



USING PE-Xa IN GROUND-SOURCE APPLICATIONS

ENERGY PILES

PE-Xa ENERGY PILES

GEOTHERMAL ACTIVATION OF THE BUILDING'S FOUNDATIONS



PE-Xa ENERGY PILES

EXPLOITING THE BUILDING'S FOUNDATIONS

Concrete piles are sometimes required for stability due to poor load-bearing soil.

Ground-source pipework can be **integrated to exploit ground-source energy**.

RAUGEO collect PE-Xa



PE-Xa is ideal due to its **small bending radius**, allowing for a simple installation.

CHOOSING THE RIGHT MATERIAL

BENDING RADIUS FOR PE-Xa AND PE 100



Min. bending radius at given temperature	PE-Xa 25x2.3	PE 100 25x2.3	PE-Xa 32x2.9	PE 100 32x2.9	PE-Xa 40x3.7	PE 100 40x3.7
20°C	25 cm	50 cm	30 cm	65 cm	40 cm	80 cm
10°C	40 cm	85 cm	50 cm	110 cm	65 cm	140 cm
0°C	50 cm	125 cm	65 cm	160 cm	80 cm	200 cm

PE-Xa ENERGY PILES

DRILLING AND INSTALATION EXAMPLES

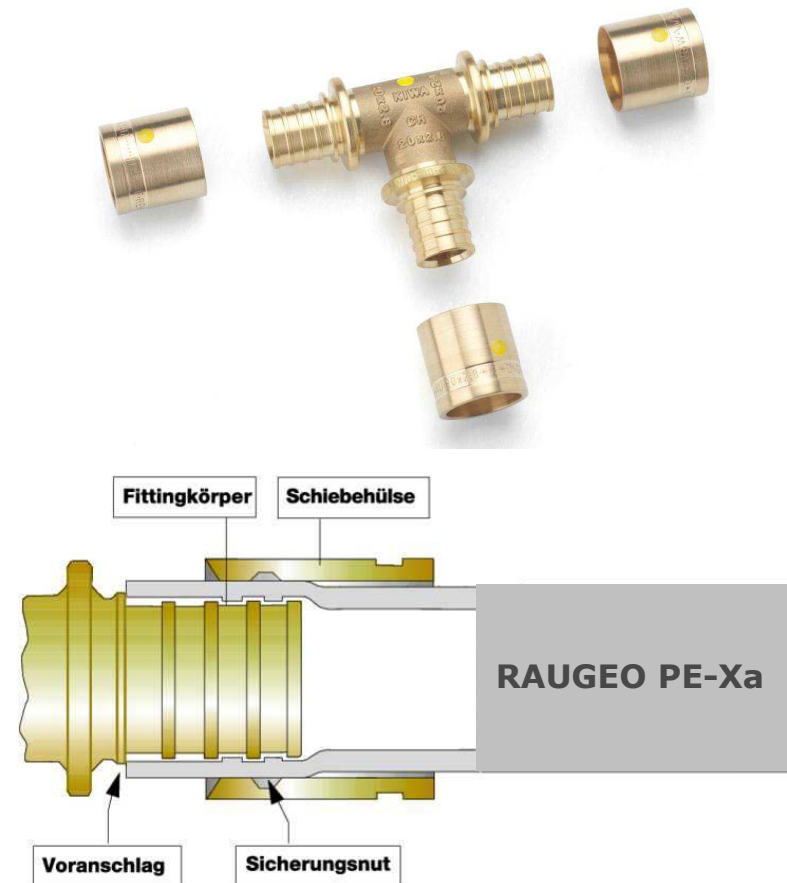


PE-Xa PIPE CONNECTIONS

LEAKPROOF EVERLOC FITTING



- Only two components: **fitting and sleeve**
- Design takes material properties
(PE-Xa memory effect)
- Ideal for below ground applications, as can be used in **all weather conditions**
- **> 500,000,000** installations worldwide and no leaks



