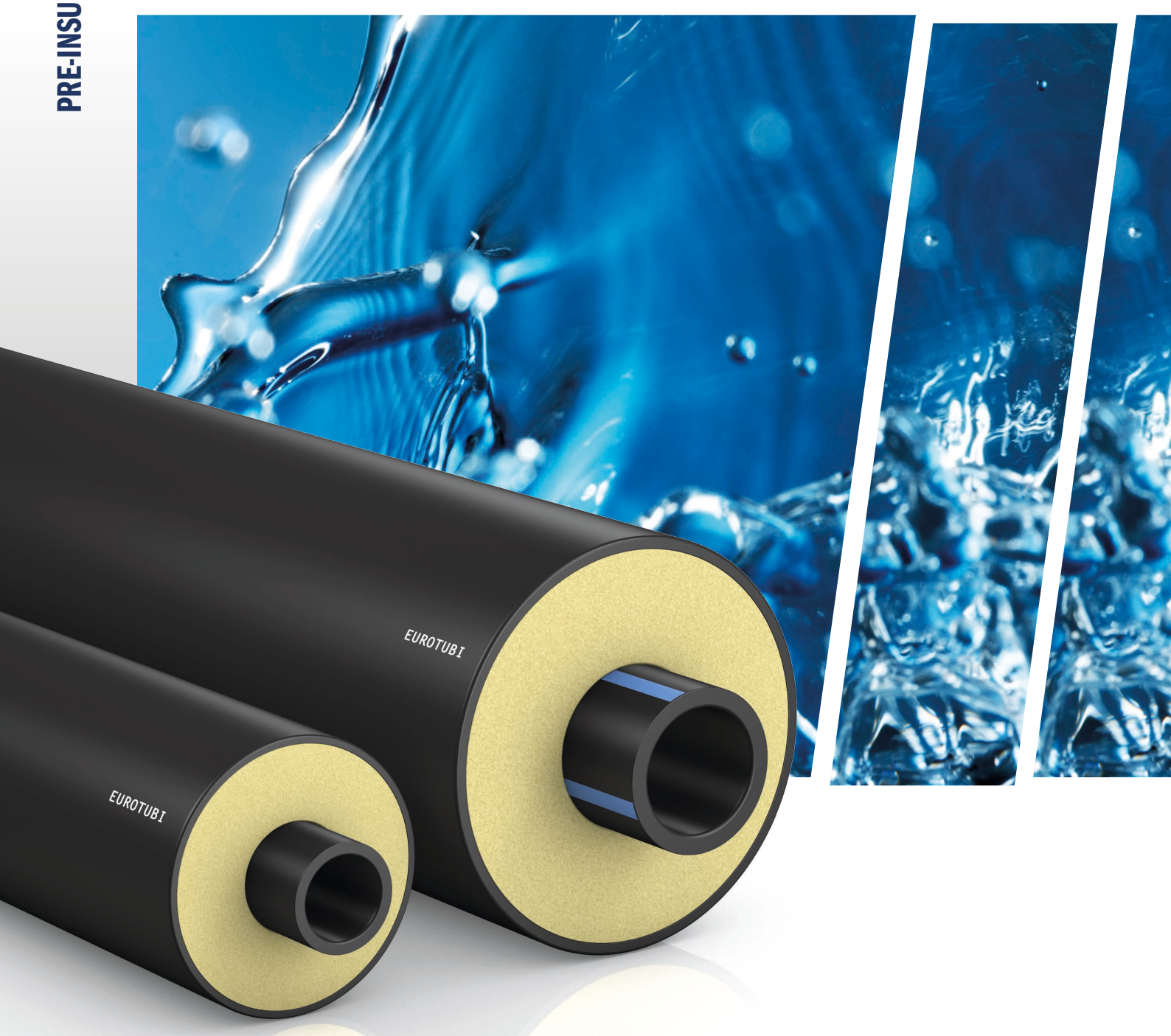
# EUROCOOL PE100

EURO TUBI

EN

PRE-INSULATED PIPES

PE100 polyethylene piping system (MRS 10 – Sigma 80) BLACK in colour or BLACK with coextruded blue stripes, compliant with EN ISO 15494 or EN 12201, for pipelines for the distribution of fluids under pressure in industrial applications or for the supply of water under pressure (including drinking water) up to a maximum temperature of 40 °C. Pre-insulated with a layer of rigid polyurethane foam (PUR). External HDPE sheath coating, corona-discharge treated and resistant to UV rays.



# EUROCOOL PE100



EUROCOOL pipes consist of a PE100 EURO100 service pipe according to the intended application, a polyurethane (PUR) insulating layer and a EUROJACKET external protective sheath. The EUROJACKET sheath allows for strong PUR adhesion, as required in EN 253, thanks to a specially developed treatment that provides wettability greater than 42 dyn/cm.

