



POTENTIALLY EXPLOSIVE ATMOSPHERES (ATEX) - DIRECTIVE AND STANDARDS

29.11.2022

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Head of Sector 1 of the „Conformity Assessment Body“

Immediate Past Chair of ExNBG

IEC TC 31 Chair „Equipment for Explosive Atmospheres“



1

Content of this webinar



- Basics of explosion protection (physic, chemistry, etc.)
- European Directives for expl. protection:
 - 1999/92/EC
 - 2014/34/EU
- (IECEX)
- Standards and standardization
 - IEC TC 31
 - CLC TC 31
 - CEN TC 305

Webinar Agenda | November 29th, 2022

POTENTIALLY EXPLOSIVE ATMOSPHERES(A) **DIRECTIVE** **STANDARDS**

10:00 - 10:10 Mr. Pambos Karmas, Director of Standardization (CYS)

10:10 - 10:30 Cyprus Organization for Standardization (CYS)
Ms. Angeliki Loizou, Standardization Officer

The role of the Cyprus Organization for Standardization (CYS)
How to participate in standardization activities
CYS Minor Committee CYS/MC 11.1 Explosive Atmospheres

10:30 - 11:30 Potentially Explosive atmospheres, the ATEX Directive and standards
Mr. Martin Thedens, Chair of IEC TC 31 "Equipment for explosive atmospheres"

An overview of the standards for the determination of the parameters, the classification of zones, the design criteria for protective systems, equipment and components as well as design, installation and operation in the area where explosive gases exist
Procedures and Marking to Directive 2014/34/EU and Conformity Assessment Procedures for "equipment and protective systems intended for use in potentially explosive atmospheres"

11:30 - 12:00 Discussion - Questions & Answers

Organizer:

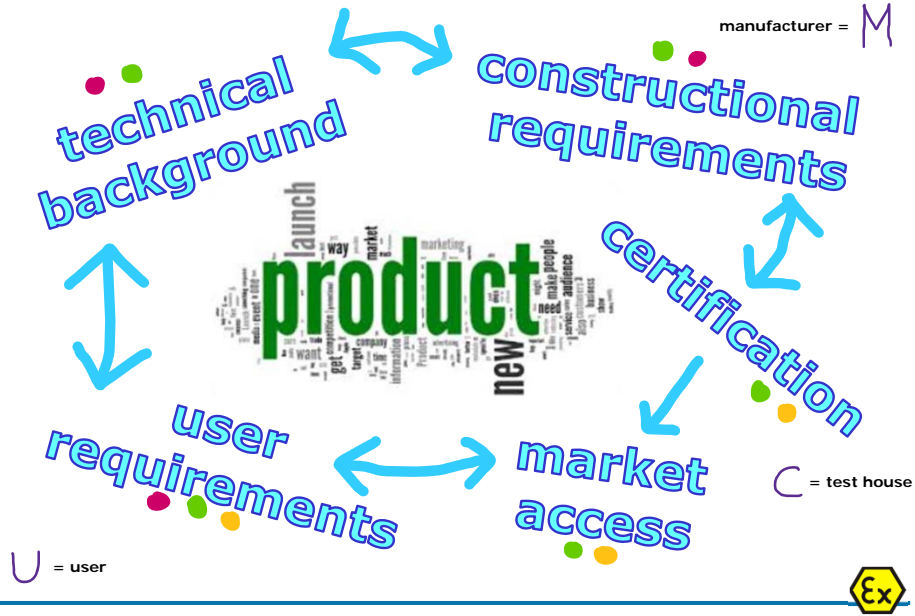
Contact info: Ms. Maria Theophanous
Phone: 22 415442
E-mail: trains@CYS.org.cy

- This webinar could be an overview only!
More details can be given in a full day training session.

2

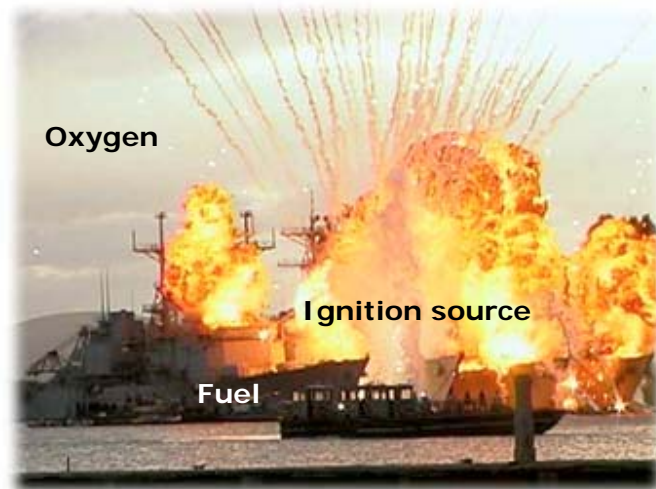


Content of this webinar



3

Why explosion protection ???



4



5



6

Potentially Explosive Atmosphere



- flammable substance (gas, vapour, mist or dust)
 - mixed with air
 - under atmospheric conditions (*)
- ➔ after ignition, combustion spreads to entire mixture

(*) atmospheric conditions according to standards:

T → -20 °C to +40 °C,

p → 0,8 bar to 1,1 bar,

rH → 5 % to 85 % ,

O₂ → 20,9 Vol-% ±0,2 Vol-%



7

Different hazardous areas



8

Area classification



- The fundamental element of Ex
- Determines the likely occurrence + extent of areas affected
- Takes into account items such as:
 - Chemical Characteristics of liquids, gases, dusts
 - Operating environment
 - Operational processes
 - Competence of Personnel
 - ...
- IEC 60079-10-1 (Gases) and IEC 60079-10-2 (Dusts)

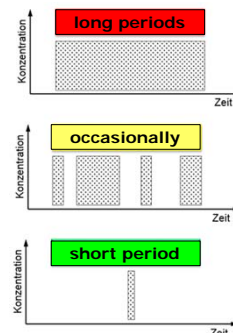


9

Gas: IEC 60079-10-1



- **Zone 0**
A place in which an explosive atmosphere consisting of a mixture with air of flammable substances in the form of gas, vapour or mist **is present continuously or for long periods or frequently.**
- **Zone 1**
A place in which an explosive atmosphere consisting of a mixture with air or flammable substances in the form of gas, vapour or mist **is likely to occur in normal operation occasionally.**
- **Zone 2**
A place in which an explosive atmosphere consisting of a mixture with air of flammable substances in the form of gas, vapour or mist **is not likely to occur in normal operation but, if it does occur, will persist for a short period only.**



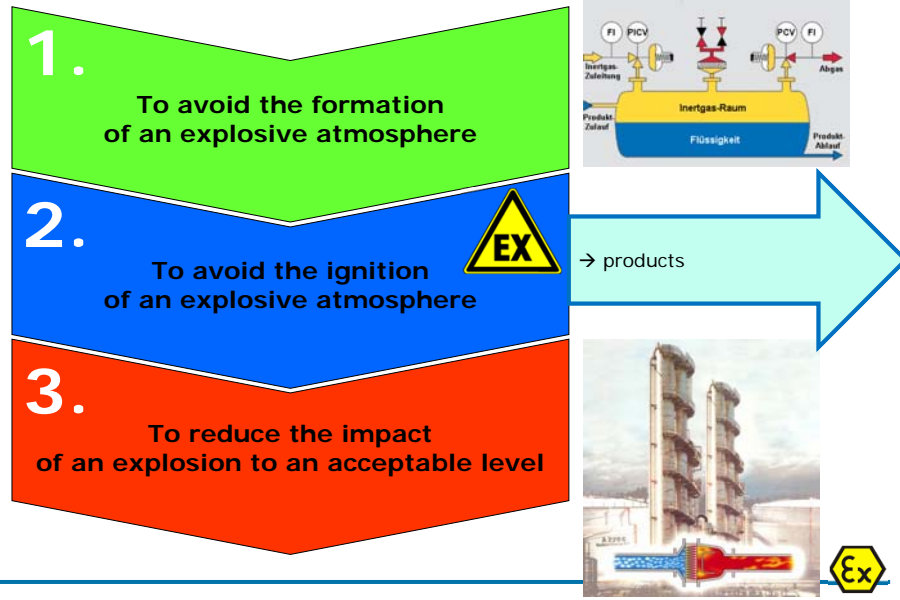
Dust: IEC 60079-10-2

- **Zone 20**
- **Zone 21**
- **Zone 22**



10

Basic principle of explosion protection



11

Equipment and protective systems



Equipment: machines, apparatus, fixed or mobile devices, control components and instrumentation and detection or prevention systems, through their own potential sources of ignition

Protective system: design units which are intended to stop explosions immediately and/or to limit the effective range of explosion.



