
FirePro CONDENSED AEROSOL GENERATORS
FOR ATEX APPLICATIONS

Models: FP-100EX, FP-200EX, FP-500EX, FP-1200EX,
FP-2000EX, FP-3000EX, FP-4200EX, FP-5700EX

This Manual (2/11/2018, version 1, rev.0) shall be used in conjunction with the latest version of the FirePro Information, Instruction & User Manual.

- II 1G Ex s IIC T3 Ga
- II 1D Ex s IIC T200 °C Da
- I M1 Ex s T450 °C Ma

T_{amb} = -54 °C +54 °C

Reinventing Fire Suppression
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1. **Scope**

This manual is written for those who are designing, installing and maintaining FirePro condensed aerosol fire extinguishing systems for total flooding applications in Explosive Atmospheres and Hazardous locations.

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This manual should be used in conjunction with the latest version of the FirePro Information Instruction and User Manual.

2. **Reference Standards, Laws and Regulations**

FirePro ATEX Condensed Aerosol Generators are built in accordance with the following standards:

- **2014/34/EU-ATEX** ATEX (Explosive Atmospheres) Directive
- **EN IEC 60079-0** Explosive atmospheres. Equipment. General requirements
- **EN IEC 60079-14** Explosive atmospheres. Electrical Installations, design, selection and erection
- **EN IEC 60079-10** Explosive atmospheres. Classification of areas
- **EN IEC 60079-17** Explosive atmospheres. Electrical Installations, inspection and maintenance
- **IEC 60079-33** Explosive atmospheres. Equipment protection by special protection “s”
- **EN 1127-1:2011** Explosive Atmospheres – Explosion prevention and protection Part 1 – Basic concepts and methodology
- **ISO 15779** Condensed aerosol fire extinguishing systems -- Requirements and test methods for components and system design, installation and maintenance -- General requirements
- **EN 15276-1:2019** Fixed firefighting systems. Condensed aerosol extinguishing systems Requirements and test methods for components
- **EN 15276-2:2019** Fixed firefighting systems. Condensed aerosol extinguishing systems Design, installation and maintenance
- **UL 2775** Standard for Fixed Condensed Aerosol Extinguishing System Units
- **NFPA 2010** Standard for Fixed Aerosol Fire-Extinguishing Systems
3. FirePro Condensed Aerosol fire extinguishing action

Traditionally, there were three distinct elements assumed as necessary for combustion: heat, fuel, and oxygen, popularly known as the “fire triangle”.

Typical fire extinguishment involves either removing the fuel from the fire, limiting oxygen to the fire (smothering), or removing the heat (quenching).

This physical theory had to be modified as halons became more widely used and better understood.

The halons, as well as other agents like the FirePro condensed aerosol do not extinguish fire in any of these ways, but instead break up the uninhibited chain reaction of the combustion process.

This extinguishing mechanism is not completely understood, yet there is definitely a chemical reaction that interferes with the combustion process by removing the active chemical species involved in the flame chain reaction.

The FirePro condensed aerosol extinguishing mechanism works by removing the active chemical species involved in the flame chain reaction.

Upon activation, the FPC (patented solid compound contained in the FirePro condensed aerosol generators), immediately starts a chemical reaction that in few seconds produces condensed dry aerosol in the discharge density defined by the system designer (i.e. potassium compounds (K₂CO₃), H₂O, N₂, CO₂ and other gas particles in small quantities.

The FirePro condensed aerosol thus generated consists of micro-sized particles of potassium compounds suspended in inert gases in an extremely high ratio between the exposed surface and their reaction mass.

The FirePro condensed aerosol then remains in suspension for a relatively long time into the protected volume allowing its active inhibitor to flow into the combustion core transported by its own natural convection currents and breaking the chain reaction upon flame contact with extremely high efficiency.

Potassium is an alkaline metal and requires the least amount of energy for ionization because of its very low ionization potential. Therefore a certain amount of energy is removed from the combustion itself to eliminate the atoms’ electrons during this ionization process. This is the physical action of the extinguishing process of FirePro condensed aerosol.

Its chemical process of the FirePro condensed aerosol fire extinguishment is characterized by certain reactions in rapid sequence taking place between atoms and fragments of unstable molecules, which is called “chain reactions of radicals”.