The EUROJACKET sheaths and the PUR insulating layer are manufactured according to EN 253. The reference standard for the service pipe is EN 12201 for the supply of water under pressure (including drinking water) and EN ISO 15494 for the distribution of fluids under pressure in industrial applications.

The pipes are suitable for all applications requiring the prevention of heat exchange between the distributed fluid and the external environment. They are used for:

- **distribution of coolants:** district cooling, air conditioning
- **distribution of moderately hot fluids** up to a maximum of 40 °C
- **prevention of freezing** of distributed liquid (typically water) in cold climates

The pipes are suitable in operation with fluids having continuous temperatures from a maximum of 40 °C to a minimum below -50 °C (thanks to the outstanding low-temperature performance of HDPE, which has a glass transition temperature of -120/-110 °C, the lowest among the plastics used in pipe manufacture).

EUROCOOL pipes are suitable for underground or above-ground installation: the sheaths are resistant to direct radiation and environmental temperature fluctuations and protect the internal part of the EUROCOOL pipes throughout their operational life.

For the chemical resistance, see the table for EURO100 service pipe.

| **Service pipe technical data** | **Units** | **Value** |
|---|---|---|
| Melt flow index (5 Kg 190 °C) | g/10 min | 0,2 - 0,4 |
| Density | g/cm$^3$ | 0,955 - 0,965 |
| Yield strength | MPa | 25 |
| Young modulus | MPa | 1050 |
| Elongation at break | % | > 500 |
| OIT (210 °C) | min | > 20 |
| VICAT softening point (5 kg) | °C | 74 |
| Thermal conductivity (23 °C) | W/m·K | 0,38 |
| Thermal expansion coefficient (20 °C) | mm/m·K | 0,18 |

| **Polyurethane foam insulation (PUR)** | **Units** | **Value** |
|---|---|---|
| Density | kg/m$^3$ | ≥ 60 |
| Thermal conductivity (50 °C) | mW/m·K | ≤ 29 |
| Closed cells | % | 88 |

| **Eurojacket sheath (EN 253)** | **Units** | **Value** |
|---|---|---|
| Melt flow index (5 Kg 190 °C) | g/10 min | 0,2 - 1,0 |
| Density | g/cm$^3$ | 0,960 |
| Yield strength [1] | MPa | 25 |
| Elongation at break | % | ≥ 350 |
| OIT (210 °C) | min | ≥ 20 |
| Carbon black | % | 2,0 - 3,0 |
| Longitudinal shrinkage | % | ≤ 3 |

1. Typical value not subject to requirement

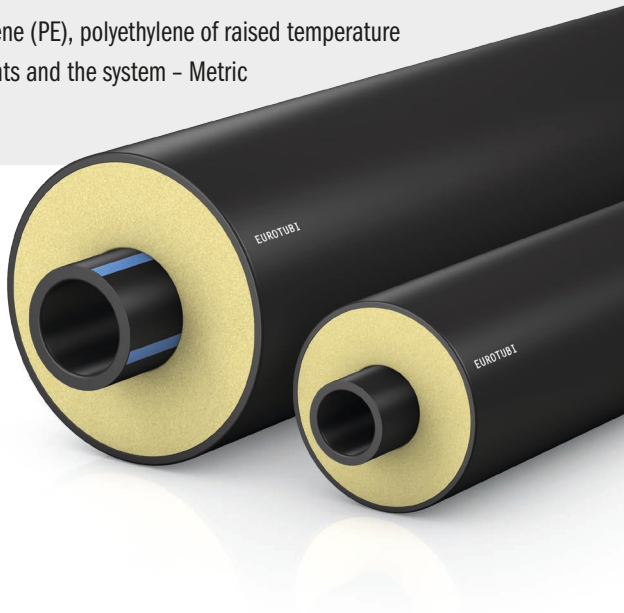
## REFERENCE STANDARDS

### For system insulation and sheathing:

- EN 253 District heating pipes – Pre-insulated bonded pipe systems for directly buried hot water networks – Pipe assembly of steel service pipe, polyurethane thermal insulation and outer casing of polyethylene.

### For the system service pipes:

- EN 12201 Plastics piping systems for water supply – Polyethylene (PE): Part 1 – General; Part 2 – Pipes; Part 3 – Fittings;, Part 4 – Valves; Part 5 – Fitness for purpose of the system
- EN ISO 15494 Plastics piping systems for industrial applications – Polybutene (PB), polyethylene (PE), polyethylene of raised temperature (PE-RT), cross-linked polyethylene (PE-X), polypropylene (PP) – Specifications for components and the system – Metric series.




| **Temperature** [°C] | **PN10** | **PN16** | **PN25** |
|---|---|---|---|
| 20 | 10 | 16 | 25 |
| 30 | 8,7 | 13,9 | 21,7 |
| 40 | 7,4 | 11,8 | 18,5 |

For operation of the system at a constant temperature greater than 20 °C follows the EN 12201 table.

