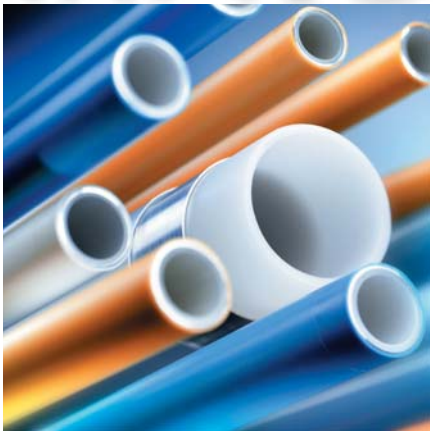
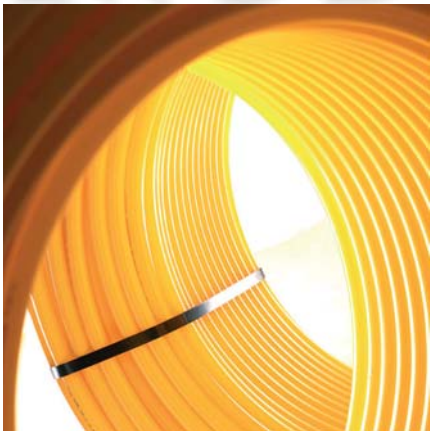
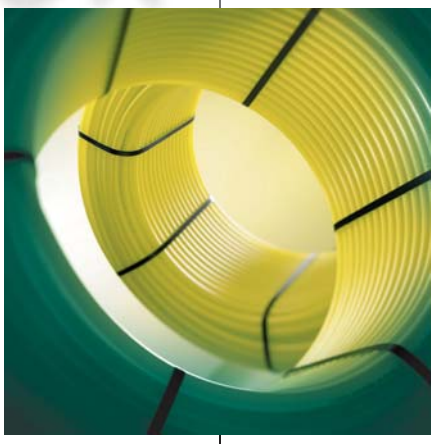






HAKATHEN®

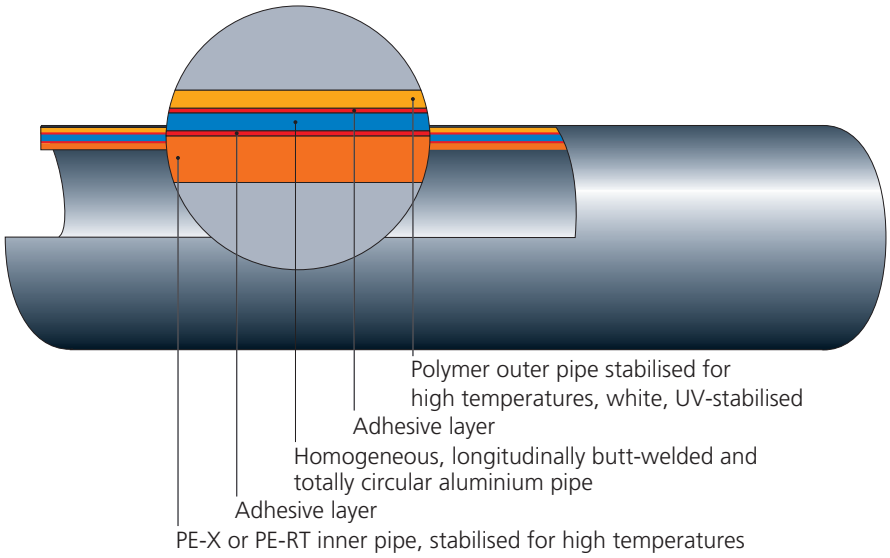
The flexible composite plastic and metal pipe for multi-purpose applications in the building services industry.

HAKA.GERODUR

Innovation in Plastics

HAKATHEN®

The complete HAKA.GERODUR range is backed by decades of experience in plastics processing. This vast pool of knowledge is available to our customers for the benefit.



