



General content of 94/9/EC European Directive

Directive for the regulation of equipment used in areas with potentially explosive atmospheres

Generality of Directive 94/9/EC

ATEX is the conventional name of the Directive 94/9/EC of the European Union for the regulation concerning equipment and protective systems intended for use in potentially explosive atmospheres. The name comes from the words **AT**mosphères and **EX**plosibles. The purpose of the Directive is to facilitate free trade within the European Union through the standardization of the technical and legal requirements in the EU Member States for products intended for use in potentially hazardous zones. Directive 94/9/EC was issued on 23 March 1994 and implemented in Italy with Presidential Decree no.126 of 23 March 1998 (in force since 1 July 2003).

It is a directive addresses to products and manufacturers, in order to ensure within the European Community the free movement of products and determine their essential safety and health. It should be noted that Directive 94/9 / EC represents an extension of the scope since, for the first time, it establishes the harmonized requirements relating to non-electrical equipment, intended for use in potentially explosive atmospheres due to dust, as well as protective systems.

Also included are safety devices intended to be used out of explosive, useful or necessary for the safe running of equipment or protective systems with respect to explosion risks. It is an extension of the applications to previous national standards for equipment and systems intended for use in potentially explosive atmospheres. For **equipment** the directive means “machines, apparatus, fixed or mobile devices, control components and instrumentation thereof and detection or prevention systems which, separately or jointly, are intended for the generation, transfer, storage, measurement, control and conversion of energy for the processing of material and which are capable of causing an explosion through their own potential sources of ignition.” (such as electrical appliances, reactors, internal combustion engines ...).

With the term **protective systems** instead, the directive means “design units which are intended to halt incipient explosions immediately and/or to limit the effective range of explosion flames and explosion pressures. (such as, for example, the explosion vent panels). Finally, an **explosive atmosphere** means a mixture characterized by the simultaneous presence of:

1. flammable substances in the form of gases, vapors, mists, powders;
2. air;
3. certain atmospheric conditions;
4. a trigger following which the combustion is propagated to the unburned mixture;

An atmosphere which could become explosive due to local and / or operational conditions, is called: “**potentially explosive atmosphere.**”



Since when and where must be applied the ATEX directive

From 1 July 2003, all products placed on the market or put into service must comply with Directive 94/9/EC. Directive 94/9/EC applies to all products placed on the EU market, manufactured both within and outside the Community.

The Directive applies to equipment, protective systems, components and devices at all stages of their use, therefore, in the context of risk assessment, the considerations set out in this document should be extended to all of the following stages:

- normal operation
- start up
- stop
- maintenance
- any other

The installation does not fall within the scope of the ATEX 94/9 / EC directive. The responsibility lies with the end user / client, who must produce the explosion protection document, in accordance with the ATEX Directive 1999/92 / EC and the Legislative Decree 81/08 (Title XI).

Directive 94/9/EC, as mentioned, has expanded its scope than the existing legislative framework as established the essential safety requirements relating to:

- non-electrical equipment intended for use in potentially explosive atmospheres (such as forklifts, transducers, pneumatic motors, etc.);

- electrical devices;
- Ex equipment for powders (D);
- Ex equipment for gases, vapors and mists (G);
- mine environments (underground works – Group I);
- protective systems and devices intended for use outside explosive atmosphere, useful or necessary for the safe functioning of equipment or protective systems with respect to explosion risks;



The following are excluded from the scope of this Directive:

- medical devices intended for use in a medical environment;
- equipment and protective systems where the explosion hazard results exclusively from the presence of explosive substances or unstable chemical substances;
- equipment intended for use in domestic and non-commercial environments where potentially explosive atmospheres may only rarely be created, solely as a result of the accidental leakage of fuel gas;
- personal protective equipment covered by Directive 89/686/EEC (1);
- seagoing vessels and mobile offshore units together with equipment on board such vessels or units.

The directive takes into consideration all types of **ignition sources** such as:

- hot surfaces;
- free flames and / or hot gas;
- mechanical sparks;
- electric sparks, arcs, static discharge, electro magnetic waves;
- ionizing radiation, ultrasound;

- adiabatic compression and shock waves;
- exothermic reactions.

