ExFórum 2023 – online

2023 július 24.

EX FÓRUM

ATEX Direktíva vs Magyarország

Követelmények a gyártóval szemben – ATEX 114 – 2014/34/EU	**Követelmények az üzemeltetővel szemben – ATEX 137 – 99/92/EG**
Vonatkozó rendelet: 35/2016 (IX.27) NGM	Vonatkozó rendelet: 3/2003 (III.11) FMM ESZCSM
Alkalmazási területek definiálása, kategóriához hozzárendelés	Zónabesorolás, megfelelő berendezés kiválasztása
Kategória **1**: G/D	**0/20-as Zóna**
Kategória **2**: G/D	**1/21-es Zóna**
Kategória **3**: G/D	**2/22-es Zóna**
Vonatkozó szabványok betartása	Szerelési, telepítési utasítások betartása
Készülékek tanúsítása és jelölése a gáz- és porrobbanásveszélynek megfelelően G ill. D	Robbanásvédelmi dokumentáció készítése: zónabesorolás / zónatérkép készítése, gyújtóforrás analizis, felülvizsgálat, munkaköri kockázatértékelés

Ex vs Magyarország

Létesítés	Üzemeltetés
OKF követelményrendszere	MV Tv követelményrendszere
96 évi XXXI Tv, 54/2014 BM, 22/2009 ÖM,	1993. évi XCIII. Törvény, 3/2003 FMM ESZCSM
Fokozottan tűz és robbanásveszélyes gép, eszköz, berendezés	*A potenciálisan robbanásveszélyes környezetben levő munkahelyek minimális munkavédelmi követelményeinek*
Minden tűz- vagy robbanásveszélyes technológia	
0/20-as Zóna	0/20-as Zóna
1/21-es Zóna	1/21-es Zóna
2/22-es Zóna	2/22-es Zóna
Rb TvMI	Robbanásvédelmi dokumentáció
Robbanásvédelmi tervfejezet Zónabesorolás dokumentáció, Tűzvédelmi Megfelelőségi Tanúsítvány, Tűzvédelmi célú vizsgálat	

Potenciálisan robbanás-veszélyes ipari területek

Robbanásveszélyes munkaterületek mint pl:

- Vegyi üzemek: Gyúlékony gázok, folyadékok és szilárd anyagok kerülnek átalakításra és feldolgozásra, amely munkafolyamatok alatt robbanékony elegy keletkezhet.
- Gázcsőhálózatok és gázelosztók: Földgázszivárgásnál előfordulhat robbanás, ha a gáz levegővel keveredik.
- Repülőterek: Itt főként az üzemanyagok miatti veszélyes környezetet kell meggátolni
- Erőművek: A darabos szén levegővel érintkezve nem okoz robbanást, de bizonyos műveletek folytán – köszörülés, szállítás, szárítás – porrá alakulva a szénpor már robbanásveszélyes.
- Kikötők: A kikötőkben áttöltött cseppfolyós gázok, üzemanyagok vagy más robbanásveszélyes anyagok lehetnek.
- Festőüzemek: A porlasztott festék robbanékony elegyet képezhet a levegővel.
- Olajfinomítók: A kőolaj finomítása során az olaj gyúlékony természete és a tevékenység során olajgőz felszabadulása okozhat problémát.
- Vízkezelő berendezések és tároló tartályok: A tartályokban tárolt anyagoktól függően előfordulhat robbanásveszély.
- Őrlőberendezések: A szilárd halmazállapotú anyagokat por állagúvá alakítják, itt is a por játszik közre a robbanáselleni védelemben.
- Cementgyárak: A cementgyártás folyamatában a cement por elkerülése lehetetlen, de a robbanásveszélyes helyzetek megelőzhetőek.
- Élelmiszerüzemek: Robbanásveszélyes környezet jöhet létre az élelmiszeriparban az alapanyagok (cukor, liszt, stb.) raktározása, szűrése valamint raktározása során.
- Műanyag granulátum gyártó üzemek: A granulátum olvasztással, hő hatására kap végleges formát, hő hatására gázok keletkeznek, és azok teszik robbanásveszélyessé a közeget.
- Fafeldolgozók: A fával történő munkálatok során (csiszolás, vágás, fűrészelés) fűrészpor és por keletkezik, ami szintén veszélyes elegyet alkot a levegővel érintkezve

