Nexans

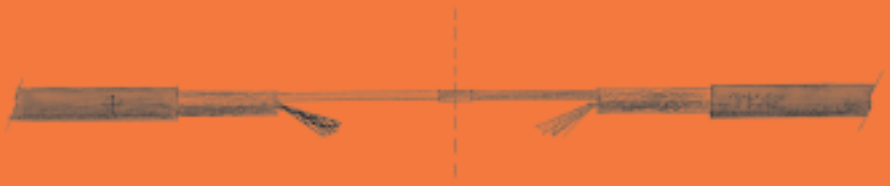


# Electrical heating cables

# Heating cables from Nexans

More and more people around the world are discovering the comfort of a warm floor.
The pleasant warmth can be installed in almost every floor type and gives comfort to private homes and office buildings. The warm floor system is invisible and does not occupy any wall space. The heat is evenly distributed in the room and gives a comfort that must be experienced. There are no parts gathering dust and you are free to use the room space at your desire.

Through an electronic thermostat, the floor keeps the desired temperature at any time and the energy consumption is limited to a minimum. The heating cables of Nexans have always been regarded as high quality products with focus on user friendliness, reliability and safety. Our product developments such as the twin conductor cable, the integrated splice and the advanced screen on the Millimat have been trend setting and have given extremely low failure rates.



All products are designed and tested in accordance with international standards, such as IEC and CENELEC standards, and meet the requirements of the European low voltage directive. The production is approved in accordance with the quality standard ISO 9001 and the environmental policy standard ISO 14001 and EMAS. Nexans offers a 10-year warranty on its electrical heating products. See the valid price list for details.

**Important;** this handbook gives an overview of common applications for electrical heating cables and information about the products of Nexans Norway. The products may be subject to national testing and approvals. This handbook contains general recommendations only and it is not intended for any specific country. It contains no national regulations. When using the manual, national regulations and installation requirements must be followed.

Our distribution network covers many parts of the world. For an overview or any other information, contact Nexans Norway on

**Email: heating.cable@nexans.com**
**or visit our web site; www.nexans.com/heating**

**www.nexans.no**



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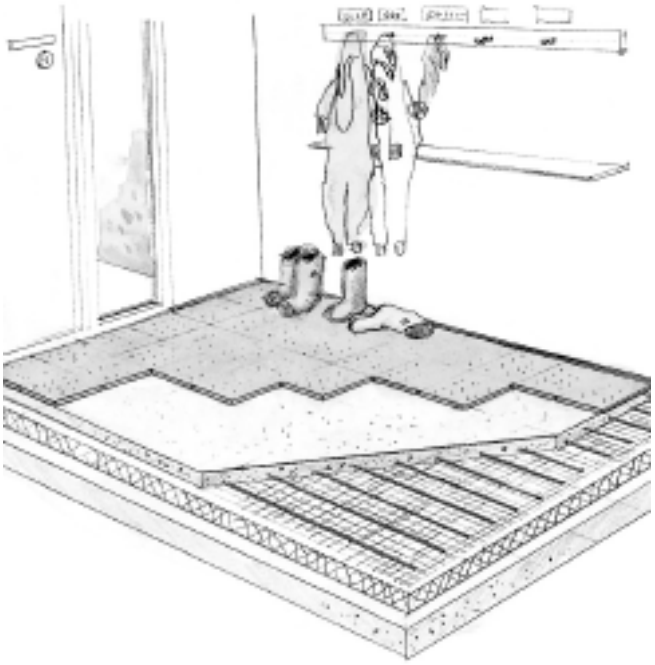

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# 1. comfort heating of buildings

# Heat loss and load demand

**Floor heating installations**
can cover heat loss and provide full heating, or serve as a basic heating of the floor for comfort purposes.
In new and properly insulated buildings the transmission losses are normally in the range of 60-80 W/m$^2$ (5.5 - 7.5 W/sq. ft) building area.

In old or poorly insulated buildings the installations are normally based on an installed load of 80-100 W/m$^2$ (7.5 - 9 W/sq. ft) building area. When necessary a full heat loss calculation should be performed in accordance with local requirements.
Floor heating systems are normally called low temperature radiant heating systems. Approximately 50% of the heat emitted from the floor are by radiation, heating the surrounding surfaces, walls, furniture etc. Thus, the air temperature will be even throughout the room. The result is very comfortable warmth, which is easy to control, room by room.



# Floor heating in concrete constructions

**Direct acting heating systems** require 60-100 W/m$^2$ (5.5 - 9 W/sq. ft). These systems require low thermal capacity, and the heating cables are placed as close to the floor surface as permitted by the national authorities.
Normally this means that the heating cable is placed in the lower part of a max 50-mm (2") thick screed on a high-grade thermal insulation.

When renovating, or when space is essential, special thin screed solutions are used, allowing screed thickness down to 10-15 mm (3/8" - 5/8").

**Storage heating** systems require 150 - 200 W/m$^2$ (14 - 18.5 W/sq. ft). These systems require that the heating cables are embedded in a concrete floor construction of high thermal mass. Often an approx. 100-mm (4") concrete slab is laid on top of a high-density insulation, and the cables are installed on top of the slab and covered with an approx. 50-mm (2") screed.

# Areas of use of Nexans heating cables

By using the factory made heating cable elements, of e.g. 17 W/m (5.2 W/ft), the calculation of the centre spacing is simplified. The correct centre spacing (c-c distance) describes the distance between the cable loops.

| APPLICATION | OUTPUT (W/m²) | | PRODUCT | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Max. | Normal | TXLP elements | TXLP drum | MILLIMAT 80 W/m² | MILLIMAT 130 W/m² | MILLIKIT | CABLEMAT | DEFROST TWIN | SNOWMAT |
| Living room | 100 | 70 - 100 | X | X | X | | X | X | | |
| Kitchen | 100 | 70 - 100 | X | X | X | | X | X | | |
| Sleeping room | 100 | 70 - 100 | X | X | X | | X | X | | |
| Cellar | 100 | 70 - 100 | X | X | X | | X | X | | |
| Bath | 200 | 120 - 150 | X | | | X | X | X | | |
| WC | 200 | 120 - 150 | X | | | X | X | X | | |
| Entrance hall | 200 | 80 - 100 | X | | X | X | X | X | | |
| Basic heating | | 40 - 60 | X | | | | | | | |
| Kindergarden | 100 | 50 - 70 | X | X | X | | X | | | |
| Office | 100 | 80 - 100 | X | X | X | | | X | | |
| Warehouse | 100 | 80 - 100 | X | X | X | | | X | | |
| Shop | 100 | 80 - 100 | X | X | X | | | X | | |
| Wooden floor* | 80 | 50 - 70 | X* | X* | X | | X | | | |
| Freezer floor* | | 10 - 15 | | X | | | | | | |
| Storage heating | 250 | 180 - 250 | X | | | | | | | |
| Snow melting | 350 | 300 | | X | | | | | X | X |

* Max 10 W/m

**Cable output = Gross area [m²] x [W/m²]**

For comfort heating in concrete constructions, we recommend the use of TXLP heating cable, single or twin conductor elements. To find the correct heating cable element, use the above calculation.

**C-C [m] = Net area [m²] divided by cable length [m]**

# Selection table, 17 W/m

The table below shows recommended products with TXLP/2R - 17 W/m and centre spacing for various room sizes and outputs

| m² | LOAD 60-80 W/m² | c-c cm. | LOAD 80-100 W/m² | c-c cm. | LOAD 100-120 W/m² | c-c cm. | LOAD 120-150 W/m² | c-c cm. |
|---|---|---|---|---|---|---|---|---|
| **3** | | | 1 TXLP 300W | 17 | 1 TXLP 300 W | 17 | 1 TXLP 400W | 12 |
| **4** | 1 TXLP 300W | 22 | 1 TXLP 400 W | 17 | 1 TXLP 400 W | 17 | 1 TXLP 500W | 13 |
| **5** | 1 TXLP 300 W | 28 | 1 TXLP 400 W | 21 | 1 TXLP 500 W | 17 | 1 TXLP 600 W | 14 |
| **6** | 1 TXLP 400 W | 25 | 1 TXLP 500 W | 20 | 1 TXLP 700 W | 14 | 1 TXLP 840 W | 12 |
| **7** | 1 TXLP 500 W | 23 | 1 TXLP 600 W | 20 | 1 TXLP 840 W | 14 | 1 TXLP 1000 W | 12 |
| **8** | 1 TXLP 500 W | 27 | 1 TXLP 700 W | 19 | 1 TXLP 840 W | 16 | 1 TXLP 1000 W | 13 |
| **9** | 1 TXLP 600 W | 25 | 1 TXLP 840 W | 18 | 1 TXLP 1000 W | 15 | 1 TXLP 1250 W | 12 |
| **10** | 1 TXLP 600 W | 28 | 1 TXLP 840 W | 20 | 1 TXLP 1000 W | 17 | 1 TXLP 1250 W | 13 |
| **11** | 1 TXLP 700 W | 26 | 1 TXLP 840 W | 22 | 1 TXLP 1250 W | 15 | 1 TXLP 1370 W | 13 |
| **12** | 1 TXLP 700 W | 29 | 1 TXLP 1000 W | 20 | 1 TXLP 1370 W | 15 | 1 TXLP 1700 W | 12 |
| **13** | 1 TXLP 840 W | 26 | 1 TXLP 1000 W | 22 | 1 TXLP 1370 W | 16 | 1 TXLP 1700 W | 13 |
| **14** | 1 TXLP 840 W | 28 | 1 TXLP 1250 W | 19 | 1 TXLP 1370 W | 17 | 1 TXLP 1700 W | 14 |
| **15** | 1 TXLP 1000 W | 25 | 1 TXLP 1250 W | 20 | 1 TXLP 1700 W | 15 | 1 TXLP 2100 W | 12 |
| **16** | 1 TXLP 1000 W | 27 | 1 TXLP 1370 W | 19 | 1 TXLP 1700 W | 16 | 1 TXLP 2100 W | 13 |
| **17** | 1 TXLP 1250 W | 23 | 1 TXLP 1370 W | 21 | 1 TXLP 1700 W | 17 | 1 TXLP 2100 W | 13 |
| **18** | 1 TXLP 1250 W | 24 | 1 TXLP 1370 W | 22 | 1 TXLP 2100 W | 14 | 1 TXLP 2600 W | 12 |
| **19** | 1 TXLP 1250 W | 25 | 1 TXLP 1700 W | 19 | 1 TXLP 2100 W | 15 | 1 TXLP 2600 W | 12 |
| **20** | 1 TXLP 1250 W | 27 | 1 TXLP 1700 W | 20 | 1 TXLP 2100 W | 16 | 1 TXLP 2600 W | 13 |
| **21** | 1 TXLP 1370 W | 26 | 1 TXLP 1700 W | 21 | 1 TXLP 2100 W | 17 | 1 TXLP 2600 W | 14 |
| **22** | 1 TXLP 1370 W | 27 | 1 TXLP 1700 W | 22 | 1 TXLP 2600 W | 14 | 2 TXLP 1370 W | 14 |
| **23** | 1 TXLP 1370 W | 28 | 1 TXLP 2100 W | 18 | 1 TXLP 2600 W | 15 | 1 TXLP 3300 W | 12 |
| **24** | 1 TXLP 1700 W | 24 | 1 TXLP 2100 W | 19 | 1 TXLP 2600 W | 16 | 1 TXLP 3300 W | 12 |
| **25** | 1 TXLP 1700 W | 25 | 1 TXLP 2100 W | 20 | 1 TXLP 2600 W | 16 | 1 TXLP 3300 W | 13 |
| **26** | 1 TXLP 1700 W | 26 | 1 TXLP 2600 W | 17 | 2 TXLP 1370 W | 16 | 1 TXLP 3300 W | 13 |
| **27** | 1 TXLP 1700 W | 27 | 1 TXLP 2600 W | 18 | 2 TXLP 1370 W | 17 | 1 TXLP 3300 W | 14 |
| **28** | 1 TXLP 2100 W | 23 | 1 TXLP 2600 W | 18 | 1 TXLP 3300 W | 14 | 2 TXLP 1700 W | 14 |
| **29** | 1 TXLP 2100 W | 23 | 1 TXLP 2600 W | 19 | 1 TXLP 3300 W | 15 | 2 TXLP 2100 W | 11 |
| **30** | 1 TXLP 2100 W | 24 | 1 TXLP 2600 W | 20 | 1 TXLP 3300 W | 15 | 2 TXLP 2100 W | 12 |

See page 6 for recommended output per room type.

