

SIMONA



Plastics in environmental protection for process sewage
SIMONA® PP-H Sewer Pipe Systems

Areas of use for PP-H AlphaPlus Sewer Pipe Systems

Owing to their material properties, such as excellent corrosion resistance and high chemical resistance, the thermoplastics polyethylene (PE) and polypropylene (PP) are of considerable importance to industrial applications. State-of-the-art plastic piping systems offer a high level of cost-effectiveness – thanks to their superior service life and permanently watertight properties.

When it comes to choosing a suitable material, aspects such as chemical resistance as well as pressure and thermal condi-

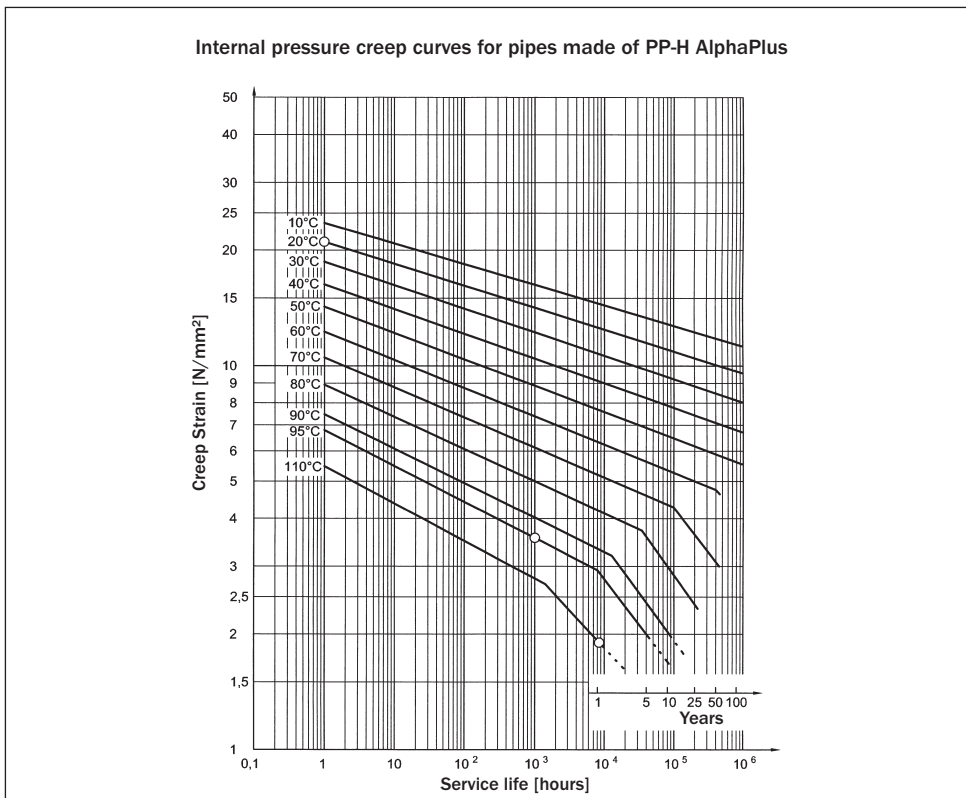
tions are of paramount importance. The material-related creep curves supplied by the manufacturer or specified in DIN 8078 (May 2007) are used for specific design and calculation.

As a result of increased environmental awareness and more stringent general requirements imposed by environmental legislation, standards relating to the corrosion resistance and watertightness of piping systems laid above ground level now also apply to underground process sewage systems. Consequently,

PE sewer pipes which have proved reliable in municipal networks are now faced with material-specific limitations (DIN 19537, October 1983).

Safe handling at high temperatures

The use of PP-H AlphaPlus sewer pipes is to be recommended in all applications requiring not only superior chemical resistance but also a high level of pipe rigidity for a potential thermal exposure of up to +80 °C.



Design of industrial pipes above ground made of SIMONA PP-H AlphaPlus

These unpressurised sewers are capable of handling discharge peaks of over 100 °C. Thus, PP-H AlphaPlus is the perfect solution for applications calling for safe collection and transportation of process sewage.