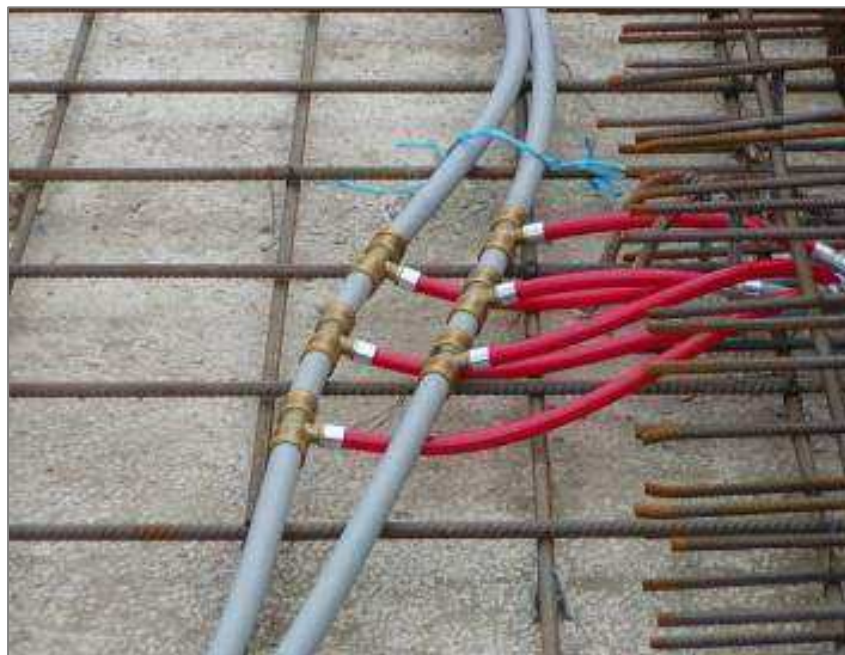
PE-Xa PIPE CONNECTIONS

LEAKPROOF EVERLOC FITTING



PE-Xa PIPE CONNECTIONS

EXAMPLES FOR THE HORIZONTAL CONNECTIONS



PE-Xa APPLICATIONS

CASE STUDIES



IMDEA, Madrid (Spain)

Ground-source energy using 1,700m of PE-Xa pipe integrated into structural concrete caissons in combination with 30 RAUGEO PE-Xa vertical probes.



PE-Xa APPLICATIONS

CASE STUDIES



AIRPORT BBI, Berlin (Germany)

Ground-source energy using **318 PE-Xa energy pilots** combination of heating and cooling applications.



PE-Xa APPLICATIONS

CASE STUDIES



Kinsale Lifeboat Station (Ireland)

Ground-source heating using 1,200m of PE-Xa pipe integrated into structural concrete caissons, which support the building. Uses tidal flow to extract ground-source energy.



CHOOSING THE RIGHT MATERIAL

ADVANTAGES OF PE-Xa OVER PE 100



- Higher **resistance to notches and grooves**
- **No reduction in lifespan** when notches travel 20% into the wall
- **No susceptibility to puncture loads**
- **No thermal changes in properties** at long periods of up to 95°C
- **Higher chemical resistance** over PE 100
- **Everloc** compression sleeve fitting



PE-Xa



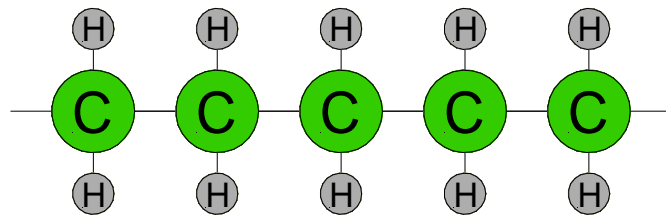
PE 100

CHOOSING THE RIGHT MATERIAL

MOLECULAR STRUCTURE OF CROSS-LINKED POLYETHYLENE

PE-HD (PE 100)

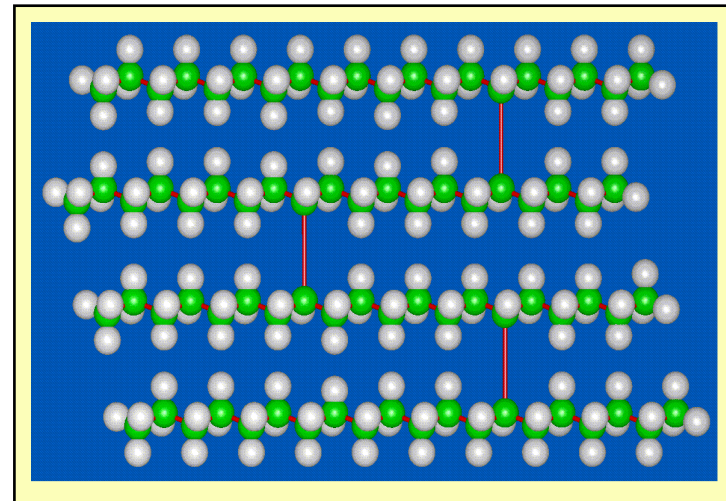
- Long chains (approx. 70,000 Carbon atoms)
- Minimal branching



Molecular structure of PE-HD

PE-Xa (Cross-linked Polyethylene)

- Approx. 2 - 3 cross-link locations per molecule chain



Molecular structure of PE-Xa