

PE-HDXc pipes (physically cross-linked polyethylene pipes)

Applications: Domestic drinking water installations, radiator connections and surface regulation

Special properties

- high chemical resistance (according to supplementary sheet 1 to DIN 8075)
- high mechanical resistance
- corrosion and encrustation free
- flexible and stress crack resistant
- smooth surface for low pressure losses
- resistant to high temperatures and pressure loads
- available in continuous lengths up to 3,500 m
- meet the most demanding hygienic requirements
- material neutral, even with regard to high pH value fluctuations
- long-life
- can also be supplied as a „pipe-in-pipe“ system, featuring different heat insulations

Technical data – PE-HDXc pipes

Test		Value	Unit	Standard
Degree of cross-linking		≥ 60	%	DIN 16892
Density	23 °C	≈ 0.94	g/cm ³	DIN 16892/DIN 53479
Notched flexural impact strength according to Charpy	23 °C	no failure	kJ/m ²	DIN EN ISO 179-1/2
Ultimate tensile strength	23 °C	24-30	N/mm ²	DIN EN ISO 6259-1
Tensile strength	23 °C	24-26	N/mm ²	DIN EN ISO 6259-1
Elongation at break	23 °C	400-600	%	DIN EN ISO 6259-1
Elastic modulus (E module)	23 °C	600-800	N/mm ²	DIN 16892/ DIN EN ISO 527-1
Stress crack resistance		no failure		ASTM D 1693
Moisture absorption		< 0.01	mg (4d)	DIN EN ISO 62
Coefficient of linear expansion	0 °C - 70 °C	1.5·10 ⁻⁴	1/K	DIN 16892/DIN 53752
Thermal conductivity		0.41	W/(K·m)	DIN 16892/DIN 52612-1
Smallest bend radius		≥ 5·D	mm	DIN 4724
Oxygen permeation*	40 °C	< 0.1	g/(m ³ ·d)	DIN 4726

* For radiator connection & surface regulation applications
All values are guide values.

Classification of operating conditions according to DIN 15875-1

Application class	Calculated temperature T _D °C	Operating life at T _D years	T _{max} °C	Operating life at T _{max} years	T _{mal} °C	Operating life at T _{mal} h	Typical application	
1 ^a	60	49	80	1	95	100	hot water supply (60 °C)	
2 ^a	70	49	80	1	95	100	hot water supply (70 °C)	
4 ^b	20 plus cumulative 40 plus cumulative 60 plus cumulative (see next column)	2.5 20 25	70	2.5	100	100	plus cumulative (see next column)	floor heating and low temperature radiator connection
5 ^b	20 plus cumulative 60 plus cumulative 80 plus cumulative (see next column)	14 25 10	90	1	100	100	plus cumulative (see next column)	high temperature radiator connection

^a Application class 1 or 2 can be selected according to national regulations.

^b If more than one calculated temperature is generated per application class the associated lines with regard to operating life should be added e.g. the temperature combination for a 50-year duration for class 5 comprises:

20 °C for 14 years followed by

60 °C for 25 years followed by

80 °C for 10 years followed by

90 °C for 1 year followed by

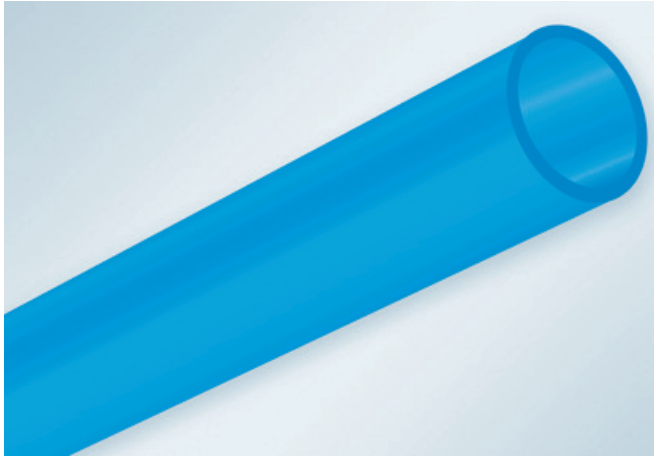
100 °C for 100 hours

Please note: This standard does not apply if base values for T_D, T_{max} and T_{mal} higher than those listed in this table exist.

