



**KOMO®**  
 Technical approval-with-product certificate  
**K84660/02**



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 Valid until Indefinite Dated 2014-09-09  
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**GEROTHERM® Geothermal systems**

**HakaGerodur AG**

STATEMENT OF KIWA

This technical approval-with-product certificate is issued on the basis of BRL 5219 "Plastics piping systems intended for geothermal heat exchange in closed loops" dated 8 November 2013, conform the Kiwa-Regulations for Certification.

The quality system and product characteristics in association with GEROTHERM® Geothermal Systems are audited periodically and the performances of GEROTHERM® Geothermal Systems in its application are assessed and the starting-points for the assessment are audited periodically.

On this basis Kiwa declares that:

- a justified confidence exists, that the GEROTHERM® Geothermal Systems delivered by the certificate holder at delivery fulfill:
  - the technical specification laid down in this technical approval-with-product certificate,
  - the product requirements as laid down in this technical approval-with-product certificate and in the BRL, provided that GEROTHERM® Geothermal Systems have been marked with the KOMO®-mark in a manner as indicated in this technical approval-with-product certificate;
- the with the GEROTHERM® Geothermal Systems composed borehole heat exchangers provide the performances as described in this technical approval-with-product certificate and comply to the requirements as laid down in this technical approval-with-product certificate, provided that:
  - the application conditions and the technical specifications as laid down in this technical approval-with-product certificate are met;
  - the manufacturing is in accordance with the regulations and processing methods as laid down in this technical approval-with-product certificate.

Within the framework of this technical approval-with-product certificate Kiwa does not impose any inspections with regard to the production of other parts of the GEROTHERM® Geothermal Systems, nor the manufacturing of the GEROTHERM® Geothermal Systems itself.

Ronald Karel  
 Kiwa

*The certificate is listed in the overview on the website of Stichting KOMO: [www.komo.nl](http://www.komo.nl).  
 Advice: consult [www.kiwa.nl](http://www.kiwa.nl) in order to ensure that this certificate is still valid.*

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**CERTIFICATE**

474/18121



**Evaluated is:**  
 Quality system  
 Product  
 Performance in application  
 Periodic inspection

## GEROTHERM® Geothermal systems

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### TECHNICAL SPECIFICATION

#### Subject

Plastics piping systems intended for geothermal heat exchange according to evaluation guideline BRL 5219.

#### Product Specifications

The Gerotherm® plastics piping system for geothermal heat exchange is a standard vertical system to be used with operational pressures of maximum 16 bar and 20 bar.

The Gerotherm® plastics piping system for geothermal heat exchange consists of the following parts:

- PE100 geothermal probes with diameters 25mm, 32mm, 40mm and 50mm;
  - o Including type "VARIO" with variable wall thickness;
- PE100 horizontal pipes with diameters 25 – 63mm, provided in coils and bars;
- PE100 probe feet consisting of U-bends and plugs with diameters 25mm, 32mm, 40mm and 50mm;
- PE100 Y-pieces 32-40mm and 40-50mm;
- PE100 electrofusion couplers including elbows, T-pieces and reductions with diameters 25 – 63mm;
- Probe foot protection cover, weight container and iron weight.

The colour of the PE100 pipes, fittings and other parts is black.

In the table below, the suitable heat carrier media are specified.

Heat transfer medium	Density at 0 °C	Frost protection
Ethylene glycol 20%	1040 kg/m <sup>3</sup>	-10,4 °C
Ethylene glycol 20% @ 15 °C	1037 kg/m <sup>3</sup>	-10,4 °C
Ethylene glycol 25%	1050 kg/m <sup>3</sup>	-13,6 °C
Ethylene glycol 25% @ 15 °C	1042 kg/m <sup>3</sup>	-13,6 °C
Ethylene glycol 30%	1059 kg/m <sup>3</sup>	-17,1 °C
Ethylene glycol 33%	1065 kg/m <sup>3</sup>	-19,3 °C
Propylene glycol 25%	1033 kg/m <sup>3</sup>	-10,1 °C
Propylene glycol 30%	1039 kg/m <sup>3</sup>	-13,5 °C
Propylene glycol 35%	1044 kg/m <sup>3</sup>	-17,5 °C
Water 5°C	1000 kg/m <sup>3</sup>	0,0 °C
Water 15°C	1000 kg/m <sup>3</sup>	0,0 °C
Ethanol 20%	969 kg/m <sup>3</sup>	-10,5 °C
Ethanol 25%	961,5 kg/m <sup>3</sup>	-15,5 °C
Ethanol 30%	954 kg/m <sup>3</sup>	-20,5 °C