Component: any item essential to the safe functioning of equipment and protective systems but with no autonomous function.



12



13

Mechanical (= non-electrical) equipment PTB

- Equipment, based on physical and mechanical effects in combination with material and geometrical parameters and characteristics



Hebezeuge



Gabelstapler
Verbrennungsmotoren



Getriebe
Kupplungen
Bremsen



Pumpen (Tauch-, Fass-, Vakuum-)
Ventilatoren



Rührwerke

- These are either single apparatus or new apparatus which are a combination with explosion proofed electrical equipment (so called: assemblies).

Ex

14

Components



conveyor belt



plastic tubes



15

Equipment assembly

BUT:



Fuel Gas Heating Skid



Switchgear is an Ex Equipment!



Chemical Injection Skid



Part of an installation!



16

Intended use of products



- Use of
 - Equipment,
 - protective systems and
 - safety devices, controlling devices and regulating devicesaccording their
 - equipment group and
 - category

and

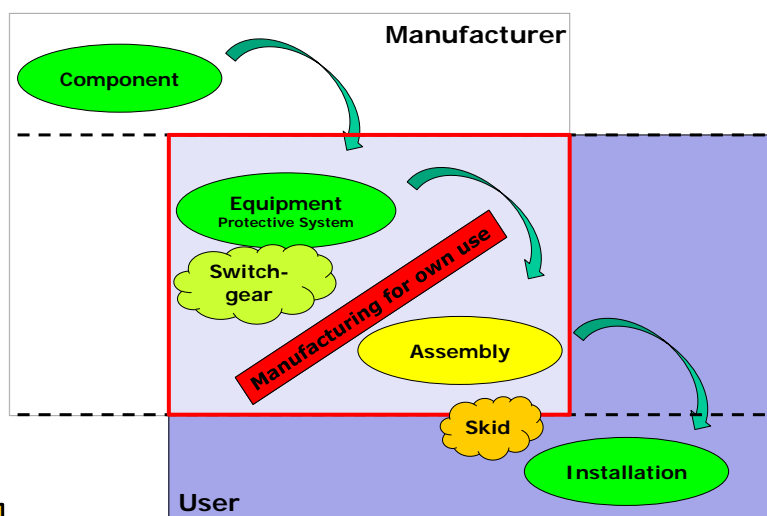
taking into account all information by the manufacturer which are needed for the safe use of the equipment.

→ The manufacturer defines the conditions of use (manual) !!!



17

Equipment → User



18

2nd explosion protection principle



Principle: Avoidance of the ignition source / ignition

- Application of a Type of Protection for mechanical (non-electrical) and electrical equipment:
 - Separation of the explosive atmosphere and the ignition source
 - Limitation of „energy“
 - Use of creepage and clearance distances
 - Choose of suitable materials

→ Constructional solution for the design of equipment to be used in hazardous areas

Type of Protections:
- electrical or non-electrical
- gas or dust



Different types of protections (safety concepts) offered by EN/IEC standards



Type of protection	Symbol	Electrical equipment gas only	Non-electrical equipment h	Electrical equipment dust only
Flameproof enclosure	d	•	•	-
Protection by enclosure	t	-	-	•
Enclosed break device	nC	•	-	-
Non-incendive component	nC	•	-	-
Pressurized apparatus	p	•	•	•
Powder filling	q	•	-	•
Liquid immersion (former: Oil immersion)	o / (k)	•	•	-
Increased safety	e	•	-	-
Non-sparking	nA	•	-	-
Constructive safety	(e)	-	•	-
Encapsulation	m	•	-	•
Hermetically sealed device	nC	•	-	-
Sealed/encapsulated device	nC	•	-	-
Intrinsic safety	I	•	-	•
Restricted breathing enclosure	nR / (fr)	•	•	•
Protection by control of ignition sources	(b)	-	•	-



Techn. Requirements → elec. Equipment



IEC 60079-0 + Type of Protection
Edition 6.0 2011-06

INTERNATIONAL STANDARD
NORME INTERNATIONALE

Explosive atmospheres –
Part 0: Equipment – General requirements
Atmosphères explosives –
Partie 0: Matériel – Exigences générales



IEC 60079-11
Edition 6.0 2011-06


INTERNATIONAL STANDARD
NORME INTERNATIONALE

Explosive atmospheres –
Part 11: Equipment protection by intrinsic safety "I"
Atmosphères explosives –
Partie 11: Protection de l'équipement par sécurité intrinsèque «i»



21

Techn. Requirements → mech. Equipment




ISO 80079-36
Edition 1.0 2016-02

INTERNATIONAL STANDARD
NORME INTERNATIONALE

Explosive atmospheres –
Part 36: Non-electrical equipment for explosive atmospheres – Basic method and requirements
Atmosphères explosives –
Partie 36: Appareils non électriques destinés à être utilisés en atmosphères explosives – Méthodologie et exigences

if necessary:



ISO 80079-37
Edition 1.0 2016-02


INTERNATIONAL STANDARD
NORME INTERNATIONALE

Explosive atmospheres –
Part 37: Non-electrical equipment for explosive atmospheres – Non electrical type of protection constructional safety "c", control of ignition source "b", liquid immersion "k"
Atmosphères explosives –
Partie 37: Appareils non électriques destinés à être utilisés en atmosphères explosives – Mode de protection non électrique par sécurité de construction "c", par contrôle de la source d'inflammation "b", par immersion dans un liquide "k"

