

Typical outputs - isoalupex

15.1

Typical outputs - isoalupex					
at 100 Pa/m (10 mm water column/m) and medium temp. of 80°C					
Carrier pipe	Velocity	Mass flow	Output at $\Delta t=30^{\circ}\text{C}$	Output at $\Delta t=40^{\circ}\text{C}$	Output at $\Delta t=50^{\circ}\text{C}$
d (mm)	(m/s)	(m ³ /h)	(kW)	(kW)	(kW)
20	0,31	0,23	7,8	10,4	13,0
25	0,37	0,42	14,3	19,0	23,8
32	0,45	0,86	29,1	38,9	48,5

See section 1 on design calculations.

Assumptions - heat loss

When comparing heat loss data, it is important to know the assumptions used in their calculation.

Several factors other than the properties of the pre-insulated pipe are of fundamental importance for heat loss.

The following parameters must be equal if a valid comparison of heat loss is to be made:

- Dimensions of carrier and jacket pipes
- Carrier pipe temperatures
- Soil lambda value
- Soil temperature
- Surface resistance
- Laying depth
- Distance between pipes

As it is in effect the lambda value of the insulation material that is compared, it is of course important that the correct lambda value be used.

The following pages contain heat loss tables for pre-insulated pipes. Heat loss calculations are based on the following assumptions.

Depending on the mechanical properties of the foam, pipes can be produced with a variety of lambda values down to 0,0225 W/m°C.

Lambda _{soil}	1.2000	W/m°C	Thermal conductivity - soil / sand Values of 1.5-2.0 W/m°C are typical for moist soils. Dry sand has a thermal conductivity of approx. 1.0 W/m°C.
Lambda	0.024	W/m°C	
R _o	0.0685	m ² °C/W	Surface resistance According to the EuHP District Heating Handbook, a value of 0.0685 m ² °C/W is usually suitable.
Laying depth H	600	mm	
t _{flow}	80.0	°C	Laying depth Should be stated in mm from upper edge of jacket pipe to soil surface (unpaved areas) or lower surface of paving.
t _{return}	40.0	°C	
t _{soil}	8.0	°C	
Distance between pipes C	100	mm	

Heat loss - isoalupex - single pipe

15.2.1

Heat loss - isoalupex - single pipe - Series 2

Alupex		Jacket pipe		Heat loss	U-value
d outside mm	Wall thickness mm	D outside mm	Wall thickness mm	W/m Φ_{total}	Φ_{total}
20	2,0	90	2,2	9,8	0,095
25	2,5	90	2,2	11,4	0,110
32	3,0	110	2,5	11,8	0,113

Heat loss - isoalupex - single pipe - Series 3

Alupex		Jacket pipe		Heat loss	U-value
d outside mm	Wall thickness mm	D outside mm	Wall thickness mm	W/m Φ_{total}	Φ_{total}
20	2,0	110	2,5	8,7	0,083
25	2,5	110	2,5	9,9	0,095

Heat loss is specified per metre trench.
U-values are specified per metre pipe.

Other dimension combinations and insulation classes are also available.

Heat loss - isoalupex - double pipe - series 2

Alupex		Jacket pipe		Heat loss	U-value
d outside mm	Wall thickness mm	D outside mm	Wall thickness mm	W/m Φ_{total}	Φ_{total}
20+20	2,0+2,0	110	2,5	6,8	0,130
25+25	2,5+2,5	125	2,5	7,2	0,138
32+32	3,0+3,0	125	2,5	9,3	0,178

Heat loss - isoalupex - double pipe - series 3

Alupex		Jacket pipe		Heat loss	U-value
d outside mm	Wall thickness mm	D outside mm	Wall thickness mm	W/m Φ_{total}	Φ_{total}
20+20	2,0+2,0	125	2,5	6,1	0,116
25+25	2,5+2,5	140	3,0	6,5	0,125
32+32	3,0+3,0	140	3,0	8,0	0,154

Heat loss is specified per metre trench.
U-values are specified per metre trench.

Other dimension combinations and insulation classes are also available.

