



**STAHL**

# PRODUCT PORTFOLIO

NORTH AMERICA

### NEC® 500 / Canadian Electrical Code Annex J Marking Example

| Class I                         | Division 1      | Groups A,B,C,D | T4               |
|---------------------------------|-----------------|----------------|------------------|
| Hazardous Classification Rating | Area Definition | Gas Group      | Temperature Code |

#### Location Classification

- **Class I** - Combustible Gases
- **Class II** - Combustible Dusts
- **Class III** - Fibers and Flyings

#### Degree of Hazard / Risk

- **Division 1** - Areas in which dangerous concentrations of incandive gases or vapors may be present in normal operating conditions.
- **Division 2** - Areas in which dangerous concentrations of gases or vapors are kept in closed containers or systems and which can only be released as a result of fault conditions.

#### Material Group

- A - atmospheres containing acetylene or equivalent hazard
- B - atmospheres containing hydrogen or equivalent hazard
- C - atmospheres containing ethylene or equivalent hazard
- D - atmospheres containing propane or equivalent hazard
- E - atmospheres containing combustible metal dusts
- F - atmospheres containing combustible carbonaceous dusts
- G - atmospheres containing combustible dusts not in Group E or F

### Temperature Class

| Max. Surface Temperature | NEC® 500 / CE Code Appendix J | NEC® 505 / CE Code Section 18 |
|--------------------------|-------------------------------|-------------------------------|
| 450 °C (842 °F)          | T1                            | T1                            |
| 300 °C (572 °F)          | T2                            | T2                            |
| 280 °C (536 °F)          | T2A                           |                               |
| 260 °C (500 °F)          | T2B                           |                               |
| 230 °C (446 °F)          | T2C                           |                               |
| 215 °C (419 °F)          | T2D                           |                               |
| 200 °C (392 °F)          | T3                            | T3                            |
| 180 °C (356 °F)          | T3A                           |                               |
| 165 °C (329 °F)          | T3B                           |                               |
| 160 °C (320 °F)          | T3C                           |                               |
| 135 °C (275 °F)          | T4                            | T4                            |
| 120 °C (248 °F)          | T4A                           |                               |
| 100 °C (212 °F)          | T5                            | T5                            |
| 85 °C (185 °F)           | T6                            | T6                            |

### Enclosure Type

| Type    | Area             | Brief Definition   |
|---------|------------------|--|
| 1       | Indoor           | General purpose  |
| 2       | Indoor           | Protection against angled dripping water                         |
| 3, 3S   | Indoor / Outdoor | Protection against rain, sleet, dirt, snow and windblown dust    |
| 3R      | Indoor / Outdoor | Protection against rain, sleet, dirt and snow                    |
| 4, 4X   | Indoor / Outdoor | Protection against rain, snow, hose directed water and corrosion |
| 5       | Indoor / Outdoor | Protection against rangled dripping water, dust, fibers, flyings |
| 6       | Indoor / Outdoor | Protection against temporary submersion                          |
| 6P      | Indoor / Outdoor | Protection against prolonged submersion                          |
| 12, 12K | Indoor           | Protection against circulating dust, fibers, flyings             |
| 13      | Indoor           | Protection against circulating dust, fibers, flyings             |

### NEC® 505 Marking Example

| Zone 1, AEx  | db eb              | IIC              | T4               | Gb                         |
|--|--------------------|------------------|------------------|----------------------------|
| <b>Canadian Electrical Code Section 18 Marking Example</b> |                    |                  |                  |                            |
| Ex   | db eb              | IIC              | T4               | Gb                         |
| Approved to Standards                                      | Type of Protection | Atmosphere Group | Temperature Code | Equipment Protection Level |

#### Hazardous Area Classification

- **Zone 0** – An area in which an explosive gas atmosphere is present continuously.
- **Zone 1** – An area in which an explosive gas atmosphere is likely to occur periodically or occasionally in normal operation.
- **Zone 2** – An area in which an explosive gas atmosphere is not likely to occur in normal operation but, if it does occur, it will exist for a short period only.
- **Zone 20** – An area in which an explosive dust atmosphere, in the form of a cloud of dust in air, is present continuously.
- **Zone 21** – An area in which an explosive dust atmosphere, in the form of a cloud of dust in air, is likely to occur in normal operation.
- **Zone 22** – An area in which an explosive dust atmosphere, in the form of a cloud of dust in air, is not likely to occur in normal operation but, if it does occur, will persist for a short period only.

