

**PE-RT/AL/PE-RT
multilayer pipe**

**for underfloorheating and -cooling,
radiator connection
and drinking water installation**





Demands on the pipe:

The most important component of a heating system or a potable water installation is the pipe.

The PE-RT/AL/PE-RT multilayer pipe provides the following benefits:

- minimized linear expansion
- dimensionally stable after installation and operation
- pressure and temperature-stable
- high reliability of assembly under site conditions
- no harassment by flow noise at constant flow rates
- impermeable to oxygen (according to DIN 4726)

- high resistance to aggressive water or additives
- resistant to corrosion and incrustation due to smooth inner surfaces
- maximum safety due to butt-laser-welded seam
- optimum bonding of the layers by polymeric adhesive layer

These properties fulfill the Becker Plastics PE-RT / Al / PE-RT - pipe.

The requirements of EN ISO 21003-2 for multilayer pipes and DIN 4726 for heating pipes are met and exceeded in many points.

Specifications of PE-RT/AL/PE-RT pipes (informative)

pipe dimension [mm]	14 x 2,0	16 x 2,0	18 x 2,0	20 x 2,0	25 x 2,5	26 x 3,0	32 x 3,0	40 x 3,5	50 x 4,0	63 x 4,5
Outer diameter, nominal size in mm	14	16	18	20	25	26	32	40	50	63
Wall thickness nominal size in mm	2	2	2	2	2,5	3	3	3,5	4	4,5
Inner diameter, nominal size in mm	10	12	14	16	20	20	26	33	42	54
Pipe weight in g/m	105	125	140	170	252	300	390	600	860	1320
Internal volume in l/m	0,079	0,113	0,154	0,201	0,314	0,314	0,531	0,855	1,385	2,29
Heat conductivity in W/m•K ¹⁾	0,43	0,43	0,43	0,43	0,43	0,43	0,43	0,43	0,43	0,43
Expansion coefficient in mm/m•K	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03
Surface roughness (inner pipe) in mm	0,007	0,007	0,007	0,007	0,007	0,007	0,007	0,007	0,007	0,007
Oxygen diffusion in mg/l•d	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1
Max. operating temperature in °C ¹⁾	70	70	70	70	70	70	70	70	70	70
Max. operating pressure (at 70°C) in bar	10	10	10	10	10	10	10	10	10	10
Bending radius, freely bent	≥5 x D	≥5 x D	≥5 x D	≥5 x D	≥5 x D	≥5 x D	≥5 x D	≥5 x D	≥5 x D	≥5 x D
Bending radius, with bending tools*	≥3,5 x D	≥3,5 x D	≥3,5 x D	≥3,5 x D	≥3,5 x D	≥3,5 x D	≥3,5 x D	≥3,5 x D	≥3,5 x D	≥3,5 x D
¹⁾ average All values are typical values; further pipe dimensions on request										



Raw material:

The pipe consists of high density polyethylene of raised temperature resistance (PE-RT type II) with a butt laser TIG welded aluminium sheathing and a top coat of polyethylene (PE-RT type II).

The basic pipe is made of a special polyethylene quality which has excellent compressive strength and ageing properties due to copolymerization.

Examinations according to ISO 9080 carried out through independent institutes have attested the conformity of the basic material to product standard and have proven this material to be a PE-RT (polyethylene of raised temperature resistance).

Owing to the minimised creep tendency of the basic material this system is particularly suitable for the use with pressure fitting systems.

The aluminium foil used is an alloy that has been developed for this application.

The protective layer is also made of a high stability polyethylene. Due to a stabiliser packet it is protected against ageing and the influence of UV light. It is also possible to equip the protective layer with a consumer-specific finish.

Pipe production:

The production of the pipes takes place in two steps.

- Extrusion of the polyethylene pipes on state-of-the-art extrusion units with minimal tolerances.
- Sheathing of the pipes on our laser welding units. In this process the aluminium sheet with a thickness of 200 – 800 µm is butt laser welded and durably joined to the basic pipe by means of an adhesive layer. Then, the pipe is equipped with a cover sheet of polyethylene which serves as a protection against corrosion and gives the pipe a customer-specific finish.

Quality assurance by internal control:

During production the PE-RT/AL/PE-RT pipe of Becker Plastics has to undergo strict controls according to the relevant product standards such as DIN EN ISO 21003-2.

Among other investigations, the following tests are made:

- preprocessing control of the raw material charges
- dimensional continuity and accuracy of the pipes
- mechanical-technological tests according to standard, eg. internal pressure test

Quality assurance by external control:

The most important characteristics are constantly tested within the scope of supervision contracts. Depending on the country and the type of pipe, the pipes are supervised through: IMA-D, TGM-A, KIWA-NL.

Further monitoring contracts and certificates on demand.



As a leading manufacturer of plastic and composite material pipes for the transport of liquid and gas media, Becker Plastics offers major customers and system providers everything from one source: together with our partners, we develop innovative solutions for special applications on a customer specific basis. Our technical know-how ensures the production of premium products – from small batches through to the production of large quantities.

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