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POLYETHYLENE PIPES FOR THE SUPPLY OF GASEOUS FUELS

Standards

Plassim's MERIGAS PE pipes comply with the following standards:

SII 71555-2 : PE piping systems for the supply of gaseous fuels : pipes

ISO 4437 : Buried PE pipes for the supply of gaseous fuels

EN 1555-2 : PE piping systems for the supply of gaseous fuels : pipes

Materials

MERIGAS pipes are manufactured from polyethylene from leading suppliers, members of the PE100+ Association, whose materials meet the additional requirements laid down by that organization.

- Hydrostatic strength: 200h, 20ºC, 12.4MPa (Standard requirement - 100h)
- Slow crack growth, Notch test: 500h, 80ºC, 9.2 bar (Standard requirement - 165h)
- Rapid crack propagation, S4 test: 10bar, 0ºC (Standard requirement - 4.2bar)

Typical material properties as follows:

Property	Method	Unit	VALUE
Minimum Required Strength - MRS	ISO 9080	MPa	10
Density (23 ºC)	ISO 1183	kg/m³	952.5
MFR (5 kg, 190 ºC)	ISO 1133	g/10 min	0.3
Tensile strength at yield	ISO 6259	N/mm²	25
Tensile strength at break	ISO 6259	N/mm²	38
Elongation	ISO 6259	%	> 600
Modulus of elasticity	ISO 527	N/mm²	1300
Vicat softening temp. (1kg)	ISO 306	ºC	127
Vicat softening temp. (5kg)	ISO 306	ºC	77
Thermal stability (OIT, 210ºC)	ISO 10837	min	> 20

Dimensions (according to ISO 4437

OD (mm)	Wall Thickness (mm)		OD (mm)	Wall Thickness (mm)	
	SDR 17	SDR 11		SDR 17	SDR 11
16		2.3	180	10.7	16.4
20		2.3	200	11.9	18.2
25		2.3	225	13.4	20.5
32	2.0	3.0	250	14.8	22.7
40	2.4	3.7	280	16.6	25.4
50	3.0	4.6	315	16.7	28.6
63	3.8	5.8	355	21.1	32.2
75	4.5	6.8	400	23.7	36.4
90	5.4	8.2	450	26.7	40.9
110	6.6	10.0	500	29.7	45.5
125	7.4	11.4	560	33.2	50.9
140	8.3	12.7	630	37.4	57.3
160	9.5	14.6			

Operating Conditions

Merigas pipes are intended for use at temperatures from -20°C to +40°C (see EN12007-2) with a maximum operating pressure of up to and including 10bar (see EN1555-2) at a reference temperature of 20°C. For other operating temperatures see derating coefficients in Annex A of EN1555-5 as follows:

Temperature	Derating coefficient
20°C	1.0
30°C	1..1
40°C	1.3

Operating pressures of the pipe are calculated according to the following equations:

$$MOP = \frac{20 \times MRS \times e}{(d - e)\, C} \qquad \text{or} \qquad MOP = \frac{20 \times MRS}{(SDR - 1)\, C}$$

MOP	=	Maximum Operating Pressure – The maximum effective pressure of the gas in a piping system in bars.
MRS	=	Minimum Required Strength - The hoop stress of the material in MPa.
d	=	Outside diameter of the pipe in mm.
e	=	Wall Thickness of the pipe in mm.
SDR	=	Standard Dimension Ratio – The ratio between the outside diameter to the wall thickness of the pipe.
C	=	Derating Coefficient - The safety factor determined by the design engineer taking into account material and environmental conditions (when calculating pressures for gas supply systems It is usual to use a design coefficient of 2 for PE pipes, therefore a PE100 SDR11 pipe would have a nominal pressure rating of 10bar).

Jointing

PE Merigas pipes can be joined using Electro Fusion or Butt Fusion technologies.
Plassim supplies fittings manufactured by GEORG FISCHER and others according to EN1555-3.