Since the radicals are unstable, they tend to reach a final stable condition. The stable final products, among others, are carbon dioxide (CO₂) and water (H₂O).

The potassium atoms derived by the disassociation of the potassium compounds contained in the FirePro condensed aerosol, reacts during combustion with the free radicals of unstable hydroxides forming potassium hydroxide (KOH). At this stage the chain reaction of the free radicals is halted and the flame is extinguished. KOH reacts further in the presence of CO₂ and forms K₂CO₃.

The reactions’ sequence is shown in the following page.
FirePro Condensed aerosol fire extinguishing reaction sequence

Oxidation of hydrogen in the flames:

\[ H_2 + O_2 \rightarrow 2 OH^- \]
\[ OH^- + H_2 \rightarrow H_2O + H^+ \]
\[ H^+ + O_2 \rightarrow OH^- + H^+ \]
\[ O^- + H_2 \rightarrow OH^- + H^+ \]

Oxidation of carbon monoxide in the flame:

\[ H_2 + O_2 \rightarrow 2 OH^- \]
\[ OH^- + CO^+ \rightarrow CO_2 + H^+ \]
\[ H^+ + O_2 \rightarrow OH^- + O^- \]

Therefore, in the flame, during combustion, further to water and carbon dioxide (stable), only unstable hydroxyl radicals are formed which allow the reaction to continue (phenomenon of auto catalysis).

The chain reaction is interrupted by the Potassium atoms, which react with the unstable hydroxyl as follows:

\[ OH^- + K^+ \rightarrow KOH \] (and flames are thus extinguished)

Notice that the potassium hydroxide (KOH) is formed in quantities smaller than micrograms.

The KOH reacts further in the presence of CO₂ and form K₂CO₃.

During this process we can verify that the extinguishing action of potassium compounds is not achieved either through smothering or quenching but through a reaction in presence of flame with consequent termination of the chain reaction.

Legend:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H₂</td>
<td>hydrogen stable</td>
</tr>
<tr>
<td>O₂</td>
<td>oxygen stable</td>
</tr>
<tr>
<td>OH⁻</td>
<td>hydroxyl radicals unstable</td>
</tr>
<tr>
<td>H₂O</td>
<td>water stable</td>
</tr>
<tr>
<td>H⁺</td>
<td>hydrogen atoms unstable</td>
</tr>
<tr>
<td>O⁻</td>
<td>Oxygen atoms unstable</td>
</tr>
<tr>
<td>CO⁺</td>
<td>carbon monoxide unstable</td>
</tr>
<tr>
<td>CO₂</td>
<td>carbon dioxide stable</td>
</tr>
</tbody>
</table>
4. Areas and hazardous zones

Explosion Hazardous areas are those where, under certain conditions, explosive atmospheres may occur.

An explosive atmosphere is a mixture with air, under atmospheric conditions, of flammable substances in the form of gases, vapours, mists or dusts in which, after ignition has occurred, combustion spreads to the entire unburned mixture.

The user, or his representative, is required to make UNDER HIS OWN RESPONSIBILITY the assessment of the zones type. He will also have to draw up a comprehensive risks assessment (possibly making use of qualified personnel) in which all the equipment and the possible risks are taken into consideration.

EN 60079-10-1 and EN 60079-10-2 provide criteria for the classification of hazardous areas in relation to chemical, physical characteristics and quantity of the substances used, as well as a function of frequency and of the time period in which such mixture may be present. Please see figure 1 below.

![Diagram of ATEX zones definition scheme according to EN 60079-10 and EN 50281-3 with the allowed product categories for each zone.](image)

Figure 1 ATEX zones definition scheme according to EN 60079-10 and EN 50281-3 with the allowed product categories for each zone.
5. Temperature classes (for potentially explosive atmosphere in the presence of combustible gas)

All devices in hazardous areas shall be classified according to the maximum surface temperature that may be developed both in normal operation and in case of failure.

The European standard EN 60079-0 provides, for maximum surface temperature, six classes from T1 to T6 (see table below) with a reference ambient temperature of +40 °C. In case of different reference temperature, the variation must be specified on the appliance/device.

