

Global Reference Guide on the Marking of Electrical Equipment for Use in Explosive Atmospheres (ATEX (EU) / IECEx / UKCA)

Typical marking of electrical equipment for use in explosive gas atmospheres (ATEX (EU) / IECEx):

Marking according to Directive 2014/34/EU

Marking according to IEC/EN 60079 serie

CE 0158 Ex II 2 G Ex db eb IIC T4 Gb

CE UKCA CE / UKCA -marking and number of the notified (monitoring) body (0158 = DEKRA EXAM GmbH) (not for equipment category 3)

UKCA CE / UKCA -marking and number of the notified (monitoring) body (8505 = DEKRA UK) (not for equipment category 3)

Explosion protection symbol II Equipment group (equipment for use in hazardous areas, other than mines susceptible to firedamp) 2 Equipment category (category 2) G Explosive atmosphere (gas, vapour or mist)

Marking according to UK Directive 2016 N°1107

Marking according to IEC/EN 60079 serie

UKCA 8505 Ex II 2 G Ex db eb IIC T4 Gb

Ex Explosion protection marking db Type of protection (flameproof enclosure, level of protection „db“) eb Type of protection (Increased safety, level of protection „eb“) IIC Equipment group (Electrical equipment group II, subgroup IIC (typical gas: hydrogen), intended for use in areas where an explosive gas atmosphere is to be expected, other than mines susceptible to firedamp) T4 Temperature class (max. surface temperature 135 °C) Gb Equipment protection level (EPL Gb; equipment with high protection level)

Typical marking of electrical equipment for use in explosive dust atmospheres (ATEX (EU) / IECEx):

Marking according to Directive 2014/34/EU

Marking according to IEC/EN 60079 serie

CE 0158 Ex II 2 D Ex tb IIIC T80 °C Db

CE UKCA CE / UKCA -marking and number of the notified (monitoring) body (0158 = DEKRA EXAM GmbH) CE / UKCA -marking and number of the notified (monitoring) body (8505 = DEKRA UK) (not for equipment category 3)

Explosion protection symbol II Equipment group (equipment for use in hazardous areas, other than mines susceptible to firedamp) 2 Equipment category (Category 2) D Explosive atmosphere (dust)

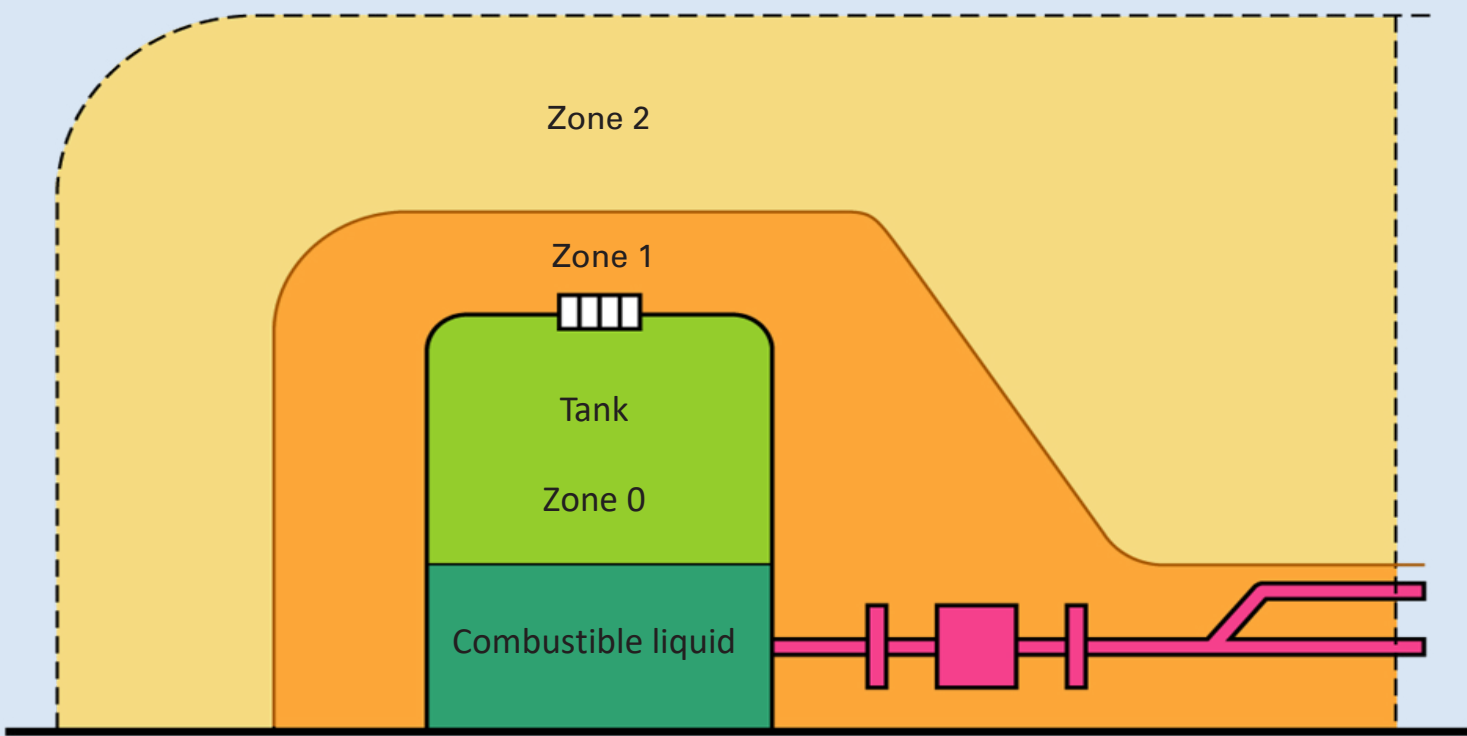
Marking according to UK Directive 2016 N°1107

