



## **Cable sealing solutions**

FOR HAZARDOUS AREAS



# Approved for explosive gas and dust atmospheres

The Roxtec Ex cable sealing system is certified according to the ATEX directive and the IECEx, International Certification Scheme, for use in areas where explosive atmospheres are likely to occur.



Our Ex products are designed to prevent ignition of explosive atmospheres. Typical applications are Ex e and/or Ex tb classified electrical enclosures, such as transformers, motors, generators and junction boxes.

The protection Ex e means increased safety, and the protection Ex tb means protection by enclosure for explosive dust atmosphere.

#### **Some of the potential industries that are likely to be affected by the ATEX directive include:**

- Petrochemical and chemical industries
- Mills, concrete plants
- Spray booth plants
- OEM producers intending to supply to areas where the ATEX product directive applies
- Silo works
- All other industries where areas have been zone classified according to marked areas in the chart on the following page.

#### **Equipment not included under the ATEX product directive:**

- Seagoing vessels and mobile offshore units together with equipment on board such vessels or units, as they are already covered by the IMO Convention.  
*Note: Oil or gas platforms which are fixed are not excluded from the directive.*
- Medical devices intended for use in a medical environment.



Roxtec R 100 B Ex frame

## Areas, zones, groups and categories

Areas	Classification of explosion hazard	Required marking for electrical equipment	
		Equipment group	Category
Mining	Operating	I	M1
Mining	Shutdown	I	M2 or M1
Non-mining	Zone 0	II	1G
Non-mining	Zone 1	II	2G or 1G
Non-mining	Zone 2	II	3G, 2G or 1G
Non-mining	Zone 20	II	1D
Non-mining	Zone 21	II	2D or 1D
Non-mining	Zone 22	II	3D, 2D or 1D

Highlighted zones = Permitted zones for Roxtec Ex products

## Zone classification

Hazardous areas are classified into zones based on the possibility of occurrence of an explosive atmosphere.

It is the obligation of the owner or the operator of a facility to ensure that the zone classification is done by authorized personnel.

The Roxtec Ex product range includes a wide variety of seals to handle different cable sizes and openings. Our products are designed and approved for use in Zone 1 and 2 for gas (incl vapor, mists) and 21 and 22 for dust.

Zone	
Zone 0 (gases) Zone 20 (dust)	Flammable material present continuously or for long periods
Zone 1 (gases) Zone 21 (dust)	Flammable material present occasionally in normal operation
Zone 2 (gases) Zone 22 (dust)	Flammable material present in abnormal conditions only for short periods

Highlighted zones = Permitted zones for Roxtec Ex products



## The ATEX directive

Directive 94/9/EC is commonly referred to as the ATEX ("Atmosphères Explosibles") product directive. Its objective is to eliminate or minimize the risks resulting from the use of certain products in or in relation to a potentially explosive atmosphere.

The ATEX product directive is a total harmonization directive. Its provisions replace existing divergent

national and European legislation which covers the same subjects as stipulated by the ATEX product directive.

The ATEX product directive applies in the countries of the European Union as well as in Liechtenstein, Iceland and Norway.

### STANDARDS

Roxtec Ex products are tested, approved and certified according to the following standards:

EN 60079-0:2012  
EN 60079-7:2007  
EN 60079-31:2009  
IEC 60079-0:2011  
IEC 60079-7:2006  
IEC 60079-31:2008

## IECEx, International Certification Scheme

The IECEx certification scheme simplifies global trade with, as well as maintenance of, equipment intended for use in explosive atmospheres. The IECEx scheme is voluntary. It is managed by the IEC, a standardization organization, and based on

global acceptance of test reports by the member states.

Certification is based on requirements in specific international IEC standards for explosion protected equipment.



# Reduction of risk with Roxtec

The purpose of the Roxtec Ex products is to minimize the risk of an explosion to occur.

## What is an explosive atmosphere?

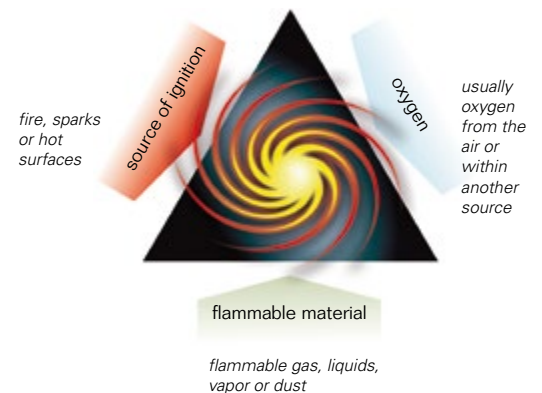
An explosive atmosphere is defined as a mixture of air and a flammable substance in the form of gases, vapors, mists, dusts or fibers, in which, after ignition, combustion spreads throughout the entire unconsumed mixture.

Potential sources of ignition include hot surfaces, electrical sparks, open flames and mechanical friction sparks.

