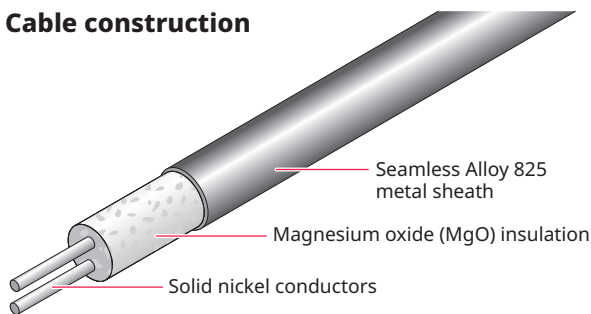


## Alloy 825 sheathed, mineral insulated, fire-rated wiring cable

### PRODUCT OVERVIEW

#### Cable construction



Pyrotenax System 2200 fire-rated mineral insulated (MI) wiring cables facilitate the controlled shutdown of critical processes and systems in the event of a hydrocarbon flash fire in both nonhazardous and hazardous locations.

Using the electrical test procedure described in UL2196, System 2200 MI cable maintains electrical circuit integrity for 2 hours during exposure to the UL 1709 fire test. The UL 1709 test, referenced in API 2218, replicates an intense hydrocarbon fire, reaching 2000°F (1093°C) in 5 minutes when subjected to a heat flux of 65,000 BTU/ft<sup>2</sup> hr (200 kW/m<sup>2</sup>) in an enclosed furnace.

System 2200 wiring cable is constructed with an Alloy 825 sheath and solid nickel conductors which allows continuous exposure temperatures to 670°C and withstands rapid-rise temperature excursions to 1200°C. In addition, the sheath provides durability in areas where corrosives may be present.

MI cable is made of inorganic materials and provides zero smoke generation, zero fuel contribution, and zero flame spread. Highly compacted magnesium oxide (MgO) insulation prevents the flow and transmission of explosive gases through the wiring cables.

System 2200 MI cable may be used for power, control, and communication wiring in the following environments:

- Petrochemical – to protect critical systems in the event of a hydrocarbon flash fire
- Petrochemical and mining – in hazardous areas to provide a gas path block
- Manufacturing – in areas of extreme heat, around furnaces, etc.
- Tunnels and confined spaces – MI cables do not burn; no smoke generated
- Nuclear and fossil fuel power generation plants – for wiring to equipment where heat or radiation may be of concern
- Pulp and paper – where corrosives are present

System 2200 wiring cable is typically supplied as a factory assembled Duoterm unit complete with terminations at each end, allowing for immediate installation in the field. In hazardous areas, the simplified installation of MI cable means that conduit systems and explosion proof seals are not required; simply connect the cable directly to the equipment or junction box.

## SYSTEM 2200 (METRIC)

System 2200 has been independently tested in hydrocarbon pit fires up to temperatures of 1110°C and meets the requirements of national electrical standards. For additional information on factory-assembled Duoterm units, or bulk cable and field-installed terminations, contact your Chemelex representative or call (800) 545-6258.

### CABLE CONSTRUCTION

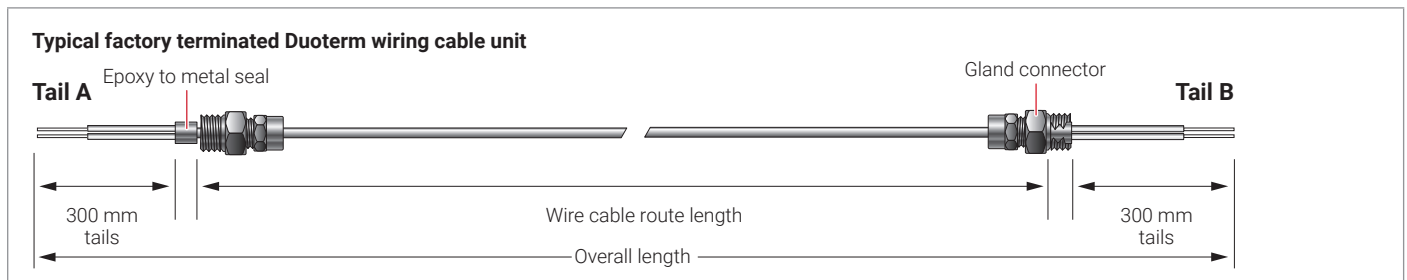
Sheath	Seamless Alloy 825
Insulation	Magnesium oxide (MgO)
Conductor type	Nickel
Insulation voltage rating	600 V
Conductor cross sectional area	2.9 – 8.6 mm <sup>2</sup>
Number of conductors	2, 3, 4, or 7 standard (Contact Chemelex for custom configurations)

### BENDING RADIUS

Minimum bending radius 6 times cable diameter

### CABLE TEMPERATURE RATING

Continuous exposure temperature	670°C
Maximum exposure temperature	1200°C



### TERMINATION CONSTRUCTION

Gland connector	Stainless steel	
Potting material	Epoxy resin	
Tails		
Standard tail length	300 mm (Please specify if longer tail lengths are required)	
Maximum exposure temperature <sup>a</sup>	Nonhazardous	Hazardous
High temperature insulated stranded wire	120°C; 200°C optional	120°C; 150°C optional
PVC sleeving	105°C	105°C

<sup>a</sup>For factory assembled Duoterm units, high temperature insulated stranded wire tails are standard. For field installed terminations, solid wire tails with PVC sleeving is standard.

