

## Construction Technologies Civil Engineering, Drilling & Tunnelling

### TERMOPLAST PLUS®

Termoplast PLUS® is a premixed specially designed for the filling of geothermal wells. According to the VDI 4640/parte 2, Termoplast PLUS® is a special blend of blast furnace cement binders, bentonite high value plastic and selected sands.

#### Characteristics of the components

Binding components:

- *the exclusive cementitious binding components* used allow for excellent workability in the first four hours, a high sulphate resistance (DIN 1164/ sec. 10) and finally a strong resistance to freezing without the use of additives, until -15 °C (VDI 4640).
- *Bentonite*: high performance bentonites specially selected for use in geothermal wells allow the achievement of the required performance with a limited quantity, still maintaining the necessary characteristics of swelling, as required by many of the requirements of local legislation in Germany.
- *Selected sands* with high fineness (<0.25 mm) and high thermal conductivity allow a good fluidity during pumping operations of the cement mixture.

#### Properties and Benefits

- Absence of cavities: the well is completely sealed;
- Fast hardening: high thixotropy of the product ensures the filling of any cavity;
- Plasticity: it allows the structural safety of the GSHP (Ground System Heat Pump) in the presence of natural settling of the subsoil;

- High conductivity and thermal efficiency over time: high thermal conductivity (up to 2.3 W / mK).
- Ready to use: fast, error free and inventories of unused materials;
- Environment friendly
- Free of chromates (EU guideline 2003/53/EG).

#### EXAMPLES OF FORMULATIONS

<p><b>Thermal Conductivity 2.3 W/mK*</b> <b>Composition of mixture</b> Soft water 780 l + Termoplast PLUS 875 Kg Ratio powder / water per m<sup>3</sup> 1,1 Number of bags per m<sup>3</sup> of mud 35 ca Mixture that can be produced with 25 kg bag →28-30 l</p>
<p><b>Thermal Conductivity 2.0 W/mK*</b> <b>Composition of mixture</b> Soft water 705 l - Termoplast PLUS 705 Kg Ratio powder / water per m<sup>3</sup> 1,0 Number of bags per m<sup>3</sup> of mud 28 ca Mixture that can be produced with a 25 kg bag →34-36 l</p>
<p><b>Thermal Conductivity 1,6 W/mK*</b> <b>Composition of mixture</b> Soft water 720 l - Termoplast PLUS 585 Kg Ratio powder / water per m<sup>3</sup> 0,8 Number of bags per m<sup>3</sup> of mud 23 ca Mixture that can be produced with a 25 kg bag →42-44 l</p>

(\*) determination method UNI EN 12664

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