<table>
<thead>
<tr>
<th>Temperature class</th>
<th>Maximum surface temperature (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>450</td>
</tr>
<tr>
<td>T2</td>
<td>300</td>
</tr>
<tr>
<td>T3</td>
<td>200</td>
</tr>
<tr>
<td>T4</td>
<td>135</td>
</tr>
<tr>
<td>T5</td>
<td>100</td>
</tr>
<tr>
<td>T6</td>
<td>85</td>
</tr>
</tbody>
</table>

Table 1 Temperature class description

6. Installation

FirePro Condensed Aerosol Generators installation in environments with a potentially explosive atmosphere, is sole responsibility of the user.

Prior to installation users shall:
- Assess the risks of the environment in which they intend to install the equipment;
- Identify the type of hazardous atmosphere (Gas or Dust);
- Define the Zone (0 – 1 – 2 for gas, or 20 – 21 – 22 for dust);
- Identify the Product category (1G – 2G – 3G or 1D – 2D –3D);
- Be sure that the license nameplate of the FirePro Condensed Aerosol Generator corresponds to the ordering data.

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7. **FIREPRO ATEX Condensed Aerosol Generators nameplate**

In accordance with the ATEX directive 2014/34/EU (Ref Chapter III, art. 10), FirePro ATEX Condensed Aerosol Generators designed to operate in potentially explosive atmospheres are identified by a nameplate. Furthermore the nameplate indicates the elements of ATEX classifications in which the Condensed Aerosol Generators can be used.

**Picture 2 FirePro ATEX Condensed Aerosol Generators Nameplate**
8. **ATEX Marking**

<table>
<thead>
<tr>
<th>Marking</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>II 1G Ex s IIC T3 Ga</td>
<td>Non mining equipment, Category 1, can be used in zones 0, 1 and 2, Gas atmosphere, Explosion protection, Special protection - IEC 60079-33, Explosion Group (most dangerous group), Maximum permitted housing temperature at 200 °C, Equipment protection level</td>
</tr>
<tr>
<td>II 1D Ex s IIC T200 °C</td>
<td>Non mining equipment, Category 1, can be used in zones 20, 21 and 22, Dust atmosphere, Explosion protection, Special protection - IEC 60079-33, Conductive dust, Maximum permitted housing temperature at 200 °C, Equipment protection level</td>
</tr>
<tr>
<td>I M1 Ex s T450 °C Ma</td>
<td>Mining equipment, Category 1, can be used in zones 0 or 20, Explosion protection, Special protection - IEC 60079-33, Maximum permitted housing temperature at 450 °C, Equipment protection level</td>
</tr>
</tbody>
</table>
DECLARATION OF CONFORMITY EU

FIREPRO SYSTEMS LTD
8 FALEAS STR., AGIOS ATHANASIOS INDUSTRIAL AREA, CY4101 LIMASSOL – CYPRUS EU

This declaration of conformity is issued under the sole responsibility of the manufacturer

Condensed Aerosol Generators: FP-100EX, FP-200EX, FP-500EX, FP-1200EX, FP-2000EX, FP-3000EX, FP-4200EX, FP-5700EX

II 1G Ex s IIC T3 Ga

II 1D Ex s IIIC T200 °C Da

I M1 Ex s T450 °C Ma

The object of the declaration described above is in conformity with the relevant European Union harmonization legislation:

2014/34/EU-ATEX

This conformity is declared referencing to the relevant harmonized standards:

THE NOTIFIED BODY ALBARUBENS srl (N. 2632) ISSUED THIS EU-TYPE EXAMINATION CERTIFICATE:
AR18ATEX132rev1
(date of first issue: 23.11.2018)

THE NOTIFIED BODY TÜV CYPRUS (TÜV NORD) LTD (N. 2261) ISSUED THIS PRODUCTION QUALITY ASSURANCE NOTIFICATION:
TÜV CY 19 ATEX AT0206135
(date of first issue: 06.06.2019)

FirePro Systems Ltd

Dr. G. Gianfilippi de Parenti
Executive Director
**10. FIREPRO EX Condensed Aerosol Generators data sheets**

