

EXPLOSION-PROOF KNOWLEDGE

HAZARDOUS AREAS



EQUIPMENT PROTECTION LEVEL

Group	Ex risk	Zone	EPL	Minimum type of protection
I (mines)	energized		Ma	
II (gas)	explosive atmosphere > 1000 hrs/yr	0	Ga	ia, ma
II (gas)	explosive atmosphere between 10 and 1000 hrs/yr	1	Gb	ib, mb, px, py, d, e, o, q, s
II (gas)	explosive atmosphere between 1 and 10 hrs/yr	2	Gc	n, ic, pz
III (dust)	explosive surface > 1000 hrs/yr	20	Da	ia
III (dust)	explosive surface between 10 and 1000 hrs/yr	21	Db	ib
III (dust)	explosive surface between 1 and 10 hrs/yr	22	Dc	ic

TEMPERATURE GROUP

Temperature Class	Gas or steam ignition temperature °C	Equipment Max surface temperature °C
T1	> 450°C	450°C
T2	> 300°C	300°C
T3	> 200°C	200°C
T4	> 135°C	135°C
T5	> 100°C	100°C
T6	> 85°C	85°C

AUTO-IGNITION TEMPERATURES

Gas liquid, gas or vapor	Temperature
Methane	580 °C
Hydrogen	560 °C
Propane	493 °C
Ethylene	425 °C
Acetylene	305 °C
Naphtha	290 °C
Carbon disulfide	102 °C

PROTECTION TYPE FOR GAS ATMOSPHERE



Protection type	Ex Code
Flame proof enclosure	db
Increased safety	eb
Intrinsic Safety	ia, ib, ic
Encapsulated	ma, mb, mc
Non sparking	nAc
Protected sparking	nCc
Restricted breathing	nRc
Oil Liquid Immersion	ob
Pressurized enclosure	pvc, pxb, pyb, pzc
Powder filling	qb

Substance	Temperature
Sugar	460 °C
Wood	340 °C
Flour	340 °C
Grain	300 °C
Tea	300 °C

PROTECTION TYPE FOR DUST ATMOSPHERES

Protection type	Ex Code
Protection by enclosure	ta, tb, tc
Intrinsic safety	ia, ib
encapsulation	ma, mb, mc
pressurization	pb, pc

MARKING

		II	2	G	Ex	db	II C	T6
Complies with European Directive	EC Mark	Equipment group	Equipment category	Gas	Explosion Protection	Type of protection	Gas group A, B or C	Temperature class (T1-T6)
		II	2	D	Ex	tb	III C	T80°C
Complies with European Directive	EC Mark	Equipment group	Equipment category	Dust	Explosion Protection	Type of protection	Gas group	Temperature class (T1-T6)