35/2016 NGM rendelet hatálya alá nem tartozik:

- **gyógyászati célú környezetben** való használatra szánt gyógyászati eszközök;
- olyan felszerelések és védelmi rendszerek, amelyek esetében a robbanásveszély kizárólag **robbanóanyagok vagy instabil vegyi anyagok** jelenléte következtében alakul ki;
- felszerelések, amelyeket olyan **háztartási** és nem kereskedelmi környezetben történő használatra szántak, amelyekben robbanásveszélyes légkör **csak ritkán és kizárólag fűtőgáz véletlen szivárgása következtében alakulhat ki**;
- az egyéni védőeszközökre vonatkozó tagállami jogszabályok közelítéséről szóló,1989. december 21-i 89/686/EGK tanácsi irányelv hatálya alá tartozó **egyéni védőeszközök**;
- **tengerjáró hajók és mozgó tengeri létesítmények** az ilyen hajók vagy létesítmények fedélzetére telepített felszerelésekkel együtt;
- **szállítóeszközök**, azaz olyan járművek és azok pótkocsijai, amelyeket kizárólag személyszállítási célokra használnak a légi, közúti, vasúti vagy vízi közlekedési hálózatokban, valamint az olyan szállítóeszközök, amelyeket áruk légi, közúti, vasúti vagy vízi közlekedési hálózatokban való szállítására terveztek. **A robbanásveszélyes légkörben való használatra szánt járművek ennek az irányelvnek a hatálya alól nem vonhatók ki**;
- az Európai Unió működéséről szóló szerződés 346. cikke (1) bekezdésének b) pontjában említett felszerelések. [*haditechnika*]

SECTIONS

FÓRUM ONLINE

APPENDIXES

Reference publications

C22.2 No. 60079-0:19
Explosive atmospheres — Part 0: Equipment — General requirements

CAN/CSA-C22.2 No. 60079-1:16
Explosive atmospheres — Part 1: Equipment protection by flameproof enclosures "d"

CAN/CSA-C22.2 No. 60079-2:16
Explosive atmospheres — Part 2: Equipment protection by pressurized enclosure "p"

CAN/CSA-C22.2 No. 60079-5:16
Explosive atmospheres — Part 5: Equipment protection by powder filling "q"

CAN/CSA-C22.2 No. 60079-6:17
Explosive atmospheres — Part 6: Equipment protection by liquid immersion "o"

CAN/CSA-C22.2 No. 60079-7:16
Explosive atmospheres — Part 7: Equipment protection by increased safety "e"

CAN/CSA-C22.2 No. 60079-11:14 (R2018)
Explosive atmospheres — Part 11: Equipment protection by intrinsic safety "i"

CAN/CSA-C22.2 No. 60079-15:18
Explosive atmospheres — Part 15: Equipment protection by type of protection "n"

CAN/CSA-C22.2 No. 60079-18:16
Explosive atmospheres — Part 18: Equipment protection by encapsulation "m"

CAN/CSA-C22.2 No. 60079-25:14 (R2018)
Explosive atmospheres — Part 25: Intrinsically safe electrical systems

CAN/CSA-C22.2 No. 60079-26:16
Explosive atmospheres — Part 26: Equipment with equipment protection level (EPL) Ga

CAN/CSA-C22.2 No. 60079-28:16
Explosive atmospheres — Part 28: Protection of equipment and transmission systems using optical radiation

CAN/CSA-C22.2 No. 60079-29-1:17
Explosive atmospheres — Part 29-1: Gas detectors — Performance requirements of detectors for flammable gases

CAN/CSA-C22.2 No. 60079-30-1:17
Explosive atmospheres — Part 30-1: Electrical resistance trace heating — General and testing requirements

ONLINE

6184-1:1985
Explosion protection systems — Part 1: Determination of explosion indices of combustible dusts in air

