



8.1 Sanitary installation

1 General description

The piping for sanitary applications comprises composite pipes and press fittings. The entire system is technically approved and certificated by the most important test institutes such as e.g. DVGW, KIWA and WRAS.

2 Materials and characteristics

2.1 Pipes

2.1.1 Composition

The pipes consist of 5 layers:

- ▶ Inner pipe of electron beam cross-linked polyethylene (PE-Xc), extruded from high density polyethylene granulates
- ▶ High quality connecting layer for a homogenous connection between the aluminium pipe and the PE-Xc inner pipe
- ▶ An aluminium pipe, longitudinally seamlessly welded and controlled by machine
- ▶ A high quality connecting layer for a homogenous connection between the aluminium pipe and the PE-Xc outer pipe
- ▶ An outer pipe of electron beam cross-linked polyethylene (PE-Xc), extruded from high density polyethylene granulates

2.1.2 Technical profile


Outer diameter (mm)	14	16	16 RIXc	18	20	20 RIXc	26	26 RIXc	32	40	50	63
Inner diameter (mm)	10	12	12	14	16	16	20	20	26	33	42	54
Wall thickness (mm)	2	2	2	2	2	2	3	3	3	3,5	4,0	4,5
Thickness of aluminium (mm)	0,4	0,4	0,2	0,4	0,4	0,28	0,5	0,28	0,7	0,7	0,9	1,2
Max. working temperature (°C)	95	95	95	95	95	95	95	95	95	95	95	95
Max. working pressure (bar)	10	10	10	10	10	10	10	10	10	10	10	10
Coefficient of thermal conduction (W/m/K)	0,43	0,43	0,43	0,43	0,43	0,43	0,43	0,43	0,43	0,43	0,43	0,43
Linear expansion coefficient (mm/m/K)	0,025	0,025	0,025	0,025	0,025	0,025	0,025	0,025	0,025	0,025	0,025	0,025
Surface roughness of inner pipe (μ)	7	7	7	7	7	7	7	7	7	7	7	7
Oxygen diffusion (mg/l)	0	0	0	0	0	0	0	0	0	0	0	0
Smallest bending radius manual / external spiral spring (mm)	5xDu	5xDu	8xDu	5xDu	5xDu	7xDu	5xDu	7xDu	*	*	*	*
Smallest bending radius with internal spiral spring (mm)	3xDu	3xDu	8xDu	3xDu	3xDu	5xDu	3xDu	5xDu	*	*	*	*
Degree of cross-linking (%)	60	60	60	60	60	60	60	60	60	60	60	60
Weight (kg/m)	0,108	0,125	0,101	0,132	0,147	0,129	0,252	0,261	0,39	0,528	0,766	1,155
Water volume (l/m)	0,072	0,113	0,113	0,154	0,201	0,201	0,314	0,314	0,53	0,803	1,32	2,042
Per coil (m)	100 200	50 100 200	100 200	100 200	100	100	50	50	50	-	-	-
Per straight length	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5

* necessary to use elbow fittings

8 SPECIFICATIONS

2.1.3 Marking

The marking on the pipes (repeated every meter) is structured as follows:

HENCO®	registered trademark
MADE IN BELGIUM	place of production
www.henco.be	website
PE-Xc	cross-linked high-density polyethylene
AL 0,4	0.4 aluminium (depending on pipe Ø)
PE-Xc	cross-linked high-density polyethylene
16*2	outer diameter *wall thickness
201905	date of production
L238	line and time code
HN000	code for Henco mark
10bar / 95°C	nominal working pressure – max. temp
Kiwaklasse2ISO1/Komo	Dutch certificate
DVGW DW...	German certificate
ÖVGWW1.377	Austrian certificate
ATG...	Belgian certificate
ÖN B5157 Typ1-A-TW	Austrian certificate
Sitac1422 0536/01;0138/98 10 bar/70°C SKZ	Swedish certificate
VA 1.14/12039	Danish certificate
UNI10954-1tipoAclasse1IIPUNI319	Italian certificate
SVGW...	Swedish certificate
NBI...	Norwegian certificate
STF	Finnish certificate
	KIWA watermark
DIN...	German standard
001m< >	meter indication



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2.1.4 Pipe with protective sleeve

The multilayer pipe and protective sleeve will be produced by the same manufacturer. The sleeve consists of polyethylene and has a red, blue or black colour. In his laying instructions the manufacturer describes when

and in which conditions the pipe must be fitted with a sleeve.

