



Thermal and Cable Solutions

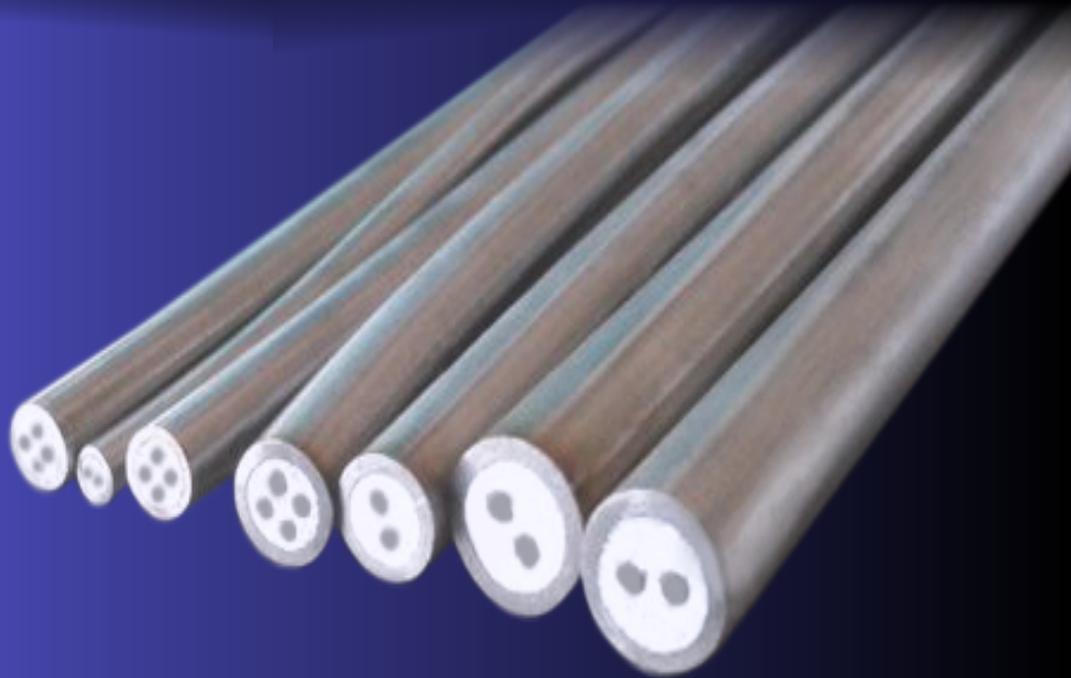
ISO 9001-2015



CCOE



MINERAL INSULATED HEATING CABLES



TEMPSENS INSTRUMENTS (I) PVT. LTD.

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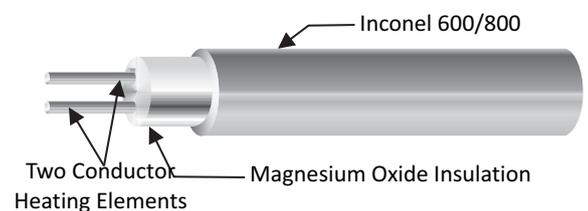
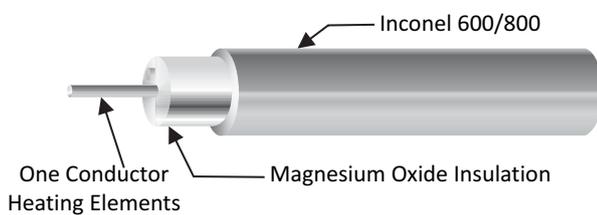
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Marathon Mineral insulated heating cables provide rugged, high temperature and reliable heat tracing for a different customize applications. MI cables constructed by high nickel alloy sheath materials, magnesium oxide dielectric insulation and resistance wire construction allow the tracing of surface up to 600°C maintain temperatures and excellent resistance to harsh & many corrosive environments. MI heating cables and heater units are widely used in areas where high temperature, high pressure, high radiation, or corrosive environments exist, and where high power density field, and electric heating or heating processes exist.