Material for the inner pipe

We manufacture two variants of the inner pipe. The first variant uses PE-X to DIN 16 892 as the basic material - in this case it is a specially stabilised PE-HD with a high molecular weight. Once the pipe has been produced, the second step is to cross-link it, i.e. to build up the physical lattice structure by means of energy-rich radiation from an electron accelerator. The second variant uses a special PE-RT for the inner pipe with increased temperature resistance to DIN 16 833. This is an ethylene-octene-copolymer; the molecular structure features a linear main chain (ethylene) and octene side chains to produce a very tough material with excellent flexibility and long-term strength.

Benefits

- totally gas-tight against oxygen and water vapour
- butt-welded aluminium pipe, 0.4 – 0.5 mm
- covered by extensive warranties

Application

HAKATHEN® is a composite plastic and metal pipe for multipurpose applications in the building services field. It can withstand maximum operating temperatures of 95° C (110° C for short periods) and a maximum operating pressure of 12 bar.

- roll packaging as standard, in cardboard boxes on pallets covered with stretch film
- bar packaging in cardboard half-shells

Technical data

Pipe dimensions and weights						*Packaging unit – bars*	*Pipe water content*
Outer diameter Ø wall element [mm]	*Roll/bar length [m]*		*Weight [g/m]*	*Roll weight [kg]*	*Bar weight [kg]*	*[pcs]*	*[l/m]*
14 x 2.0	200	–	111	22.20	–	–	0.075
16 x 2.0	200	5	129	25.80	0.65	24 x 5 m	0.113
18 x 2.0	200	5	152	30.40	0.76	24 x 5 m	0.154
20 x 2.0	100	5	175	17.50	0.88	24 x 5 m	0.201
20 x 2.5	100	5	202	20.20	1.01	24 x 5 m	0.172
26 x 3.0	50	5	296	14.80	1.48	24 x 5 m	0.307
32 x 3.0	50	5	365	–	1.83	10 x 5 m	0.523
40 x 3.5	–	5	510	–	2.55	10 x 5 m	0.845

Thermal and mechanical data

Coefficient of linear expansion	2,3 x 10^{-5} [K^{-1}]
Maximum operating temperature	95° C
Short-term load capacity	110 ° C
Maximum operating pressure	12 bar
Inner surface roughness (Prandtl-Colebrook method)	©= 0.007 mm

Thermal resistance and thermal conductivity

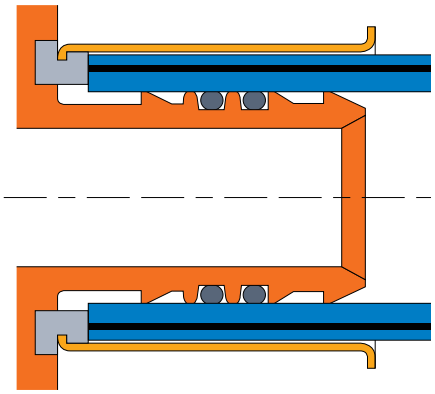
Dimension [mm]	*Thermal resistance [m^2K/W]*	*Thermal conductivity [W/mK*
14 x 2.0	0.0041	0.49 – 0.50
16 x 2.0	0.0041	0.49 – 0.50
18 x 2.0	0.0041	0.49 – 0.50
20 x 2.0	0.0041	0.49 – 0.50
20 x 2.5	0.0051	0.49
26 x 3.0	0.0063	0.48
32 x 3.0	0.0063	0.48
40 x 3.5	0.0076	0.46

Bending radii

Outer Ø, wall thickness [mm]	*with bending aid*	*without bending aid*
14 x 2.0 – 20 x 2.5	2 d	5 d
26 x 3.0	5 d	–
32 x 3.0	5 d	–
40 x 3.5	5 d	–

d = average outer diameter in mm

Schematic diagram of the HAKAPRESS system



Jointing method
HAKATHEN® composite plastic and metal pipes can be jointed quickly and reliably by means of the HAKAPRESS system. Of course, other well proven jointing methods can also be used.

