines.

INSTALLATION

Fusion compatibility: If pipes manufactured from PE 80 or PE 100 are to be joined by butt fusion or using electrofusion fittings mixed different pipe materials, the joints shall conform to the requirements specified in table 8 of PNS/ ISO 4427: 2002 standard. Installation shall comply with the latest installation instructions published or with supervision by Atlanta Industries, Inc. and shall conform to all applicable plumbing and building code requirements. The system shall be protected from chemical agents not compatible with PE compounds. The system shall be tested after installation through pressure test for 24 hours on the design or nominal working pressure set by the standards.

WARNING! Never test with or transport/store compressed air or gas in PE pipe and fittings. Doing so can result in explosive failures and cause severe injury or death.



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REFERENCE STANDARD

PNS/ ISO 4427: 2002	:	Polyethylene (PE) pipes for Water Supply - Specifications
ISO 161-1: 1996	:	Thermoplastic pipes for the conveyance of fluids – Nominal outside diameters and nominal pressures – Part 1: Metric series.
ISO 1133: 1996	:	Plastics – Determination of the melt mass flow rate (MFR) and the melt volume-flow rate (MVR) of thermoplastics.
ISO 1167: 1996	:	Thermoplastic pipes for the conveyance of fluids – Resistance to internal pressure – Test Method.
ISO 2505-1: 1994	:	Thermoplastic pipes – Longitudinal reversion – Part 1: Determination methods.
ISO 2505-2: 1994	:	Thermoplastic pipes – Longitudinal reversion – Part 2: Determination of parameters.
ISO 3126: 1974	:	Plastic pipes – Measurement of dimensions
ISO 4065: 1996	:	Thermoplastic pipes – Universal wall thickness table
ISO 4607: 1978	:	Plastics – Methods of exposure to natural weathering.
ISO 6259-1: - 1)	:	Thermoplastic pipes – Determination of tensile properties – Part 1: General test method.
ISO 6259-3: - 1)	:	Thermoplastic pipes – Determination of tensile properties – Part 3: Polyolefin pipes.
ISO 6964: 1986	:	Polyolefin pipes and fittings – Determination of carbon black content by calcinations and pyrolysis – Test method and basic specification.
ISO/TR 9080: 1992	:	Thermoplastic pipes for the transport of fluids – Methods of extrapolation of hydrostatic stress rupture data to determine the long-term hydrostatic strength of thermoplastic pipe materials.
ISO 10837: 1991	:	Determination of the thermal stability of polyethylene (PE) for the use in gas pipes and fittings.
ISO 11420: 1996	:	Method for the assessment of the degree of carbon black dispersion in polyolefin pipes, fittings and compounds.
ISO 11922-1: - 2)	:	Thermoplastic pipes for the conveyance of fluids – Dimension and tolerances – Part 1: Metric series.
ISO 12162: 1995	:	Thermoplastic materials for pipes and fittings for pressure applications – Classification and designation – Overall service (design) coefficient.
ISO 13761: 1996	:	Plastic pipes and fittings – Pressure reduction factors for polyethylene pipeline systems for use at temperatures above 20° C.
ISO 13949: - 1)	:	Method for the assessment of the degree of pigment dispersion in polyolefin pipes, fittings and compounds.



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PE-80

NOMINAL OUTSIDE DIAMETER		WALL THICKNESS (mm)					THEORETICAL WEIGHT (kgs)				
mm	in	PN 16	PN 12.5	PN 10	PN 8	PN 6	PN 16	PN 12.5	PN 10	PN 8	PN 6
		SDR 9	SDR 11	SDR 13.6	SDR 17	SDR 21	SDR 9	SDR 11	SDR 13.6	SDR 17	SDR 21
20	1/2	2.30	1.82	1.47	1.18	0.95	0.37	0.30	0.25	0.20	-
25	3/4	2.80	2.30	1.84	1.47	1.19	0.57	0.47	0.39	0.31	-
32	1	3.60	3.00	2.35	1.88	1.52	0.93	0.79	0.63	0.52	-
40	1-1/4	4.50	3.70	2.94	2.35	1.90	1.45	1.22	0.99	0.80	-
50	1-1/2	5.60	4.60	3.68	2.94	2.38	2.26	1.90	1.55	1.26	-
63	2	7.10	5.80	4.70	3.71	3.00	3.61	3.02	2.49	2.00	-
75	2-1/2	8.40	6.80	5.60	4.50	3.57	5.09	4.22	3.53	2.89	-
90	3	10.10	8.20	6.70	5.40	4.30	7.34	6.10	5.08	4.15	3.35
110	4	12.30	10.00	8.10	6.60	5.30	10.93	9.09	7.51	6.21	5.05
160	6	17.90	14.60	11.80	9.50	7.70	23.13	19.31	15.90	13.00	10.67
225	8	25.20	20.50	16.60	13.40	10.80	45.79	38.13	31.46	25.79	21.04
280	10	31.30	25.40	20.60	16.60	13.40	70.80	58.82	48.60	39.77	32.49
315	12	35.20	28.60	23.20	18.70	15.00	89.58	74.50	61.57	50.39	40.93
355	14	39.70	32.20	26.10	21.10	16.90	113.84	94.53	78.07	64.08	51.97
400	16	44.70	36.30	29.40	23.70	19.10	144.44	120.07	99.10	81.11	66.17
450	18	50.30	40.90	33.10	26.70	21.50	182.85	152.18	125.50	102.79	83.79
560	20	-	50.80	41.20	33.20	26.70	-	235.26	194.40	159.07	129.50
630	24	-	57.20	46.30	37.40	30.00	-	297.99	245.79	201.57	163.71

PE-100

NOMINAL OUTSIDE DIAMETER		WALL THICKNESS (mm)			THEORETICAL WEIGHT (kgs)		
mm	in	PN 16	PN 12.5	PN 10	PN 16	PN 12.5	PN 10
		SDR 11	SDR 13.6	SDR 17	SDR 11	SDR 13.6	SDR 17
20	1/2	-	-	-	-	-	-
25	3/4	-	-	-	-	-	-
32	1	3.00	-	-	0.79	-	-
40	1-1/4	3.70	-	-	1.22	-	-
50	1-1/2	4.60	-	-	1.90	-	-
63	2	5.80	4.70	-	3.02	2.49	-
75	2-1/2	6.80	5.60	4.50	4.22	3.53	2.89
90	3	8.20	6.70	5.40	6.10	5.08	4.15
110	4	10.00	8.10	6.60	9.09	7.51	6.21
160	6	14.60	11.80	9.50	19.31	15.90	13.00
225	8	20.50	16.60	13.40	38.13	31.46	25.79
280	10	25.40	20.60	16.60	58.82	48.60	39.77
315	12	28.60	23.20	18.70	74.50	61.57	50.39
355	14	32.20	26.10	21.10	94.53	78.07	64.08
400	16	36.30	29.40	23.70	120.07	99.10	81.11
450	18	40.90	33.10	26.70	152.18	125.50	102.79
560	20	50.80	41.20	33.20	235.26	194.40	159.07
630	24	57.20	46.20	37.40	297.99	245.30	201.57

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