



Technical Information (PP Piping Systems)

TECHNICAL DATA SHEET

		Specialty Advanced PP				
Typical Properties		Method	Value Unit	Block Co-Poly	Homo	Beta Nucleated
Physical						
Density		ISO 1183	g/cm ³	0.912	0.9	0.905
Melt flow rate (MFR)	(230°C/2.16 kg)	ISO 1133	g/10m	0.3	0.3	0.3
	(230°C/5 kg)		g/10in	1.3	1.3	-
Mechanical						
Tensile Modulus (23°C, v = 1 mm/min, Secant)			MPa	1150	1300	1300
Tensile Stress at Yield (23°C, v = 50 mm/min)		ISO 527-1, 2	MPa	26	30	30
Tensile Strain at Yield (23°C, v = 50 mm/min)		ISO 527-1, 2	%	11	9	10
Tensile Creep Modulus 1h		ISO 527-1, 2	MPa	1050	1250	-
Impact						
Charpy unnotched impact strength	(0°C)	ISO 179	kJ/m ²	8.0	200	-
	(23°C)		kJ/m ²	40	26	-
Charpy notched impact strength	(0°C)	ISO 179	kJ/m ²	NoBreak	2.8	-
	(23°C)		kJ/m ²	NoBreak	2.2	50
Shore hardness (Shore D (3 sec))		ISO 868	MPa	67	70	-
Ball indentation hardness (H 132/30, 358/30)		ISO 2039-1	MPa	54	67	-
Thermal						
Heat deflection temperature Unannealed	B (0.45 MPa)	ISO 75B-1, 2	°C	73	90	
	A (1.80 MPa)	ISO 75A-1, 2	°C	50	54	
Vicat softening temperature	(VST/A/50 K/h (10N))	ISO 306	°C	72	150	
	(VST/B/50 K/h (50 N))		°C	165	90	83
Melting Temperature		ISO3146	°C	48	165	

The above are typical values taken from raw material manufacturers of existing grades. These may be subject to change depending on availability of these grades and newer updated technology. Actual values may therefore differ.

Support Distances L for PPH pipes of PN10 rating

OD	20° C	30° C	40° C	50° C	60° C	70° C	80° C
20	70	67	65	62	60	57	55
25	80	77	75	72	70	67	65
32	95	92	90	87	85	80	75
40	110	107	105	100	95	92	87
50	125	122	120	115	110	105	100

For other pressure ratings support distances may be changed as follows:

PN2.5 -25%

PN6 / 6.3 -9%

PN16 +7%

For Gases with density <0.01 g/cm³

63	165	160	155	150	145	140	135
75	155	150	145	140	135	130	125
90	145	142	140	135	130	125	120
110	185	180	175	170	160	150	140
125	200	195	190	180	170	160	150
140	210	205	200	190	180	170	160
160	225	220	210	200	190	180	170
200	250	240	230	220	210	200	190
225	265	255	245	235	225	215	200
250	280	270	260	250	240	230	215
280	295	285	275	265	255	245	230
315	315	305	295	285	270	260	245
355	355	325	315	300	285	275	260
400	355	345	335	320	305	290	275

support distances will be increased by:

PN 6 47%

PN10 30%

PN16 21%

Fluids of higher density, between 1 g/cm³ to 1.25 g/cm³, reduced by 4%.