### FP-100EX

<table>
<thead>
<tr>
<th>TECHNICAL INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
</tr>
<tr>
<td><strong>Activation method</strong></td>
</tr>
<tr>
<td><strong>Current intensity to be tested</strong></td>
</tr>
<tr>
<td><strong>Weight gross</strong></td>
</tr>
<tr>
<td><strong>Weight net extinguishing agent</strong></td>
</tr>
<tr>
<td><strong>Operational discharge time</strong></td>
</tr>
<tr>
<td><strong>Discharge outlet</strong></td>
</tr>
<tr>
<td><strong>Discharge length</strong></td>
</tr>
<tr>
<td><strong>Size</strong></td>
</tr>
<tr>
<td><strong>Self-activation temperature</strong></td>
</tr>
<tr>
<td><strong>Fire class</strong></td>
</tr>
</tbody>
</table>

**APPLICATIONS**

ATEX areas

![FP-100EX](image)

### FP-200EX

<table>
<thead>
<tr>
<th>TECHNICAL INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
</tr>
<tr>
<td><strong>Activation method</strong></td>
</tr>
<tr>
<td><strong>Current intensity to be tested</strong></td>
</tr>
<tr>
<td><strong>Weight gross</strong></td>
</tr>
<tr>
<td><strong>Weight net extinguishing agent</strong></td>
</tr>
<tr>
<td><strong>Operational discharge time</strong></td>
</tr>
<tr>
<td><strong>Discharge outlet</strong></td>
</tr>
<tr>
<td><strong>Discharge length</strong></td>
</tr>
<tr>
<td><strong>Size</strong></td>
</tr>
<tr>
<td><strong>Self-activation temperature</strong></td>
</tr>
<tr>
<td><strong>Fire class</strong></td>
</tr>
</tbody>
</table>

**APPLICATIONS**

ATEX areas

![FP-200EX](image)
<table>
<thead>
<tr>
<th>Model</th>
<th>FP-500EX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activation method</td>
<td>Electrical (Minimum pulse voltage: 1.5 V DC, Minimum pulse current: 0.6 A, Minimum pulse duration: 0.5 s)</td>
</tr>
<tr>
<td>Weight gross</td>
<td>3770 g</td>
</tr>
<tr>
<td>Weight net extinguishing agent</td>
<td>500 g</td>
</tr>
<tr>
<td>Operational discharge time</td>
<td>5 - 10 seconds</td>
</tr>
<tr>
<td>Discharge outlet</td>
<td>1</td>
</tr>
<tr>
<td>Discharge length</td>
<td>3.0 m</td>
</tr>
<tr>
<td>Size</td>
<td>d:84 mm x 310 mm (incl. connector housing)</td>
</tr>
<tr>
<td>Self-activation temperature</td>
<td>300°C</td>
</tr>
<tr>
<td>Fire class</td>
<td>A, B, C, F</td>
</tr>
</tbody>
</table>

**APPLICATIONS**

ATEX areas

- II 1G Ex s IIIC T3 Ga
- II 1D Ex s IIIC T200 °C Da
- I M1 Ex s T450 °C Ma

<table>
<thead>
<tr>
<th>Model</th>
<th>FP-1200EX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activation method</td>
<td>Electrical (Minimum pulse voltage: 1.5 V DC, Minimum pulse current: 0.6 A, Minimum pulse duration: 0.5 s)</td>
</tr>
<tr>
<td>Weight gross</td>
<td>17050 g</td>
</tr>
<tr>
<td>Weight net extinguishing agent</td>
<td>1200 g</td>
</tr>
<tr>
<td>Operational discharge time</td>
<td>10 - 15 seconds</td>
</tr>
<tr>
<td>Discharge outlet</td>
<td>1</td>
</tr>
<tr>
<td>Discharge length</td>
<td>3.5 m</td>
</tr>
<tr>
<td>Size</td>
<td>365 x 450 x 310</td>
</tr>
<tr>
<td>Self-activation temperature</td>
<td>300°C</td>
</tr>
<tr>
<td>Fire class</td>
<td>A, B, C, F</td>
</tr>
</tbody>
</table>

**APPLICATIONS**

ATEX areas

- II 1G Ex s IIIC T3 Ga
- II 1D Ex s IIIC T200 °C Da
- I M1 Ex s T450 °C Ma
### FP-2000EX

