



TYCROC® PERT PIPES PROCESSING & INSTALLATION INSTRUCTIONS

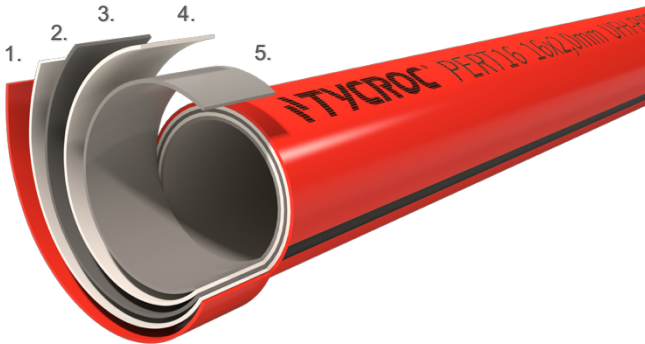
Updated: 1 June 2026

1. PRODUCT IDENTIFICATION

Tycroc PERT pipes are made from the high-performance material PE-RT. The Tycroc PERT pipe is an oxygen-tight composite pipe consisting of 5 layers. The base pipe and outer layer are made of PE-RT and enclose the sensitive oxygen barrier layer (EVOH). To ensure a permanent bond between the materials, the layers are fused together with a polymer adhesive. The result is a high-quality, highly flexible pipe with a securely protected oxygen barrier layer, guaranteeing a long service life (50-year warranty).

PIPE 5-LAYER STRUCTURE:

- 1. Polyethylene (PE-RT)
- 2. Adhesive layer (A-Polymer)
- 3. Oxygen barrier layer (EVOH)
- 4. Adhesive layer (A-Polymer)
- 5. Polyethylene (PE-RT)



AVAILABLE DIMENSIONS:

ARTICLES	DIMENSIONS
PERT16-120	Ø 16 × 2,0 mm 120 m
PERT16-240	Ø 16 × 2,0 mm 240 m
PERT16-480	Ø 16 × 2,0 mm 480 m
PERT16-640	Ø 16 × 2,0 mm 640 m
PERT17-120	Ø 17 × 2,0 mm 120 m
PERT17-240	Ø 17 × 2,0 mm 240 m
PERT17-480	Ø 17 × 2,0 mm 480 m
PERT20-120	Ø 20 × 2,0 mm 120 m
PERT20-240	Ø 20 × 2,0 mm 240 m
PERT20-480	Ø 20 × 2,0 mm 480 m
PERT20-640	Ø 20 × 2,0 mm 640 m

MAX. PERMITTED CIRCUIT LENGTH
Ø 16 × 2.0 mm – up to 80 m
Ø 17 × 2.0 mm – up to 90 m
Ø 20 × 2.0 mm – up to 120 m

*The maximum permitted circuit lengths are defined in accordance with the standard EVS 941-1:2024 "General quality requirements for construction works. Part 1: Heating and cooling systems". The final choice of pipe diameter and circuit length should be made according to the previously prepared project.

2. APPLICATION FIELDS

Tycroc PERT pipes are primarily used for floor heating, both with Tycroc UHP and NOB underfloor heating base panels and in floors covered with concrete or gypsum-based screed. Other main applications include the cooling of ceilings and floors, as well as the heating of ceilings or walls. Tycroc PERT pipes are also permitted for use in radiator heating.

3. PIPE CONDITION AND PROPERTIES

3.1 VISUAL CONDITION

Upon visual inspection, the inner and outer surfaces of the pipes must be smooth, clean, and as free as possible of indentations, cavities and other surface defects that would cause the pipes to fail to meet ISO 22391 requirements. No foreign particles must be visible in the material. Minor variations in colour appearance are acceptable. Pipe ends must be cut burr-free and perpendicular to the pipe axis.

3.2 OXYGEN BARRIER

According to DIN 4726, oxygen-tight pipes must meet the following area-related oxygen permeability limits for use at 40 °C (ISO 10508 Class 4) or at 80 °C (ISO 10508 Class 5):

a) $\leq 0.32 \text{ mg}/(\text{m}^2 \cdot \text{d})$ at 40 °C (Class 4);

b) $\leq 3.60 \text{ mg}/(\text{m}^2 \cdot \text{d})$ at 80 °C (Class 5).