# Selection table, 10 W/m

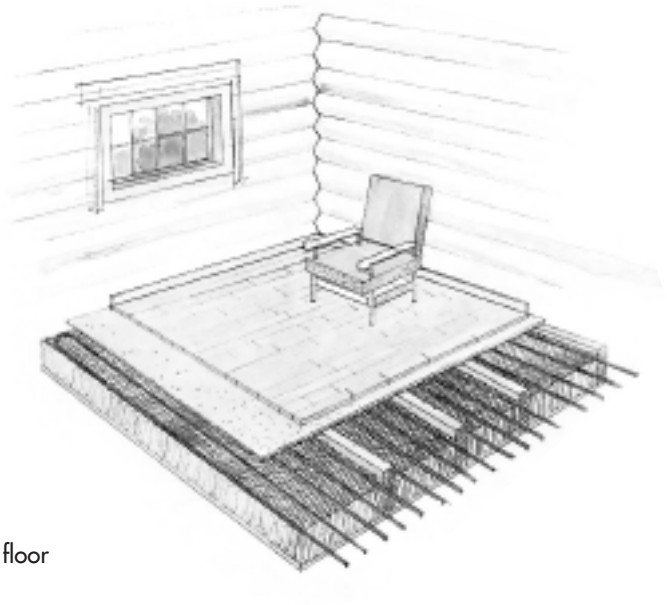
The table below shows recommended products with TXLP/2R - 10 W/m and centre spacing for various room sizes and outputs

| m² | LOAD 40-60 W/m² | c-c cm. | LOAD 60-80 W/m² | c-c cm. | LOAD 80-100 W/m² | c-c cm. | LOAD 100-120 W/m² | c-c cm. |
|---|---|---|---|---|---|---|---|---|
| **3** | | | 1 TXLP 230 W | 13 | 1 TXLP 230 W | 13 | 1 TXLP 380 W | 08 |
| **4** | 1 TXLP 230 W | 17 | 1 TXLP 230 W | 17 | 1 TXLP 380 W | 11 | 1 TXLP 380 W | 13 |
| **5** | 1 TXLP 230 W | 22 | 1 TXLP 380 W | 13 | 1 TXLP 380 W | 13 | 1 TXLP 530 W | 09 |
| **6** | 1 TXLP 380 W | 16 | 1 TXLP 380 W | 16 | 1 TXLP 530 W | 11 | 1 TXLP 760 W | 08 |
| **7** | 1 TXLP 380 W | 18 | 1 TXLP 530 W | 13 | 1 TXLP 530 W | 13 | 1 TXLP 760 W | 09 |
| **8** | 1 TXLP 380 W | 21 | 1 TXLP 530 W | 15 | 1 TXLP 760 W | 11 | 1 TXLP 940 W | 08 |
| **9** | 1 TXLP 530 W | 17 | 1 TXLP 760 W | 12 | 1 TXLP 760 W | 12 | 1 TXLP 1050 W | 09 |
| **10** | 1 TXLP 530 W | 19 | 1 TXLP 760 W | 13 | 1 TXLP 940 W | 11 | 1 TXLP 1050 W | 09 |
| **11** | 1 TXLP 530 W | 21 | 1 TXLP 760 W | 14 | 1 TXLP 940 W | 12 | 1 TXLP 1300 W | 08 |
| **12** | 1 TXLP 530 W | 22 | 1 TXLP 760 W | 16 | 1 TXLP 1050 W | 11 | 1 TXLP 1300 W | 09 |
| **13** | 1 TXLP 760 W | 17 | 1 TXLP 940 W | 14 | 1 TXLP 1050 W | 12 | 1 TXLP 1300 W | 10 |
| **14** | 1 TXLP 760 W | 18 | 1 TXLP 940 W | 15 | 1 TXLP 1050 W | 11 | 1 TXLP 1610 W | 09 |
| **15** | 1 TXLP 760 W | 20 | 1 TXLP 1050 W | 14 | 1 TXLP 1300 W | 12 | 1 TXLP 1610 W | 09 |
| **16** | 1 TXLP 760 W | 21 | 1 TXLP 1050 W | 15 | 1 TXLP 1300 W | 12 | 1 TXLP 1610 W | 10 |
| **17** | 1 TXLP 940 W | 18 | 1 TXLP 1300 W | 13 | 1 TXLP 1610 W | 11 | 2 TXLP 940 W | 09 |
| **18** | 1 TXLP 940 W | 19 | 1 TXLP 1300 W | 14 | 1 TXLP 1610 W | 11 | 2 TXLP 940 W | 09 |
| **19** | 1 TXLP 940 W | 20 | 1 TXLP 1300 W | 15 | 1 TXLP 1610 W | 12 | 2 TXLP 1050 W | 10 |
| **20** | 1 TXLP 1050 W | 19 | 1 TXLP 1300 W | 15 | 1 TXLP 1610 W | 12 | 2 TXLP 1050 W | 09 |
| **21** | 1 TXLP 1050 W | 20 | 1 TXLP 1610 W | 13 | 2 TXLP 940 W | 11 | 2 TXLP 1050 W | 09 |
| **22** | 1 TXLP 1050 W | 21 | 1 TXLP 1610 W | 14 | 2 TXLP 1050 W | 10 | 2 TXLP 1300 W | 10 |
| **23** | 1 TXLP 1300 W | 18 | 1 TXLP 1610 W | 14 | 2 TXLP 1050 W | 11 | 2 TXLP 1300 W | 08 |
| **24** | 1 TXLP 1300 W | 18 | 1 TXLP 1610 W | 15 | 2 TXLP 1050 W | 11 | 2 TXLP 1300 W | 09 |
| **25** | 1 TXLP 1300 W | 19 | 1 TXLP 1610 W | 15 | 2 TXLP 1050 W | 12 | 2 TXLP 1300 W | 09 |
| **26** | 1 TXLP 1300 W | 20 | 1 TXLP 1610 W | 16 | 2 TXLP 1050 W | 12 | 2 TXLP 1300 W | 10 |
| **27** | 1 TXLP 1300 W | 21 | 1 TXLP 1610 W | 17 | 2 TXLP 1300 W | 10 | 2 TXLP 1610 W | 08 |

See page 6 for recommended output per room type.

# Floor heating in wooden floors

**When using electrical heating cables**
in wooden floors, cables with 10 W/m or less is usually installed with a maximum of 80 W/m$^2$.

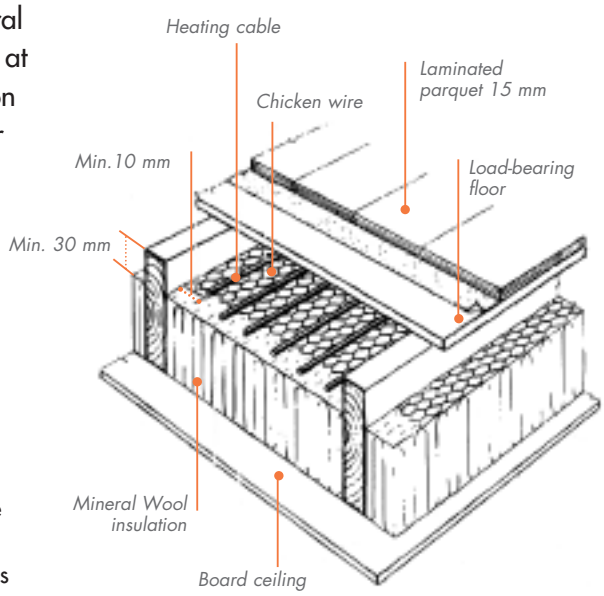


For heating requirements of 60-70 W/m$^2$ and a cable output of maximum 10 W/m, the centre distance will normally be in the range of 90-130 mm.
In order to avoid damaged or creaking floorboards, the following precautions should be taken in rooms where people spend prolonged periods of time;

- Install maximum 60 W/m$^2$
- Distribute the cables evenly across the entire floor area
- Protect all material against rain and moisture in the construction period, and make sure that all the materials are dry before the floor covering is laid
- Use an electronic thermostat with room sensor and a floor sensor limiting the max. temperature in the floor to 35° C.
- If possible, floorboards should be placed loosely on top of the heated floor for a few days before they are fastened
- Avoid laying any thick/wall-to-wall carpets or rugs on top of parquet

# Installation

**The spaces between the beams** should be filled with mineral wool insulation material, creating an air pocket of at least 30 mm at the top (see figure). Chicken wire-net is laid on top of the insulation and the cable is fixed every 350 mm. Cut a mask and twist it over the cable, do not use plastic or nylon strips. The heating cables are to be laid parallel to the beams. The distance from the cable to combustible material must be at least 10 mm.




When crossing the supporting beams, a 10x10-mm slot must be scored, through which the cable will run.
The slots must be scored in a way that the supporting function of the beam is not significantly reduced and with min. 50 mm distance between the slots. If the cables can be laid prior to the battening of joists, slots will not be necessary.
In so-called platform floors, in which the beams are shut off at an early stage to form a working platform, you are recommended not to install insulation from below since the heating cables may be pushed up towards the floor. This can lead to the cable being enclosed by insulation, reducing the air pocket.

# Renovation with MILLIMAT



*MILLIMAT: Perfect for renovation*



**Renovation of an existing room** improves the standard and value of any home. It is also the perfect time to install electrical floor heating.
Minimum floor thickness is important in renovation processes in order to avoid extra work on doors and thresholds.

For renovation projects, Nexans has developed the MILLIMAT. This is a ready-made heating cable unit on a thin, self adhesive glass fibre net. The MILLIMAT is only 4 mm thick and can be installed in most rooms requiring a thin floor construction. The MILLIMAT is easily adapted to the shape of the room and may be installed directly in tile glue. The MILLIMAT is delivered with 130 W/m$^2$ or with 80 W/m$^2$ at 230 VAC. The 130 W/m$^2$ is usually installed in bathrooms and other barefoot areas, whereas the 80 W/m$^2$ is usually installed in living rooms, kitchens, halls etc. The 80 W/m$^2$ may also be used under parquet or other wooden floor coverings, with a recommended use of a thermostat with a temperature limit of max. 35° C.
MILLIMAT 80 W/m$^2$ is approved for installation on combustible surfaces.

# Project planning and calculations

Correct planning is vital for all projects, to achieve best possible heat comfort and energy saving.
The following parameters are central for good planning.

**Load demand**
The first step is to determine the area load, W/m$^2$. For comfort heating applications this can normally be done either by heat loss calculation or by using empirical values (see other section in this booklet). Heat loss calculations can be a complex matter, and should, if possible, be executed by the architect or constructor of the building. For snow melting applications the recommended loads in this booklet should be adapted to climatic conditions.

**Area to be heated**
The area load demand is normally regarded as the load demand for the gross area.
In rooms with obstacles such as fixed furniture, toilet, bath tube etc, the net area must have an increased area load to compensate for the unheated areas.

**Selection of cable**
The selection of the type of cable shall be based on application type, and construction details such as ground or floor type, load etc.

**Centre spacing**
If the cable is applied with the correct centre spacing, it will cover the entire area. The centre spacing is easily found by dividing net area by cable length.
Please see page 7 and 8 as well for selection of cable.

**NexCalc**
Our Internet solution for heating cable calculations is a helpful tool for all project planning.
Logging on to www.nexans.no and selecting "Servicelink", you are able to use our NexCalc system for any intended use of our products. The program will tell by colour codes what calculations are acceptable and what is not recommended. Each calculation can easily be printed and used as documentation. There is also a link to the product database, where you will find product data sheets for all cables.

**NexCalc, project planner**



# 2. special applications

# Selection of thermostats

**Thermostat control** The thermostat will automatically control the comfort temperature, since the required heat is influenced by factors such as outdoor temperature and wind. The thermostat will also utilise the so-called free heating from electrical appliances, lighting, the sun or persons. This free heating may create up to 10-20% of the required heating.

**Selection guide**

| Primary task of the heating | Description of purpose | Selection of thermostat type |
|---|---|---|
| Comfort heating of floor | Shall give a comfortable heat in floors, e.g. in a bathroom or entrance hall. Also used to secure dry and non-slippery floors in entrances, washing rooms, shops or other public areas | Electronic thermostat incl. floor sensor |
| Floor warming in combination with other heating sources | Shall provide basic heating in the floor, whereas the comfort regulation is done by another heat source | Thermostat incl. floor sensor |
| Floor warming, heating the room | Shall give a comfortable temperature in the entire room | Thermostat with an integrated or remote room sensor |

**Selection of limitation sensor** For certain conditions, it might be necessary to use a thermostat that includes a limitation sensor for control of min. or max. temperature.

| Min. temperature limitations | Max. temperature limitations |
|---|---|
| Secures that the floor always get minimum comfort temperature. When there is sunshine, the floor heating system may be off for so long that the floor temperature will drop. In heavy constructions (40-60 mm) the floor heating will react slowly when the heating demand rises. | For installations in wooden floors it might be necessary to limit the max. temperature of the cable or the floor construction to e.g. 28° C.<br>In other applications it might be necessary to limit the max. temperature of the cable. |

**Save up to 25% with setback temperature** In weekdays there may only be need for comfort heating during the morning and then again from the late afternoon to the end of the night. In offices, the comfort heating is normally needed during the day from Monday till Friday. Up to 15-25% may be saved if the comfort temperature is lowered by about 5°C at night, and during the day on weekdays. The setback temperature has its greatest advantage in thin (10-20 mm) floor constructions and wooden floors. Heavy constructions (40-60 mm) will have a higher heating capacity, thus the time for lowering or rising of the temperature will be longer.
This means that a setback temperature should only be used if the setback period is relatively long, e.g. at night.