Protecting the environment

In addition to meeting specific temperature standards, underground sewer pipes have to be sufficiently resistant to external ground pressure and water pressure. In this context, PP-H AlphaPlus sewer pipes offer palpable advantages over PE-HD pipes on account of their much higher level of rigidity. This is underlined by structural analyses in accordance with ATV Recommendation A-127 (Recommendation for the structural analysis of drainage ducts and pipes). There can be no doubt whatsoever: underground PP-H AlphaPlus sewer pipe systems in industrial installations offer superior environmental protection.

No compromise in drinking water conservation areas

The handling of substances which constitute a hazard to water calls for maximum safety margins, the prime objective being to protect the environment. For this reason, the use of double-wall pipes in drinking water conservation areas is regu-

Design of underground pipes in accordance with ATV A-127 (comparison)

Modulus of elasticity for deformation and stability analysis

Material	Short term E _R , K	Long term (50 years) E _R , L
PE-HD	800 N/mm ²	160 N/mm ²
PP-H AlphaPlus	1,250 N/mm ²	312 N/mm ²

Reduction factors for thermal influences

Material	30 °C	40 °C	50 °C	60 °C
PE-HD	0.85	0.75	0.6	not permissible
PP-H AlphaPlus	0.95	0.85	0.75	0.70

lated in ATV Code of Procedure A-142 “Sewers in water catchment areas”:

SIMONA® double-containment pipe systems provide a high level of reliability in critical applications.

Conservation Zone 1

(Catchment area)

- Direct vicinity of a drinking water production facility
- Transmission of waste water not permitted

Conservation Zone 2

(Restricted conservation zone)

- Transmission of waste water only possible after classification of risk potential
- For very high risk classification double-wall piping systems are mandatory

Conservation Zone 3

(Extended conservation zone)

- Transmission of waste water permitted

Comprehensive product range and instant availability

With an extensive range of semi-finished products comprising standard pipes, double-containment pipes, fittings, sheets, profiles, solid rods and welding rods, SIMONA AG offers single-source solutions, complemented by instant availability. As a result, we can offer customers PP-H AlphaPlus sewer pipe systems in a wide variety of configurations, including the full range of system components such as inspection boxes and sewer shafts.

Advantages of PP-H AlphaPlus at a glance

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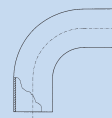
- Continuous service capability at effluent temperatures of 0 °C to +80 °C, which is equivalent to a mean pipe wall temperature of 60 °C max.
- Discharge peaks at temperatures of over +100 °C possible
- Excellent resistance to aqueous solutions of salts, acids, alkalis, alcoholic products and solvents even at high temperatures
- Superior tension crack resistance due to subsequent thermal treatment
- Elimination of internal linings and protective coats due to the superior corrosion resistance
- Permanently watertight, strong connection by welding
- High structural load capacity of underground pipes even in high temperature ranges
- No securing measures for sand or fine chippings bed; fixing points and abutments no longer required
- Outstanding hydraulic properties due to extremely low wall roughness
- Low cost of service and maintenance due to reduced tendency towards encrustation
- Rinsing at high pressure without any risk of damage to pipe interior
- Simple handling due to light weight
- Cost-effective installation thanks to adapted pipe lengths
- Approved basic raw materials in accordance with Section 19 WHG
- Production certified to ISO 9000
- Recyclable without any additional material processing
- Maximum economy in transport, laying, service and maintenance



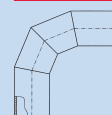
Fittings



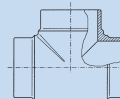
Bends 90°
Injected, $r = d$



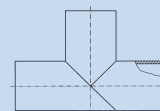
Bends 90°, 60°, 45°, 30°
Seamless, $r \sim 1.5 d$



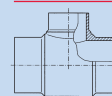
Bends 90°, 60°, 45°, 30°
Segment-welded,
 $r \sim 1.5 d$



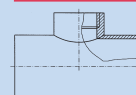
Tees
Injected



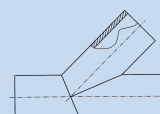
Tees
Segment-welded
(pressure reduction factor 0.65)



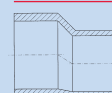
Tees reduced
Injected



Tees reduced
Saddle-mounted, swept
(pressure reduction factor 0.75)



Branches 60°, 45°
Segment-welded
(pressure reduction factor 0.50)



Reducers, eccentric
Injected

Range of PP-H AlphaPlus Sewer Pipes and Fittings for industrial waste water

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Pipes

Material

PP-H AlphaPlus as per DIN 8078, low-stress due to subsequent thermal treatment

Colour

grey

Dimensions

DIN 8077, standard length: 5 m

Remarks

Other dimensions and lengths on request.