ISO/IEC (International Organization for Standardization/International Electrotechnical Commission)

FDIS 80079-20-1:2017
Explosive atmospheres — Part 20-1: Material characteristics for gas and vapour classification — Test methods and data

80079-20-2:2016
Explosive atmospheres — Part 20-2: Material characteristics — Combustible dusts test methods

C60079-13:19
Explosive atmospheres — Part 13: Equipment protection by pressurized room "p" and artificially ventilated room "v"

CAN/CSA-C60079-30-2:17
Explosive atmospheres — Part 30-2: Electrical resistance trace heating — Application guide for design, installation and maintenance

ANSI/ISA (American National Standards Institute/International Society of Automation)

12.01.01-2013
Definitions and Information Pertaining to Electrical Equipment in Hazardous (Classified) Locations

12.27.01-2011
Requirements for Process Sealing Between Electrical Systems and Flammable or Combustible Process Fluids

60079-10-1 (12.24.01)-2014
Explosive Atmospheres — Part 10-1: Classification of areas — Explosive gas atmospheres

RP 12.06.01-2003
Recommended Practice for Wiring Methods for Hazardous (Classified) Locations — Instrumentation — Part 1: Intrinsic Safety

Reference publications

RP 500 (2012)
Recommended Practice for Classification of Locations for Electrical Installations at Petroleum Facilities Classified as Class I, Division 1 and Division 2

RP 505 (2018)
Recommended Practice for Classification of Locations for Electrical Installations at Petroleum Facilities Classified as Class I, Zone 0, Zone 1, and Zone 2

RP 2216 (2003; R2015)
Ignition Risk of Hydrocarbon Liquids and Vapors by Hot Surfaces in the Open Air

DIN [Deutsches Institut für Normung (German Institute for Standardisation)]
DIN IEC 60079-20-2 (withdrawn)
Explosive Atmospheres — Part 20-2: Material Characteristics — Combustible Dusts Test Methods

EI (Energy Institute)
15 (2015)
Model code of safe practice Part 15: Area classification code for installations handling flammable fluids

IEC (International Electrotechnical Commission)
60079-10-1:2015
Explosive atmospheres — Part 10-1: Classification of areas — Explosive gas atmospheres

60079-10-2:2015
Explosive atmospheres — Part 10-2: Classification of areas — Explosive dust atmospheres

Reference publications

60079-14:2013
Explosive atmospheres — Part 14: Electrical installations design, selection and erection

60079-17:2013
Explosive atmospheres — Part 17: Electrical installations inspection and maintenance

60079-19:2019
Explosive atmospheres — Part 19: Equipment repair, overhaul and reclamation

60079-20-1:2010
Explosive atmospheres — Part 20-1: Material characteristics for gas and vapour classification — Test methods and data

60079-25:2020
Explosive atmospheres — Part 25: Intrinsically safe electrical systems

60079-26:2014
Explosive atmospheres — Part 26: Equipment with equipment protection level (EPL) Ga

60079-29-2:2015
Explosive atmospheres — Part 29-2: Gas detectors — Selection, installation, use and maintenance of detectors for flammable gases and oxygen

60079-29-3:2014
Explosive atmospheres — Part 29-3: Gas detectors — Guidance on functional safety of fixed gas detection systems

60300 Series
Dependability management

60364-1:2005
Low-voltage electrical installations — Part 1: Fundamental principles, assessment of general characteristics, definitions

61010-1:2010
Safety requirements for electrical equipment for measurement, control, and laboratory use — Part 1: General requirements

GUIDE 117 (edition 1.0, 2010-10-13)
Electrotechnical equipment — Temperatures of touchable hot surfaces

TS 60079-40 (2015)
Explosive atmospheres — Part 40: Requirements for process sealing between flammable process fluids and electrical systems

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IEC/IEEE (International Electrotechnical Commission/Institute of Electrical and Electronics Engineers)

60079-30-1:2015
Explosive atmospheres — Part 30-1: Electrical resistance trace heating — General and testing requirements