Marking according to IEC/EN 60079 serie

UKCA 8505 Ex II 2 D Ex tb IIIC T80 °C Db

Ex tb Explosion protection marking Type of protection (protection by enclosure „tb“) IIIC Equipment group (Electrical apparatus group III, subgroup IIIC (conductive dust), intended for use in areas where an explosive dust atmosphere is to be expected, other than mines susceptible to firedamp) T80 °C Surface temperature (max. 80 °C) Db Equipment protection level (EPL Db; equipment with high protection level)

Example of classification of explosive gas atmospheres into zones
Ex gas atmosphere according to IEC/EN 60079-10-1



Electrical types of protection for explosive atmospheres due to flammable gases, vapours and mists

Type	Protection level	Type of protection	Group	Equipment category	Equipment protection level (EPL)	CENELEC / IEC standard	Protection concept
d	da	Flameproof enclosure	II	1 G	Ga	EN/IEC 60079-1	Explosion containment, prevention of flame transmission
d	db	Flameproof enclosure	II	2 G	Gb	EN/IEC 60079-1	Explosion containment, prevention of flame transmission
d	dc	Flameproof enclosure	II	3 G	Gc	EN/IEC 60079-1	Explosion containment, prevention of flame transmission
p	pab	Pressurized enclosure	II	2 G	Gb	EN/IEC 60079-2	Exclusion of Ex-atmosphere
p	pac	Pressurized enclosure	II	3 G	Gc	EN/IEC 60079-2	Exclusion of Ex-atmosphere
q		Powder filling	II	2 G	Gb	EN/IEC 60079-5	Prevention of explosion diffusion
o	ob	Liquid immersion	II	2 G	Gb	EN/IEC 60079-6	Exclusion of Ex-atmosphere
o	oc	Liquid immersion	II	3 G	Gc	EN/IEC 60079-6	Exclusion of Ex-atmosphere
e	eb	Increased safety	II	2 G	Gb	EN/IEC 60079-7	No arcs, sparks or hot surfaces
e	ec	Increased safety	II	3 G	Gc	EN/IEC 60079-7	No arcs, sparks or hot surfaces
i	ia	Intrinsic safety	II	1 G	Ga	EN/IEC 60079-11	Limitation of spark energy and surface temperature
i	ib	Intrinsic safety	II	2 G	Gb	EN/IEC 60079-11	Limitation of spark energy and surface temperature
i	ic	Intrinsic safety	II	3 G	Gc	EN/IEC 60079-11	Limitation of spark energy and surface temperature
p/v		Pressurized enclosure/ ventilation	II	2 G	Gb	EN/IEC 60079-13	Exclusion of Ex-atmosphere / dilution
nA		Non-sparking equipment	II	3 G	Gc	EN/IEC 60079-15	No arcs, sparks or hot surfaces
nC		Enclosed equipment	II	3 G	Gc	EN/IEC 60079-15	Explosion containment, prevention of flame transmission
nR		Restricted breathing enclosure	II	3 G	Gc	EN/IEC 60079-15	Exclusion of Ex-atmosphere for a limited period
m	ma	Encapsulation	II	1 G	Ga	EN/IEC 60079-18	Exclusion of Ex-atmosphere
m	mb	Encapsulation	II	2 G	Gb	EN/IEC 60079-18	Exclusion of Ex-atmosphere
m	mc	Encapsulation	II	3 G	Gc	EN/IEC 60079-18	Exclusion of Ex-atmosphere
i		Intrinsic system	II	2 G	Gb	EN/IEC 60079-25	Limitation of spark energy and surface temperature
		Equipment with protection level (EPL) Ga	II	1 G 1 G/2 G	Ga Ga/Gb	EN/IEC 60079-26	Double protection concept
op is		Inherent safe optical radiation	II	1 G	Ga	EN/IEC 60079-28	Limitation of radiation energy
op is		Inherent safe optical radiation	II	2 G	Gb	EN/IEC 60079-28	Limitation of radiation energy
op is		Inherent safe optical radiation	II	3 G	Gc	EN/IEC 60079-28	Limitation of radiation energy
op pr op sh		Safe/interlocked optical radiation	II	2 G	Gb	EN/IEC 60079-28	Limitation or containment of radiation energy
op pr op sh		Safe/interlocked optical radiation	II	3 G	Gc	EN/IEC 60079-28	Limitation or containment of radiation energy
s	sa	Special protection	n.a.	n.a.	Ga	IEC 60079-33	Special measures
s	sb	Special protection	n.a.	n.a.	Gb	IEC 60079-33	Special measures
s	sc	Special protection	n.a.	n.a.	Gc	IEC 60079-33	Special measures

Classification of explosion-protected equipment into equipment groups and categories in accordance with Directive 2014/34/EU

Equipment Group I for mines endangered by firedamp. The equipment Group I is subdivided into the Categories M1 and M2:

M1	The equipment in this category is intended for use in both underground parts of mines and those parts of surface installations of such mines that are endangered by firedamp and/or combustible dust.
M2	The equipment in this category is intended for use in both underground parts of mines and those parts of surface installations of such mines that are endangered by firedamp and/or combustible dust. If an explosive atmosphere occurs, it must be possible to switch off the equipment. The constructional explosion-protection measures ensure the required degree of safety during normal operation, even under severe operating conditions and, in particular, in cases of rough handling and changing environmental influences.

