PMA

ABB

PRODUCT CATALOGUE

PMA Ex-System

ATEX-IECEx approved cable protection system

ABB provides ATEX-IECEx approved flexible nonmetallic cable protection solution for hazardous areas.
All our brands are built upon four product & service solution platforms. Platforms that address you or your customers' critical electrical & lighting needs covering the protection of data, energy, processes, assets and personal safety.

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Introduction
Low voltage products for hazardous areas

At ABB, our focus is on improving your business performance by providing practical, reliable electrical products & services. To connect & protect for life.

Our extensive engineering, supply chain management and technical sales support teams are committed to understanding everything that impacts your ability to accomplish your business objectives by reducing your total cost of ownership.

Whether you are designing, installing, operating, maintaining or owning an office building, off-shore platform, hospital, or a high speed train, power generating plant, machine equipment or a manufacturing facility, ABB engineered products fit and function in your application while providing superior performance, sustainability, and value throughout the project life cycle.

All our brands are built upon four product & service solution platforms. Platforms that address you or your customers' critical electrical & lighting needs covering the protection of data, energy, processes, assets and personal safety. Beyond high performance application characteristics, ABB products, information and services facilitate and speed up your time critical assembly, installation or maintenance process.

Typical applications:
- Light fittings, boxes and enclosures
- Customised control panels for hazardous areas
- Ongoing R&D program for innovative and high performance products
- ATEX & IECEx approved nylon - or flexible metallic cable protection

COMPLETE CABLE PROTECTION PORTFOLIO

To solve everyday problems in the area's of Wire & Cable Management, Cable Protection, Power Connection & Control and Safety.

Food & Beverage applications

Food & Beverage Industry
ABB offers a range of products for the food processing market, including products for use in areas where stainless steel is preferred as well as areas classified as hazardous.
ABB can offer stainless steel control stations for use on automated food processing and packaging machines as well as lighting specifically designed for use in dust filled atmospheres such as flour mills.

ABB has a range of products designed for being used in all beverage production sectors in the malting, brewing, wine, spirits or soft drink business. PMA-Ex can supply non-metallic conduit and fittings that work with other ABB products to reach the needs of hazardous areas where explosive gases or other places where the risk of explosion is considered to be extremely high.

Chemical & Pharmaceutical applications

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01

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02

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01 Chemical engineering - Explosion proof
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02 Pharmaceutical production - Explosion proof

Chemical & Pharmaceutical Industry
The ABB range of products and solutions are ideal for use in the chemical and pharmaceutical industry. Whether it is upstream in the primary production stage or downstream in the packing stage. Many of the processes and applications used in these areas require approvals to hazardous area standards making PMA-Ex range of conduits & fittings ideal.

Certifications and Standards
Global Guide

—
Africa, Australia, Asia (IECEx)

—
Canada (CSA & IECEx)

—
South America (UL and IECEx)

—
Europe (ATEX and IECEx)

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USA, Mexico (UL)

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Brazil (InMetro)

—
Russia (EAC and EAC Ex)

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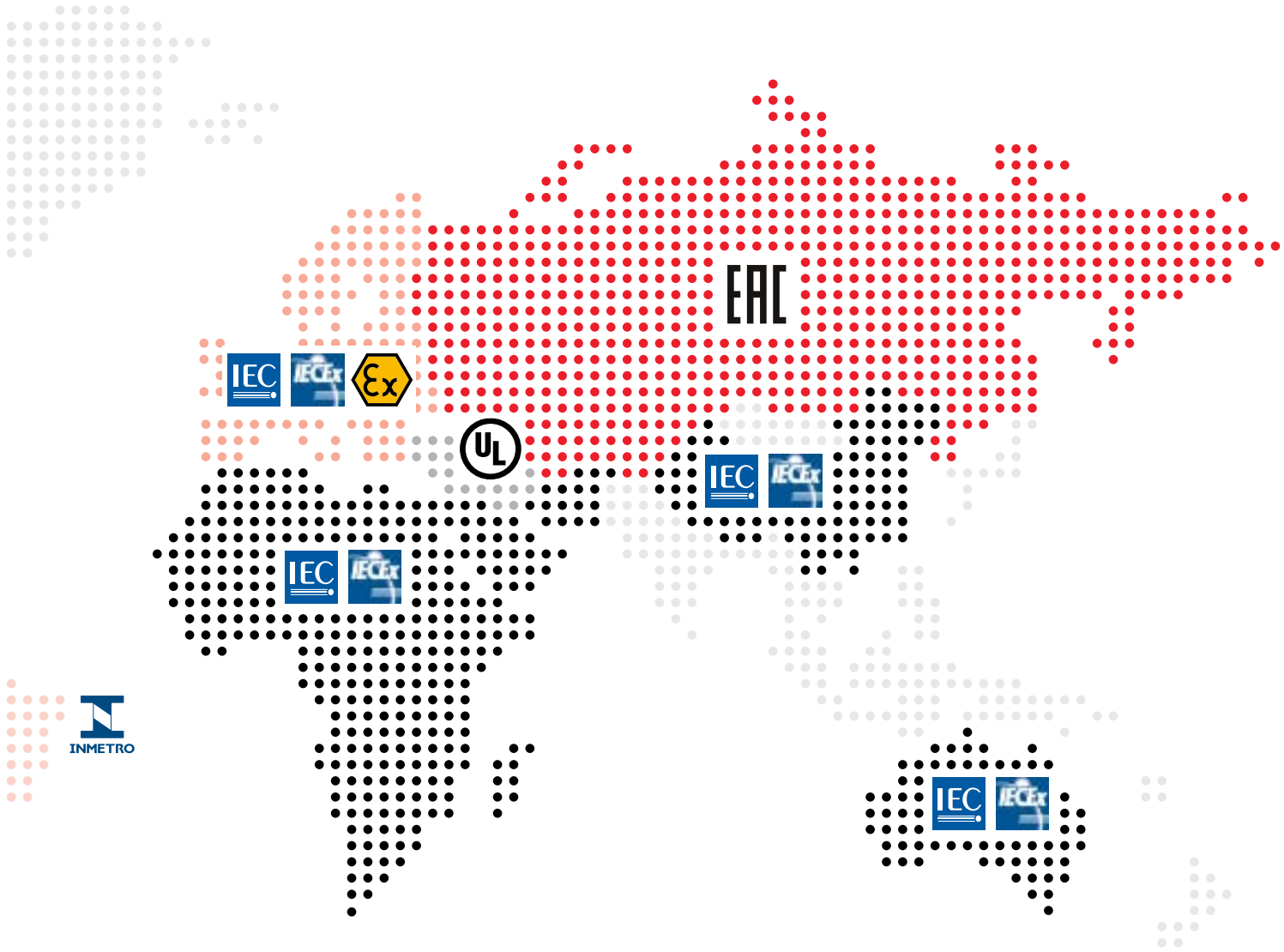
Rest of World
(Mixed and Local)

