SOURCE IEC

"We specialize in IEC/ATEX/EX Electrical Equipment for use in Hazardous/Industrial Environments"

Marking to Directive 94/9/EC (ATEX 95)

CE 0518 Ex II 2 G D

- 0518: Number of the notified body
- II: Group II (Explosive atmospheres (other than mines)) / Group I (Mines susceptible to firedamp)
- 2: Category
- G: Gas (G)
- D: Dust (D)

Catagories (Directive 94/9/EC Annex I)

Category 1	Category 1 comprises equipment designed to be capable of functioning in conformity with the operational parameters established by the manufacturer and ensuring a very high level of protection. Equipment in this category is intended for use in areas in which explosive atmospheres caused by mixtures of air and gases, vapours or mist or by air/dust mixtures are present continuously, for long periods or frequently. Equipment in this category must ensure the requisite level of protection, even in the event of rare incidents relating to equipment, and is characterized by means of protection such that: – either, in the event of failure of one means of protection, at least an independent second means provides the requisite level of protection, – or the requisite level of protection is assured in the event of two faults occuring independently of each other.
Category 2	Category 2 comprises equipment designed to be capable of functioning in conformity with the operational parameters established by the manufacturer and of ensuring a high level of protection. Equipment in this category is intended for use in areas in which explosive atmospheres caused by gases, vapours, mists or air/dust mixtures are likely to occur. The means of protection relating to equipment in this category ensure the requisite level of protection, even in the event of frequently occuring disturbances or equipment faults which normally have to be taken into account.
Category 3	Category 3 comprises equipment designed to be functioning in conformity with the operational parameters established by the manufacturer and ensuring normal level of protection. Equipment in this category is intended for use in areas in which explosive atmospheres caused by gases, vapours, mists, or air/dust mixtures are unlikely to occur or, if they do so only infrequently and for a short period only.

Gas

Zone 0	A place in which an explosive atmosphere consisting of a mixture with air of flammable substances in the form of gas or vapour is present continuously or for long periods or frequently.
Zone 1	A place in which an explosive atmosphere consisting of a mixture with air of flammable substances in the form of gas or vapour is likely to occur in normal operation occasionally
Zone 2	A place in which an explosive atmosphere consisting of a mixture with air of flammable substances in the form of gas or vapour is not likely to occur in normal operation, but if it does occur, will persist for a short period only (usually no longer than 2 hours).

Dust

Zone 20	Area in which an explosive atmosphere in the form of a cloud of combustible dust in air is present continuously or for long periods or frequently.
Zone 21	Area in which an explosive atmosphere in the form of a cloud of combustible dust in air is likely to occur, occasionally, in normal operation.
Zone 22	Area 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.

Non-electrical equipment for use in potentially explosive atmospheres

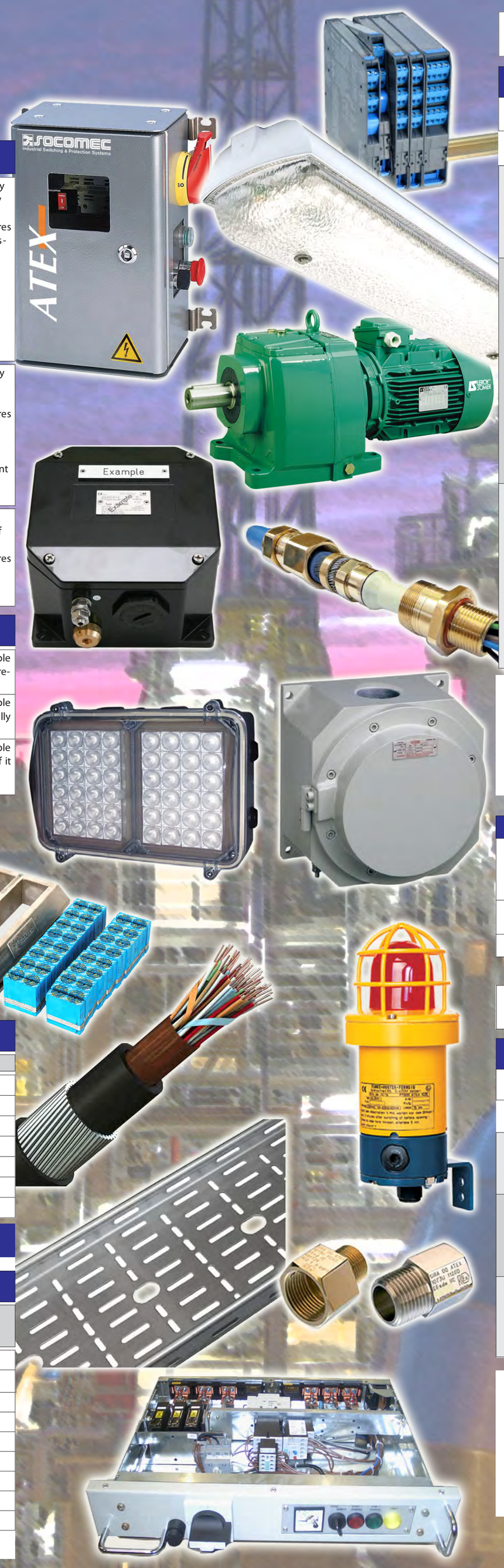
Europe	Code	Type of protection
EN 13463-1		Basic method and requirements
EN 13463-2	fr	Protection by flow restricting enclosure
EN 13463-3	d	Protection by flameproof enclosure
EN 13463-5	c	Protection by constructional safety
EN 13463-6	b	Protection by control of ignition source
EN 13463-7	p	Protection by pressurized enclosure
EN 13463-8	k	Protection by liquid immersion