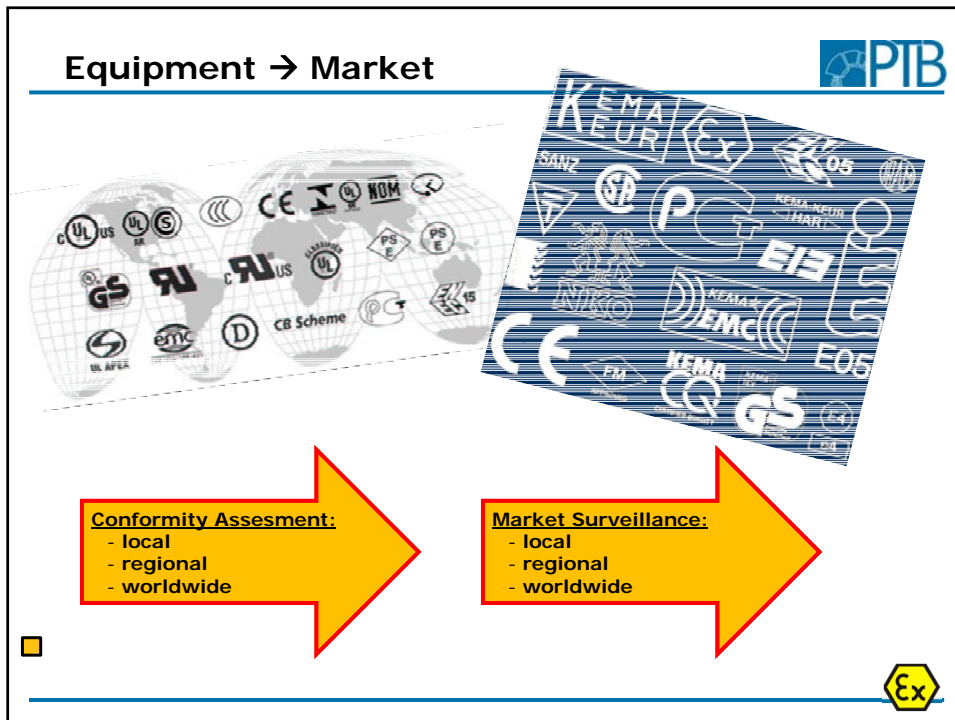
or:

IEC 60079-1 Ex "d"
IEC 60079-2 Ex "p"

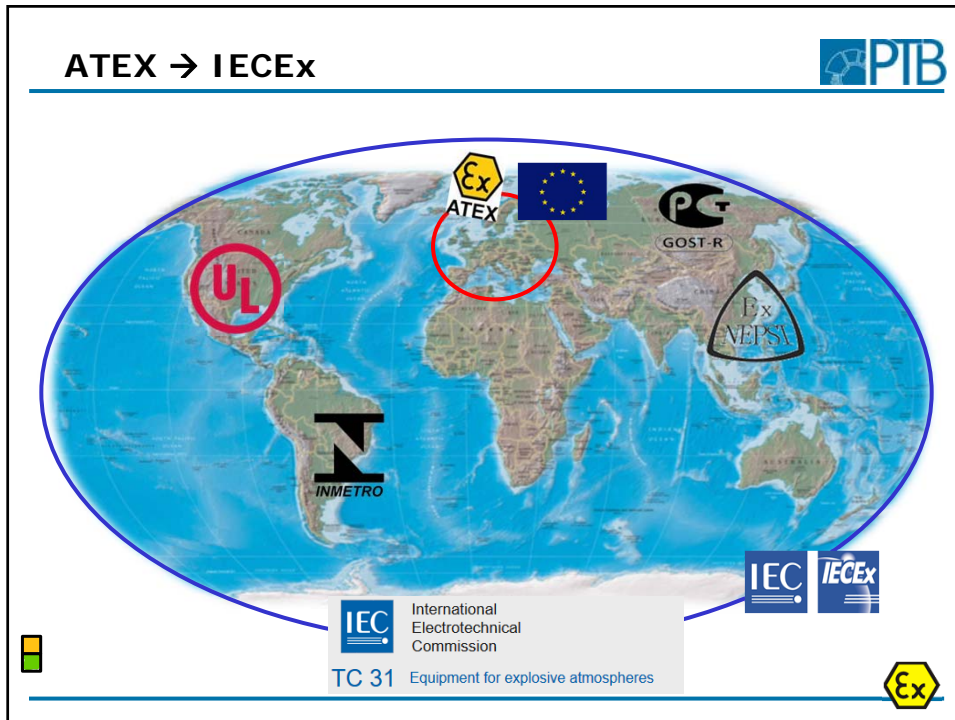
Ex h
(without level of protection)



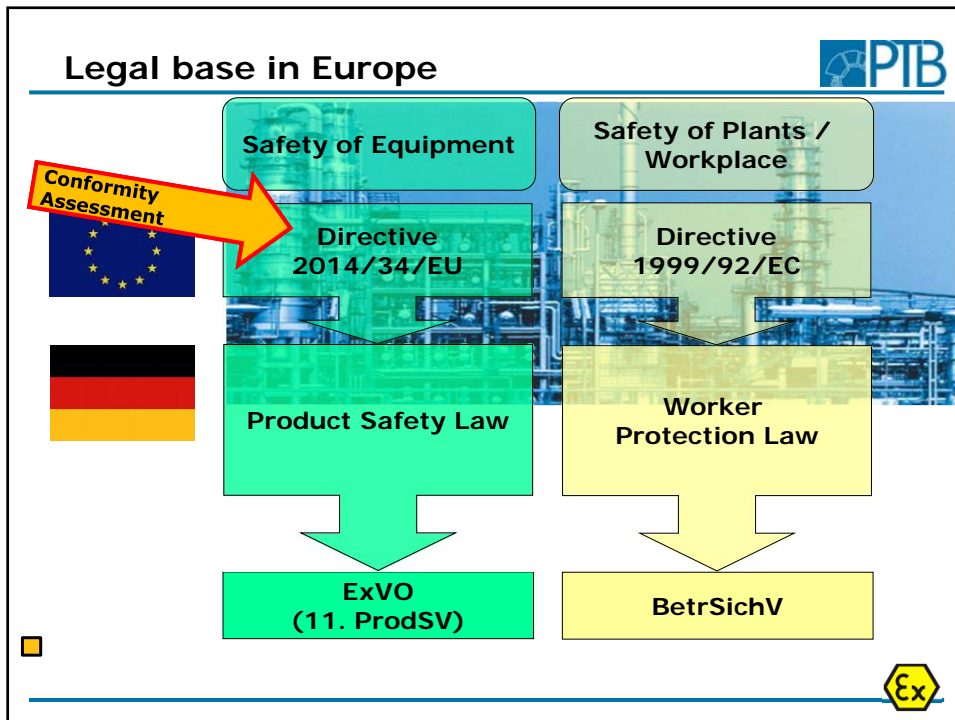
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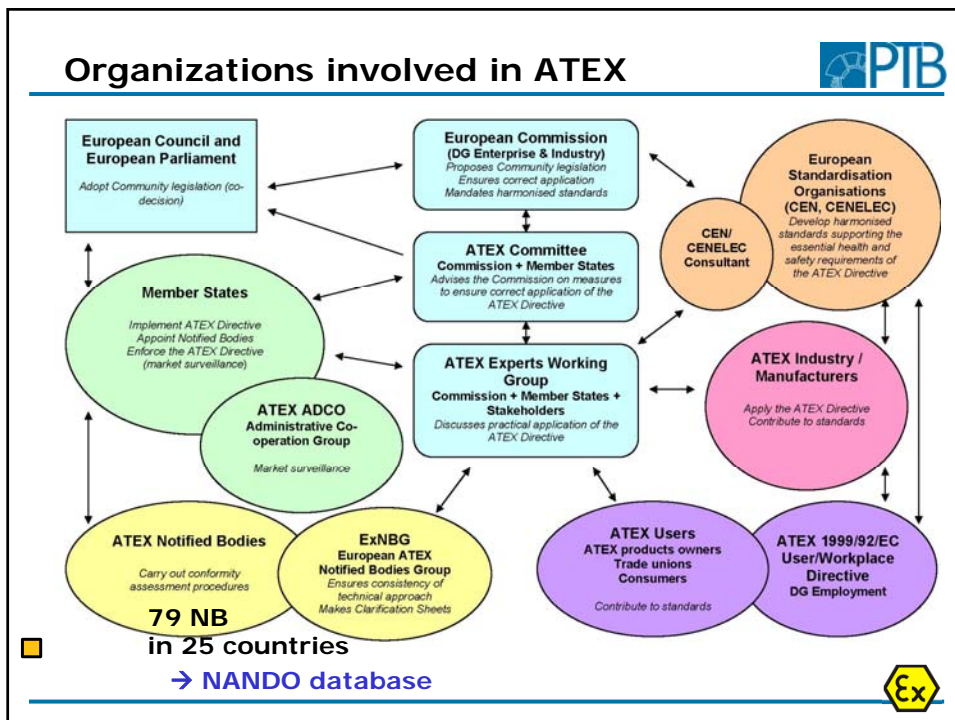
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24



