



ATEX General Information on Explosion Protection

- **Why explosion protection?**

Explosion protection for electrical and mechanical machinery is an important precautionary measure to ensure the safety of persons and all kinds of production, storage and distribution systems, when explosive mixtures of combustible gases, dusts and air may occur.

- **What does explosion protection achieve?**

Explosion protection can mean to generally prevent the occurrence of an explosive mixture. Explosion protection can also be achieved by eliminating potential ignition sources in advance, e.g. high temperatures and sparking by designing components accordingly and by permanent monitoring of operation, or by using a flame-proof enclosure for the source of ignition to protect the surrounding area against possible effects of an internal explosion. In many trades and industries, combustible gases, vapours and dusts are handled which may cause.

- **Explosions**

Examples of explosion hazards in various industries:

- **Chemical industry**

In the chemical industry, combustible gases, liquids and solids are converted and processed in various procedures. Explosive mixtures may be created during these processes.

- **Waste Disposal Sites**

At waste disposal sites, combustible gases may form. Comprehensive technical measures are required to prevent their uncontrolled escaping and possible ignition.

- **Energy Production Companies**

Coal dust, which may form explosive dust/air mixtures, may occur during production, breaking and drying from coal lumps which themselves are not explosive with air.

- **Waste Management Companies**

The fermentation gases released during treatment of waste water in waste water treatment plants may form explosive gas/air mixtures.

- **Gas Suppliers**

If natural gas escapes through leakages or similar, explosive gas/air mixtures may be created.

- **Metal Processing Companies**

During the production of formed metal parts, explosive metal dusts may occur during surface treatment (grinding). This applies in particular to light metals. These metal dusts may cause an explosion risk in separators.

- **Wood-Processing Companies**

When processing wood work pieces, wood dust occurs, which may form explosive dust/air mixtures in filters or silos for example.

- **Paint Shops**

Overspray, which may occur during painting of surfaces using spray guns as well as any released solvent vapours, may form an explosive atmosphere with air.

- **Agriculture**

Some agricultural facilities operate systems for the production of biogas. If biogas escapes as a consequence of leakages, for example, explosive biogas/air mixtures may form.

- **Food and Feeding-Stuffs Industry**

During the transportation and storage of grain, sugar, etc. explosive dusts may occur. When these are evacuated and separated using filters, an explosive atmosphere may

occur in the filter.

- **Pharmaceutical Industry**
In pharmaceutical production, alcohols are frequently used as solvents. Furthermore, active and auxiliary substances with a dust explosion hazard may also be used.
- **Refineries**
The hydrocarbons processed in refineries are all combustible and, depending on their flash point, are capable of causing an explosive atmosphere even at ambient temperatures.
- **Recycling Companies**
When processing recycling waste, explosion hazards may be caused by cans which are not completely empty or other containers with combustible gases and/or liquids; explosion hazards may also be caused by paper or plastic dust.

Cooperation of Parties Involved

Obligations of user, installer and manufacturer. Close cooperation of all parties involved is essential for the safety in potentially explosive areas.

The user is responsible for the safety of the installation. He has to assess possible explosion hazards and assign zones accordingly.

In addition, he is also responsible for ensuring that the equipment is installed in accordance with regulations and is tested before it is put into service for the first time. The equipment must be kept in appropriate condition by regular inspections and maintenance. The installer must observe the relevant installation requirements and select and install the equipment correctly for its intended use.

Manufacturers of explosion-proof equipment must ensure that each device manufactured complies with the type-tested design.

Legal Basis

The acronym ATEX is the abbreviation of the French term "Atmospheres explosibles", which means explosive atmospheres.

This designation is currently still used as a synonym for these two directives of the European Union:

94/9/EC (ATEX 95, previously ATEX 100a) and

99/92/EC (ATEX 137, previously ATEX 118a).

Directive 94/9/EC is primarily intended for manufacturers of explosion-proof equipment.

Directive 99/92/EC is primarily intended for users of installations with a potentially explosive atmosphere.

Risk Assessment

For taking efficient measures in areas with an explosion hazard, a risk assessment – in accordance with national health and safety regulations taking into account national industrial safety acts as well as hazardous substances ordinances must be carried out first. If this risk assessment shows that the formation of explosive atmospheres is not safely prevented, the likelihood that explosive atmospheres will occur based on their frequency and persistence, the likelihood that ignition sources will be present and become active and effective and the scale of the anticipated effects of explosions must be determined.

The results of the risk assessment must be recorded in the form of an **Explosion Protection Document**.