

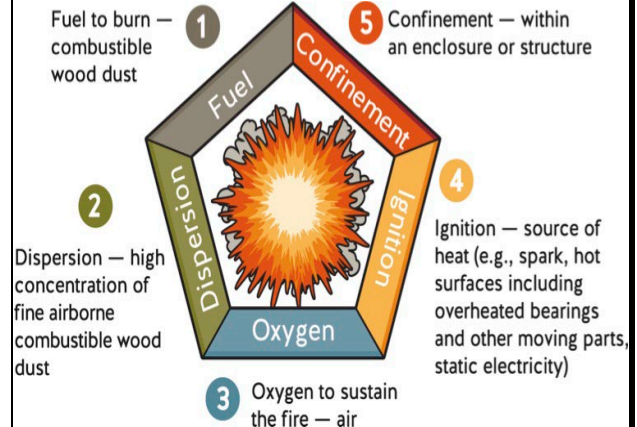


# HSE BULLETIN

Issue 72, Aug 2023

## HAZARDOUS AREA CLASSIFICATION

When electrical equipment is used in, around, or near an atmosphere that has flammable gases or vapors, flammable liquids, combustible dusts, ignitable fibers or flyings, there is always a possibility or risk that a fire or explosion might occur. Those areas where the possibility or risk of fire or explosion might occur due to an explosive atmosphere and/or mixture is often called a hazardous (or classified) location/area. Currently there are two systems used to classify these hazardous areas; the Class/Division system and the Zone system. The Class/Division system is used predominately in the United States and Canada, whereas the rest of the world generally uses the Zone system. However, the United States and Canada are trending more towards the Zone System.



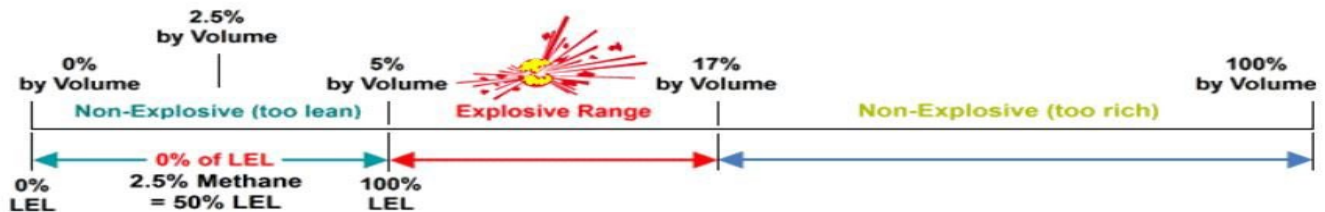
### Lower and Upper Explosive (Flammable) limits:

Combustion will only occur if the flammable mixture comprises fuel, in the form of a gas or vapor and air, is within certain limits. These limits are:

**The Lower Explosive Limit (LEL) OR Lower Flammability Limits (LFL)**

**The Upper Explosive Limit (UEL) OR Upper Flammability Limits (UFL)**

Methane - LEL: 5% by volume in Air / UEL: 17% by volume in Air



Visual example to show where on the scale % of LEL is measured

### Class/Division System

Hazardous locations per the Class/Division system are classified according to the Class, Division, and Group.

1. Class—The Class defines the general nature (or properties) of the hazardous material in the surrounding atmosphere which may or may not be in sufficient quantities.
2. Division—The Division defines the probability of the hazardous material being able to produce an explosive or ignitable mixture based upon its presence.
3. Group—The Group defines the type of hazardous material in the surrounding atmosphere. Groups A, B, C, and D are for gases (Class I only) while groups E, F, and G are for dusts and flyings (Class II or III).

### Zone System

Hazardous locations per the Zone system are classified according to its Zone which can be gas or dust. For gas atmospheres electrical equipment is further divided into Groups and Subgroups.

The Zone defines the probability of the hazardous material, gas or dust, being present in sufficient quantities to produce explosive or ignitable mixtures.

Typical ATEX and IECEx Marking (I<sup>o</sup>ATEX only)

**CE** **0259** **Ex** **II 2 G Ex d IIC T4 Gb**

COMPLIES WITH EUROPEAN DIRECTIVE NUMBER | NOTIFIED BODY EXPLOSION PROTECTION GROUP | SPECIFIC RATING FOR EXPLOSION PROTECTION EQUIPMENT CATEGORY | ENVIRONMENT | TYPE OF PROTECTION | TEMPERATURE CLASS (T1-T6) | EQUIPMENT PROTECTION LEVEL

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