Arrangement of tails at one end		Standard Tail Colour Code			
				B Black	Y Yellow
				W White	Br Brown
				R Red	O Orange
				Bl Blue	

## 600 V WIRING CABLE SPECIFICATIONS

Cable size reference	Nominal conductor cross sectional area (mm <sup>2</sup> )	Nominal conductor resistance at 20°C (Ω/km)	Allowable ampacity <sup>c</sup> 75°C/90°C (A)	Cable diameter (mm)	Nominal conductor diameter (mm)	Nominal coil length <sup>b</sup> (m)	Nominal weight (kg/km)	Gland connector size (mm)
<b>Two conductor</b>								
449/2NI4/825	4.4	20.7	22 / 25	11.4	2.37	190	523	25
496/2NI6/825	5.6	16.2	25 / 29	12.6	2.68	156	640	25
<b>Three conductor</b>								
496/3NI4/825	4.3	21.4	18 / 21	12.6	2.33	156	649	25
527/3NI6/825	6.3	14.5	22 / 25	13.4	2.83	140	759	25
590/3NI9/825	8.6	10.7	26 / 30	15.0	3.30	111	961	32
<b>Four conductor</b>								
527/4NI4/825	4.3	21.0	18 <sup>d</sup> / 21 <sup>d</sup>	13.4	2.35	139	750	25
590/4NI6/825	6.3	14.5	22 <sup>d</sup> / 26 <sup>d</sup>	15.0	2.83	111	958	32
637/4NI9/825	8.6	10.7	27 <sup>d</sup> / 31 <sup>d</sup>	16.2	3.30	96	1146	32
<b>Seven conductor</b>								
590/7NI3/825	2.9	31.4	15 <sup>d</sup> / 18 <sup>d</sup>	15.0	1.93	111	932	32
637/7NI4/825	4.0	22.9	18 <sup>d</sup> / 21 <sup>d</sup>	16.2	2.26	96	1110	32
684/7NI6/825	5.5	16.6	22 <sup>d</sup> / 25 <sup>d</sup>	17.4	2.65	84	1317	32

<sup>b</sup> For longer lengths, please contact Chemelex.

<sup>c</sup> Allowable ampacity (amps) for 75°C/90°C conductor temperature is based on Neher-McGrath calculation.

<sup>d</sup> Based on 3 conductors supplying current to the load; other conductor(s) used as neutral or for control signal. Derating factors apply if 4 or more conductors are used as current carrying conductors.

## APPROVALS

### Bulk Cable



#### Ordinary Locations / Hazardous Locations

Class I, Div. 1 and 2, Groups A, B, C, D  
Class II, Div. 1 and 2, Groups E, F, G  
Class III, Div. 1 and 2



#### Ordinary Locations

### MI Cable Seal Assembly



II 2G EEx e II  
Baseefa02ATEX0194U

### Cable Glands



II 2GD  
Ex db IIC Gb Ex eb IIC Gb  
Ex tb IIIC Db  
Baseefa08ATEX0327X

IECEx BAS 08.0107X  
Ex db IIC Gb Ex eb IIC Gb  
Ex tb IIIC Db



American Bureau of Shipping Type Approved

### Factory Assembled Duoterm Units and Field Installed Termination Kits



#### Ordinary Locations / Hazardous Locations

Class I, Div. 1 and 2, Groups A, B, C, D  
Class II, Div. 1 and 2, Groups E, F, G  
Class III, Div. 1 and 2



American Bureau of Shipping Type Approved

### Additional Performance Information for MI Cable

- System Testing – Motor operated valve third party test witnessed by international oil company. Complete system test with valve actuator and cable. Valve was opened and closed every 5 minutes during 30 minute fire exposure to UL 1709 conditions (65,000 BTU/ft<sup>2</sup> hr / 200 kW/m<sup>2</sup> heat flux) per API 2218.
- Passes IEC 60331 flame test – modified to 2000°F (1100°C) for 3 hours (normally 750°C or 830°C) with mechanical shock every 5 minutes.
- Passes customer specified rapid rise open flame test for 45 minutes at 2000°F (1100°C).

**Note:** Caution should be exercised when comparing open flame tests with enclosed furnace tests as the heat flux conditions are very different.

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**Raychem Tracer Pyrotenax Nuheat**