Heat loss - isoalupex - differentiated carrier pipes

15.2.3

Heat loss - isoalupex - double pipe - differentiated carrier pipe diameters

Alupex		Jacket pipe		Heat loss	U-value
d outside mm	Wall thickness mm	D outside mm	Wall thickness mm	W/m Φ_{total}	Φ_{total}
25+20	2,5+2,0	125	2,5	6,6	0,126
25+20	2,5+2,0	140	3,0	6,0	0,116
32+25	3,0+2,5	125	2,5	8,0	0,154
32+25	3,0+2,5	140	3,0	7,2	0,139

Heat loss is specified per metre trench.
U-values are specified per metre trench.

Other dimension combinations and insulation classes are also available.

Connection at branches

Where isoalupex is connected to traditional steel pipes, the following rules must be observed:

- If tee branches are used, the isoalupex pipe can be connected without any need for relief measures, $L = \infty$. See fig. 1.
- If parallel branches are used, the isoalupex pipe must be bent immediately after the connection point, see fig. 2.

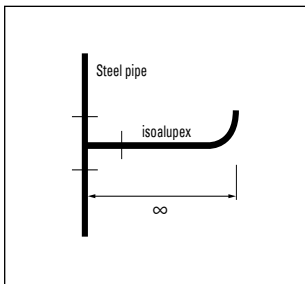


fig. 1

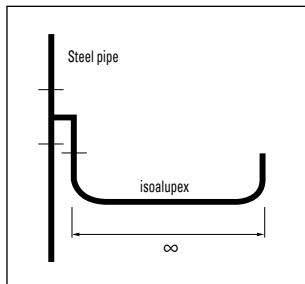


fig. 2

Connection to steel pipes

Where isoalupex is connected in extension of traditional steel pipes, the following rules must be observed:

- The maximum distance to a fix point on the pipe line must comply with fig. 3.
- When connecting isoalupex to steel pipes which are not fixated, the rules shown in fig. 4 must be observed.
- When connecting isoalupex to steel pipes > 25 m, follow the rules shown in fig. 5.

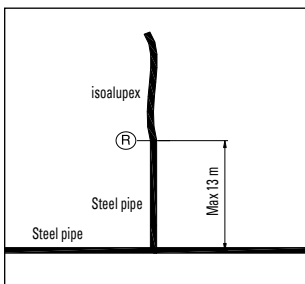


fig. 3

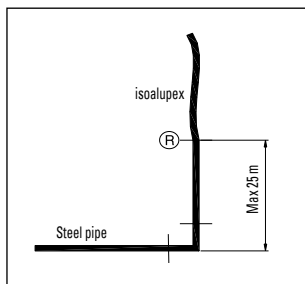


fig. 4

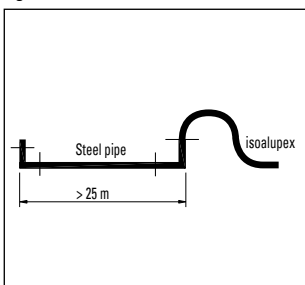


fig. 5

Unrolling flexible piping

Always unroll/bend flexible piping in the coil direction. (see fig. 6)

Where this is not possible, the piping should be handled as described in section 3.

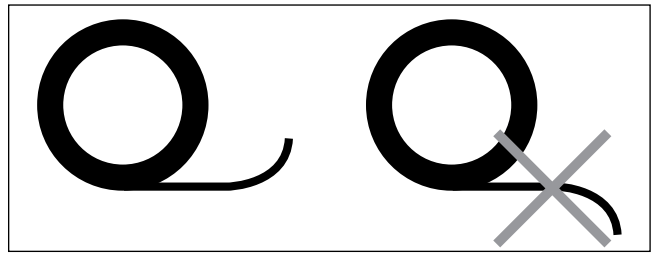


fig. 6

Service lines

Pipe expansion should be considered in connection with building lead-ins. If the pipe is secured within the building, or movement is prevented in some other way, expansion relief must be provided before the pipe is led into the building.

The rules shown in fig. 7 and fig. 8 must be observed.

