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As a result of friction, impact or abrasion processes such as grinding particles can become separated from solid materials and become hot owing to the energy used in the separation process. If these particles consist of oxidizable substances, for example iron or steel, they can undergo an oxidation process, thus reaching even higher temperatures. These particles (sparks) can ignite combustible gases and vapours and contain dust/air mixtures (especially metal dust/air mixtures). In deposited dust, smouldering can be caused by the sparks, and this can be a source of ignition for an explosive atmosphere.

The ingress of foreign materials to equipment, protective systems and components, e.g. stones or tramp metals, as a cause of sparking shall be considered.
Rubbing friction, even between similar ferrous metals and between certain ceramics, can generate hot spots and sparks similar to grinding sparks. These can cause ignition of explosive atmospheres.

Impacts involving rust and light metals (e.g. aluminium and magnesium) and their alloys can initiate a thermal reaction which can cause ignition of explosive atmospheres.

The light metals titanium and zirconium can also form sparks under impact or friction against any sufficiently hard material, even in the absence of rust.

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Classification of Equipment and Hazardous Areas

Equipment is divided into two groups (I for mining and II for surface industries) and into categories (M1 and M2 for mining) and categories 1,2 and 3 for all other industries

ATEX Directive 99/92/EC (also know as "USE" or ATEX 137) refers to the safety and health protection of workers potentially at risk from explosive atmospheres. The directive highlights what the employer must do to prevent and protect against explosions as well as classifies hazardous areas into zones, as defined below

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Gas, Mists or Vapours

Zone 0 – An atmosphere where a mixture of air and flammable substances in the form of gas, vapour or mist 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, vapour or mist 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, vapour or mist is not likely to occur in normal operation but, if it does occur, will persist for only a short period.

Dusts

Zone 20 – An atmosphere where a cloud of combustible dust in the air is present frequently, continuously or for long periods.

Zone 21 – An atmosphere where a cloud of combustible dust in the air is likely to occur in normal operation occasionally

Zone 22 – An atmosphere where a cloud of combustible dust in the air is not likely to occur in normal operation but, if it occur , will persist for only a short period.

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ATEX Group II Categories and Applications

Category	Design of safety	Design requirements	Application	Zone of use
1	Very high level of safety	Two independent means of protection or safe with two separate faults	Where explosive atmospheres are present continuously or for lengthy periods	Zone 0 Zone 20
2	High level of safety	Safe with frequently occurring disturbances or with an operating fault	Where explosive atmospheres are likely to occur	Zone 1 Zone 21
3	Normal level of safety	Safe in normal operation	Where explosive atmospheres are likely to occur infrequently and be short of duration	Zone 2 Zone 22

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IS YOUR COMPANY READY FOR THE ATEX DIRECTIVE ?

o All companies who are working in explosive atmosphere have to fulfil the ATEX DIRECTIVE from 30th June 2006

o Non Sparking Tools should be also used according the ATEX DIRECTIVE

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o Tools for use in potentially explosive atmospheres

o In Zones 0 and 20:

No equipment or component which can cause sparks is permitted.

o In Zones 1 and 2/21 and 22:

Equipments or components that can cause sparks are permissible if it is ensured that no hazardous explosive atmosphere is present at the workplace. However, the use of any kind of spark causing potential component or equipment is completely prohibited in zone 1 and zone 21 if the risk of explosion exists

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Who are the companies which have ATEX ZONES and therefore have a need for EGAMASTER NON SPARKING Safety Tools

- Oil and Gas, off-shore and on-shore
- Petro-chemical
- Explosives manufacturers
- Flammable material manufacturers
- Chemical manufacturers
- Distilleries
- Grain handling
- Paint manufacturers

- Pipeline construction
- Public utilities-Gas, Electric

- Armed forces
- Pharmaceuticals
- Shipyards
- Tankers
- Aircraft and missile factories
- Airports
- Non-magnetic applications
- .....and many others were sparks are a potential explosion or fire hazard

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