60079-30-2:2015
Explosive atmospheres — Part 30-2: Electrical resistance trace heating — Application guide for design, installation and maintenance

ISA (International Society of Automation)

12.04.04-2012
Pressurized Enclosures

12.10-1988
Area Classification in Hazardous (Classified) Dust Locations

12.12.03-2011
Standard for Portable Electronic Products Suitable for Use in Class I and II, Division 2, Class I Zone 2 and Class III, Division 1 and 2 Hazardous (Classified) Locations

12.13.04:2007 (R2014)
Performance Requirements for Open Path Combustible Gas Detectors

12.20.01-2009 (R2014)
General Requirements for Electrical Ignition Systems for Internal Combustion Engines in Class I, Division 2 or Zone 2, Hazardous (Classified) Locations

Magison, Ernest. *Electrical Instruments in Hazardous Locations,* 4th edition, 2007

RP12.02.02-1996
Recommendations for the Preparation, Content, and Organization of Intrinsic Safety Control Drawings

TR12.2-1995
Intrinsically Safe System Assessment Using the Entity Concept

TR12.12.04:2011
Electrical Equipment in a Class 1, Division 2/Zone 2 Hazardous Location

TR12.13.01-1999 (R2013)
Flammability Characteristics of Combustible Gases and Vapors

TR12.13.03-2009
Guide for Combustible Gas Detection as a Method of Protection

TR12.21.01:2004 (R2013)
Use of Fiber Optic Systems in Class 1 Hazardous (classified) Locations

Reference publications

6184-1:1985
Explosion protection systems — Part 1: Determination of explosion indices of combustible dusts in air

ISO/IEC (International Organization for Standardization/International Electrotechnical Commission)

FDIS 80079-20-1:2017
Explosive atmospheres — Part 20-1: Material characteristics for gas and vapour classification — Test methods and data

80079-20-2:2016
Explosive atmospheres — Part 20-2: Material characteristics — Combustible dusts test methods

68-2018
Standard on Explosion Protection by Deflagration Venting

77-2019
Recommended Practice on Static Electricity

91-2020
Standard for Exhaust Systems for Air Conveying of Vapors, Gases, Mists, and Noncombustible Particulate Solids

96-2021
Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations

484-2019
Standard for Combustible Metals

496-2021
Standard for Purged and Pressurized Enclosures for Electrical Equipment

497-2021
Recommended Practice for the Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas

499-2021
Recommended Practice for the Classification of Combustible Dusts and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas

505-2018
Fire Safety Standard for Powered Industrial Trucks Including Type Designations, Areas of Use, Conversions, Maintenance, and Operation

654-2020
Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids

655-2017
Standard for Prevention of Sulfur Fires and Explosions

664-2020
Standard for the Prevention of Fires and Explosions in Wood Processing and Woodworking Facilities

820-2020
Standard for Fire Protection in Wastewater Treatment and Collection Facilities

HAZ-10
Fire Protection Guide to Hazardous Materials, 2010

Ex FÓRUM ONLINE

Reference publications

UL (Underwriters Laboratories)

1836
Outline of Investigation for Electric Motors and Generators for Use in Class I, Division 2, Class I, Zone 2, Class II, Division 2 and Zone 22 Hazardous (Classified) Locations

122701 (2017)
Standard for Requirements for Process Sealing Between Electrical Systems and Flammable or Combustible Process Fluids

Appendix L — Engineering guidelines for determining hazardous area classifications

L3 Stakeholders

This Appendix is focused on engineering and design requirements essential for proper area classification but also identifies requirements that affect other stakeholders, such as original equipment manufacturers, installers, inspectors, and operations, safety, and maintenance personnel. There are also other stakeholders, such as insurers or regulatory representatives responsible for worker safety or code enforcement, who may be impacted by an area classification or require access to documentation related to it.