Subject to technical changes, also with regard to dimensions.

Pipe	SDR 33		SDR 17.6		SDR 11	
	d mm	e mm ≈ kg/m	e mm ≈ kg/m	e mm ≈ kg/m	e mm ≈ kg/m	e mm ≈ kg/m
90	2.8	0.758	5.1	1.330	8.2	2.030
110	3.4	1.120	6.3	1.990	10.0	3.010
125	3.9	1.450	7.1	2.550	11.4	3.910
140	4.3	1.800	8.0	3.200	12.7	4.870
160	4.9	2.320	9.1	4.170	14.6	6.390
180	5.5	2.940	10.2	5.250	16.4	8.070
200	6.2	3.680	11.4	6.500	18.2	9.950
225	6.9	4.570	12.8	8.190	20.5	12.600
250	7.7	5.670	14.2	10.100	22.7	15.500
280	8.6	7.090	15.9	12.600	25.4	19.400
315	9.7	8.970	17.9	16.000	28.6	24.600
355	10.9	11.300	20.1	20.300	32.2	31.200
400	12.3	14.400	22.7	25.700	36.3	39.600
450	13.8	18.200	25.5	32.500	40.9	50.100
500	15.3	22.400	28.4	40.200	45.4	62.000
560	17.2	28.200	31.7	50.300		
630	19.3	35.600	35.7	63.700		
710	21.8	45.200	40.2	80.800		
800	24.3	57.200	45.3	103.000		
900	27.6	72.500				
1000	30.6	89.200				



Double-containment pipes

Material

Internal pipe:
PP-H AlphaPlus as per
DIN 8077/78, low-stress
due to subsequent
thermal treatment;

External pipe:
PP-H AlphaPlus or PE 80
as per DIN 8074/75

Dimensions

DIN 8077,
Standard length: 5 m

Colour

PP-H AlphaPlus grey,
PE 80 black

Welding processes

Internal and external
pipe PP-H AlphaPlus:
Simultaneous welding/
cascade welding;

Internal pipe PP-H
AlphaPlus/ external pipe
PE 80: Cascade welding

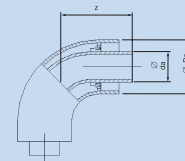
Remarks

Other dimensions and
lengths on request.

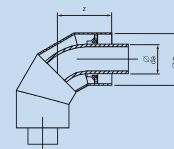
Subject to technical
changes, also with
regard to dimensions.

Internal pipe			External pipe				
PP-H AlphaPlus SDR 17.6			PP-H AlphaPlus SDR 33			PE 80 SDR 17.6	
d mm	e mm	≈ kg/m	d mm	e mm	≈ kg/m	e mm	≈ kg/m
90	5.1	1.330	160	4.9	2.320	9.1	4.350
110	6.3	1.990	200	6.2	2.940	11.4	5.480
125	7.1	2.550	200	6.2	3.680	11.4	6.790
140	8.0	3.200	225	6.9	4.570	12.8	8.550
160	9.1	4.170	250	7.7	5.670	14.2	10.600
180	10.2	5.250	250	7.7	5.670		
180	10.2	5.250	280			15.9	13.200
200	11.4	6.500	315	9.7	8.970	17.9	16.700
225	12.8	8.190	315	9.7	8.970	17.9	16.700
250	14.2	10.100	355	10.9	11.300	20.1	21.200
280	15.9	12.600	400	12.3	14.400	22.7	26.900
315	17.9	16.000	400	12.3	14.400		
315	17.9	16.000	450			25.5	34.000
355	20.1	20.300	450	13.8	18.200		
355	20.1	20.300	500			28.4	42.000
400	22.7	25.700	500	15.3	22.400		
400	22.7	25.700	560			31.7	52.000
450	25.5	32.500	560	17.2	28.200		
450	25.5	32.500	630			35.7	66.500
500	28.4	40.200	630	19.3	35.600	35.7	66.500
560	31.7	50.300	710	21.8	45.200	40.2	84.400
630	35.7	63.700	800	24.5	57.200	45.3	107.100

