BARTEC

Safe.t® Technology

Explosion Safe Solutions

Marking of equipment for use in potentially explosive atmospheres

Conditions in hazardous areas

Flammable substances	Temporary behaviour of flammable substances in hazardous places	Subdivision of hazardous places	Required marking for installation	
			Equipment group	Category group
Gases vapours	is present continuously or for long periods or frequently	zone 0	**II**	**1G**
	is likely to occur in normal operation occasionally	zone 1	**II**	**2G or 1G**
	is not likely to occur in normal opration but, if it does occur, will persist for a short period only	zone 2	**II**	**3G or 2G or 1G**
Dusts	is present continuously or for for long periods or frequently	zone 20	**II**	**1D**
	is likely to occur in normal operation occasionally	zone 21	**II**	**2D or 1D**
	it is not likely to occur in normal operation but, if it does occur, will persist for a short period only	zone 22	**II**	**3D or 2D or 1D**
Methane dusts		mines	**I**	**M1**
		mines	**I**	**M2 or M1**

Subdivision of gases and vapours

Apparatus may be used in	Explosion subgroup	Gases and vapours					
IIA, IIB, IIC	**IIA**	ammonia methane ethane propane	ethyl alchohol cyclohexane n-butane	gasoline n-hexane	acetaldehyde		
IIB, IIC	**IIB**	town gas, acrylnitril	ethylene ethylene oxide	ethylene glycol hydrogen sulphide	ethyl-ether		
IIC	**IIC**	hydrogen	ethine (acetylene)	hydrogen			sulphide of carbon

Temperature classes subdivision of gases and vapours according to the ignition temperature

T1	T2	T3	T4	T5	T6
> 450°C	> 300°C ≤ 450°C	> 200°C ≤ 300°C	> 135°C ≤ 200°C	> 100°C ≤ 135°C	> 80°C ≤ 100°C

Apparatus may be used

T1
T2
T3
T4
T5
T6

Restriction for using apparatus

Requirements	Marking
without restriction	-
special condition may be noted	**X**
Ex component, which is not intended to be used alone and requires additional certification. CE-Conformity of the component is certified when installed in a complete equipment or protective system.	**U**

CE 0032 Ex **II 2G EEx d IIB T4** NB 99 ATEX 1234 **U**

Accredited test centre

Notified Bodies	Country	Code
LCIE	France	**0081**
INERIS	France	**0080**
BAM	Germany	**0589**
DMT	Germany	**0158**
DQS	Germany	**0297**
FSA	Germany	**0588**
IBExU	Germany	**0637**
PTB	Germany	**0102**
TUV (Nord Cert)	Germany	**0032**
SEE	Luxemburg	**0499**
KEMA	Netherlands	**0344**
SP	Sweden	**0402**
LOM	Spain	**0163**
EECS (BASEEFA)	UK	**0600**
SCS	UK	**0518**

Protectioon types

Application	Principle of protection	Type of protection	Symbol	Marking	Can be used in **zone**	CENELAC	IEC
all applications	-	general requirements		**-**	-	EN 50014	60079-0
control stations, motors, fuses, switchgear, power electronics	an propagation of an explosion inside to the outside is excluded	flameproof enclosure		**EEx d**	1 or 2	EN 50018	60079-1
installation materials, motors, luminaries	avoidance of arcs, sparks and excessive temperature	increased safety		**EEx e**	1 or 2	EN 50019	60079-7
measurement and control, automation technology, sensors, actuators	limitation of energy as well as arcs and temperature	intrinsic safety		**EEx i**	0, 1 or 2**	EN 50020* EN 50039**	60079-11
switch- and control cupboards, analyse-apparatus, computers	ex-atmosphere keep at a distance from the ignition source	pressurisation		**EEx p**	1 or 2	EN 50016**	60079-2
coils of motors or relays, solenoid valves	ex-atmosphere keep at a distance from the ignition	encapsulation		**EEx m**	1 or 2	EN 50028	60079-18
transformers, relays, control stations, magnetic contactors	ex-atmosphere keep at a distance from the ignition source	oil immersion		**EEx o**	1 or 2	EN 50015	60079-6
capacitors, transformers	an propagation of an ignition inside to the outside is excluded	powder filling		**EEx q**	1 or 2	EN 50017	60079-5
see at the top - only for zone 2	see at the top - only for zone 2	'non sparking'		**EEx n**	2	EN 50021	60079-15

*devices **systems ***ia for use in zone 0, 1, 2/ib for use in Zone 1, 2

BARTEC is an organisation employing more than a 1.200 highly qualified people throughout the world, all of whom are committed to a central corporate goal **BARTEC protects people and the environment by the safety of components, systems and plants.** We design and build components and systems for machine and equipment constructors and for original equipment manufacturers; for constructors and operators of industrial plant, for the chemical, petrochemical, pharmaceutical, power generation and environmental engineering industries. They all rely on BARTEC as an expert partner in matters of safety engineering.

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