Tycroc PERT 5-layer pipes significantly exceed these standards thanks to the use of the EVOH layer and the 5-layer pipe structure.

3.3 BENDING RADIUS

The smallest permitted bending radius "r" is five times the pipe diameter. For dimensions of 20 mm and larger, a bending radius of eight times the pipe diameter is recommended. In addition, the bending radius depends on the ambient temperature or pipe temperature. The colder the temperature, the stiffer the pipe and the larger the bending radius. The recommended bending radius refers to a pipe temperature of 20 °C.

4. CUTTING, STORAGE AND DECOILING

Cutting Tycroc PERT pipes is straightforward using professional tools such as a plastic pipe cutter.

In intensive weather conditions, Tycroc PERT pipes should be protected with cardboard or black foil. Pipes must be transported, stored and handled in such a way that they are protected from damage. Plastic pipes must not be exposed to direct sunlight.

Recommendation! To make work easier and faster, we strongly recommend using a pipe decoiler.

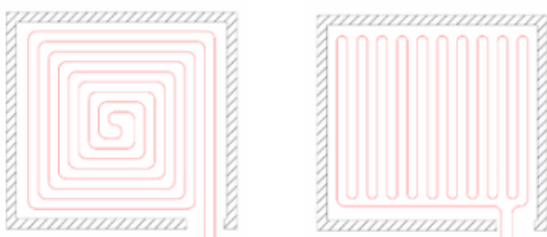
5. ARRANGEMENT OF HEATING CIRCUITS

The arrangement depends on the purpose, shape and details of the room (floor material, windows, external or internal walls, etc.). The two main patterns are the spiral and the serial pattern.

The spiral pattern ensures the most uniform temperature distribution across the heating surface, as the supply and return pipes are placed alternately side by side.

In the serial pattern, the temperature of the heated surface decreases linearly. When using the serial pattern, the start of the circuit should be placed in the area with the greatest heat loss (external walls, windows, terraces, external doors, etc.).

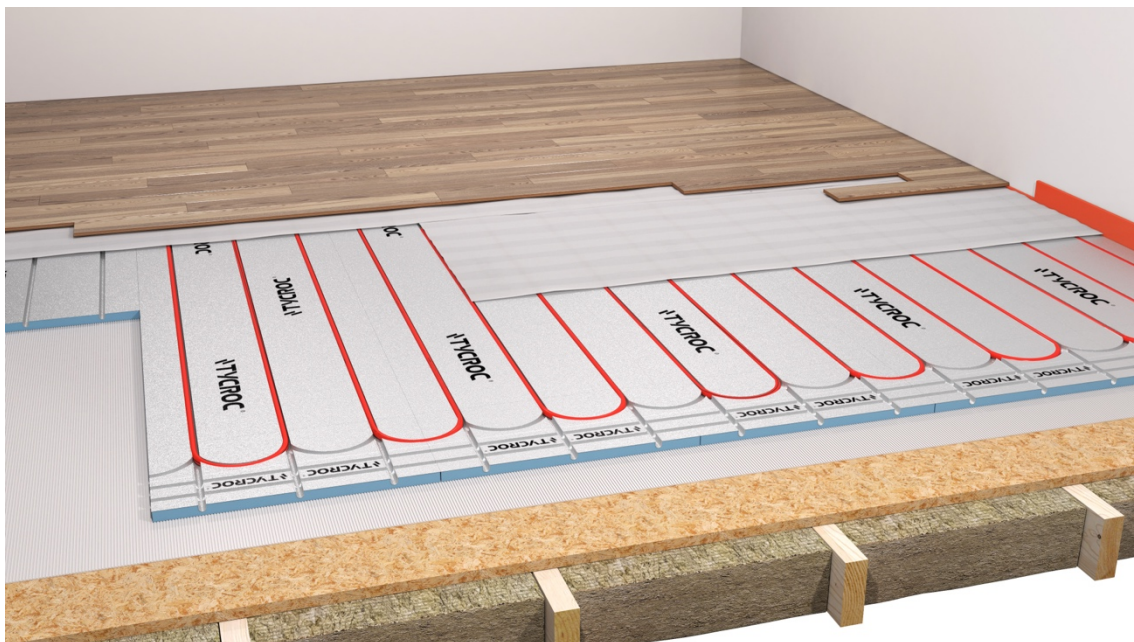
The choice of circuit pattern does not affect the overall efficiency of the heating system, but it does affect the temperature distribution across the room surface.



