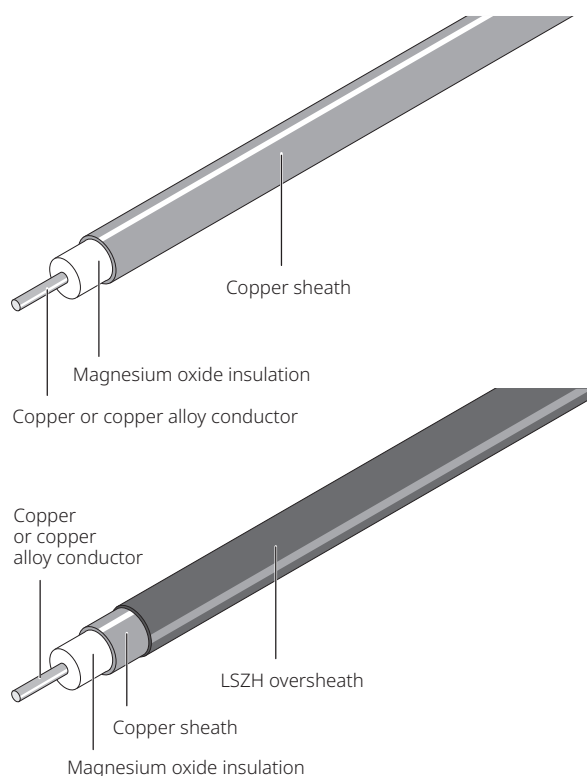


## Mineral insulated (MI) copper sheathed heating cable

### PRODUCT OVERVIEW



Raychem HCH/HCC mineral insulated (MI) Copper series heating cables are suited for use in hazardous areas. They are extensively used in a wide variety of industrial heat-tracing applications, such as long line heating or condensation prevention at low temperatures, and domestic applications, such as under floor or road and ramp heating applications. The copper heating cables with copper conductors (HCC) are available in very low resistances to allow for long line applications with a limited amount of supply points when the maximum operating sheath temperature does not exceed 200°C. The typical maximum power output goes up to 50 W/m. Cables are available with an optional LSZH (Low Smoke Zero Halogen) over-sheath for enhanced corrosion protection up to 80°C, usually applied when buried in concrete. The heating cables are offered as bulk cable as well as factory-terminated heating units to ensure optimum quality of the connections. The offering is completed with a full range of components for installation, connection and splicing of the heating cables.

### PRODUCT SPECIFICATIONS

#### Technical details

|                               |                                                  |                                                                                         |
|-------------------------------|--------------------------------------------------|-----------------------------------------------------------------------------------------|
| Cable sheath material         | Copper                                           |                                                                                         |
| Conductor material            | Copper (HCC) or Copper Alloy (HCH)               |                                                                                         |
| Max. exposure temperature     | 200°C**                                          |                                                                                         |
| Min. installation temperature | -60°C                                            |                                                                                         |
| Min. bending radius           | 6 x outer diameter at -60°C                      |                                                                                         |
| Max. supply voltage and power | Voltage (U0/U)<br>300/500 Va                     | Max. power output*<br>50 W/m<br><small>*typical value, depending on application</small> |
| Earth leakage                 | 3 mA/100 m (nominal at 20°C, 230 Vac, 50 - 60Hz) |                                                                                         |
| Min. cable spacing            | 25 mm for hazardous areas                        |                                                                                         |

**\*\* Note:** Cables available with optional additional oversheath for corrosion protection:  
 – LSZH (Max Sheath temp 80°C) – add R to the ref. (HCHR...)  
 For LSZH add 1.8 mm to cable OD.

## MI series heating cables HCH/HCC

| Order Reference          | Nominal resistance (Ω/km @ 20°C) | Outer diameter (mm) | Temp. coefficient (x 10 <sup>-3</sup> /K) | Max. coil length [m] | Nom.weight (kg/km) |
|--------------------------|----------------------------------|---------------------|-------------------------------------------|----------------------|--------------------|
| HCH1L2000 <sup>(1)</sup> | 2000                             | 2.8                 | 0.4                                       | 1200                 | 31                 |
| HCH1L1250 <sup>(1)</sup> | 1250                             | 2.8                 | 0.4                                       | 1200                 | 32                 |
| HCH1M800                 | 800                              | 3.5                 | 0.4                                       | 900                  | 50                 |
| HCH1M630                 | 630                              | 4                   | 0.4                                       | 1100                 | 65                 |
| HCH1M450                 | 450                              | 4                   | 0.4                                       | 1000                 | 67                 |
| HCH1M315                 | 315                              | 4.3                 | 0.4                                       | 1000                 | 77                 |
| HCH1M220                 | 220                              | 4.5                 | 0.4                                       | 1000                 | 85                 |
| HCH1M140                 | 140                              | 4.9                 | 0.4                                       | 1000                 | 102                |
| HCH1M100                 | 100                              | 5.2                 | 0.4                                       | 800                  | 125                |
| HCC1M63                  | 63                               | 3.2                 | 3.9                                       | 2000                 | 41                 |
| HCC1M40                  | 40                               | 3.4                 | 3.9                                       | 2000                 | 46                 |
| HCC1M25                  | 25                               | 3.7                 | 3.9                                       | 1600                 | 56                 |
| HCC1M17                  | 17                               | 4.6                 | 3.9                                       | 500                  | 85                 |
| HCC1M11                  | 11                               | 4.9                 | 3.9                                       | 500                  | 98                 |
| HCC1M7                   | 7                                | 5.3                 | 3.9                                       | 400                  | 118                |
| HCC1M4                   | 4                                | 5.9                 | 3.9                                       | 800                  | 150                |
| HCC1M2.87                | 2.87                             | 6.4                 | 3.9                                       | 650                  | 170                |
| HCC1M1.72                | 1.72                             | 7.3                 | 3.9                                       | 500                  | 235                |
| HCC1M1.08                | 1.08                             | 8.3                 | 3.9                                       | 400                  | 326                |

