

## SURFACE HEATING

### Electric Concrete Floor Heatings

**Complete ready-to-install heating mats, with or without spare heating cable, consisting of heating cable, cold lead and temperature sensors. Concrete floor heatings from Klöpper-Therm are the optimum protection against dangers from black ice in cold stores.**

Concrete brings heat from outside into the cooling chamber. Thereby the temperature of the concrete along the heat flow falls to the temperature of the cooling chamber. The moisture stored in the warmer air condenses on the cold concrete surface through which black ice can form. Dangers through the exchange of warmer and colder air arise particularly in the area of locks. When, through repeated opening of the doors, condensation from the walls and ceilings falls on the floor and black ice forms, it can lead to accidents. In consequence of the effects of permanent cold, doors can freeze solid at the seals and be severely damaged. Untight doors, because of the large temperature differences, cause a higher energy requirement for the whole cooling plant.

Concrete floor heatings from Klöpper-Therm are a reliable protection against the build-up of ice, not only in the area of locks, but also in the area of the doors of cooling chambers. At the same time the freezing of door seals at floor level and the cold stream in the direction of heated rooms is prevented.

#### Applications:

Electric concrete floor heatings for: ► lock areas in cold stores, the areas of doors and gates of cooling chambers, as floor heating in freezers to defrost the floor

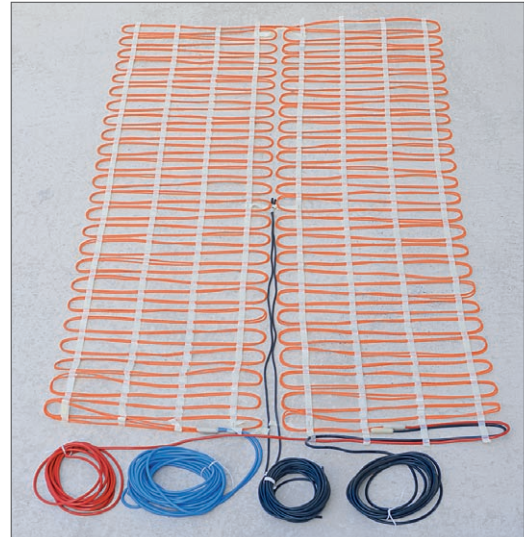
#### Advantages:

Simply, quickly and cost-effective installed: Heating mats from Klöpper-Therm are embedded approx. 3 to 6 cm – deep in concrete. Specially prepared layout drawings and wiring diagrams for your project enable the problem-free laying and connection of the Klöpper-Therm heating mats and temperature sensors to the electricity supply.

- 5-Year Warranty for Heating mats
- High economy in controlled operation: > 50 % operating cost savings in comparison to uncontrolled operation
- Improved operational safety – risk of accidents through black ice reduced
- Cost-effective protection against frost damage to seals and concrete
- Fully automatic operation of the heating mats is possible via control and switching units from Klöpper-Therm
- Larger areas are heat-able by connecting together multiple heating mats
- Supply with spare heating cable possible

## Technical Data

|                                |   |
|--------------------------------|---|
| Nominal voltage:               | 230 V AC  |
| Resistance tolerance at 20 °C: | -5 %/+10 %  |
| Min. installation temperature: | +5 °C   |
| Installation clearance:        | max. 0.05 m   |
| Heating cable:                 | NH6YMY90<br>in accordance with VDE 0253   |
| Cold lead:                     | 1.5 mm <sup>2</sup> , NYM-flex,<br>Standard length 6.0 m,<br>other lengths on request |
| Cable coupler:                 | vapour pressure proof,<br>high voltage test with<br>1 kV for 10 minutes               |



Concrete floor heating mat with spare heating cable and temperature sensors

| Product Description |               | Door light<br>(m) | Length **<br>x width<br>± 2 %<br>(m) | Nominal power<br>per heating<br>circuit<br>(W) | Nominal<br>resistance<br>at 20 °C<br>(Ohm) | Nominal<br>electric<br>current<br>(A) |
|---------------------|---------------|-------------------|--------------------------------------|--|--|---------------------------------------|
| Without<br>spare    | With<br>spare |                   |                                      |  |  |                                       |
| KT72-DTF-345        | KT72-DRTF-345 | 1.0               | 1.0 x 1.0                            | 345  | 154  | 1.5                                   |
| KT51-DTF-440        | KT51-DRTF-440 | 1.5               | 1.4 x 1.0                            | 440  | 120  | 1.9                                   |
| KT18-DTF-550        | KT18-DRTF-550 | 2.0               | 1.9 x 1.0                            | 550  | 96   | 2.4                                   |
| KT14-DTF-710        | KT14-DRTF-710 | 2.5               | 2.4 x 1.0                            | 710  | 74   | 3.1                                   |
| KT14-DTF-850        | KT14-DRTF-850 | 3.0               | 2.9 x 1.0                            | 850  | 64   | 3.6                                   |
| KT72-195*           | KT72-R-195*   | --                | 2.7 x 0.5                            | 195  | 271  | 0.8                                   |

\* without temperature sensor, for use outside cooling chambers

\*\* other mat lengths on request

### Other Products:

Individually equipped control units, temperature sensors, emergency alarm systems, frost heave protection heatings in various designs, heat tracing for melt-water pipes and drains

Klöpper-Therm offers complete electrical heating systems from planning to installation. Components matched with each other guarantee trouble-free and economic operation. All services from one source.