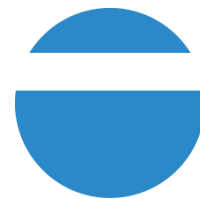


METALPERT®

MULTILAYER PIPES PE-RT II/Al/PE



METALPERT® is an extremely flexible multilayer pipe and is therefore ideal for the creation of floor, wall and ceiling radiant heating and cooling systems.

Thanks to its excellent performances it can also be used for convector and radiator heating systems, in industrial plants as well as for compressed air distribution systems.

METALPERT® combines the advantages of synthetic materials (polyethylene raised temperature) such as resistance to abrasion and corrosion, chemical resistance and hygiene with those of the aluminium such as resistance to high temperatures and pressures, dimensional stability, impermeability to oxygen and light, and low thermal expansion.

The result is a product consisting of different layers of materials that combined together allow excellent properties to be obtained which can not be reached by a pipe made of only one material.

The characteristics of METALPERT® pipes are such as to make this a highly reliable product and extremely easy to install.

- **Durability and mechanical strength**

The system has a durability of at least 50 years guaranteed by the product standards at pressures of 10 bar and temperatures up to 95°C. For operating temperatures lower than 95°C, the pipes can withstand pressures above 10 bar while maintaining a high degree of reliability over time.

- **Resistance to corrosion**

The resistance to corrosion, to building materials and to the main chemical compounds allows them to be used for various applications even industrial ones.

- **Smoothness and resistance to limescale formation**

The extreme smoothness of the inner surface, as well as preventing the formation of limescale, also ensures low pressure drops over time.

- **Resistance to abrasion**

PE-RT is abrasion resistant, and this is a synonym of durability, since the pipes are not affected by the abrasive action of impurities that are carried by the water at high speed.

- **Flexibility and shape stability**

The combination of polyethylene raised temperature and aluminium guarantees excellent flexibility during the bending phase (manual bending also). The METALPERT® pipe can be bent manually or mechanically with bending radii of up to 2.5 times its diameter.

Once bent and installed, the METALPERT® pipe maintains the configuration over time allowing to reduce the number of anchoring clips needed, which in surface mounting is reduced by 40% of the clips required for plastic pipes such as PE-X, PE-RT, PP-R, PB, PVC-C etc.

- **Thermal expansion**

Thermal expansion is about 8 times lower than that of plastic pipes and is comparable to that of metal pipes.

- **Lightweight**

The pipes are extremely lightweight compared to metal pipes: the weight is 1/3 compared to that of a corresponding copper pipe and 1/10 compared to that of a corresponding steel pipe.

- **Oxygen and light barrier**

The butt-welded aluminium layer represents a permanent oxygen and light barrier, avoiding in this way the two main causes of algae formation and corrosion in plastic pipes.

- **Thermal conductivity**

The thermal conductivity of the pipe is 0.42 - 0.52 W/m·K (in relation to the diameter), approximately 900 times lower than that of copper, an aspect which is extremely important to ensure reduced temperature losses.

Table. Typical technical data.

Features	Values	Test method
Material	Polyethylene raised temperature PE-RT Type II internal layer. Internal bonding layer, intermediate aluminium layer, external bonding layer, high density polyethylene HDPE external layer.	-
Colour	RAL white 9003	-
Dimensions	16÷26 mm	-
Application	Distribution Radiator and convector heating systems, radiant heating and cooling systems.	-
Minimum operating temperature ⁽¹⁾	-60°C	-
Maximum temperature ⁽²⁾	+95°C/+100°C	EN ISO 21003-1
Maximum pressure	+10 bar	EN ISO 21003-1
Density at 23°C	> 0,940 g/cm ³ (PE-RT)	-
Softening temperature	125°C	-
Thermal expansion coefficient	0,026mm/m·K	-
Thermal conductivity	0,42 W/m·K	-
Internal roughness	0,007 mm	-
Oxygen permeability	0 mg/l	-
UV Resistance	Yes, if protected with UV-resistant paint	-
Halogen levels	Halogen-free	-

(1) At any rate above the freezing temperature of the transported fluid.

(2) For more details see the "Application fields" section.