—
World standards

Region	Basic Electrical Code	Base Standard	Symbols		Hazardous Area Standards	Symbols	
Europe	IEC	IEC/EN 62444 - Cable Glands IEC/EN 61386 - Conduit Systems IEC/EN 60529 - Ingress Protection	CE	CE	IEC/EN 60079-0 - General Requirements IEC/EN 60079-1 - Flameproof Equipment IEC/EN 60079-7 - Increased Safety IEC/EN 60079-31 - Dust Enclosure	EX IECEx	Ex IEC IECEx
US	NEC	UL514B - Fittings UL360 - Electrical Conduit UL1696 - Protective Tubing	UL UR	UL UR	UL2225 -xxxx UL1203 - xxxx	UL	UL
Canada	CEC	CSA C22.2-18.3 - Fittings CSA C22.2-54-04 - Electrical Conduit CSA C22.2-227.3 - Protective Tubing	CSA	SP	CSA C22.2-25 -30 -174 -94 CSA C22.2/IEC 60079-0 - General Requirements CSA C22.2/IEC 60079-1 - Flameproof Equipment CSA C22.2/IEC 60079-7 - Increased Safety CSA C22.2/IEC 60079-31 - Dust Enclosure	CSA	SP



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World standards

Region	Basic Electrical Code	Base Standard	Symbols	Hazardous Area Standards	Symbols
Russia	IEC	IEC/EN 62444 - Cable Glands IEC/EN 61386 - Conduit Systems IEC/EN 60529 - Ingress Protection	EAC	ГОСТ Р МЭК 60079-0 - General Requirements ГОСТ Р МЭК 60079-7 - Increased Safety ГОСТ Р МЭК 60079-31 - Dust Enclosure ГОСТ IEC 60079-1 - Flameproof Equipment	EAC Ex
Brazil	IEC	ABNT NBR IEC 62444 - Cable Glands ABNT NBR IEC 61386 - Conduit Systems ABNT NBR IEC 60529 - Ingress Protection	InMetro	ABNT NBR IEC 60079-0 - General Requirements ABNT NBR IEC 60079-1 - Flameproof Equipment ABNT NBR IEC 60079-7 - Increased Safety ABNT NBR IEC 60079-31 - Dust Enclosure	InMetro (Segurança)
China	IEC	IEC/EN 62444 - Cable Glands IEC/EN 61386 - Conduit Systems IEC/EN 60529 - Ingress Protection		GB3836.1 - General Requirements GB3836.2 - Flameproof Equipment GB3836.3 - Increased Safety GB12476.1 - Dust General Requirements GB12476.5 - Dust Enclosure	CNEX PCEC

Standards, zone definitions & product markings

Zone definitions – Onshore gases & vapor

Zone 0

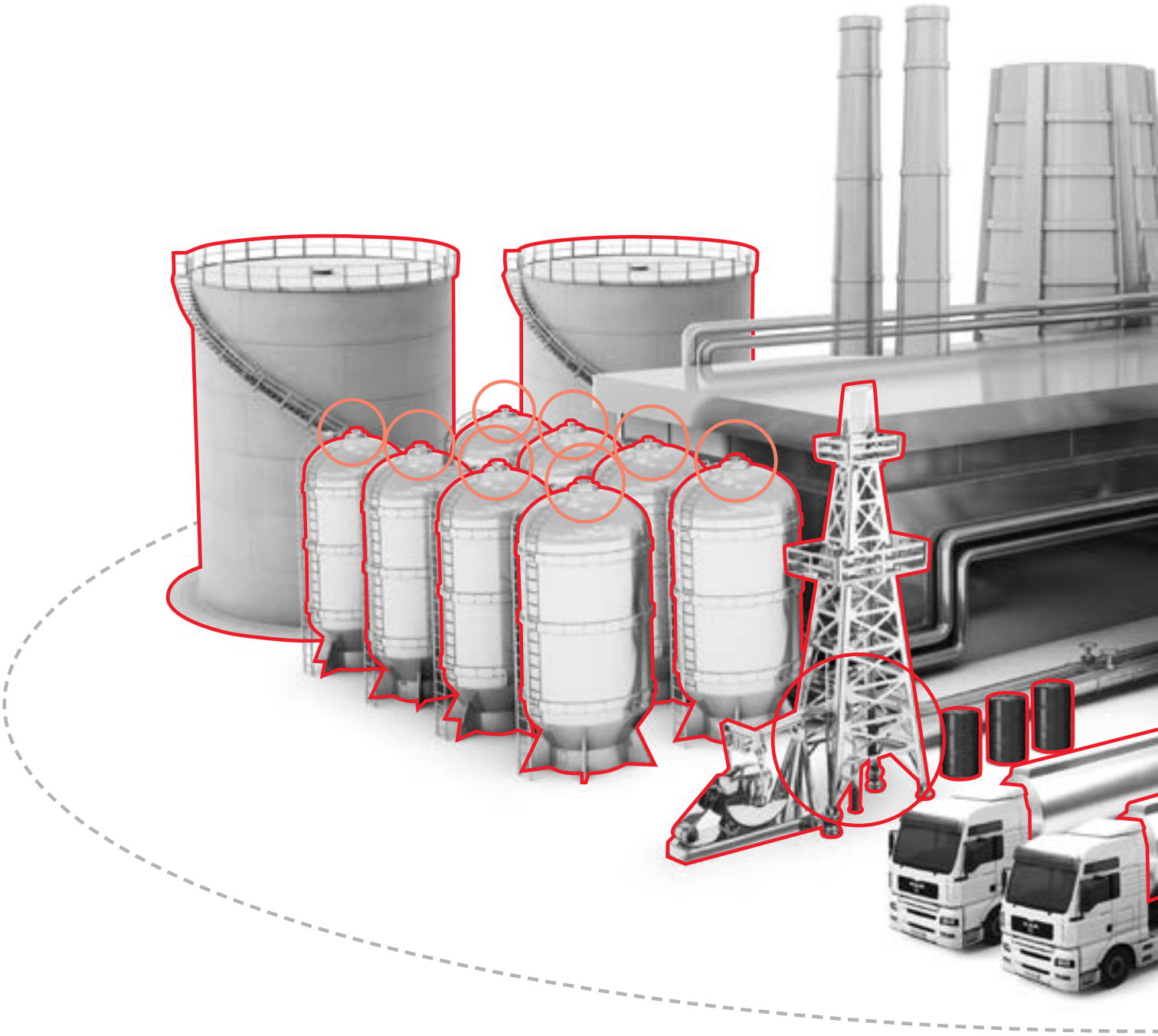
Permanent / Frequent

Place in which an explosive atmosphere consisting of a mixture with air of flammable substances in the form of gas, vapor or mist is present continuously or for long periods, or frequently.

Zone 1

Occasional

Site where an atmosphere consisting of a mixture of air and inflammable substances in the form of gas, vapor or mist is likely to arise occasionally during normal operation.



