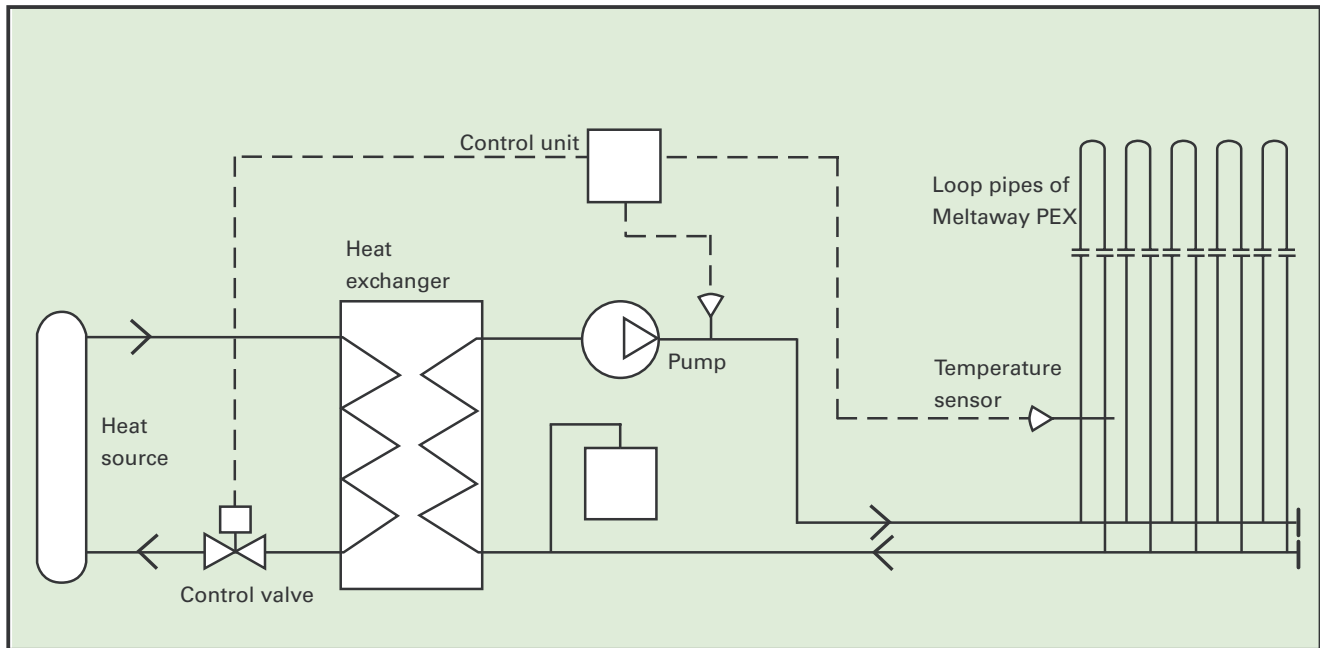


Wirsbo Surface Heating

MELTAWAY Manual



Principles



Meltaway needs water at a temperature of only $+35^{\circ}\text{C}$ which means a wide variety of heat sources can be used, including district heating return water, waste heat from various processes, heat pumps, etc. The heat from any suitable source can be transferred through a heat exchanger to the Meltaway system. A pump in the Meltaway circuit circulates the warm water. The

temperature sensor just below the ground surface maintains the surface temperature at the required level. A sensor in the supply line regulates the temperature in the heating loops.

All pipes and couplings laid in the ground or floor are made of plastic, which eliminates the risk of corrosion.

Design

A fundamental principle for outdoor systems is that all loops from a given distribution pipe manifold should be of equal lengths. The heat will then be distributed evenly, without the use of throttling valves. In larger systems with several distribution pipes, the system is balanced by calculating the pressure drop in the loops, distributors and supply pipes. In underfloor heating systems, the distribution pipes can be mounted on a wall or in conduits, recesses, etc.

Meltaway PEX is softer and more flexible than Wirsbo-PEX pipes, and is suitable for laying in sand, asphalt, etc.

A Meltaway system can be rated for heat outputs ranging up to 350 W per m^2 . The output required is dependent on the geographical location and the requirement of the system. Due to our research work and long experience, we can always recommend an optimum output. The depth of laying and the loop centre-to-centre distance are also matched to the relevant system.