#### Marking

The products are marked with the KOMO®-mark.

The following marking is applicable for the different products.

#### Probes and horizontal pipes

The minimum required marking on the probes and horizontal pipes is:

- KOMO (or KOMO® word mark);
- Factory name, logo or registered trademark;
- System name;
- Class "cold";
- Pipe material: "PE100";
- Working pressure: 16 bar or 20 bar;
- SDR or S class;
- Maximum temperature: 40 °C;
- Nominal outside diameter(s) of the pipe(s) in mm and wall thickness;
- Production code;
- "Geothermal heat" or "Aardwarmte";
- On the pipe the depth of the probe must be indicated every meter;
- Flow indication mark on geothermal probe.

The realization of the marks is as follows: clearly and indelible at intervals of not more than 2 m.



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### Fittings

The minimum required marking on the fittings is:

- KOMO® (if not possible KOMO only on the smallest packaging);
- the manufacturer's name, trade name or logo;
- nominal outside diameter of the corresponding pipe;
- production code.

Location of the marks: on every fitting.

The realization of the marks is as follows: durable and indelible.

The minimum required marking on the smallest packaging unit of the fittings shall be:

- KOMO® (or KOMO® word mark);
- the manufacturer's name, trade name, system name, logo or certificate number of the accompanying technical approval (system)certificate, according to the marking of the pipe belonging to the piping system;
- material identification of the fitting body;
- nominal outside diameter and nominal wall thickness of the corresponding pipe in mm.

Location of the marks: on every package.

The realization of the marks is as follows: clearly and indelible on every packaging.

### PROCESSING

Production and assembly of the system is laid down in the annex of the certification agreement.

The supplier shall provide installation instructions as well as a technical handbook or manual. A reference to these instructions shall be made at or near the packaging. The instructions must contain specific information with regard to storage, transport, processing temperature and construction of the joints. The technical handbook or manual must contain specific information with regard to the operation and heat conductance of the Gerotherm® plastics piping system for geothermal heat exchange.

### PERFORMANCES

1. The temperature of the heat carrier media shall not exceed 40 °C;
2. All joints shall be leak tight and possess sufficient clamp force to resist external influences;
3. All system components must be designed for a lifetime of 50 years at an operating temperature profile from -20 °C to +40 °C and an allowable working pressure of maximum 1,6 MPa (16 bar overpressure).

### RECOMMENDATION FOR THE CUSTOMER

Check at the time of delivery whether:

- the supplier has delivered in accordance with the agreement;
- the mark and the marking method are correct;
- the products show no visible defects as a result of transport etc.

Examine at delivery of the products mentioned under "processing" that they comply to the mentioned specifications.

if you should reject a delivery on the basis of the above, please contact:

- HakaGerodur AG
- and, if necessary:
- Kiwa Nederland B.V.

Consult the installation instructions of the producer for the correct way of storage, transport and processing of the products.

Take the application conditions mentioned under "performances" in consideration.

### CONSTRUCTION PRODUCTS REGULATIONS

If a construction product is subject to a European harmonised technical specification, the statements in this KOMO attestation including product certificate must not be used as a replacement for the CE marking on such construction product and/or for the associated obligatory Declaration of Performance.

### LIST OF DOCUMENTS

For the actual version of the standard see the latest version of the BRL or latest amendment sheet.