Equipment Group II for all other hazardous areas

The equipment Group II is subdivided into the Categories 1, 2 and 3:

1	The equipment in this category is intended for use in areas in which an explosive atmosphere is present continuously or for long periods or frequently. Even if equipment failures only occur infrequently, the equipment must ensure the required degree of safety and feature such explosion protection measures that — if one constructional protective measure fails, at least one other independent constructional protective measure ensures the required degree of safety, or — if two independent faults occur in combination, the required degree of safety is still ensured.
2	The equipment in this category is intended for use in areas in which an explosive atmosphere occurs occasionally. Even in the case of frequent equipment failures or faulty conditions that are normally to be expected, the constructional explosion-protection measures ensure the required degree of safety.
3	The equipment in this category is intended for use in areas in which no occurrence of an explosive atmosphere due to gases, vapours, mists or whirled-up dust is to be expected. If, however, it occurs, then in all probability only rarely or for a short period. During normal operation the equipment ensures the required degree of safety.

Explosion group

Explosive Atmosphere	Typical combustible material	Group
Gas, vapour or mist	Acetylene	IIC
	Hydrogen	IIC / IIB+I2
	Ethylene/Formaldehyde	IIB
	Methane/Octane	IIA
Dust	Metal dust	IIIC
	Coal dust	
	Non-conductive	IIIB
	Grain dust	
	Fibres & Flyings	IIIA
	Wood, paper or cotton processing	

Temperature class

Maximum surface temperature	IEC/EN 60079-0
450 °C	T1
300 °C	T2
200 °C	T3
135 °C	T4
100 °C	T5
85 °C	T6

IP degree of protection to IEC 60529

First digit	Second digit
Protection against solid foreign objects	Protection against ingress of water with damaging effects
0 No protection	0 No protection
1 > 50 mm diameter	1 Vertically dripping water
2 > 12 mm diameter	2 15° angled dripping water
3 > 2.5 mm diameter	3 Spraying water
4 > 1.0 mm diameter	4 Splashing water
5 Dust protected	5 Water jets
6 Dust tight	6 Strong water jets
	7 Temporary submersion
	8 Permanent submersion
	9 High pressure, high temperature spray downs

Electrical types of protection for explosive atmospheres due to combustible dust

Type	Protection level	Type of protection	Group	Equipment category	Equipment protection level (EPL)	CENELEC / IEC standard	Protection concept
p	pab	Pressurized enclosure	II	III	2 D	Da	Exclusion of Ex-atmosphere
p	pac	Pressurized enclosure	II	III	3 D	Dc	Exclusion of Ex-atmosphere
i	ia	Intrinsic safety	II	III	1 D	Da	Limitation of spark energy and surface temperature
i	ib	Intrinsic safety	II	III	2 D	Dc	Limitation of spark energy and surface temperature
i	ic	Intrinsic safety	II	III	3 D	Dc	Limitation of spark energy and surface temperature
m	ma	Encapsulation	II	III	1 D	Da	Exclusion of Ex-atmosphere
m	mb	Encapsulation	II	III	2 D	Dc	Exclusion of Ex-atmosphere
m	mc	Encapsulation	II	III	3 D	Dc	Exclusion of Ex-atmosphere
op is		Inherent safe optical radiation	II	III	1 D	Da	Limit of radiation energy
op is		Inherent safe optical radiation	II	III	2 D	Dc	Limit of radiation energy
op is		Inherent safe optical radiation	II	III	3 D	Dc	Limit of radiation energy
op pr op sh		Safe/interlocked optical radiation	II	III	2 D	Dc	Limitation or containment of radiation energy
op pr op sh		Safe/interlocked optical radiation	II	III	3 D	Dc	Limitation or containment of radiation energy
t	ta	Protection by enclosure	II	III	1 D	Da	Exclusion of dust
t	tb	Protection by enclosure	II	III	2 D	Dc	Exclusion of dust
t	tc	Protection by enclosure	II	III	3 D	Dc	Exclusion of dust
s	sa	Special protection	III	n.a.	Da	IEC 60079-33	Special measures
s	sb	Special protection	III	n.a.	Dc	IEC 60079-33	Special measures
s	sc	Special protection	III	n.a.	Dc	IEC 60079-33	Special measures