#### Equipment Group and Associate Sub-Group

- **IIC** - atmospheres containing acetylene & hydrogen or gases of an equivalent hazard
- **IIB+H2** - atmospheres containing hydrogen in addition to the gases of IIB
- **IIB** - atmospheres containing ethylene or gases of an equivalent hazard
- **IIA** - atmospheres containing propane or gases of an equivalent hazard
- **IIIC** - atmospheres containing combustible conductive dusts
- **IIIB** - atmospheres containing combustible non-conductive dusts
- **IIIA** - atmospheres containing flyings (fibers)

#### Equipment Protection Level (EPL)



Indicates which locations the equipment is suitable for installation within:

- **Ga** – Zone 0, 1 and 2
- **Gb** – Zone 1 and 2
- **Gc** – Zone 2
- **Da** – Zone 20, 21 and 22
- **Db** – Zone 21 and 22
- **Dc** – Zone 22
- **Ma** – Very high level of protection for mines
- **Mb** – High level of protection for mines

### Degree of Protection (IP Code)



| Protection from solid bodies |                  | Protection from water |   |
|------------------------------|------------------|-----------------------|---|
| 0                            | No protection    | 0                     | No protection                           |
| 1                            | Object > 50 mm   | 1                     | Vertical drip                           |
| 2                            | Object > 12.5 mm | 2                     | Angled drip                             |
| 3                            | Object > 2.5 mm  | 3                     | Spraying                                |
| 4                            | Object > 1.0 mm  | 4                     | Splashing                               |
| 5                            | Dust-protected   | 5                     | Jetting                                 |
| 6                            | Dust-tight       | 6                     | Powerful jetting                        |
|                              |                  | 7                     | Temporary immersion                     |
|                              |                  | 8                     | Continuous immersion                    |
|                              |                  | 9                     | High pressure and temperature water jet |

**Protection Concepts**  
**NEC® 500 / Canadian Electrical Code Annex J Marking**










| Type of Protection       | Class      | Division                                       | North American Standard<br>UL/CSA/NFPA                       | Basic Concept of Protection   |
|--------------------------|------------|--|--|---|
| Explosionproof           | I          | Division 1, 2                                  | UL 1203,<br>CSA C22.2 No. 30                                 |  |
| Nonincendive             | I, II      | Division 2                                     | UL121201,<br>CSA C22.2 No. 286                               |  |
|                          | III        | Division 1, 2                                  |  |   |
| Intrinsic Safety         | I, II, III | Division 1, 2                                  | UL/CSA C22.2<br>No. 60079-11<br>UL 913,<br>CSA C22.2 No. 157 |  |
| Purge and Pressurization | I, II, III | Division 1, 2<br>Depending on type:<br>X, Y, Z | NFPA 496   |  |
| Dust-Ignitionproof       | II         | Division 1, 2                                  | UL 1203,<br>CSA C22.2 No. 25                                 |  |
| Dusttight                | II         | Division 2                                     | UL121201,<br>CSA C22.2 No. 286                               |   |

**Other Protection Methods**

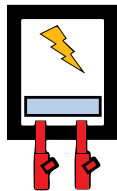
Products often utilize a combination of protection methods to provide an optimal solution that is both easy to install and maintain, while ensuring safety.

| Type of Protection             | Application  | Basic Concept of Protection   |   |
|--------------------------------|--|---|---|
| Flameproof components or Ex de | Class I, Div. 2<br>Class I, Zone 1<br>Class II, Div. 2 |  | The component is made by flameproof enclosure with increased safety terminals. Each component can then be installed inside a suitable enclosure.                            |
| Indirect Entry or Ex de        | Class I, Div. 2<br>Class I, Zone 1<br>Class II, Div. 2 |  | Combination of an explosionproof enclosure attached to a nonincendive or increased safety connection enclosure. The electrical connection is done with certified junctions. |

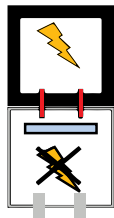
**Protection Concepts**  
**NEC® 505 / Canadian Electrical Code Section 18 Marking**