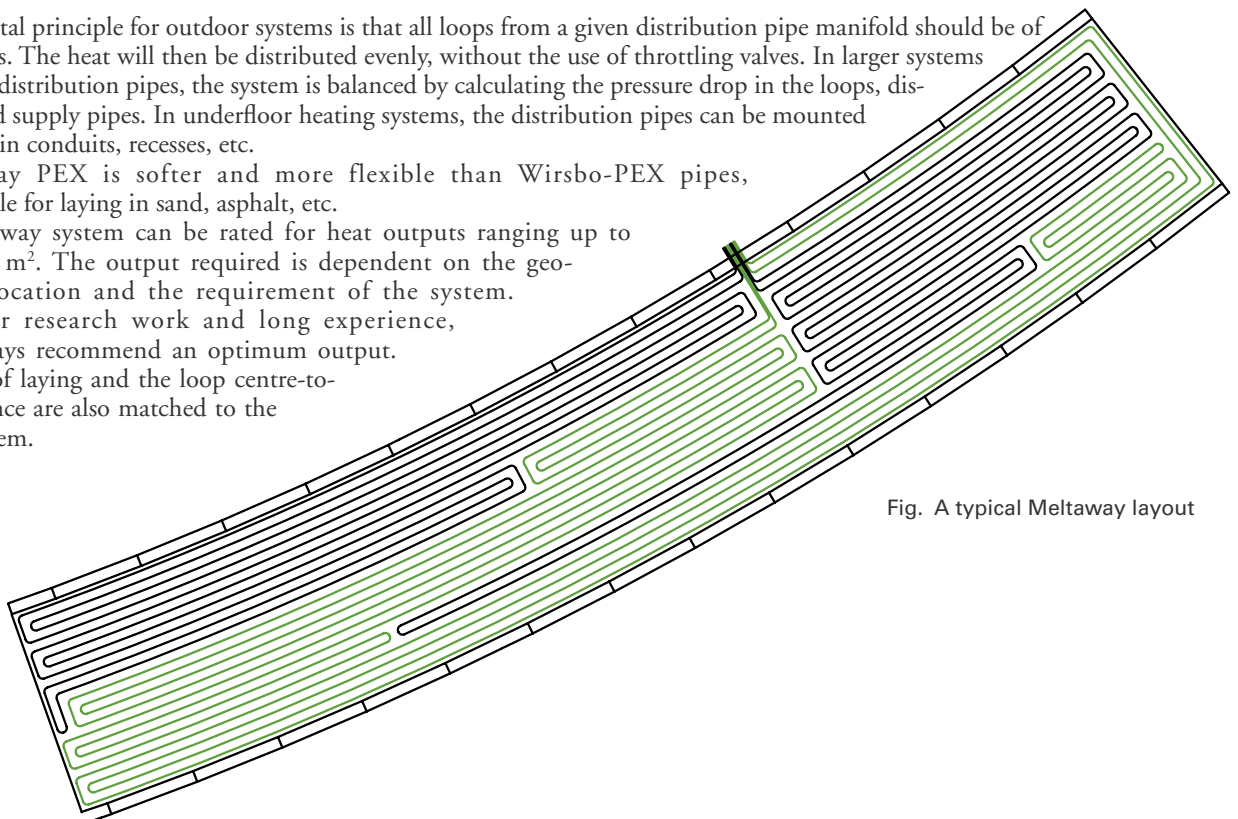


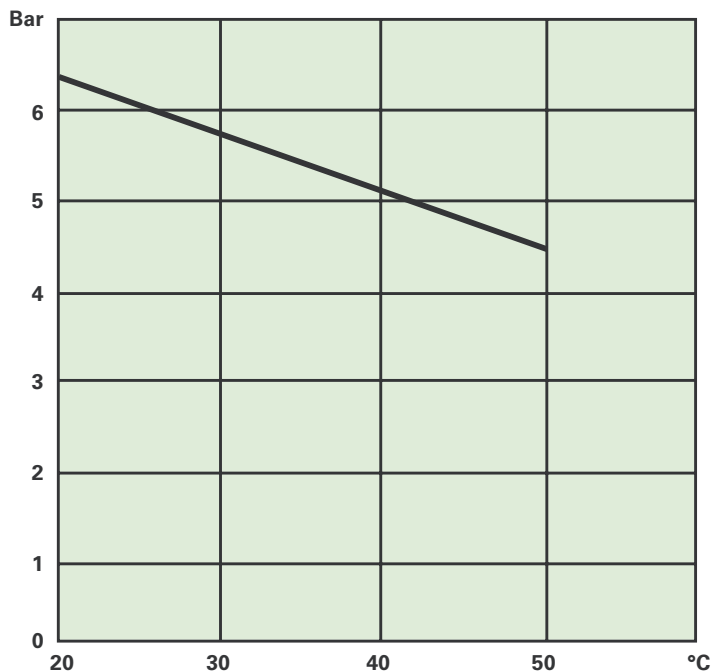
Fig. A typical Meltaway layout

Media pipes

Meltaway PEX pipes

Mechanical properties		Value	Unit	Testing standard
Density		925	kg/m ³	
Tensile strength	(at 20°C)	12	N/mm ²	DIN 53455
Elongation on failure	(at 20°C)	300	%	DIN 53455
Impact strength	(at 20°C)	No fracture	kJ/m ²	DIN 53453
	(at -50°C)	No fracture	kJ/m ²	DIN 53453
Modulus of elasticity	(at 20°C)	117±13	MPa	
Modulus of elasticity	(at 50°C)	51±4	MPa	
Application temperature Meltaway PEX		up to 50	°C	
Thermal properties				
Coefficient of linear expansion	(at 20°C)	1.8x10 ⁻⁴	m/m°C	
Specific heat		2.3	kJ/kg°C	
Thermal conductivity		0.4	W/m°C	

Maximum system working pressure



Distribution pipe: Polyethylene (HDPE), complete with compact-welded 25 mm ROSEX couplings.

