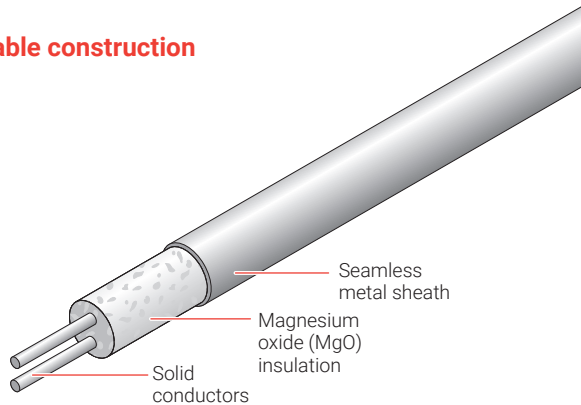


## ALLOY 825 SHEATHED, MINERAL INSULATED, FIRE-RATED WIRING CABLE

### Cable construction



### PRODUCT OVERVIEW

nVent 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 that allow continuous exposure temperatures to 1238°F (670°C) and withstand rapid-rise temperature excursions to 2200°F (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

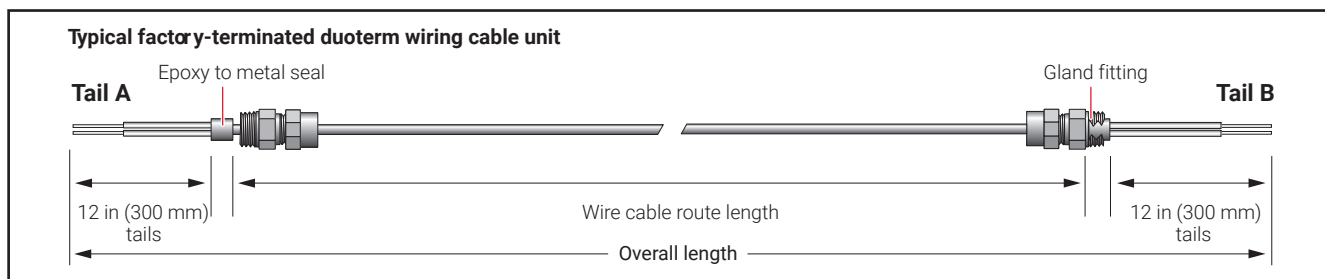
System 2200 has been independently tested in hydrocarbon pit fires up to temperatures of 2030°F (1110°C) and meets the requirements of national electrical codes. For additional information on factory-assembled Duoterm units or bulk cable and field-installed terminations, contact your nVent representative or call (800) 545-6258.

### CABLE CONSTRUCTION

Sheath	Seamless Alloy 825
Insulation	Magnesium oxide (MgO)
Conductor type	Nickel
Insulation voltage rating	600 V
Conductor size	16 AWG – 5 AWG
Number of conductors	2, 3, 4, 5, 7, 8, or 10 standard (Contact nVent for custom configurations)

### CABLE TEMPERATURE RATING

Continuous exposure temperature	1238°F (670°C)
Maximum exposure temperature	2200°F (1200°C)

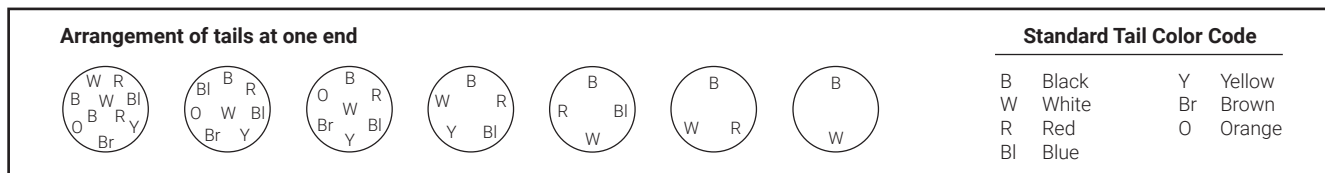


### TERMINATION CONSTRUCTION

Gland fitting	Stainless steel
Potting material	Epoxy resin
Tails	
Standard tail length	12 in (300 mm) (Please specify if longer tail lengths are required)
Maximum exposure temperature <sup>1</sup>	Nonhazardous Hazardous
High temperature insulated stranded wire	248°F (120°C); 392°F (200°C) optional 248°F (120°C); 302°F (150°C) optional
PVC sleeving	220°F (105°C) 220°F (105°C)
Size <sup>2</sup>	16 AWG – 4 AWG

<sup>1</sup> For factory assembled Duoterm units, high temperature insulated stranded wire tails are standard unless otherwise noted in table below. For field installed terminations, solid wire tails with PVC sleeving is standard.

