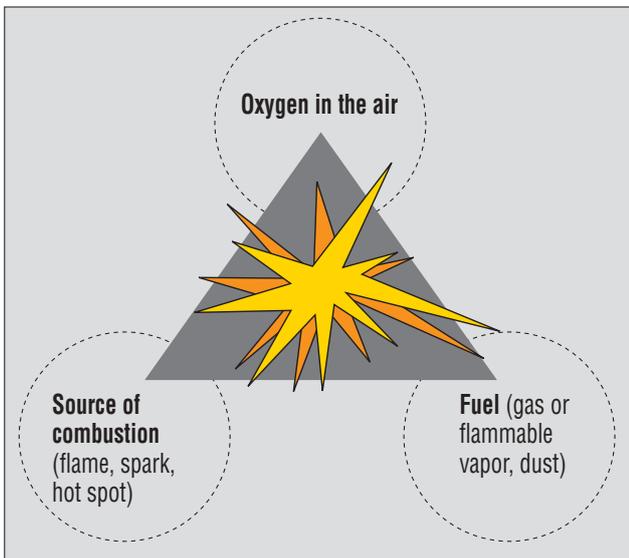


A- What is the ATEX?

The ATEX regulation is a European directive which requires all heads of organizations to fully understand the risks related to certain explosive environments.

To do this, an evaluation of the risk of explosion in a company is required in order to identify any locations where explosive environments could form and then to put in place the means to avoid explosion.

B- Under what conditions can an explosion occur?



It requires the presence of several elements:

- An oxidant: the oxygen in air, for example
- A fuel:
 - gases and vapors: hydrocarbons, solvents, varnishes, thinners, gas, alcohol, dyes, perfumes, chemical products, agents for manufacture of plastics...
 - powders and dust: magnesium, aluminum, sulfur, cellulose, cereals, carbon, wood, milk, resins, sugars, starch, polystyrenes, fertilizer...
- a hot spot or a source of combustion

Example: When filling a grain silo, the concentration of dust is very high. The environment then is dangerous: a rise in temperature, or even a spark, can trigger an explosion.

C- How do you choose equipment that is adapted for an environment at risk of explosion?

If a risk of explosion is identified in an environment (gas or dust), a safety requirement is imposed for the use of equipment that is specifically designed to function without becoming a potential source of combustion. This equipment offers different types of protection designed to diminish the risk of explosion.

- ATEX environments are subdivided into three zones:
 - 0, 1 or 2 for gases
 - 20, 21 or 22 for dust

- There are two groups of materials:
 - "Group I" specifically concerns mines (more restrictive)
 - "Group II" concerns all above-ground industries

For "Group II" (above-ground industries), a specifically adapted category of equipment is associated with each ATEX zone classification:

Zone classification	ATEX classification required for equipment (for Group II, above-ground industry)
Zone 0 (gas) Zone 20 (dust) PERMANENT RISK The explosive mix is present constantly or for a long period of time	Category 1 VERY HIGH LEVEL OF PROTECTION
Zone 1 (gas) Zone 21 (dust) FREQUENT RISK An explosive mix may form under average working conditions	Category 2 HIGH LEVEL OF PROTECTION
Zone 2 (gas) Zone 22 (dust) OCCASIONAL RISK An explosive mix has a small chance of forming and would exist only for a short period	Category 3 NORMAL LEVEL OF PROTECTION

D- What are the characteristics of ATEX certified equipment?

Products classified into different groups may have different modes of protection against explosion. These modes are designed for the zone in which the equipment is to be used. For example: Zones 1/21, Zones 2/22.

Headlamps: the more restrictive the mode of protection (zone 1/21, zone 0/20), the less powerful the lighting will be. The intensity and voltage that is permitted may be low in order to ensure that the device does not produce an arc, spark or dangerous temperature.

E- How are gases classified under the ATEX standard?

The ATEX standard also has a classification for explosive gases against which the user can protect himself by using a product that has adapted protection.

For Group II materials, the danger of gases covered by a product grows from subdivision IIA - the least dangerous - to subdivision IIC - the most dangerous (see www.petzl.com for more information).