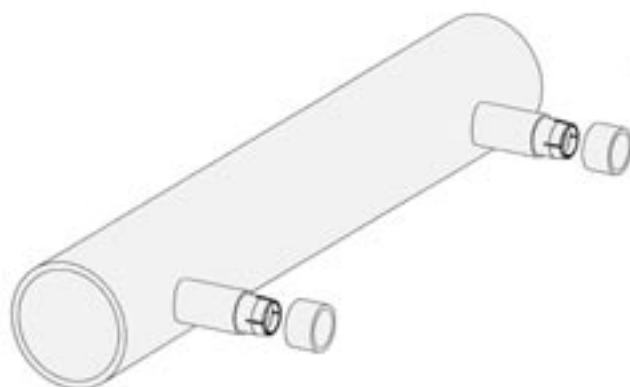
Supply pipes: Polyethylene (HDPE) to Swedish Standard SS 3362.

Pipe fittings: Butt welding of polyethylene (HDPE) to Swedish Standard SS 3362.

ROSEX coupling for jointing Meltaway pipes.

Range of materials

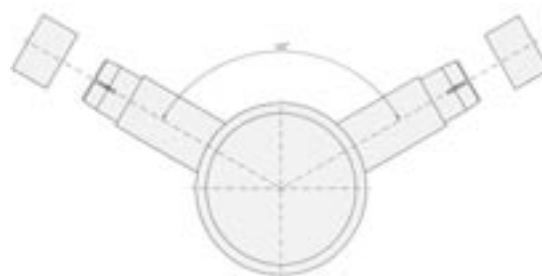
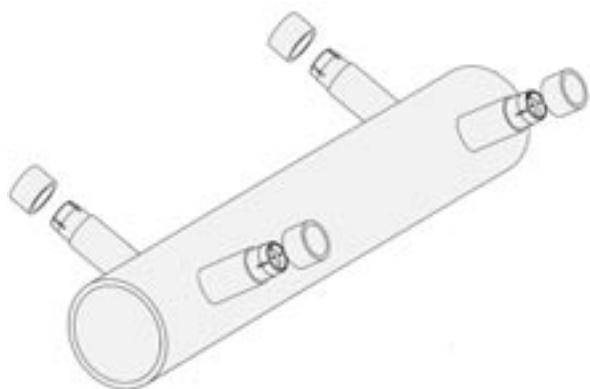
Distribution pipes



Meltaway single distribution pipes made of HDPE pipe and equipped with compact-welded ROSEX couplings.

Article No.	O.D. x T, mm	ID., mm	L, mm	ROSEX couplings between centres, mm
2102610	75x6.8	61.4	6000	500
2102620	110x6.6	96.8	6000	500
2102630	160x9.5	141.0	6000	500

The distribution pipes can be made in shorter lengths and/or with different distances between centres, although no less than 100 mm.



Meltaway double distribution pipes made of HDPE pipe and equipped with compact-welded ROSEX couplings oriented in two directions with an angle of 120° between them.

Article No.	O.D. x T, mm	ID., mm	L, mm	ROSEX couplings between centres, mm
2102640	75x6.8	61.4	6000	500
2102650	110x6.6	96.8	6000	500
2102660	160x9.5	141.0	6000	500

Can also be manufactured with a different angle and different distances between centres.

Supply pipe – Meltaway supply pipe of HDPE

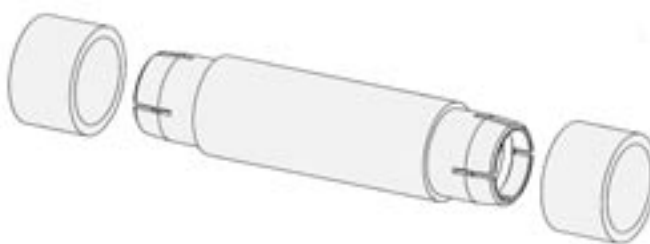


Article No.	Description	O.D. x T, mm	ID., mm	L, mm
2101010	HDPE supply pipe	50x4.6	40.8	6000
2101020	HDPE supply pipe	75x6.8	61.4	6000
2101030	HDPE supply pipe	110x6.6	96.8	6000
2101040	HDPE supply pipe	160x9.5	141.0	6000
2101050	HDPE supply pipe	200x11.9	176.2	6000