| Type of Protection                                  | Ex Code | EPL      | Zone  | North American Standard<br>UL/CSA | Basic Concept of Protection   |
|---|---------|----------|-------|-----------------------------------|---|
| Flameproof  | da      | Ga       | 0     | 60079-1                           |    |
|   | db      | Gb       | 1     |                                   |   |
|   | dc      | Gc       | 2     |                                   |   |
| Increased Safety                                    | eb      | Gb<br>Db | 1     | 60079-7                           |    |
|   | ec      | Gc<br>Dc | 2     |                                   |   |
| Intrinsic Safety                                    | ia      | Ga<br>Da | 0, 20 | 60079-11                          |    |
|   | ib      | Gb<br>Db | 1, 21 |                                   |   |
|   | ic      | Gc<br>Dc | 2, 22 |                                   |   |
| Encapsulation                                       | ma      | Ga<br>Da | 0, 20 | 60079-18                          |    |
|   | mb      | Gb<br>Db | 1, 21 |                                   |   |
|   | mc      | Gc<br>Dc | 2, 22 |                                   |   |
| Purge and Pressurization                            | px      | Gb<br>Db | 1, 21 | 60079-2                           |   |
|   | py      | Gb<br>Db | 1, 21 |                                   |   |
|   | pz      | Gc<br>Dc | 2, 22 |                                   |   |
| Powder-Filled                                       | qb      | Gb       | 1     | 60079-5                           |  |
| Liquid Immersion                                    | ob      | Gb       | 1     | 60079-6                           |  |
|   | oc      | Gc       | 2     |                                   |   |
| Equipment dust ignition protection by enclosure "t" | ta      | Da       | 20    | 60079-31                          |  |
|   | tb      | Db       | 21    |                                   |   |
|   | tc      | Dc       | 22    |                                   |   |
| Optical Radiation                                   | op pr   | Gb<br>Db | 1, 21 | 60079-28                          |  |
|   | op is   | Ga<br>Da | 0, 20 |                                   |   |
|   | op sh   | Ga<br>Da | 0, 20 |                                   |   |

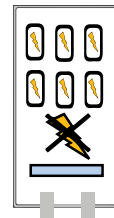
**Ask me how to eliminate conduit seals on your installation?**



Explosionproof enclosure with conduit & conduit seals or barrier gland with suitable cable rated for the area such as TC-ER-HL or MC-HL



Indirect Entry enclosure with cable gland and suitable cable for the area such as TC, TC-HL, MC, MC-HL or Teck 90 for Class I, Div. 2 locations



Flameproof components in enclosure with cable gland and suitable cable for the area such as TC, TC-HL, MC, MC-HL or Teck 90 for Class I, Div. 2 locations



# CONTROL SOLUTIONS AND ENCLOSURES



316L SS Control Stations  
Compact and Universal Mounting



FRP Control Stations  
8040 Compact



Custom Control Panels  
316L SS & FRP



Panel Mount Control Devices



316L SS Terminal Boxes



FRP Terminal Boxes



Custom Terminal Boxes



316L SS Empty Enclosures  
NEMA 4X, IP66 - G150



Empty Enclosures  
Explosionproof 8265 - GUBox



Empty Enclosures  
Explosionproof 8264 - CUBEx



System Solutions Panels



Accessories - Conduit Hubs,  
Glands, Breathers

# POWER DISTRIBUTION AND CONTROL SOLUTIONS



1-, 2-, 3-Pole Circuit Breakers



Contactors



Load Protection



Switches



Manual Disconnect Switches  
316L SS & FRP



Manual Transfer Switches  
316L SS & FRP



Motor Starters



Indirect Entry Systems



Power Distribution Panels - EPIK



Power Distribution Panels - BROZ



Plugs and Receptacles



Quick Disconnect MiniCON

# AUTOMATION INTERFACES AND MORE

|   |   |  |   |
|---|---|--|---|
|    |    |    |    |
| <p>Zener Safety Barriers<br/>9001 + 9002</p>  | <p>Galvanic Isolator Barriers<br/>9100 &amp; 9200</p>                               | <p>IS1+ Remote I/O for<br/>Class I, Division 1</p>                                   | <p>IS1+ Universal Remote I/O<br/>Class I, Division 2 / Zone 2</p>                     |
|   |   |   |   |
| <p>Panel Mount IPCs</p>   | <p>IPCs and Thin Clients Stations</p>   | <p>IPCs and Thin Clients Extreme<br/>Conditions Stations</p>                         | <p>Thin Client Firmware</p>   |
|  |  |  |  |
| <p>Ethernet APL Switch</p>  | <p>Purge and Pressurization System</p>  | <p>Purge and Pressurization System</p>   | <p>Cameras and CCTV Systems</p>   |



# SIGNALING, LIGHTING AND MORE



Combination Signaling Device YL60



Visual Signaling FL60



Audible Signaling YA60 / YA90



Panel Mount Audible Alarm YA11



Tubular Lighting



Linear Lighting



Flood Lighting



Emergency Lighting



Media Converters



Wireless Access Points



Ethernet Terminal



Optical Fiber Splice Cassette

U.S. Product 2023-06 / EN



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