**Installation of floor sensor**
The correct installation of the sensors is a condition for the function of the thermostat, as well as for the comfort and energy consumption of the installation.

The floor sensor must be installed in a section of the floor where there is a high probability that it will not be covered by heavy furniture. The sensor must not be placed close to the heating cable. In order to ensure easy replacement of the sensor, it should be embedded in a tube in the floor. The tube must be sealed and placed as close as possible to the floor surface – this is the main measuring point. If necessary the sensor cable can be extended up to approximately 100 m with a standard installation cable.

**Installation of thermostat with built-in room sensor**
A thermostat with room sensor should be installed approximately 1.6 m above floor level. The sensor must not be installed on cold external walls, exposed to draught, direct sunlight or heat from various appliances. If a correct installation is impossible, a remote room sensor should be used. Then a floor-heating thermostat must be used, and the floor sensor replaced by a remote room sensor.

# Snow melting installations

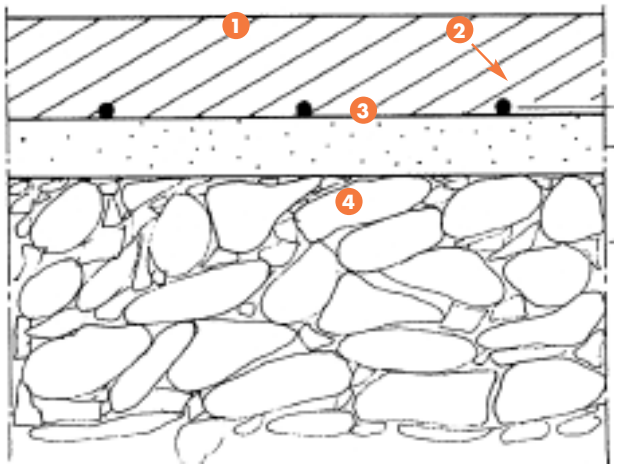
**Nexans heating cables** are perfect for snow melting applications. Use series resistance general purpose heating cable, TXLP, DEFROST TWIN or SNOWMAT. In some cases an armoured cable has to be considered.

The amount of load to be installed is determined principally from what is required of the installation with regard to the climatic conditions and the control system.

In roads, driveways, sidewalks etc. the heating cable should be installed on a base consisting of compacted stone/sand or similar.

We suggest the use of SNOWMAT for outdoor snow and ice melting applications. If a heating cable, such as TXLP or DEFROST TWIN, is installed on an insulated base, a wire netting should be used in order to prevent the cables from being compressed into the insulation.
The structural base should be frost free in order to prevent uneven frost heaving.

The cables are normally covered by 50 mm (2") asphalt, concrete or sand and concrete paving slabs.

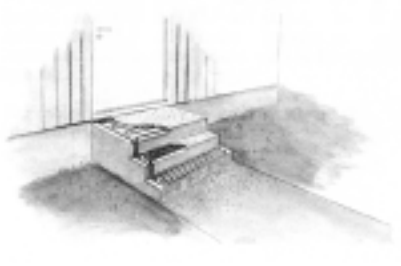



***Section of Pavement with asphalt***

*1. 50 mm asphalt or concrete paving stones.*
*2. SNOWMAT or other heating cable.*
*3. 20-30 mm compacted stone –sand or similar.*
*4. Crushed stone*

# Heating cables in stairs

Nexans heating cables in stairs should be laid lengthways on the steps so that they lie only on the horizontal surfaces. The cables are covered with a 30 - 50 mm screed or paving slabs embedded in mortar.
Use DEFROST TWIN with 4-5 cable runs in each step, or TXLP series resistance heating cable which is well suited for medium or large installations.



**Limitations**

| | |
|---|---|
| With sand/slabs: | Max. 30 W/m (9 W/ft) of cable |
| Asphalt: | Max. 30 W/m (9 W/ft) of cable |
| Concrete: | Max. 35 W/m (10 W/ft) of cable |

For design and selection of customised cable/resistance value, use NexCalc or diagram.

*Note:* When using long cables, potential capacitance problems may occur.

## Installation

The heating cable shall be installed with even spacing.
Avoid concentration of heating cable that will give uneven cable and surface temperatures, and in worst-case cause overheating and breakdown. Always measure insulation and conductor resistance before and immediately after covering the cables. Be aware that the insulation resistance tends to become lower at high temperature, e.g. when measuring the cable in warm asphalt.

# Frost protection of freezer room (floors)



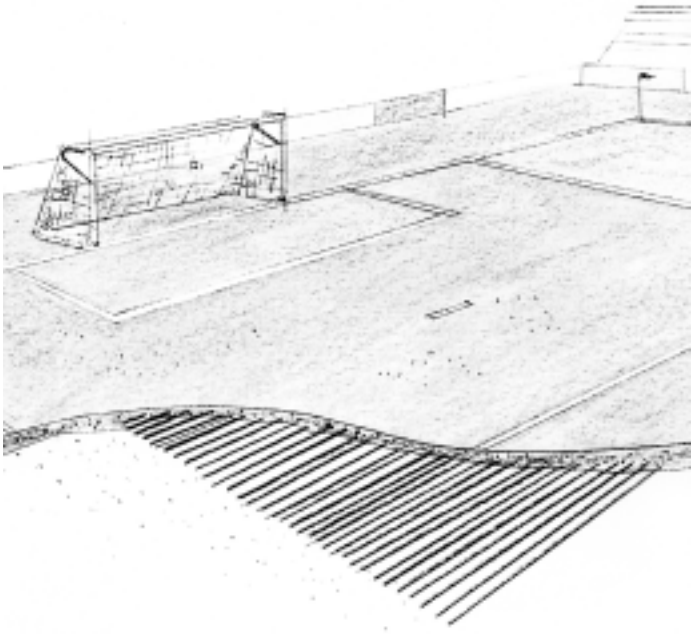
### Use series resistance heating cable type TXLP

**Selection of load**
In freezer room floors, which are well insulated, the load requirement is 10-15 W/m$^2$ (1-1.5 W/Sq. ft).

**Thermostat control**
The heating cable should be controlled by use of a thermostat, with a remote sensor located at the same depth as the heating cable and between two cable runs.

**Installation**
Use a linear load of 5-10 W/m$^2$ (1.5-3 W/ft) cable. The centre spacing will then be in the range of 50 - 70 cm (19-27").
The heating cable is normally embedded in a concrete layer before the floor is insulated and finished.
Always measure the insulation and conductor resistance before embedding.

# Soil heating



### Use series resistance heating cable type TXLP

**Selection of load**
For soil heating in market garden forcing frames, the load demand is approx. 5 W/m$^2$/°C (0.26 W/Sq. ft/°F).
For soil heating of sports arenas, the load is normally 50-70 W/m$^2$ (4.5-6.5 W/sq. ft).

**Installation**
Selection and location of heating cable as well as installation method have to be individually decided.

*Note:* Always measure the insulation and conductor resistance before embedding.

# Laying heating cables in concrete screed



*Asphalt installation after manual covering*



*Placing of SNOWMAT*



*Frost free drive way*

## And in asphalt

**For all outdoor installations,** care must be taken whilst covering the heating cables.

Do not drop stones or slabs on the heating cable. Asphalt should not have a higher temperature than approx. 160°C (320° F).
The cable should first be covered manually by one layer of asphalt before the total thickness is laid and compacted.
The cables are placed in the correct location, then covered with a thin layer of asphalt before the thicker layer is laid.

If the heating cables shall be moulded in concrete, it is important that the underlay is stable, and that the concrete is compacted.

# Drying and hardening of concrete

Electrical heating cables may be used for drying and hardening of concrete in new buildings.
The shortening of the drying time will contribute to the shortening of the complete construction time: a very economical action. The heating cables are placed directly in the concrete. It prevents freezing and accelerates the hardening of the concrete and makes it possible to remove the frames after three days, even in severe cold. At a later stage, the heating cables can be re-connected for effective drying of the building structure and providing basic heating during the construction period.

Another effect of rapid drying of the concrete floor is that painting work can begin earlier than with other heating methods. Standard TXLP heating cables are often used for this purpose. In some countries a standard 230V element of 10 W/m is connected to 400V, giving an output of 30 W/m.

For drying and hardening of concrete, a load of 85 - 135 W/m$^2$ is used. The cable is fixed to the armouring mesh, and should not cross or overlap at any point. The cable should not come in contact with plastic or combustible material.
The cables may be used at a later stage in the construction period and the cold leads are cut when the installation is completed.



*Bøleråsen building site*



*Photo showing concrete hardening heating cables once concrete poured.*

# Frost protection of gutters and roof drains

Heating cables are ideal to prevent ice and heavy snow in gutters and roof drains.
It has an important safety aspect, as it prevents damage that might be caused by snow, ice and icicles falling down.

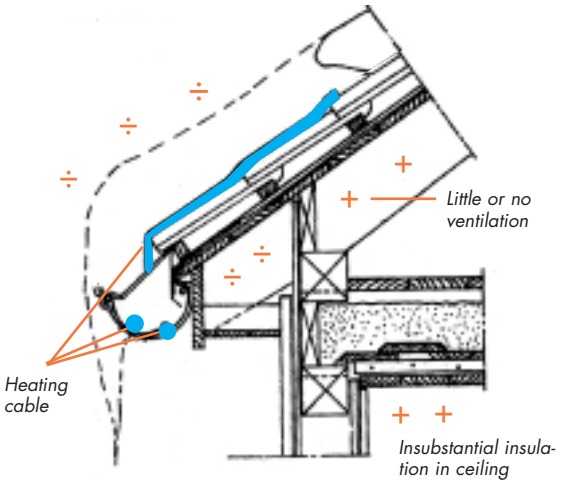
For this application, series resistance heating cable type TXLP or self-limiting heating cable type DEFROST PIPE 20 / GUTTER is used.

**Evaluate the roof construction: Warm or cold roof?**

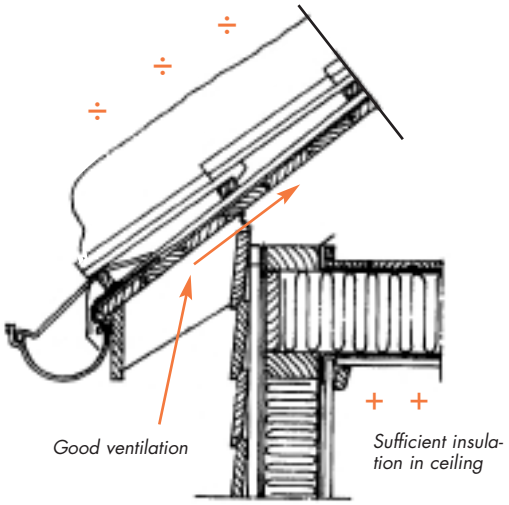
**Warm roof** is a poorly insulated roof where the heat loss through the roof construction causes a positive temperature on the roof surface under a layer of snow.
Water from snow melting will end up in the cold roof drains and freeze.

**Cold roof** is a well-insulated roof where the problem of ice is caused often in the late winter. Sunshine will melt the snow on the roof while the roof drains and gutters may be in the shadow. The melting water will then freeze.

**Warm roof**



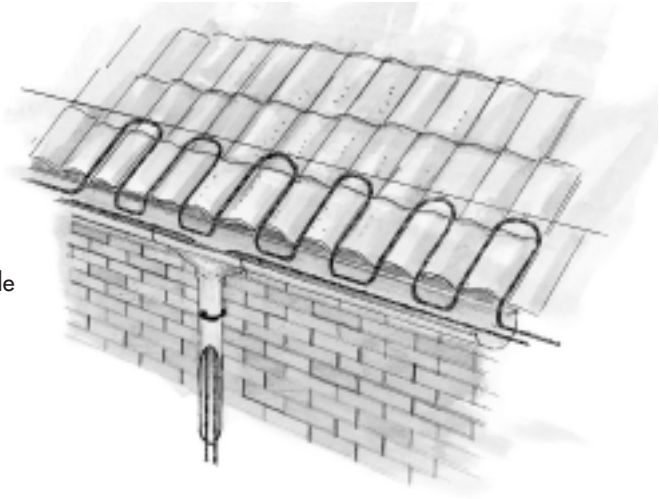

**Cold roof**




**Selecting the right load**

**Warm roof:** 40-50 W/m of gutter
**Cold roof:** 30-40 W/m of gutter

**Limitations**
Metal gutters and pipes: Max. 50 W/m of gutter, 25 W/m of cable
Wooden gutters and pipes: Max. 36 W/m of gutter, 18 W/m of cable
Plastic gutters and pipes: Max. 40 W/m of gutter, 20 W/m of cable



## Planning and calculation

Due to the high loads and varying gutter and drain lengths, TXLP drum type single conductor cable is used.