25



26

ATEX-Directive 2014/34/EU 

29.3.2014 EN Official Journal of the European Union L 96/309

DIRECTIVE 2014/34/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 26 February 2014
on the harmonisation of the laws of the Member States relating to equipment and protective systems intended for use in potentially explosive atmospheres (recast)




Remove of trade barriers
by harmonisation of the
property requirements

ATEX
Atmosphère
Explosible




27

ATEX-Directive 2014/34/EU + Guideline 

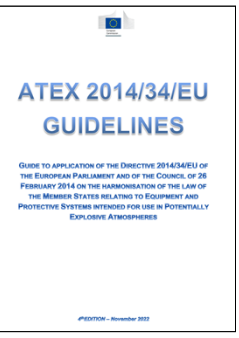
29.3.2014 EN Official Journal of the European Union L 96/309

DIRECTIVE 2014/34/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
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http://ec.europa.eu/growth/sectors/mechanical-engineering/atex/index_en.htm



GROWTH
Internal Market, Industry, Entrepreneurship and SMEs




Where can I find further guidance or support?

Guidance documents are approved by the formal ATEX committee working group and made available to assist those who need to apply the directive.

These resulted from cooperation between various stakeholders. The continuous revision of guidance documents is carried out by the ATEX working parties based on their analysis of issues that continue to arise, in the course of implementing the directive.

The ATEX working parties comprise the committee, the working group of the committee, the administrative cooperation (AdCo) group and the European coordination of notified bodies group (EaNBG).

- [Fourth edition of the ATEX 2014/34/EU guidelines](#) (5 MB), issued in November 2022
 - [French translation of the Guide to application of the ATEX Directive 2014/34/EU](#) ^(EN+FR)
(Please note that this is a third-party translation and the Commission accepts no responsibility or liability for its contents)



28

ATEX – Aims



- Free movement of products within the EU on the base of harmonised requirements and procedures to establish compliance (CE conformity marking and EU Declaration of Conformity)
- Definition of essential requirements regarding safety and other relevant attributes by which a high level of protection will be ensured. These **Essential Health and Safety Requirements (EHSRs)** are listed in Annex II of the ATEX-Directive.
- Harmonised standards: The use of the harmonised standards is not mandatory but the presumption of conformity of the EHSR is given by using harmonised standards.

Area	Zone	Level of safety	ATEX category	EPL
Gas	0	very high	II 1G	Ga
	1	high	II 2G	Gb
	2	normal	II 3G	Gc
Dust	20	very high	II 1D	Da
	21	high	II 2D	Db
	22	normal	II 3D	Dc
Mining		high normal	I M1	Ma
			I M2	Mb

electrical equipment
 EN IEC 60079-0 ff for gas and dust
mechanical equipment
 EN ISO 80079-36/-37 for gas and dust



29

ATEX: conformity assessment modules



Modul (according Decision No. 768/2008/EC)	Name	Annex of Directive 2014/34/EU	Category according Directive 2014/34/EU			EU Declaration of Conformity 23.05.2019 CE
			electrical	non-electrical	Protective system	
A ^{#1}	Internal Production Control	Annex VIII	3	2 ^{#2} , M2 ^{#2} 3		
B	EU-Type Examination	Annex III	1, M1 2, M2	1, M1	1, M1	
C1	Conformity to Type	Annex VI	2, M2			
D	Production Quality Assurance	Annex IV	1, M1	1, M1	1, M1	
E	Product Quality Assurance	Annex VII	2, M2			
F	Product Verification	Annex V	1, M1	1, M1	1, M1	
G	Unit Verification	Annex IX	all categories			

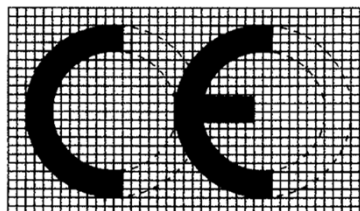
#1: Done by the manufacturer only, a Notified Body is not involved.
 #2: Documents have to be retained at a Notified Body.



30

CE conformity marking

- meaning: The product fulfils **all relevant** EU-Directives.
- Affixed by the manufacturer or his authorised representative after the conformity assessment procedure has been completed.
- The proportion after enlargement or after decrease in size have to be unchanged.
- Minimum size: 5 mm



- If a special Directive requires an identification number of a Notified Body involved in the procedure, then this number has to be put under or next to the CE logo.
- **ATTENTION:**
 - a) More than one number is possible!
 - b) Only **one** CE logo!



31

EU Declaration of Conformity

#: according ATEX Article 14 and Annex X
(not for components)

Content

- the name or identification mark and the address of the manufacturer or his authorized representative established within the Community,
- a description of the equipment,
- all relevant rules fulfilled by the equipment,
- where appropriate, the name, identification number and address of the notified body and the number of the EU-type-examination certificate,
- where appropriate, reference to the harmonised standards
- where appropriate, the standards and technical specifications which have been used
- where appropriate, references to other Community Directives which have been applied
- identification of the signatory
- date of signature



32

Manual – ATEX Annex II, 1.0.6



- The manual has to be available for each equipment or protective system – **in a language, which could be understand by the end user (according the requirements given by each member state).**
- a recapitulation of the information with which the equipment or protective system is marked, except for the serial number
- instructions for safe **putting into service, installation, use, assembling, dismantling, maintenance (servicing and emergency repair) and adjustment**
- where necessary, an indication of the danger areas in front of pressure-relief devices
- where necessary, training instructions
- limit values, e.g. electrical values, pressure, temperature
- where necessary, special conditions of use, including particulars of possible misuse which experience has shown might occur



33

Storage of the manual



- It is helpful to make the use of the manual available also during normal operation, to ensure that it will be possible to read the manual during a failure of the equipment.
- But not in this way:



34

Market access by using certificates



Statement: Ex requirements are fulfilled



Basis for market access

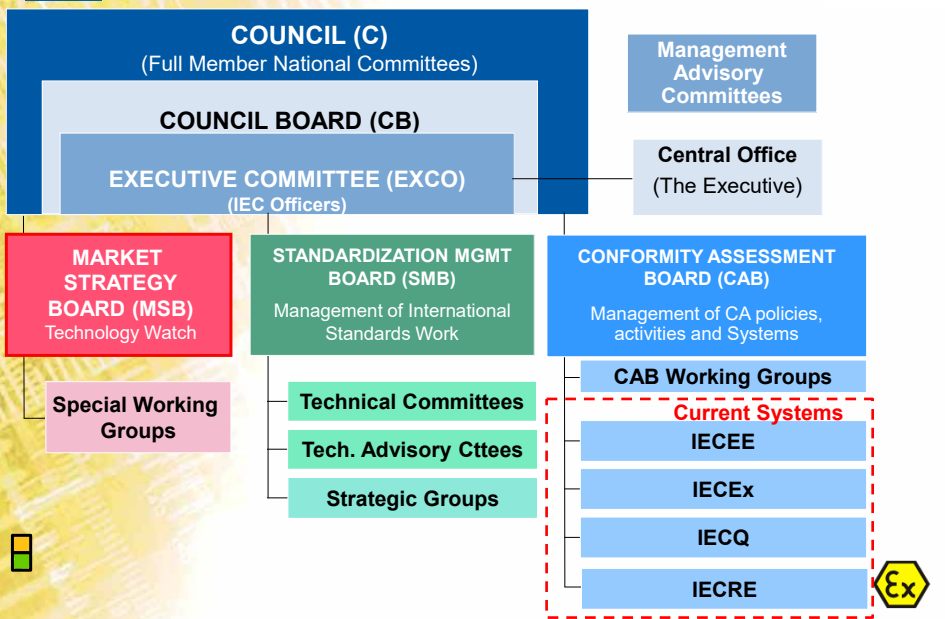
plus QAN

EU-Declaration of Conformity



35

IEC Structure



36



What is IECEx?