Application fields

The conditions of use of METALPERT® pipes are shown in the technical data tables outlined above, however, according to the international standard EN ISO 21003-1 there are four classes of application that need to be laboratory tested in combination with the operating pressure p_D chosen by the producer, which can be 4, 6, 8, 10 bar. The METALPERT® pipes are certified for third and fourth class of application for pressures up to 10 bar, these are given in the table below.

Tabella. Application fields and operating conditions in compliance with EN ISO 21003-1.

Application class	Operating temperature T_D	Duration of T_D	Maximum operating temperature T_{max}	Duration of T_{max}	Malfunctioning temperature T_{mal}	Duration of T_{mal}	Typical application
	[°C]	[anni]	[°C]	[anni]	[°C]	[ore]	
1 ^a	60	49	80	1	95	100	Domestic hot water (60°C)
2 ^a	70	49	80	1	95	100	Domestic hot water (70°C)
4 ^a	20	2,5	70	2,5	100	100	Floor heating and low temperature systems
	+	+					
	40	20					
	+	+					
5 ^a	60	25	90	1	100	100	High temperature heating systems
	+	+					
	80	10					
	+	+					

Range

The METALPERT® pipes are available in coils from a 16 mm diameter to a 26 mm diameter, with a 6 mm insulating sheath.

Table. METALPERT® range

Pipe dimensions	METALPERT® pipe in coils	METALPERT pipe with 6 mm insulating sheath
16x2	100, 200, 600 m	50 m (red, blue)
20x2	100, 200 m	50 m (red, blue)
26x3	50 m	50 m (red, blue)

Pipe features

METALPERT® pipes without insulation are used mainly for the construction of floor heating and cooling systems. If necessary, they can be insulated after the installation.

Table. METALPERT® pipe features

External diameter	[mm]	16	20	26
Thickness	[mm]	2	2	3
Internal diameter	[mm]	12	16	20
Water volume	[l/m]	0,113	0,201	0,314
Weight	[g/m]	104	138	251
Weight with water	[g/m]	217	339	564
Operating temperature	[°C]	0÷80	0÷80	0÷80
Maximum operating temperature ¹	[°C]	80	80	80
Malfunctioning temperature ¹	[°C]	100	100	100
Oxygen permeability	[mg/l]	0	0	0

(1) In accordance with EN ISO 21003, for details, see the "Application fields" section

Connection systems

The METALPERT® pipes can be combined with the different types of Valsir fittings.

Table. Connection systems

METALPERT® pipe	Pexal® Brass Brass multi-press fittings	Bravopress® PPSU multi-press fittings	PexalEasy® Full bore PPSU fittings	Pexal® Twist Brass compression fittings
16x2	•	•		
20x2	•	•		
26x3	•	•		

METALPERT® insulated pipe features

METALPERT® pipes that are covered in the factory with thermal insulating sleeves are suitable in all applications that require a certain degree of insulation against condensation and against energy loss combined with an extremely practical and economic installation.



METALPERT® insulated pipe features.

Pipe	Insulation layer thickness	External diameter of the insulated pipe	Weight	Thermal conductivity of the insulated pipe
	[mm]	[mm]	[g/m]	[W/m·K]
16x2	6	28	113	0,054
20x2	6	32	150	0,053
26x3	6	38	266	0,060

The features of the material used for the production of the insulating sheath are indicated in the table.

Features of the material used for the production of the insulating sheath.

Features	Unit	Value
Material	-	High density closed cell polyethylene
Fire resistance class (EN 13501-1)	-	BL-s1,d0
Density	[kg/m ³]	33
Thermal conductivity at 0°C	[W/m·K]	0.0343
Thermal conductivity at 10°C	[W/m·K]	0.0354
Thermal conductivity at 40°C	[W/m·K]	0.0374
Traction resistance	[N/mm ²]	>0.18
Ultimate elongation	[%]	>80
Water vapour diffusion <u>resistance factor</u> - μ	-	7400

Connection systems

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Connection systems.

METALPERT® pipe	Pexal® Brass Brass press fittings	Bravopress® Multi-press PPSU fittings	PexalEasy® Full bore PPSU fittings	Pexal® Twist Brass compression fittings
16x2	•	•		
20x2	•	•		
26x3	•	•		