

Marking of Electrical Equipment for Use in Explosive Atmospheres (ATEX/IECEx/CSA)

Typical marking of electrical equipment for use in explosive gas atmospheres (ATEX/IECEx):

Marking according to Directive 2014/34/EU (ATEX)	Marking according to IEC/CENELEC/CSA standard 60079-0
CE ₀₁₀₂ II 2G	Ex db eb IIB T6 Gb
<p>CE₀₁₀₂ CE-marking and number of the notified (monitoring) body (Physikalisch-Technische Bundesanstalt)</p> <p> Explosion protection symbol</p> <p>II Equipment group (equipment for use in hazardous areas, other than mines susceptible to firedamp)</p> <p>2 Equipment category (category 2)</p> <p>G Explosive atmosphere (gas, vapour or mist)</p>	<p>Ex Explosion protection marking</p> <p>db Type of protection (flameproof enclosure, level of protection 'db')</p> <p>eb Type of protection (Increased safety, level of protection 'eb')</p> <p>IIB Equipment group (Electrical equipment group II, subgroup IIB (typical gas: ethylene), intended for use in areas where an explosive gas atmosphere is to be expected, other than mines susceptible to firedamp)</p> <p>T6 Temperature class (-20°C to +40°C normal amb. temp.) (max. surface temperature 85 °C)</p> <p>Gb Equipment protection level (EPL Gb; equipment with high protection level)</p>

Typical marking of electrical equipment for use in explosive dust atmospheres (ATEX/IECEx):

Marking according to Directive 2014/34/EU (ATEX)	Marking according to IEC/CENELEC/CSA standard 60079-0
CE ₀₁₀₂ II 2D	Ex tb IIIC T85°C Db
<p>CE₀₁₀₂ CE-marking and number of the notified (monitoring) body (Physikalisch-Technische Bundesanstalt)</p> <p> Explosion protection symbol</p> <p>II Equipment group (equipment for use in hazardous areas, other than mines susceptible to firedamp)</p> <p>2 Equipment category (category 2)</p> <p>D Explosive atmosphere (dust)</p>	<p>Ex Explosion protection marking</p> <p>tb Type of protection (protection by enclosure 'tb')</p> <p>IIIC Equipment group (Electrical apparatus group III, subgroup IIIC (conductive dust), intended for use in areas where an explosive dust atmosphere is to be expected, other than mines susceptible to firedamp)</p> <p>T85°C Surface temp. (-20°C to +40°C normal amb. temp.) (max. 85 °C)</p> <p>Db Equipment protection level (EPL Db; equipment with high protection level)</p>

Zones/ Equipment Protection Level (EPL)						
Definitions	Zones	According to EU directive 2014/34/EU (ATEX)		According to EN/IEC/CSA 60076-0		
		Equipment group	Equipment category	Group	EPL	Level
Mines susceptible to fire damp	Not applicable	I	M1	I	Ma	very high
Explosive gas atmosphere	Zone 0	II	M2	II	Mb	high
	Zone 1		1G		Ga	very high
	Zone 2		2G		Gb	high
Explosive dust atmosphere	Zone 20	II	3G	III	Gc	enhanced
	Zone 21		1D		Da	very high
	Zone 22		2D		Db	high
			3D		Dc	enhanced

Explosion Group			
Explosive atmosphere	Typical combustible material	Group	
Gas, vapour or mist	Acetylene	IIC	
	Hydrogen	IIC / IIB+H ₂	
	Ethylene/Formaldehyde	IIB	
Dust	Methane/Octane	IIA	
	Conductive	Metal dust	IIIC
	Non-conductive	Coal dust	IIIB
	Fibres & Flyings	Wood, paper or cotton processing	IIIA

Temperature Class	
Temperature class	Maximum surface temp.
T1	≤ 450 °C
T2	≤ 300 °C
T3	≤ 200 °C
T4	≤ 135 °C
T5	≤ 100 °C
T6	≤ 85 °C

IP Degree of Protection to IEC 60529	
First digit	Second digit
0 No protection	0 No protection
1 ≥ 50 mm diameter	1 Vertically dripping water
2 ≥ 12.5 mm diameter	2 15° angled dripping water
3 ≥ 2.5 mm diameter	3 Spraying water
4 ≥ 1.0 mm diameter	4 Splashing water
5 Dust protected	5 Water jets
6 Dust tight	6 Strong water jets
	7 Temporary submersion
	8 Long submersion
	9 High pressure, high temperature spray downs

Electrical types of protection for explosive atmospheres due to flammable gases, vapours and mists