Zone classification / Equipment protection level

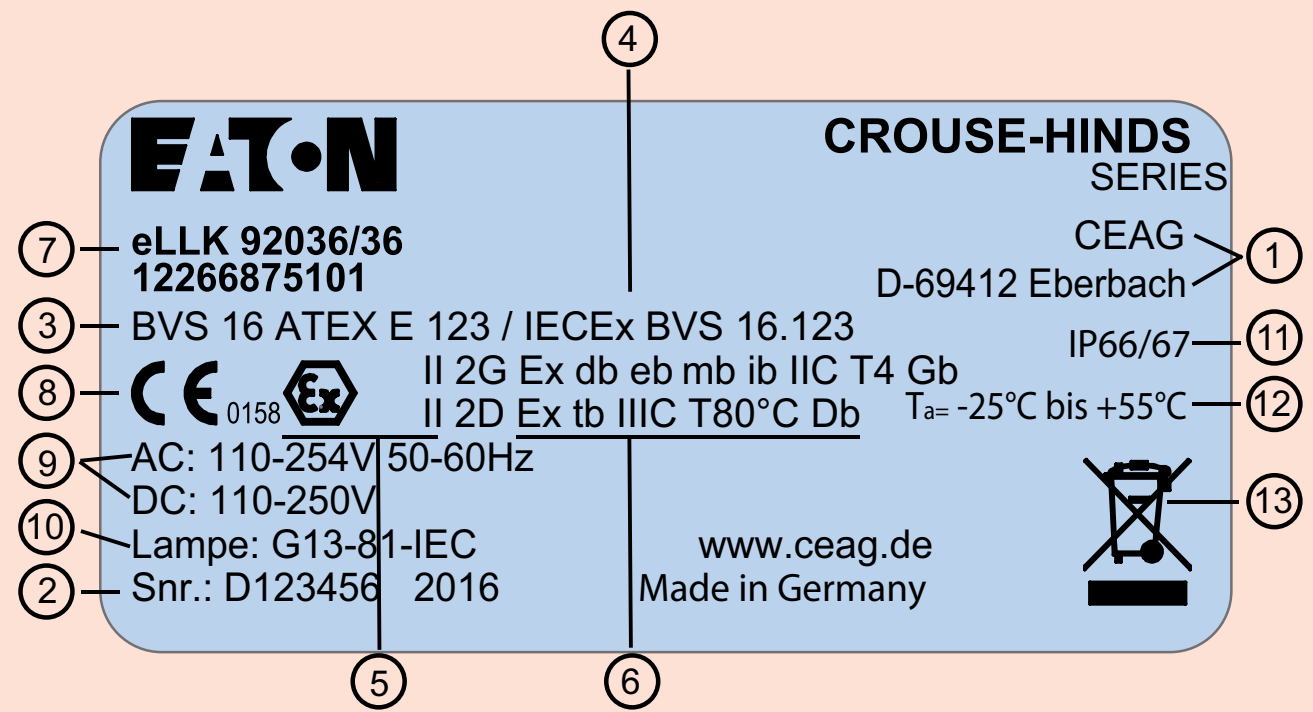
Substance	Period of presence of the combustible substances	Zone	Minimum requirements for equipment				Protection level
			Directive 2014/34/EU		Standard IEC/EN 60079-0		
			Equipment group	Equipment category	Group	Equipment protection level EPL	
Gas, mist, vapour	Continuously for long periods or frequently	Zone 0	II	1 G	II	Ga	very high
	Occasional occurrence	Zone 1	II	2 G	II	Gb	high
	Not likely, but if it occurs only rarely and for a short period	Zone 2	II	3 G	II	Gc	enhanced
Dust	Continuously for long periods or frequently	Zone 20	II	1 D	III	Da	very high
	Occasional occurrence	Zone 21	II	2 D	III	Dc	high
	Not likely, but if it occurs only rarely and for a short period	Zone 22	II	3 D	III	Dc	enhanced
Methane, coal dust		Mining	I	M1	I	Ma	very high
		Mining	I	M2	I	Mb	high

Example of type label: CEAG product

- Name or registered trade mark (CEAG) and address of the manufacturer
- Serial number including year of manufacture
- Certificate number, may end with "X" or "U" - "X" indicates that special conditions for safe use apply - "U" is used for component certificates
- Additional IECEx certification
- Marking according to directive: Equipment group (II) and equipment category (2): type of explosive atmosphere G (Gas, vapour or mist) - D (dust)
- Marking according to standard: IEC/EN
- Equipment name/type
- CE marking and number of the "notified body" responsible for monitoring the quality system (0158 = EXAM Germany)
- Electrical parameters
- Other essential information (depends on the standard, e.g. lamp)

Colour legend

Information relating to explosive gas atmospheres Information relating to explosive dust atmospheres Information relating to mines endangered by firedamp Information relating to all areas



- Other optional information (e.g. degree of protection)
- Permissible ambient temperature (-25°C to +55°C; no marking required for temperatures from -20°C to 40°C (standard values for all equipment))
- Marking according to EU-directive 2002/96/EC (WEEE-directive: Waste of Electrical and Electronic Equipment)

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Global Reference Guide on the Marking of Electrical Equipment for Use in Explosive Atmospheres: NEC/CEC Reference

Typical NEC/CEC Class/Division marking of electrical apparatus in USA and Canada:
Marking according to NEC 505 / CEC 18

Class I Division 1 Groups A, B, C & D T6 Class II Division 2 Groups F, G T80°C

GAS: Class IHazard category
Division 1Area classification
Groups A, B, C & D.... Hazardous atmosphere category
T6Temperature classification