Sum up the total length of roof drain and gutters.
If needed the loop, in the drain is to go down to frost proof depth.
Multiply this length by 2, and this gives the cable length (load).
Select the correct length and resistance value by using the load diagram. As the cable is laid in a loop, the load per meter cable has to be the W/m roof drain/pipe divided by 2.

Use the load diagram to find the wanted cable length from the horizontal line and the correct load per meter cable from the resistance line.

The cable is installed in a continuous loop in the gutter/drain.
The cable is fastened on top of each drain by using a stainless steel suspension bracket.
The loop is protected at the bottom opening as shown in the installation picture.

For the control, use an outdoors waterproof thermostat placed on the shadow side of the building. The thermostat is to disconnect at approx. + 5°C (41°F). With cold roofs a thermostat disconnecting at approx. - 10°C (14°F) can also be used for energy saving purposes.

In many countries it is also required to use a ground fault circuit interrupter, disconnecting at max. 30 mA.

## Cables on roof surfaces

In some difficult situations with warm roofs it may be necessary to install heating cable loops on the outer part of the roof in addition to the cable in the gutters/drains. The linear cable load is to be limited to 16-18 W/m per meter cable.

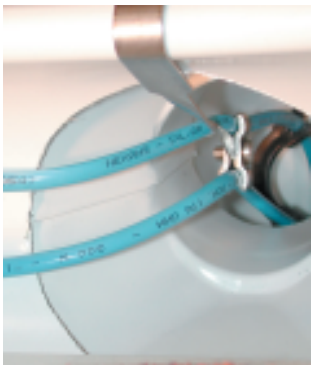
*Example; A 21 m long gutter with 2 drains, each 8 m. Total length is 37 m and we want approx. 40 W/m gutter/drain. Cable length; 37 x 2 = 74 m. Cable linear load; 40/2 = 20 W/m. From the diagram we find that 74 m 0.49 Ω/m gives 20 W/m and 1450W total at 230V.*



*Two cable lengths with plastic spacers*



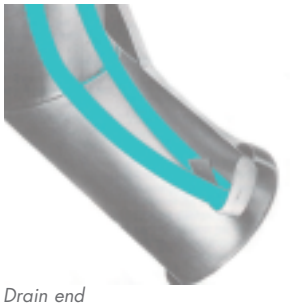
*Cable on roof surface*



*Drain top*



*Drain top and fixing of stainless steel suspension*



*Drain end*

# Frost protection of pipes

**Choice of cable type:** The most economic solution is often to use cable type TXLP. Alternatively use self-limiting heating cables, or parallel resistance cable type MPT-NG (up to 120°C).

## Load demand, recommended load for non-insulated pipes buried in the ground

| LOWEST WINTER AIR TEMPERATURE -30°C (-22 F) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Pipe diameter | | Load requirements of pipe buried at different depths | | | | | |
| Inside " | Outside mm | Depth 500 mm 20" | | Depth 800 mm 32" | | Depth 1000 mm 40" | |
| | | W/m | Wft | W/m | W/ft | W/m | W/ft |
| 1/2 | 21 | 6 | 2.0 | 5 | 1.5 | 5 | 1.5 |
| 3/4 | 27 | 8 | 2.5 | 7 | 2.0 | 6 | 2.0 |
| 1 | 33 | 10 | 3.0 | 8 | 2.5 | 7 | 2.0 |
| 1 1/4 | 42 | 12 | 3.5 | 10 | 3.0 | 9 | 3.0 |
| 1 1/2 | 48 | 14 | 4.5 | 11 | 3.5 | 10 | 3.0 |
| 2 | 60 | 17 | 5.0 | 14 | 4.0 | 12 | 3.5 |
| 2 1/2 | 75 | 21 | 6.5 | 17 | 5.0 | 15 | 4.5 |
| 3 | 89 | 25 | 8.0 | 21 | 6.5 | 18 | 5.5 |
| 4 | 114 | 32 | 10.0 | 26 | 8.0 | 23 | 7.0 |
| 6 | 165 | 46 | 14.0 | 38 | 12.0 | 33 | 10.0 |

(Values rounded off)

The tables show the load requirement per meter or per feet of pipeline. Single conductor heating cables should be used. The heating cable is laid forwards and backwards in a loop. The linear load of the cable shall be half the requirement per unit length of pipe as shown in the table.

## Recommended loading for insulated pipes

| INSIDE pipe diam. " | THICKNESS OF INSULATION | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 15 mm Temp. difference | | | 20 mm Temp. difference | | | 25 mm Temp. difference | | | 30 mm Temp. difference | | | 40 mm Temp. difference | | | 50 mm Temp. difference | | | 100 mm Temp. difference | | |
| | 10 | 20 | 30 | 10 | 20 | 30 | 10 | 20 | 30 | 10 | 20 | 30 | 10 | 20 | 30 | 10 | 20 | 30 | 10 | 20 | 30 |
| 3/4 | 3.5 | 6.5 | 11 | 3.1 | 5.5 | 8.0 | 2.5 | 5.5 | 7.0 | 2.5 | 4.5 | 6.5 | 2.0 | 3.5 | 5.5 | 2.0 | 3.5 | 5.0 | 1.5 | 2.5 | 3.5 |
| 1 | 4.0 | 8.0 | 12 | 3.5 | 7.0 | 10 | 3.0 | 6.0 | 9.0 | 3.0 | 5.0 | 8.0 | 2.5 | 5.0 | 7.0 | 2.0 | 4.0 | 6.0 | 1.5 | 3.0 | 4.0 |
| 1 1/4 | 5.0 | 10 | 15 | 4.0 | 8.0 | 12 | 4.0 | 7.0 | 10 | 3.0 | 6.0 | 9.0 | 3.0 | 5.0 | 8.0 | 2.5 | 5.0 | 7.0 | 2.0 | 3.0 | 5.0 |
| 1 1/2 | 5.5 | 11 | 16 | 4.5 | 9.0 | 13 | 4.0 | 8.0 | 11 | 4.0 | 7.0 | 10 | 3.0 | 6.0 | 8.0 | 2.5 | 5.0 | 7.0 | 2.0 | 3.5 | 5.0 |
| 2 | 6.5 | 13 | 19 | 5.0 | 10 | 15 | 5.0 | 9.0 | 13 | 4.0 | 8.0 | 12 | 3.0 | 6.0 | 9.0 | 3.0 | 6.0 | 8.0 | 2.0 | 4.0 | 6.0 |
| 2 1/2 | 8.0 | 16 | 24 | 6.0 | 12 | 18 | 5.0 | 10 | 15 | 5.0 | 9.0 | 13 | 4.0 | 7.0 | 11 | 3.0 | 6.0 | 9.0 | 2.0 | 4.0 | 6.0 |
| 3 | 9.0 | 18 | 27 | 7.0 | 14 | 21 | 6.0 | 12 | 17 | 5.0 | 10 | 15 | 4.0 | 8.0 | 12 | 4.0 | 7.0 | 11 | 2.5 | 4.5 | 7.0 |
| 4 | 11 | 22 | 33 | 9.0 | 18 | 27 | 8.0 | 15 | 22 | 6.0 | 12 | 18 | 5.0 | 10 | 15 | 4.0 | 8.0 | 12 | 2.5 | 5.0 | 8.0 |
| 5 | 14 | 28 | 42 | 11 | 21 | 31 | 8.0 | 17 | 25 | 7.0 | 14 | 21 | 6.0 | 12 | 17 | 5.0 | 10 | 15 | 3.0 | 6.0 | 9.0 |
| 6 | 15 | 30 | 45 | 12 | 24 | 36 | 10 | 20 | 30 | 9.0 | 17 | 25 | 7.0 | 14 | 21 | 6.0 | 11 | 17 | 3.5 | 7.0 | 10 |
| 7 | 17 | 34 | 51 | 14 | 28 | 42 | 11 | 22 | 33 | 10 | 19 | 29 | 8.0 | 15 | 22 | 6.0 | 12 | 18 | 4.0 | 8.0 | 11 |
| 8 | 20 | 40 | 59 | 15 | 30 | 45 | 13 | 25 | 37 | 11 | 21 | 32 | 9.0 | 17 | 25 | 7.0 | 14 | 21 | 4.0 | 8.0 | 12 |
| 9 | 22 | 43 | 64 | 17 | 34 | 51 | 14 | 27 | 40 | 12 | 23 | 35 | 10 | 18 | 28 | 8.0 | 15 | 23 | 4.5 | 9.0 | 13 |
| 10 | 23 | 46 | 69 | 19 | 37 | 55 | 15 | 30 | 45 | 13 | 26 | 39 | 10 | 20 | 30 | 8.0 | 16 | 24 | 5.0 | 10 | 14 |

### Limitations for TXLP:

These must never be used on pipes requiring a temperature above 50°C (122°F).

## Using self limiting heating cables

After having found the heat loss, the following table is used to select the cable type:

| Type | Output at 5 °C (W/m) | Most common application |
|---|---|---|
| DEFROST PIPE 15 | 14.5 | Frost protection of water pipes |
| DEFROST PIPE 20 / GUTTER | 22.5 | Frost protection of water pipes, roof gutters and drains |
| DEFROST PIPE 30 | 33 | Frost protection of water pipes |

A self-limiting heating cable will adjust the heat output in response to increasing or decreasing pipe temperature.
Due to this it is important to select the cable with the correct output depending on the temperature of the pipe. Check the operating pipe temperature and use the relevant diagrams in the product data sheet to select the correct cable temperature.

The DEFROST PIPE 15 giving 14.5 W/m at 5 °C will give approx. 4 W/m at 40 °C pipe temperature.

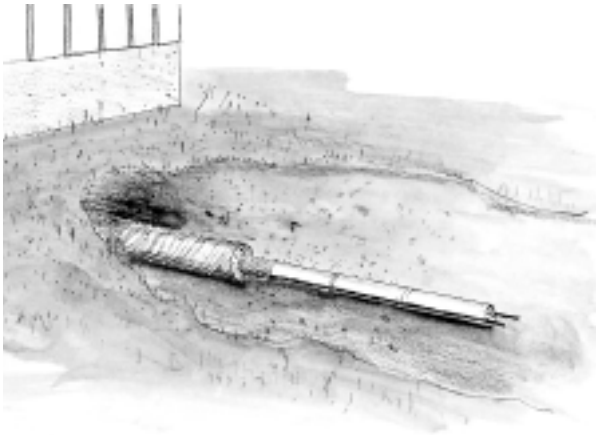
| Type | Startup temp. | Max. length (m) at circuit breaker size: | | | | | |
|---|---|---|---|---|---|---|---|
| | | 6 A | 10 A | 16 A | 20 A | 25 A | 32 A |
| DEFROST PIPE 15 | 0 °C | 84 | 100 | - | - | - | - |
| DEFROST PIPE 20 / GUTTER | 0 °C | 48 | 80 | 129 | 140 | 155 | - |
| DEFROST PIPE 30 | 0 °C | 34 | 57 | 90 | 100 | 110 | 120 |

## Installation

Series-resistance single conductor heating cables are installed in one or more loops on the surface of the pipe or spiralled in order to give the correct load.
Self-limiting heating cables and parallel resistance heating cables are normally laid straight along the pipe or spiralled in order to give the correct load.
The heating cables are fixed to the pipe by means of a temperature resistant tape. The best thermal contact and heat distribution is achieved by wrapping an aluminium foil over the heating cable before the insulation is applied. The insulation must be suitably protected against moisture or water.
On flanges and vents on process piping, 1-1,5 m (40 -60") of heating cable is wrapped carefully in such a way that uncoupling can be done later if necessary.

## Thermostat control

Thermostat control is recommended in order to maintain a steady temperature and save energy. An electronic thermostat with a remote sensor should be used.



*Pipe with heating cable and mineral wool insulation*

# Hot water in buildings

Instant hot water supply by single pipe system can be achieved by using WARM WATER PIPE self-limiting heating cable for hot water temperature maintenance.

The WARM WATER PIPE self-limiting heating cable is fitted to a single hot water supply pipe to maintain the hot water temperature by compensating for the heat loss under non-flow condition. Compared with a re-circulation system, this reduces the capital costs and lowers the operating costs.

# 3. product information

# TXLP/2R

## Twin conductor heating cable units for direct heating



**Applications:**
TXLP/2R heating cable units are ideal for floor warming in concrete constructions. Can also be used in snow melting installations, for frost protection of roof gutters and drains, and soil heating. Each unit has a unique factory made internal splice which is marked =>SPLICE<= on the cable surface. There is no need for a return conductor.
The sealed end is 100% waterproof (factory made seal). The cold end is marked with *** on the cable surface.