(1) Not approved for hazardous areas, maximum 300 Vac.

## Recommended cold leads for HCH/HCC MI series heating cables

| Cold Lead Code | Sheath Material | Current Rating (A) | Voltage Rating (Vac) | No of Conductors | Design* | Cable O.D. (mm) | Pigtail Size (mm <sup>2</sup> ) | Gland Size |
|----------------|-----------------|--------------------|----------------------|------------------|---------|-----------------|---------------------------------|------------|
| C31A           | Copper          | 31                 | 600                  | 1                | B       | 5.8             | 2.1                             | M25        |
| C41A           | Copper          | 41                 | 600                  | 1                | B       | 7               | 3.3                             | M25        |
| C54A           | Copper          | 54                 | 600                  | 1                | B       | 6.2             | 5.3                             | M25        |
| C70A           | Copper          | 70                 | 600                  | 1                | B       | 7.6             | 8.4                             | M25        |
| C94A           | Copper          | 94                 | 600                  | 1                | B       | 8.6             | 13.3                            | M25        |
| C127A          | Copper          | 127                | 600                  | 1                | B       | 10.2            | 21.1                            | M25        |

\* For details on the different heating unit designs, refer to chapter MI heating Systems - MI heating Cables in the Databook (reference DOC-2210)

Nickel plated brass glands are standard on all copper sheathed heating units. Other materials are possible, contact Chemelex for more information. If a cold lead has an LSZH oversheath, the C in the order reference becomes an R. (example : C31A becomes R31A)

Delivery length of bulk cable on coil depends on type of resistance and is limited by max. coil length as indicated in the table on top. Factory terminated elements are limited by a max. weight of 50 kg, however to ensure practical and safe on-site handling, it is strongly recommended to limit element lengths to 25 - 30 kg. Not all resistances are standard items and as such may not be in stock.

Contact Chemelex to confirm lead time. Chemelex requires the use of a 30 mA residual current device to provide maximum safety and protection from fire.

Where design results in higher leakage current, the preferred trip level for adjustable devices is 30 mA above any inherent capacitive leakage characteristic of the heater as specified by the trace heater supplier or alternatively, the next common available trip level for non adjustable devices, with a maximum of 300 mA. All safety aspects need to be proven.

Also refer to the components section for more details on heating units, accessories and nomenclatures.

## Chemical resistance

| Sheath Material | Maximum Cable Sheath Temp (°C) | Description                                   | Sulphuric Acid | Hydro-chloric Acid | Hydro-fluoric Acid | Alkalies | Phosphoric Acid | Sea Water | Nitric Acid | Chloride | Organic Acid |
|-----------------|--------------------------------|-----------------------------------------------|----------------|--------------------|--------------------|----------|-----------------|-----------|-------------|----------|--------------|
| Copper-LSZH     | 80                             | Copper with Low Smoke Zero Halogen oversheath | GE             | GE                 | A                  | A        | A               | NR        | A           | A        |              |
| Copper          | 200                            | Copper                                        | NR             | NR                 | A                  | A        | NR              | A         | A           | NR       | X            |

Note: NR Not recommended, A acceptable, GE Good to excellent, X Check for specific data.  
Corrosion resistance data is dependent on temperature and concentration.

## APPROVALS

For use in ordinary and hazardous\* area Zone 1 and Zone 2 (Gas), Zone 21 and Zone 22 (Dust)

\*Cable types HCH1L2000 and HCH1L1250 can only be used in ordinary areas

### Temperature classification

T6...T2

Raychem heat-tracing products are approved for the listed temperature classifications by using the principles of stabilized design. Use TraceCalc design software or contact Chemelex.

### Product certification



More details about product certification, approvals and conditions of safe use are available in the installation manual at [www.chemelex.com](http://www.chemelex.com).

## ORDERING INFORMATION

- Due to the sensitivity & craftsmanship required to assemble an MI heating unit, they are usually purchased as factory terminated units. Refer to the "MI Heating Systems Nomenclature" datasheet for more information on the ordering references for complete units or contact your local Chemelex representative.  
It is strongly recommended to use Chemelex design software such as TraceCalc Pro to validate the design and ordering string.
- To purchase MI heating cables in bulk, refer to the tables with the cable references on p. 2 of this document.