



## HCH/HCC



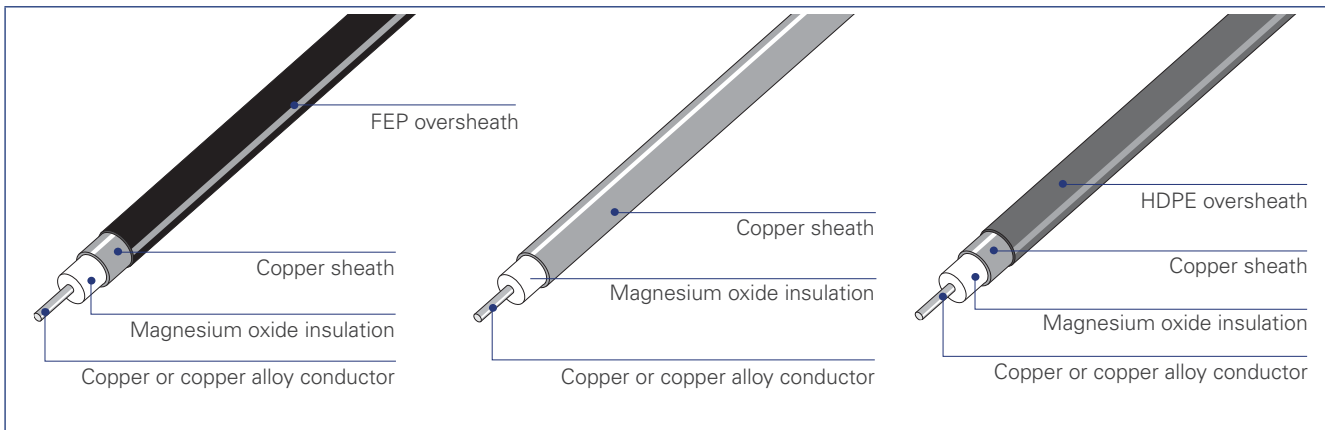
### Mineral insulated copper sheathed heating cable

Pyrotenax 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, typically 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. Optionally they are offered with an HDPE (High Density Polyethylene) over-sheath for enhanced corrosion protection up to 80°C, usually applied when buried in concrete. For temperatures in excess of 80°C, an

FEP (Fluorinated Ethylene Propylene) over-sheath is available which can be used up to a maximum temperature of 200°C. 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.

#### Heating cable construction



#### Application

Area classification Hazardous areas\*, Zone 1 or Zone 2 (Gas) or Zone 21 or Zone 22 (Dust)  
 Ordinary areas  
 \*cable types HCH1L2000 and HCH1L1250 can only be used in ordinary areas

#### Approvals

System (heating units) Baseefa02ATEX0046X  
 Ex II 2GD Ex e II T6 to T3 Ex tD A21 IP6X  
 Actual T class temperature determined by design

Bulk cable Baseefa02ATEX0045U  
 Ex II 2G Ex e II

Heating units are also approved for Dust environments. Temperature classification (T-rating) has to be established by using the principles of stabilised design or the use of a temperature limiting device. Use TraceCalc design software or contact Tyco Thermal Controls.

This product also has all required approvals for use in Kazakhstan, Russia and other countries. Contact your local Tyco Thermal Controls representative for more details.

### Technical Data

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 (U <sub>0</sub> /U) 300/500 Vac	Max. power output* 50 W/m <i>* typical value, depending on application</i>
Earth leakage	3 mA/100 m (nominal at 20°C, 230Vac, 50 - 60Hz)	
Min. cable spacing	25 mm for hazardous areas	

\*\* **Note:** Cables available with optional additional oversheath for corrosion protection:

- HDPE (Max Sheath temp 80°C) – add H to ref. (ie. HCHH....)
- FEP (Max Sheath temp 200°C) – add P to ref. (ie. HCHP....)

For HDPE add 1.8 mm to cable OD. For FEP details available upon request.

### 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	0.4	1100	65
HCH1M450	450	4.0	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

Resistance tolerance: ±10%

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

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

Nom. cross section [mm <sup>2</sup> ]	Order reference	Max. current (design B)	Outer diameter (mm)	Standard gland size
2.5	CC1H2.5	34	5.3	M20
6	CC1H6	57	6.4	M20
10	CC1H10	77	7.3	M25
16	CC1H16	102	8.3	M25
25	CC1H25	133	9.6	M32
35	CC1H35	163	10.7	M32

Brass glands are standard on all heating units. Other materials are possible, contact Tyco Thermal Controls for more information.

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 50kg, however to ensure practical and safe on-site handling, it is strongly recommended to limit element lengths to 25 - 30kg. Not all resistances are standard items and as such may not be in stock. Contact Tyco Thermal controls to confirm lead time. Tyco Thermal Controls 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. Page 118.

Chemical resistance											
Sheath Material	Maximum Cable Sheath Temp (°C)	Description	Sulphuric Acid	Hydro-chloric Acid	Hydro-fluoric Acid	Alkalis	Phosphoric Acid	Sea Water	Nitric Acid	Chloride	Organic Acid
Copper-DPE	80	Copper with high density polyethylene oversheath	GE	GE	A	A	A	NR	A	A	
Copper	200	Copper	NR	NR	A	A	NR	A	A	NR	X
Copper-FEP	200	Copper with fluorinated ethylene propylene oversheath	GE	GE	A	A	A	A	A	GE	GE

**Note:** NR Not recommended, A acceptable, GE Good to excellent, X Check for specific data.

Corrosion resistance data is dependent on temperature and concentration.

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