6. PIPE INSTALLATION SYSTEMS

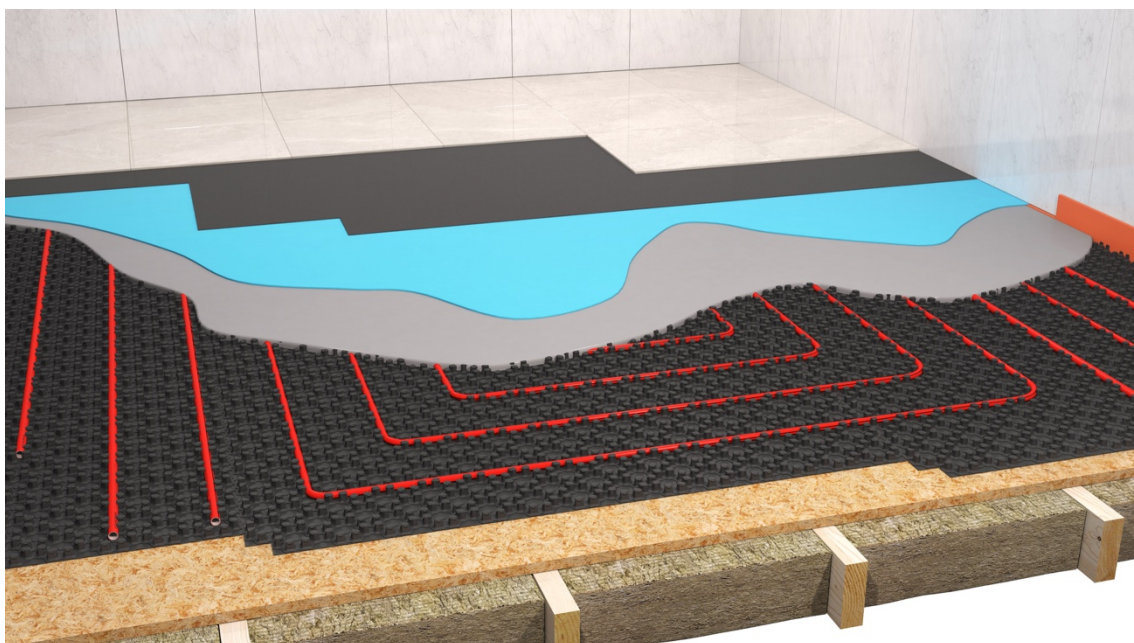
6.1 HEATING CIRCUITS IN TYCROC UHP UNDERFLOOR HEATING PANELS

Install the Tycroc PERT underfloor heating pipe of the appropriate thickness and length according to the previously prepared heating project (consumption rate: 1 m² = 5 m of pipe). For detailed information, refer to the Tycroc UHP installation instructions available at www.tycroc.com.



