



Typical equipment marking / Ex-designation

ATEX *	CE	II 2 G	EEx cde	IIB T4
CENELEC			EEx de	IIB T4
IEC			Ex de	IIB T4
NEC 505 (USA)	Class I, Zone 1, AEx	de	IIB T4	
NEC 500 (USA)	Class I, Division 1, Group C		T4	

* Manufacturer: 94/9/EG ATEX 95, User: 99/92/EG ATEX 137

Area Classification (NEC 500)

Class	Typical gas	Group
I	Acetylene	A
	Hydrogen	B
	Ethylene	C
	Propane	D
Mining	Methane	Mining
II	Metal dust	E
	Coal dust	F
	Grain dust	G
III	Fibers	

Explosion Groups (NEC 500)

Class	Continuous/intermittent presence	Occasional presence
I	Division 1	Division 2
II		
III		

Equipment-Group I – Mining (ATEX)

Equipment-Group II – other explosive atmospheres (ATEX)

	Category 1		Category 2		Category 3	
Level of protection	very high		high		normal	
Sufficient Safety	by means of 2 protective measures / 2 faults		frequently occurring equipment faults / 1 fault		during normal operation	
Can be used in zone	0	20	1	21/22*	2	22*
Atmosphere	G (Gas)	D (Dust)	G (Gas)	D (Dust)	G (Gas)	D (Dust)

* - Category 3: Non conductive dust Zone 22 IP5x
- Category 2: Conductive dust Zone 22 IP6x

Temperature Classes (NEC 500)

T1	T2	T2A	T2B	T2C	T2D	T3	T3A	T3B	T3C	T4	T4A	T5	T6
450°C*	300°C*	280°C*	260°C*	230°C*	215°C*	200°C*	180°C*	165°C*	160°C*	135°C*	120°C*	100°C*	85°C*

* Maximum surface temperature

Classification of Gases and Vapours into Explosion Groups and Temperature Classes (ATEX, CENELEC, IEC, NEC 505)

	T1 450°C *	T2 300°C *	T3 200°C *	T4 135°C *	T5 100°C *	T6 85°C *
I	Methane					
II A	Acetone Ethane Ammonia Benzol (pure) Acetic acid Methane (natural gas) Methanol Propane Toluene	Ethanol i-Amyl acetate n-Butane n-Butyl alcohol	Benzene Diesel fuel Aircraft fuel Heating oil n-Hexane	Acetaldehyde Ethylether		
II B	Town gas	Ethylene				
II C	Hydrogen	Acetylene				Carbon disulphide

* Maximum surface temperature

Zone (CENELEC, IEC, NEC 505)

Presence	continous	intermittent	occasional
maximum presence per year	over 1000 hours	10 - 1000 hours	less then 10 hours
Zone for gas	0	1	2
Zone for dust	20	21	22

Types of protection (ATEX, CENELEC, IEC, NEC 505)

Type of protection	c	d	e	i	k	m	n	p
Description							This type of protection includes several methods of ignition protection	
Type of protection	Constructive safety	Flameproof enclosure	Increased safety	Intrinsic safety	Oil immersion	Encapsulation	Type of protection n	Pressurized apparatus
Mode of functioning	Mechanical equipment, protection by safe construction	Risky equipment is covered by flame proof enclosure	Electric sparks, and high temperature possibilities are eliminated	Intrinsic safety circuit are not able to cause ignition	Protection by immersion/wetting with a safe fluid	Protection by encapsulation in a sealing compound	The equipment is safe under normal working conditions and define failures	Protection by over pressured enclosure
Application range	Gears and wheels	Switch and control gear, motors and transformers	Terminal and connection boxes, squirrelcage motors	Communication technology, sensors, actuators	Lifting and travelling gears	Control and signalling units, sensors	All electrical equipment for Zone 2	Switchgear and control cabinets, analysers, motors
Standards electrical equipment		EN 50 018 IEC 60 079-1	EN 50 019 IEC 60 079-7	EN 50 020 IEC 60 079-11		EN 50 028 IEC 60 079-18	EN 50 021 IEC 60 079-15	EN 50 016 IEC 60 079-2
Standards* non electrical equipment	EN 13 463-5	EN 13 463-3			EN 13 463-8			EN 13 463-7

* EN 13 463-1 General rules

- Gas and vapours
- Dust
- Fiber
- Explosion will be prevented
- Explosion will be intercepted

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