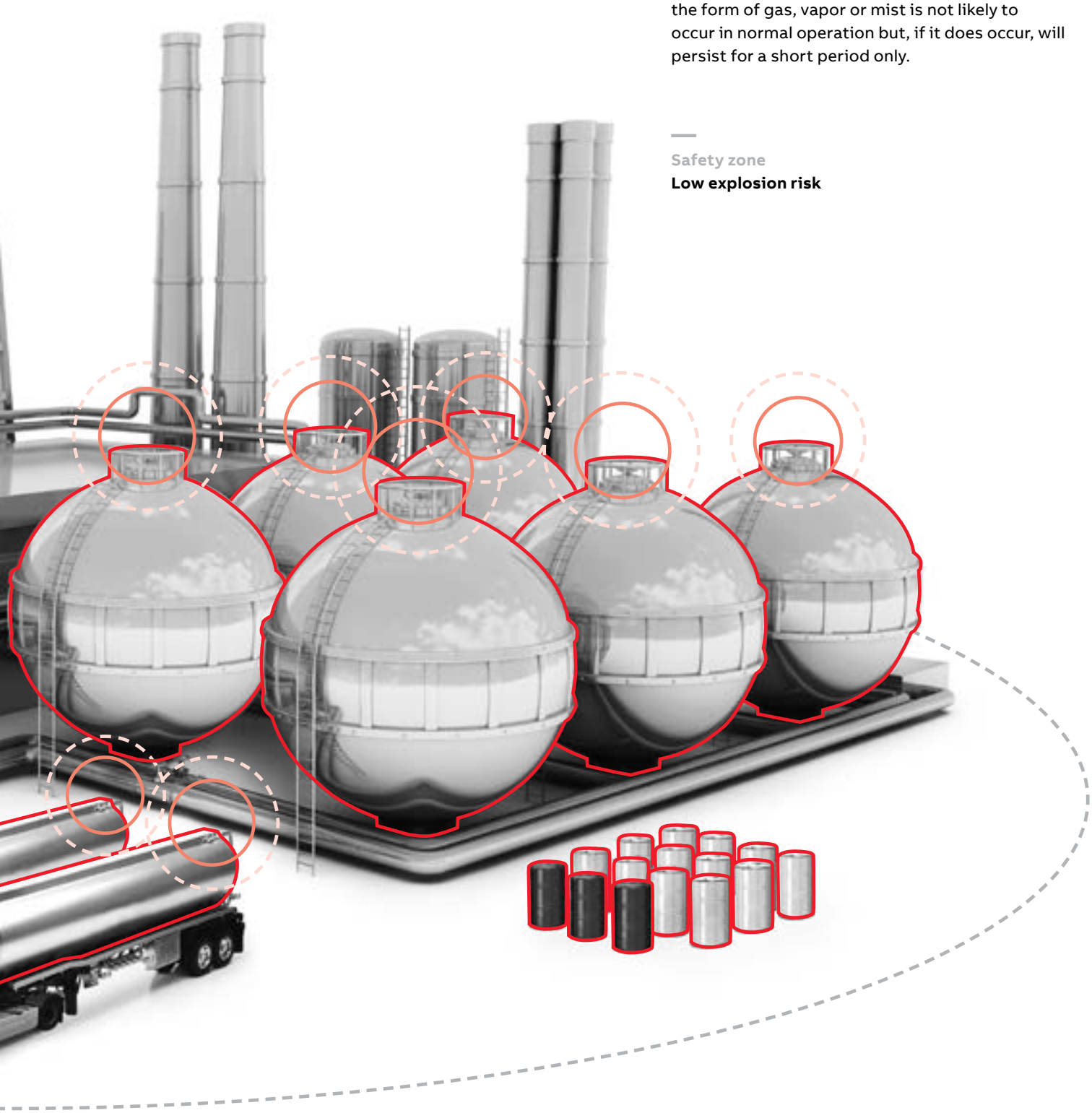
Zone 2

Gas irregular / Short duration

Place in which an explosive atmosphere consisting of a mixture with air of flammable substances in the form of gas, vapor or mist is not likely to occur in normal operation but, if it does occur, will persist for a short period only.

Safety zone

Low explosion risk



Standards, zone definitions & product markings

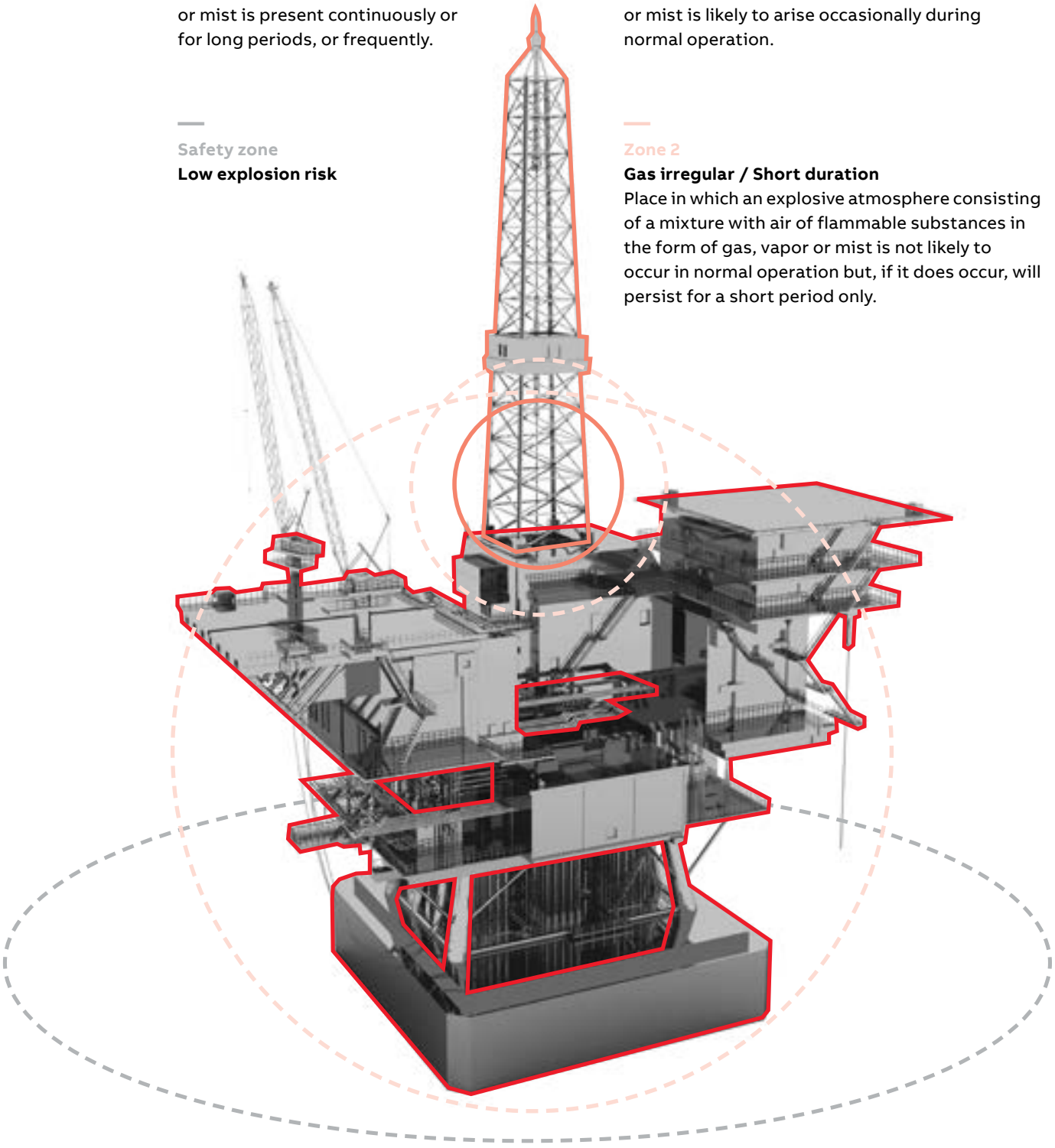
Zone definitions – Offshore gases & vapor

Zone 0
Permanent / Frequent
Place in which an explosive atmosphere consisting of a mixture with air of flammable substances in the form of gas, vapor or mist is present continuously or for long periods, or frequently.

Zone 1
Occasional
Site where an atmosphere consisting of a mixture of air and flammable substances in the form of gas, vapour or mist is likely to arise occasionally during normal operation.