6.2 HEATING CIRCUITS IN TYCROC NOB UNDERFLOOR HEATING PANELS

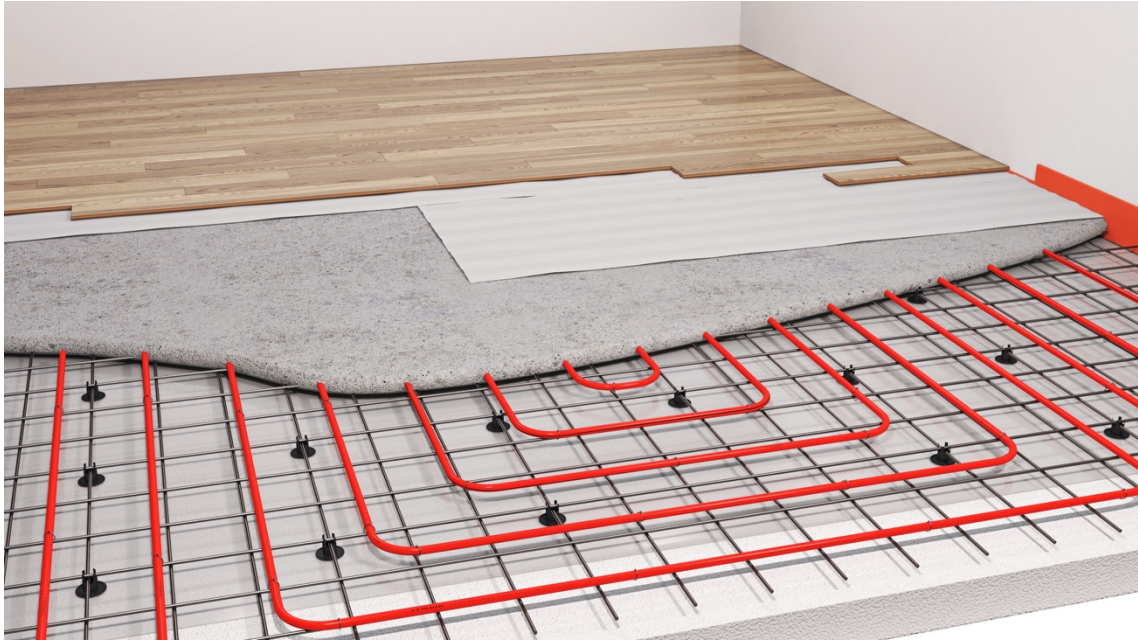
Install the Tycroc PERT underfloor heating pipe of the appropriate thickness and length according to the previously prepared heating project (consumption rate depends on the installation spacing). For detailed information, refer to the Tycroc NOB installation instructions available at www.tycroc.com.



6.3 HEATING CIRCUITS ON REINFORCING MESH IN A CONCRETE FLOOR

Install the Tycroc PERT underfloor heating pipe of the appropriate thickness and length according to the previously prepared heating project.

- The thickness of the concrete layer covering the pipes must be 30–90 mm. The thickness of the concrete layer affects the temperature regulation speed in the room.
- The standard pipe installation distance in a concrete floor is 100, 150, 200, 250 or 300 mm. This ensures an even temperature distribution.
- Fix the pipes to the reinforcing mesh using suitable binding wire.
- The maximum permitted distance between fixing points is 750 mm, and 200 mm at bends and U-turns.
- Other installation and fixing systems specifically designed for this purpose may also be used. During processing and installation procedures, strictly follow the installation instructions of the respective manufacturer.



6.4 HEATING CIRCUITS IN AN ANHYDRITE (GYPSUM-BASED) FLOOR

Install the Tycroc PERT underfloor heating pipe of the appropriate thickness and length according to the previously prepared heating project (consumption rate depends on the installation spacing). During processing and installation procedures, strictly follow the installation instructions of the respective manufacturer.

7. PIPE FASTENING AND COUPLINGS

7.1 PIPE FASTENING

Pipes and their fastening systems must be secured to maintain their planned horizontal and vertical position. The fastening distance required to meet these requirements depends on the pipe dimensions and the pipe fastening systems. The manufacturer specifies the maximum permitted spacing between fixings. The smaller the distances between fixings, the greater the security of the pipe position. Fastening distances depend on the system used.

7.2 PIPE COUPLINGS

All system couplings must be accurately positioned and indicated on the project drawing. Brass clamp and press connectors are recommended as connection elements. Couplings are installed according to the instructions of the respective manufacturer.

Tycroc PERT 5-layer pipes have been tested and approved as a system together with the corresponding clamp and press connectors in accordance with DIN Certco and KIWA/KOMO requirements.

8. INSTALLATION AT LOW TEMPERATURES

In the event of a risk of freezing, appropriate measures must be taken, such as using antifreeze or controlling the building temperature. There are no restrictions on the use of Tycroc PERT pipes at low temperatures. Since the base material does not become brittle, there is essentially no loss of quality – even when the pipes are processed or used at temperatures well below 0 °C.