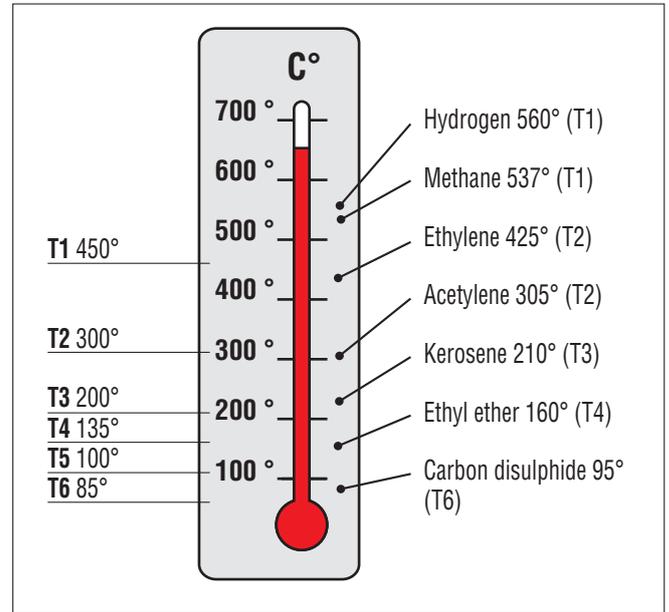
Gas groups	Reference gas
Group I	Methane
Group IIA	Propane
Group IIB	Ethylene
Group IIC	Hydrogen/acetylene

F- Temperature classes for gases and dust

The exterior of a headlamp for use in hazardous locations must not present an external surface temperature that could provoke combustion. Different substances may combust at different temperatures. The lower the combustion temperature is, the more dangerous the substance is. Therefore, each piece of equipment used in an explosive environment is classified according to the maximal surface temperature it generates.

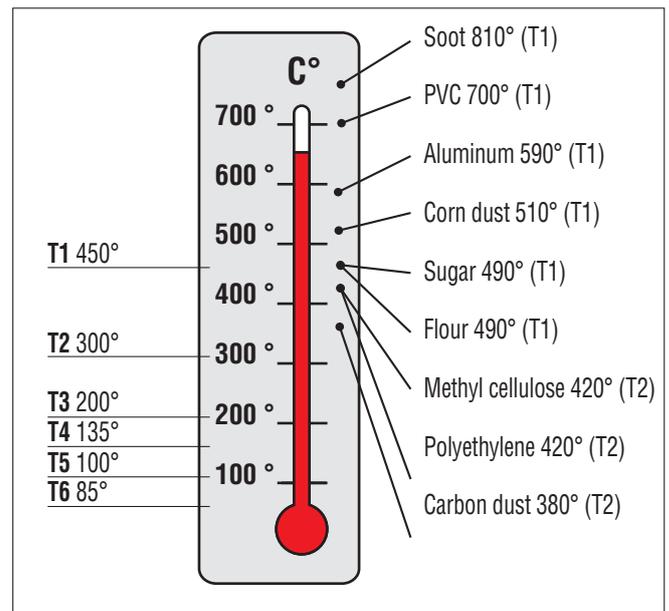
There are six classes of temperatures, from T1 to T6:

• Auto-ignition classes and temperatures for gas



See www.petzl.com to consult the classification of gases according to their combustion temperatures.

• Classes and temperatures for suspended dust particle combustion



G- What does the marking on equipment compatible with explosive environments mean?

All equipment designed for use in explosive environments is very clearly marked.

Example of marking:

CE 0081  II 2 GD Ex nAnL IIB T4

CE	The equipment meets European standards for this product
0081	Identification number of the notified body, when it intervenes in the inspection phase of production. Here the number corresponds to the LCIE – Bureau Véritas. This number may also be 0080, for example for INERIS.
	Use authorized for explosive environments
II	Equipment group (I = mines, II = above-ground industry)
2	Category of device: 1= permanent risk (Zones 0 and 20) 2= frequent risk (Zones 1 and 21) 3= occasional risk (Zones 2 and 22)
GD	D = dust G = gases and vapors
Ex	The product meets the Cenelec protection standards
nAnL	Type of protection
IIB	Indicates the class of gases covered by the product
T4	Temperature class corresponding to a surface temperature