## JOINTS

**Service pipes.** Service pipes are typically joined using the electrofusion fittings generally used for polyethylene pipes or alternatively they can be butt-welded with a heat plate (in this case a welding machine capable of working on the diameter of the sheath is recommended). More generally, the joint systems used for PE pipes under pressure (e.g. mechanical sleeves, flanges, etc.) are normally compatible with EUROCOOL piping. However, we recommend checking the dimensional compatibility of the joining system both with the non pre-insulated ends and with the sheath joining system (see below).

**Sheathing.** The joining method of the outer sheath, installed once the service pipe joint is completed, must guarantee continuity of the pre-insulation and waterproofing at the junction point. This can be achieved by using heat shrink sleeve kits fulfilling EN 489 standard. The kit includes putty strips to be placed between the sleeve and the sheaths, doses of polyol and isocyanate to be injected into the sleeve (to fill the chamber formed on the rigid insulating foam joint) and weld caps to hermetically close the injection holes.

## FITTINGS

The EUROCOOL system is completed with standard fittings: bends (sectors) and tees. The fittings are manufactured by machining and welding the service pipes and sheaths and, like EUROCOOL pipes, they are supplied pre-insulated and ready for joining with the remaining pipeline components. The fittings are manufactured in accordance with EN 489 standard for sheaths and related standards for service pipes.

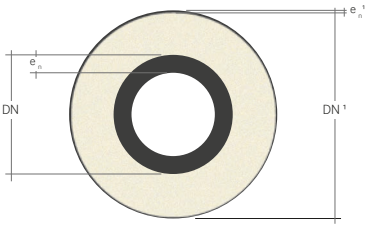
# EUROCOOL PE100

## PRE-INSULATED PIPES

| DN | PN 10 SDR 17 | | PN 16 SDR 11 | | PN 25 SDR 7,4 | | EUROJACKET | |
|---|---|---|---|---|---|---|---|---|
| | $e_n$ | Cutback [mm] | $e_n$ | Cutback [mm] | $e_n$ | Cutback [mm] | DN[1] | $e_n$[1] |
| 32 | - | - | 3,0 | 150 | 4,4 | 150 | 90 | 3,0 |
| 40 | - | - | 3,7 | 150 | 5,5 | 150 | 110 | 3,0 |
| 50 | - | - | 4,6 | 150 | 6,9 | 150 | 110 | 3,0 |
| 63 | 3,8 | 150 | 5,8 | 15 | 8,6 | 150 | 125 | 3,0 |
| 75 | 4,5 | 150 | 6,8 | 15 | 10,3 | 150 | 140 | 3,0 |
| 90 | 5,4 | 150 | 8,2 | 150 | 12,3 | 150 | 160 | 3,0 |
| 110 | 6,6 | 150 | 10,0 | 150 | 15,1 | 150 | 200 | 3,2 |
| 125 | 7,4 | 150 | 11,4 | 150 | 17,1 | 150 | 225 | 3,4 |
| 140 | 8,3 | 150 | 12,7 | 150 | 19,2 | 150 | 225 | 3,4 |
| 160 | 9,5 | 150 | 14,6 | 150 | 21,9 | 150 | 250 | 3,6 |
| 180 | 10,7 | 150 | 16,4 | 150 | 24,6 | 150 | 280 | 3,9 |
| 200 | 11,9 | 150 | 18,2 | 150 | 27,4 | 150 | 315 | 4,1 |
| 225 | 13,4 | 150 | 20,5 | 150 | 30,8 | 150 | 315 | 4,4 |
| 250 | 14,8 | 150 | 22,7 | 150 | 34,2 | 150 | 400 | 4,8 |
| 280 | 16,6 | 150 | 25,4 | 150 | 38,3 | 150 | 400 | 4,8 |
| 315 | 18,7 | 150 | 28,6 | 150 | 43,1 | 150 | 450 | 5,2 |
| 355 | 21,1 | 150 | 32,2 | 150 | 48,5 | 150 | 500 | 5,6 |
| 400 | 23,7 | 150 | 36,3 | 150 | 54,7 | 150 | 560 | 6,0 |
| 450 | 26,7 | 150 | 40,9 | 150 | 61,5 | 150 | 630 | 7,6 |
| 500 | 29,7 | 150 | 45,4 | 150 | - | - | 710 | 7,9 |

Other measures on request (up to DN 800 with Eurojacket DN[1] 1000)

| | |
|---|---|
| DN | Nominal diameter of service pipe |
| $e_n$ | Nominal thickness of service pipe |
| DN[1] | Nominal diameter of EUROJACKET sheath |
| $e_n$[1] | Nominal thickness of EUROJACKET sheath |




The designer of a piping system shall consider and carefully evaluate the implications of the parameters of each specific project with technical or law regulations.

IDROTHERM 2000

**EUROTUBI is a commercial division of Idrotherm 2000 S.p.A.**

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