The single International IEC System with schemes covering certification to standards that relate to equipment and services in areas relating to explosive atmospheres, to provide an internationally accepted means of *demonstrating claimed compliance with International Standards.*

IECEx is a “Conformity Assessment Tool” providing confidence that products, services and personnel covered by an IECEx Certificate meet specified requirements of the IEC TC31 standards.

“IECEx is the international standard way of doing Ex Certification”



37



IECEx – On-line system

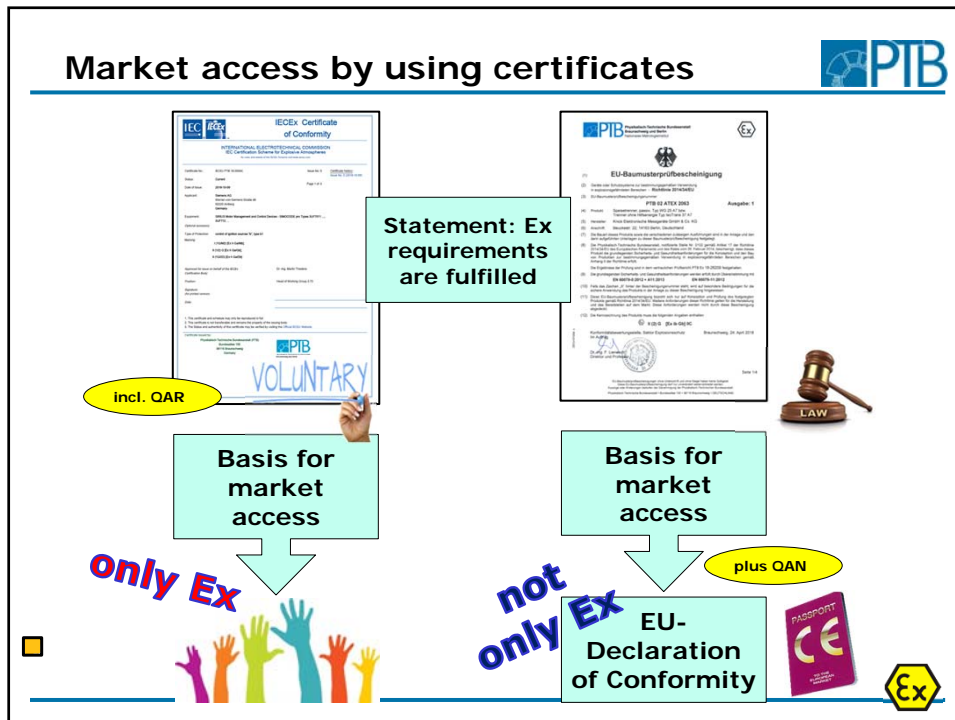


Dedicated Website
www.iecex.com

85 laboratories in 33 countries

38

Market access by using certificates



39

Basic differences: ATEX vs. IECEx



- ATEX** is a regulation system, consisting of two EU directives: the 2014/34/EU (trade directive) and the 1999/92/EC (user's directive) with access to the European market
IECEx is not a regulation system – must be accepted by local regulators such as Australia, New Zealand, Singapore, India (with some restrictions) and Israel
- ATEX** does not require conformity with standards, although “harmonized standards” may show easier the presumption of conformity with the ESHRs
IECEx is a conformity assessment scheme requiring full compliance with IEC TC 31 standards
- ATEX** does not require the accreditation of the ATEX Notified Bodies, the CBs are „notified” by notifying authorities of each member state
IECEx is a peer assessment scheme, applying the ISO Guide 65 and the ISO/IEC 17025, therefore proficiency testing programs are obligatory



40

Benefit of ATEX (1)



- A Notified Body has got the possibility to certify without using standards (= more flexibility for manufacturers).
- Manufacturers and NBs have the duty to consider the change of the state of the art / of new standard editions:
 - Products are always "up to date".
- Placing products to the European market is possible
 - for mechanical Ex Equipment of category 2 and
 - for Ex Equipment of category 3without involvement of a Notified Body.
- The responsibility of a sold product for the intended use as described in the manual has got the manufacturer for the lifetime of the product.



41

Benefit of ATEX (2)



- The market surveillance is regulated national but coordinated by an European group (ATEX ADCO).
- The EN-standards are technical identical with the IEC-standards. → On the base of an ATEX-certificate, it is easy to issue an IECEx Certificate of Conformity.
- The risk assessment is done by the manufacturer for all risks related with the product, not only the explosion hazardous.
- The LVD (Low Voltage Directive 2014/35/EU) must be fulfilled also as being part of the ATEX Directive.
(The LVD is not listed in the EU Declaration of Conformity but the applicable/used standards are listed.)



42

Key Problems with the ATEX-regulations


- Difficult to exercise the self-responsibility of manufacturers based on the requirements of the ATEX-Directive plus additional applicable Directives.
(mainly for companies coming from outside of Europe)
- Many manufacturers are not confident enough to self "certify" equipment.
- Operators tend to overstate the hazardous areas.
- Global harmonization is required by manufacturers and users:

one standard - one product - one installation concept



43

Benefit of IECEx

-  Participation is mandatory!
- Rules for the acceptance of measurements done by the manufacturer or a third party: **IECEx OD 024**
(→ can be used also for ATEX) Edition 2.0 2017-10
- Fast track procedure:
Using the ExTR to obtain local / regional certificates (such as ATEX, as EN standards are technically the same as IEC)
- The IECEx CoC for Ex Equipment of EPL Gc or Dc and for mechanical Ex Equipment of EPL Gb and Db can be used as a technical assessment to issue the EU Declaration of Conformity (related to the ATEX Directive)

but hard work:
- site assessment
- witness testing



44

MARKING



Ex marking

29.3.2014 EN Official Journal of the European Union L 96/309

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IECEX 04 © IEC:2007(E) - 9 -
Annex A
The IECEx Mark

INTERNATIONAL STANDARD
IEC 60079-0
First Ed. 2011-06

A.1 Master symbol for photographic reproduction
The IECEx Conformity Mark reproduced below may be used for photographic reproduction



Marking acc. ATEX Directive



+ equipment group + equipment category

- I M1
- I M2
- II 1 G
- II 1 D
- II 2 G
- II 2 D
- II 3 G
- II 3 D

Area	Zone	Level of safety	ATEX category	EPL
Gas	0	very high	II 1G	Ga
	1	high	II 2G	Gb
	2	normal	II 3G	Gc
Dust	20	very high	II 1D	Da
	21	high	II 2D	Db
	22	normal	II 3D	Dc
Mining		high normal	I M1	Ma
			I M2	Mb

G for Gas or
D for Dust



47

Example of marking



The identification number of the Notified Body only has to accompany the CE marking if the Body is involved in the production control phase

CE₀₁₀₂ Ex II 2 G
Ex de IIC T4 Gb
PTB 11 ATEX 1000

marking according the Type of Protections

number of the certificate






48

Example of marking of an Ex Component

The identification number of the Notified Body only has to accompany the CE marking if the Body is involved in the production control phase

marking according the Type of Protections

number of the certificate

 0102  II 2 G
Ex de IIC  Gb
PTB 11 ATEX 1000U

49

Marking of Ex Equipment

All equipment and protective systems must be marked legibly and indelibly with the following minimum particulars:

- name and address of manufacturer,
- CE conformity marking (see Annex X, point A),
- designation of series or type,
- serial number, if any,
- year of construction and
- the marking according the ATEX Directive.

