

# Explosion Endangered Areas – Dusts: Marking Of Electrical Equipment Per EC Directive 94/9 - ATEX



**1** **CE** Conformity with EC directives

**5** **T80°C** Maximum allowed surface temperature

**2** **0102** Notified body

Classes and groups per NEC 500:  
typical dust, fluffs, fibres

Notified body	Country	Code No.
TÜV-A	Austria	0408
PTB	Germany	0102
EXAM	Germany	0158

Class II	Class III
Metal dust/group E	fibres/fluffs
Coal dust/group F	
Grain dust/group G	

**3** **II 2D** Conditions in the explosive endangered areas

Flammable material	Temporary behaviour of the flammable material in Ex zones	Classification of the explosive endangered area			Required marking of the suitable electrical equipment per CENELEC	
		CENELEC / IEC	US NEC 505	US NEC 500	Equipment group	Equipment category
Dusts	are continuously present, for long periods or frequently	Zone 20	---	Class II Division 1	II	1D
	are likely to occur	Zone 21	---		II	2D (or 1D)
	are unlikely to occur by whirled dust, if they do though only rarely or only for a short time	Zone 22	---	Class II Division 2	II	3D (or 2D or 1D)
Dust	---	Mining	---	Mining	I	M1
	---	Mining	---	---	I	M2 (or M1)

**4** **tD** Protection methods

Protection	Symbol	Marking	Protection concept	Zone	CENELEC IEC FM/UL	Application
General requirements				--- all Class II, Div. 1/2	--- IEC 61241-0 UL 1604	all applications
Protection by enclosure		tD	Ex atmosphere is kept apart from ignition source and temperature limitation	20, 21 or 22 20, 21 or 22 Class II, Div. 1	EN 50281-1-1 IEC 61241-1-1 UL 1203	switching, command- and signalling devices, lights, installation boxes, enclosures
Purged		pD	Ex atmosphere is kept apart from ignition source	21 or 22 21 or 22 Class II, Div. 1/2	EN 50281-4 IEC 61241-2 NFPA 496	switchgear and control cabinets, motors, measuring and analysis devices, calculators
Intrinsic safety		iD	Energy limitation of sparks and temperatures	20, 21 or 22 20, 21 or 22 Class II, Div. 1	EN 50281-5 IEC 61241-11 FM 3610/UL 913	measuring, control technology and engineering, sensors, actuators, instrumentation
Encapsulation		mD	Ex atmosphere is kept apart from ignition source	20, 21 or 22 20, 21 or 22 ---	EN 50281-6 IEC 61241-18 ---	coils of relays and motors, electronics, magnetic valves, connecting systems
Non-incendive		[NI]	Avoidance of sparks and high temperatures	-- -- Class II, Div. 1	-- -- FM 3611/UL 1604	
Dust tight			Transmission of an explosion to the outside is excluded	--- --- Class II, Div. 2	-- -- FM 3611/UL 1604	