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## Wall and under-floor heating pipe

**Standard:** DIN 16833 : 2001, DIN 16834 : 2001, DIN 4726 : 2000

Number of the technical permission in building industry: A – 138 / 1997

**Application field:** Pipes are applicable for heating systems, like wall and under-floor heating, climate and heating systems with radiators of low temperature with the following network profiles (working temperature / pressure.)

Wall and under-floor heating system, climate and radiator heating of low temperature: 70°C / 4 bar

- Pipe's dimensions should be selected as a function of working temperature and pressure (4–10 bar).
- The three-layer pipeline have a protective layer preventing oxygen diffusion.
- The single-layer pipeline is applicable with the following conditions:

These pipe has not any preventing layer against oxygen diffusion, therefore in the heating network should be prevented those parts, which are capable for corrosion (separation with heat-changer, additive – inhibitor – in the heating system, application of non-corrode materials, etc.).

**Material:** Polyethylene with increased heat-proof quality ( PE – RT )

### Execution:

- single-layer type
- multi-layer - NOOXYPE® - 3 type

### Colour:

- self-colour
- or according to customers' requirements

**Execution:** in 300 metres long rolls

### Nominal dimensions:

**In both types:** Ø 10x1,3; 12x1,3; 14x2; 15x1,7; 16x2; 17x2; 18x2; 20x2; 22x2  
**Additional dimensions in Single-layer type:** Ø 6x1; 14x4,5; 25x3

### **Structural properties of the polyethylene pipes with increased heat-proof quality:**

#### **Basic pipe:**

At both execution/types the inner pipe is called, which is in direct connection with the heating-agent and meets the necessary requirements (lifetime, temperature, pressure, etc.)

**Material:** Polyethylene with increased heat-proof quality – marking – PE – RT

#### **Outer layer:**

It can be found only at NOOXYPE® - 3 – a plastic preventing layer, which can reduce and stop through the wall of pipe the oxygen diffusion in the pipe.

**Material:** Ethylene – vinyl-alcohol ( EVOH ) copolymer

#### **Middle layer:**

It can be found only at NOOXYPE® - 3 – Binding or adhesive layer, which help by sticking of inner layer (basic pipe) and outer layer

**Material:** special plastic polymer

The layers of the three-layer NOOXYPE® - 3 PE – RT are developed during the production, and through its lifetime they cannot be broken off each other.

#### **Quality properties:**

**Raw material:** Ethylene-octen copolymer with increased heat-proof quality and medium density, which meets the requirements of prescription VSZM – AS 19 / 00

#### **Finished product:**

##### **Dimension:**

Dimensions and tolerances meets the requirements of Standard's prescription DIN 16834 : 2001.

By multi-layer pipe the wall thickness is related only to the basic pipe!

Thickness of preventing layer: 0,08 mm

Thickness of adhesive layer: 0,04 mm

Thickness of preventing and adhesive layer together: max. 0,12 mm

**Strength characteristics:** A non-dimensional number, which describe the strength of the pipe.

Marking: S

Calculation formula:  $S = (d_n - e_n) / 2e_n$  ( $d_n$ = outer diameter,  $e_n$  = wall thickness)

**Lifetime:** minimum 50 years, according to application experiences and calculations, supposing a pipe with recommended rigidity applied in heating systems, described in the Standard.

**Surface:**

Smooth outer and inner surface. On the outer surface any scratches, which can be damaging the preventing layer are not permitted. On the inner surface some linear slight scratches, which developed during the production and does not influence the rigidity and lifetime of the pipe can be permitted.

**Bending radius:** min. 5 d

**Degree of Oxygen diffusion :** less, than 0,1 g/m<sup>3</sup>/day

**Linear coefficient of thermal expansion:** according to Standard DIN 52612: 1,95 exp – 4 / k

**Weather-proof quality:**

The pipe's material can be damaged by UV radiation. Through a longer storage the pipe should be prevented from the damaging effects of weather (storage in roofed site)

**Marking:**

Application and identification details are indicated by the producer on the outer surface of the pipe in every metre, which is well readable without any expedient.

**Colour:**

**Self-coloured or according to customer's requirements.**

**Application guide:**

- The heating system should be planned by a responsible designer and according to the plans should be completed and put in working by the guidance and control of a qualified technician. The maintenance should be identified by the designer.
- The outer layer of NOOXYPE® - 3 PE - RT will basically stop oxygen diffusion, but the system's parts should be carefully selected according to corrosion.
- Before the installation the pipes should be surveyed. Only damage free pipes can be installed.
- The NOOXYPE® - 3 PE - RT is applied for all kind of heating systems according to Standard of MSZ EN 1264.
- Pipes can be equally bounded by disengaged – clamping, otherwise by express junction, not releasable moulded metal bind. (The supplementary control of binding should be assured.)
- The straight parts of the system and the binding of the pipes should be formed according the thermal expansion rules.
- The working parameters of the heating systems cannot exceed the 70°C, 4 bar. For a short period of time the pipe wears out the temperature of 100° C. In these circumstances the expecting lifetime of the pipe is 50 years according to DIN 16834.