Thermoheat by

HCH/HCC

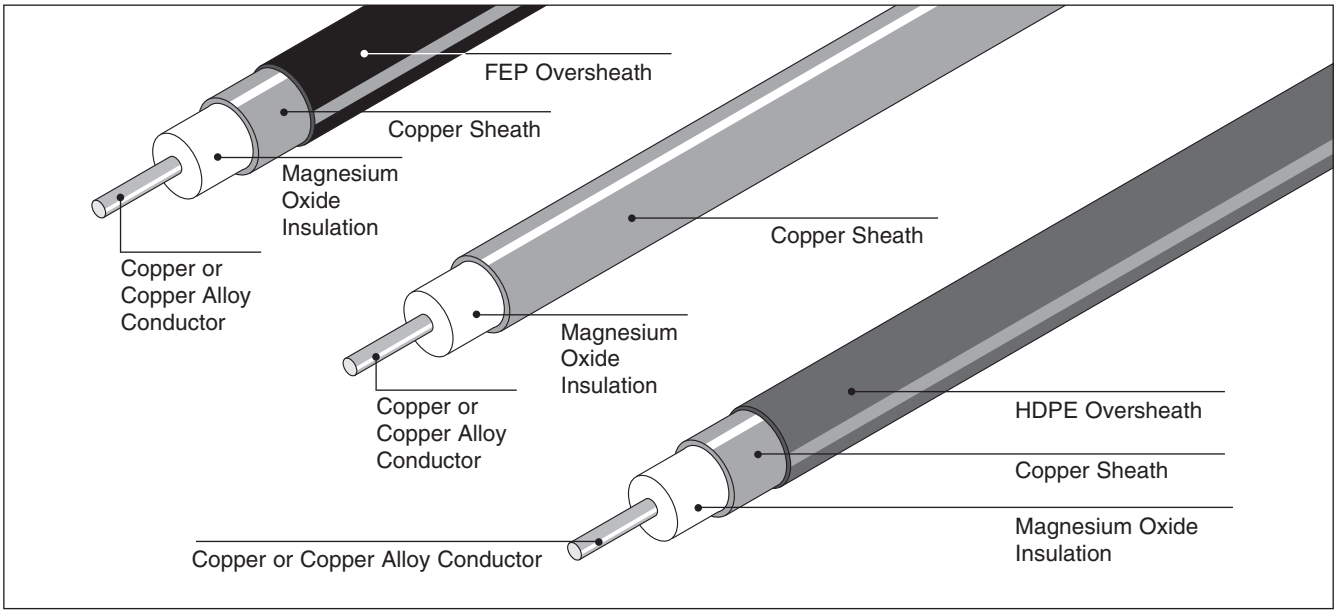
Mineral insulated copper heating cables

Mineral Insulated Copper heating cable is suitable for use within a wide variety of industrial heat tracing and domestic heating applications. The copper cable offers a long line heating capability where the maximum operating sheath temperature does not exceed 200°C.

Copper cables are extensively used in underfloor, road and ramp heating applications and are offered with HDPE (High Density Polyethylene) oversheathing for enhanced corrosion protection up to 80°C. For temperatures in excess of 80°C FEP oversheathing is available to a maximum of 200°C.

MI cable features:
- Corrosion resistance
- High performance output
- High resistance to mechanical abuse
- Safety and fire resistance

Heating cable construction



Copper Heating Cable

Cable Sheath Material	Copper	
Cable Insulation Material	MgO (Magnesium Oxide)	
Cable Conductor Material	Copper or Copper Nickel alloy	
Supply Voltage	Up to 300/500 VAC	
Withstand Voltage	2.0 kV rms ac	
Insulation Resistance	1000 MΩ/1000 m (Factory pass level)	
Maximum Allowable Sheath Temperature	200°C**	
Earth Leakage	3mA/100 m (Nominal at 20°C)	
Minimum installation temperature	–60°C	
Minimum bending radius	6 x OD. (Cable outside diameter) at –60°C	
Approvals	Baseefa 2001 Ltd. Ⓔx II 2 G EExe II T6 to T3 BAS02ATEX0046X (Units) BAS02ATEX0045U (Bulk cable) GOSGORTECHNADZOR KAZAKH GOST	Actual T class temperature determined by design *T6 (80°C) for HDPE oversheath
Area Classification	Hazardous area, Zone 1 and Zone 2, Ordinary	
Minimum cable spacing	25 mm	
Resistance correction factor	Temperature coefficient of resistance for copper conductor - α = 0.00393 per °C	

**Note: – Cables available with optional additional serving for corrosion protection:
– HDPE (Max Sheath temp 80°C) – add H to ref. (ie. HCHH….)
– FEP 140 (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.