Meltaway PEX pipe of cross-linked polyethylene

Article No.	Description	O.D. x T, mm	ID., mm	Coil length, m
2000033	Meltaway loop pipe	25x2.3	20.4	920
2000035	Meltaway loop pipe	25x2.3	20.4	1020
2000040	Meltaway loop pipe	25x2.3	20.4	odd lengths < 1000

ROSEX Straight couplings



Article No.	Description	Dimension for Meltaway pipe, mm	L, mm
2111025	ROSEX coupling	25x2.3	150

Other products in the range

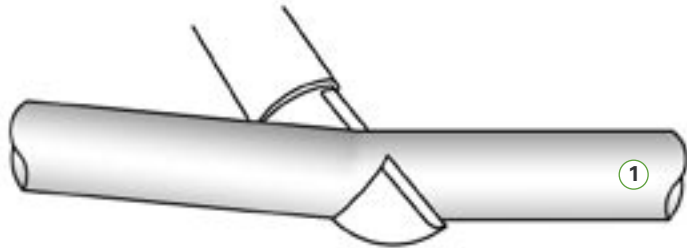
In addition to the above range, the following products are available in HDPE for pipe diameters 50 to 200 mm: Elbows, T-pieces, reducers, support flanges and plugs. Also loose flanges and blank flanges of aluminium for pipe diameters 50 to 200 mm, and 25 mm WIPEX couplings (Art no. 58255) for threaded connections.

Mounting instruction ROSEX-coupling

How to joint Meltaway PEX-pipes with ROSEX-coupling



The coupling consists of two lock rings and one joint sleeve with prefabricated o-rings and grip rings



- ① Cut the pipe perpendicular. Chamfer the pipe ends with a suitable knife



- ② Slide a lock ring over the pipe



- ③ Apply silicone to the o-ring and pipe. Fully insert the pipe into the fitting and push the pipe over the o-ring



- ④ Pull the lock ring over the joint sleeve



- ⑤ Repeat the procedure with the other pipe end

Pipe and system description

A Handling

- Meltaway is not an oxygen diffusion tight system and must not be connected to other heating systems without a heat exchanger between the two.
- Store Meltaway PEX pipe indoors, or outdoors under a tarpaulin. Do not remove the black packaging. An extended period of storage in sunlight will damage the product.
- The pipe can be covered with asphalt surfacing at a maximum temperature of 120°C, provided cold water flows through the pipes while the asphalt is being laid, and that the pipe is kept under pressure of 0.2 MPa.
- The pipe is made of silane cross-linked polyethylene (XLPE).
- Meltaway PEX pipe is soft and easy to handle.

B Installation technique

- The pipe can be covered with asphalt, gravel, sand and slab or can be cast into concrete.
- For surface heating, the pipe should be laid about 100 mm below the finished surface level and at a centre-to-centre distance of 250 mm in order to ensure a uniform temperature on the surface.
- Mark the U-bends on site before laying the pipes.
- When Meltaway pipes are laid, they should be secured in position with spacers which should be removed when the pipes are covered, or using plastic holder bands that remain. In a concrete installation the pipe is fixed using tying wire.
- Fill the pipes with water and pressurize them before the surfacing work is started (internal pressure of 0.2 MPa).
- Use butt welding for jointing the supply pipes and the distribution pipes.

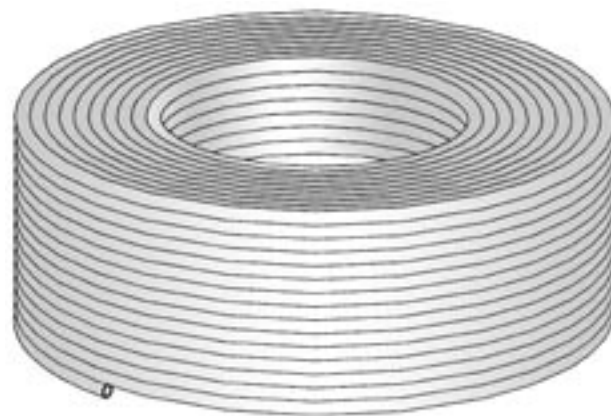
C Miscellaneous

- Meltaway PEX pipe is used for underfloor heating in larger premises, such as hangars, workshops and warehouse premises. The supply pipes and distribution pipes for such areas are made of plastic, copper or stainless steel.
- The Meltaway system has been installed in numerous football pitches around Europe.
- Supply and distribution pipes, including couplings, are of high-density polyethylene (HDPE), so all components are made of the same material, with the same coefficient of linear expansion.
- Straight couplings for Meltaway pipe are made entirely of HDPE and have O-ring seals.

