PAROC®
Better built environment

Thermal Insulation of Pipes

PAROC® Academy

Heat and water pipes

Application	Reason to insulate
Heating pipes	Economical heat insulation
Comfort cooling pipes	Condensation Economical insulation
Hot water pipes	Economical heat insulation Keep hot water hot for health reasons Safety requirements
Cold drinking water pipes	Condensation Keep cold water cold for health reasons

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Pipe insulation

- **Hot pipes**
  - Hot tap water against heat loss
    > right temperature at the tap
  - Insulation against heat loss
- **Cold pipes**
  - Cold tap water against heating
    > avoid risk of spreading disease
  - Comfort cooling against
    - heating of cold media
    - condensation

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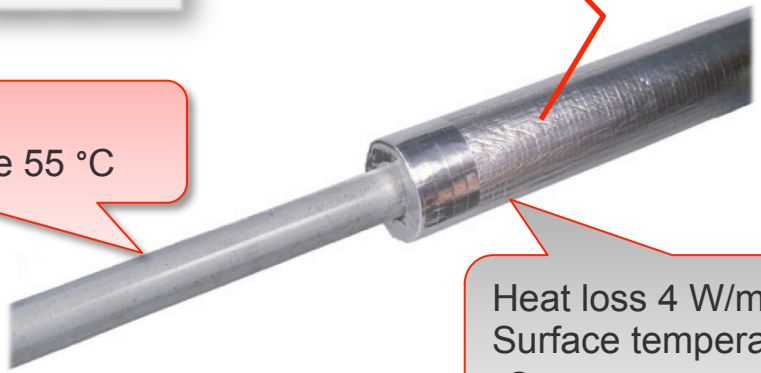
Heat loss pipes

Medium temperature 55 °C
Surrounding temp. 20 °C

Heat loss 40 W/m
Surface temperature 55 °C

ø 28 mm

PAROC Hvac Section AluCoat
Insulation thickness 60 mm



Heat loss 4 W/m
Surface temperature 22 °C

Annual heat loss
Non-insulated 40 W x 8760 hours= 350 kWh/m, y
Insulated 4 W x 8760 hours= 35 kWh/m, y

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Heat loss

Pipe diameter 22 mm
Hot tap water 55 °C
Surrounding temp. 20 °C

	Insulation	λ-value W/m°C	Thickness mm	Heat loss W/m	Heat loss kWh/m, year
CE	PAROC Hvac Section AluCoat T	0,037	60	4,0	35
CE	Flexible pipe section	0,044	60	4,8	42
CE	Flexible pipe section	0,044	90	4,1	36
	Plus Prisol * at 30 °C	0,043*	15	8,3	73

We are insulating to reduce energy loss, not only condensation!

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Comfort cooling

Pipe diameter 28 mm
Cooling medium 8 °C
Surrounding temp. 23 °C
Relative humidity 60 %

Insulation material	**Thickness** mm	**Heat loss** W/m	**Heat loss** kWh/m, year
Cellular rubber	13	3,5	31
Cellular rubber	19	2,8	25
PAROC Hvac Section AluCoat T	40	1,9	17
PAROC Hvac Section AluCoat T	60	1,6	14

It costs approximately three times more to provide cooling compared to heating.

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Condensation

When insulating cold installations, the insulation shall be dimensioned so that the surface temperature is higher than the surrounding air dew point.

After that, you have to apply a facing with high water vapor diffusion resistance to reduce the moisture diffusion to the cold surface. All joints in the facing need to be properly sealed e.g. with tape.

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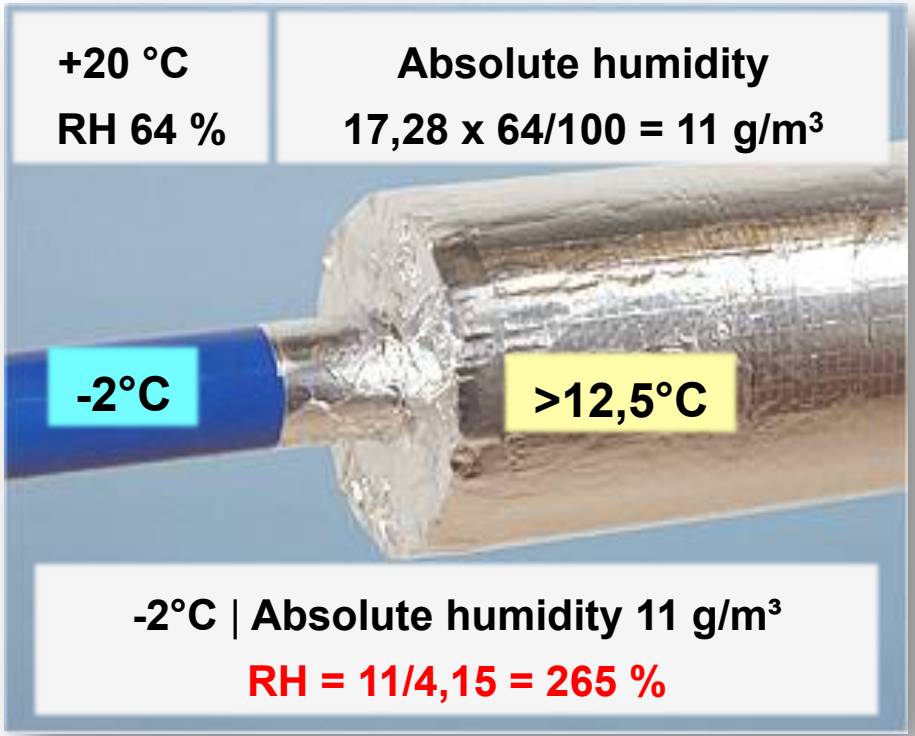
Condensation