<table>
<thead>
<tr>
<th>TECHNICAL INFORMATION</th>
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<tbody>
<tr>
<td><strong>Model</strong></td>
</tr>
<tr>
<td><strong>Activation method</strong></td>
</tr>
<tr>
<td><strong>Current intensity to be tested</strong></td>
</tr>
<tr>
<td><strong>Weight gross</strong></td>
</tr>
<tr>
<td><strong>Weight net extinguishing agent</strong></td>
</tr>
<tr>
<td><strong>Operational discharge time</strong></td>
</tr>
<tr>
<td><strong>Discharge outlet</strong></td>
</tr>
<tr>
<td><strong>Discharge length</strong></td>
</tr>
<tr>
<td><strong>Size</strong></td>
</tr>
<tr>
<td><strong>Self-activation temperature</strong></td>
</tr>
<tr>
<td><strong>Fire class</strong></td>
</tr>
</tbody>
</table>

#### APPLICATIONS

ATEX areas

- IIG Ex s IIC T3 Ga  \(T_{amb} = -54°C + 54°C\)
- II 1D Ex s IIC T200°C Da
- I M1 Ex s T450°C Ma

### FP-3000EX

<table>
<thead>
<tr>
<th>TECHNICAL INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
</tr>
<tr>
<td><strong>Activation method</strong></td>
</tr>
<tr>
<td><strong>Current intensity to be tested</strong></td>
</tr>
<tr>
<td><strong>Weight gross</strong></td>
</tr>
<tr>
<td><strong>Weight net extinguishing agent</strong></td>
</tr>
<tr>
<td><strong>Operational discharge time</strong></td>
</tr>
<tr>
<td><strong>Discharge outlet</strong></td>
</tr>
<tr>
<td><strong>Discharge length</strong></td>
</tr>
<tr>
<td><strong>Size</strong></td>
</tr>
<tr>
<td><strong>Self-activation temperature</strong></td>
</tr>
<tr>
<td><strong>Fire class</strong></td>
</tr>
</tbody>
</table>

#### APPLICATIONS

ATEX areas

- IIG Ex s IIC T3 Ga  \(T_{amb} = -54°C + 54°C\)
- II 1D Ex s IIC T200°C Da
- I M1 Ex s T450°C Ma
### FP-4200EX

**TECHNICAL INFORMATION**

- **Model**: FP-4200EX
- **Activation method**: Electrical (Minimum pulse voltage: 1.5 V DC, Minimum pulse current: 0.6 A, Minimum pulse duration: 0.5 s)
- **Current intensity to be tested**: maximum 5 mA
- **Weight gross**: 30910 g
- **Weight net extinguishing agent**: 4200 g
- **Operational discharge time**: 15 - 20 seconds
- **Discharge outlet**: 1
- **Discharge length**: 5.0 m
- **Size**: 365 x 450 x 420
- **Self-activation temperature**: 300°C
- **Fire class**: A, B, C, F

**APPLICATIONS**

- ATEX areas

### FP-5700EX

**TECHNICAL INFORMATION**

- **Model**: FP-5700EX
- **Activation method**: Electrical (Minimum pulse voltage: 1.5 V DC, Minimum pulse current: 0.6 A, Minimum pulse duration: 0.5 s)
- **Current intensity to be tested**: maximum 5 mA
- **Weight gross**: 33710 g
- **Weight net extinguishing agent**: 5700 g
- **Operational discharge time**: 15 - 20 seconds
- **Discharge outlet**: 1
- **Discharge length**: 8.0 m
- **Size**: 365 x 450 x 420
- **Self-activation temperature**: 300°C
- **Fire class**: A, B, C, F

**APPLICATIONS**

- ATEX areas
11. **FirePro Initiator (Electrical Activator)**

The initiator is connected to the activation power circuit through heat resistant wires. The applied power will activate the electrical coil (4) which will heat up the FPC Solid Compound thermal booster (5) initiating an exothermic reaction. The heat developed will transfer through the cylinder outlets (7) starting the exothermic reaction of the FPC Solid Compound (9); thus, the thermal energy will be sufficient to start the reaction of the whole mass of FPC Compound contained inside the aerosol generator, transforming the FPC into a particulate (microsized particles) and carrier gases.