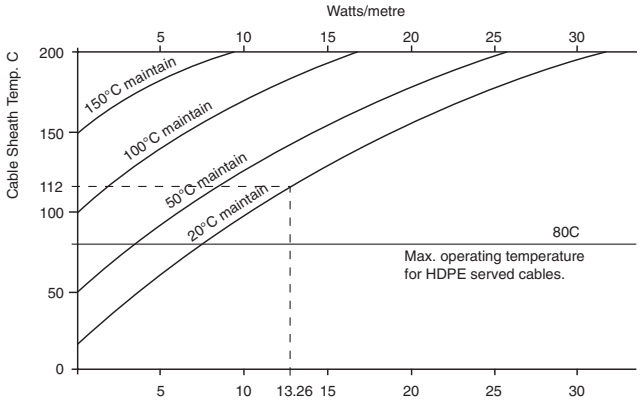
Technical Data

Cable Ref:	Cable Diameter (mm)	Conductor Material	Conductor Diameter (mm)	Resistance (Ω/km)	Nominal Coil Length (m)	Coil Diameter (mm)	Approx Weight (kg/km)
HCH1L2000*	2.8	Copper Alloy	0.51	2000	1200	610	31
HCH1L1250*	2.8	Copper Alloy	0.65	1250	1200	610	32
HCHIM800	3.5	Copper Alloy	0.81	800	814	915	50
HCH1M630	4.0	Copper Alloy	0.91	630	622	915	65
HCH1M450	4.0	Copper Alloy	1.08	450	622	915	67
HCH1M315	4.3	Copper Alloy	1.29	315	538	915	77
HCH1M220	4.5	Copper Alloy	1.54	220	450	915	85
HCH1M140	4.9	Copper Alloy	1.93	140	380	915	102
HCH1M100	5.2	Copper Alloy	2.29	100	337	915	125
HCC1M63	3.2	Copper	0.59	63	2189	915	41
HCC1M40	3.4	Copper	0.74	40	2041	915	46
HCC1M25	3.7	Copper	0.94	25	1655	915	56
HCC1M17	4.6	Copper	1.14	17	516	915	85
HCC1M11	4.9	Copper	1.41	11	460	915	98
HCC1M7	5.3	Copper	1.77	7	391	915	118
HCC1M4	5.9	Copper	2.34	4	315	915	150
HCC1M2.87	6.4	Copper	2.76	2.87	660	915	170
HCC1M1.72	7.3	Copper	3.57	1.72	531	915	235
HCC1M1.08	8.3	Copper	4.51	1.08	413	915	326

Note: All resistances shown are nominal at 20°C. (*Not Ex approved, maximum 300 VAC.)

Tyco Thermal Controls requires the use of a 30 mA residual current device to provide maximum safety and protection from fire. Where there is a marked increase in nuisance tripping, a maximum 300 mA residual current device may be used.
*Also refer to the components section (page 77) for more details on heating units, accessories and nomenclatures.

Maximum operating temperatures



Follow steps below to obtain sheath temperature guidelines from the graph, for ordinary area applications.

Step 1: By design, identify cable reference to be used and calculate watts/metre rating of cable/element e.g. HCH1M100 (bare cable), 20 W/m.
Step 2: Refer to rating factor table and multiply watts/metre rating of cable/element by rating factor to obtain adjusted watts/metre value. (20 W/m x 0.663 = 13.26 W/m)
Step 3: Using adjusted value, enter graph on watts/metre axis and obtain cable sheath temperature for application maintain temperature. Cable sheath temperature = 112°C for 20°C maintain - see graph.

Rating factor table

Cable Ref.	Rating factor		
	Bare	HDPE	FEP
HCH1L2000	1.076	.714	–
HCH1L1250	1.076	.714	–
HCHIM800	.928	.634	.735
HCH1M630	.829	.588	.671
HCH1M450	.829	.588	.671
HCH1M315	.780	.564	.637
HCH1M220	.751	.548	.617
HCH1M140	.698	.521	.581
HCH1M100	.663	.502	.556
HCC1M63	1.000	.666	.781
HCC1M40	.950	.644	.752
HCC1M25	.886	.615	.709
HCC1M17	.727	.541	.610
HCC1M11	.698	.521	.581
HCC1M7	.649	.496	.549
HCC1M4	.597	.463	.508
HCC1M2.87	.558	.445	.500
HCC1M1.72	.500	.406	.450
HCC1M1.08	.445	.384	.406

MI Heating cable sheath corrosion resistance and temperature data

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-HDPE	80	Copper sheathed cable with high density polyethylene oversheath	GE	GE	A	A	A	NR	A	A	A
Copper	200	Copper sheathed cable	NR	NR	A	A	NR	A	A	NR	X
Copper-FEP	200	Copper sheathed cable with FEP 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.