Leakage testing

Leakage testing should be carried out as follows:

- purge the air out of the system, and pressurize the system to approx. 2 x working pressure.
- if the ambient temperature is lower than the leakage testing water temperature, the pressure will increase.
- if the ambient temperature is higher than the leakage testing water temperature, the pressure will drop.



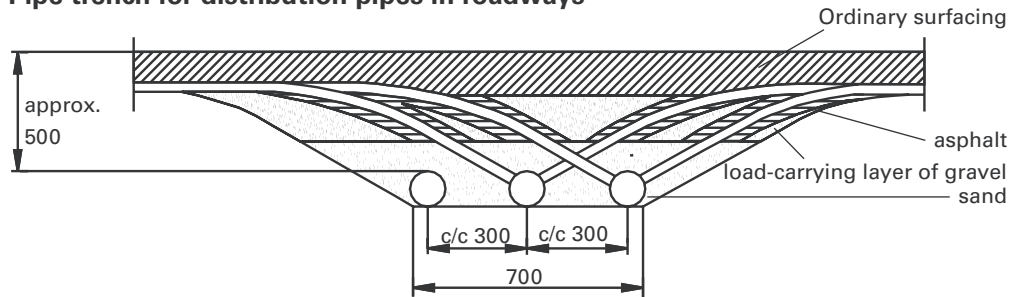
- this pressure variation is due to the fact that the plastic expands and contracts more than the water.
- maintain the pressure for 30 minutes, and visually inspect the pipes and joints.
- adjust the test pressure by means of the filler and drain valves. If the test pressure in the system remains constant for 90 minutes, the system is tight and the loops can be covered.
- N.B. Meltaway pipes can be asphalted only if cold water is kept flowing through them (the asphalt temperature must not exceed 120°C). Wirsbo will be pleased to assist with further information.

Typical section

Distribution pipes

All dimensions in mm

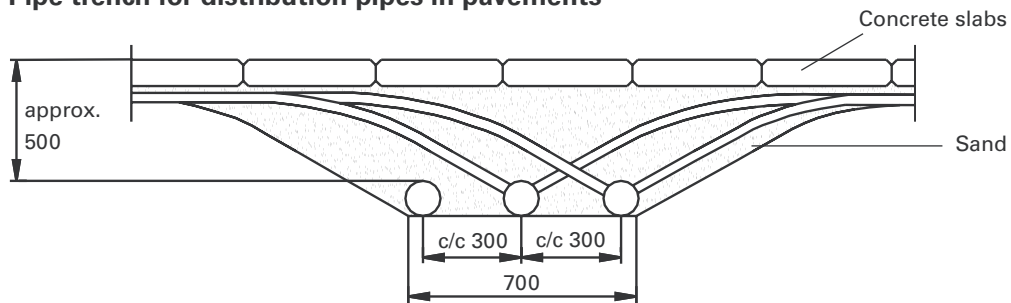
Pipe trench for distribution pipes in roadways



The sand should be 10 cm above the crown of the pipe and should be compressed with water.

Bed in accordance with local standards.

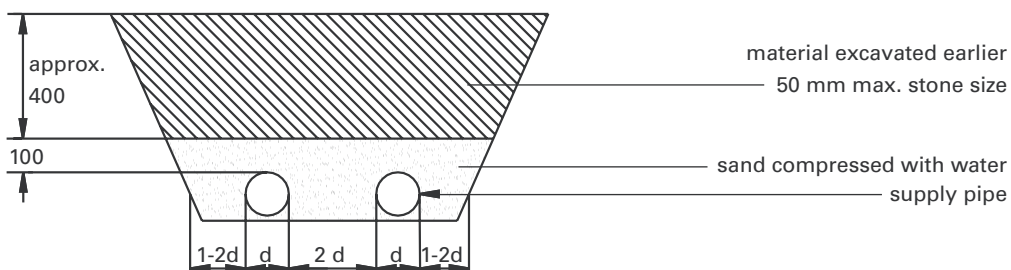
Pipe trench for distribution pipes in pavements



Bed in accordance with local standards.

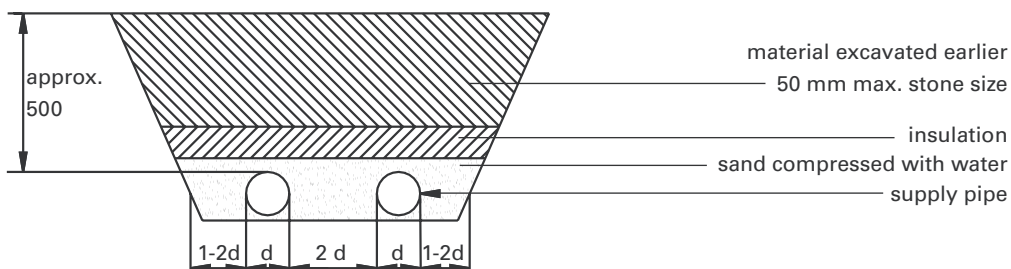
Supply pipes

Pipe trench for supply pipe without insulation



Bed in accordance with local standards.

