

HAZARDOUS (CLASSIFIED) LOCATIONS

There are definitions essential to understanding the use of Thermocouples and RTDs in hazardous (classified) locations.

Encapsulation: An international term describing a type of protection in which the parts could ignite an explosive atmosphere by either sparking or heating are enclosed in an encapsulant in such a way that this explosive atmosphere cannot be ignited. This type of protection is referred to by CENELEC as "Ex m" in draft Standard EN50028.

Explosion Proof Enclosure: An enclosure that is capable of withstanding an explosion of a gas or vapor within it and of preventing the ignition of an explosive gas or vapor that may surround it and that operates at such an external temperature that a surrounding explosive gas or vapor will not be ignited thereby. This type of enclosure is similar to a flame-proof enclosure.

Explosion Proof Equipment (Apparatus): Equipment or apparatus enclosed in an explosion proof enclosure.

Explosion Proof Seal / Cable: A cable terminator filled with compound and designed to contain an explosion in the enclosure to which it is attached or to minimize passage of flammable gases or vapors from one location or another. A conduit seal may also be used as a cable seal. This method differs from the international method which requires cable glands.

Hermetically Sealed Device: A device that is sealed against the entrance of an external atmosphere and in which the seal is made by fusion. Continuous soldering, brazing, welding and the fusion of glass to metal are examples of recognized methods.

Nonincendive Circuit: AA circuit in which any arc or thermal effect produced in normal operating conditions of the equipment is not capable, under prescribed conditions, of igniting the specified inflammable gas, vapor-in-air mixture, combustible dusts, or ignitable fibers or flyings.

Nonincendive Equipment: Equipment having electrical/electronic circuitry and components that are incapable under normal conditions, of causing ignition of a specified flammable gas or vapor-in-air mixture due to arcing or thermal effect. This type of protection is referred to by IEC as "Ex n." Ex n protection is limited to gas and vapor hazards.

Simple Apparatus (as applied to intrinsic safety): A device that will not generate nor store more than 1.2V., 100mA, 25mW, or 20 μ J. Examples are switches, thermocouples, light-emitting diodes, and resistance temperature devices.

At the publication of this catalog, JMS has submitted complete sensor assemblies to FM for testing and approval as meeting all the requirements for Class I, Division II suitability. The approval designs are readily available by drawing and can be ordered thru your salesperson by drawing number 11400.

It should be noted that a hermetically sealed, incapsulated, simple apparatus with explosion proof seals containing non-incendive circuits rates as a nonincendive piece of equipment. Therefore, thermocouples and RTDs so built require no external marking at all. However, the CYA principle might dictate such markings and they are offered by JMS.

(1) Group D equipment shall be permitted for this atmosphere if such equipment is isolated in accordance with Section 501-5(a) of National Electric Code by sealing all conduits 1/2 inch size or larger.

(2) Group C equipment shall be permitted for this atmosphere if such equipment is isolated in accordance with Section 501 -5(a) of National Electric Code by sealing all conduits 1/2 inch size or larger.

(3) For classification of areas involving ammonia atmosphere, see Safety Code for Mechanical Refrigeration (ANSI/ASHRAE 15-1978) and safety requirements for the Storage and Handling of Anhydrous Ammonia (ANSI/CGA G2.1-1972).

(4) A saturated hydrocarbon mixture boiling in the range 20-135 degree C. (68 - 275 degrees F.) Also known by the synonyms benzene, ligroin, petroleum ether, or naphtha.

Compliances:

JMS explosion proof products are designed to fulfill the applicable Underwriter's Laboratories and Canadian standards requirements and National Electrical Code Article 500 Hazardous (Classified) Location installations. Where statement of compliances is used in this catalog in reference to UL, CSA, or FM listed standards numbers, it is for identification of products shown in catalog having met design criteria and company tested.

(The statement of compliances does not imply that the products have been approved by Underwriters' Laboratories, Canadian Standards Association or Factory Mutual). Such approvals are covered by listing published by Underwriters' Laboratories, Canadian Standards Association and Factory Mutual and are available upon request.

*Taken from NFPA 497M-1983

*See page 8-24 and 8-25 for more details