



Based on the test report LZF00-00942/23/Z00NZF from the Building Research Institute.

PRE-INSULATED PEX PIPES

Calculations in accordance with PN-EN ISO 12241:2022-12 and PN-EN 15632-1

With regard to double heating pipes, double domestic hot water pipes, and quadruple heating + domestic hot water pipes, the heat loss calculations were carried out in accordance with PN-EN ISO 10211:2014-09 and PN-EN ISO 6946:2017-10 using a computer program BISCO by PHYSIBEL.

The value of the equivalent thermal conductivity of air gaps was calculated using the radiation method in accordance with PN-EN ISO 10077-2:2017-10 9PKT.6.4.2

Design values of thermal conductivity coefficients λ .

No.	Description	λ [W/m ²]
1	Transmission pipe PEX	0,38
2	Corrugated casing made of HDPE	0,43
3	Insulation foamed polyethylene PE λ 40	0,040
4	Insulation foamed polyethylene PE+ PETM (silver layer)	0,033
5	Soil (substrate)	1,0

No.	Description	Assumed Value
1	Ground surface temperature	10 °C
2	Depth of cover	He – (D4 /2)=0,6 m
3	Ground Surface resistance	Re =0,2m ² K/W

Calculation results:

- with regard to single **ECO Plus** pipes, with the application of insulation for all layers of the foam **polyethylene (PE) mat with a silver coating PETM** – **tab. 1**
- with regard to single standard pipes, with the application of insulation consisting of one layer of **foam polyethylene (PE) mat with a silver PETM coating**, plus foam polyethylene (PE) insulation **tab. 2**
- with regard to double heating pipes, with the application of insulation consisting of one layer of foam polyethylene (PE) mat with a silver PETM coating, plus foam polyethylene (PE) insulation, taking into account the air gap – **tab. 3**
- with regard to double domestic hot water pipes, with the application of insulation consisting of one layer of foam polyethylene (PE) mat with a silver PETM coating, plus foam polyethylene (PE) insulation, taking into account the air gap – **tab. 4**
- with regard to quadruple heating + domestic hot water (c.o. + c.w.) pipes, with the application of insulation consisting of one layer of foam polyethylene (PE) mat with a silver PETM coating, plus foam polyethylene (PE) insulation, taking into account the air gap **tab. 5**



Tab.1 Heat losses from pre-insulated pipelines (single pipes) of the **Syncopex ECO Plus type – PE mat with PETM**
 $\lambda = 0,033 \text{ W/m}$

Catalog number	Product description	Heat losses q_l, E [W/m]				
		Fluid temperature Θ_i [°C] (supply)				
		50°C	60°C	70°C	80°C	90°C
100250140	250/140	14,7	18,4	22,1	25,8	29,4
100200125	200/125	16,9	21,2	25,4	29,6	33,9
100200110	200/110	13,3	16,6	19,9	23,2	26,5
100160090	160/90	13,5	16,9	20,3	23,7	27,1
100160075	160/75	10,3	12,9	15,4	18,0	20,6
100160063	160/63	8,4	10,4	12,5	14,6	16,7
100125050	125/50	8,8	11,0	13,2	15,4	17,6
100110040	110/40	7,9	9,9	11,9	13,9	15,9
100090032	90/32	7,8	9,8	11,7	13,7	15,6
100090025	90/25	6,3	7,8	9,4	11,0	12,5

Tab.2 Heat losses from pre-insulated pipelines (single pipes) of the **Syncopex Standard type – PE mat with PETM**
 $\lambda = 0,033 \text{ W/m} + \text{PE mat } \lambda_{40} = 0,040 \text{ W/mK}$

Catalog number	Product description	Heat losses q_l, E [W/m]				
		Fluid temperature Θ_i [°C] (supply)				
		50°C	60°C	70°C	80°C	90°C
100250140	250/140	16,8	21,0	25,2	29,4	33,7
100200125	200/125	18,9	23,6	28,3	33,0	37,7
100200110	200/110	15,4	19,2	23,1	26,9	30,8
100160090	160/90	15,2	19,0	22,8	26,6	30,4
100160075	160/75	11,8	14,7	17,7	20,6	23,5
100160063	160/63	9,9	12,3	14,8	17,3	19,7
100125050	125/50	10,1	12,7	15,2	17,7	20,2
100110040	110/40	9,3	11,6	13,9	16,2	18,5
100090032	90/32	9,0	11,3	13,5	15,8	18,0
100090025	90/25	7,4	9,2	11,1	12,9	14,8

Tab.3 Heat losses from pre-insulated pipelines (double heating pipes) of the **Syncopex type**.

Catalog number	Product description	Heat losses q_l, E [W/m]				
		Fluid temperature Θ_i [°C] (zasilanie/powrót)				
		50°C/30°C	60°C/40°C	70°C/50°C	80°C/60°C	90°C/70°C
200250275	250/2x75	16,2	21,8	27,5	33,2	39,0
200250263	250/2x63	13,7	18,5	23,3	28,2	33,1
200200250	200/2x50	12,3	16,6	21,0	25,4	29,8
200160240	160/2x40	10,4	14,0	17,6	21,3	25,0
200160232	160/2x32	9,2	12,5	15,8	19,1	22,5
200160225	160/2x25	7,9	10,7	13,5	16,4	19,2



Tab.4 Heat losses from pre-insulated pipelines (double domestic hot water pipes) of the Syncoflex type.

Catalog number	Product description	Heat losses q_l, E [W/m]		
		Fluid temperature Θ_i [°C] (supply / return)		
		40°C/30°C	50°C/40°C	60°C/50°C
202509050	250/90+50	12,9	18,1	23,4
202507540	250/75+40	12,1	17,0	22,0
202006332	200/63+32	10,8	15,3	19,8
201605025	160/50+25	8,9	12,4	15,9
201604025	160/40+25	7,6	10,7	13,8
201603225	160/32+25	7,0	10,0	12,9
201602525	160/25+25	6,9	9,8	12,8

Tab.5 Heat losses from pre-insulated pipelines (quadruple heating + domestic hot water pipes) of the Syncoflex type

Catalog number	Product description	Heat losses q_l, E [W/m]
		Fluid temperature Θ_i [°C] (supply / return)
		70°C-heating pipes supply, 30°C- heating pipes return 60°C – domestic hot water supply, 50°C – domestic hot water circulation
400250275	250/2x75+40+25	25,6
400250263	250/2x63+40+25	23,7
400250251	250/2x50+40+25	22,6
400200250	200/2x50+32+25	19,8
400200240	200/2x40+32+25	19,8
400160232	160/2x32+25+25	17,1
400160225	160/2x25+25+16	14,7