Pipe trench for supply pipe with insulation

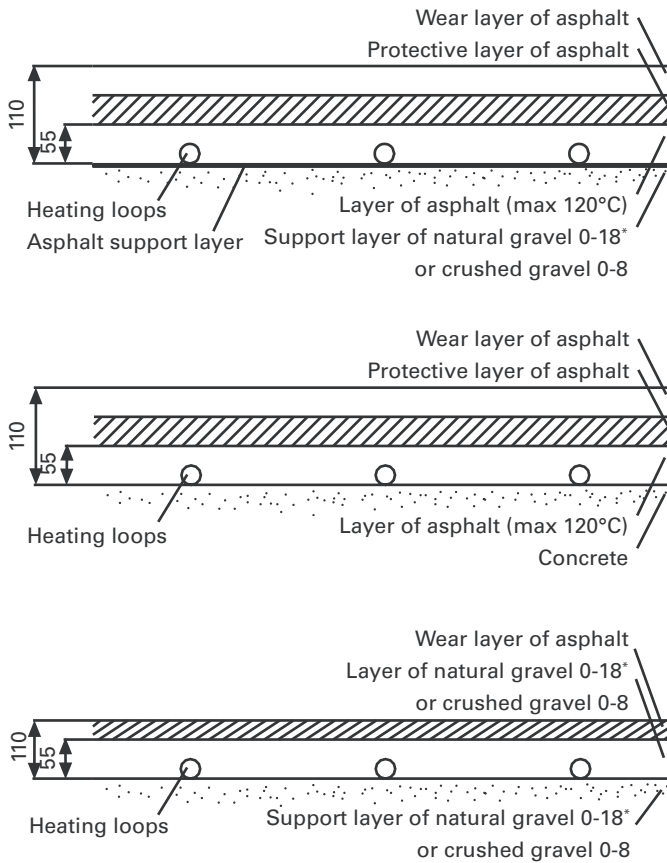


Bed in accordance with local standards.

