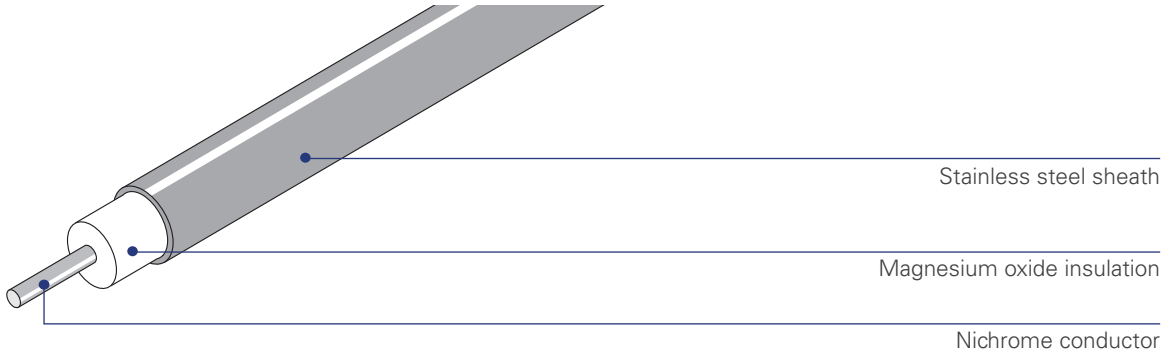
Mineral insulated (MI) stainless steel sheathed heating cable

Pyrotenax HSQ mineral insulated (MI) Stainless steel series heating cables are suited for use in hazardous areas. The Stainless steel sheath offers excellent corrosive properties against a wide range of organic acids and alkalis in combination with a high temperature withstand capability. HSQ cables are typically used in bitumen plants, gas plants, oil refineries, reactors and vessels, sodium loops and a wide variety of other heat-tracing applications where temperature resistance, power output and durability are paramount. The heating cables can be used for exposure temperatures up to 700°C and a typical power output up to 150 W/m. Higher temperatures and power outputs can be achieved, contact Tyco Thermal Controls for assistance. The heating cables are offered as bulk cables as well as factory-terminated heating units employing brazing or laser welding techniques 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

Approvals

System (heating units)	Baseefa02ATEX0046X Ⓔx II 2GD Ex e II T6 to T1 Ex tD A21 IP6X Actual T class temperature determined by design
Bulk cable	Baseefa02ATEX0045U Ⓔx 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	321 Stainless steel	
Conductor material	Nichrome	
Max. exposure temperature	700°C* (heating cables) 450°C (brazed heating units) 700°C* (laser welded heating units) ** Higher temperatures can be realized, contact Tyco Thermal Controls*	
Min. installation temperature	–60°C	
Min. bending radius	6 x outer diameter at –60°C	
Max. supply voltage and power	Voltage (Uo/U) 300/500 Vac 460/800 Vac (laser welded heating units)	Max. power output* 150 W/m **typical value, depending on application*
Earth leakage	3 mA/100 m (nominal at 20°C, 230 Vac, 50 - 60 Hz)	
Min. cable spacing	25 mm for hazardous areas	

MI series heating cables HSQ

Order Reference	Nominal resistance (Ω/km @ 20°C)	Outer diameter (mm)	Temp. coefficient (x 10^{-3}/K)	Max. coil length [m]	Nom.weight (kg/km)
HSQ1M10K	10000	3.2	0.09	717	39
HSQ1M6300	6300	3.2	0.09	717	39
HSQ1M4000	4000	3.2	0.09	717	39
HSQ1M2500	2500	3.4	0.09	639	46
HSQ1M1600	1600	3.6	0.09	572	52
HSQ1M1000	1000	3.9	0.09	499	62
HSQ1M630	630	4.3	0.09	405	78
HSQ1M400	400	4.7	0.09	342	96
HSQ1M250	250	5.3	0.09	271	127
HSQ1M160	160	6.5	0.09	180	191

Resistance tolerance: ±10%

Recommended cold leads for HSQ MI series heating cables

Nom. cross section [mm²]	Order reference	Max. current (design B)	Outer diameter (mm)	Standard gland size
2.5	SC1H2.5	34	5.3	M20
6	SC1H6	57	6.4	M20

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.

Table 3 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
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.

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