**Legend**

- 1: heat resistant wires (feed)
- 2: steel housing
- 3: polymeric resin
- 4: electric coil
- 5: FPC (solid compound-thermal booster)
- 6: chemical stabilizer
- 7: cylinder with 2 outlets
- 8: sealing
- 9: FPC (solid compound)
- 10: lacquered surface

**Electrical values**

- Bridge resistance: 1.6-3.0 Ohms (Ω)
- Minimum Pulse Energy: 0.8 mWs/Ω
- Minimum Pulse Voltage (V): 1.5 Vdc
- Minimum Pulse Current (A): 0.6 A
- Minimum Pulse Duration: 0.5 s
- No Fire Current (A): 0.02 A
- Duration of Heat Emission: 3 - 4 s

**Working temperature (not to exceed)**

- Deployment temperature: -54°C to 100°C
- Storage temperature: -54°C to 54°C

The initiator is a standard component of all the FirePro aerosol generators.
12. Equipment – General requirements

*Reference:* IEC 60079-0:2011 Explosive atmospheres – Part 0: Equipment – General requirements

For requirements related to Connection facilities for earthing (grounding) or bonding conductors, Equipment requiring earthing, Size of conductor connection, Secureness of electrical connections refer to *IEC 60079-0:2011 clause 15.*

For requirements related to Entries into enclosures, Identification of entries, Cable glands, Blanking elements, Thread adapters, Temperature at branching point and entry point, Electrostatic charges of cable sheaths refer to *IEC 60079-0:2011 clause 16.*

13. Electrical design, selection and installation

*Reference:* IEC 60079 -14 Explosive atmospheres – Electrical installations design, selection and erection.

For requirements related to Potential equalization, refer to *IEC 60079 -14 clause 6.*

For requirements related to Earthing of conducting screens, Cable armour bonding, Installation of cables and wiring, Conductors of intrinsically safe circuits, Unused cores in multi-core cables, Earthing of intrinsically safe circuits refer to *IEC 60079 -14 clause 12.*

**Earthing / Grounding details:**

Multiple grounds throughout an installation could result in a difference of potential between Condensed Aerosol Generators and possibly could also create ground fault problems to the Fire Extinguishing Panel. Use of local bonding to earth (grounding) of the Condensed Aerosol Generator metallic enclosure could be beneficial for reasons, such as:

a. Lightning Protection  
b. Protection against voltage surges  
c. Provision of “clean earth” system  
d. Shielding against electromagnetic interference noise  
e. Protection against electrostatic discharge

However, the above benefits would be effective only in case the bonding/grounding is done properly. It is advised that the bonding / grounding of the Condensed Aerosol Generator metallic enclosure is done locally, and individually from the braid of the cable. The cable braid should be grounded at the common earthing terminal within the Fire Alarm and Extinguishing Panel side only.
It is mandatory to consult FirePro Systems Ltd or its authorized distributor before using FirePro ATEX Condensed Aerosol Generators in potentially explosive atmospheres;

14. Inspection and Maintenance

Reference: EN IEC 60079 -17 Explosive atmospheres – Electrical installations inspection and maintenance. For requirements related to:

Maintenance requirements, refer to **EN IEC 60079 -17 clause 4.6**
Isolation of equipment, intrinsically safe installations, refer to **EN IEC 60079 -17 clause 4.8.2**
Earthing and equipotential bonding refer to **EN IEC 60079 -17 clause 4.9**
Inspection Schedules refer to **EN IEC 60079 -17 clause 4.12**
Cable gland, refer to **EN IEC 60079 -17 clause 4.12.5**
Type of cable, refer to **EN IEC 60079 -17 clause 4.12.6**
Sealing, refer to **EN IEC 60079 -17 clause 4.12.7**
Cable screens, refer to **EN IEC 60079 -17 clause 5.3.7**

Important Note:
Even though, the Ex rated gland, the cabling and the Aerosol Generator are pre-assembled at the factory, it is the responsibility of the installer to check and verify the integrity of the complete assembly.

The membrane (sticker) which hermetically seals the outlets of the Condensed Aerosol Generators should be replaced every two years or whenever damage is observed.

15. Design Calculation.
The quantity (mass) of aerosol agent to be used should be determined as per Design Calculation Section of the latest EN Information Instruction and User Manual.