Nonincendive Circuit [as applied to Hazardous (Classified) Locations].

A circuit, other than field wiring, in which any arc or thermal effect produced under intended operating conditions of the equipment, is not capable, under specified test conditions, of igniting the flammable gas–air, vapor–air, or dust–air mixture.

Informational Note: Conditions are described in ANSI/ISA-12.12.01- 2013, Nonincendive Electrical Equipment for Use in Class I and II, Division 2, and Class III, Divisions 1 and 2 Hazardous (Classified) Locations.

A nonincendive circuit employs a protection technique that prevents electrical circuits from causing a fire or explosion in a hazardous location under normal conditions. This is in contrast to an intrinsically safe circuit, whose evaluation is conducted under abnormal
conditions. Because of its definition, a nonincendive circuit is a low-energy circuit, but many low-voltage, low-energy circuits, including some communications circuits and thermocouple circuits (or Class 2 or 3 circuits as defined in Article 725), are not necessarily nonincendive.

Nonincendive Component [as applied to Hazardous (Classified) Locations].

A component having contacts for making or breaking an incendive circuit and the contacting mechanism is constructed so that the component is incapable of igniting the specified flammable gas–air or vapor–air mixture. The housing of a nonincendive component is not intended to exclude the flammable atmosphere or contain an explosion.
Informational Note: For further information, see ANSI/ISA-12.12.01-2013, Nonincendive Electrical Equipment for Use in Class I and II, Division 2, and Class III, Divisions 1 and 2 Hazardous (Classified) Locations.

**Nonincendive Equipment [as applied to Hazardous (Classified) Locations].**

Equipment having electrical/electronic circuitry that is incapable, under normal operating conditions, of causing ignition of a specified flammable gas–air, vapor–air, or dust–air mixture due to arcing or thermal means.

Informational Note: For further information, see ANSI/ISA-12.12.01-2013, Nonincendive Electrical Equipment for Use in Class I and II, Division 2, and Class III, Divisions 1 and 2 Hazardous (Classified) Locations.
Nonincendive Field Wiring [as applied to Hazardous (Classified) Locations].

Wiring that enters or leaves an equipment enclosure and, under normal operating conditions of the equipment, is not capable, due to arcing or thermal effects, of igniting the flammable gas–air, vapor–air, or dust–air mixture. Normal operation includes opening, shorting, or grounding the field wiring. Field wiring meeting this definition requires limitations of energy under normally expected conditions of operation, such as opening, shorting, or grounding. For example, stored energy in the form of mutual inductance or capacitance could be released during an opening, shorting, or grounding of nonincendive field wiring, which defeats the purpose of this protection technique.
Nonincendive Field Wiring Apparatus [as applied to Hazardous (Classified) Locations].

Apparatus intended to be connected to nonincendive field wiring.

Informational Note: For further information, see ANSI/ISA-12.12.01-2013, Nonincendive Electrical Equipment for Use in Class I and II, Division 2, and Class III, Divisions 1 and 2 Hazardous (Classified) Locations.

Nonlinear Load.

A load where the wave shape of the steady-state current does not follow the wave shape of the applied voltage.

Informational Note: Electronic equipment, electronic/electric-discharge lighting, adjustable-speed drive systems, and similar equipment may be nonlinear loads. Nonlinear loads are a major cause of harmonic currents.
Additional conductor heating is just one of the undesirable operational effects associated with harmonic currents.

Informational Note No. 1(2) following 310.15(A)(3) points out that harmonic current is one of the factors that must be considered when determining the heat generated internally in a conductor. Actual circuit measurements of current for nonlinear loads should be made using only true rms-measuring ammeter instruments. Averaging ammeters produces inaccurate values if used to measure nonlinear loads. See also 310.15(B)(5)(c) and its commentary for more on nonlinear loads.

**Oil Immersion [as applied to Hazardous (Classified) Locations].**

Electrical equipment immersed in a protective liquid in such a way that an explosive
atmosphere that may be above the liquid or outside the enclosure cannot be ignited.