Safety zone
Low explosion risk

Zone 2
Gas irregular / Short duration
Place in which an explosive atmosphere consisting of a mixture with air of flammable substances in the form of gas, vapor or mist is not likely to occur in normal operation but, if it does occur, will persist for a short period only.



Standards, zone definitions & product markings

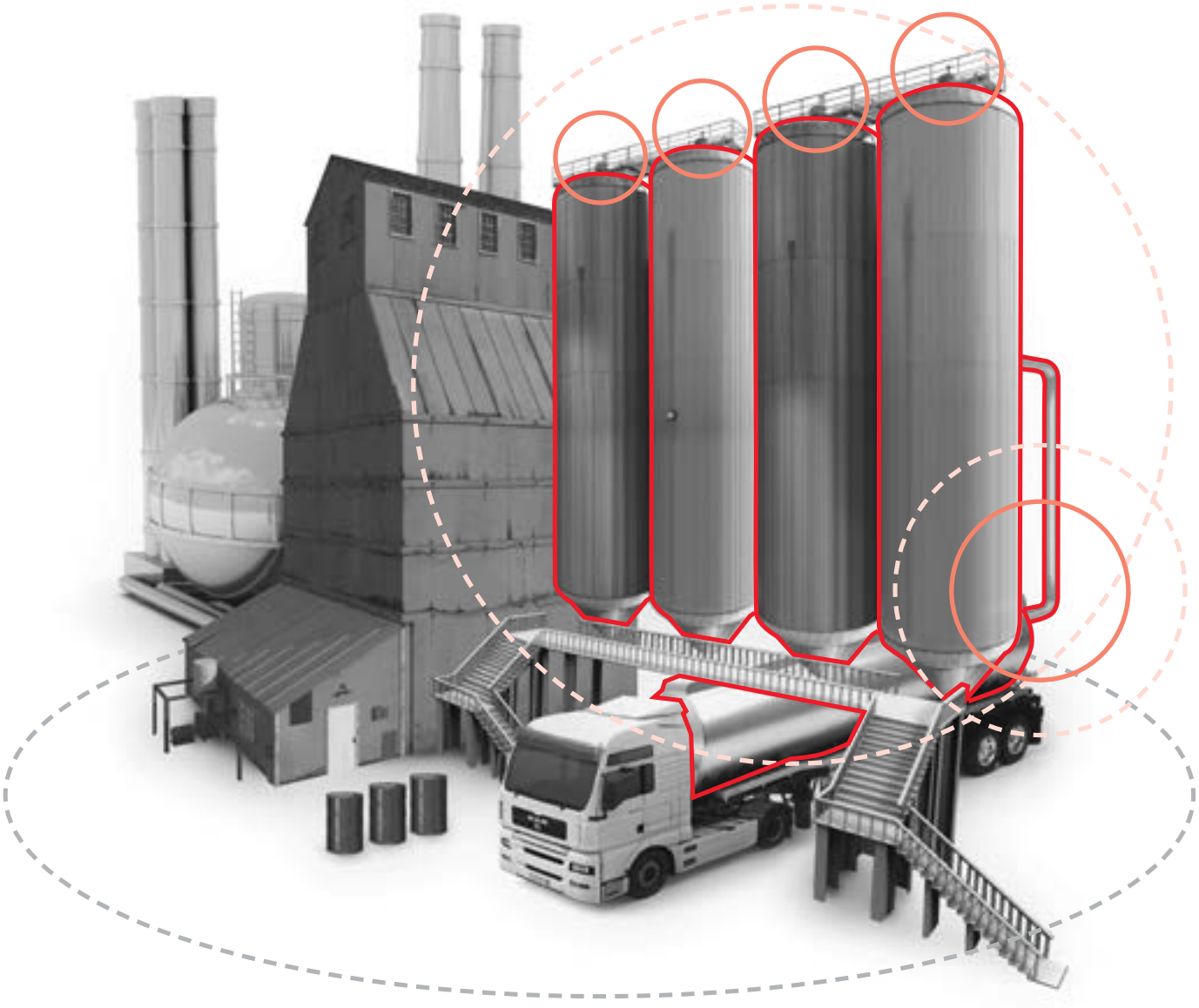
Zone definitions – Dust

Zone 20
Permanent / Frequent
Area in which an explosive atmosphere in the form of a cloud of combustible dust in air is present continuously, or for long periods, or frequently.

Zone 21
Occasional
Area in which an explosive atmosphere, in the form of a cloud of combustible dust in air is likely to occur, occasionally, in normal operation, ocassionally.

Zone 22
Dust Irregular / Short Duration
Area in which an explosive atmosphere, in the form of a cloud of combustible dust in air is not likely to occur in normal operation but, if it does occur, will persist for a short period only.

Safety Zone
No Explosion Risk



Standards, zone definitions & product markings

NEC - Class and Division System

Classifications of hazardous areas

Classifications of hazardous areas			Descriptions	Equipment Usage	Comparison
Mining			Not covered in the NEC. See MSHA, Specific requirements for Mining Equipment and Safety Standards.		
Gas environments	**Class I**	**Division 1**	1. Ignitable concentrations of gases can exist under normal operating conditions. 2. Ignitable concentrations of gases may exist frequently because of repair, maintenance, leakage. 3. Equipment breakdown or faulty operation that may create both an ignitable gas release and a source of ignition from electric equipment failure .	Class I Div 1	Zone 0 Zone 1
		Division 2	1. Gases are normally confined to within closed containers or closed systems requiring accidental rupture, breakdown or abnormal operation for escape. 2. Where ignitable concentrations of gases are normally prevented by positive pressure ventilation. 3. Location adjacent to a Class I Division 1 location where ignitable concentrations of gases might occasionally be communicated.	Class I Div 1 and Class I Div 2	Zone 2
Dust environments	**Class II**	**Division 1**	1. Combustible dust is in the air under normal operating conditions sufficient to product explosive or ignitable mixtures. 2.Mechanical failure or abnormal operation might simultaneously produce ignitable mixtures and an electrical source of ignition. 3. Group E combustible dusts may be present in sufficient quantities.	Class II Div 1	Zone 20 Zone 21
		Division 2	1. Combustible dust due to abnormal operations may be present in the air in quantities sufficient to produce explosive or ignitable mixtures. 2. Sufficient dust accumulations could become suspended in air by equipment malfunction. 3. Dust accumulations could be ignitable due to electrical equipment overheating, abnormal operation or failure.	Class II Div 1 and Class II Div 2	Zone 22
Fibres and Flyings environments	**Class III**	**Division 1**	Easily ignitable fibres and flyings are handled, manufactured or used	Class III Div 1	Zone 20 Zone 21
		Division 2	Easily ignitable fibres and flyings are stored or handled other than in the process of manufacture	Class III Div 1 and Class III Div 2	Zone 22

Standards, zone definitions & product markings

NEC - Class and Division System

Gas & dust groups

Group		Typical	Examples
Gases	**A**	Acetylene	Acetylene is the only gas in Group A
	B	Hydrogen	Acrolein, Butadiene, Ethylene Oxide, Formaldehyde (gas), Process Gas , Propyl Nitrate
	C	Ethylene	Acetaldehyde, Diethyl Ether, Hydrogen Sulphidel
	D	Propane	Acrylonitrile, Ammonia, Butane, Fuel Oil 1, Gasoline, Heptane, Methane,
Dusts	**E**	Combustible metal dusts	Aluminium, Magnesium
	F	Combustible carbonaceous dusts that have more than 8% total entrapped volatiles	Coal, Carbon Black, Charcoal, Coke
	G	Combustible dusts not included in Group E or F	Flour, Grain, Wood (saw dust), Plastic, Chemicals
Fibers & Flyings	**No Groups**	Fibres/flyings ("big dust") not in suspension in ignitable quantities	Wood shaving, Rayon, Cotton