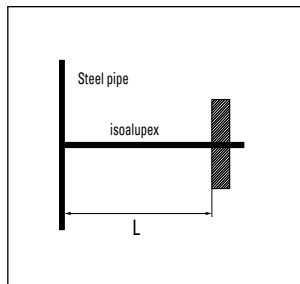


fig. 7

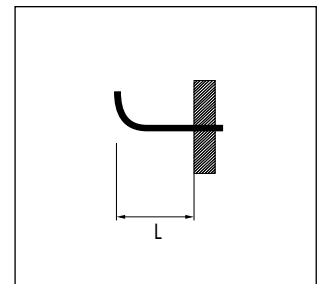


fig. 8

No displacement permissible, $L = \text{max. } 6 \text{ m}$.
Displacement permissible, $L = \infty$.

No displacement permissible, $L = \text{max. } 8 \text{ m}$.
Displacement permissible, $L = \infty$.

Where flexible piping is installed in conduits or using soil displacement techniques, there may be limitations on the stated lengths, or requirements on other expansion-related considerations.

Note: Laying rules apply for both single and double pipes.

isoalupex - single pipe

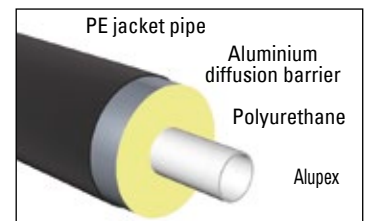
15.4

isoalupex - single pipe - series 2

Alupex		Jacket pipe		Bending radius	Weight	Water quantity	Std length
d outside mm	Wall mm	D outside mm	Wall mm	m	kg/m	l/m	max. m
20	2,0	90	2,2	0,9	1,1	0,20	250
25	2,5	90	2,2	0,9	1,2	0,31	250
32	3,0	110	2,5	1,1	1,7	0,53	200

isoalupex - single pipe - series 3

Alupex		Jacket pipe		Bending radius	Weight	Water quantity	Std length
d outside mm	Wall mm	D outside mm	Wall mm	m	kg/m	l/m	max. m
20	2,0	110	2,5	1,1	1,5	0,20	200
25	2,5	110	2,5	1,1	1,5	0,31	200



Other dimensions can be supplied on request.

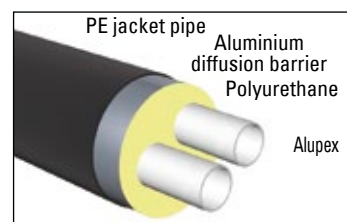
isoalupex - double pipe - series 2

Alupex		Jacket pipe		Bending radius	Weight	Water quantity	Std length
d outside mm	Wall mm	D outside mm	Wall mm	m	kg/m	l/m	max. m
20+20	2,0+2,0	110	2,5	1,1	1,7	0,20+0,20	200
25+25	2,5+2,5	125	2,5	1,25	2,1	0,31+0,31	150
32+32	3,0+3,0	125	2,5	1,25	2,3	0,53+0,53	150

isoalupex - double pipe - series 3

Alupex		Jacket pipe		Bending radius	Weight	Water quantity	Std length
d outside mm	Wall mm	D outside mm	Wall mm	m	kg/m	l/m	max. m
20+20	2,0+2,0	125	2,5	1,25	2,0	0,20+0,20	150
25+25	2,5+2,5	140	3,0	1,4	2,6	0,31+0,31	140
32+32	3,0+3,0	140	3,0	1,4	2,8	0,53+0,53	140

Other dimensions can be supplied on request.



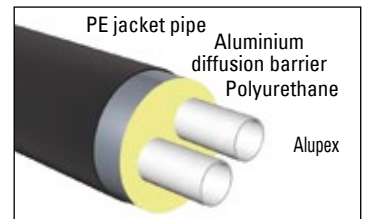
isoalupex - differentiated carrier pipes

15.4.2

isoalupex - double pipe - differentiated carrier pipe diameters

Alupex		Jacket pipe		Bending radius	Weight	Water quantity	Std length
d outside mm	Wall mm	D outside mm	Wall mm	m	kg/m	l/m	max. m
25+20	2,5+2,0	125	2,5	1,25	2,0	0,31+0,20	150
25+20	2,5+2,0	140	3,0	1,4	2,5	0,31+0,20	150
32+25	3,0+2,5	125	2,5	1,25	2,2	0,53+0,31	150
32+25	3,0+2,5	140	3,0	1,4	2,7	0,53+0,31	140

Other dimensions can be supplied on request.