**Construction:**
- Solid resistance wire
- XLPE insulation
- Tinned copper earthing conductor
- Aluminium screen
- PVC outer jacket
- Overall diameter: approx. 7.5 mm (1/3")

**Technical data:**
- Element values from 230 to 3300 W
- Linear load: 10 or 17 W/m
- Series resistance
- Max. cont. operating temperature outer jacket: 65° C (149° F)
- Min. bending radius: 5 x cable diameter
- Tolerance on conductor resistance: - 5 / + 10 %
- Highest system voltage: 300/500 V
- Rated voltage: 230 V

| TYPE | Load a 230V | Element length(*) | Element length(*) | Nominal element resistance | Outer diameter | Max magnetic flux density | Weight per unit | Weight per unit | Nexans code no. | EAN-13 |
|---|---|---|---|---|---|---|---|---|---|---|
| | (W) | (m) | (ft) | (Ω) | (mm) | (µT) | (kg) | (lb) | | |
| **TXLP/2R 300/17** | 300 | 17.6 | 58 | 176.3 | 7.5 | 0.80 | 1.4 | 3.4 | 10022293 | 7045210013566 |
| **TXLP/2R 400/17** | 400 | 23.5 | 77 | 132.3 | 7.5 | 1.06 | 1.8 | 4.3 | 10022294 | 7045210013573 |
| **TXLP/2R 500/17** | 500 | 29.3 | 96 | 105.8 | 7.5 | 1.33 | 2.2 | 5.3 | 10022295 | 7045210013580 |
| **TXLP/2R 600/17** | 600 | 35.2 | 115 | 88.2 | 7.5 | 1.46 | 2.6 | 6.3 | 10022296 | 7045210013597 |
| **TXLP/2R 700/17** | 700 | 41.0 | 135 | 75.6 | 7.5 | 1.59 | 2.9 | 7.0 | 10022297 | 7045210013597 |
| **TXLP/2R 840/17** | 840 | 49.7 | 162 | 63.0 | 7.5 | 1.86 | 3.5 | 8.4 | 10022298 | 7045210013610 |
| **TXLP/2R 1000/17** | 1000 | 58.3 | 191 | 52.9 | 7.5 | 2.23 | 4.1 | 9.9 | 10022288 | 7045210013511 |
| **TXLP/2R 1250/17** | 1250 | 72.4 | 237 | 42.3 | 7.5 | 2.65 | 5.0 | 12.0 | 10022289 | 7045210013528 |
| **TXLP/2R 1370/17** | 1370 | 80.8 | 265 | 38.6 | 7.5 | 3.32 | 5.3 | 12.8 | 10022290 | 7045210013535 |
| **TXLP/2R 1700/17** | 1700 | 100.0 | 328 | 31.1 | 7.5 | 3.63 | 6.7 | 16.1 | 10022291 | 7045210013542 |
| **TXLP/2R 2100/17** | 2100 | 123.7 | 405 | 25.2 | 7.5 | 4.51 | 8.3 | 20.0 | 10022292 | 7045210013559 |
| **TXLP/2R 2600/17** | 2600 | 154.5 | 507 | 20.3 | 7.5 | 5.57 | 9.5 | 20.9 | 10047809 | 7045210026511 |
| **TXLP/2R 3300/17** | 3300 | 194.0 | 615 | 16.0 | 7.5 | 6.9 | 11.7 | 25.7 | 10022300 | 7045210013634 |
| **TXLP/2R 230/10** | 230 | 23.0 | 75 | 230.0 | 7.5 | 0.29 | 1.7 | 3.7 | 10022283 | 7045210013467 |
| **TXLP/2R 380/10** | 380 | 38.3 | 126 | 139.2 | 7.5 | 0.48 | 2.7 | 5.9 | 10022284 | 7045210013474 |
| **TXLP/2R 530/10** | 530 | 53.4 | 175 | 99.8 | 7.5 | 0.67 | 3.7 | 8.2 | 10022285 | 7045210013481 |
| **TXLP/2R 760/10** | 760 | 76.0 | 249 | 69.6 | 7.5 | 0.96 | 5.2 | 11.5 | 10022286 | 7045210013498 |
| **TXLP/2R 940/10** | 940 | 94.4 | 310 | 56.3 | 7.5 | 1.19 | 6.4 | 14.1 | 10022287 | 7045210013504 |
| **TXLP/2R 1050/10** | 1050 | 105.4 | 346 | 50.4 | 7.5 | 1.32 | 6.9 | 15.2 | 10022280 | 7045210013436 |
| **TXLP/2R 1300/10** | 1300 | 130.4 | 428 | 40.7 | 7.5 | 1.64 | 8.6 | 18.9 | 10022281 | 7045210013443 |
| **TXLP/2R 1610/10** | 1610 | 161.3 | 529 | 32.9 | 7.5 | 2.03 | 10.7 | 23.6 | 10022282 | 7045210013450 |

(*) Plus 2.25 m (7 1/2 ft) 2 x 1.0 mm² cold lead

# TXLP/1

## Single conductor heating cable units for direct heating



**Applications:**
The heating cable units are ideal for direct floor warming in concrete constructions. They are also used in snow melting installations, for frost protection of roof gutters and drains, and soil heating.
Each unit has a unique factory made integrated splice which is marked =>SPLICE<= on the cable surface.



**Construction:**
- Solid resistance wire
- XLPE insulation
- Tinned copper earthing conductor
- Aluminium screen
- PVC outer jacket
- Overall diameter: approx. 6.5 mm (1/3")

**Technical data:**
- Element values from 300 to 3150 W
- Linear load:18.5 W/m at 220 V
- Series resistance
- Max. cont. operating temperature outer jacket: 65° C (149° F)
- Minimum bending radius: 5 x cable diameter
- Tolerance on conductor resistance: -5 / +10 %
- Highest system voltage: 300/500 V
- Rated voltage: 220 and 230 V

| TYPE | Load at 220V | Load at 230V | Element lenght(*) | Element lenght(*) | Nominal element resistance | Outer diameter | Weight per unit | Weight per unit | Nexans code no. | EAN-13 |
|---|---|---|---|---|---|---|---|---|---|---|
| | (W)/(W/m) | (W)/(W/m) | (m) | (ft) | (Ω) | (mm) | (kg) | (lb) | | |
| TXLP/1 | 300/18.5 | 330/20.2 | 16.2 | 53.1 | 161.3 | 6.5 | 1.3 | 2.9 | 10082908 | 7045210033205 |
| TXLP/1 | 400/18.5 | 440/20.2 | 21.6 | 70.9 | 121.0 | 6.5 | 1.5 | 3.3 | 10082910 | 7045210033212 |
| TXLP/1 | 500/18.5 | 550/20.2 | 27.0 | 88.6 | 96.8 | 6.5 | 1.8 | 4.0 | 10082911 | 7045210033229 |
| TXLP/1 | 600/18.5 | 660/20.2 | 32.3 | 106.0 | 80.7 | 6.5 | 2.1 | 4.6 | 10082913 | 7045210033236 |
| TXLP/1 | 700/18.5 | 770/20.2 | 37.7 | 123.7 | 69.1 | 6.5 | 2.3 | 5.1 | 10082924 | 7045210033243 |
| TXLP/1 | 850/18.5 | 930/20.2 | 45.9 | 150.6 | 56.9 | 6.5 | 2.8 | 6.2 | 10082925 | 7045210033250 |
| TXLP/1 | 1000/18.5 | 1090/20.2 | 53.9 | 176.8 | 48.4 | 6.5 | 3.3 | 7.3 | 10082926 | 7045210033267 |
| TXLP/1 | 1200/18.5 | 1310/20.2 | 65.0 | 213.3 | 40.3 | 6.5 | 3.8 | 8.4 | 10082929 | 7045210033274 |
| TXLP/1 | 1400/18.5 | 1530/20.2 | 75.4 | 247.4 | 35.6 | 6.5 | 4.3 | 9.5 | 10082932 | 7045210033281 |
| TXLP/1 | 1600/18.5 | 1750/20.2 | 86.5 | 283.8 | 30.3 | 6.5 | 5.0 | 11.0 | 10082933 | 7045210033298 |
| TXLP/1 | 1760/18.5 | 1920/20.2 | 95.0 | 311.7 | 27.5 | 6.5 | 5.5 | 12.1 | 10082935 | 7045210033304 |
| TXLP/1 | 2000/18.5 | 2190/20.2 | 109.0 | 357.6 | 24.2 | 6.5 | 6.0 | 13.2 | 10082937 | 7045210033311 |
| TXLP/1 | 2200/18.5 | 2400/20.2 | 117.3 | 384.8 | 22.0 | 6.5 | 6.7 | 14.8 | 10082938 | 7045210033328 |
| TXLP/1 | 2400/18.5 | 2620/20.2 | 129.9 | 426.2 | 20.2 | 6.5 | 7.2 | 15.9 | 10082939 | 7045210033335 |
| TXLP/1 | 2600/18.5 | 2840/20.2 | 141.9 | 465.6 | 18.6 | 6.5 | 7.9 | 17.4 | 10082940 | 7045210033342 |
| TXLP/1 | 2800/18.5 | 3060/20.2 | 152.2 | 499.3 | 17.3 | 6.5 | 8.3 | 18.3 | 10082941 | 7045210033359 |
| TXLP/1 | 3150/18.5 | 3440/20.2 | 170.5 | 559.4 | 15.4 | 6.5 | 9.2 | 20.3 | 10082942 | 7045210033366 |

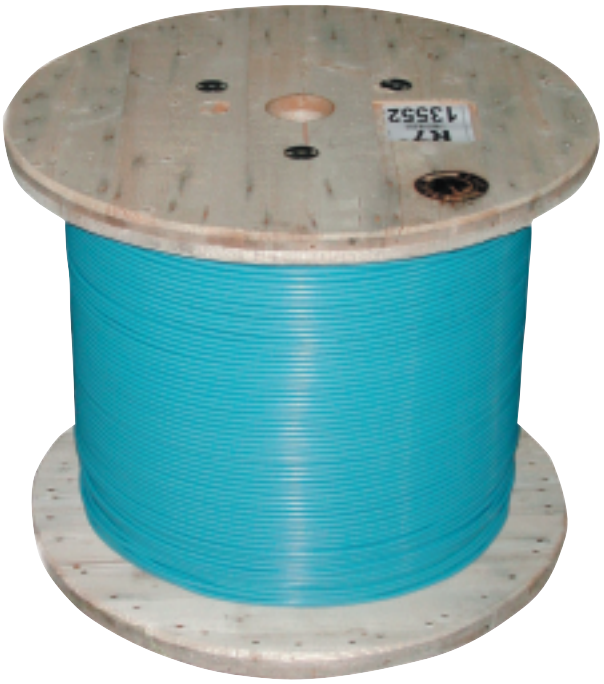
(*) Plus 2.25 m (7 1/2 ft) 1x1.0 mm² cold lead in each end

# TXLP

## Single conductor general purpose heating cable



**Applications:** This heating cable is ideal for floor warming in concrete constructions. It is also used in snow melting installations, for frost protection of pipes, roof gutters and drains, and soil heating.



### Construction:

- Stranded resistance wire
- XLPE insulation
- Earthing conductor
- Metallic sheath (aluminium)
- PVC outer jacket
- Overall diameter: approx. 6.5 mm (1/4")

### Technical data:

- Max. cont. operating temperature outer jacket: 65° C (149° F)
- Series resistance
- Minimum bending radius: 5 x cable diameter
- Tolerance on conductor resistance: -5 / +10 %
- Highest system voltage: 300/500 V

| TYPE | Linear resistance (Ω/m) | Outer diameter (mm) | Weight per 100 m (kg) | Weight per 100 yds. (lb) | Nexans code no. | EAN-13 |
|---|---|---|---|---|---|---|
| **TXLP 12.7** Ω/m | 12.7 | 6.0 | 4.6 | 11.1 | 10022258 | 7045210013214 |
| **TXLP 7.7** Ω/m | 7.7 | 6.0 | 4.6 | 11.1 | 10022257 | 7045210013207 |
| **TXLP 5.35** Ω/m | 5.35 | 6.0 | 4.6 | 11.1 | 10022259 | 7045210013221 |
| **TXLP 3.5** Ω/m | 3.5 | 6.1 | 4.9 | 11.8 | 10022256 | 7045210013191 |
| **TXLP 2.5** Ω/m | 2.5 | 6.1 | 5.1 | 12.3 | 10022255 | 7045210013184 |
| **TXLP 1.4** Ω/m | 1.4 | 6.1 | 5.0 | 12.0 | 10022254 | 7045210013177 |
| **TXLP 1.0** Ω/m | 1.0 | 6.3 | 5.2 | 12.5 | 10022252 | 7045210013153 |
| **TXLP 0.7** Ω/m | 0.7 | 6.3 | 5.1 | 12.3 | 10022249 | 7045210013122 |
| **TXLP 0.49** Ω/m | 0.49 | 6.3 | 5.3 | 12.8 | 10022247 | 7045210013108 |
| **TXLP 0.3** Ω/m | 0.3 | 6.3 | 5.3 | 12.8 | 10022246 | 7045210013092 |
| **TXLP 0.2** Ω/m | 0.2 | 6.3 | 5.3 | 12.8 | 10022245 | 7045210013085 |
| **TXLP 0.13** Ω/m | 0.13 | 6.5 | 5.6 | 12.5 | 10022253 | 7045210013160 |
| **TXLP 0.09** Ω/m | 0.09 | 6.3 | 5.3 | 12.8 | 10022251 | 7045210013146 |
| **TXLP 0.05** Ω/m | 0.05 | 6.5 | 5.8 | 13.9 | 10022250 | 7045210013139 |

# DEFROST TWIN

## Twin conductor heating cable for snow and ice melting



**Applications:**
DEFROST TWIN are ready made twin conductor heating cable units for snow and ice melting applications such as driveways, courts etc. The units can be installed directly in hot asphalt (160°C), or covered with concrete or flagstone and sand. DEFROST TWIN is equipped with 10 m cold leads and integrated splice.