Directive 94/9/EC provides obligations for the person placing the products on the market and / or puts them in working, whether it be the manufacturer, his authorized representative, the importer or any other person responsible. The directive does not regulate the use of equipment for use in potentially explosive atmospheres. These aspects are in fact regulated by Directive 1999/92/EC on minimum requirements for improving the protection of safety and health of workers who may be exposed to the risk of explosive atmospheres defines the various zones in relation to the presence of gases, vapors and dust.

Obligations of economic subjects and declaration of conformity

The directive 94/9/CE introduces obligations on the economic subjects (manufacturer, agent, importer). In detail, the manufacturer is responsible for the design and construction of products placed in the EU, in compliance with the essential health and safety requirements. Anyone who substantially changes a product to make it “like new” becomes its manufacturer. The manufacturer is responsible for checking whether his product is covered by Directive 94/9 / EC. He is also responsible for applying the appropriate conformity assessment procedures. The manufacturer can subcontract the design or construction of the product, but he is still responsible for these activities.



With regard to conformity assessment procedures, they depend on the group and category of the equipment / protection system / safety device or component being assessed. The possible alternatives are defined in Art. 8 of the Directive and, among others, include: CE type-examination, internal control of production, single product verification. In particular, internal control of production (often erroneously defined as “self-certification”) presupposes an independent assessment by the manufacturer of the conformity of the product he wants to place on the market.

All the steps (formal and informal) must therefore be completed by the manufacturer. They include:

- drafting of the technical documents;

- tests on the product;
- use and maintenance manual;
- declaration of conformity;
- CE marking

At the end of the conformity assessment process, the manufacturer must issue the declaration of conformity. It must contain the following elements:

- identification mark of the manufacturer or his authorized representative in the European Community;
- description of the device or protection system;
- identification of all the parts;
- any possible name and number of the Notified Body involved;
- any references to harmonized standards;
- any references to specific uses;
- any reference to other directives applied;
- identification of the signer

The declaration of conformity must be followed by the CE marking, regulated by Article 10.

Classification of work areas according to Directive 99/92/EC

Directive 99/92/EC related to hazardous places are classified into zones based on the frequency and duration of the presence of explosive atmospheres:

Ex Zone Definitions	
Gas, Mists or Vapors	Dusts
Zone 0 - An atmosphere where a mixture of air and flammable substances in the form of gas, vapor or mist is present frequently, continuously or for long periods.	Zone 20 - An atmosphere where a cloud of combustible dust in the air is present frequently, continuously or for long periods.
Zone 1 - An atmosphere where a mixture of air and flammable substances in the form of gas, vapor or mist is likely to occur in normal operation occasionally.	Zone 21 - An atmosphere where a cloud of combustible dust in the air is likely to occur in normal operation occasionally.
Zone 2 - An atmosphere where a mixture of air and flammable substances in the form of gas, vapor or mist is not likely to occur in normal operation, but if it does occur will persist for only a short period.	Zone 22 - An atmosphere where a cloud of combustible dust in the air is not likely to occur in normal operation, but if it does occur will persist for only a short period.

Zone 0:

Zone in which it is present continuously or for long periods or frequently an explosive atmosphere consisting of a mixture of air and flammable substances in the form of gas, vapor or mist.

Zone 1:

Area in which during normal activities, it is likely the formation of explosive atmosphere consisting of a mixture of air and flammable substances in the form of gas, vapor or mist.

Zone 2:

Area in which during normal activities is not likely the formation of explosive atmosphere consisting of a mixture of air and flammable substances in the form of gas, vapor or mist, if it does occur, it is only of short duration.

Zone 20:

Area in which it is present continuously or for long periods or frequently an explosive atmosphere in the form of a cloud of combustible dust.

Zone 21:

Area in which occasionally during normal activities, it is likely the formation of an explosive atmosphere in the form of a cloud of combustible dust.

Zone 22:

Area in which during normal activities is not likely the formation of an explosive atmosphere in the form of a cloud of combustible dust and, if it does occur, it is only of short duration.

In these areas must installed and used the following categories of apparatus, provided as suitable and appropriate, to gases, vapors or mists and / or dust:

- In zone 0 or zone 20: equipment of category 1;
- In zone 1 or zone 21: equipment Category 1 or Category 2;
- Zone 2 or Zone 22: Category 1 equipment, 2 or 3.

The future

The aforementioned Directive will be repealed with effect from 20 April 2016 with the new Directive ATEX 2014/34 / EU.

Web sites and related resources

THE GUIDELINES OF THE 94/9 / EC

DIRECTIVE 2014/34 / EU - "NEW ATEX"