



Intrinsically Safe vs. Explosion Proof

Did you know that there is a difference between a product that is intrinsically safe and one that is explosion proof?

Products that are labeled as explosion-proof have internal components that must be engineered in a way to contain an internal explosion. Products that are labeled as intrinsically safe have internal components that cannot spark or create sufficient energy to ignite. In both cases, the equipment's surface temperature cannot meet or ignite the gas or vapor ignition temperatures of the group it is rated in.

Products that need to be intrinsically safe/explosion-proof can have a variety of different ratings associated with them that will be specific to the particular environment where they will be used. Here are the ratings:

There are three types of classes:

Class I - gases and vapor

Class II – combustible dust

Class III - fibers and flyings

There are two kinds of hazardous conditions within a class. With Class I pertaining to gases and vapor hazards, the two kinds are:

Division 1: The gases or vapors are always present at sufficient concentrations to be an explosion hazard.

Division 2: The gases or vapors may be present, and if they are they are likely to be in sufficient concentrations to be an explosion hazard.

Groups identify what elements are present that have the potential to cause an explosion. Groups A-D apply to Class I locations. Groups E-G apply to Class II locations.

Group A

Acetylene (usually used in welding)

Group B

Hydrogen or gases of equivalent hazard (includes ethylene oxide, propylene oxide, etc.)

Group C

Ethylene or gases of equivalent hazard (includes carbon monoxide, ether, etc.)

Group D

Propane (includes butane, gasoline, natural gas, ammonia, hexane, ethanol, etc.)

Group E

Metal dust (Division 1 only—includes aluminum and magnesium dust)

Group F

Coal dust (includes charcoal dust, coal, etc.)

Group G

Grain dust (includes starch, flour, etc.)

IMPORTANT: Please note that a flashlight (or other device) with a Class 1, Division 1 rating doesn't necessarily work in any environment, nor is it the best for every

application. A Class 1, Division 1 is NOT approved for “Combustible Dust” unless it clearly states “Class 2, Division 1”.

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