DUST: Class IIHazard category
Division 2Area classification
Groups F, GHazardous atmosphere category
T80°CTemperature classification

Marking according to NEC 505

Class I Zone 1 AEx eb IIC T6 Gb

Class IHazard category
Zone 1Area classification
AExExplosion-protection standard

Marking according to CEC 18

Zone 21, AEx tb IIIC T80°C Db Ex tb IIIC T80°C Db

Gb.....Equipment protection level (GAS)
Db.....Equipment protection level (DUST)

Method of explosion protection

Type of protection	Description of protection	Permitted for use in USA		Permitted for use in Canada		Protection concept
		NEC 500 Division	NEC 505 Zone	CEC J18 Division	CEC 18 Zone	
e	Increased safety	2	1, 2	-	1, 2	No arcs, sparks or hot surfaces
n	Non-incendive	2	2	2	2	
d	Flameproof	2	1, 2	-	1, 2	Contain the explosion prevent the flame propagation
-	Explosion-proof	1, 2	1, 2	1, 2	-	
q	Powder filled	2	1, 2	-	1, 2	Limit the energy of the spark and the surface temperature
ia	Intrinsic safety	1, 2	0, 1, 2	1, 2	0, 1, 2	
ib		2	1, 2	-	1, 2	Keep the flammable gas out
p	Pressurized (purged)	1, 2	1, 2	1, 2	1, 2	
pxb		1, 2	1, 2	-	1, 2	
pyb		1, 2	1, 2	-	1, 2	
m		2	1, 2	-	1, 2	
ma	Encapsulation	1, 2	0, 1, 2	-	0, 1, 2	
mb		2	1, 2	-	1, 2	
o	Oil immersion	2	1, 2	2	1, 2	

Area classification

	Continuous hazard	Intermittent hazard	Hazard under abnormal conditions
North America / NEC 500-503/CEC J18	Division 1	Division 1	Division 2
NEC 505-506/CEC 18	Zone 0 (Zone 20 dust)	Zone 1 (Zone 21 dust)	Zone 2 (Zone 22 dust)

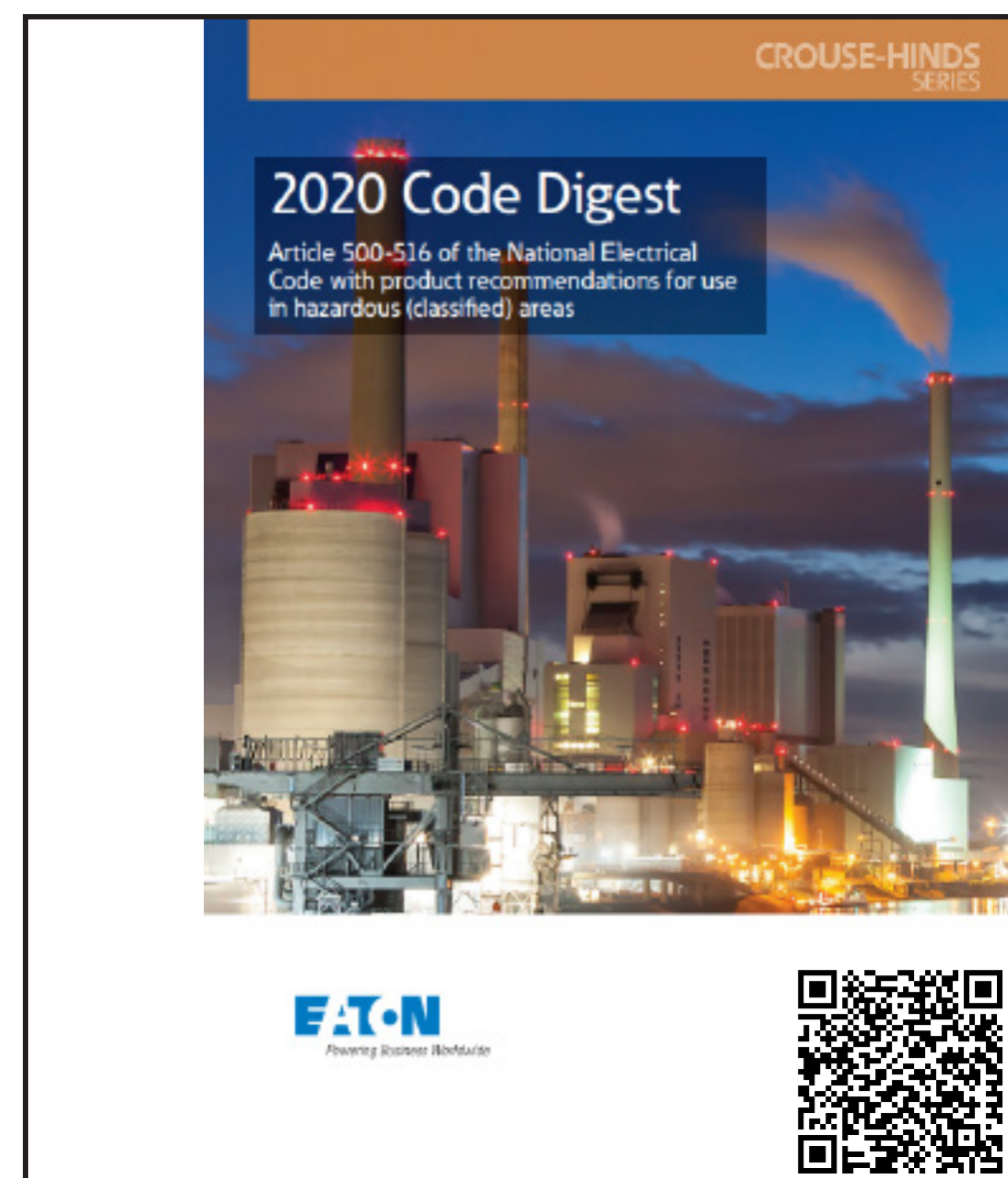
Temperature classification according to NEC/CEC

