



ATEX luminaires

Portfolio

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ATEX environment



What is an explosive atmosphere?

An explosive atmosphere (ATEX) is defined as the mixture of air, under normal atmospheric conditions, with flammable substances in the form of gases, vapors, mists or dusts, in which, after an ignition, the combustion spreads to the entire unburned mixture.

Where can an explosive atmosphere be formed?

An explosive atmosphere can be formed in environments where flammable liquids or combustible dusts are used, as well as in areas where gases are formed or accumulated which, because of their temperature or condition, can cause explosions.

Why ZALUX?



SAFETY

It is the priority. Electrical safety tests and completely sealed products guarantee that ZALUX luminaires are the right solution for hazardous areas where strict ATEX specifications must be met.

RELIABILITY

ZALUX is the European leader for luminaires with high protection ratings, specialized in the development and manufacturing of protected luminaries for more than 40 years.

LOW MAINTENANCE

Low failure rate of LED electrical components (< 0.2%/year) and good thermal management of ZALUX luminaires (allowing up to L80 100,000 h lifetime), implies nearly zero maintenance, keeping lighting quality during the product life.

ATEX - IECEx Directives

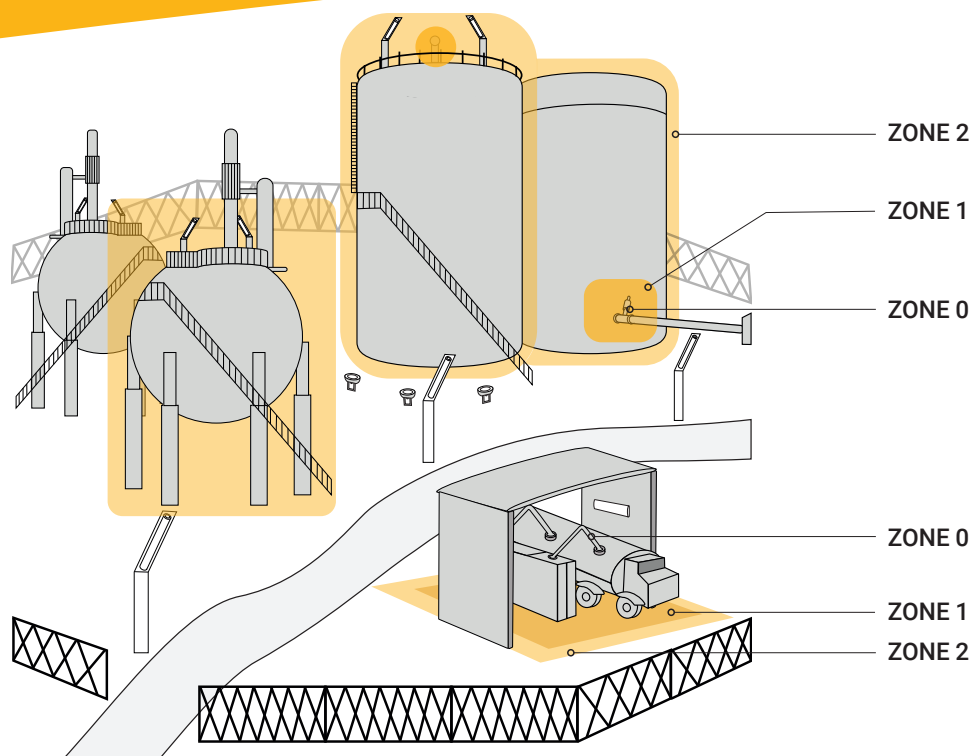


Regulations within the explosive atmosphere sector describe what kind of protection must be used in the installed equipment and by the employees working in these environments. The most important are:

Directive 2014/34/UE: harmonization of the laws of the European member states relating to equipment and protective systems intended for use in potentially explosive atmospheres.

Directive 1999/92/CE: minimum requirements for improving safety and health protection of workers potentially at risk from explosive atmospheres.

ATEX Zones



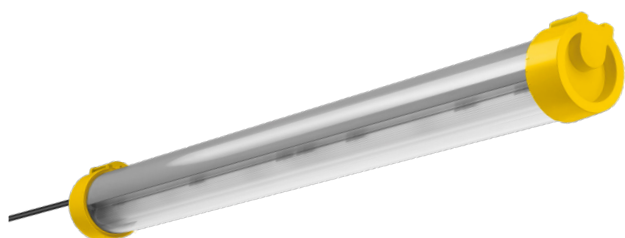
Group	Zones	Description	Duration of hazardous atmosphere
II	0 / 20	Area in which an explosive atmosphere consisting of a mixture with air of flammable substances in the shape of gas, vapour or mist, is continuously present, or it is foreseen to be present during long periods.	Constant
IIB	1 / 21	Area in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapour or mist is likely to occur in normal operation.	Likely
IIC	2 / 22	Area in which an explosive atmosphere consisting of a mixture with air of dangerous 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.	Seldom