Press fittings - isoalupex

15.5

Press sleeve connector



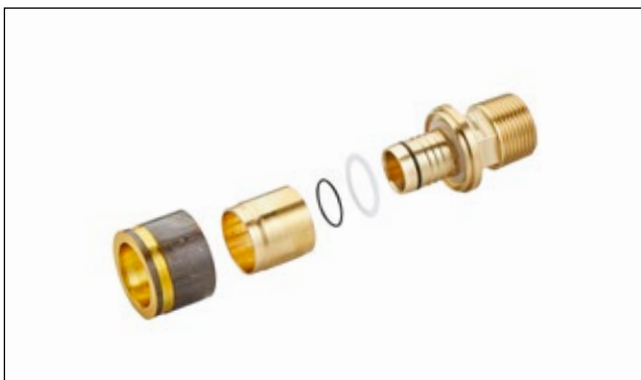
Alupex outside dia. mm	20	25	32
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Press sleeve connector - blanking plug



Alupex outside dia. mm	20	25	32
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Press nipple



Alupex outside dia. mm	20	25	32
Pipe thread	3/4"	3/4"	1"

Press weld adapter



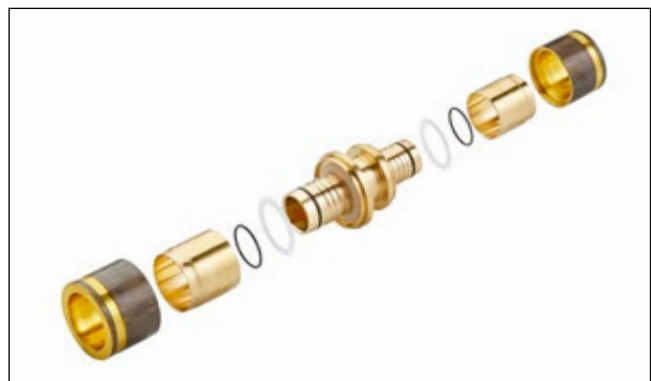
Alupex outside dia. mm	20	20	25	25	32
Steel pipe outside dia. mm	26,9	33,7	26,9	33,7	33,7

Press weld adapter - blanking plug



Alupex outside dia. mm	20	20	25	25	32
Steel pipe outside dia. mm	26,9	33,7	26,9	33,7	33,7

Press reduction adapter



Alupex d1 outside dia. mm	25	32	32
Alupex d2 outside dia. mm	20	20	25

Press fittings - isoalupex

15.5.1

Press nipple - 90°



Alupex outside dia. mm	20	25	32
Pipe thread	3/4"	3/4"	1"

Pipe connector



Steel pipe outside dia. mm	26,9	33,7

Available with welded-on press coupling.

Press T-piece



Branch isoalupex Outside dia. mm	Run pipe isoalupex d outside mm		
	20	25	32
20	x	x	x
25		x	x
32			x

Also available with run pipe reduction, e.g. 32-20-25 mm.

Compression fittings - isoalupex

15.5.2

Compression adapter - nipple



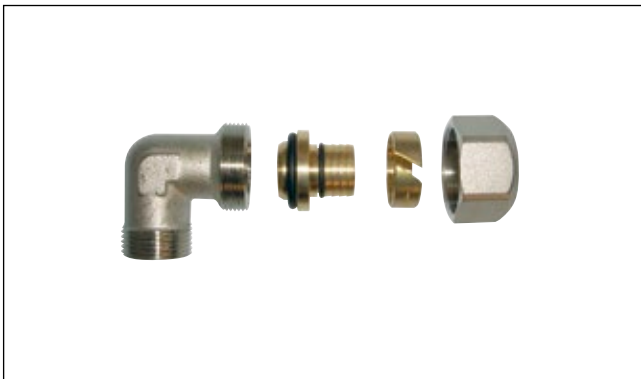
Alupex outside dia. mm	20	25	32
Pipe thread	3/4"	3/4"	1"

Compression adapter - socket



Alupex outside dia. mm	20	25	32
Pipe thread	3/4"	3/4"	1"

Compression adapter - 90° nipple



Alupex outside dia. mm	20	25	32
Pipe thread	3/4"	3/4"	1"

Compression adapter - 90° socket



Alupex outside dia. mm	20	25	32
Pipe thread	3/4"	3/4"	1"

Compression sleeve connector



Alupex outside dia. mm	20	25	32
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