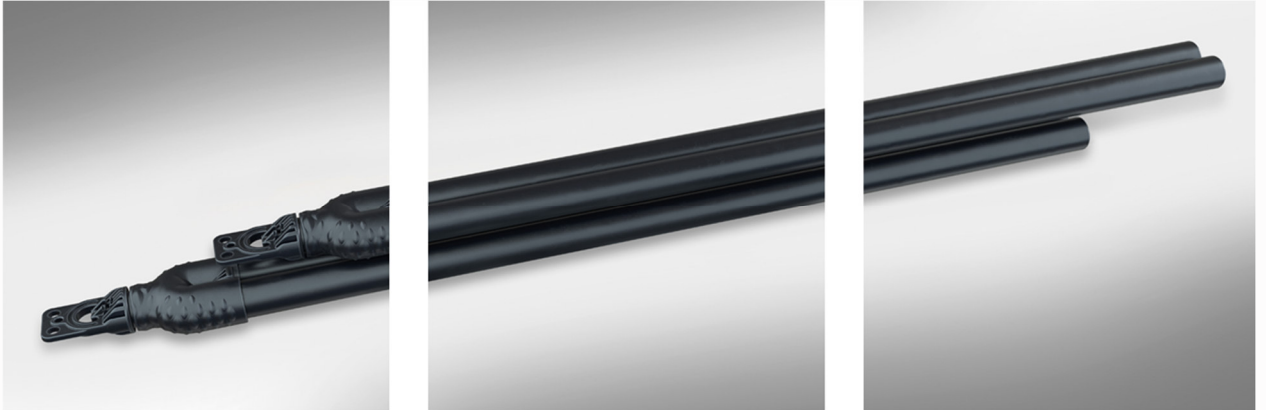




## Technical data sheet

**GEROtherm® VARIO**

The conical, pressure loss optimised geothermal probe  
PN16 up to PN20  
dn 40 x 3.7 – 4.5

## GERO<sup>®</sup>therm VARIO conical, pressure loss optimised geothermal probe PN16 up to PN20

|                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Material                                                                                                                                                                        | Polyethylene PE100-RC (RC=resistance to cracking)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Geothermal probe design                                                                                                                                                         | <ul style="list-style-type: none"> <li>Two geothermal probe feet, PN25, U-shaped with dirt trap and a minimal pressure drop of &lt;10 mbar at 1.0 m/s, a fixture for securing weights as an aid to installation, plus a reinforcement brace for the GERO<sup>®</sup>therm PUSH-FIX impact-resistant sleeve</li> <li>Four conical pipes for double-U probes from pipe series PN 16 up to 20 made of the material PE100-RC in the pipe outside diameter 40 × 3.7 – 4.5 mm; with double metering and flow direction indication (forward/return flow)</li> <li>Patent: EP 2 706 308</li> </ul> |
| Installation and operation                                                                                                                                                      | The part of the geothermal system down in the soil must withstand the pressures and temperatures that occur. The applicable standards must be observed.                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Delivery form                                                                                                                                                                   | Rolls on a pallet covered with protective film: each individual probe foot packed in a protective pouch with a factory certificate and serial number in accordance with EN 10204 2.2.                                                                                                                                                                                                                                                                                                                                                                                                      |
| Regulations                                                                                                                                                                     | SIA 384/6; SKZ HR3.26 A278; VDI 4640; KOMO <sup>®</sup> (K84660/02); DIN EN 12201-2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Geothermal probe marking                                                                                                                                                        | {Direction of flow} {GERO <sup>®</sup> therm VARIO} {Erdwärmesonde/Geothermal probe} {Swiss made} {EP 2 706 308} {40 x 3.7-4.5} {PE100 RC} {SDR11-9} {PN16-20} {Tmax 40°C} {DIN EN 12201-2} {SKZ A278}/{KOMO K84660} {Part No.} {Machine No.} {Date} {Production No.} {Double metering}                                                                                                                                                                                                                                                                                                    |
| External monitoring                                                                                                                                                             | SKZ (Süddeutsches Kunststoffzentrum, Würzburg/Germany)<br>KOMO <sup>®</sup> (Kiwa Nederland B.V)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Physical properties</b>                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Density                                                                                                                                                                         | 0.95 – 0.97 g / cm <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Pipe roughness                                                                                                                                                                  | 0.03 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Minimum bending radius at 0°C                                                                                                                                                   | 50 x dn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Minimum bending radius at 10°C                                                                                                                                                  | 35 x dn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Minimum bending radius at 20°C                                                                                                                                                  | 20 x dn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Mechanical properties</b>                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Tensile modulus of elasticity (23°C, v = 1 mm/min, secant)                                                                                                                      | 900 MPa                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Yield stress (23°C, v = 50 mm/min)                                                                                                                                              | 23 MPa                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Tensile deformation (23°C, v = 50 mm/min)                                                                                                                                       | 9%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| FNCT (4.0 MPa, 2% Arkopal N100, 80°C)                                                                                                                                           | >= 8760 h                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Failure strain                                                                                                                                                                  | >= 350%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Mean thermal coefficient of linear thermal expansion                                                                                                                            | 0.18 mm/m K                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Hardness</b>                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Shore hardness (Shore D (3 sec))                                                                                                                                                | 63                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Thermal properties</b>                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Maximum temperature                                                                                                                                                             | + 40°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Minimum temperature                                                                                                                                                             | - 20°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Thermal conductivity                                                                                                                                                            | ~0.4 W/mK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Specific thermal capacity                                                                                                                                                       | 1.9J/g K                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Chemical properties</b>                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| The HakaGerodur GERO <sup>®</sup> therm geothermal systems are resistant to the common heat transfer media. Refer to the Technical Manual for the suitable heat transfer media. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |