

ATEX Explained

The Explosion Protection Regulations



To place equipment and protective systems intended for use in potentially explosive atmospheres on the market or into service in all EU member states, the equipment must carry an 'ATEX' certificate required by the EU directive 94/9/EC. This new directive is more commonly known as the ATEX directive (from the French : ATmospheres EXplosives).

User environment :

ATEX concerns all products to be used in places where explosive atmospheres may arise, such as mixtures of air and flammable materials such as gases, vapours, mists and dusts.

Products :

ATEX does not only concern electrical equipment, but all equipment and protection systems for use in potentially explosive atmospheres.

Scope :

In the ATEX directive, conformity of products is compulsory. The ATEX directive also covers explosive dust/air mixtures as well as gases.

Classification of equipment :

The ATEX directive contains classification into groups and categories which are defined by the marking on the equipment.

Area Classification:

Process plants are divided into Zones (European and IEC method) or Divisions (North American method) according to the likelihood of a potentially explosive atmosphere being present.

European & IEC Classification

Zone 0 (gases)

Zone 20 (dusts)

Zone 1 (gases)

Zone 21 (dusts)

Zone 2 (gases)

Zone 22 (dusts)

Definition of zone or division

An area in which an explosive mixture is continuously present or present for long periods

An area in which an explosive mixture is likely to occur in normal operation

An area in which an explosive mixture is not likely to occur in normal operation and if it occurs it will exist only for a short time

North American Classification

Class I Division 1 (gases)

Class II Division 1 (dusts)

Class I Division 1 (gases)

Class II Division 1 (dusts)

Class I Division 2 (gases)

Class II Division 2 (dusts)

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Marking :

The ATEX directive requires the product to be marked with the CE mark, the 'EX' mark and the equipment coding as per the following example.



- Ex II 2G Eexd IIB T4
- Ex – Explosion proof in accordance with ATEX
- II – **Equipment group:** II surface industries
- 2 – **Category:** 2 equipment (suitable for use in Zone 1)
- G – **Gas:** Suitable for atmospheres containing gas
- E – European certificate in accordance with harmonised standards
- Ex – Explosion-proof electrical equipment
- d – **Type of protection** is 'Flameproof enclosure'
- II – **Gas Group** II - surface industries
- B – **Gas sub group** = B
- T4 – **Temperature class** T4 (135 degrees centigrade surface temperature).

Alternatives to the above are:

Equipment Group: I for mines - Category M1 and M2.

II in all other places - Category 1, Category 2 & Category 3.

Category: 1 - Equipment that is intended for use in areas where an explosive atmosphere is present continuously, for long periods or frequently.

2 - Equipment that is intended for use in areas where an explosive atmosphere is likely to occur

in normal operation and must ensure a high level of protection.

3 - Equipment that is intended for use in areas where an explosive atmosphere is unlikely to occur

in normal operation and must ensure a normal level of protection.

Gas: For gases add the letter G - Category 1G, 2G or 3G.

For dusts add the letter D - Category 1D, 2D or 3D

Type of Protection: D = Flameproof

ia = Intrinsically safe

E = Increased safety

Gas Group: I = Mines

II = Surface above ground industries

Gas Sub Group : A = less easily ignited gases e.g. propane

B = easily ignited gases e.g. ethylene

C = most easily ignited e.g. hydrogen or acetylene

Temperature Classification: Hazardous area apparatus is classified according to the maximum surface temperature produced under fault conditions at an ambient temperature of 40°C, or as otherwise specified. The standard classifications are as follows:

T1 = 450°C T2 = 300°C T3 = 200°C T4 = 135°C T5 = 100°C T6 = 85°C

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