IP Degree of Protection

IEC/EN 60529

	First numeral (against penetration of solid foreign objects / prevention of access to hazardous parts)	Second numeral (against penetration of water with harmful effects)
0	not protected	not protected
1	≥ 50.0 mm diameter / back of hand	vertically falling water drops
2	≥ 12.5 mm diameter / finger	water drops (enclosure tilted 15°)
3	≥ 2.5 mm diameter / tool	spraying water
4	≥ 1.0 mm diameter / wire	splashing water
5	dust-protected / wire	water jets
6	dust-tight / wire	powerful water jets
7		temporary immersion in water
8		continuous immersion in water

Example: IP 54 dust-protected / protected against splashing water



Marking to IEC/EN Standard 60079-0

Gas

Electrical apparatus for explosive gas atmospheres (Equipment II)

EPL	IEC Standards		Type of protection
	60079-0		General requirements
Ga	60079-11	ia	Intrinsic safety
	60079-18	ma	Encapsulation
	60079-26		Equipment with equipment protection level (EPL) Ga
	60079-28	op is	Protection of equipment and transmission systems using optical radiation
Gb	60079-1	d	Flameproof enclosures
	60079-2	p, px, py	Pressurized enclosures
	60079-5	q	Powder filling
	60079-6	o	Oil immersion
	60079-7	e	Increased safety
	60079-11	ib	Intrinsic safety
	60079-18	mb	Encapsulation
	60079-25		Intrinsically safe systems
	60079-27		Fieldbus intrinsically safe concept (FISCO)
	60079-28	op is op pr op sh	Protection of equipment and transmission systems using optical radiation
Gc	60079-11	ic	Intrinsic safety
	60079-18	mc	Encapsulation
	60079-15	nA	Non sparking
	60079-15	nR	Restricted breathing enclosure
	60079-15	nL	Limited energy (only old edition)
	60079-15	nC	Equipment producing operational sparks
	60079-2	pz	Pressurized enclosures
	60079-28	op is op pr op sh	Protection of equipment and transmission systems using optical radiation

Ex ed IIB T6 Gb

Equipment groups (Gas)

IIA	Aceton, ethane, Benzene, petrol, butane, propane, methane
IIB	Ethylene, town gas
IIC	Hydrogen, acetylene

Temperature class	Ignition temperature of gas or vapour	Maximum surface temperature for hot surfaces
T1	> 450 °C	440 °C
T2	> 300 °C	290 °C
T3	> 200 °C	195 °C
T4	> 135 °C	130 °C
T5	> 100 °C	95 °C
T6	> 85 °C	80 °C

Zone	Equipment Protection Level (EPL)
0	Ga
1	Gb and Ga
2	Gc, Gb and Ga

Dust

Electrical equipment for use in areas with combustible dust (Equipment group III)

EPL	IEC Standards		Type of protection
	60079-0		General requirements
Da	60079-31	ta	Protection by enclosure
	60079-11	ia	Protection by intrinsic safety (iaD IEC 61241-11)
	60079-18	ma	Protection by encapsulation
Db	60079-31	tb	Protection by enclosure
	60079-11	ib	Protection by intrinsic safety (ibD IEC 61241-11)
	60079-18	mb	Protection by encapsulation
	61241-4	pD	Type of protection 'pD'
Dc	60079-31	tc	Protection by enclosure
	60079-11	ic	Protection by intrinsic safety
	60079-18	mc	Protection by encapsulation
	61241-4	pD	Type of protection 'pD'

Surface temperature max.

Ex tb IIIC T95°C Db

Ex tb IIIC T95°C

Equipment groups (Dust)	
IIIA	fibres
IIIB	non-conductive dust
IIIC	conductive dust

Zone	Equipment Protection Level (EPL)
20	Da
21	Db and Da
22	Dc, Db and Da

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