Temperature °C	Saturation humidity, g/m³
-12	1,81
-10	2,15
-8	2,54
-6	3,00
-4	3,53
-2	4,15
0	4,86
2	5,57
4	6,37
6	7,26
8	8,27
10	9,40
12	10,67
14	12,05
16	13,66
18	15,36
20	17,28
22	19,40

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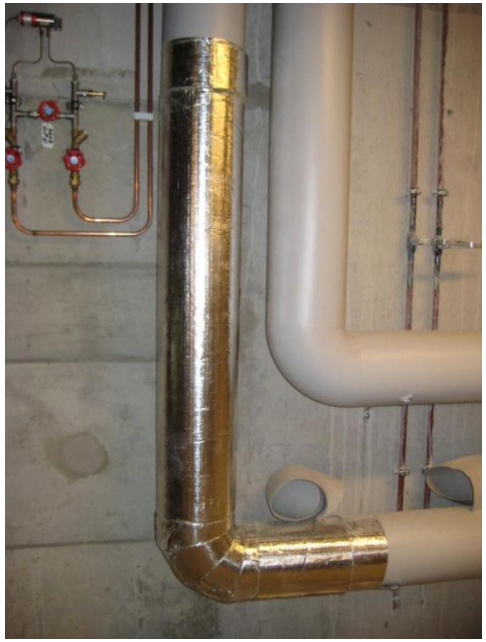
PAROC pipe section system

PAROC Hvac Section AluCoat T
PAROC Hvac Bend AluCoat T



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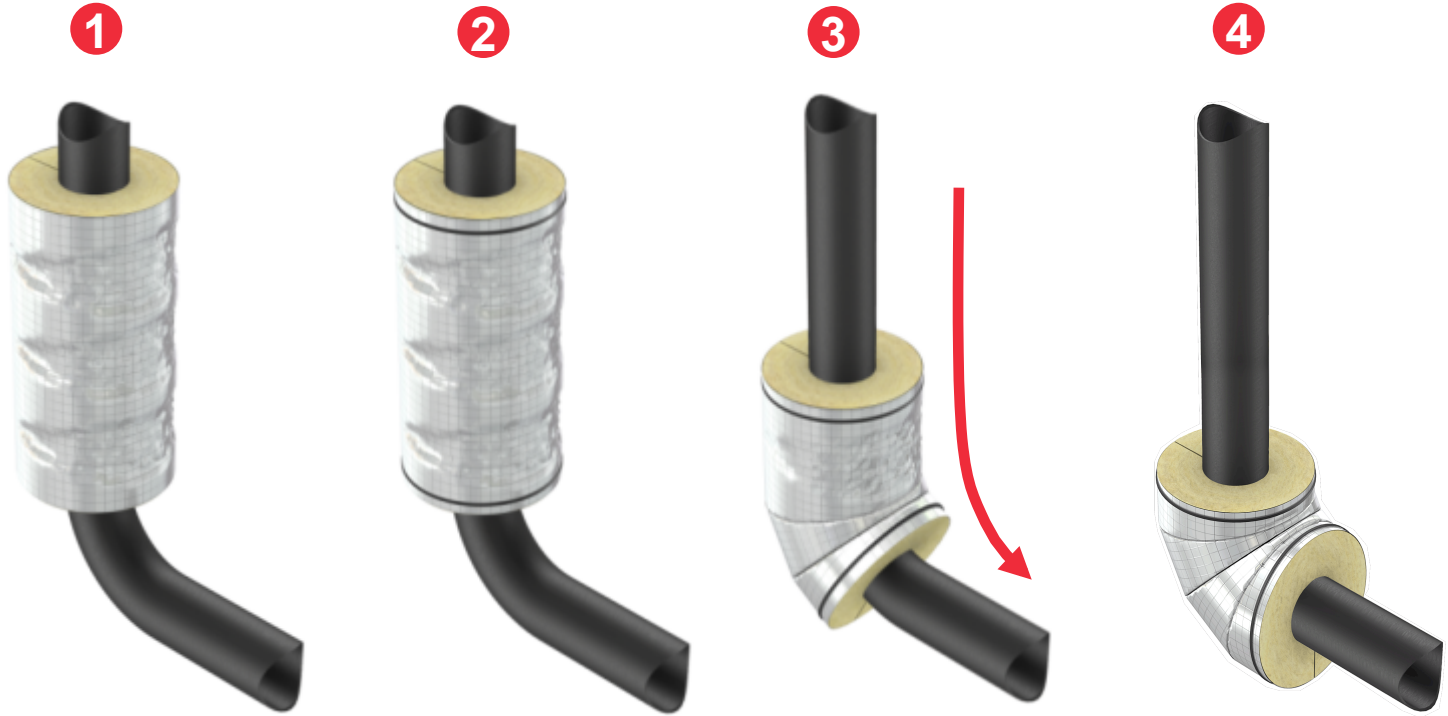
PAROC Hvac Bend AluCoat T



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Other pipe applications

Smoke and exhaust pipes

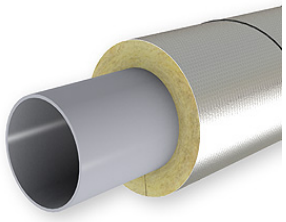
- Require non-combustible insulation solutions which will work as fire insulation and endure high temperatures

Drainpipes

- Insulated to protect against condensation when needed

Wastewater pipes

- Insulated against condensation
- Insulated against fire and sound
- Sometimes also thermal insulation is needed



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