**Construction:**
- Solid resistance wire
- XLPE insulation
- Tinned copper drain wire
- Aluminium armour screen
- PVC outer jacket
- Integrated cold end splice

**Technical data:**
- Output range from 1500 W to 3400 W
- Tolerance on element resistance: -5 / +10 %
- Linear load: 28 W/m
- Length of cold lead: 10 m
- Max. temperature energized, outer jacket: 65 °C (149 °F)
- Min. bending radius: 5 x cable diameter.
- Rated voltage: 230 VAC
- Max. resistance of drain wire: 18.5 Ω/km
- Max. temperature of hot asphalt: 160 °C (320 °F).

| Output | Element length | Nominal element resistance | Outer diameter | Nexans code no. | EAN-13 |
|---|---|---|---|---|---|
| (W) | (m) | (Ω) | (mm) | | |
| 1500 | 55.3 | 35.3 | 7.5 | 10082426 | 7045210033106 |
| 2700 | 96.4 | 19.6 | 7.5 | 10082427 | 7045210033113 |
| 3400 | 120.0 | 15.6 | 7.5 | 10070744 | 7045210030709 |

# MILLIMAT

## Heating cable mat for thin floor constructions



**Applications:** MILLIMAT is ideal for renovating exixsting cold floors and in wet areas.The cable mat consist of a twin conductor heating cable unit attached to a thin flexible fibre-glas net. The heating cable unit is delivered with 2.25 m cold lead.

### Construction:

- Conductor: Twin resistance wires
- FEP Insulation
- Solid copper earth wire
- Sheath/screen of conductive polymer compound
- Fibre-glas net

### Technical data:

- Area load 80 or 130 W/m²
- Loads from 150 W to 1000 W
- Max. continuously operating temperature outer jacket : 100° C
- Tolerance on conductor resistance: -5 / + 10 %
- Rated voltage: 230 V

**Millimat 230 V, 80 W/m²**

| Output | Mat width | Mat length | Mat area | Min. room area | Nominal element resistance (Ω) | | | Nexans code no. | EAN-13 |
|---|---|---|---|---|---|---|---|---|---|
| (W) | (m) | (m) | (m²) | (m²) | Min. (- 5%) | Nominal | Max. (+ 10%) | | |
| 150 | 0.4 | 4.6 | 1.8 | 1.9 | 335 | 352.7 | 387 | 10044268 | 7045210026313 |
| 200 | 0.4 | 6.1 | 2.4 | 2.6 | 251 | 264.5 | 291 | 10044269 | 7045210026320 |
| 300 | 0.4 | 9.2 | 3.7 | 3.9 | 168 | 176.3 | 194 | 10044270 | 7045210026337 |
| 400 | 0.4 | 12.2 | 4.9 | 5.2 | 126 | 132.3 | 145 | 10044271 | 7045210026344 |
| 500 | 0.4 | 15.3 | 6.1 | 6.5 | 100 | 105.8 | 116 | 10044272 | 7045210026351 |
| 600 | 0.8 | 9.4 | 7.5 | 7.8 | 84 | 88.2 | 97 | 10044273 | 7045210026368 |
| 700 | 0.8 | 10.9 | 8.7 | 9.1 | 72 | 75.6 | 83 | 10044274 | 7045210026375 |
| 840 | 0.8 | 13.1 | 10.5 | 10.9 | 60 | 63.0 | 69 | 10044275 | 7045210026382 |
| 1000 | 0.8 | 15.8 | 12.6 | 13 | 50 | 52.9 | 58 | 10044276 | 7045210026399 |

**Millimat 230 V, 130 W/m²**

| Output | Mat width | Mat length | Mat area | Min. room area | Nominal element resistance (Ω) | | | Nexans code no. | EAN-13 |
|---|---|---|---|---|---|---|---|---|---|
| (W) | (m) | (m) | (m²) | (m²) | Min. (- 5%) | Nominal | Max. (+ 10%) | | |
| 150 | 0.4 | 2.7 | 1.1 | 1.2 | 335 | 352.7 | 387 | 10024202 | 7045210021714 |
| 200 | 0.4 | 3.6 | 1.5 | 1.6 | 251 | 264.5 | 291 | 10022462 | 7045210015256 |
| 300 | 0.4 | 5.3 | 2.1 | 2.4 | 168 | 176.3 | 194 | 10024203 | 7045210021738 |
| 400 | 0.4 | 7.1 | 2.8 | 3.2 | 126 | 132.3 | 145 | 10022463 | 7045210015263 |
| 500 | 0.4 | 8.8 | 3.5 | 4.0 | 100 | 105.8 | 116 | 10022464 | 7045210027204 |
| 600 | 0.8 | 5.5 | 4.4 | 4.7 | 84 | 88.2 | 97 | 10022467 | 7045210015300 |
| 700 | 0.8 | 6.5 | 5.2 | 5.5 | 72 | 75.6 | 83 | 10022468 | 7045210015317 |
| 840 | 0.8 | 7.7 | 6.2 | 6.6 | 60 | 63.0 | 69 | 10022469 | 7045210015324 |
| 1000 | 0.8 | 9.2 | 7.4 | 7.8 | 50 | 52.9 | 58 | 10022470 | 7045210015331 |

# SNOWMAT

## Twin conductor heating cable mat with integrated splice

**Applications:**
SNOWMAT is ideal for quick installation of snow and ice melting in outdoor areas such as driveways, courts etc. It can be installed in hot asphalt, concrete or flagstone and sand. Comprises a twin conductor cable unit attached to a thin and flexible fibre glas net. Two mat widths, 40 cm for wheel tracks and small areas, and 80 cm for large areas are available. The heating cable unit is delivered with integrated splice and 5.0 m, cold lead.



**Construction:**
- Solid resistance wire
- XLPE insulation
- Conductive polymer screen
- PVC outer jacket
- Overall diameter: approx. 7.5 mm (1/3″)

**Technical data:**
- Element values from 1100 to 3300 W
- Linear load: 28 W/m
- Area load: 300 W/m$^2$
- Series resistance
- Max. asphalt temperature: 160°C (320°F)
- Max. cont. operating temperature outer jacket: 65° C (149° F)
- Minimum bending radius: 5 x cable diameter
- Tolerance on conductor resistance: -5 / + 10 %
- Rated voltage: 230 V



| Output | Mat width | Mat length | Mat area | Nominal element resistance | Nexans code no. | EAN-13 |
|---|---|---|---|---|---|---|
| (W) | (m) | (m) | (m$^2$) | (Ω) | | |
| 1100 | 0.4 | 9.0 | 3.6 | 48.1 | 10035242 | 7045210026221 |
| 1500 | 0.4 | 12.0 | 4.8 | 35.3 | 10035243 | 7045210026405 |
| 1800 | 0.4 | 14.5 | 5.8 | 29.4 | 10035244 | 7045210026412 |
| 2150 | 0.4 | 17.2 | 6.9 | 24.6 | 10035245 | 7045210026429 |
| 2600 | 0.8 | 11.0 | 8.8 | 20.3 | 10035246 | 7045210026436 |
| 3300 | 0.8 | 13.9 | 11.1 | 16.0 | 10035249 | 7045210026443 |

# CABLEMAT

## Twin conductor heating cable mat for direct heating

**Applications:**
CABLEMAT is ideal for floor warming in concrete floor constructions. The units consist of twin conductor heating cable TXLP/2R attached to a thin, flexible glass fibre net. The units are equipped with a 4.5 m cold lead. Each unit has a unique factory made integrated splice which is marked =>SPLICE<= on the outer sheath. There is no need for a return conductor. The end seal is factory made, and 100% waterproof. The cold lead is marked with ***** on the outer sheath.



**Construction:**
- Solid resistance wire
- XLPE insulation
- Aluminium screen
- Tinned copper drain wire
- PVC outer jacket
- Overall diameter: Approx. 7.5 mm (1/3″)

**Technical data:**
- Element values from 300 to 2100 W
- Linear load: 17 W/m
- Area load: 100 W/m$^2$
- Series resistance
- Max. cont. operating temperature outer jacket: 65 °C (149 °F)
- Min. bending radius: 5 x cable diameter
- Tolerance on element resistance: -5 / +10 %
- Rated voltage: 230 VAC
- IP class end seal: IPX7



| Output | Mat width | Mat length | Mat area | Min. room area | Nominal element resistance (Ω) | | | Nexans code no. | EAN-13 |
|---|---|---|---|---|---|---|---|---|---|
| (W) | (m) | (m) | (m²) | (m²) | Min. (- 5%) | Nominal | Max. (+ 10%) | | |
| 300 | 0.8 | 3.5 | 2.8 | 17.6 | 167.5 | 176.3 | 193.9 | 10022430 | 7045210014938 |
| 400 | 0.8 | 4.6 | 3.7 | 23.5 | 125.7 | 132.3 | 145.5 | 10022431 | 7045210014945 |
| 500 | 0.8 | 5.7 | 4.6 | 29.3 | 100.5 | 105.8 | 116.4 | 10022432 | 7045210014952 |
| 600 | 0.8 | 6.8 | 5.4 | 35.2 | 83.8 | 88.2 | 97.0 | 10022433 | 7045210014969 |
| 700 | 0.8 | 7.9 | 6.3 | 41.0 | 71.8 | 75.6 | 83.2 | 10022434 | 7045210014976 |
| 840 | 0.8 | 9.6 | 7.7 | 49.7 | 59.9 | 63.0 | 69.3 | 10022435 | 7045210014983 |
| 1000 | 0.8 | 11.2 | 9.0 | 58.3 | 50.3 | 52.9 | 58.2 | 10022425 | 7045210014884 |
| 1250 | 0.8 | 13.9 | 11.1 | 72.4 | 40.2 | 42.3 | 46.5 | 10022426 | 7045210014891 |
| 1370 | 0.8 | 15.5 | 12.4 | 80.8 | 36.7 | 38.6 | 42.5 | 10022427 | 7045210014907 |
| 1700 | 0.8 | 19.1 | 15.3 | 100.0 | 29.5 | 31.1 3 | 4.2 | 10022428 | 7045210014914 |
| 2100 | 0.8 | 23.6 | 18.9 | 123.7 | 23.9 | 25.2 | 27.7 | 10022429 | 7045210014921 |

# MILLIKIT

## Twin conductor heating cable kit

**Applications:**
MILLIKIT is a thin twin conductor heating cable element which is packed in a user friendly reel-box. The box also contains a flexible plastic tube for the sensor cable, hotmelt glue sticks, warning tag and installation manual.
The outer diameter is only 4 mm. MILLIKIT is recommended for renovation or rooms where a thin floor construction is required. For larger areas where more than one MILLIKIT is required, MILLIKIT 1100 W excl. thermostat is available for use in combination with a common thermostat.