Summary

Product	Protection	Zone	Temperature range	Emergency battery
STRONGEX 2	Ex II 3G Ex ec IIC T6 Gc Ex II 3D Ex tc IIIC T85 Dc Ex II 2D Ex tb IIIC T85 Db	2, 21 2, 22	-35°C to +55°C	
ACQUEX	Ex II 3G Ex nA IIC T6 Gc Ex II 3D Ex tc IIIC T85 Dc IP66	2, 22	-20°C to +40°C	✓
KRATEX	Ex II 2G Ex db IIC T6 Gb Ex II 2D Ex tb IIIC T85 Db	1, 21	-20°C to +55°C	✓
OREX 1	Ex II 2G Ex eb mb op is IIC T5 Gb Ex II 2D Ex tb op is IIIC T105 Db Ex II 3G Ex ec op is IIC T5 Gb Ex II 3D Ex tc op is IIIC T105 Dc	1, 21 2, 22	-32°C to +55°C	
OREX 2	Ex II 3D Ex tc op is IIIC TX Dc Ex II 3G Ex ec op is IIC TX Gc Ex II 2D Ex tb op is IIIC TX Db	2, 21 2, 22	-32°C to +55°C	

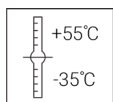
Explosion proof LED luminaires certified for use in EX-Zones according to ATEX directive

STRONGEX 2



Zone 2, 21 / 2, 22

- II 3G Ex ec op is IIC T6 Gc
- II 3D Ex tc op is IIC T85 Dc
- II 2D Ex tb op is IIC T85 Db



Up to 6,200lm
Up to 150lm/W
L80B50 100,000 h



IP 68/69K

IP 67/69K

IK 10

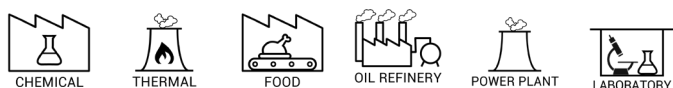
Characteristics

- High impact resistant PMMA.
- End caps in PA66 and fibreglass.
- Polyurethane gasket.
- 316L stainless steel fixing brackets.
- With ATEX cable gland or ATEX quick connector.

Accessories

- Accessories bag STRONGER G2 SCRW for indoor.
- Junction box 2 122x120x90mm.
- Junction box 80x75x75mm.
- Connector bag PNCX.

Applications

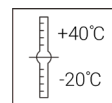


ACQUEX



Zone 2, 22

- II 3G Ex nA IIC T6 Gc
- II 3D Ex tc IIC T85 Dc IP66



Up to 5,800lm
Up to 150lm/W
L80B50 up to 70,000 h



IP 66

IK 10

Characteristics

- Compressed fibreglass reinforced polyester in yellow RAL 1003.
- Injected transparent diffuser in impact resistance polycarbonate with UV protection.
- Polyurethane gasket.
- Stainless steel closing clips.
- Stainless steel fixing accessories.
- With PA ATEX cable gland.
- Emergency kit available.

Accessories

- Bag with 2 suspension triangles for ACQUEX.

Applications



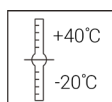
5 YEARS
warranty

KRATEX



Zone 1, 21

Ex II G Ex db IIC T6 Gb
Ex II 2D Ex tb IIIC T85 Db



Up to 11,750lm
Up to 150 lm/W
L80B50 50,000 h



IP 66 IK 10 IK 07 IK 09

Characteristics

- Profile: UV resistant polycarbonate IK10, or borosilicate glass IK07 (600mm) / IK09 (1200mm).
- End caps in aluminium alloy with yellow polyurethane finish in yellow RAL1003.
- 2 entries for 3/4" NPT for cable gland (not included).
- NBR oil-resistant gasket.
- Emergency kit and DALI dimming available.

Accessories

- Eye bolts.
- Fixing omegas.
- Brass double-sealed EX cable gland.

Applications



OREX 1



Zone 1, 21

Ex II 2G Ex eb mb op is IIC T5 GB
Ex II 2D Ex tc op is IIIC T105 Db
Ex II 3G Ex ec op is IIC T5 Gb
Ex II 3D Ex tc op is IIIC T105 Dc
Ex II 3D Ex tc op is IIIC TX Dc
Ex II 3G Ex ec op is IIC TX Gc
Ex II 2D Ex tb op is IIIC TX Db

Up to 39,500lm
Up to 145lm/W
L80B10 70,000 h



IP 66/67 IK 10

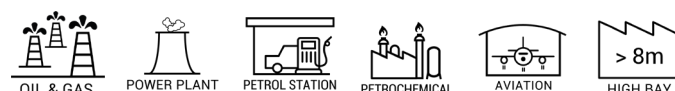
Characteristics

- Casing aluminium alloy yellow RAL 1003 with surface protected against corrosive elements.
- Hardened glass diffuser.
- Cable gland 2xM20x1.5 (M25 optional in OREX 1).
- Stainless steel eyebolt.
- Polyamide cable gland, with external cable.
- DALI optional.

