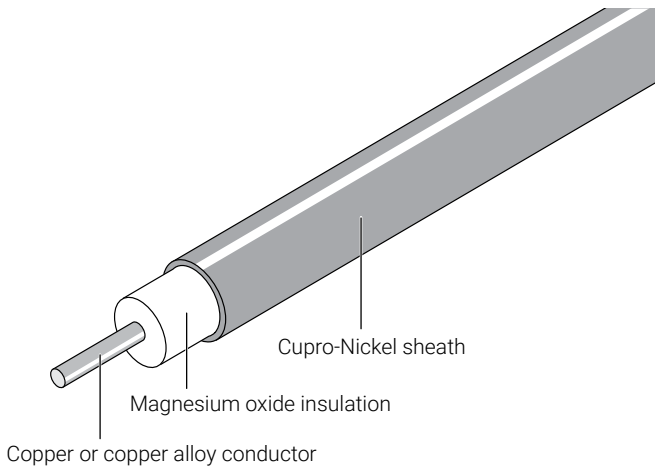


# MINERAL INSULATED CUPRO-NICKEL SHEATHED HEATING CABLE








### TYPICAL CABLE CONSTRUCTIONS

nVent RAYCHEM HDC/HDF mineral insulated (MI) Cupro-Nickel series heating cables are suited for use in hazardous areas. They are extensively used for a wide variety of industries, such as oil and gas, chemical and petrochemical, power generation, gas storage and many other industrial applications. Cupro-Nickel heating cables with copper conductors (HDC) are available in very low resistances to allow for long line applications with a limited amount of supply points, in particular for applications exceeding the capabilities of Polymer Insulated (PI) series heating cables. The heating cables can be used for exposure temperatures up to 400°C and a typical power output up to 70 W/m. 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.

### APPLICATION

Area classification Hazardous areas, Zone 1 or Zone 2 (Gas) and Zone 21 or Zone 22 (Dust)  
Ordinary areas

### APPROVALS

System (heating units)	Baseefa 13ATEX0174X	 II 2G Ex eb IIC T* Gb II 2D Ex tb IIIC T*°C Db (for * see schedule)
	IECEX BAS 13.0090X	 Ex eb IIC T* Gb Ex tb IIIC T*°C Db (for * see schedule)
	 RU C-BE.ИМ43.В.01571 ООО «ТехИмпорт» Ambient temp range: -60°C...+56°C	1Ex e IIC T* Gb X Ex tb IIIC T* Db X *: by design Made in Germany or Poland
Bulk cable	Baseefa 13ATEX0173U	 II 2G Ex e IIC Gb
	IECEX BAS 13.0091U	Ex e IIC Gb
	 RU C-BE.ИМ43.В.01571 ООО «ТехИмпорт» Ambient temp range: -60°C...+56°C	1Ex e IIC T* Gb X Ex tb IIIC T* Db X *: by design Made in Canada or Italy

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 nVent.

### TECHNICAL DATA

Cable sheath material	70/30 Cupro-Nickel	
Conductor material	Copper (HDC) or Copper Alloy (HDF)	
Max. exposure temperature	400°C	
Min. installation temperature	-60°C	
Min. bending radius	6 x outer diameter at -60°C	
Max. supply voltage and power	Voltage (U <sub>o</sub> /U)	Max. power output*
	300/500 Vac	70 W/m *typical value, depending on application
Earth leakage	3 mA/100 m (nominal at 20°C, 230Vac, 50 - 60Hz)	
Min. cable spacing	25 mm for hazardous areas	

## MI SERIES HEATING CABLES HDF/HDC

Order Reference	Nominal resistance ( $\Omega/\text{km}$ @ 20°C)	Outer diameter (mm)	Temp. coefficient ( $\times 10^{-3}/\text{K}$ )	Max. coil length [m]	Nom. weight (kg/km)
HDF1M1600	1600	3.2	0.04	625	40
HDF1M1000	1000	3.4	0.04	550	45
HDF1M630	630	3.7	0.04	465	55
HDF1M400	400	4.0	0.04	400	67
HDF1M250	250	4.4	0.04	330	84
HDF1M160	160	4.9	0.04	265	108
HDC1M63	63	3.2	3.9	620	39
HDC1M40	40	3.4	3.9	550	44
HDC1M25	25	3.7	3.9	440	55
HDC1M17	17	4.6	3.9	300	84
HDC1M11	11	4.9	3.9	265	98
HDC1M7	7	5.3	3.9	225	119
HDC1M4	4	5.9	3.9	180	155

## RECOMMENDED COLD LEADS FOR HDF/HDC 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
S33A	Alloy 825	33	600	1	B	5.5	3.3	M25
S55A	Alloy 825	55	600	1	B	6.4	8.4	M25
S76A	Alloy 825	76	600	1	B	8.1	13.3	M25
S123A	Alloy 825	123	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 DOC2210)

Nickel plated brass glands are standard on all heating units. Other materials are possible, contact nVent for more information. Cold leads attached to cupro nickel sheathed heating cables are provided with an Alloy 825 outer sheath. As the cold lead is an exposed component, not protected by insulation, it can be subject to extremely variable corrosive environments. The Alloy 825 sheath provides enhanced life expectancy with a superior level of corrosion protection against a wide range of exposure conditions.

By default, all cold leads are supplied with M25 glands intended for use with a standardized range of Raychem MI junction boxes which include an integral earth plate.

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 nVent to confirm lead time. nVent 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	Hydrochloric Acid	Hydrofluoric Acid	Phosphoric Acid	Nitric Acid	Organic Acid	Alkalis	Sea Water	Chloride
Cupro-Nickel	400	Cupro-Nickel alloy 70% copper 30% nickel	NR	X	X	X	X	X	X	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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