Furthermore, where necessary, **the equipment must also be marked with all information essential to their safe use.**

Marking according the Type of Protections

50

VDE 0170/0171 as of 1944



a) Aufbau der Kurzzeichen für Explosionsschutz.

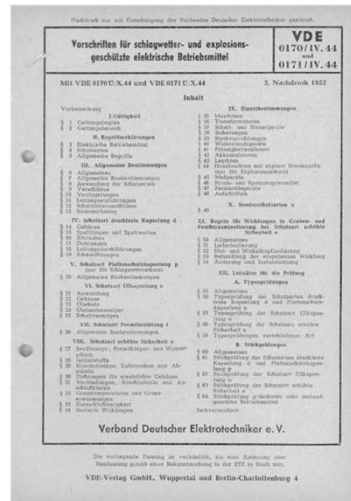
Allgemeiner Kennbuchstabe für Explosionsschutz	Ex			
Bauarten:				
Bauart druckfeste Kapselung		d		
Bauart Ölkapselung		o		
Bauart erhöhte Sicherheit		s		
Sonderbauart				
Kennziffer der Explosionsklassen			1-3	
Kennbuchstabe der Zündgruppen				A-D

b) Kennziffern der Explosionsklassen. Ermittlung nach § 42.

Kennziffern	Spaltweite, bei der ein Zünddurchschlag bei 25 mm Spaltlänge erfolgt mm
1	über 0,8
2	0,5 bis 0,8
3	unter 0,5

c) Kennbuchstaben der Zündgruppen. Ermittlung nach § 43.

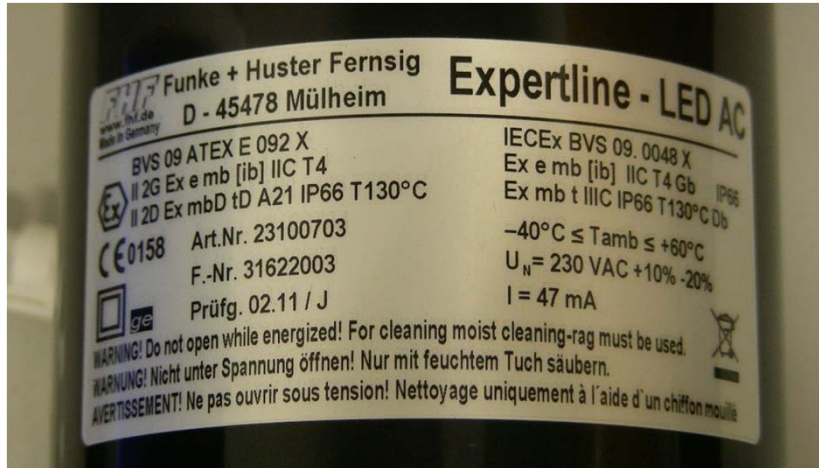
Kennbuchstaben	Zündtemperatur größer als
A	450°
B	300°
C	175°
D	120°



Old equipment = old marking: Exd D3



New marking: e.g. Ex e mb [ib] IIC T4 Gb 



53

Marking according IEC 60079-0 

e.g.

Ex db eb IIC T4 Gb

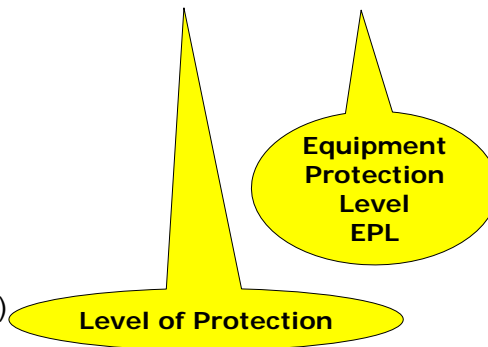
Ex symbol

Type of Protection(s)

Group

Temperature class
(not for Ex Components)

Equipment Protection Level
(EPL)



54

„Level of Protection“



- Each type of protection is sub-divided into three „Level of Protections“:
 - **a** type of protection fulfills the requirements for the use in zone 0 or zone 20
 - **b** type of protection fulfills the requirements for the use in zone 1 or zone 21
 - **c** type of protection fulfills the requirements for the use in zone 2 or zone 22



55

Classification e.g. temperature classes



Temperature class	Ignition temperature	max. Surface-temperatur of the equipment
T1	> 450 °C	≤ 450 °C
T2	> 300 °C	≤ 300 °C
T3	> 200 °C	≤ 200 °C
T4	> 135 °C	≤ 135 °C
T5	> 100 °C	≤ 100 °C
T6	> 85 °C	≤ 85 °C



56

Special markings



e.g. for gases

Ex db IIC T4 Gb

Ex db IIB+H2 T4 Gb



e.g. for multiple temperature classes

Ex db IIC T_ Gb

T4 für $-20\text{ °C} < T_{amb} < +55\text{ °C}$

T6 für $-20\text{ °C} < T_{amb} < +40\text{ °C}$



57

Marking according IEC 60079-0 / -31



e.g.

Ex tb IIIC T80 °C Db ~~IP66~~

Ex symbol

Type of Protection

Group

max. surface temperature
(not for Ex Components)

Equipment Protection Level
(EPL)



Group III subdivisions:

- IIIA: combustible flyings
- IIIB: non-conductive dust
- IIIC: conductive dust

T1	T2	T3	T4	T5	T6
450 °C	300 °C	200 °C	135 °C	100 °C	85 °C

$\Delta 10\text{ K}$

$\Delta 5\text{ K}$



58

Combination of electrical and mechanical



Question:

How shall marking be shown for equipment covered by both the electrical and non-electrical standards (IEC 60079 and ISO 80079 series)?

Answer:

Equipment which includes both an electrical part and a non-electrical part shall have combined marking. For example:

Ex db h IIA T4 Gb

Ex h tb IIIC T135 °C Db

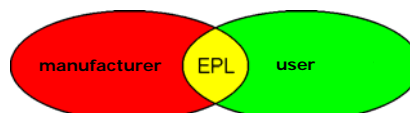
It will be clearer for the user that the combined risk of the electrical part and the non-electrical part, covered by a single certificate, has been assessed for the complete equipment, stating one EPL, one equipment Group and one temperature class for Gas and the same for Dust (but showing a maximum surface temperature instead of a temperature class). It is also noted that Ex Components are not marked with either a temperature class (Group II) or a maximum surface temperature (Group III).



59

Relation between: EPL / category / zone

EN 60079-0		Directive 2014/34/EU		EN 60079-10-X
EPL	Group	Equipment Group	Equipment Category	Zones
Ma	I	I	M1	NA
Mb			M2	
Ga	II	II	1G	0
Gb			2G	1
Gc			3G	2
Da	III	II	1D	20
Db			2D	21
Dc			3D	22



The user has to

- determine the needed EPL acc. his zone concept, and
- choose the right equipment acc. the EPL marking of the equipment...