T = temperature, T_D = calculated temperature, T_{max} = maximum calculated temperature, T_{mal} = malfunction temperature

Basic pipe

Single-layer PE-Xc pipes without oxygen barrier are used exclusively in drinking water installations in Germany. In some export markets, they are used in additional application areas.



In terms of hygiene, PE-Xc material is irreproachable. This is particularly significant for drinking water installations and adherence to related regulations. It does not react with substances dissolved in water, is unsusceptible to fluctuating pH values and has no impact whatsoever on drinking water quality. Furthermore, the PE-Xc pipes are highly durable, with a service life well in excess of 50 years, as continuously proven by creep strength tests.

A further significant argument in favour of the pipes is simple installation and processing on the construction site. On account of their extreme flexibility, PE-Xc pipes can generally be adapted to existing room geometry without using expensive forming equipment.

Hewing constructs and manufactures the pipes individually according to relevant client requirements.

Many parameters can be individually defined for PE-HDXc basic pipes:

- dimensions
- fitting compatibility
- pipe lengths
- signature
- colour
- prefabricated insulation (see info box)

Standard-model range PE-HDXc basic pipe

PE-Xc pipe according to DIN 16892/93
/DIN EN ISO 15875-2

Application area drinking water domestic installation				
PE-HDXc pipe measurements				packaging unit
d _n mm	e _n mm	S- value	SDR- value	coil bundle/ drum m
12	1.8	3.2	7.4	50/75/100/120/200
16	2.2	3.2	7.4	50/75/100/120/200
20	2.8	3.2	7.4	50/75/120/200
25	3.5	3.2	7.4	25/50
32	4.4	3.2	7.4	25/50
40	5.5	3.2	7.4	on request
50	6.9	3.2	7.4	on request
63	8.7	3.2	7.4	on request

d_n = outer diameter

e_n = wall thickness

S = nominal pipe serial number according to ISO 4065

SDR = standard dimension ratio, allocation of SDR values according to DIN 16893 / DIN EN ISO15875-2

The following insulation variants for the heating application area can be supplied upon request:

Condensation water insulation 4 mm

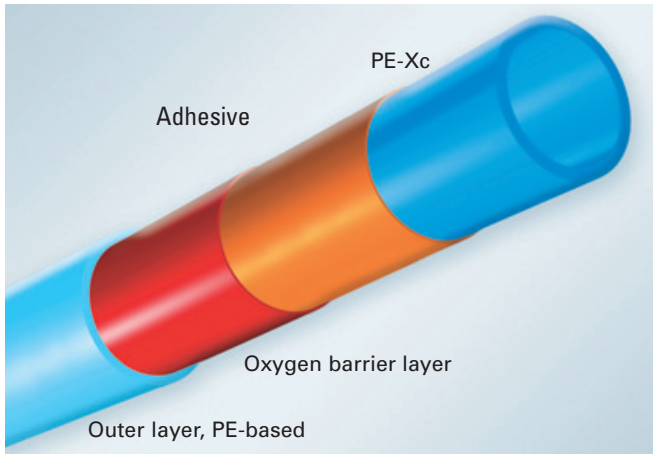
All-round insulation 6, 9 and 13 mm

Special asymmetrical heat insulation

Individual client requirements, e.g. prefabricated insulated pipes are implemented by Hewing; special profiles are developed jointly with the client.

PEX-4-Pipe

- DIN-standard oxygen impermeable due to special coating
- protection of oxygen barrier against mechanical impacts via additional PE layer
- PE-Xc inner pipe – Adhesive – EVOH oxygen barrier – PE-based outer layer



PEX-4-Pipes are designed for heating applications and drinking water installations. They feature an additional oxygen barrier layer as well as an outer protective PE layer. Thus, the oxygen barrier is effectively protected against mechanical damage, ensuring extremely safe installation and operation. PEX-4-Pipe is created in a special coextrusion procedure in which the basic pipe is coated three times in a single production step with three additional layers featuring tight tolerances.

Hewing has developed and stringently tested its own special compound for the oxygen barrier layer. The effectiveness of this barrier layer is continuously analysed in the in-plant test laboratory with an accuracy of 0.2 ppb (parts per billion). These tests prove that the maximum oxygen diffusion of Hewing PE-Xc pipes featuring oxygen barriers are significantly below the limits of 0.1 mg per litre per day in heating water specified in DIN 4726.