Maximum surface temperature	US Zone concept	US Division / Canada Zone and Division concept
450 °C (842 °F)	T1	T1
300 °C (572 °F)	T2	T2
280 °C (536 °F)		T2A
260 °C (500 °F)		T2B
230 °C (446 °F)		T2C
215 °C (419 °F)		T2D
200 °C (392 °F)	T3	T3
180 °C (356 °F)		T3A
165 °C (329 °F)		T3B
160 °C (320 °F)		T3C
135 °C (275 °F)	T4	T4
120 °C (248 °F)		T4A
100 °C (212 °F)	T5	T5
85 °C (185 °F)	T6	T6

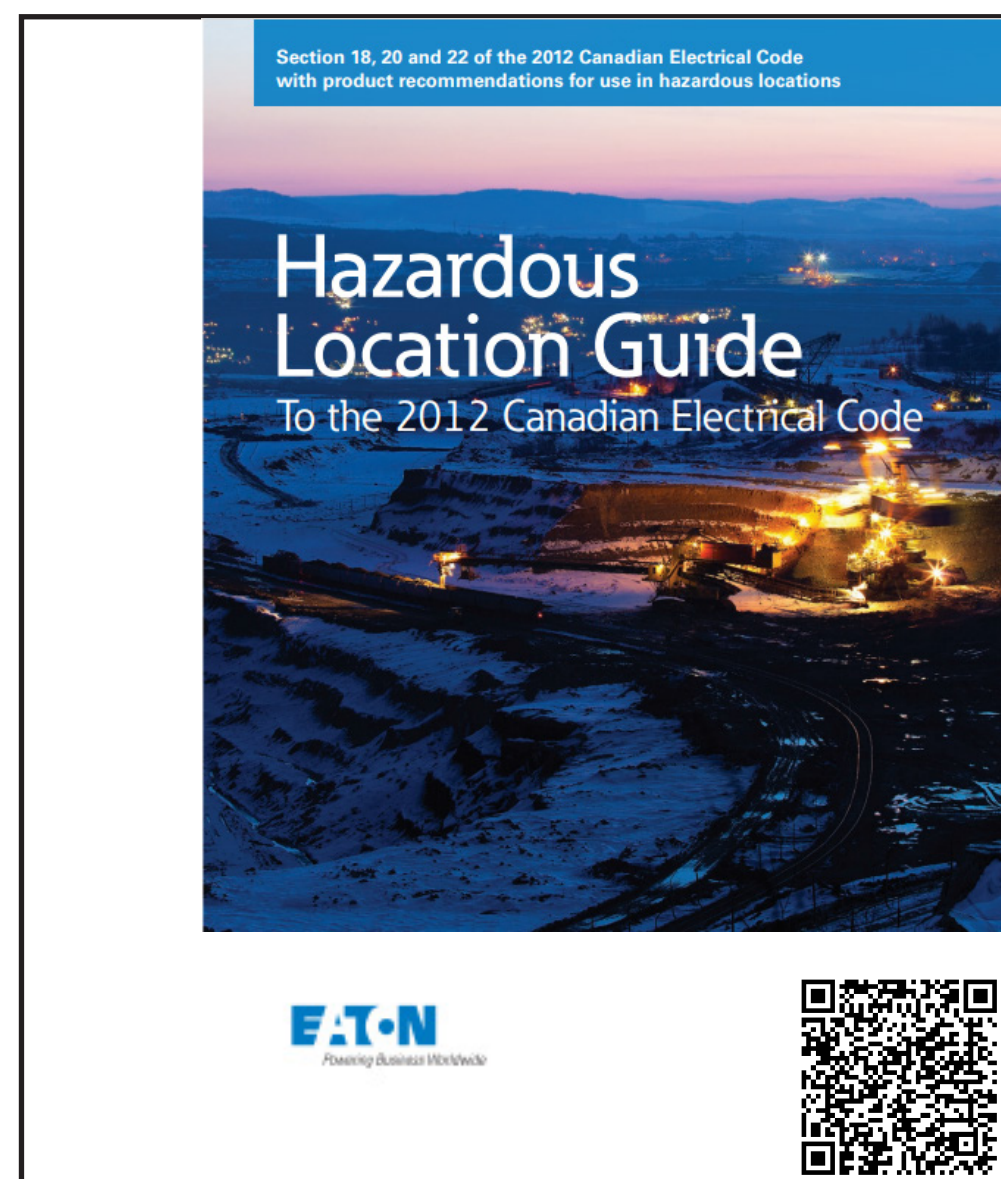
Committees and directives

NEMA (National Electrical Manufacturers Association) NEMA 250 series standards for enclosure types covers both hazardous areas (potentially explosive atmospheres) and non-hazardous areas.
NEC – National Electrical Code (USA)
CEC – Canadian Electrical Code (Canada)