**Construction:**
- Solid resistance wires
- FEP insulation
- Solid, tinned copper drain wire
- Conductive polymer combined sheath and screen
- Moulded cold lead splice

**Technical data:**
- Output range from 110 W to 1100 W
- Tolerance on element resistance: -5 / +10 %
- Linear load: 10 W/m
- Max. temperature energized, outer jacket: 65 °C (149 °F)
- Min. bending radius: 15 mm
- Rated voltage: 230 VAC
- Maximum resistance of drain wire: 18.5 Ω/km






| Output | Element length | Nominal element resistance | Outer diameter | Nexans code no. | EAN-13 |
|---|---|---|---|---|---|
| (W) | (m) | (Ω) | (mm) | | |
| 110 | 11 | 480.9 | 4 | 10058005 | 7045210027808 |
| 160 | 16 | 330.6 | 4 | 10058006 | 7045210027822 |
| 220 | 22 | 240.5 | 4 | 10058007 | 7045210027839 |
| 325 | 32 | 162.8 | 4 | 10058008 | 7045210027846 |
| 430 | 43 | 123.0 | 4 | 10058009 | 7045210027853 |
| 540 | 54 | 97.9 | 4 | 10058010 | 7045210027860 |
| 650 | 65 | 81.4 | 4 | 10058011 | 7045210027877 |
| 760 | 76 | 69.6 | 4 | 10058012 | 7045210027884 |
| 900 | 91 | 58.8 | 4 | 10058013 | 7045210027891 |
| 1100 | 110 | 48.1 | 4 | 10058014 | 7045210027907 |
| 1100 excl. thermostat | 110 | 48.1 | 4 | 10070413 | 7045210030600 |

# DEFROST PIPE/GUTTER

## Self-limiting heating cable for non-industrial applications



### Applications:

DEFROST PIPE is a light commercial grade self-limiting heating cable that is ideal for frost protection of pipes, tanks, roof gutters and drains. It can be cut-to-length on site within the given limitations, and exact lengths can be fitted without any complicated design considerations. Its self-limiting characteristics improve safety and realibility. DEFROST PIPE will not overheat or burnout, even when overlapped upon itself.
The output is self-limiting in response to the pipe temperature.

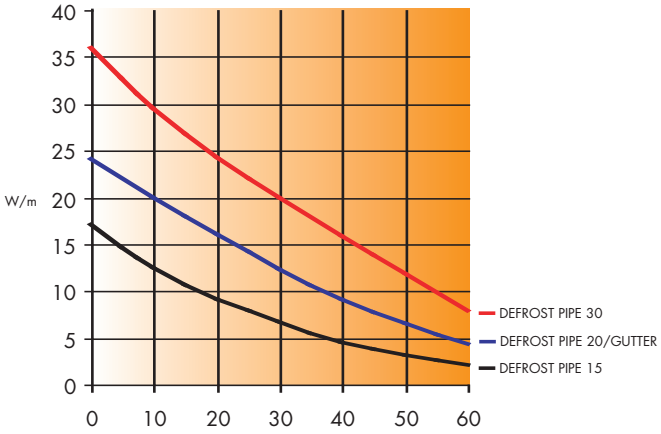
DEFROST PIPE 20/GUTTER is suitable for roof gutters and drains, and may be regarded as a universal cable for this field of use.

### Construction:

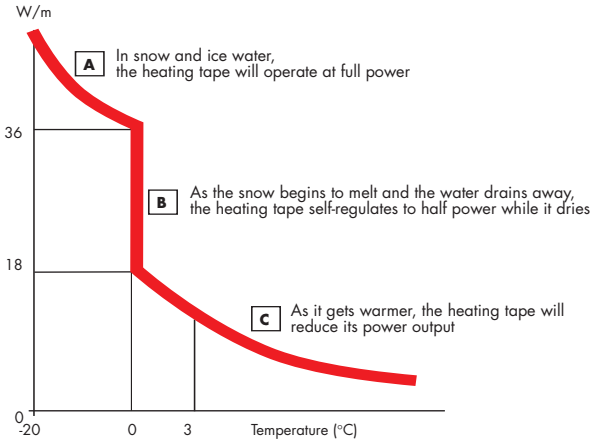
- Nickel-plated copper bus wires
- Semi conductive polymer matrix
- XLPE insulation
- Aluminium screen
- Tinned copper drain wire
- Polyolefin outer jacket

### Technical data:

- Min. installation temperature: -30 °C (-22 °F)
- Max. temperature energized, outer jacket: 65 °C (149 °F)
- Max. temperature de-energized, outer jacket: 80 °C (176 °F)
- Min. bending radius: 15 mm
- Rated voltage: 230 VAC




Thermal ratings
Nominal output at 230V for DEFROST PIPE 20/GUTTER when melting ice and snow




| Type | Output at 5°C | Outer dimension | | Bus bar cross section | Weight | Max length | Nexans code no. | EAN-13 |
|---|---|---|---|---|---|---|---|---|
| | | Width | Height | | | | | |
| | (W/m) | (mm) | (mm) | ($mm^2$) | (kg/100m) | (m) | | |
| DEFROST PIPE 15 | 14.5 | 8.3 | 5.8 | 2x0.57 | 6.6 | 100 | 10061571 | 7045210028713 |
| DEFROST PIPE 20 / GUTTER | 22.5 | 13.0 | 4.9 | 2x1.23 | 9.0 | 155 | 10061572 | 7045210028720 |
| DEFROST PIPE 30 | 33 | 15.6 | 5.3 | 2x1.23 | 10.5 | 120 | 10061573 | 7045210028737 |

| Type | Temp | In-rush current | Max length [m] and circuit breaker size | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (°C ) | (A/m) | 6 A | 10 A | 16 A | 20 A | 25 A | 32 A |
| DEFROST PIPE 15 | 5 °C | 0.083 | 90 | 100 | - | - | - | - |
| | 0 °C | 0.086 | 84 | 100 | - | - | - | - |
| | -20 °C | 0.12 | 57 | 95 | 100 | - | - | - |
| | -30 °C | 0.13 | 50 | 84 | 100 | - | - | - |
| DEFROST PIPE 20 / GUTTER | 5 °C | 0.12 | 52 | 87 | 139 | 155 | - | - |
| | 0 °C | 0.14 | 48 | 80 | 129 | 140 | 155 | - |
| | -20 °C | 0.18 | 34 | 57 | 90 | 113 | 140 | |
| | -30 °C | 0.20 | 30 | 50 | 80 | 100 | 124 | 155 |
| DEFROST PIPE 30 | 5 °C | 0.17 | 36 | 60 | 96 | 120 | - | - |
| | 0 °C | 0.20 | 34 | 57 | 90 | 100 | 110 | 120 |
| | -20 °C | 0.24 | 26 | 44 | 70 | 87 | 109 | 120 |
| | -30 °C | 0.26 | 23 | 39 | 62 | 77 | 97 | 110 |

# DEFROST WATER

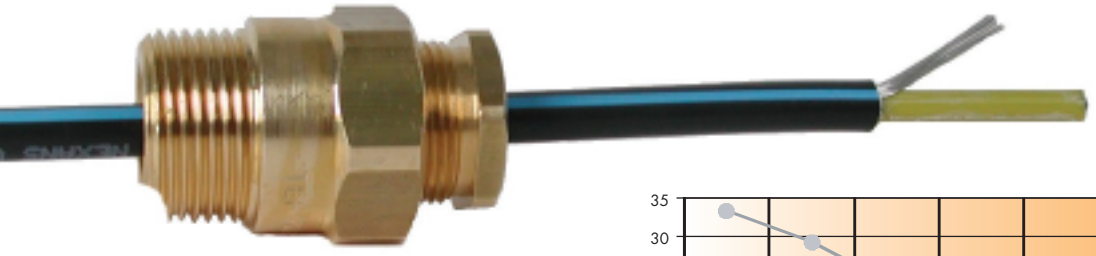
## Self-limiting heating cable for internal installation in drinking water pipes

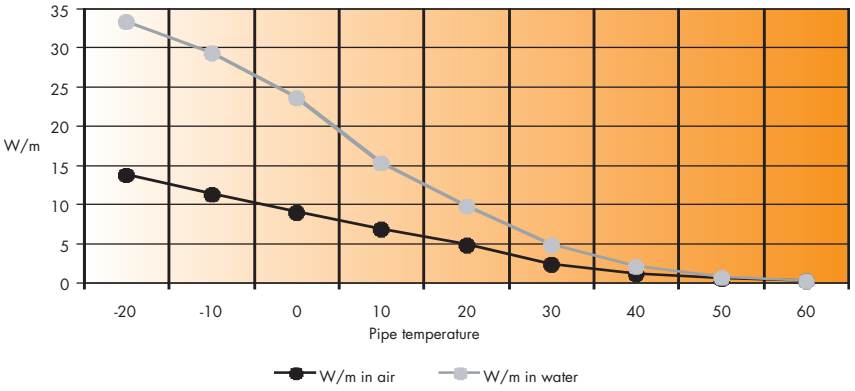


**Applications:**
DEFROST WATER is a light halogen free commercial grade self-limiting heating cable that is ideal for frost protection of drinking water pipes. The cable is suitable for internal installation in drinking water pipes, the outer sheath material is approved for this use. It can be cut-to-length on site within the given limitations, and exact lengths can be fitted without any complicated design considerations. Its self-limiting characteristics improve safety and realibility. DEFROST WATER will not overheat or burnout. The output is self-limiting in response to the pipe temperature.

**Construction:**
- Tinned copper bus wires
- Semi conductive polymer matrix
- PE insulation
- Aluminium screen
- Tinned copper drain wire
- PE outer jacket

**Technical data:**
- Max. temperature energized, outer jacket: 45 °C (113 °F)
- Min. installation temperature: -10 °C (14 °F)
- Min. bending radius: 15 mm
- Rated voltage: 230 VAC
- Max. circuit breaker size: 10 A
- Max. resistance of drain wire: 18.5 Ω/km






| Type | Output at 5 °C | Outer diameter | Bus bar cross section | Weight | Max length | Nexans code no. | EAN-13 |
|---|---|---|---|---|---|---|---|
| | (W/m) | (mm) | ($mm^2$) | (kg/100m) | (m) | | |
| DEFROST WATER | 18.5 in water<br>9 in air | 7.0 | 2 x 0.5 | 6.1 | 60 in water<br>100 in air | 10064795 | 7045210030303 |

| Type | Temp. | In-rush current | Max. length [m] Circuit breaker size 10 A In water | Max. length [m] Circuit breaker size 10 A In air |
|---|---|---|---|---|
| | (°C) | (A/m) | | |
| DEFROST WATER | 5 °C | 0.2 | 60 | 100 |
| | 0 °C | 0.3 | 54 | 90 |
| | -10 °C | 0.4 | 42 | 70 |
| | -20 °C | 0.5 | 30 | 50 |
| | -30 °C | 0.7 | 24 | 40 |

# WARM WATER PIPE

## Self-limiting heating cable for temperature maintenance of hot water pipes

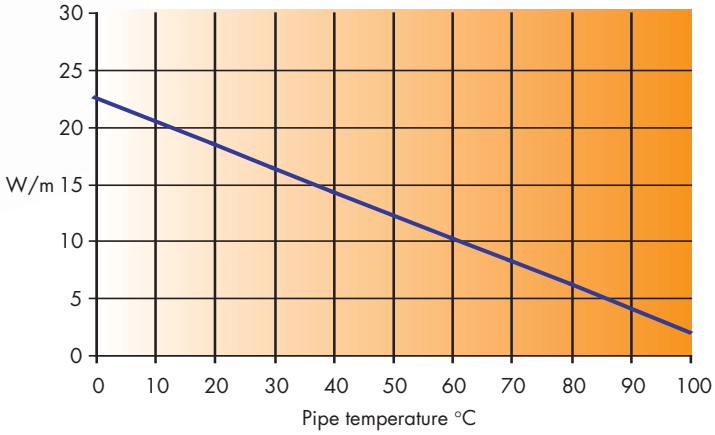


**Applications:**
WARM WATER PIPE is a commercial grade self-limiting heating cable that is ideal for temperature maintenance of hot water pipes. WARM WATER PIPE is used to keep the pipetemperature at approx. 55 °C (131 °F). It can be cut-to-length on site within the given limitations, and exact lengths can be fitted without any complicated design considerations. Its self-limiting characteristics improve safety and realibility. WARM WATER PIPE will not overheat or burnout. The output is self-limiting in response to the pipe temperature.

**Construction:**
- Nickel-plated copper bus wires
- Semi conductive polymer matrix
- XLPE insulation
- Aluminium screen
- Tinned copper drain wire
- Polyolefin outer jacket

**Technical data:**
- Max. temperature energized, outer jacket: 100 °C (212 °F)
- Max. temperature de-energized, outer jacket: 120 °C (248 °F)
- Min. bending radius: 15 mm
- Rated voltage: 230 VAC
- Max. circuit breaker size: 20 A
- Max. resistance of drain wire: 18.5 Ω/km






| Type | Output at 5°C | Outer dimension | | Bus bar cross section | Weight | Max length | Nexans code no. | EAN-13 |
|---|---|---|---|---|---|---|---|---|
| | | Width | Height | | | | | |
| | (W/m) | (mm) | (mm) | ($mm^2$) | (kg/100m) | (m) | | |
| WARM WATER PIPE | 9 | 10.1 | 3.2 | 2 x 1.23 | 9.0 | 120 | 10061634 | 7045210028744 |

| Circuit breaker size | 6 A | 10 A | 16 A | 20 A |
|---|---|---|---|---|
| Max. length | 30 | 50 | 80 | 120 |

| Maintenance temperature | Pipe diameter (mm) | | | | | |
|---|---|---|---|---|---|---|
| (°C) | 15 | 20 | 28 | 35 | 42 | 54 |
| 55 | 20 | 20 | 25 | 30 | 37 | 50 |
| 50 | 12 | 12 | 19 | 25 | 25 | 37 |

# MPT-NG

## Parallel-resistance heating cable for industrial applications



**Applications:** This heating cable has a fixed load (20 W/m). It is ideal for industrial applications such as frost protection and temperature maintenance of pipes and vessels.The cable may be cut into various lengths down to approx. 1 meter.

