

Outdoor applications

In real life, situations very frequently occur when it is necessary to protect various applications from snow, ice and icing – most frequently eaves troughs, downpipes and gutters or outdoor surfaces (pavements, drives, stairs etc.). These requirements occur in private but also industrial or commercial applications. Thanks to the simplicity of the solution and basically zero maintenance requirements, electric heating cables have an exclusive position here – other heating systems simply aren't used for anti-freeze protection.

Heating of thoroughfares

Thermal insulation of outdoor applications

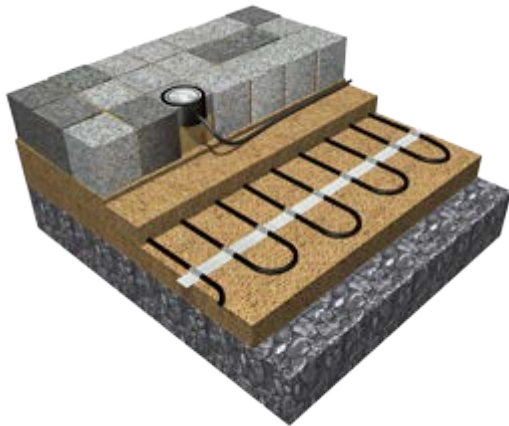


Heating of thoroughfares

It is possible to protect any area used for passage with the help of heating cables – pavements, paths, drive-up ramps, staircases etc. Special heating cables are used for these applications – robust structures with stranded resistance and wattages of 20-30 W/m. The heating can be provided by a heating circuit **as well as a heating mat**. For thoroughfares which are walked on, the heating element is placed in a sand bed or into a concrete slab, while in the case of stairs, terraces and similar areas the element is embedded into bonding cement. In thoroughfares used for driving, we unambiguously recommend that the heating element is

placed into a concrete slab which will protect the heating cable from damage when the thoroughfare is used by a car.

For the heating of outdoor surfaces a wattage of 300 W/m² is installed. Such a high output is necessary for the system to function correctly even at temperatures far below freezing point. Also, correct regulation is very important – see the chapter **Regulation of ECOFLOOR heating systems** – – as it will bring the heating system into operation as soon as there is a danger of ice formation. This means a regulation system which registers not only the temperature but also the presence of moisture in the area monitored. If the system is controlled manually by the user and is brought into operation at a time when the surface concerned has already been covered with a layer of snow, this snow can take more than 12 hours to melt (depending on the height of the layer of snow). It is necessary to realize that the heating cable is placed in the ground, which has a great ability to absorb heat, and also that a large amount of energy is needed for the transformation of snow into water – so called latent heat. The installation of



supplementary thermal insulation into the base composition is inefficient with a few exceptions; see the chapter Thermal insulation of outdoor applications.

Thermal insulation of outdoor applications

Users often enquire as to whether the efficiency of outdoor applications – the heating of thoroughfares – could be increased by the placement of suitable thermal insulation into the composition of their structure. Unfortunately, while in winter this insulation could speed up the warming of the upper layer and thus the melting of snow, in the transitional period it would insulate the heat accumulated in the earth and thus cause ice formation also in the spring and in the autumn when the ground isn't generally frozen. Thermal insulation has its value only in applications in which the heated surface is exposed to ambient conditions from all sides. For example, in the case of an outdoor staircase where the stair carriage is above the ground, it is possible to carry out thermal insulation of the steps from the bottom side so that undesired leakage of warmth via that side is avoided.