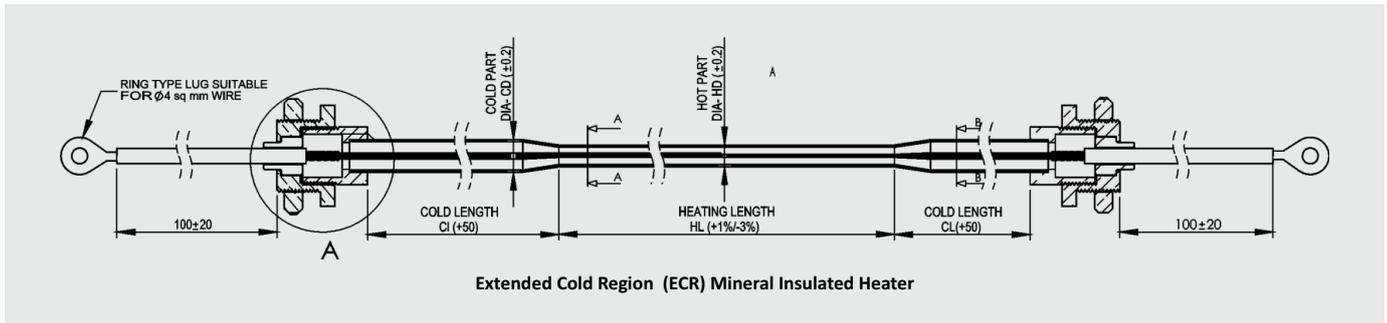
Construction



- **Metal Sheath:** High nickel content Alloy 600 & 825 is recognized for its use in high temperature applications, and use in many corrosive environments. This alloy has excellent resistance to pitting, acid and alkali corrosion. Stainless steel alloys is also available.
- **MgO :** Highly compacted Magnesium Oxide provides insulation of the resistance Wire. Completely sealed sheath protects the MgO from moisture & contamination.
- **Resistance Wire :** A large number of available resistances enables the design of a large range of

lengths and wattages. Double and single conductor available.

- **Special Heating Cable Design Configurations :** Marathon Heater offers customized designs in MI Heater Configurations to fulfill customer requirements. Marathon Heater ECR (Extended Cold Region) Heaters are examples of such special type of MI Heaters, which are manufactured with extended cold ends from the Heating Length of the heater which suits to Critical Nuclear applications.



- Wattage and voltage customized to application
- Elements can be formed to specification or formed on location
- Optional internal thermocouple can be located at various points for precise temperature control
- Sealed lead wire transition eliminates contamination
- Sheath materials available in 304 stainless steel, 316 stainless steel, Inconel® 600, or custom material available upon request.

Applications

- Heat Trace / Freeze Protection
- Semiconductor Manufacturing
- Plastic Moulding Hot Runners Systems
- Air or Liquid Immersion
- Cutting and Sealing Bars
- Tube and Pipe Heating
- Large Surface Areas
- Vacuum Chambers

Advantages

- High power output due to perfect thermal conductivity of the metallic sheath.
- Reduced size due to the high dielectric strength of the magnesium oxide while maintaining good thermal conductivity.
- Easy installation due its reduced size and annealed state of outer sheath.
- High flexibility during the design phase, due to the wide range of available resistance.
- Factory assembled cable sets ready for installation
- Fully annealed sheath allows field bending
- Corrosion resistant sheath

Technical Specifications

Voltage	Upto 600V
Cold Resistance Tolerance	≤ 3%
Heating Element	Ferritic Alloys- Powder metallurgical element, Mara FeCrAl, NiCr 80/20
Watt Density	1 to 5 W/cm ²
Temperature Range	Up to 600°C
Sheath Materials	Nickel Alloys 600/ 825, Stainless steel Alloys SS304, SS316, SS321
Heater Parameters	Customized - Power rating, voltage, resistance , length, diameter and other dimensions

Note: For custom design requirements please contact factory