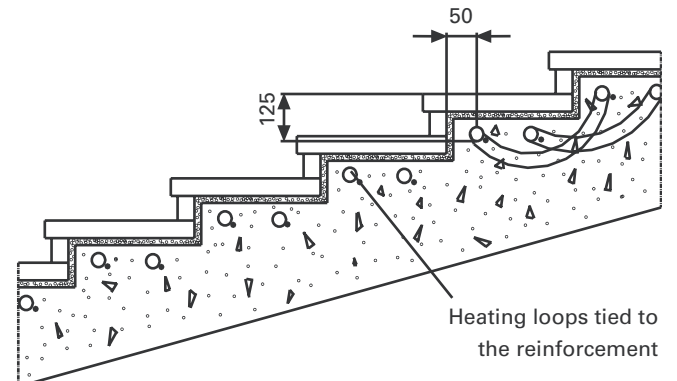
Alternative laying methods and depths

Meltaway Surface Heating

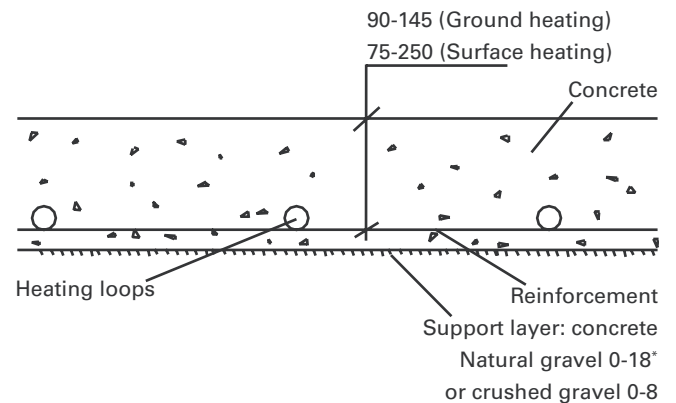
Asphalted surfaces



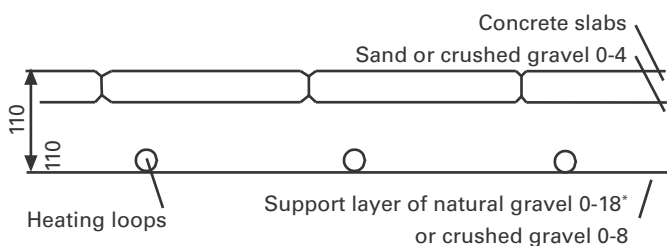
Steps



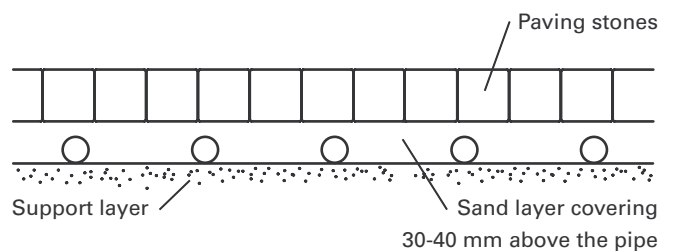
Concrete surfaces



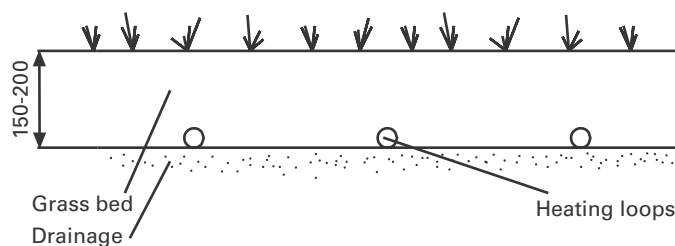
Slab-surfaced pavements and roadways



Paving stones



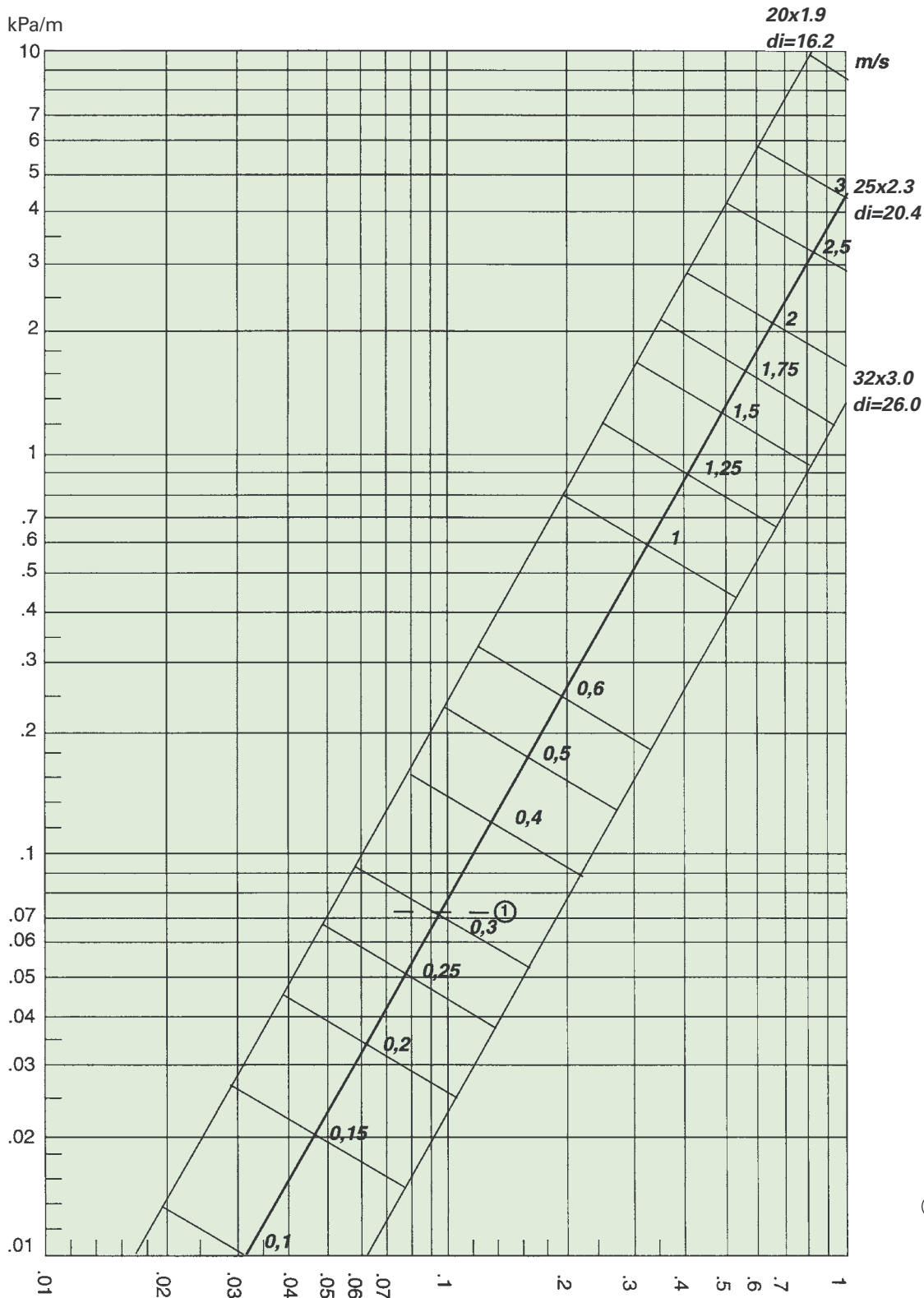
Grassed surfaces



*A mixture of natural gravel with stones in sizes 0-18 mm

Pressure loss nomogram for Meltaway pipes