Benefits of HAKAPRESS
- all round even pressing
- all «wetted» parts made of brass are tin-plated
- press-sleeve made of stainless steel, V2A
- patented front seal against water from inside or condensate from outside

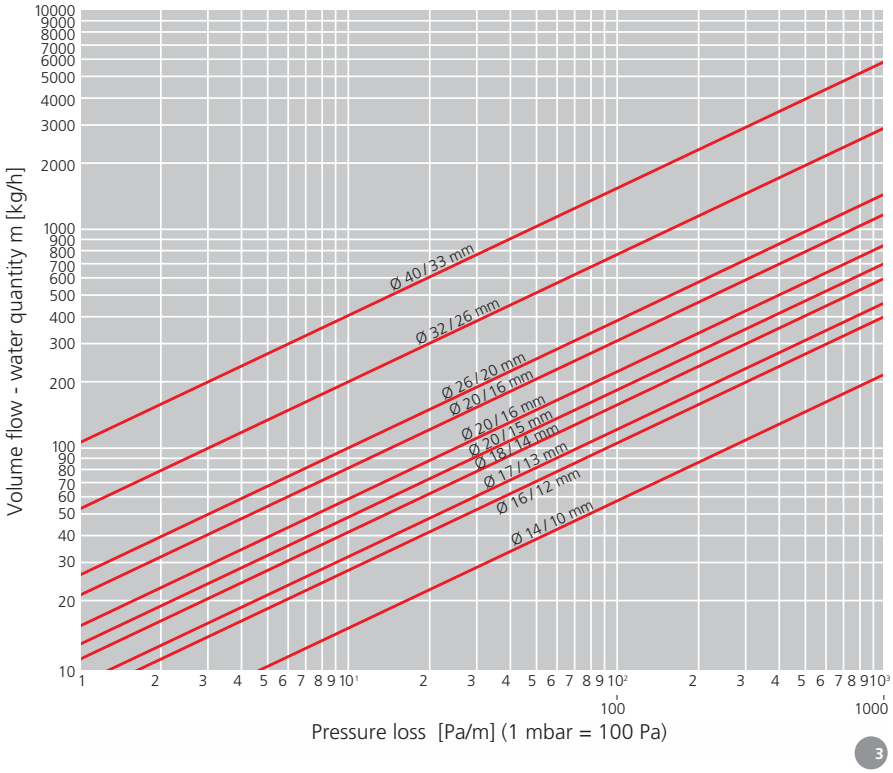
HAKA.GERODUR quality
We believe that quality assurance is vital, so monitoring is carried out at regular intervals both ourselves and by specialists of external organisations. We perform the following inspections at our own works on a continuous basis:

- inspection of incoming raw materials:
  – melt-flow index
  – dry loss
- automatic online tests:
  – surface inspection of the pipe
  – inspection of the weld seam
- dimensional checks:
  external Ø, inner Ø and wall thickness
- check on the degree of cross-linkage in the inner liner to DIN 16 892
- internal pressure tests for creep (conclusions regarding life expectancy)
- 100% testing of finished pipe rolls at high pressure
- followed by pilot verification of the inner diameter
- composite adhesion test

In addition to our own monitoring tests, samples of HAKATHEN® production are regularly inspected by the South German Plastics Centre at Würzburg (SKZ).

HAKA.GERODUR is also an active member of the following trade associations:
- SFF, Swiss Surface Heating and Cooling Association
- BVF, Federal Surface Heating Association (Germany)
- eu-ray, European Association for Surface Heating and Cooling

Pressure loss from HAKATHEN® heating pipes



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Complete sales range

Heating + Sanitary Division, Gossau/Neustadt
- Floor heating pipes in PE-RT, PB and PE-X
- Multi-layer composite pipes in plastic/metal
- Sanitation pipes
- Special pipes, e.g. for ceiling cooling or oil product lines

Pipe Systems Division, Benken/Neustadt
- PE pressure pipes for gas / water / sewage
- GEROfit® protective casing pipe
- Sewerage and drainage pipes
- Cable protection pipes
- Domestic drainage pipes
- Pipes for industrial applications (liquid and gas transport)
- Finished plastic components

Geothermal Probes Division, Benken
- Pipe systems utilising geothermal energy for air conditioning (cooling and heating) in buildings
- Comprehensive range of accessories

Profiles Division, Gossau
- Profiles made of polyolefines / technical plastics for machinery design and construction, environmental technology, lighting, construction, furniture, medical and laboratory technology, etc.
- Own (CAD) design and tool production

Location