

Explosion protection for ATEX Zones 2 and 22

Product overview



SCHMERSAL

Flammable gases, vapours or mists

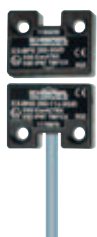
Zone 2

**This may apply, amongst other things,
to the following applications:**

- Printing machines
- Paint-spraying plants
- Fuel stations
(areas accessible to customers)
- Weaving / Dying factories
- Chemical industry
- Waste processing plants
- Petrochemical industry
- Pharmaceutical industry
- Plastics manufacturers
- Furniture plants

**In Directive 1999/92/EC, zone 2 is defined
in the following way:**

“A place, in which an explosive atmosphere consisting of a mixture with air of 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 a short period only**”.



Flammable dusts

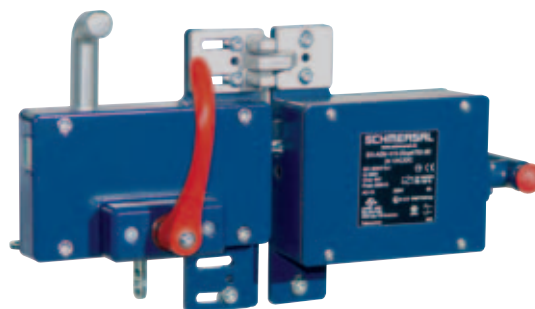
Zone 22

This may apply, amongst other things, to the following applications:

- Grain and corn mills
- Powder coating
- Textile industry
- Chemical industry
- Waste processing plants
- Pharmaceutical industry
- Woodworking machines
- Grain, beans and coffee warehouses

In Directive 1999/92/CE, Zone 22 is defined in the following way:

“A place, in which an explosive atmosphere in the form of a cloud of combustible dust in air is not likely to occur in **normal operation but, if it does occur, will persist for a short period only**”.



ATEX Directives

Two Directives basically govern the explosion protection of machinery and plants within the European member states.

- Directive 94/9/EC of the European Parliament and of the Council of 23 March 1994
- Directive 1999/92/EC of the European Parliament and of the Council of 16 December 1999

Both Directives are also called the ATEX Directives (ATEX= Atmosphère Explosible).

Whereas the “Manufacturer’s Directive“ 94/9/EC lays down the essential requirements for improving the safety and health protection of workers potentially at risk from explosive atmospheres, the industrial safety regulation or Operator’s Directive 1999/92/EC divides the equipment and protective systems which it covers into equipment groups and categories; this Directive provides for a classification by the employer of the places where explosive atmospheres may occur in terms of zones and determines which equipment groups and categories should be used in each zone.

These zones, equipment categories and groups are basically determined as follows:

Flammable material	Zone (99/92/EC)	Group (94/9/EC)	Category (94/9/EC)
Methane, dust	Mining	I	M1
	Mining	I	M2 or M1
Gases, vapours	Zone 0: The explosive atmosphere is present continuously or for long periods or frequently	II	1G
	Zone 1: The explosive atmosphere is likely to occur in normal operation occasionally	II	2G or 1G
	Zone 2: The explosive atmosphere is unlikely to occur in normal operation but, if it does occur, will persist for a short period only	II	3G or 2G or 1G
Dusts	Zone 20: The explosive atmosphere is present continuously or for long periods or frequently	II	1D
	Zone 21: The explosive atmosphere is likely to occur in normal operation occasionally	II	2D or 1D
	Zone 22: The explosive atmosphere is unlikely to occur in normal operation but, if it does occur, will persist for a short period only	II	3D or 2D or 1D

In Zones 0, 1, 20 and 21, only electrical equipment with an approval in the form of an EC-type examination certificate may be used; in Zone 0 however only those products that are explicitly approved for this zone. For electrical equipment intended for use in Zones 2 and 22, compliance with all the essential safety requirements of Directive 94/9/EC as well as a written declaration of conformity from the manufacturer is required.

As one of the largest industrial switchgear manufacturers in the world, the Schmersal Group offers a comprehensive range of safety devices for any application in Zones 2 and 22: from non-contact position switches (magnetic switches) up to safety switches with and without interlocking device for the protection of man.



ATEX Marking

Zone 2 :		Zone 22 :	
⚡ II 3G EExnAC T6 X		⚡ II 3D IP67 T80°C X	
⚡	ATEX marking proves that the equipment is suitable for use in potentially explosive atmospheres (Ex zones)	⚡	ATEX marking proves that the equipment is suitable for use in potentially explosive atmospheres (Ex zones)
II	Equipment group	II	Equipment group
3G	Equipment category - Zone 2 (gas and vapour)	3D	Equipment category - Zone 22 (dust)
EExnAC	Contact protection class	IP67	Protection class
T6	The maximum surface temperature of the equipment may not ignite the potentially explosive atmosphere. The temperature is indicated in temperature classes.	T80°C	The maximum surface temperature of the equipment may not ignite the potentially explosive atmosphere. The temperature is indicated in Celsius.
X	Observe special application conditions.	X	Observe special application conditions.

Because of their low self-heating features, magnetic switches are particularly suitable for use at high ambient temperatures, as they never reach the ignition temperature of the gas or the dust, not even under live conditions.

The following table lists the maximum permitted surface temperature and the corresponding temperature classes:

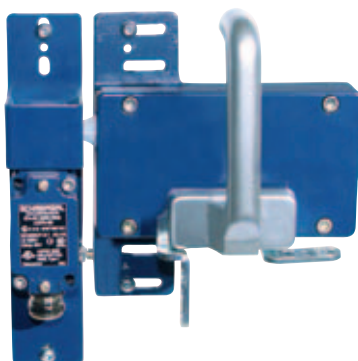
Temperature classes and maximum permitted surface temperature for electrical equipment of Group II (IEC 60079-0)					
T1	T2	T3	T4	T5	T6
450°C	300°C	200°C	135°C	100°C	85°C

The standardized switches of the series 235 and 335 with metal enclosure are particularly suitable for heavy-duty positioning applications of parts or machine axes.

The large variety of actuating heads provides for a flexible application.

The Schmersal Group can even offer a comprehensive programme of safety switches and solenoid interlocks of type 2 (with separate actuator) to protect operators against hazardous machine movements in potentially explosive atmospheres. The large variety of useful accessories allows for a flexible application of these switches under all circumstances.

If you need further information regarding this topic, do not hesitate to call us: +49-(0) 2 02-64 74-0.



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