L4 Factors used to determine an area classification

Electrical designs and installations in hazardous locations are based on the area classifications for a facility. The factors to be taken into account in defining an area classification include the following:

a) the characteristics of the fluids being handled (e.g., chemical and physical properties such as flash point, molar composition, liquid density, vapour specific gravity, lower flammable limit (LFL), upper flammable limit (UFL), mole weight);
b) operating pressures, temperatures, flow rates, and volumes;
c) the design and maintenance of the compression, pumping, piping, valve, and containment systems for handling the fluids;
d) the minimum explosible concentration of dusts;
e) dust confinement systems;
f) housekeeping and humidity;
g) building design and dimensions;
h) heating and ventilation systems in buildings;
i) the site layout and proximity to other structures;
j) the type of safety systems available (e.g., gas detection);

Appendix L — Engineering guidelines for determining hazardous area classifications

k) outdoor terrain and topographical features (e.g., berms, low spots, slopes, vegetation);
l) local temperature and wind conditions;
m) the remoteness of an installation (i.e., the capacity to detect and/or respond to a release through on-site personnel or remote monitoring);
n) operating and maintenance practices and training;
o) the operating, maintenance, and failure history of the facility; and
p) facility modifications resulting from site operations or maintenance that could impact the area classification boundaries.

L5 Multidisciplinary involvement

Many of the factors given as examples in Clause L4 are best understood by disciplines other than electrical engineers and designers. These disciplines may include

a) process engineers;
b) heating and ventilation engineers;
c) air quality scientists or engineers;
d) operations specialists;
e) fire and safety specialists;
f) maintenance personnel; and
g) instrumentation engineers.

L6 Responsibility for training and competence

The engineering profession is responsible for determining what levels of competence are required for a given discipline or activity. There is currently no regulated certification requirement verifying competence for an engineer in order to perform an area classification study. There is, nonetheless, a professional responsibility on the part of the practising engineer to be knowledgeable and competent in practising the profession, hence in performing an area classification study.

The following are various approaches that can be taken to develop competence in performing area classification studies:

a) taking industry-sponsored training on area classification techniques;
b) certification to IECEx OD 504, *IEC System for Certification to Standards relating to Equipment for Use in Explosive Atmospheres (IECEx System) — IECEx Scheme for Certification of Personnel Competence for Explosive Atmospheres — Specification for Units of Competence Assessment Outcomes*;
c) participation in codes and Standards development organizations (SDOs);
d) mentorship by more experienced engineers;
e) familiarization with codes and standards;
f) on-the-job performance of area classification studies (under appropriate supervision), starting with simple installations and moving towards more complex installations;
g) reviewing existing area classification studies;
h) reviewing incident and failure histories;
i) participating in investigations and corrective or remedial projects; and
j) developing and delivering area classification training programs.

Appendix L — Engineering guidelines for determining hazardous area classifications

L7 Engineering authentication

Where an engineer is involved, all area classification drawings and studies should be traceable to a registered professional engineer working under a permit to practise. Traceability and authentication requirements are governed by the respective jurisdiction, but typically this means that drawings and reports are signed and stamped, or signed with the title P. Eng. (or equivalent).

L8 Engineering quality controls

In addition to competency and training of the individual professional engineer, the engineering project structure should also include peer or supervisory reviews of area classification documents.

L9 Documentation and records

Area classification drawings and supporting studies should be maintained on file with the owner/operator of the facility for the life of the facility and any additional legally required time period thereafter. The professional engineer and/or engineering company that prepared the reports and drawings should also maintain those records in accordance with any regulatory and/or contractually required time periods. These records should be accessible, upon request, by any affected stakeholder.

In order to ensure accessibility and facilitate retrieval, all relevant information should be recorded on the area classification drawing itself (e.g., results of fugitive emissions studies with date or revision number, minimum ventilation rates, rationales, process conditions, and any other important comments). See also Clause L12.

Company-specific operating and safety procedures may require on-site access to, or posting of, area classification drawings for convenient reference. Such drawings should, therefore, be well organized, uncluttered, and easy to understand.

L10 Management of change

Area classification studies and drawings are based on certain assumptions and conditions. If process or operating conditions change (e.g., as a result of plant expansions, equipment relocations, changes in inlet or process streams, changes in operating pressures, changes in operating procedures, alteration of building ventilation, or changes in site grading), or if conditions are not maintained (e.g., gas detection is not kept in proper working order), then the area classification may be rendered invalid. Depending upon the exact nature of the changes, this may lead to an unsafe condition. A management-of-change process should be put in place to ensure that the area classification remains valid and is adhered to at all times throughout the life of a facility.