NEC Code Digest



CEC Code Digest



Hazardous atmosphere category (gas or dust grouping)

Explosionsfähige Gemische	Typischer brennbarer Stoff	Nord Amerika NEC 500-503 / CEC J18		NEC 505 / CEC 18
		Einteilung der Stoffe	Explosionsgruppe	Gas-Gruppe
Gase und Dämpfe*	Acetylen	Class I	Group A	IIC
	Wasserstoff	Class I	Group B	IIC or IIB+H2
	Ethylen/Formaldehyd	Class I	Group C	IIB
	Methan/Oktan	Class I	Group D	IIA
Staub**	Metallstaub	Class II	Group E	IIIC
	Kohlenstaub	Class II	Group F	IIIC
	Getreidestaub	Class II	Group G	IIIB
Fasern & Flusen	Holz, Papier oder Baumwollverarbeitung	Class III	-	IIIA

* In Übereinstimmung mit 506.9 (C)(2) gekennzeichnete und gelistete Bereiche für Zone 0, 1, oder 2 Standorte sind für die gleiche Gasatmosphäre mit einer geeigneten Temperaturklasse ebenfalls zugelassen in Class I Division 2 Bereichen (siehe Artikel 501.5 des National Electrical Code). In Kanada dürfen Geräte, die für den Einsatz in Zone 0, 1 oder 2 geeignet sind, in Bereichen der Class I Division 2 und mit einer geeigneten Temperaturklasse nach CE Code Rule J18-150 verwendet werden.

** In Übereinstimmung mit 506.9 (C)(2) gekennzeichnete und gelistete Geräte für Zone 20, 21, oder 22 Bereiche sind für die gleiche Staubatmosphäre mit einer geeigneten Oberflächentemperatur ebenfalls zugelassen in Class II Division 2 Bereichen. In Kanada können für die gleiche Staubatmosphäre Geräte mit einer geeigneten Oberflächentemperatur verwendet werden, die (i) EPL Da, Db oder Dc in Class II Division 2 Bereichen nach CEC Rule J18-274 aufweisen; (ii) EPL Da in Class 2 Division 1 Bereichen nach CEC Rule J18-224 aufweisen. Geräte, die (i) EPL Da aufweisen, können in Class III Division 1 mit einer Oberflächentemperatur verwendet werden, die nicht größer als T120 °C ist bei möglicher Überlast und nicht größer als T165 °C für überlastbare Geräte nach CEC J18-326. (ii) EPL Da, Db oder Dc aufweisen, können in Class III Division 2 mit einer Oberflächentemperatur verwendet werden, die nicht größer als T120 °C ist bei möglicher Überlast und nicht größer als T165 °C für überlastbare Geräte nach CEC J18-376.

NEMA enclosure types

Enclosure type	Intended use	Equivalent IP rating*
1	Indoor use, limited amounts of falling dirt	20
3	Outdoor use, rain, sleet, windblown dust, external formation of ice	55
3R	Outdoor use, rain, sleet, external formation of ice	24
3S	Outdoor use, rain, sleet, windblown dust, external mechanisms operable when ice laden	55
4	Indoor or outdoor use, windblown dust and rain, splashing water, hose directed water, external formation of ice	66
4X	Indoor or outdoor use, windblown dust and rain, splashing water, hose directed water, corrosion resistant, external formation of ice laden	66
5	Indoor use, settling airborne dust, falling dirt, non-corrosive liquids	53
6	Indoor or outdoor use, hose directed water, temporary submersion, external formation of ice	67
6P	Indoor or outdoor use, hose directed water, prolonged submersion, external formation of ice	68
7**	Indoor use, Class I, Division 1, Groups A, B, C, and D hazardous locations, air-break equipment	
8**	Indoor or outdoor use, Class I, Division 1, Groups A, B, C, and D hazardous locations, oil-immersed equipment	
9**	Indoor use, Class II, Division 1, Groups E, F and G hazardous locations, air-break equipment	
10**	Mining applications	
12	Indoor use, circulating dust, falling dirt, dripping noncorrosive liquids	54
12K	Indoor use, circulating dust, falling dirt, dripping noncorrosive liquids, provided with knockouts	54
13	Indoor use, lint, dust, spraying of water, oil an noncorrosive coolant	54

* NEMA Enclosure Type can be converted to IP Code rating, but IP Codes cannot be converted to NEMA Enclosure Type (Ref. NEMA 250)
** Enclosure Types for U.S. only (Ref. NEMA 250)

You can find more information on the definition of hazardous areas according to NEC/CEC and the requirements of explosion-protected equipment for use in North America you will find in the 2017 Code Digest (NEC) and the Hazardous Location Guide (CEC).