When Tycroc PERT pipes need to be installed at low temperatures, reduced pipe flexibility must be taken into account. In principle, however, installation is completely trouble-free even at very low sub-zero temperatures, as the minimum permitted bending radius does not change. In practice, there are a few measures to simplify installation:

- If possible, pipes should not be stored outdoors at temperatures below freezing. Storing the pipes at room temperature keeps them more flexible and makes them easier to install.
- Factory-packaged Tycroc PERT pipes contain no residual moisture and are completely dry, so on-site draining or drying is not required.
- In Scandinavian countries in particular, a “warmlaying” method is used when the outdoor temperature is extremely low. To do this, the pipes are filled before installation with a warm, frost-proof water-glycol mixture, which is then also used to pressurise the heating system.

9. TECHNICAL PROPERTIES PE-RT TYPE II

PROPERTY	VALUE
Material	PE-RT Type II according to ISO 22391
Max. operating temperature according to ISO 10508 Class 5 [°C]	90
Max. operating pressure according to ISO 10508 Class 5 [bar]	6
Thermal conductivity [W/mK] at 20 °C DIN 52612	0,41
Coefficient of linear thermal expansion [mm/mK] DIN 52328	0,195
Surface roughness inside [mm] acc. Prandl/Colebrook	0,007
Oxygen diffusion barrier DIN 4726 [mg/(m²·d)] 40 °C (Class 4)	< 0,32
Oxygen diffusion barrier DIN 4726 [mg/(m²·d)] 80 °C (Class 5)	< 3,60

10. APPROVALS AND CERTIFICATIONS

CERTIFICATE	STATUS
KIWA KOMO BRL 5602, certificate No.: K86478	Yes
DIN CERTCO, certificate No.: 3V399 PE-RT	Yes
Oxygen diffusion barrier according to DIN 4726	Yes
Oxygen diffusion barrier according to ISO 17455	Yes
SKZ A 748 according to HR 3.16	Yes
European Technical Assessment of service conditions according to ISO 10508 Class 4 and Class 5, certificate number: ETA 17/1013	Yes

11. ISO 10508 SERVICE CLASSES

11.1 ISO 10508 CLASS 4 (FLOOR HEATING)

TEMPERATURE	VALUE	LIFETIME	OVERALL SERVICE COEFFICIENT
T cold	20 °C	2.5 years	1,25
T design	40 °C + 60 °C	20 years + 25 years	1,5
T max	70 °C	2.5 years	1,3
T malfunction	100 °C	100 hours	1,0

11.2 ISO 10508 CLASS 5 (RADIATOR HEATING)

TEMPERATURE	VALUE	LIFETIME	OVERALL SERVICE COEFFICIENT
T cold	20 °C	14 years	1,25
T design	60 °C + 80 °C	25 years + 10 years	1,5
T max	90 °C	1 year	1,3
T malfunction	100 °C	100 hours	1,0

12. PRESSURE TEST ACCORDING TO DIN EN 1264-4

The tightness of the underfloor heating system's heating circuits is checked with a pressure test immediately before the screed is laid. The leak test can be carried out with water or compressed air. In deviation from the VOB, the test pressure here is twice the operating pressure, but at least 6 bar. In addition to DIN EN 1264-4:2009-11, the maximum time of the leak test must be limited to 48 hours when testing with air.

Requirements: The tightness of the underfloor heating system's heating circuits is checked with a pressure test immediately before the screed is laid. The pipes must also be under pressure during the laying of the screed. The test must be carried out in two stages:

- 1) pre-test – duration 60 min. and permitted pressure drop 0.6 bar;
- 2) main test – duration 120 min. and permitted pressure drop 0.2 bar.

13. INSPECTION PROTOCOL

Name and address of the object: _____

Heating installation company: _____

Length of installed Tycroc PERT pipe: _____ Diameter: _____

Tycroc PERT pipe marking: _____

Installation date: _____ System commissioning date: _____

DATA:

1) Max. permitted operating pressure: _____ Test pressure: _____ Duration: _____

2) Max. permitted operating pressure: _____ Test pressure: _____ Duration: _____

Leak-tightness determination; no permanent changes in shape on any component. YES / NO (mark accordingly)

Test result: POSITIVE / NEGATIVE (mark accordingly)

SIGNATORIES:

Location / Date: _____ Building owner / client (name and signature):

Location / Date: _____ Site manager / installer (name and signature):

Location / Date: _____ Heating system designer (name and signature):