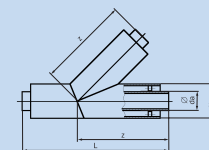
Double-containment pipe fittings



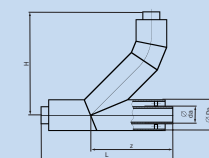
Bends 90°
Injected



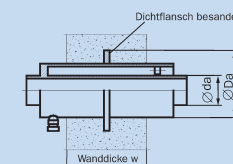
Bends 90°
Segment-welded



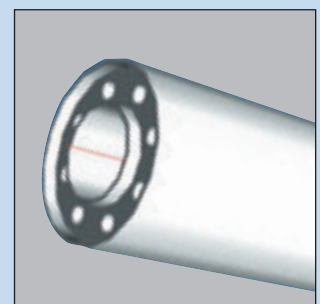
Branch 45°



Branch with bend



**Shaft connection
Type 2**

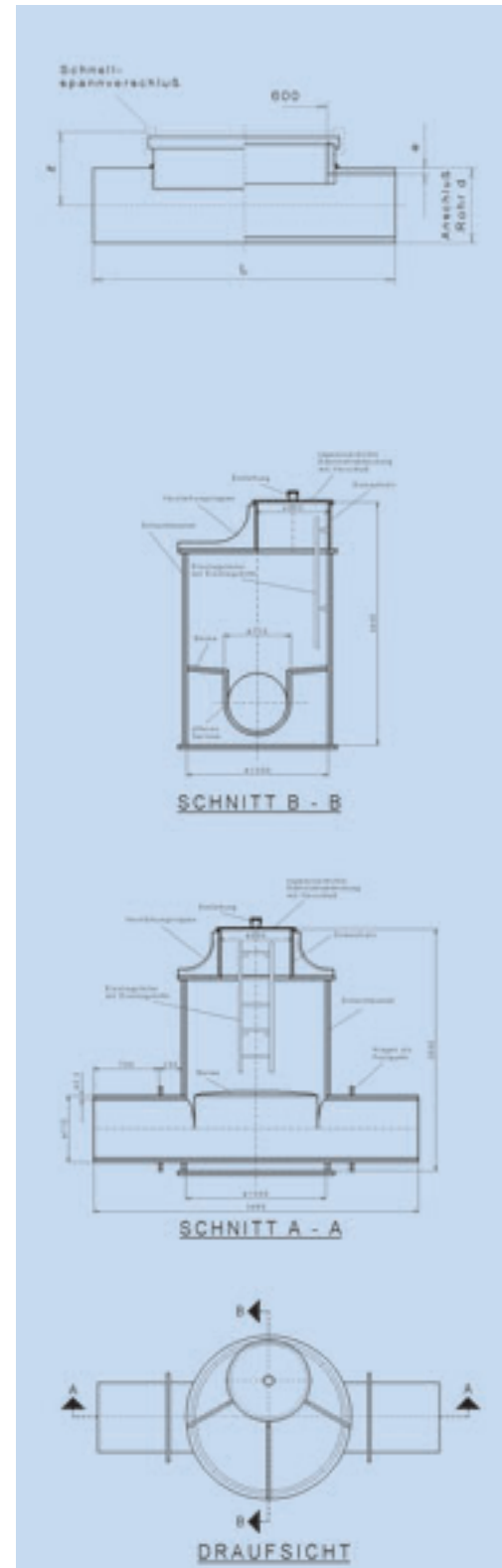


Our expertise – your gain

SIMONA

We offer an all-embracing service, with professional advice ranging from project planning to on-site engineering. Equipped with an in-house plastics workshop, we are also able to produce customised designs. Take advantage of the special services we offer and contact us: +49 (0) 67 52 14-722 or pm.umwelt@simona.de

Inspection box



Shaft



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