

mayr® ATEX-certified products

 Marking for operational equipment in areas where there is a danger of explosion acc. 94/9 EC (ATEX 95)

Our experts are happy to assist
with an application-specific evaluation

Ignition Protection Types

a) Standards for electrical equipment in areas where there is a high danger of explosion

Ignition Protection Type	Marking	Symbol	Protective Principle	Zone	EN / IEC
General regulations	-	-	-	-	60079-0
Pressure-resistant encapsulation	Ex d		Prevents further transmission of explosion	1 / 2	60079-1
Increased safety	Ex e		Prevents sparks and high temperatures	1 / 2	60079-7
Inherent safety	Ex ia / ib / ic		Limits sparks and high temperatures	0 / 1 / 2 / 20 / 21 / 22	60079-11
Pressurizing	Ex pv / px / py / pz		Separates explosive atmosphere from ignition source	1 / 2	60079-2
Encapsulation	Ex ma / mb / mc		Separates explosive atmosphere from ignition source	0 / 1 / 2 / 21 / 22	60079-18
Oil immersion	Ex o		Separates explosive atmosphere from ignition source	1 / 2	60079-6
Powder filling	Ex q		Prevents further transmission of explosion	1 / 2	60079-5
Ignition protection type "n"	Ex nA / nC / nR		Different protective principles for Zone 2	2	60079-15
Protection by housing	Ex ta / tb / tc		Separates explosive atmosphere from ignition source	21 / 22	60079-31
Pressurizing	Ex p		Separates explosive atmosphere from ignition source	21 / 22	61241-4

b) Standards for non-electrical equipment in areas where there is a high danger of explosion

Ignition Protection Type	Marking	Symbol	Protective Principle	Zone	EN / IEC
Basic principles and requirements	-	-	-	0 / 1 / 2	13463-1
Protection by smoke-reducing encapsulation	fr		Prevents further transmission of explosion	2 / 22	13463-2
Pressure resistant encapsulation	d		Separates explosive atmosphere from ignition source	1 / 2 / 21 / 22	13463-3
Structural safety	c		Danger of ignition is prevented by equipment design	1 / 2 / 21 / 22	13463-5
Ignition source monitoring	b		Monitoring of potential ignition sources	1 / 2 / 21 / 22	13463-6
Liquid filling	k		Separates explosive atmosphere from ignition source	1 / 2	13463-8

Examples of Gas, Haze and Steam Classification and Differentiation (Please Observe for Different Ignition Types)

	Explosives Group				Temperature Class and Max. Surface Temperature
	I	IIA	IIB	IIC	
Classification of Gases and Steams	Methane	Acetone Ammoniac Ethane Acetic acid Methane Propane	Acrylonitrile Urban gas	Hydrogen	T1 450 °C
		Cyclohexane Ethanol n-Butane i-amyl acetate	Ethylene Ethylen oxide	Acetylene	T2 300 °C
		Benzines Diesel fuels Jet propulsion fuels Fuel oil n-Hexane	Ethyl glycol Hydrogen sulphide		T3 200 °C
		Acetaldehyd	Ethyl ether		T4 135 °C
				Carbon disulphide	T5 100 °C T6 85 °C

Additional Marking for Dust Explosion Hazard Areas acc. EN 60079-0

IIIA	IIIB	IIIC
flammable lint	non-conductive dust	conductive dust

If no particular ambient temperature range T_a is specified, the standard range of $-20^\circ\text{C} \leq T_a \leq +40^\circ\text{C}$ applies.
For this, no special marking is necessary.
Other ambient temperature ranges must be included in the marking, e.g. $-15^\circ\text{C} \leq T_a \leq +80^\circ\text{C}$.

CE  II 2 G c IIC T5 D 120°C X

CE-marking certifies
conformity of product with
the existing guidelines

Marking
Explosion-proof Design

Official Inspection Authorities in
Germany
(If Certified by a Laboratory)

Code	Laboratory
0035	TÜV Rheinland
0102	PTB
0123	TÜV Süd
0158	DEKRA / EXAM
0588	FSA
0589	BAM
0637	IBExU
0556	DGUV
0044	TÜV Nord

Classification and Marking of Explosive Areas

Com- bustible materials	Time-related behaviour of combustible materials in explosive areas	Classification of areas where there is a high danger of explosion	Marking for equipment
Gas, Fog, Steam	are constantly / often present or present over longer time	Zone 0	II 1G
	are occasionally present	Zone 1	II 1G 2G
	are probably not present; and, if present, only rarely or temporarily	Zone 2	II 1G 2G 3G
Dust	are constantly / often present or present over longer time	Zone 20	II 1D
	are occasionally present	Zone 21	II 1D 2D
	are probably not present even in whirled dust, or are rarely or temporarily present	Zone 22	II 1D 2D 3D
Methane, Dust	-	Mines	I M1
	-	Mines	I M1 M2

Additional
Classification
acc. EN 60079-0

Device class	Equipment Protection Level (EPL)
II	Ga
II	Ga Gb
II	Ga Gb Gc
III	Da
III	Da Db
III	Da Db Dc
I	Ma
I	Ma Mb

Actual Maximum Surface
Temperatures of Operational
Range Dust
in °C

Additional Conditions

Condition	Marking
Operational equipment can be used without restriction	-
Observe special operational conditions	X
EX-endangered equipment, partly certified, not suitable for use alone. CE-conformity is certified after installation into the complete equipment	U



Torque limiting clutch
EAS®-element clutch :
CE Ⓢ II 3 G c T5 -15°C ≤ T_a ≤ +80°C D 110°C



Torque limiting clutch in enclosed housing
EAS®-HTL :
CE Ⓢ II 2 G c T5 -15°C ≤ T_a ≤ +80°C D 110°C



Torque limiting clutch
EAS®-Compact®-overload :
CE Ⓢ II 2 G c T5 -15°C ≤ T_a ≤ +80°C D 110°C



Shaft coupling
ROBA® DS :
CE Ⓢ II 2 G c T5 -30°C ≤ T_a ≤ +80°C D 110°C
CE Ⓢ I M2 c -30°C ≤ T_a ≤ +80°C



Shaft coupling
ROBA® ES:
CE Ⓢ II 2 G c T4/T5/T6 -30°C ≤ T_a ≤ +80/60/45°C D 110°C
CE Ⓢ I M2 c -30°C ≤ T_a ≤ +80°C



Safety brake
ROBA-stop®-M Brake :
CE Ⓢ II 3 G Ex nA IIC T3 Gc X
CE Ⓢ II 3 D Ex tc IIC T120°C IP65/IP54 Dc X