

safe operating temperature, as determined by simultaneous exposure to the combinations of Class I and Class II conditions.

Exception: Equipment of the non-heat-producing type, such as junction boxes, conduit, and fittings, and equipment of the heat-producing type having a maximum temperature not more than 100°C shall not be required to have a marked operating temperature or temperature class.

Informational Note: More than one marked temperature class or operating temperature, for gases and vapors, dusts, and different ambient temperatures, may appear.

(5) Ambient Temperature Range. Electrical equipment designed for use in the ambient temperature range between -25°C to +40°C shall require no ambient temperature marking. For equipment rated for a temperature range other than -25°C to +40°C, the marking shall specify the special range of ambient temperatures in degrees Celsius. The marking shall include either the symbol “Ta” or “Tamb.”

Informational Note: As an example, such a marking might be “-30°C ≤ Ta ≤ +40°C.”

(6) Special Allowances.

(a) *General-Purpose Equipment.* Fixed general-purpose equipment in Class I locations, other than fixed luminaires, that is acceptable for use in Class I, Division 2 locations shall not be required to be marked with the class, division, group, temperature class, or ambient temperature range.

See also

Article 501, Part III, for which equipment is permitted to be installed in a general-purpose enclosure for Class I, Division 2 locations

(b) *Dusttight Equipment.* Fixed dusttight equipment, other than fixed luminaires, that is acceptable for use in Class II, Division 2 and Class III locations shall not be required to be marked with the class, division, group, temperature class, or ambient temperature range.

(c) *Associated Apparatus.* Associated intrinsically safe apparatus and associated nonincendive field wiring apparatus that are not protected by an alternative type of protection shall not be marked with the class, division, group, or temperature class. Associated intrinsically safe apparatus and associated nonincendive field wiring apparatus shall be marked with the class, division, and group of the apparatus to which it is to be connected.

(d) *Simple Apparatus.* “Simple apparatus” as defined in Article 100 Part III, shall not be required to be marked with class, division, group, temperature class, or ambient temperature range.

(D) Temperature.

Δ (1) Class I Temperature. The temperature marking specified in 500.8(C) shall not exceed the autoignition temperature of the specific gas or vapor to be encountered.

Informational Note: See NFPA 497, *Recommended Practice for the Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas*, for information on autoignition temperatures of gases and vapors.

Electrical equipment intended for installation in a hazardous location is evaluated for maximum temperatures regardless of the type of protection afforded the equipment. Gases and vapors are qualified with an autoignition temperature, and dusts are qualified with a layer or cloud ignition temperature, each of which is the temperature at which the material ignites. The equipment temperature is compared to these material temperatures to determine if a potential for a thermal ignition exists.

The autoignition temperature of a solid, liquid, or gaseous substance is the minimum temperature required to initiate or cause self-sustained combustion independent of the heating or heated element. The flash point is the minimum temperature at which a liquid gives off enough vapor to form an ignitable mixture with air. The ignition temperature and the flash point are unrelated properties, except that the flash point is always lower than the ignition temperature.

Δ (2) Class II Temperature. The temperature marking specified in 500.8(C) shall be less than the ignition temperature of the specific dust or metal fiber/flying to be encountered. For organic dusts that might dehydrate or carbonize, the temperature marking shall not exceed the lower of either the ignition temperature or 165°C (329°F).

Informational Note: See NFPA 499, *Recommended Practice for the Classification of Combustible Dusts and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas*, for minimum ignition temperatures of specific dusts.

Δ (3) Class III Temperature. The temperature marking specified in 500.8(C) shall be less than the ignition temperature of the specific fiber/flying to be encountered, except as specified in 500.8(D)(3)(a) or (D)(3)(b).

(a) For nonmetal combustible fibers/flyings that might dehydrate or carbonize, the temperature marking shall not exceed the lower of either the ignition temperature or 165°C (329°F).

(b) When ignitable fibers/flyings are present, the maximum surface temperatures under operating conditions shall not exceed 165°C (329°F) for equipment that is not subject to overloading, and 120°C (248°F) for equipment (such as motors or power transformers) that might be overloaded.

(E) Threading. The supply connection entry thread form shall be NPT or metric. Conduit and fittings shall be made wrenchtight to prevent sparking when fault current flows through the conduit system, and to ensure the explosionproof integrity of the conduit system where applicable. Equipment provided with threaded entries for field wiring connections shall be installed in accordance with 500.8(E)(1) or (E)(2) and with (E)(3).

To ensure the integrity of the ground-fault current path of the conduit system, all conduit joints must be made up wrenchtight