These comprehensive basic guides and further information can be found on the net under:

<https://www.eaton.com/us/en-us/support/education-training/crouse-hinds-series-training-and-technical-info.html>

Using the following link you can download the PDF documents directly:

2020 Code Digest (NEC):

<https://www.eaton.com/content/dam/eaton/support/crouse-hinds/code-digests/crouse-hinds-codedigest2020.pdf>

2012 Hazardous Location Guide (CEC):

<https://www.eaton.com/content/dam/eaton/support/crouse-hinds/code-digests/crouse-hinds-canadian-code-2012.pdf>

Electrical types of protection for explosive atmospheres due to flammable gases, vapours and mists

Type	Protection level	Type of protection	Equipment protection level (EPL)	CSA/UL standard	Protection concept
d	da	Flameproof enclosure	Ga	CAN/CSA C22.2 No. / UL No. 60079-1	Explosion containment, prevention of flame transmission
d	db	Flameproof enclosure	Gb	CAN/CSA C22.2 No. / UL No. 60079-1	Explosion containment, prevention of flame transmission
p	pnb pyb	Pressurized enclosure	Gb	CAN/CSA C22.2 No. / UL No. 60079-2	Exclusion of Ex-atmosphere
p	ptc	Pressurized enclosure	Gc	CAN/CSA C22.2 No. / UL No. 60079-2	Exclusion of Ex-atmosphere
q	qb	Powder filling	Gb	CAN/CSA C22.2 No. / UL No. 60079-5	Prevention of explosion diffusion
o	ob	Liquid immersion	Gb	CAN/CSA C22.2 No. / UL No. 60079-6	Exclusion of Ex-atmosphere
e	eb	Increased safety	Gb	CAN/CSA C22.2 No. / UL No. 60079-7	No arcs, sparks or hot surfaces
i	ia	Intrinsic safety	Ga	CAN/CSA C22.2 No. / UL No. 60079-11	Limitation of spark energy and surface temperature
i	ib	Intrinsic safety	Gb	CAN/CSA C22.2 No. / UL No. 60079-11	Limitation of spark energy and surface temperature
i	ic	Intrinsic safety	Gc	CAN/CSA C22.2 No. / UL No. 60079-11	Limitation of spark energy and surface temperature
nA		Non-sparking equipment	Gc	CAN/CSA C22.2 No. / UL No. 60079-15	No arcs, sparks or hot surfaces
nC		Enclosed equipment	Gc	CAN/CSA C22.2 No. / UL No. 60079-15	Explosion containment, prevention of flame transmission
nR		Restricted breathing enclosure	Gc	CAN/CSA C22.2 No. / UL No. 60079-15	Exclusion of Ex-atmosphere for a limited period
m	ma	Encapsulation	Ga	CAN/CSA C22.2 No. / UL No. 60079-18	Exclusion of Ex-atmosphere
m	mb	Encapsulation	Gb	CAN/CSA C22.2 No. / UL No. 60079-18	Exclusion of Ex-atmosphere
m	mc	Encapsulation	Gc	CAN/CSA C22.2 No. / UL No. 60079-18	Exclusion of Ex-atmosphere
i		Intrinsic system	Gb	CAN/CSA C22.2 No. / UL No. 60079-25	Limitation of spark energy and surface temperature

Electrical types of protection for explosive atmospheres due to combustible dust

Type	Protection level	Type of protection	Equipment protection level (EPL)	CSA/UL standard	Protection concept
p	pnb	Pressurized enclosure	Db	CAN/CSA C22.2 No. / UL No. 60079-2	Exclusion of Ex-atmosphere
p	ptc	Pressurized enclosure	Dc	CAN/CSA C22.2 No. / UL No. 60079-2	Exclusion of Ex-atmosphere
i	ia	Intrinsic safety	Da	CAN/CSA C22.2 No. / UL No. 60079-11	Limitation of spark energy and surface temperature
i	ib	Intrinsic safety	Db	CAN/CSA C22.2 No. / UL No. 60079-11	Limitation of spark energy and surface temperature
i	ic	Intrinsic safety	Dc	CAN/CSA C22.2 No. / UL No. 60079-11	Limitation of spark energy and surface temperature
m	ma	Encapsulation	Da	CAN/CSA C22.2 No. / UL No. 60079-18	Exclusion of Ex-atmosphere
m	mb	Encapsulation	Db	CAN/CSA C22.2 No. / UL No. 60079-18	Exclusion of Ex-atmosphere
m	mc	Encapsulation	Dc	CAN/CSA C22.2 No. / UL No. 60079-18	Exclusion of Ex-atmosphere
op is		Inherent safe optical radiation	Da	CAN/CSA C22.2 No. / UL No. 60079-28	Limit of radiation energy
op is		Inherent safe optical radiation	Db	CAN/CSA C22.2 No. / UL No. 60079-28	Limit of radiation energy
op is		Inherent safe optical radiation	Dc	CAN/CSA C22.2 No. / UL No. 60079-28	Limit of radiation energy
op pr op sh		Safe/interlocked optical radiation	Db	CAN/CSA C22.2 No. / UL No. 60079-28	Limitation or containment of radiation energy
op pr op sh		Safe/interlocked optical radiation	Dc	CAN/CSA C22.2 No. / UL No. 60079-28	Limitation or containment of radiation energy
t	ta	Protection by enclosure	Da	CAN/CSA C22.2 No. / UL No. 60079-31	Exclusion of dust
t	tb	Protection by enclosure	Db	CAN/CSA C22.2 No. / UL No. 60079-31	Exclusion of dust
t	tc	Protection by enclosure	Dc	CAN/CSA C22.2 No. / UL No. 60079-31	Exclusion of dust



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