PERMISSIBLE OPERATING TEMPERATURES

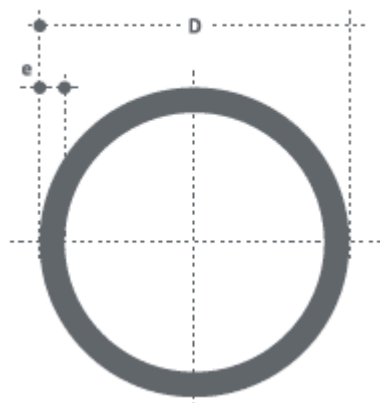
Pipe Series - S		20	16	12.5	8.3	8	5	4	3.2	2.5	2
Pressure Rating - PN		3	3.2	4	6	6.3	10	12.5	16	20	25
Std. Dimension Ratio: SDR		41	33	26	17.6	17	11	9	7.4	6	5
Temp. (°C)	Operation period (yrs)	Permissible component operating pressure (bar) ^{1,2}									
10	1	4.5	5.7	7.1	10.8	11.4	18	22.7	28.6	36	45.3
	5	4.1	5.2	6.5	9.9	10.4	16.5	20.8	26.2	33	41.6
	10	4	5	6.3	9.6	10	15.9	20.1	25.3	31.8	40.1
	25	3.8	4.8	6	9.1	9.5	15.2	19.1	24.1	30.3	38.1
	50	3.6	4.6	5.8	8.8	9.2	14.6	18.4	23.2	29.2	36.8
	100	3.5	4.4	5.6	8.4	8.9	14.1	17.7	22.3	28.1	35.4
20	1	3.9	4.9	6.2	9.3	9.8	15.6	19.6	24.7	31.1	39.2
	5	3.5	4.5	5.6	8.5	8.9	14.2	17.9	22.5	28.4	35.7
	10	3.4	4.3	5.4	8.2	8.6	13.6	17.2	21.6	27.3	34.3
	25	3.2	4.1	5.1	7.8	8.1	12.9	16.3	20.5	25.9	32.6
	50	3.1	3.9	4.9	7.5	7.8	12.4	16.7	19.7	24.9	31.3
	100	3	3.7	4.7	7.2	7.5	12	16.1	19	23.9	30.1
30	1	3.3	4.2	5.3	8	8.4	13.3	16.8	21.1	26.6	33.5
	5	3	3.8	4.8	7.2	7.6	12.1	15.2	19.2	24.1	30.4
	10	2.9	3.6	4.6	6.9	7.3	11.6	14.6	18.4	23.1	29.1
	25	2.7	3.4	4.3	6.6	6.9	10.9	13.8	17.4	21.9	27.5
	50	2.6	3.3	4.1	6.3	6.6	10.5	13.2	16.6	21	26.4
	100	2.5	3.1	4	6	6.3	10	12.7	16.0	20.1	25.3
40	1	3.2	4	5.1	7.7	8.1	12.9	16.3	20.5	25.8	32.5
	5	2.9	3.6	4.6	7	7.3	11.6	14.6	18.4	23.2	29.3
	10	2.8	3.5	4.4	6.7	7	11.1	14	17.6	22.2	28
	25	2.6	3.3	4.1	6.3	6.6	10.5	13.2	16.6	20.9	26.4
	50	2.5	3.1	4	6	6.3	10	12.6	15.9	20	25.2
	100	2.4	3	3.8	5.7	6	9.6	12	15.2	19.1	24.1
50	1	2.7	3.4	4.3	6.5	6.8	10.8	13.6	17.2	21.6	27.2
	5	2.4	3	3.8	5.8	6.1	9.7	12.2	15.4	19.3	24.4

