Typical outputs - isoflex 14.1

	Typical outputs - isoflex				
	at 100 Pa/m (10 mm water column/m) and medium temp. of 80°C				
Carrier pipe	Velocity	Mass flow	Output at Δt=30°C	Output at Δt=40°C	Output at Δt=50°C
d (mm)	(m/s)	(m^3/h)	(kW)	(kW)	(kW)
20	0,28	0,20	7	10	13
25	0,38	0,47	16	21	26
28	0,41	0,66	23	30	38

See section 1 on design calculations.

isoplus Piping Systems A/S · Tel.: +45 64 41 61 09 · E-mail: iso@isoplus.dk · www.isoplus.dk

Heat loss - isoflex 14.2

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
Lambda	0.024	W/m°C
R_o	0.0685	m^2 °C/W
Laying depth H	600	mm
t_{flow}	80.0	°C
t_{return}	40.0	°C
t_{soil}	8.0	°C
Distance between pipes C	100	mm

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.

Surface resistance
According to the EuHP District Heating Handbook, a value of 0.0685 m2 °C/W is usually suitable.

Laying depth
Should be stated in mm from upper edge of jacket pipe to soil surface (unpaved areas) or lower surface of paving.

Heat loss - isoflex 14.2.1

Heat loss - isoflex - single pipe					
Steel pipe		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	75	2,2	11,4	0,109
25	2,0	90	2,2	11,7	0,112
28	2,0	90	2,2	12,8	0,123

Heat loss is specified per metre trench.
U-values are specified per metre pipe.
Flex pipes are continuously produced pipes with integrated diffusion barriers between the jacket pipe and the polyurethane foam layer.

isoplus Piping Systems A/S · Tel.: +45 64 41 61 09 · E-mail: iso@isoplus.dk · www.isoplus.dk

Laying rules - isoflex 14.3

Connection at branches

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

- When connecting to a straight branch, the maximum length of the isoflex pipe must not exceed the limit shown in fig. 1.
- When connecting to a parallel branch as shown in fig. 2, there are no limitations on the length of the isoflex pipe.

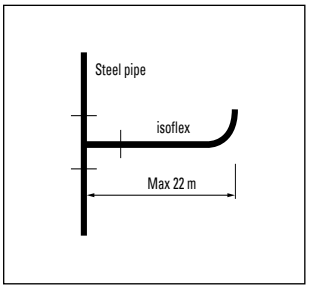


fig. 1

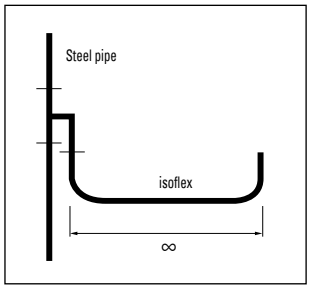


fig. 2

Connection to steel pipes

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

- The maximum distance from a fix point on the pipe run must not exceed the limit shown in fig. 3.
- When connecting isoflex to steel pipes that are not fixated, the rules shown in fig. 4 must be observed.
- When connecting isoflex to steel pipes > 25 m, follow the rules shown in fig. 5.

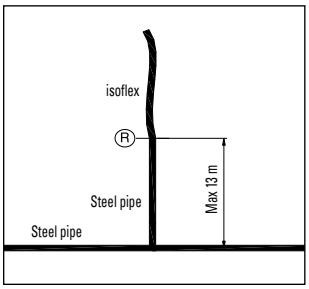


fig. 3

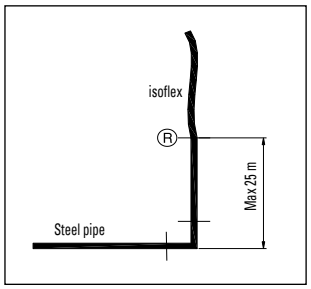


fig. 4

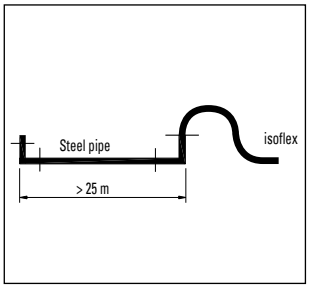


fig. 5

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.

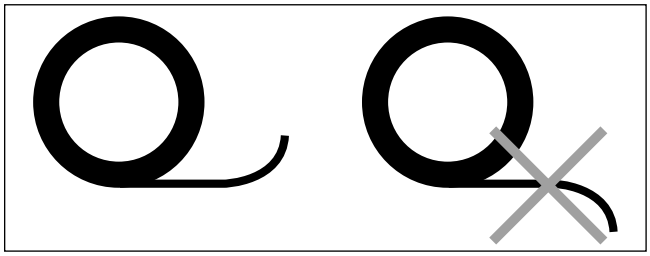


fig. 6

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.

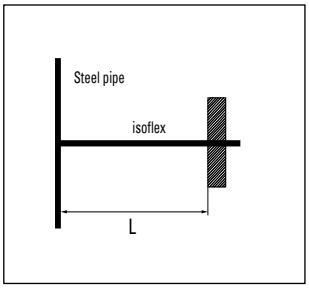


fig. 7

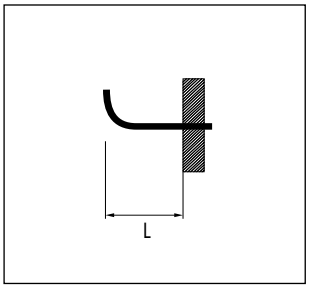


fig. 8

No displacement permissible, L = max. 8 m. Displacement permissible, L = max. 22 m.

No displacement permissible, L = max. 12 m. Displacement permissible, L = ∞.

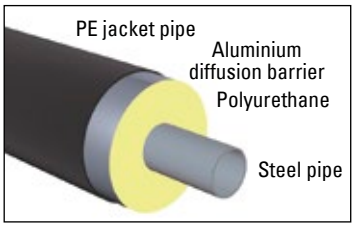
Where flexible piping is installed in conduits or using soil displacement techniques, there may be limitations on the stated lengths, or requirements on other expansion-related considerations.

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

isoflex - single pipe

isoflex - single pipe							
Steel pipe		Jacket pipe		Bending radius	Weight	Water quantity	Std length
d outside mm	Wall mm	D outside mm	Wall mm	m	kg/m	l/m	m
20	2,0	75	2,2	0,8	1,7	0,20	100
20	2,0	90	2,2	0,8	1,9	0,20	100
25*	2,0	90	2,2	0,8	2,2	0,34	100
28	2,0	90	2,2	0,8	2,3	0,45	100

* Available to order



isoplus Piping Systems A/S · Tel.: +45 64 41 61 09 · E-mail: iso@isoplus.dk · www.isoplus.dk

Fittings - isoflex 14.4.1

Threaded coupling

Steel pipe d outside mm	20	25	28
Threaded coupling	3/4"	3/4"	1"

Pipe connector

Steel pipe d outside mm	26,9	33,7