Meltaway 25 mm x 2.3 mm pipe

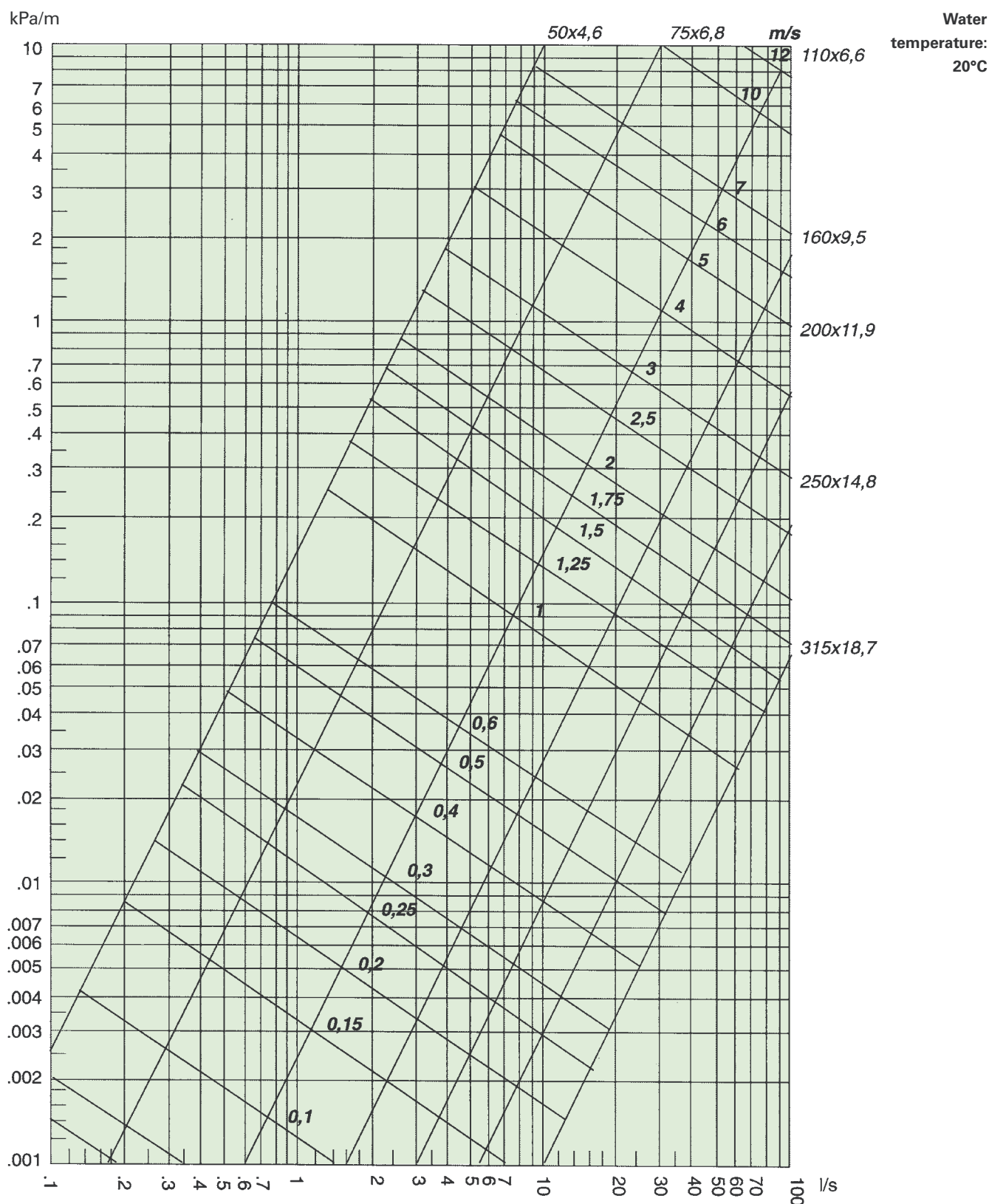


Water temperature: 20°C

① Recommended min. water velocity (in view of the risk of stagnant air bubbles in vertical pipes.)

Pressure loss nomogram for Meltaway supply and distribution pipes

Meltaway Supply pipes



Support

We can support you with everything from the first layout, design, materials delivery, supervision, inspection of surfacing work, and up to the finally surfaced system. We can also submit a fixed price for any Meltaway system.