Accessories

- Brackets for wall and tube mounting.
- Connector bag PNCX.
- Junction boxes.
- EX cable glands.

Applications



ATEX marking



ATEX CODING			
EU Explosive atmosphere symbol	Ex II 2 GD		
	Equipment group	Equipment category	
	I - mining	M1 - energised	
		M2 - de-energised (*)	
II - non-mining	1 - very high protection	Gas	Dust
	2 - high protection	0	20
	3 - normal protection	1	21

(*) = in presence of explosive atmosphere

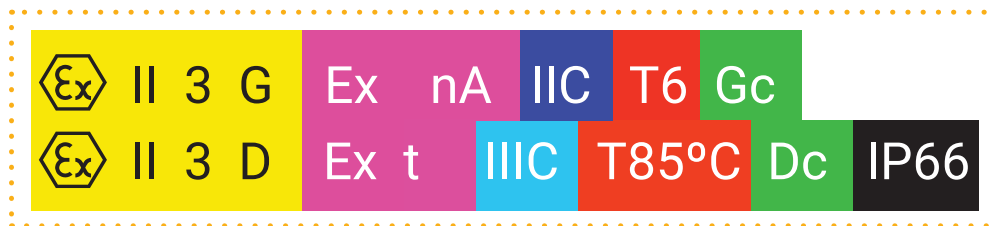
GAS GROUPS	
Gas Group	Representative Test Gas
I	Methane (mining only)
IIA	Propane
IIB	Ethylene
IIC	Hydrogen

Gases are classified according to the ignitability of gas-air mixture. Refer to IEC/EN 60079-20-1 for classification of common gases and vapours.

TEMPERATURE CLASS	
T Class	Maximum Surface Temperature
T1	450°C
T2	300°C
T3	200°C
T4	135°C
T5	100°C
T6	85°C

EQUIPMENT PROTECTION LEVEL	
Equipment Protection Level	Zone
Ga	0
Gb	1
Gc	2
Da	20
Db	21
Dc	22
Ma	energised*
Mb	De-energised*

G= Gas, D= Dust, M= Mining
*in presence of explosive atmosphere



ELECTRICAL PROTECTION CONCEPTS					
Standard IEC/EN		Code		Protection Concept	Zone
Gas	Dust	Gas	Dust		
60079-0				General Requirements	
60079-1		Ex d		Flameproof	1
	60079-31		Ex ta Ex tb Ex tc	Enclosure	20 21 22
60079-2**	61241-4	Ex pxb Ex pyb Ex pzc	Ex pD	Preassured	1 1 2
60079-5		Ex q		Powder Filled	1
60079-6		Ex o		Oil Filled	1
60079-7		Ex e		Increased Safety	1
60079-11*		Ex ia Ex ib Ex ic	Ex ia Ex ib Ex ic	Intrinsic Safety	0 1 2
60079-15		Ex nA Ex nR Ex nC		No-sparking Restricted breathing Enclosed break	2
60079-18		Ex ma Ex mb Ex mc	Ex ma Ex mb Ex mc	Encapsulation	0 1 2

* Recently published standard combining gas and dust requirements for the first time.

** Soon to be published with combined gas and dust requirements

DUST GROUPS	
IIIA	Combustible flyings
IIIB	Non-conductive dust
IIIC	Conductive dust

INGRESS PROTECTION (IP)	
Hazardous area equipment typically requires a minimum IP rating of IP54 but may be assessed and tested to the higher ratings below:	
DUST	
IP 5x - dust protected	
IP 6x - dust tight	
WATER	
IP x4 - splashing water	
IP x5 - water jets	
IP x6 - powered water jets	
IP x7 - temporary immersion	
IP x8 - continuous immersion	

See IEC/EN 60529 for full definition of IP ratings

MECHANICAL PROTECTION CONCEPTS			
Standards	Code	Concept	Zone
EN13463-1		general requirements	
EN13463-2	fr	flow restrictions	2 22
EN13463-3	d	flameproof	1 21
EN13463-5	c	constructional safety	1 21
EN13463-6	b	control of ignition sources	1 21
EN13463-8	k	liquid immersion	1 21

Mechanical certification is based on a risk assessment approach.

Category 3 equipment must be safe for use in normal operation.
Category 2 equipment must be safe for use in normal operation and expected malfunction.
Category 1 equipment must be safe for use in normal operation and rare malfunction.

Potential ignition sources identified in the risk assessment are made safe by applying one or more of the concepts.
The number of "*" in the table below indicate the number of protection concepts which need to be applied.

	cat 3	cat 2	cat 1
normal operation	*	*	**
expected malfunction		*	**
rare malfunction			*

