

Type THWN conductors are commonly used in areas where they could be exposed to gasoline because of their ease of handling. Not all Type THWN conductors are suitable where they could be exposed to gasoline. THWN wire suitable for exposure to liquid gasoline and gasoline vapors at ordinary ambient temperature is marked "Gasoline and Oil Resistant I" (or "GR1") or "Gasoline and Oil Resistant II" (or "GR2"). See the *UL Guide Information for Electrical Equipment*, which can be found at [productspec.ul.com](http://productspec.ul.com), for further information on these cables.

### 501.25 Uninsulated Exposed Parts, Class I, Divisions 1 and 2.

There shall be no uninsulated exposed parts, such as electrical conductors, buses, terminals, or components, that operate at more than 30 volts (15 volts in wet locations). These parts shall additionally be protected by a protection technique according to 500.7(E), (F), or (G) that is suitable for the location.

The intrinsically safe or nonincendive techniques listed in 500.7 limit the circuit's energy to a level incapable of causing ignition in the hazardous area.

Δ **501.30 Grounding and Bonding.** Regardless of the voltage of the electrical system, wiring systems and equipment shall comply with 501.30(A) and (B).

N (A) **Grounding.** Wiring systems and equipment shall be grounded in accordance with Part I and Part VI of Article 250, as applicable.

Δ (B) **Bonding.** Bonding shall comply with Part I and Part V of Article 250, as applicable, and 501.30(B)(1) and (B)(2).

N (1) **Specific Bonding Means.** Bonding shall comply with 501.30(B)(1)(a) and (B)(1)(b).

(a) The locknut-bushing and double-locknut types of contacts shall not be depended on for bonding purposes, but bonding jumpers with identified fittings or other approved means of bonding shall be used. These bonding means shall apply to all metal raceways, fittings, boxes, cable trays, and enclosures, and other parts of raceway systems between Class I locations and the point of grounding for service equipment or point of grounding for a separately derived system. Metal struts, angles, or channels provided for support and mechanical or physical protection as permitted in 335.4(5), 336.10(7)(c), or 722.135(C) shall be bonded in accordance with 250.102.

(b) Where the branch-circuit overcurrent protection is located on the load side of the disconnecting means, the specific bonding means shall be permitted to end at the nearest point where the grounded circuit conductor and the grounding electrode conductor are connected together on the line side of the building or structure disconnecting means as specified in 250.32(B).

The specific bonding methods mentioned in this section are intended to provide a mechanical/electrical connection that is low impedance and free from accidental arcing due to loose connections; they apply to raceways and raceway-to-enclosure

connections both inside and outside the hazardous location. Section 250.100 specifies this enhanced level of bonding for all raceways and enclosures, and the requirement is not contingent on the circuit voltage. This includes metal raceways and enclosures containing signaling, communications, or other power-limited circuits.

Section 250.100 clarifies that the installation of a wire-type equipment grounding conductor (EGC) in a metal raceway does not negate the special raceway and enclosure bonding requirements. The electrical continuity of raceways and raceway-to-enclosure connections must always be ensured through compliance with 250.100 and 501.30(A), regardless of whether a wire-type EGC has been installed in the raceway.

Section 501.30(B)(1)(b) covers the grounding and bonding requirements that are specific to hazardous locations where the installation occurs at a multibuilding or multistructure setting. If the service equipment and the electrical equipment supplying the hazardous location are not located in the same building or structure, applying the bonding requirement of 501.30(A) from the hazardous location back to the service equipment is not required. It is necessary only to apply the bonding requirement from the hazardous location back to the grounding electrode connection to the grounded conductor on the line side of the building or structure disconnecting means.

N (2) **Flexible Metal Conduit and Liquidtight Flexible Metal Conduit.** Flexible metal conduit and liquidtight flexible metal conduit shall comply with 501.30(B)(2)(a) and (B)(2)(b).

(a) Flexible metal conduit and liquidtight flexible metal conduit shall include an equipment bonding jumper of the wire type in accordance with 250.102.

(b) In Class I, Division 2 locations, the bonding jumper shall not be required where all of the following conditions are met:

- (1) Listed liquidtight flexible metal conduit 1.8 m (6 ft) or less in length, with fittings listed for grounding, is used.
- (2) Overcurrent protection in the circuit is limited to 10 amperes or less.
- (3) The load is part of a meter, instrument, or relay circuit.

### 501.35 Surge Protection.

(A) **Class I, Division 1.** Surge arresters, surge-protective devices, and capacitors shall be installed in enclosures identified for Class I, Division 1 locations. Surge-protective capacitors shall be of a type designed for specific duty.

(B) **Class I, Division 2.** Surge arresters and surge-protective devices shall be nonarcing, such as metal-oxide varistor (MOV) sealed type, and surge-protective capacitors shall be of a type designed for specific duty. Enclosures shall be permitted to be of the general-purpose type. Surge protection of types other than described in this paragraph shall be installed in enclosures identified for Class I, Division 1 locations.

In Class I, Division 2 locations, only spark-producing types of surge arresters require installation in an enclosure identified for