

Thermoheat by



HSQ

Ex Mineral insulated (MI) stainless steel heating cables

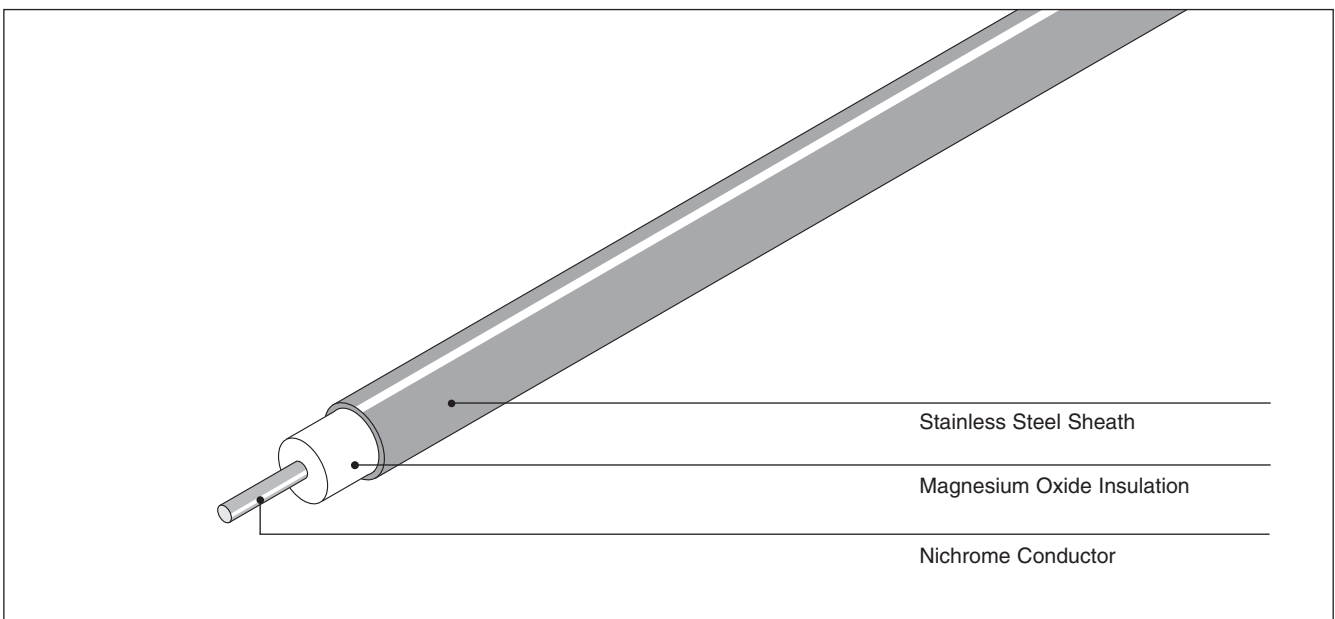
Mineral Insulated (MI) Stainless Steel cables can operate to a maximum sheath temperature of 600°C. MI Stainless Steel cables offer the industrial heat tracing market excellent corrosive properties against a range of harsh environments with a high temperature capability.

HSQ cables are typically used on bitumen plants, gas plants, oil refineries, reactors and vessels, sodium loops and a variety of other heat tracing applications where temperature, efficiency, durability and cable safety is paramount.

MI cable features:

- Corrosion resistance
- High performance output
- High resistance to mechanical abuse
- Safety and fire resistance

Heating cable construction



Stainless Steel Heating Cable

Cable Sheath Material	321 Stainless Steel
Cable Insulation Material	MgO (Magnesium Oxide)
Cable Conductor Material	Nichrome
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	600°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. Ex II 2 G EExe II T6 to T1 Actual T class temperature determined by design BAS02ATEX0046X (Units) BAS02ATEX0045U (Bulk cable) GOSGORTECHNADZOR KAZAKH GOST
Area Classification	Hazardous area, Zone 1 or Zone 2, Ordinary
Minimum cable spacing	25 mm

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)
HSQ1M10K	3.2	Nichrome	0.37	10000	717	610	39
HSQ1M6300	3.2	Nichrome	0.47	6300	717	610	39
HSQ1M4000	3.2	Nichrome	0.59	4000	717	610	39
HSQ1M2500	3.4	Nichrome	0.74	2500	639	610	46
HSQ1M1600	3.6	Nichrome	0.93	1600	572	610	52
HSQ1M1000	3.9	Nichrome	1.17	1000	499	610	62
HSQ1M630	4.3	Nichrome	1.48	630	405	610	78
HSQ1M400	4.7	Nichrome	1.85	400	342	610	96
HSQ1M250	5.3	Nichrome	2.35	250	271	610	127
HSQ1M160	6.5	Nichrome	2.93	160	180	915	191

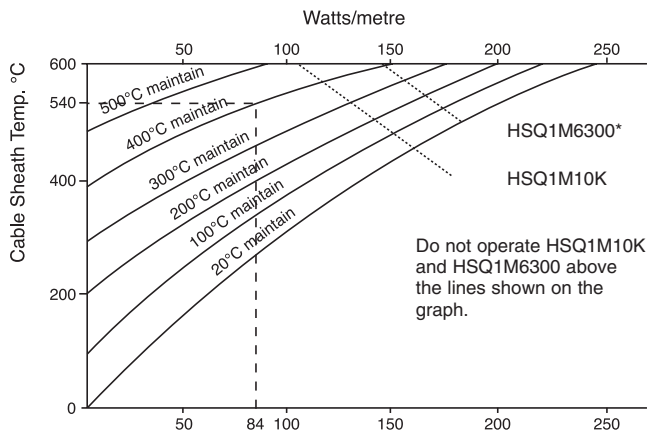
Note: All resistances shown are nominal at 20°C.

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.



Rating factor table

Cable Ref.	Rating factor
HSQ1M10K	1.000
HSQ1M6300	1.000
HSQ1M4000	1.000
HSQ1M2500	0.952
HSQ1M1600	0.901
HSQ1M1000	0.840
HSQ1M630	0.769
HSQ1M400	0.714
HSQ1M250	0.645
HSQ1M160	0.538

Step 1: By design, identify cable reference to be used and calculate watts/metre rating of cable/element e.g. HSQ1M1000, 100W/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. (100 W/m x 0.840 = 84 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 = 540°C for 400°C maintain - see graph.

MI Heating cable sheath corrosion resistance and temperature data

Sheath Material	Maximum Cable Sheath Temp (°C)	Description	Sulphuric Acid	Hydrochloric Acid	Hydrofluoric Acid	Phosphoric Acid	Nitric Acid	Organic Acid	Alkalis	Sea Water	Chloride
Stainless Steel 321 DIN 1.4541	600*	18/8 austenitic stainless steel with added titanium	NR	NR	NR	NR	X	GE	A	NR	NR

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

* Temperature limitation based on construction of heating element.

** Corrosion resistance data is dependent on temperature and concentration.