Protection Concepts	Techniques (Types)	ANSI (UL) /CSA Standards		Class I	Class II	Class III
By Enclosure	Explosion proof	ANSI / UL 1203	UL 60079-1	1 or 2		
	Dust Ignition proof	ANSI / UL 1203	UL 60079-31		1 or 2	
By Exclusion	Purged and Pressurized	ANSI/NFPA 496	UL 60079-2	1 or 2	1 or 2	1 or 2
By Equipment	Intrinsic Safety*	ANSI/UL 913	UL 60079-11	1 or 2	1 or 2	1 or 2
	Nonincendive (circuit, equipment, component)	ANSI / ISA-12.12.01	UL 60079-15	2	2	1 or 2
	Oil Immersion		UL 60079-6	2		
	Hermetically Sealed	ANSI / ISA-12.12.01	UL 60079-18	2	2	1 or 2
	Combustible Gas Detection System	ANSI/UL 2075; ANSI/ISA-60079-29-1	UL 60079-29	1 or 2		
	Increased Safety		UL 60079-7	1 or 2		

Temperature Classification

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

* Temperature classification is based on the maximum surface temperature of the equipment in normal use

ATEX-IECEx

Polyamide cable protection: 40 years of experience in high quality solutions

- Products for the protection of cables, wires and hoses against not only mechanical damage but also the influences of UV radiation, weathering and chemicals
- Products made of specially modified, load discharging polyamide materials (PA12) for use in explosion endangered zones 1/2 (gas) and 21/22 (dust)
- Identical in function to the standard product range PMAFIX/PMAFLEX (since more than 40 years successfully used in applications as railway, machinery, automation, etc.)
- Sealing system fulfilling IP68
- System safety: For security reasons re-opening is only possible with the use of a screwdriver
- Flexible conduits, excellent for applications with continual reversed bending
- Quick and simple installation, reduced total installation costs (compared to other explosion-proof cable protection systems)
- No corrosion, long service life

ATEX/IECEx marking:

CE 1258 Ex

II 2G Ex eb IIC Gb
II 2D Ex tb IIIC Db
SEV 15 ATEX 0121X,
IECEX SEV 15.0009X

A pioneering technology leader, ABB is focused on providing solutions that address the critical issues in every area of operations, allowing customers to focus on plant sustainability, cost, quality, flexibility, safety and regulatory challenges. Therefor ABB provides also a metallic conduit system portfolio for the hazardous areas. For more information see here: http://new.abb.com/low-voltage/products/conduit-fittings/kopex-ex/ex-metallic-conduit-systems

COMPLETE CABLE PROTECTION SOLUTIONS

ABB is focused on providing solutions that address the critical issues in every area of operations, allowing customers to focus on plant sustainability, cost, quality, flexibility, safety and regulatory challenges.

Flexible non-metallic nylon conduit systems for hazardous areas

Selection guide

Selection guide






Type	XESX Nylon conduit	NENV Straight Nylon fittings	NEIR Nylon straight conduit female thread	NENZ Straight Nylon fittings with strain relief	NEAV Nylon 45˚ elbow fittings	NEBV Nylon 90˚ curved elbow fittings
Approvals						
ATEX	•	•	•	•	•	•
IEC / IECx	•	•	•	•	•	•
CSA / UL	–	–	–	–	–	–
UL	–	–	–	–	–	–
EAC Ex	•	•	•	–	–	–
INMETRO	•	•	•	–	–	–
CNEX	•	•	•	–	–	–
Protection Type						
Ex eb	•	•	•	•	•	•
Ex d	–	–	–	–	–	–
Ex de	–	–	–	–	–	–
Ex tb	•	•	•	•	•	•
Zones						
Zone 1	•	•	•	•	•	•
Zone 2	•	•	•	•	•	•
Zone 21	•	•	•	•	•	•
Zone 22	•	•	•	•	•	•
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NEWV Nylon 90˚ elbow fitting fittings	BENRRE Nylon Corrugated conduit to rigid metal pipe connection	BESGR Nylon Splice connector fittings	BEYR Nylon 'Y' piece fittings	BETR Nylon 'T' piece adapter	BEAVR Nylon conduit fittings	BEH Nylon conduit clip	GMM Hex Locknut
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25	**25**	**26**	**26**	**26**	**27**	**27**	**27**

Non-metallic nylon conduit

XESX Range - Anti-static nylon multilayer conduit

Features

- For applications with high mechanical loads in explosion endangered areas classified as zones 1/2 and 21/22 (acc. to ATEX 137)
- For use at low temperatures
- Free from halogens, REACH + ROHS compliant
- No corrosion
- Excellent flexibility and high compression strength
- Multilayer material combination for improved product performance
- Vibration resistance

XESX Range

Approvals & certifications

Ex IEC IECEx

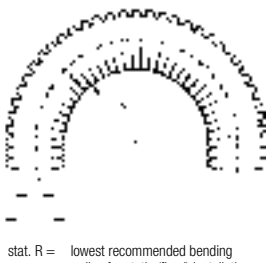
Exd Extb

ZONE 1 ZONE 2 ZONE 21 ZONE 22

	Standards
EC Type examination certificate to:	ATEX: Baseefa 08 ATEX 0003X/ SEV 15ATEX0121X
	IECEx: IECEx BAS08.0001X/SEV 15.0009X
	Ex eb IIC Gb
	Ex tb IIIC Db
Operating temperature:	-40°C to +85°C
IP test:	IP66
Compatible with:	KOPEX-Ex EXPQ and Nylon Fittings
Material:	Anti-Static Nylon 12
Colour:	Black / Yellow inside

XESX Anti-static nylon multilayer conduit

Type	Conduit Size NW (mm)	Conduit Size Metric (mm)	Outside Diameter (mm)	Coil Length (m)
XESX0250	10	12	12.8	50
XESX0350	12	16	15.6	50
XESX0450	17	20	21	50
XESX0550 23	23	25	28.5	50
XESX0650	29	32	34.4	50
XESX0730	36	40	42.4	30
XESX0830	48	50	54.4	30



stat. R = lowest recommended bending radius for static (fixed) installation
dyn. R = lowest recommended bending radius for dynamic (flexible) installation

Fine profile T
Tight bending radius

Coarse profile G
High pull-out strength

Non-metallic nylon conduit system

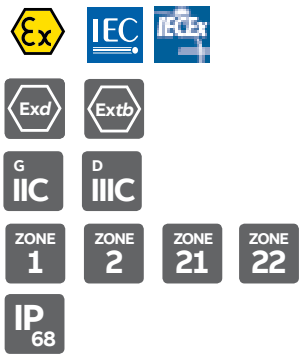
Nylon fittings for XESX conduit

Features and benefits:

- For applications with high mechanical loads in explosion endangered areas classified as zones 1/2 and 21/22 (acc. to ATEX 137)
- For use at low temperatures
- Free from halogens, REACH + ROHS compliant
- No corrosion
- Excellent flexibility and high compression strength
- Multilayer material combination for improved product performance
- Vibration resistance