### Cable design

- FEP insulated copper conductors 2 x 1.5 $mm^2$
- FEP additional insulation
- Spiralized resistance conductor
- FEP inner jacket
- Copper braid
- FEP outer jacket
- Outer diameter: approx. 6 x 8 mm (1/4" x 1/3")

### Technical data:

- Delivered in drum lengths
- Parallel resistance
- Max. cont. operating temperature outer jacket: 160°C (320°F)
- Min. bending radius: 5 x cable diameter
- Tolerance on conductor resistance: - 5 / + 10 %

| Type | Load at 230 V | Max. connected unith length | Outer diameter | Nexans code no. | EAN-13 |
|---|---|---|---|---|---|
| | (W/m) | (m) | (mm) | | |
| MPT NG 20 | 22 | 90 | 6 x 8 | 10022490 | 7045210015539 |

# ACCESSORIES

## for heating cables

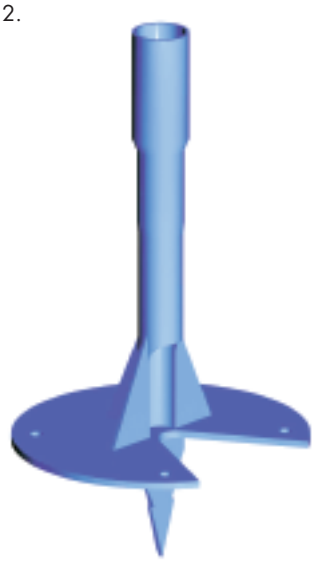
To our series and parallel resistance heating cable products, the following accessories are available:

| Type designation | Description | Suitables for the following cables | Nexans code no. | EAN-13 |
|---|---|---|---|---|
| Splice kit 1.5 - 2.5 (4 splices) | Splice kit for single conductor heating cable to cold lead 1.5 - 2.5 mm². | TXLP drum types | 10066638 | 7045210030204 |
| Splice kit 4.0 (2 splices) | Splice kit for single conductor heating cable to cold lead 4.0 mm². | TXLP drum types | 10066639 | 7045210030228 |
| Plastic spacers | Plastic spacers for heating cable in roof drains and gutters | TXLP | 10068944 | 7045210030501 |
| Suspension bracket | Stainless steel suspension bracket for heating cable in roof drains | TXLP | 10066636 | 7045210029949 |
| Spacer strip | Galvanised spacer strip for heating cables in floors and outdoor applications. May also be used in gutters. | TXLP | 10066637 | 7045210030402 |
| Termination kit MPT-NG | Termination and connection kit for parallel resistance heating cable | MPT-NG | 10068220 | 7045210030266 |
| Up-stick | Positions the heating cable and comprises a terminal for cold tail pipe | TXLP | 10068946 | 7045210030426 |
| Cable installation trolley | Trolley for easy installation of heating cables in large floors and out door areas | TXLP | 10021013 | 7045210001112 |

1.



2.



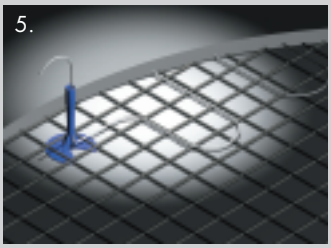
3.



4.



5.



*1. Stainless steel suspension*

*2. Up-stick*

*3. Spacer Strip*

*4. Plastic spacer*

*5. Up-stick*

# ACCESSORIES

## for self-limiting heating cables

To our self-limiting heating cables, the following accessories are available:

| Type designation | Suitables for the following cables | Nexans code no. | EAN-13 |
|---|---|---|---|
| Splice, end termination and connection kit | DEFROST PIPE, WARM WATER PIPE | 10072993 | 7045210031508 |
| End termination kit, watertight | DEFROST WATER | 10066641 | 7045210030242 |
| Aluminium fixing and heat distribution tape, 75 mm | DEFROST PIPE, WARM WATER PIPE | 10066642 | 7045210030273 |
| Glass fibre fixing tape | DEFROST PIPE, WARM WATER PIPE | 10068945 | 7045210030518 |
| Brass gland 3/4", watertight | DEFROST WATER | 10066685 | 7045210030419 |

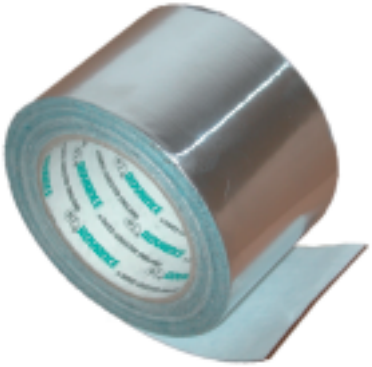
1



2



3



4



*1. Fixing tape*

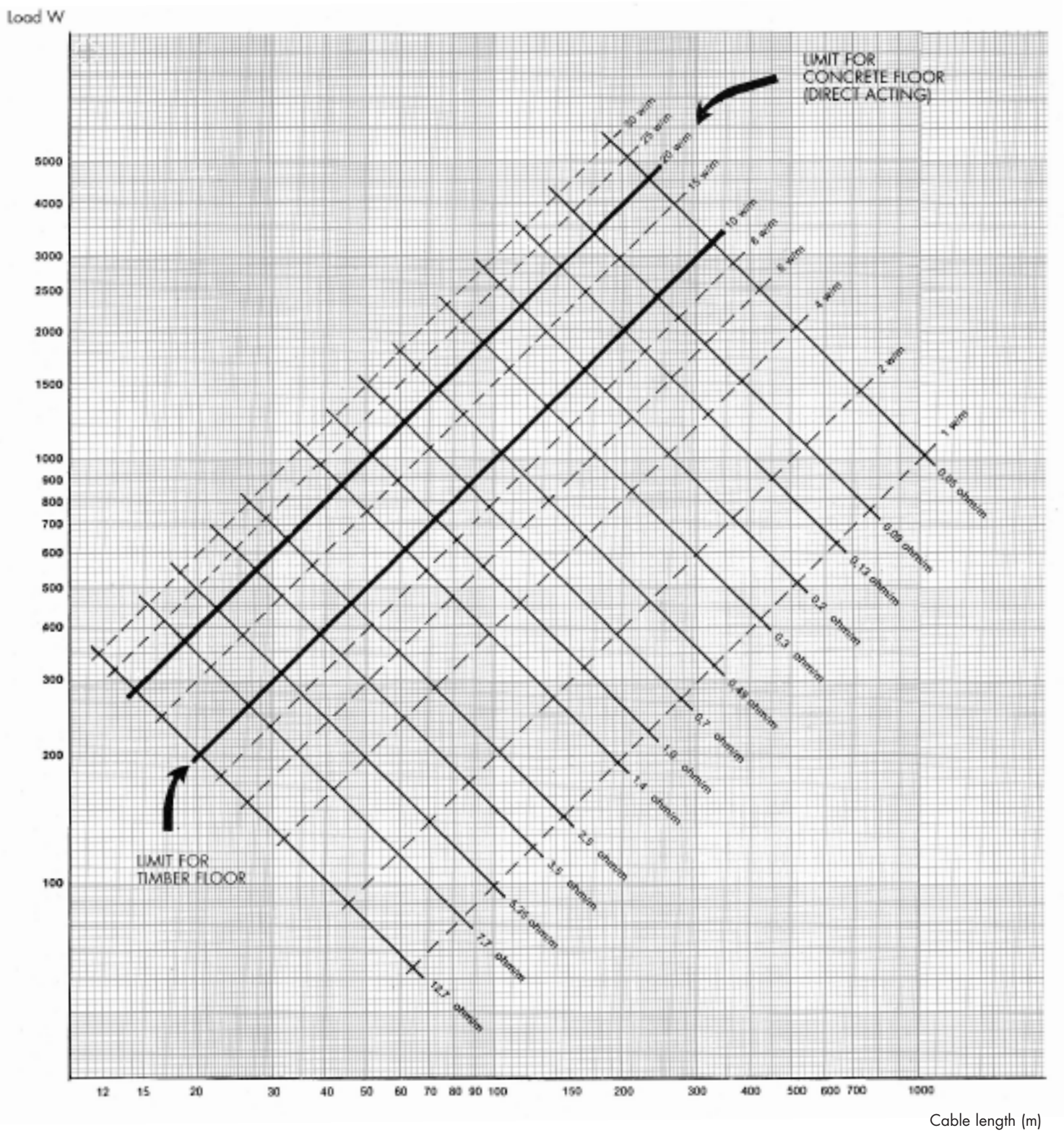
*2: Splice , termination and connection kit*

*3: Fixing tape*

*4: Gland*

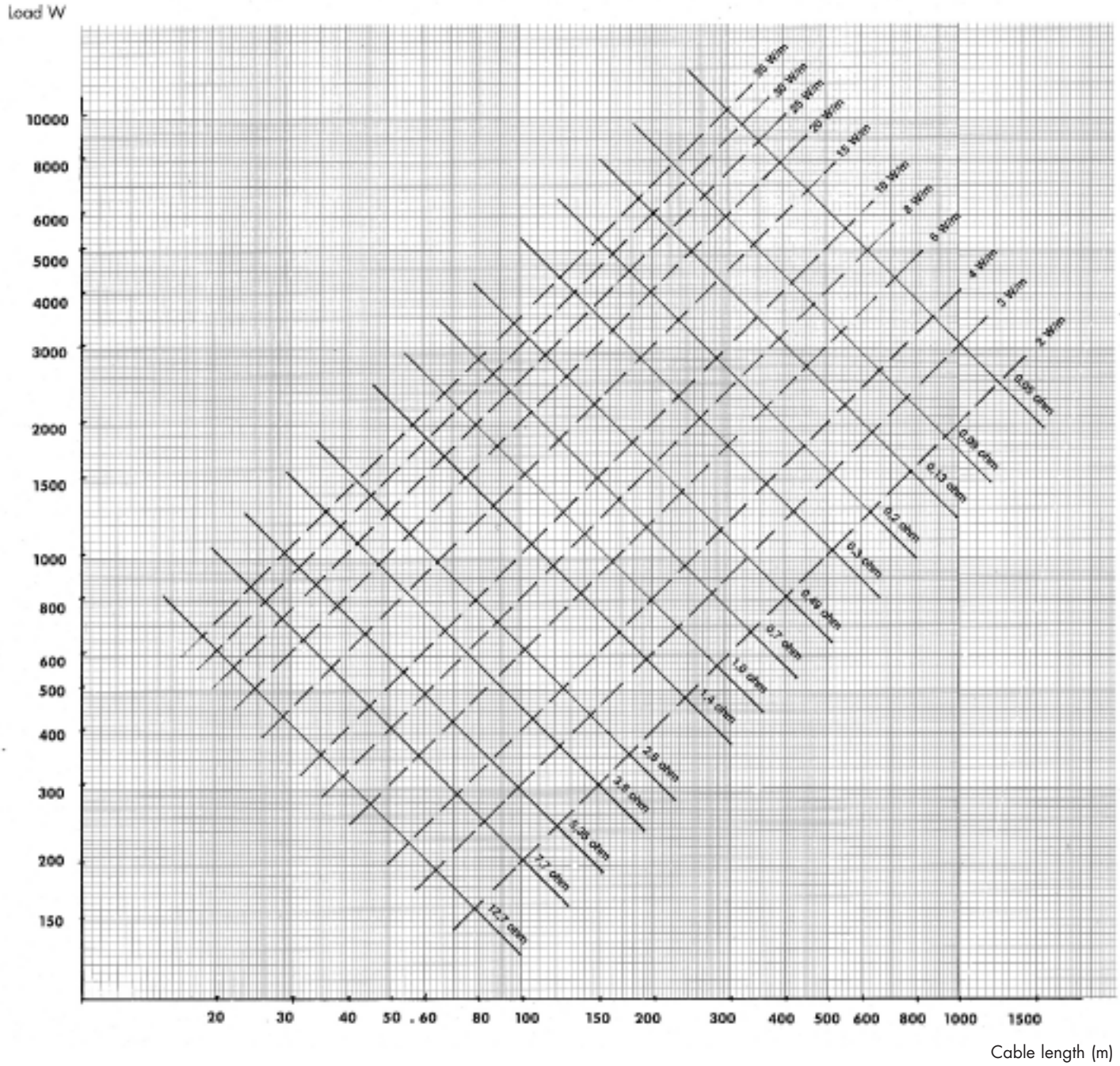
# LOAD DIAGRAM

## 230 VOLT



# LOAD DIAGRAM

## 400 VOLT



Nexans

Global expert in cables and cabling systems

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