The pipe with protective sleeve must be available in the following sizes:

Pipe sleeve		
Measure	Coil length	Colour
14x2	25 m	blue/red/black
	50 m	blue/red/black
	100 m	blue/red/black
16x2	25 m	blue/red/black
	50 m	blue/red/black
	100 m	blue/red/black
18x2	50 m	blue/red/black
	100 m	blue/red/black
20x2	25 m	blue/red/black
	50 m	blue/red/black
26x3	50 m	blue/red/black

2.1.5 Pre-insulated pipe

The insulation must be PE foam, provided with a round or eccentric PE film in a red or blue colour. The multilayer pipes and insulation must come from the same

manufacturer. The insulation must satisfy the following conditions:

Quality standard	UNI and ISO 9002-94
Lambda value	0.040 W/mK at + 40°C
Fire class	1 - UNI 9177 and UNI 8457
Temperature resistance	-35°C to + 95°C
Thickness (round)	6, 10 or 13 mm
Thickness (eccentric)	6 mm above and 13 or 26 mm below

8 SPECIFICATIONS

The pre-insulated pipes are available in the following dimensions:

Round insulation							
Dimension	Coil length	6 mm		10 mm		13 mm	
		Coil length	Colour	Coil length	Colour	Coil length	Colour
14x2	100 m		red or blue	50 m	red or blue	-	-
16x2	100 m		red or blue	50 m	red or blue	50 m	blue
18x2	50 m		red or blue	50 m	red or blue	-	-
20x2	50 m		red or blue	50 m	red or blue	50 m	blue
26x3	25 or 50 m		red or blue	25 m	red or blue	50 m	blue
32x3	25 m		red or blue	-	-	-	-

Eccentric insulation					
Dimension	Coil length	6 mm above and 13 mm below		6 mm above and 26 mm below	
		Coil length	Colour	Coil length	Colour
16x2	50 m		blue	25 m	blue
20x2	25 m		blue	25 m	blue
26x3	25 m		blue	25 m	blue

2.2 Fittings

The whole sanitary installation, with the exception of the connections to the manifolds, is connected by press fittings of polyvinylidene fluoride (PVDF). The synthetic press fittings and the multilayer pipes must be produced by the same manufacturer.

The PVDF press fittings must be fitted with O-rings to ensure sealing between the pipe and fitting. The pressure sleeves must be stainless steel. They are also provided with 3 openings for visual checks, and a special

rim that allows the perfect positioning of the fitting in the jaws specified by the manufacturer.

If brass press fittings are used, these must come from the same manufacturer and be provided with a synthetic insulating ring to prevent electrolysis between the aluminium of the pipe and the brass of the fitting. The fittings must also be fitted with O-rings and pressure sleeves in stainless steel.



2.3 Manifolds

All manifolds are made of brass. The manifolds exist in 1" or 3/4" designs and have 2 to 10 branches with euroconus connections.

They are also fitted with a 3/8" screw thread for the fitting of an automatic air vent.

The centre-to-centre distance between the branches amounts to 50 mm, and the distance from the outside of the brass to the middle of the first branch amounts to 26 mm.

The galvanised manifolds are provided with ball valves and a euroconus connection on each outlet. These manifolds are provided with 2, 3 or 4 connections.

They are supplied as constituent elements that can be attached to each other, with at one end a female thread and the other end a 1" or 3/4" male thread.

Assembly of the manifolds on the wall is exclusively using wall brackets specified by the manufacturer. The cabinets for the manifolds must also come from the same manufacturer.

3 Connections

The pipes and the fittings are connected according to the press-fit procedure. This must be done using the tools from the manufacturer and according to the assembly instructions given by the manufacturer.

To make the connection between pipes and manifolds

one must use fittings designed by the manufacturer provided with a separate euroconus assembly nut; these fittings are provided with O-rings, a stainless steel pressure sleeve and a synthetic ring.

4 Pressure tests

The whole sanitary installation must undergo pressure tests in conformity with DIN 1988 as specified by the manufacturer.

5 Insurance and guarantee

The manufacturer must be able to present a test certificate from the IKP university in Stuttgart demonstrating compliance with the DIN 4726 standard and/or DVGW approval and/or KIWA approval and/or ATG approval.

The pipe is insured against damage after delivery for a period of at least 12 years and for a sum of 3,000,000 euros per case of damage per year. A guarantee certificate is always supplied.

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