<sup>2</sup> Factory assembled Duoterm units are supplied with tail sizes as shown in the "Tail size" column (see Table). For field installed terminations, tail size is the same size as the "Conductor size" (see Table).



## 600 V WIRING CABLE SPECIFICATIONS

Cable reference number	Conductor size (AWG)	Allowable ampacity <sup>3</sup> 75°C / 90°C (A)	Nominal coil length <sup>4</sup> [ft / (m)]	Nominal weight [lb / 1000 ft / (kg / km)]	NPT gland size (in)	Tail size (AWG)
<b>Two conductor</b>						
355-16/2NI825	16	11/13	990/(302)	208/(309)	1/2	16
402-14/2NI825	14	15/17	774/(236)	271/(403)	1/2	14
<b>Three conductor</b>						
387-16/3NI825	16	9/11	835/(255)	251/(373)	1/2	16
418-14/3NI825	14	13/15	719/(219)	301/(448)	3/4	14
434-13/3NI825	13	14/16	669/(204)	327/(487)	3/4	12
465-12/3NI825	12	16/18	583/(178)	380/(565)	3/4	12
527-10/3NI825	10	22/25	458/(140)	510/(759)	3/4	10
<b>Four conductor</b>						
465-14/4NI825	14	13 <sup>5</sup> /15 <sup>5</sup>	582/(177)	374/(556)	3/4	14
496-12/4NI825	12	15 <sup>5</sup> /18 <sup>5</sup>	513/(156)	436/(649)	3/4	12
590-10/4NI825	10	21 <sup>5</sup> /24 <sup>5</sup>	364/(111)	644/(957)	1	10
637-8/4NI825	8	27 <sup>5</sup> /31 <sup>5</sup>	284/(87)	770/(1146)	1	8
<b>Five conductor</b>						
590-11/5NI825	11	18 <sup>5</sup> /21 <sup>5</sup>	364/(111)	624/(929)	1	10
714-7/5NI825	7	29 <sup>5</sup> /34 <sup>5</sup>	250/(76)	978/(1455)	1-1/4	6
810-5/5NI825	5	38 <sup>5</sup> /45 <sup>5</sup>	194/(59)	1336/(1988)	1-1/4	4 <sup>6</sup>
<b>Seven conductor</b>						
496-16/7NI825	16	9 <sup>5</sup> /11 <sup>5</sup>	511/(156)	420/(625)	3/4	16
543-14/7NI825	14	13 <sup>5</sup> /15 <sup>5</sup>	428/(130)	519/(772)	1	14
590-13/7NI825	13	15 <sup>5</sup> /18 <sup>5</sup>	364/(111)	626/(931)	1	12
<b>Eight conductor</b>						
684-11/8NI825	11	19 <sup>5</sup> /22 <sup>5</sup>	272/(83)	871/(1296)	1	10
<b>Ten conductor</b>						
700-14/10NI825	14	13 <sup>5</sup> /15 <sup>5</sup>	257/(78)	843/(1254)	1-1/4	14

<sup>3</sup> Allowable ampacity (amps) for 75°C/90°C conductor temperature is based on Neher-McGrath calculation.

<sup>4</sup> For longer lengths, please contact nVent.

<sup>5</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.

<sup>6</sup> For factory-assembled Duoterm units, tail is stranded wire with PVC sleeving.

Note: To obtain cable diameter, use first three digits in the cable reference number and move the decimal point three places to the left; the result is cable diameter in inches. Example: cable reference 684-11/8NI825 is 0.684" diameter.

## 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



American Bureau of Shipping Type Approved



#### 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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