60

STANDARDIZATION



61

International

- ITU - International Telecommunication Union



- ISO - International Organization for Standardization



- IEC - International Electrotechnical Commission



62

Europe



- ETSI - European Telecommunications Standards Institute



- CEN - European Committee for Standardization



- CENELEC (CLC) - European Committee for Electrotechnical Standardization



63

e.g. Germany



- DIN - Deutsche Institut für Normung e. V.



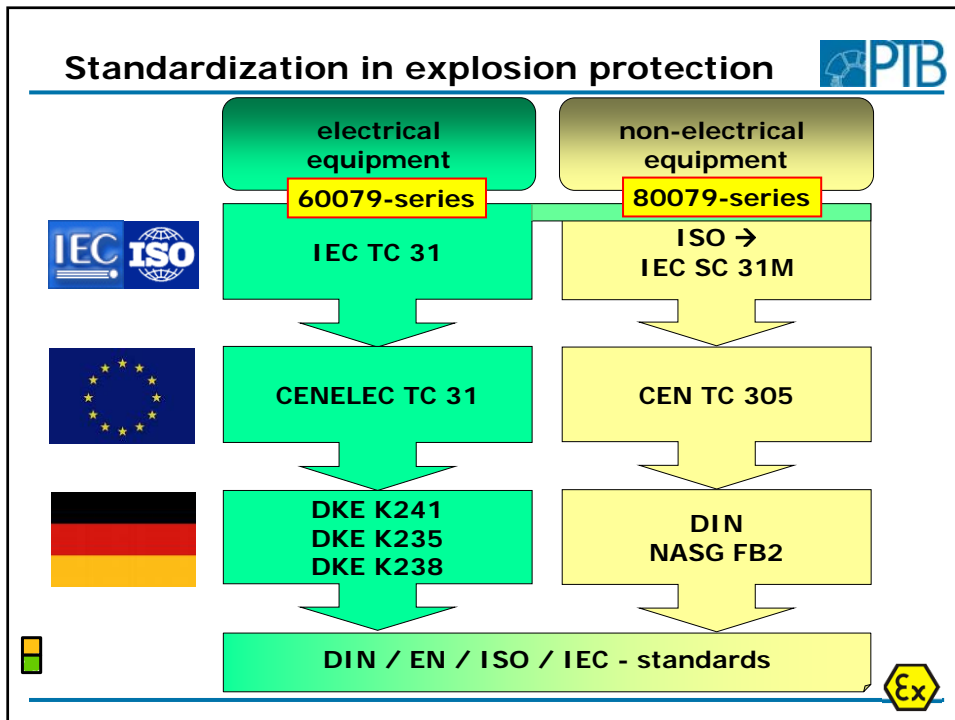
- VDE - Verband der Elektrotechnik Elektronik Informationstechnik e. V.



- DKE - Deutsche Kommission Elektrotechnik Elektronik Informationstechnik in DIN und VDE



64



65

IEC TC 31 Equipment for explosive atmospheres

Mrz 2022

TC 31 Scope

To prepare and maintain international standards relating to equipment for use where there is a hazard due to the possible presence of explosive atmospheres of gases, vapours, mists or combustible dusts

- Officers:
 - Chair: Martin Thedens (DE)
 - Vice-Chair 1: Jason Wigg (AU)
 - Vice-Chair 2: Brad Zimmerman (USA)
 - Secretary: Tom Stack (UK)
 - IEC Officer: Stephen Dutnall (UK)
 - Past Chair: Mark Coppler (USA)

**ESTABLISHED
1948**

66



Info Resources - TC 31 Dashboard

International Electrotechnical Commission
International Standards and Conformity Assessment for all electrical, electronic and related technologies

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TC 31 Equipment for explosive atmospheres

Scope | Structure | Projects / Publications | Documents | Votes | Meetings | Collaboration Tools

Work programme | Publications | Stability Dates | Project files

TC 31 Work programme (19)

Project Reference	Document Reference	Init. Date	Current Stage	Next Stage	Working Group	Project Leader	Fcst. Publ. Date
IEC 60079-0 Ed. 7.0 Explosive atmospheres - Part 0 Equipment - General requirements	31/1197/CD 1455 kB	2014-11	TCO 2015-05	ASCO 2015-09	WG 22	William Lawrence	2017-11
IEC 60079-13 Ed. 2.0 Explosive atmospheres - Part 13: Equipment protection by pressurized room "p" and artificially ventilated room "v"	31/1126/CDV 375 kB 488 kB	2013-12	ADIS 2014-11	DEC 2015-05	MT 60079-13	Dale El-Tawry	2015-10

- <http://www.iec.ch/tc31>
- • All website lists are dynamic information

67

SC and WG of IEC TC 31



Jul 2022

Subcommittees

SC 31G	Intrinsically-safe apparatus
SC 31J	Classification of hazardous areas and installation requirements
SC 31M	Non-electrical equipment and protective systems for explosive atmospheres

Working Groups

WG 22	Responsible for MT 60079-0, maintenance of IEC 60050.426 and other specific tasks assigned by TC 31
WG 27	Electric Machines (motors and generators)
WG 28	Dusts
WG 30	Equipment process sealing
WG 31	Gas/dust hybrid mixtures
WG 32	Creepage and clearance distances
WG 37	Electrochemical cells and batteries and electrochemical capacitors in equipment for explosive atmospheres
WG 39	Adverse service conditions
WG 40	Luminaires
WG 42	Safety Devices Related to Explosion Risk
WG 43	High voltage
WG 47	Gc equipment
WG 54	Reference point for TC 31 standards as a basic safety publication



68

other teams of IEC TC 31



Jul 2022

Project Team	
PT 60079-44	Explosive atmospheres – Personal Competence
PT 60079-45	Electrical Ignition Systems for Internal Combustion Engines
Maintenance Teams	
MT 60079-1	Maintenance of IEC 60079-1
MT 60079-2	Maintenance of IEC 60079-2
MT 60079-7	Maintenance of IEC 60079-7
MT 60079-15	Maintenance of IEC 60079-15
MT 60079-18	Maintenance of IEC 60079-18
MT 60079-26	Maintenance of IEC 60079-26
MT 60079-28	Risk of ignition by radiation from optical equipment
MT 60079-29	Maintenance of IEC 60079-29 series
MT 60079-30	Maintenance for IEC 60079-30-1 and IEC 60079-30-2
MT 60079-31	Maintenance of IEC 60079-31
MT 60079-33	Maintenance of IEC 60079-33
MT 60079-35	Maintenance of IEC 60079-35-1 and IEC 60079-35-2
MT 60079-46	Explosive atmospheres - Equipment assemblies



69

other teams of IEC TC 31



Jul 2022

Joint Working Groups	
JWG 29	with TC 101 - Electrostatics linked to TC 101
JWG 45	Toxic gas detection for workplace atmospheres linked to ISO/TC 146/SC 2
JWG 50	JWG 50 standards coordination with IECEx linked to IECEx
Advisory Groups	
AG 36	Chair's Advisory Group
AG 49	Portable and personal equipment
AG 55	Specific Conditions of Use
Ad-Hoc Groups	
ahG 56	Different dielectric strength and insulation resistance tests in 60079-5, 60079-7, 60079-11, 60079-15, and 60079-18
ahG 57	Alignment of sealing concepts in IEC 60079-1, IEC 60079-2, IEC 60079-26, and IEC TS 60079-40
ahG 58	"ec" Ex Equipment enclosures
Joint Maintenance Teams	
JMT 62784	Particular requirements for vacuum cleaners and dust extractors providing equipment protection level Dc linked to SC 61J
Editing Group	
EG 52	Editing Group