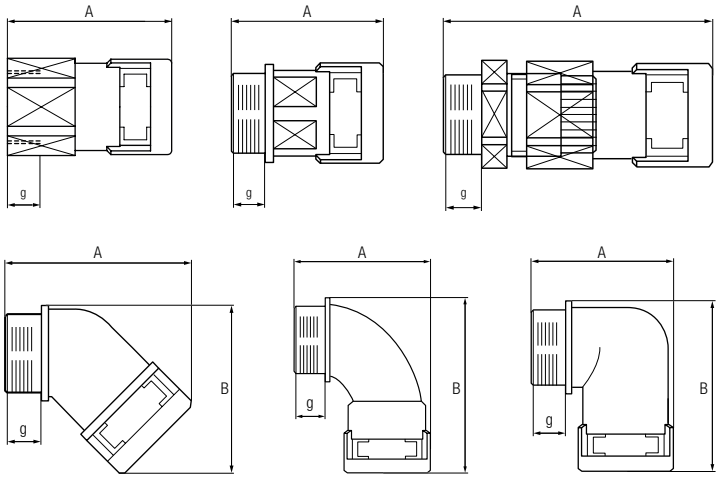
XESX Range

Approvals & certifications



Standards

EC Type examination certificate to:	ATEX: SEV15ATEX0121 X
	IECEx: IECEx BAS08.0001X/SEV 15.0009X
	Ex eb IIC Gb
	Ex tb IIIC Db
Safe operating temperature range:	NW 10-12/12-16mm -5°C to +85°C NW 17-48/21-54mm -20°C to + 85°C
IP test:	IP68



g = Thread length A = Overall length A x B = External dimensions

Non-metallic nylon conduit system

Nylon fittings for XESX conduit

Type NENV Straight male fitting

Material: Anti-Static Nylon 12 with nickel plated brass thread

Part no.	Metric Thread Size (mm)	Fits to Conduit Size (mm) NW	Fits to Conduit Size (mm) Metric	Thread Length (mm)	Overall Length (mm)
NENV0202	M12x1.5	10	12	10.0	40.0
NENV0203	M16x1.5	10	12	10.0	40.0
NENV0303	M16x1.5	12	16	10.0	43.0
NENV0304	M20x1.5	12	16	10.0	43.0
NENV0404	M20x1.5	17	20	10.0	51.0
NENV0405	M25x1.5	17	20	11.0	51.0
NENV0505	M25x1.5	23	25	11.0	52.0
NENV0506	M32x1.5	23	25	13.0	54.0
NENV0606	M32x1.5	29	32	13.0	56.0
NENV0607	M40x1.5	29	32	13.0	57.3
NENV0707	M40x1.5	36	40	13.0	71.4
NENV0708	M50x1.5	36	40	14.0	72.4
NENV0808	M50x1.5	48	50	14.0	72.4
NENV0809	M63x1.5	48	50	14.0	72.4

Type NEIR Straight female fitting

Material: Anti-Static Nylon 12 with nickel plated brass thread

Part no.	Metric Thread Size (mm)	Fits to Conduit Size (mm) NW	Fits to Conduit Size (mm) Metric	Thread Length (mm)	Overall Length (mm)
NEIR0303	M16x1.5	12	16	9.0	41.0
NEIR0404	M20x1.5	17	20	10.0	50.0
NEIR0505	M25x1.5	23	25	10.0	56.0
NEIR0606	M32x1.5	29	32	11.0	55.5
NEIR0707	M40x1.5	36	40	13.0	71.0
NEIR0808	M50x1.5	48	50	15.0	73.0

Non-metallic nylon conduit system

Nylon fittings for XESX conduit

Type NENZ Straight male fitting with strain relief

Material: Anti-Static Nylon 12 with nickel plated brass thread

Part no.	Metric Thread Size (mm)	Fits to Conduit Size (mm) NW	Metric	Terminal Range	Thread Length (mm)	Overall Length (mm)
NENZ0202S/P1	M16x1.5	10	12	4.0 – 6.5	5.0	48.5
NENZ0203S/P1	M16x1.5	10	12	4.0 – 6.5	6.0	49.5
NENZ0203S/P2	M16x1.5	10	12	5.0 – 8.0	6.0	49.5
NENZ0203S/P3	M16x1.5	10	12	6.5 – 9.5	6.0	49.5
NENZ0304S/P1	M20x1.5	12	16	4.0 – 6.5	6.5	54.0
NENZ0304S/P3	M20x1.5	12	16	6.5 – 9.5	6.5	54.0
NENZ0304S/P4	M20x1.5	12	16	7.0 – 10.5	6.5	54.0
NENZ0404S/P3	M20x1.5	17	20	6.5 – 9.5	6.5	60.0
NENZ0404S/P4	M20x1.5	17	20	7.0 – 10.5	6.5	60.0
NENZ0404S/P5	M20x1.5	17	20	9.0 – 13.0	6.5	60.0
NENZ0405S/P5	M25x1.5	17	20	9.0 – 13.0	7.5	61.5
NENZ0405S/P6	M25x1.5	17	20	11.5 – 15.5	7.5	61.5
NENZ0505S/P6	M25x1.5	23	25	11.5 – 15.5	7.5	72.5
NENZ0606S/P3	M32x1.5	29	32	17.0 – 20.5	8.0	73.0
NENZ0606S/P4	M32x1.5	29	32	20.0 – 25.0	8.0	73.0
NENZ0607S/P5	M40x1.5	29	32	24.0 – 28.0	8.0	73.0
NENZ0707S/P1	M40x1.5	36	40	20.0 – 25.0	9.0	87.0
NENZ0707S/P2	M40x1.5	36	40	24.0 – 28.0	9.0	87.0
NENZ0708S/P3	M50x1.5	36	40	32.0 – 36.0	10.0	89.5
NENZ0808S/P2	M50x1.5	48	50	32.0 – 36.0	10.0	92.0
NENZ0808S/P3	M50x1.5	48	50	36.0 – 40.0	10.0	92.0

*Other clamping ranges and multiple hole sealing inserts available on request.

Type NEAV 45° Elbow fitting

Material: Anti-Static Nylon 12 with nickel plated brass thread

Part no.	Metric Thread Size (mm)	Fits to Conduit Size (mm) NW	Metric	Thread Length (mm)	External Dimensions (mm)
NEAV0303	M16x1.5	12	16	10.0	53.0 x 40.5
NEAV0404	M20x1.5	17	20	10.0	60.5 x 51.5
NEAV0505	M25x1.5	23	25	11.0	70.0 x 60.5
NEAV0606	M32x1.5	29	32	13.0	77.0 x 68.0
NEAV0707	M40x1.5	36	40	13.0	94.0 x 87.5
NEAV0808	M50x1.5	48	50	14.0	102.0 x 101.0
NEAV0809	M63x1.5	48	50	14.0	102.0 x 104.0

Non-metallic nylon conduit system

Nylon fittings for XESX conduit

Type NEBV 90° Curved elbow fitting

Material: Anti-Static Nylon 12 with nickel plated brass thread

Part no.	Metric Thread Size (mm)	Fits to Conduit Size (mm) NW	Metric	Thread Length (mm)	External Dimensions (mm)
NEBV0404	M20x1.5	17	20	10.0	51.0 x 73.0
NEBV0505	M25x1.5	23	25	11.0	62.5 x 85.0
NEBV0606	M32x1.5	29	32	13.0	74.0 x 94.5
NEBV0707	M40x1.5	36	40	13.0	86.5 x 123.0
NEBV0808	M50x1.5	48	50	14.0	100.5 x 135.0
NEBV0809	M63x1.5	48	50	14.0	100.5 x 138.0