Hewing constructs and manufactures the pipes individually according to relevant client requirements. Many parameters can be individually defined for PEX-4-Pipes:

- dimensions
- fitting compatibility
- pipe lengths

- pipe marking
- colour
- in-plant insulation (see info box)

Standard-model range PEX-4-Pipe PE-HDXc

PE-Xc pipe according to DIN 16892/93 / DIN EN ISO 15875-2, oxygen impermeable according to DIN 4726

Application area heating				
PE-HDXc pipe measurements				packaging unit
d _n mm	e _n mm	S-value	SDR-value	coil bundle/ drum m
10.5	1.25	4	9	200/300/1200
12	2	3.2	7.4	75/200/600
14	2	3.2	7.4	75/200/600/3500
16	2	4	9	75/200/600/3000
17	2	4	9	75/200/600/3000
18	2	4	9	75/200/500/2500
20	2	5	11	75/200/500/2000
25	2.3	5	11	100/250/1300

Application area drinking water domestic installation and heating				
PE-HDXc pipe measurements				packaging unit
d _n mm	e _n mm	S-value	SDR-value	coil bundle/ drum m
12	1.8	3.2	7.4	50/75/100/120/200
16	2.2	3.2	7.4	50/75/100/120/200
20	2.8	3.2	7.4	50/75/120/200
25	3.5	3.2	7.4	25/50
32	4.4	3.2	7.4	25/50
40	5.5	3.2	7.4	on request
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63	8.7	3.2	7.4	on request

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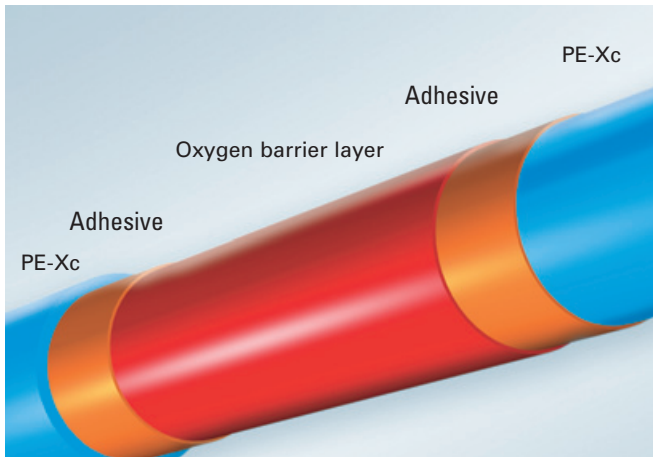
The following insulation variants for heating and drinking water applications can be supplied upon request:

Condensation water insulation 4 mm
All-round insulation 6, 9 and 13 mm
Special asymmetrical heat insulation

Individual client requirements, e.g. prefabricated insulated pipes are implemented by Hewing; special profiles are developed jointly with the client.

Penta-Pipe

- oxygen-tight according to DIN 4726
- centrally positioned oxygen barrier layer (EVOH)
- PE-Xc inner pipe – Adhesive – EVOH oxygen barrier – Adhesive – PE-Xc outer pipe



Using a newly developed extrusion procedure, Hewing can process five layers into a homogenous pipe in a single production step. Following subsequent final cross-linking, the pipe is finished: the Penta-Pipe, featuring a centrally positioned oxygen barrier layer. It is equipped with a particularly robust PE-Xc outer pipe, securely connected to the oxygen barrier via a further adhesive layer. Thus, Penta-Pipe is protected from damage on construction sites as well as in operation. Apart from drinking water installation and classic heating applications this also enables Penta-Pipe to be used for laying directly in the ground, in concrete core activation as well as installation in a medium.

Hewing constructs and manufactures the pipes individually according to relevant client requirements. Many parameters can be individually defined for Penta-Pipe:

- dimensions
- fitting compatibility
- pipe lengths
- pipe marking
- colour
- in-plant insulation (see info box)

Standard-model range Penta-Pipe PE-HDXc

PE-Xc pipe according to DIN 16892/93 / DIN EN ISO 15875-2, oxygen impermeable according to DIN 4726

Application area heating				
PE-HDXc pipe measurements				packaging unit
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Hewing GmbH is the world-leading manufacturer of physically cross-linked polyethylene pipes (PE-Xc pipes). Other highlights in the product portfolio are high quality MT multilayer pipes and system panels for surface regulation. The company supplies providers of complete systems for sanitary and heating technology with these components.

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