Type of protection	Type	Protection level	Group	Equipment category	Equipment protection level (EPL)	Protection concept	Standard	
General requirements							EN/IEC/CSA 60079-0	
Flameproof enclosure		d	da	II	1 G	Ga	Explosion containment, prevention of flame transmission	EN/IEC/CSA 60079-1
			db	II	2 G	Gb		
			dc	II	3 G	Gc		
Increased safety		e	eb	II	2 G	Gb	No arcs, sparks or hot surfaces	EN/IEC/CSA 60079-7
			ec	II	3 G	Gc		
Intrinsic safety		i	ia	II	1 G	Ga	Limitation of spark energy and surface temperature	EN/IEC/CSA 60079-11
			ib	II	2 G	Gb		
			ic	II	3 G	Gc		
Intrinsic system		i		II	2 G	Gb	Limitation of spark energy and surface temperature	EN/IEC/CSA 60079-25
Non-sparking equipment		nA		II	3 G	Gc	No arcs, sparks or hot surfaces	EN/IEC/CSA 60079-15
Enclosed equipment		nC		II	3 G	Gc	Explosion containment, prevention of flame transmission	EN/IEC/CSA 60079-15
Restricted breathing enclosure		nR		II	3 G	Gc	Exclusion of Ex-atmosphere for a limited period	EN/IEC/CSA 60079-15
Encapsulation		m	ma	II	1 G	Ga	Exclusion of Ex-atmosphere	EN/IEC/CSA 60079-18
			mb	II	2 G	Gb		
			mc	II	3 G	Gc		
Liquid immersion		o	ob	II	2 G	Gb	Exclusion of Ex-atmosphere	EN/IEC/CSA 60079-6
			oc	II	3 G	Gc		
Pressurized enclosure		p	pxb pyb	II	2 G	Gb	Exclusion of Ex-atmosphere	EN/IEC/CSA 60079-2
			pzc	II	3 G	Gc		
Powder filling		q		II	2 G	Gb	Prevention of explosion diffusion	EN/IEC/CSA 60079-5
Inherent safe optical radiation		op is		II	1 G	Ga	Limitation of radiation energy	EN/IEC/CSA 60079-28
				II	2 G	Gb		
				II	3 G	Gc		
Safe/interlocked optical radiation		op pr op sh		II	2 G	Gb	Limitation or containment of radiation energy	EN/IEC/CSA 60079-28
				II	3 G	Gc		

Electrical types of protection for explosive atmospheres due to combustible dust

Type of protection	Type	Protection level	Group	Equipment category	Equipment protection level (EPL)	Protection concept	Standard		
Protection by enclosure		t	ta	II	III	1 D	Da	Exclusion of dust	EN/IEC/CSA 60079-31
			tb	II	III	2 D	Db		
			tc	II	III	3 D	Dc		
Intrinsic safety		i	ia	II	III	1 D	Da	Limitation of spark energy and surface temperature	EN/IEC/CSA 60079-11
			ib	II	III	2 D	Db		
			ic	II	III	3 D	Dc		
Encapsulation		m	ma	II	III	1 D	Da	Exclusion of Ex-atmosphere	EN/IEC/CSA 60079-18
			mb	II	III	2 D	Db		
			mc	II	III	3 D	Dc		
Pressurized enclosure		p	pxb	II	III	2 D	Db	Exclusion of Ex-atmosphere	EN/IEC/CSA 60079-2
Inherent safe optical radiation		op is		II	III	1 D	Da	Limit of radiation energy	EN/IEC/CSA 60079-28
				II	III	2 D	Db		
				II	III	3 D	Dc		
Safe/interlocked optical radiation		op pr op sh		II	III	2 D	Db	Limitation or containment of radiation energy	EN/IEC/CSA 60079-28
				II	III	3 D	Dc		

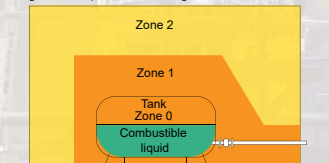
Example of Alloy's product nameplate

ALLOY LED HIGH BAY LIGHTING FIXTURE
 FLAMEPROOF AND INCREASED SAFETY TYPE, DUST PROTECTION TYPE
 CE 0102 TB 1955-2551
 Ex db e IIB T6 / T5 Gb
 Ex tb IIIC T85°C / T95°C Db IP66
 IECEx L0E 17.0040 X
 Rated Volt: AC 110-240 Hz: 50/60 Amp: 0.45 P.F. (%) 99
 LED Power (Watts): 100 Lumen Flux (lm): 9000 Colour Temp. (K): 5700
 Cat. No.: DFDR - 100 - M2 Serial No.: 0510180085
 WARNINGS: DO NOT OPEN WHEN ENERGIZED. -20°C ≤ Ta ≤ +50°C
 WAIT 15 MINUTES BEFORE OPENING THE UNIT AFTER DE-ENERGIZING.

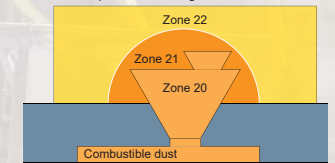
- Name or registered trade mark (ALLOY) and address of the manufacturer
- Equipment name/ type
- Thai Industrial Standard logo (radio disturbance limits)
- CE-marking number of the notified body responsible for monitoring the quality system
- Marking according to Directive 2014/34/EU and ATEX certificate number **
- Marking according to IEC standard and IECEx certificate number **
- Permissible ambient temperature (-20°C to 50°C) no marking required for temperature -20°C to 40°C (standard values for all equipment)
- Text of warning markings
- Electrical parameters
- Equipment catalogue number
- Serial number including year of manufacture

** Certificate number, may end with 'X' or 'U'
 - 'X' indicates that special conditions for safe use apply/special conditions for safe use apply
 - 'U' is used for component certificates

Example of classification of explosive gas atmospheres into zones
 Ex gas atmosphere according to IEC/EN 60079-10-1



Example of classification of explosive dust atmospheres into zones
 Ex dust atmosphere according to IEC/EN 60079-10-2



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