## What is an explosion?

An explosion is a sudden chemical reaction of a flammable material with oxygen. In order for an explosion to occur, three conditions must be fulfilled:

- 1: Flammable material
- 2: Oxygen
- 3: Ignition source



## Risk reduction in general

In all situations where there may be an explosive atmosphere, the following steps should be taken to minimize the risk of explosion:

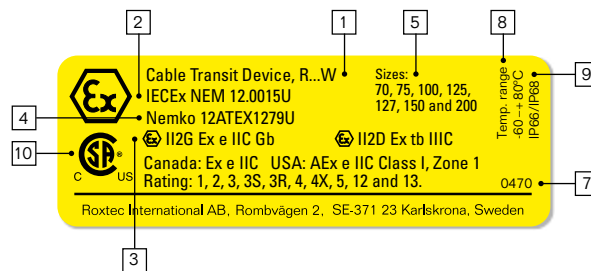
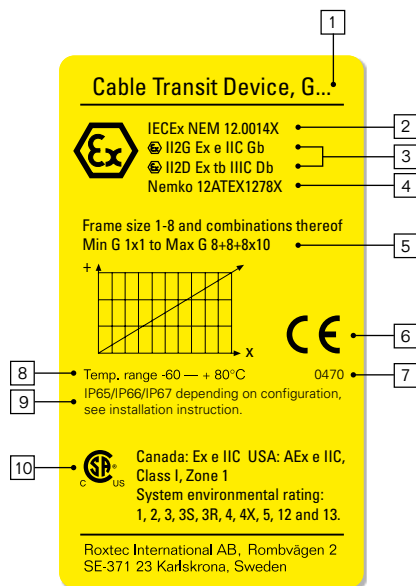
- Elimination of the explosive atmosphere around the source of ignition
- Elimination of the source of ignition
- Substitute with a non-flammable substance
- Lowering the process temperature

In practice, however, it is very difficult to ensure that an explosive atmosphere will never occur.

In these cases the ATEX product directive provides necessary protective measures.

# Roxtec Ex marking

All Roxtec Ex products are clearly marked in accordance with the ATEX directive. They are easily identified by the yellow Ex label and Ex icon.



1. Type of Cable Transit Device.
2. NEMKO's IECEx certificate number.  
**NEM** = Name or mark of notified body.  
**0014, 0015** = Consecutive No.  
**12** = Year of certification.  
**U** = Marking to indicate that the equipment is an Ex component.  
**X** = Marking to indicate that special conditions for safe use apply for the certification of the product.
3. = Ex Trademark.  
**II2G** = Electrical equipment of Group II is intended for use in places with an explosive gas atmosphere other than mines susceptible to firedamp.  
**2** = Equipment category.  
**G** = Marking for protection against potential explosive gases.  
**Ex** = The symbol to indicate that the electrical apparatus corresponds with one or more explosion protection techniques.  
**e** = The symbol for the protection Increased Safety.  
**IIC** = Permitted equipment group II or IIC.  
**Gb** = equipment for explosive gas atmospheres, having a "high" level of protection, which is not a source of ignition in normal operation or during expected malfunctions.  
**II2D** = Electrical equipment of Group II is intended for use in places with an explosive dust atmosphere other than mines susceptible to firedamp.

- D** = Marking for protection against explosive dust.  
**tb** = protection by enclosure, (for EPL Db).  
**IIIC** = Permitted equipment group III or IIIC.  
**Db** = equipment for explosive dust atmospheres, having a "high" level of protection, which is not a source of ignition in normal operation or during expected malfunctions.
4. NEMKO's ATEX certificate number.  
**Nemko** = Name or mark of notified body.  
**12** = Year of certification.  
**1278, 1279** = Consecutive No.  
**U** = Marking to indicate that the equipment is an Ex component.  
**X** = Marking to indicate that special conditions for safe use apply for the certification of the product.
  5. Type designation for the certified Cable Transit Device.
  6. For cable glands certified as apparatus according to the ATEX directive, the CE mark is also applied.
  7. **0470** = Serial number of notified body.
  8. Minimum/maximum ambient temperature.
  9. Level of Ingress Protection.
  10. Ex marking for US/Canada.

# Roxtec Ex sealing system

The ingenious features of the Roxtec products provide our customers with numerous benefits including safety and cost-efficiency.



The purpose of using a Roxtec Ex sealing system is to create an intrusion-proof passage for cables. This is achieved by allowing the cables to be routed through a Roxtec frame. Roxtec sealing modules are then inserted in the frame to seal the passage. The built-in flexibility of our modular-based system provides fast and safe installations. On top of this, a Roxtec sealing system allows additional installations or reconfigurations to be performed in the future.

## **Multidiameter™ by Roxtec**

A unique feature of our system is Multidiameter™, a solution based on sealing modules with removable layers. The fit to the cable is achieved by peeling off layers from the core of the seal, such as Roxtec modules or Roxtec round seals. The benefits are enormous for the users. Fewer parts that can do more turn the pre-planning and logistics into simplicity. In fact, every step in your operations, from design to maintenance, will benefit from the improvement.