	10	2.3	2.9	3.6	5.5	5.8	9.2	11.6	14.6	18.4	23.2
	25	2.1	2.7	3.4	5.2	5.4	8.6	10.9	13.7	17.3	21.8
	50	2	2.6	3.3	4.9	5.2	8.2	10.4	13.1	16.5	20.8
	100	1.9	2.4	3.1	4.7	4.9	7.9	9.9	12.5	15.7	19.8
60	1	2.5	3.1	4	6	6.3	10	12.6	15.9	20.1	25.3
	5	2.2	2.8	3.5	5.3	5.6	8.9	11.2	14.1	17.8	22.5
	10	2.1	2.6	3.3	5.1	5.3	8.5	10.7	13.4	16.9	21.3
	25	1.9	2.5	3.1	4.7	5	7.9	10	12.6	15.8	19.9
	50	1.8	2.3	2.9	4.4	4.6	7.4	9.3	11.7	14.8	18.6
70	1	2	2.6	3.2	4.9	5.2	8.2	10.3	13	16.4	20.7
	5	1.8	2.2	2.8	4.3	4.5	7.2	9.1	11.5	14.5	18.2
	10	1.7	2.1	2.7	4.1	4.3	6.8	8.6	10.9	13.7	17.2
	25	1.4	1.7	2.2	3.4	3.5	5.6	7.1	9	11.3	14.2
	50	1.2	1.5	1.9	2.8	3	4.8	6	7.6	9.5	12
80	1	1.6	2.1	2.6	4	4.1	6.6	8.3	10.5	13.2	16.7
	5	1.3	1.7	2.2	3.3	3.5	5.5	7	8.8	11.1	13.9
	10	1.1	1.4	1.8	2.8	2.9	4.7	5.9	7.4	9.3	11.8
	25	0.9	1.1	1.4	2.2	2.3	3.7	4.7	5.9	7.5	9.4
95	1	1.1	1.4	1.8	2.7	2.9	4.6	5.8	7.3	9.2	11.6
	5	0.7	0.9	1.2	1.8	1.9	3.1	3.9	4.9	6.2	7.8
	(10) ³	(0.6)	(0.8)	(1)	(1.5)	(1.6)	(2.6)	(3.3)	(4.1)	(5.2)	(6.6)

- The above values are adapted from DIN 8077. They have to be adjusted by a reducing co-efficient for every application depending on media temperature, concentration and composition. Also, UV radiation is not assumed in these values. Values are determined using a creep curve with safety coefficient of 1.6 to 1.25
- Values stated are for standard PP-Homopolymer. However specialty grades of PP may have better features
- Values in brackets are valid at proof of longer testing periods > 1 year for 110°C tests

PP / PPH pipes as per DIN 8077 / 78

Wall thickness Chart



Regular Pipes (Plain End)

Please note:

- All dimensions in mm
- SDR Rating / Pipe Specs Standard to be specified
- Please refer pipe wall thickness chart for thickness
- Standard Length: 6 mtrs
- Also available: Pipes in special lengths, Ventilation pipes; SDR 33 / 17 / 9 / 5 thickness; Pipes per ASTM Sch 40 / 80; Flanged Pipes

Outer Diameter		SDR 41	SDR 26	SDR 17.6	SDR 11	SDR 7.4	SDR 6
		Pressure Rating					
		PN 2.5	PN 4	PN 6	PN 10	PN 16	PN 20
mm	inches	e	e	e	e	e	e
16	-	-	-	-	-	2.2	2.7
20	1/2	-	-	-	1.9	2.8	3.4
25	3/4	-	-	-	2.3	3.5	4.2
32	1	-	-	1.8	2.9	4.4	5.4
40	1.25	-	1.8	2.3	3.7	5.5	6.7
50	1.5	-	2	2.9	4.6	6.9	8.3
63	2	1.8	2.5	3.6	5.8	8.6	10.5
75	2.5	1.9	2.9	4.3	6.8	10.3	12.5
90	3	2.2	3.5	5.1	8.2	12.3	15
110	4	2.7	4.2	6.3	10	15.1	18.3
125	5	3.1	4.8	7.1	11.4	17.1	20.8
140	5	3.5	5.4	8	12.7	19.2	23.3
160	6	4	6.2	9.1	14.6	21.9	26.6
180	7	4.4	6.9	10.2	16.4	24.6	29
200	8	4.9	7.7	11.4	18.2	27.4	33.2
225	8	5.5	8.6	12.8	20.5	30.8	37.4
250	10	6.2	9.6	14.2	22.7	34.2	-
280	10	6.9	10.7	15.9	25.4	38.3	-
315	12	7.7	12.1	17.9	28.6	-	-
355	14	8.7	13.6	20.1	32.2	-	-
400	16	9.8	15.3	22.7	36.3	-	-
450	18	11	17.2	25.5	40.9	-	-
500	20	12.3	19.1	28.4	-	-	-
560	22	13.7	21.4	31.7	-	-	-
630	24	15.4	24.1	35.7	-	-	-