

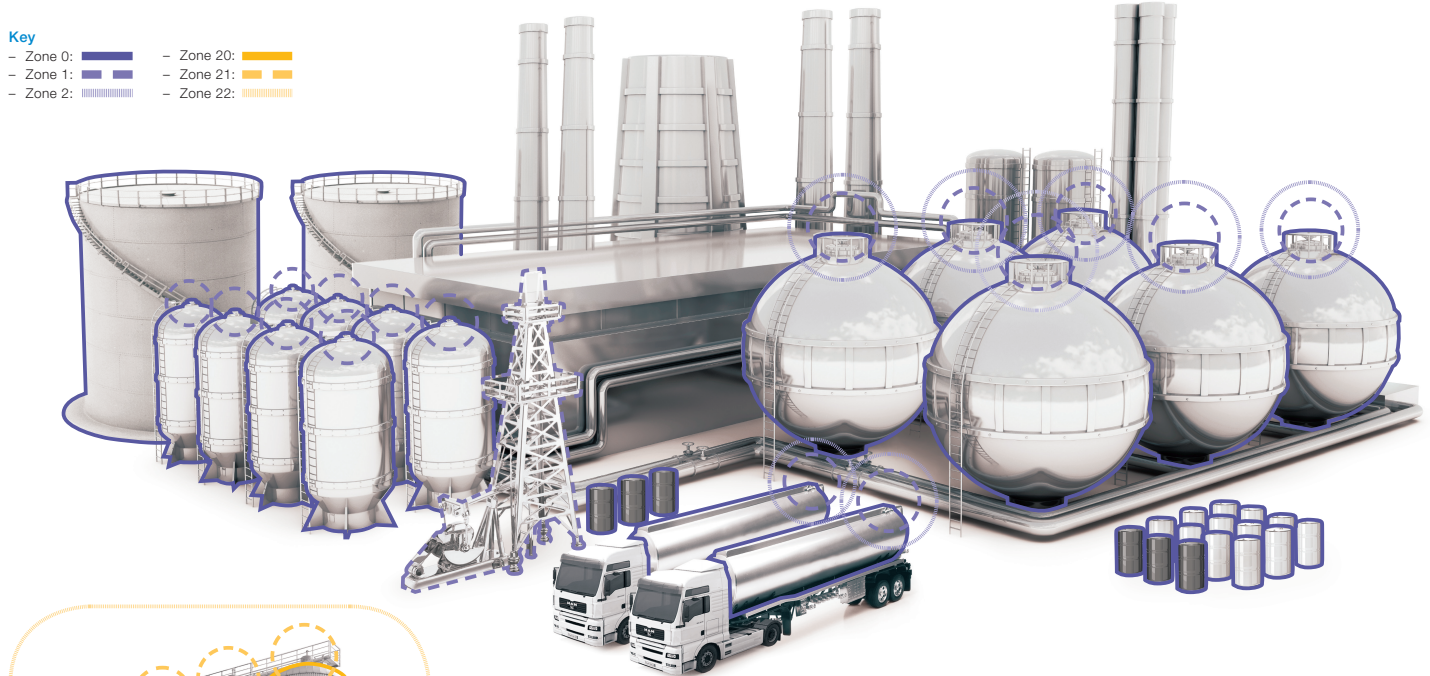
# Hazardous areas - ATEX and IECEx Guide to classification

## Classifications of Hazardous Areas

Classifications of Hazardous Areas		Description	ATEX Group	ATEX Category	EPL	Equipment Usage
Mining	Energised	Persistent risk of methane gas and other dusts	I	M1	Ma	
	De-energised		I	M2	Mb	
Gas Environments	Zone 0	Persistent and continuous presence of gas for frequent or long periods	II	1G	Ga	ATEX Equipment Category 1G, Equipment Protection Level Ga
	Zone 1	Likely occurrence of gas presence in normal operation	II	2G	Gb	ATEX Equipment Category 2G or higher, Equipment Protection Level Gb or higher
	Zone 2	Unlikely occurrence of gas presence in normal operation, short term persistence if any	II	3G	Gc	ATEX Equipment Category 3G, Equipment Protection Level Gc or higher
Dust Environments	Zone 20	Persistent and continuous presence of dust for frequent or long periods	II	1D	Da	ATEX Equipment Category 1D, Equipment Protection Level Da
	Zone 21	Likely occurrence of dust presence in normal operation	II	2D	Db	ATEX Equipment Category 2D or higher, Equipment Protection Level Db or higher
	Zone 22	Unlikely occurrence of dust presence in normal operation, short term persistence if any	II	3D	Dc	ATEX Equipment Category 3D or higher, Equipment Protection Level Dc or higher

## Key

- Zone 0:  - Zone 20: 
- Zone 1:  - Zone 21: 
- Zone 2:  - Zone 22: 

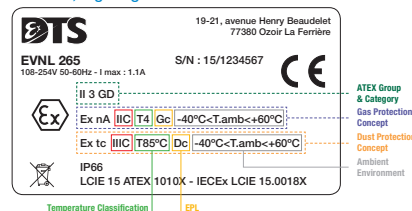


## Temperature Classification

Class*	Surface Temperature
T1	450°C
T2	300°C
T3	200°C
T4	135°C
T5	100°C
T6	85°C

\* Temperature classification is based on the maximum surface temperature of the equipment in normal use

## Controls, Lighting & Junction Boxes



## Cable Glands & Conduit Fittings



## Gas & Dust Groups

Group	Typical	Examples
Mining	I	Methane (Mining only)
Gases	IIA	Propane Ammonia, Methane Gasoline, Butane
	IIB	Ethylene Town gas Acrylonitril
	IIB+H2	Hydrogen
	IIC	Hydrogen Acetylene Carbon disulphide
Dusts	IIIA	Combustible flyings Wood shavings
	IIB	Non-conductive dust Saw dust, flour
	IIC	Conductive dust Metal dust

## Protection Concepts

Protection Concepts	Primary	Type of Protection	EN/IEC Standard	Sub Concept	Gas Zones	Dust Zones
By Enclosure	Ex d	Flameproof	60079-1	Ex db Ex dc	1 2	-
	Ex t	Dust proof	60079-31	Ex ta Ex tb Ex tc	- 20 22	21 22
By Exclusion	Ex p	Pressurisation	60079-2	Ex pxb Ex pyb Ex pzc	1 1 2	21 / 22
	Ex m	Encapsulation	60079-18	Ex ma Ex mb Ex mc	0 1 2	20 21 22
	Ex o	Oil immersion	60079-6	Ex ob	1	-
	Ex q	Powder filling	60079-5	Ex qb	1	-
By Equipment	Ex i	Intrinsically safe	60079-11	Ex ia Ex ib Ex ic	0 1 2	20 21 22
	Ex op	Optical radiation	60079-28	Ex op is Ex op pr Ex op sh	0 / 1 / 2 1 / 2 0 / 1 / 2	20 / 21 / 22 21 / 22 20 / 21 / 22
	Ex e	Increased safety	60079-7	Ex eb Ex ec	1 2	-
	Ex n	Non sparking Limited energy Restricted breathing Enclosed breaking	60079-15	Ex na Ex nl Ex nr Ex nc	2	-



<http://new.abb.com/low-voltage/hazardous>

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