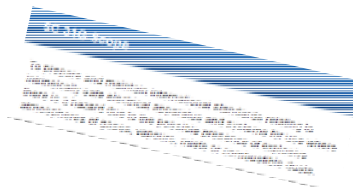
70

IEC SC 31G



Aug 2020

- Task:
 - Intrinsically-safe apparatus
- Officers:
 - Chair: Günter Gabiel (DE)
 - Sekretär: Nick Ludlam (UK)
 - IEC Officer: Stephen Dutnall (UK)
- Plenary Meetings of SC 31G
 - Oktober 2016 in Frankfurt (DE)
 - Oktober 2018 in Busan (Korea)
 - November 2022 in San Francisco (USA)



Working Groups	
WG 4	Spark Test Apparatus
Project Teams	
PT 60079-30	IEC 60079-30
PT 60079-47	Explosive atmospheres - Part 47: Equipment protection by 2-Wire Intrinsically Safe Ethernet concept (2-WISE)
Maintenance Teams	
MT 60079-11	Maintenance of IEC 60079-11
MT 60079-25	Maintenance of IEC 60079-25



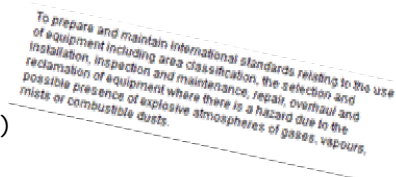
71

IEC SC 31J



Nov 2022

- Task:
 - Classification of hazardous areas and installation requirements
- Officers:
 - Chair: Neil Dennis (Australien)
 - Sekretär: Marino Kelava (Kroatien)
 - IEC Officer: Stephen Dutnall (UK)
- Plenary Meetings of SC 31J
 - Oktober 2019 in Nanyang (CN)
 - Oktober 2022 in San Francisco (USA)



Label	Title
Working Groups	
WG 1	Electrical installations design, selection, erection and inspection in underground mines susceptible to firedamp
WG 2	Portable and personal equipment
Maintenance Teams	
MT 60079-10-1	Maintenance of IEC 60079-10-1
MT 60079-10-2	Maintenance of IEC 60079-10-2
MT 60079-13	Maintenance of IEC 60079-13 and IEC 60079-16
MT 60079-14	Maintenance of IEC 60079-14
MT 60079-17	Maintenance of IEC 60079-17
MT 60079-19	Maintenance of IEC 60079-19



72

IEC SC 31M



April 2022

- Task:
 - Non-electrical equipment and protective systems for explosive atmospheres
- Officers:
 - Chair: Thierry Houeix (FR)
 - Sekretär: Anke Sachtleben (DE)
 - IEC Officer: Stephen Dutton (UK)
- Plenary Meetings of SC 31M
 - Oktober 2016 in Frankfurt (DE)
 - Oktober 2017 in Wladiwostok (RU)
 - Oktober 2018 in Busan (Korea)
 - Oktober 2019 in Nanyang (CN)
 - Oktober 2021 via ZOOM (online)
 - Oktober 2022 in San Francisco (USA)



73

SC 31M Scope and structure



April 2022

To prepare and maintain international standards relating to non-electrical equipment and protective systems for use where there is a hazard due to the possible presence of explosive atmospheres of gases, vapours, mists or combustible dusts

Note: For the purposes of this sub-committee non-electrical equipment is defined as "equipment which can achieve its intended function mechanically". For the purposes of this sub-committee, 'Protective system' is defined as devices other than components of the equipment which are intended to halt incipient explosions immediately and/or to limit the effective range of an explosion.

Working Groups

- WG 1 Non-electrical equipment (ISO 80079-36 und 37)
- WG 2 Performance requirements, test methods and limits for use for flame arresters (ISO 80079-49)

Project Teams

- PT 80079-41 Reciprocating internal combustion engines
- PT 80079-50 Explosion venting devices

Maintenance Teams

- MT 80079-20-1 Material characteristics for gas and vapour classification - Test methods and data
- MT 80079-20-2 Material characteristics - Combustible dusts test methods
- MT 80079-34 Application of quality systems for electrical and non-electrical equipment
- MT 80079-38 Equipment and components in explosive atmospheres in underground mines



74



IEC Publications – International Standard (IS)

A document, established by consensus and approved by IEC, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context



≥ 2/3 vote in favour by TC/SC P-members
≤ 1/4 negative vote from all IEC members voting



75



IEC Publications – Technical Specification (TS)

Published when:

- The subject is still under technical development
- Insufficient consensus for approval of an IS is available
- There is doubt that consensus has been achieved
- Other reason precluding immediate publication of an IS

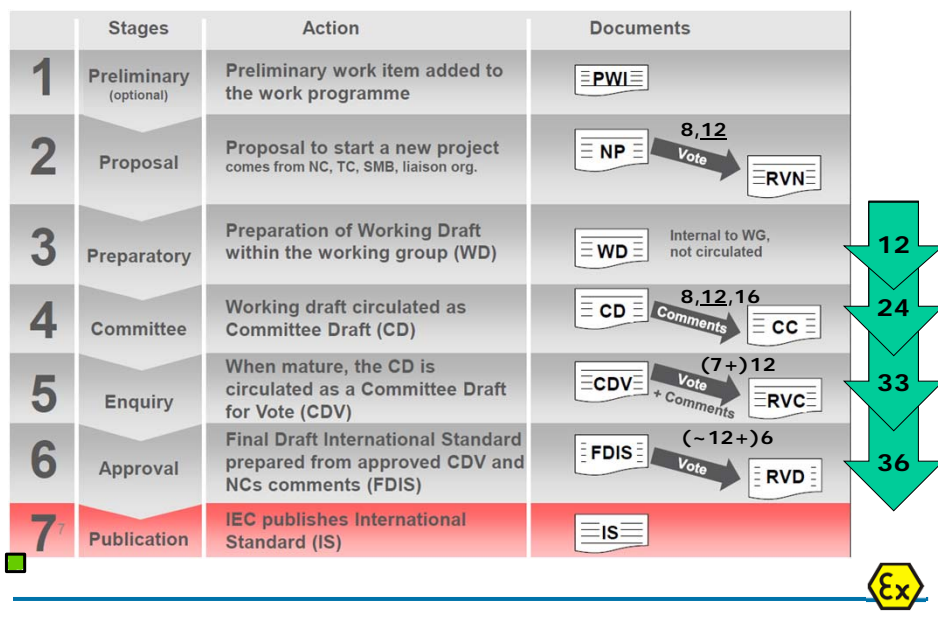


≥ 2/3 vote in favour by TC/SC P-members voting



76

IEC Standard – stages of development



77

Projects as CDV or FDIS



Project Reference	Document Reference	Init. Date	Current Stage	Next Stage	Working Group	Project Leader	Fcst. Publ. Date
IEC 60079-2 ED7 Explosive atmospheres - Part 2: Equipment protection by pressurized enclosure "p"	31/1636/CDV 	2018-07	CCDV 2022-09	PRVC 2022-11	MT 60079-2	Ryan Brownlee	2023-12
IEC 60079-11 ED7 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"	31G/352/FDIS 	2017-05	CFDIS 2022-10	PRVD 2022-11	MT 60079-11	Colin Cameron	2023-02
ISO/IEC 80079-49 ED1 Flame arresters — Performance requirements, test methods and limits for use	31M/173/CDV 	2021-04	CCDV 2022-09	PRVC 2022-11	WG 2	Graham P Ackroyd	2023-12

- Projects in review:
 - IEC 60079-0
 - IEC 60079-1
 - IEC 60079-7
 - Working on „Specific Conditions of Use“
 - Working on a „Basic Safety Publication“



78