



ATEX & IECEx Certifications Quick Overview

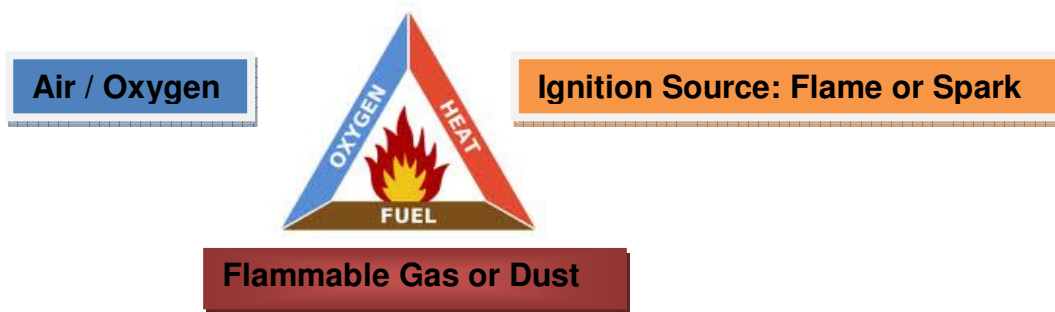


1. What is intrinsically safety?

Electrical and electronics equipment **certified** by a national or international test laboratory (Notified Body) for safe operation in explosive gas and dust environments.

Products and equipment may be certified to different **standards** such as **ATEX** (applicable for Europe), **IECEx** (International), **FM** (USA & Canada), **UL** (USA & Canada) and others.

2. Elements needed to cause an explosion (“Triangle of Fire”)



GAS Explosion:

A **spark** was sufficient to ignite this gasoline station!



DUST Explosion:

A **spark** was sufficient to ignite this sugar factory.



Therefore – personal safety lights including flashlights to be employed in explosive zones must be **CERTIFIED** by a Notified Body!



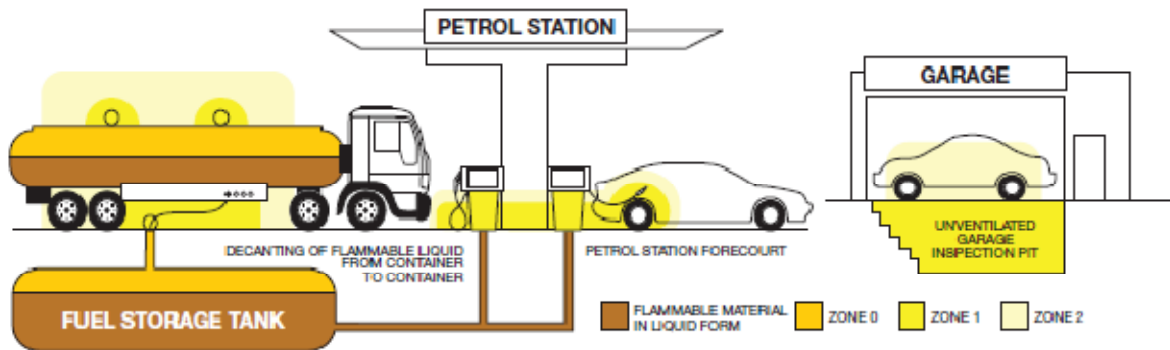
3. ATEX and IECEx Certification Glossary

To non-specialists the various certification ratings might be confusing, especially as some standards classify hazardous **ZONES** (Europe and International) and others define hazardous **DIVISIONS** (USA and Canada). This overview explains hazardous Zones as Parat X-treme are certified to ATEX and IECEx (IEC) standards.

The IEC has defined three categories of hazardous Zones

a) GAS

- **Zone 0** : the explosive atmosphere is continuously present; e.g. mines, inside oil tanks
- **Zone 1** : the explosive atmosphere is often present; e.g. at the pump of a gasoline station
- **Zone 2** : the explosive atmosphere may accidentally be present; e.g. around a car engine.



b) DUST

- **Zone 0** : the explosive atmosphere is continuously present
- **Zone 21** : the explosive atmosphere is often present
- **Zone 22** : the explosive atmosphere may accidentally be present

TYPE of PROTECTION and limitation are represented by different markings indicating e.g. type of gas, or dust, protection and IP ratings, etc. as shown in the following page.

Information about **Parat® X-treme ATEX and IECEx Safety Lights** can be obtained from:

Permalight (Asia) Co. Ltd.

4/F Waga Commercial Centre, 99 Wellington Street, Central, Hong Kong

Tel.: ++(852)-2815 0616 Fax.: ++(852)-2542 3269

Email: pila@pilatorch.com Web Site: www.pilatorch.com

Markings of Safety Lights For Use in Potentially Explosive Atmospheres

Condition in Hazardous Areas				
Flammable Substances	Presence	Zone	Required Markings	
			Equipment Group	Category Group
Gases Vapours	Always, continuously	0	II	1G
	Likely, normal	1	II	2G or 1G
	Unlikely, short time	2	II	3G or 2G or 1G
Dusts	Always, continuously	20	II	1D
	Likely, normal	21	II	2D or 1D
	Unlikely, short time	22	II	3D or 2D or 1D
Methane Dust	NA	Mines	I	M1
	NA	Mines	I	M2 or M1

Subdivision of Gases & Vapours						
Explosion Subgroup	Gases and Vapours					
	IIA	Ammonia	Ethyl Alcohol			
Methane		Propane				
IIB	Butane	Ethylene				
	Town Gas					
IIC	Hydrogen	Acetylene				
Temperature Class °C						
	T1	T2	T3	T4	T5	T6
	>450	>300 to 450	200 to 300	135 to 200	100 to 135	80 to 100

CE
0359
Ex
II
2G
Ex ib
IIC
T4

Notified Body (Certification Authority)		
Intertek	UK	0359
TÜV	D	0044
KEMA	NL	0344

Requirement		Zone
Flameproof enclosure	Ex d	1 or 2
Increased safety	Ex e	1 or 2
Intrinsic safety	Ex ia or ib	1 or 2
Pressurisation	Ex p	1 or 2
Encapsulation	Ex m	1 or 2
Oil immersion	Ex o	1 or 2
Powder filling	Ex q	1 or 2
'Non sparking'	Ex n	2

Example - Parat PX 1 XAG Xenon

ATEX Certifications (ITS08ATEX25942X)

GAS Ex II 2G Ex ib e IIC T4 Gb (Ta 0°C to +40°C)

DUST Ex II 2D Ex ib e IIIC T81°C Db IP64 (Ta 0°C to +40°C)

IECEx Certifications (IECExITS08.0042X)

GAS Ex ib e IIC T4 Gb (Ta 0°C to +40°C)

DUST Ex ib e IIIC T81°C Db IP64 (Ta 0°C to +40°C)

Example - Parat PX 1 XAG LED

ATEX Certifications (ITS08ATEX25942X)

GAS Ex II 2G Ex ib IIC T4 Gb (Ta -20°C to +40°C)

DUST Ex II 2D Ex ib IIIC T81°C Db IP68 (Ta -20°C to +40°C)

IECEx Certifications (IECExITS08.0042X)

GAS Ex ib IIC T4 Gb (Ta -20°C to +40°C)

DUST Ex ib IIIC T81°C Db IP68 (Ta -20°C to +40°C)

Note: IEC60079-0 2007 Ed5. combines requirements for Gas and Dust **IIIA** combustible flyings, **IIIB** non-conductive dust and **IIIC** conductive dust.