A management-of-change process may require changes such as the following:

a) revisions to area classification studies and drawings;
b) modifications of designs and installations; and
c) changes to procedures.

All documentation sets should be updated, and all stakeholders should be notified of the changes and potential impacts.

Appropriate engineering review and sign-off should be part of a management-of-change process. Engineering accountability is present not only for the initial project design, but also throughout the life of a facility.

L11 Communication responsibilities

As noted, area classification studies are based on various conditions and assumptions that must be valid if the determination of area classification is to be valid. At the outset of a project, the engineer responsible should communicate these conditions and assumptions to all parties (e.g., construction, inspection, operating, and maintenance personnel) responsible for ensuring that these requirements are met during the initial installation and throughout the life of the facility. The following are examples of methods of communication and design approaches:

a) including area classification studies in project data books;
b) including appropriate notes on drawings;
c) holding training sessions;
d) requiring various warning signs in and around classified areas;
e) requiring the posting of area classification drawings and/or studies that present key information;
f) requiring classification signs for building interiors;
g) requiring fencing or barriers to restrict access to the site;
h) requiring equipment that will help to ensure conformance (e.g., travel stops on the louvres of dust collection or confinement systems); and
i) mandatory housekeeping procedures.

L13 Inspection requirements

Field and shop inspectors should be provided with the engineered area classification studies and drawings applicable to the facility to be inspected.

További információk

- ATEX Guideline
  - *Magyarul:* https://www.exnb.eu/hu/2014-34-eu-atex-utmutato
- Rb TVMI
  - *Angolul:* https://www.exnb.eu/hu/magyar-tuzvedelmi-muszaki-iranyelv
- ATEX honlap: https://single-market-economy.ec.europa.eu/sectors/mechanical-engineering/equipment-potentially-explosive-atmospheres-atex_en

További információk

- ExFórum webinar anyagok: http://exforum.hu/#OnlinEx
- Blog: https://exprofessional.com/
- Podcast:
  - *ANCHOR: https://lnkd.in/dX_6S77z*
  - *APPLE Podcast: https://lnkd.in/dhBNDa5U*
  - *SPOTIFY: https://lnkd.in/dBEiF-Tw*

Ex professional Podcast

Exprofessional.com PODCAST formájában a mai naptól az alábbi linkeken elérhető.

- ANCHOR podcast: - https://lnkd.in/dX_6S77z
- APPLE podcast: - https://lnkd.in/dhBNDa5U
- SPOTIFY podcast: - https://lnkd.in/dBEiF-Tw

Robbanásbiztonság-technika a mindennapjaink része.

Gőzök, gázok, porok - melyek robbanásveszélyesek - szerepelnek gyártásban, alkalmazásban, fejlesztésben, ahol a teljes élettartam alatti robbanáselleni védelmet biztosítani és igazolni kell tudni. A PODCAST ebbe a világba ad betekintést. Olajipar, gázipar, megújuló energiák, környezetvédelem, bioenergia, atomenergia, vegyipar, gyógyszeripar, szennyvízkezelés, hidrogén, alkoholok, élelmiszeripar, autó- és akkumulátorgyártás - mind idetartoznak.

Egy fontos: itt a funkció elkezdése előtt igazolni kell tudni, hogy robbanásbiztosan csinálod.

Célunk: PODCAST formájában megszólaltassuk az ipar szereplőit a saját élményeikről, tapasztalataikról, hogy azok megosztásra kerülhessenek eképp is.

Minden feliratkozónak köszönet előre is :) egyenlőre havi egyszeri megjelenéssel tervezünk és magyarul :)

#exprofessionalpodcast #exprofessional ExProfessional.com #exisourpassion

Kérdés és válaszok

ExFórum 2023 – online

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veress@exprofessional.com

Minden héten hétfőn 14.00kor

http://exforum.hu/#OnlinEx

ONLINE