# Roxtec Ex sealing system

## MODULES



RM Ex modules



CM Ex modules

## RECTANGULAR FRAMES



S Ex frame



SF...W Ex frames



G...W Ex frames



G Ex frame



CF 8 Ex frame



CF 32 Ex frame



CF 16 Ex frame

## ROUND FRAMES/SEALS



R...W Ex frames



R...B Ex frames



RS...W Ex seals



RS...B Ex seals



C RS T Ex seal

## ASSEMBLY PARTS



Wedge kit Ex



Wedge Ex



Stayplate Ex



Lubricant

## ACCESSORIES



Pre-compression wedge



Pre-compression tool



Pre-compression eccentric tool



Handgrip pre-comp



Stayplate clamps




Stayplate clips



Roxtec Wedge puller



Module Adaption Indicator

Roxtec Ex frames/seals are marked  II 2G Ex e IIC Gb/II2D Ex tb IIIC Db. Ingress protection is from IP66 to IP68 depending on the product. Temperature range -60° C — +80° C or -40° C — +80° C depending on the product. For Ex frames/seals suitable for EMC, please contact your local Roxtec supplier or send an e-mail to [info@roxtec.com](mailto:info@roxtec.com) for guidance.

# We support you globally



## Sharing our knowledge

Roxtec is much more than a supplier. Our sales and support staff around the world help customers find the optimal solution. Our knowledge, acquired through many years of work in the field, enables us to guide you to a solution that suits your specific needs.

## We help ensure quality

Our extensive R&D resources, with design departments, a fire test lab and a technical center, give us the opportunity to continuously develop and improve products and solutions for our customers. We provide tests and certificates as well as support and documentation for transferring knowledge within your organization.

## Roxtec Transit Designer™

Our free, web-based tool simplifies product selection according to needs and requirements and improves the entire process of designing, purchasing and installing cable and pipe transits. It is available on [www.roxtec.com](http://www.roxtec.com).



## Installation training

Whenever desired, we provide product installation training on site through our sales staff and technicians. On our website [www.roxtec.com](http://www.roxtec.com), we have collected useful information for staff involved in assembly and installation of the sealing system. Instructions and videos can be viewed online or downloaded for free.

# Available on your market

## Market leader

Roxtec is the global market leader in modular-based seals for cable and pipe entries. Our head office is situated in Sweden, where we manufacture our products and coordinate sales and marketing. We serve our customers in more than 70 markets through subsidiaries and an extensive network of local distributors.

## Continuous development

We work continuously to improve our products, to keep pace with and lead the development in the market place and to meet new requirements pertaining to materials and standards. All of these activities are carried out within the framework of our quality management system, certified according to the ISO 9001 and ISO 14001 standards.

## Quick deliveries

Delivery times are crucial. Local representatives and stocks worldwide mean that we can deliver at short notice. Products will be delivered to the destination of your choice, to warehouses or directly to site.



## Find out more

Learn more about us, and find your nearest Roxtec representative at [www.roxtec.com](http://www.roxtec.com)



## Local presence worldwide

Roxtec is the world-leading provider of flexible sealing solutions for cable and pipe penetrations. Our adaptability solution, Multidiameter™, is based on modules with removable layers. It seals perfectly, regardless of the dimension of the cable or pipe. We are present all over the world in order to ensure product availability as well as quick support and supply.

**Sweden**, Roxtec International AB, HQ  
**Argentina**, INGIAR Representaciones SRL  
**Australia**, Roxtec Australia Ltd  
**Belgium**, Roxtec b.v.b.a./s.p.r.l  
**Brazil**, Roxtec Latin América Ltda  
**Chile**, FACOR Ltda  
**China**, Roxtec Sealing System (Shanghai) Co. Ltd  
**Croatia**, Roxtec d.o.o.  
**Czech Republic**, Roxtec CZ s.r.o  
**Denmark**, Roxtec Denmark ApS  
**Finland**, Roxtec Finland Oy  
**France**, Roxtec France SAS  
**Germany**, Roxtec GmbH  
**Hungary**, Glob-Prot Trade and Service Ltd  
**India**, Roxtec India Pvt Ltd  
**Israel**, C&P Co. Ltd  
**Italy**, Roxtec Italia S.r.l  
**Japan**, Roxtec Japan K.K  
**Lithuania**, SWELBALT UAB  
**Mexico**, Roxtec de México, S.A. de C.V  
**Nigeria**, Structured Resource Business Ltd  
**The Netherlands**, Roxtec BV  
**Norway**, Roxtec AS  
**Peru**, Synixtor S.A.C  
**Poland**, Pionet Sp.zo.o  
**Russia**, Roxtec RU  
**Romania**, Roxtec RO s.r.l.  
**Singapore/Indonesia**, Roxtec Singapore PTE Ltd  
**South Africa**, Roxtec Africa (PTY) Ltd  
**South Korea**, Roxtec Korea Ltd  
**Spain**, Roxtec Sistemas Pasamuros S.L  
**Switzerland**, Agro AG  
**Turkey**, Roxtec Yalıtım Çözümleri San. ve Tic. Ltd. Şti.  
**UAE**, Roxtec Middle East F.Z.E  
**UK/Ireland**, Roxtec Ltd,  
**USA/Canada**, Roxtec Inc  
**Venezuela**, Grupo ES Escorihuela Somes, C.A

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