Type NEWV 90° elbow fitting

Material: Anti-Static Nylon 12 with nickel plated brass thread

Part no.	Metric Thread Size (mm)	Fits to Conduit Size (mm) NW	Metric	Thread Length (mm)	External Dimensions (mm)
NEWV0303	M16x1.5	12	16	10.0	42.0 x 46.5

Type BENRRE Corrugated conduit to rigid metal pipe connection

Material: Anti-Static Nylon 12, Stainless Steel Jubilee Clip

Part no.	Fits to Conduit Size (mm) NW	Metric	Steel Tube Metric (mm)	Inside Diameter (mm)	Overall Length (mm)
BENRRE030324	12	16	M16	16.0	54.0
BENRRE040428	17	20	M20	20.0	65.0
BENRRE050532	23	25	M25	25.0	71.0
BENRRE060644	29	32	M32	32.0	71.0
BENRRE070750	36	40	M40	40.0	90.0
BENRRE080865	48	50	M50	50.0	90.0

Non-metallic nylon conduit system

Nylon fittings for XESX conduit

Type BESGR Splice connector

Material: Anti-Static Nylon 12

Part no.	Fits to Conduit Size (mm) NW	Metric	Inside Diameter (mm)	Overall Length (mm)
BESGR0303	12	16	23.5	66.0
BESGR0404	17	20	29.5	87.0
BESGR0505	23	25	37.0	103.0
BESGR0606	29	32	44.0	100.0
BESGR0707	36	40	53.5	130.0
BESGR0808	48	50	66.0	133.0

Type BEYR 'Y' Piece

Material: Anti-Static Nylon 12

Part no.	1 x Conduit Size (mm) NW	Metric	2 x Conduit Size (mm) NW	Metric
BEYR030202	12	16	10	12
BEYR040303	17	20	12	16
BEYR050404	23	25	17	20
BEYR060505	29	32	23	25
BEYR070606	36	40	29	32
BEYR080707	48	50	36	40

*Sizes can be adapted with EAVR conduit adapters to fit smaller conduit dimensions.

Type BETR 'T' Piece

Material: Anti-Static Nylon 12

Part no.	2 x Conduit Size (mm) NW	Metric
BETR020202	10	12
BETR030303	12	16
BETR040404	17	20
BETR050505	23	25
BETR060606	29	32
BETR070707	36	40
BETR080808	48	50

*Sizes can be adapted with EAVR conduit adapters to fit smaller conduit dimensions.

Non-metallic nylon conduit system

Nylon fittings for XESX conduit

Type BESGR Conduit adapter

Material: Anti-Static Nylon 12

Part no.	Fits into Fitting for Conduit Size (mm) NW	Metric	Fits to Conduit Size (mm) NW	Metric	Overall Length (mm)
BEAVR03/02	12	16	10	12	46.0
BEAVR04/03	17	20	12	16	54.0
BEAVR05/04	23	25	17	20	62.0
BEAVR06/05	29	32	23	25	64.0
BEAVR07/06	36	40	29	32	81.0
BEAVR08/07	48	50	36	40	88.5

Type BEH Conduit clip

Material: Anti-Static Nylon 12

Part no.	Fits to Conduit Size (mm) NW	Metric	Width x Height x Depth (mm)	Fixing Screw
BEH02	10	12	20.5 x 24.5 x 20.0	1 x M5
BEH03	12	16	24.0 x 27.0 x 20.0	1 x M5
BEH04	17	20	30.0 x 34.0 x 20.0	1 x M6
BEH05	23	25	38.5 x 42.0 x 20.0	1 x M6
BEH06	29	32	45.5 x 48.0 x 20.0	1 x M6
BEH07	36	40	55.5 x 56.0 x 20.0	1 x M6
BEH08	48	50	67.5 x 68.0 x 20.0	1 x M6

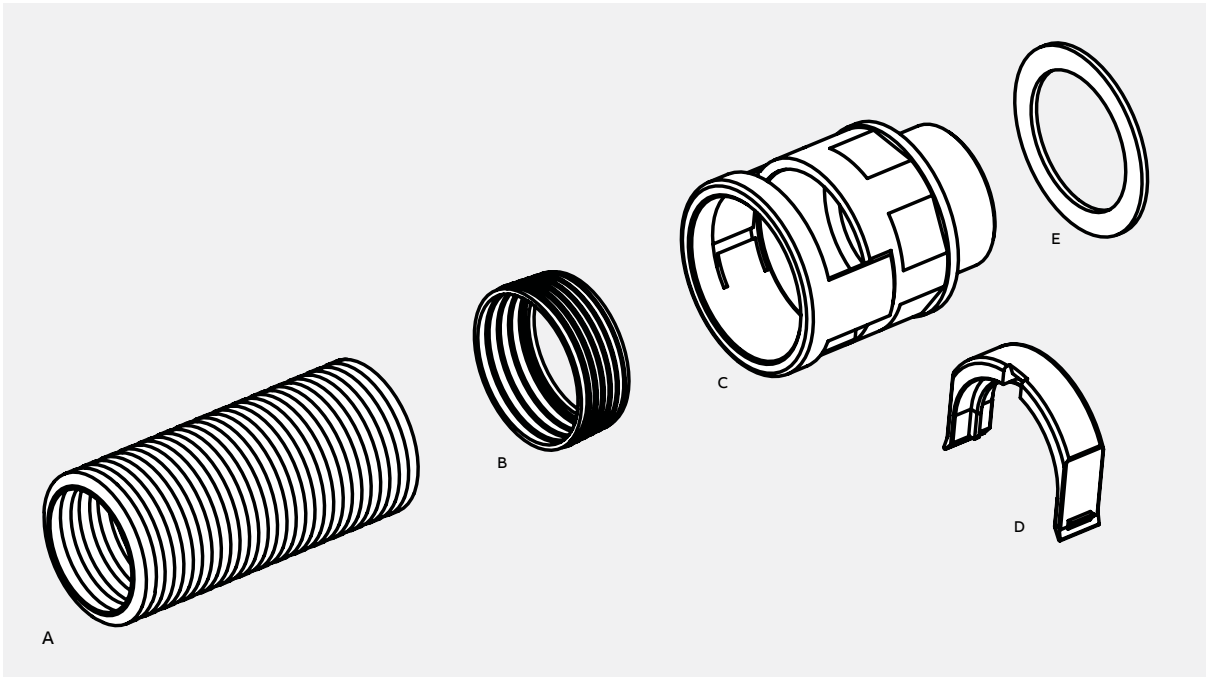
GMM Hex Locknut

Material: Nickel plated/Brass

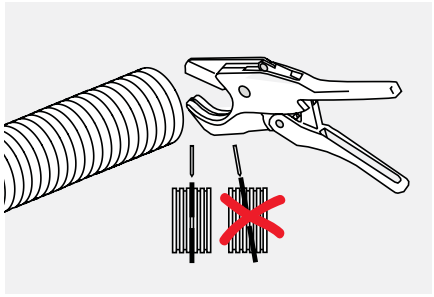
Part no.	Fits to Thread Metric (mm)	Wrench size	Height (min.) mm
GMM-M12	M12x1.5	15	2.8
GMM-M16	M16x1.5	19	2.8
GMM-M20	M20x1.5	24	3.0
GMM-M25	M25x1.5	30	3.5
GMM-M32	M32x1.5	36	4.0
GMM-M40	M40x1.5	46	4.5
GMM-M50	M50x1.5	60	**5.0**
GMM-M63	M63x1.5	**70**	**5.5**

Easy installation
with highest assembly reliability

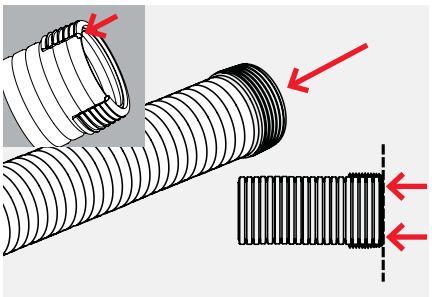
—
A. Conduit
B. Ex Seal cap (yellow)
C. Fitting
D. Oval clip
E. Thread seal



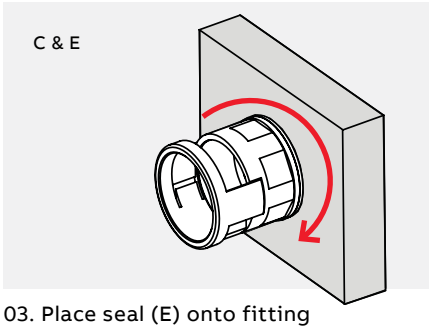
Installation of IP68 safety system (pat.)



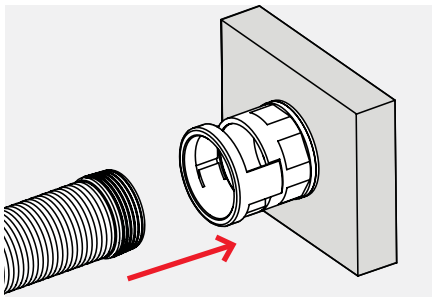
01. Straight cut of conduit



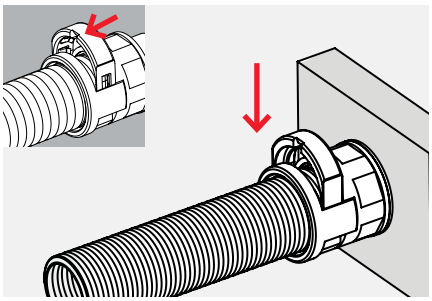
02. Push seal cap (B) completely onto conduit in order to achieve IP68.

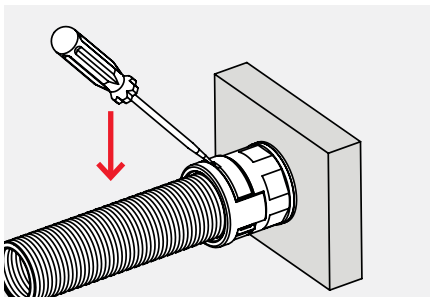


03. Place seal (E) onto fitting thread (C) and screw in.



04. Push conduit with seal cap A+B) into the fitting until seal cap is no more visible in the locking element window.





05. Insert oval clip (D) in the locking element window and click into place. The screwdriver slot must point towards the conduit. To re-open use a screwdriver.

Area of application
The products constitute an equipment group II category 2G device in accordance with Directive 2014/34/EU (ATEX 114) Appendix I which may be implemented in zones 1 / 2 as well as in gas groups IIA, IIB and IIC which are subject to explosion risk due to combustible substances, in accordance with Directive 99/92/EC (ATEX 137). The requirements in accordance with EN 60079-14 shall be adhered to on use/installation.

The products constitute an equipment group II category 2D device in accordance with Directive 2014/34/EU (ATEX 114) Appendix I which may be implemented in zones 21 / 22 with explosive air/dust mixtures in accordance with Directive 99/92/EC (ATEX 137). The requirements in accordance with EN 60079-14 shall be adhered to on use/installation.

Operation, service, maintenance
The defined ambient and operating temperature range in accordance to EN 60079-0 is:
–40 °C to +85 °C in combination with
Kopex-Ex EXPQ fitting
–20 °C to +85 °C in combination with
PMA NW17-48 fittings
–5 °C to +85 °C in combination with
PMA NW10-12 fittings

A visual examination of the cable protection system shall be performed in periodic maintenance of systems and components, but no later than every 5 years. In the event of visible damage (holes, cracks, signs of heavy wear) to conduits, fittings or accessories, the damaged parts shall be replaced. (In the event of apparent mechanical damage, it shall be ensured that no incorrect handling takes place.)

Only ATEX-IECEx approved original PMA parts shall be used for the replacement of ATEX-IECEx approved parts.

Assembly
To ensure the discharge of electrical currents and thus to ensure antistatic behaviour, ATEX/IECEx approved PMA conduits shall be used exclusively in combination with special PMA connectors and accessories which are also ATEX/IECEx approved. These connectors and accessories (seals, fasteners) are also made of discharging material and are designated with the conformity marking.

The ATEX/IECEx approved connectors or accessories shall always be in direct contact with a metallic surface (ground). No insulating materials (e.g. adhesives) and no components which are not ATEX/IECEx approved shall be used between the discharging plastic parts or between plastic parts and metal surfaces.

Chemical resistance guide

This document serves as a guideline only and compatibility should be verified in the application environment to ensure suitability. Many factors can determine the exact suitability; such as temperature, duration of contact, nature of contact such as submersion and concentration of the chemicals involved.

Resistance guide	Chemical Formula	PA12 Polyamide 12
Chemicals		
3 = Excellent resistance / suitable for permanent contact **2 = Resistant / suitable for occasional contact** **1 = Relatively resistant / suitable for short-term contact** **0 = Not recommended** **- = No data** *** = Synthetic additives can affect the oil resistance of plastics.** **Please contact PMA for further information.**		
Acetic acid (10%)	C2H4O2	2
Acetone	C3H6O	3
Ammonia (30%)	NH3	3
Benzine	–	3
Brake fluid	–	3
Caustic soda	HNaO	3
Ethyl alcohol (40%)	C2H6O	3
Glycol	C2H6O2	2
Hydrochloric acid (10%)	HCL	1
Methanol	CH4O	3
Methyl ethyl ketone	C4H8O	3
Nitric acid (10%)	HNO3	0
Ozone	O3	2
Paint thinner	–	3
Perchlorethylene	C2Cl4	2
Paraffin	–	3
Phosphoric acid (10%)	H3O4P	2
Sea water	–	3
Soap solution	–	3
Sodium chloride	NaCl	3
Sulphuric acid (10%)	H2SO4	2
Toluene	C7H8	3
Trichlorethylene	C2HCl3	2
Turpentine	–	3
Urine	–	3
Resistance Against Oils and Greases		
Cutting oils*	–	2
Diesel oil	–	3
ASTM Oil Nr. 3	–	3
Fuel oil	–	3
Hydraulic oils*	–	3
Mineral oils	–	3
Spark-erosion liquids	–	3
Skydrol	–	2
Transformer oils*	–	3

Important:
The chemical resistance of plastic products is also dependant on factors such as temperature, amount of time exposed to chemicals (e.g. occasional contact or immersed) as well as the concentration of the specific chemicals.The stated chemical resistances are valid for a temperature of 20 °C. The chemical resistance table above serves only as a guide for the use of polyamide products in conjunction with the listed chemicals. Each specific application should be controlled for suitability by the end-user. A more detailed table can be found on the PMA Homepage under www.pma.ch.

Index & useful information

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Notes

Notes

Additional information
We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB AG does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

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