

# FLEXIBLE SOLUTION FOR FIRESTOP PIPE PENETRATIONS

# ArmaProtect EFC1 and EFC2 Endless firestop collar

Endless firestop collar for fire seals in walls and floors

// Combustible pipes Ø < 160 mm (with and without sound insulation)
// Combustible pipes Ø < 108 mm (with combustible insulation)
// Non-combustible pipes Ø < 108 mm (with combustible insulation)
// Multi-layer composite pipes Ø < 110 mm</pre>

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# ENHANCING SAFETY LEVELS TO PROTECT PROPERTY AND SAVE LIVES.

PASSIVE FIRE PROTECTION (PFP) products and systems are designed to provide fire-safe circumstances in the event of a fire emergency. Often built as part of the building component, PFP measures are not visible to building users and hence often overlooked as a fire protection measure.



#### PFP sys

#### // Building construction

- Fire protection to the load bearing structure
- The building envelope, e.g. fire rated external walls, curtain walls etc.

#### // Building services

- Firefighting shafts and stairwells
- · Fire rated service ducts and shafts
- Fire rated cable coatings
- Fire rated elevators for emergency use only

#### // Ventilation systems

- Fire rated ductwork including fire dampers
- or intumescent)

#### COMPARTMENTATION

Regulated by building codes in many countries, buildings are sub-divided into "fire compartments" and in some cases also smoke compartments. In the event of a fire emergency in a building, the strategy is to keep the fire and smoke contained within a limited area of the building (the fire compartment) for a given amount of time (referred to as the fire rating). Fire ratings are countrydependent and typically ranges between 30 and 120 minutes (partly even up to 240 minutes).

Properly designed and installed, PFP systems complement fire compartments to provide multiple levels of fire safety, such as

- Providing building users sufficient time to safely make their way to a means of egress and escape from the building
- Keeping escape routes free from smoke and other toxic gasses, and
- Allowing emergency responders to safely rescue building users from the fire scene and attempt to extinguish the fire

Fire and flames cause severe harm but a key concern for humans is the inhalation of smoke and other toxic gasses. For example, if there is a hole

- Fire rated glazing
- Fire shutters
- - Cavity barriers

- Fire rated air transfer grilles (mechanical



as small as 10 mm (0.4") in diameter penetrating a fire rated floor or ceiling between the two rooms and a fire is to occur in a room, it would take less than 3 minutes for the adjacent room to be filled with smoke. In this situation, you would not be able to see your own hand even if placed just 45 cm (18") in front of you. Incapacitation and physical impairment due to smoke inhalation occurs even faster.

centres.

#### // Compartmentation

- Partitions and floors
- Fire rated doors
- Service shafts
- Suspended ceilings
- Industrial fire shutters and curtains
- Linear gap seals
- Penetration seals for pipes, cables and
- other services, also known as firestop
- systems

firestop systems is an integral measure to be considered.

Apart from being a safety issue for humans, smoke can also cause severe damage to assets and equipment, for example in hospitals and data



BUILDINGS ARE EQUIPPED WITH MECHANICAL AND ELECTRICAL SYSTEMS TO PROVIDE COMFORT, SAFETY AND SECURITY. SERVICES CONNECTED TO THESE APPLIANCES RUN ACROSS BUILDINGS AND PENETRATE FIRE RATED WALLS, FLOORS AND SERVICE SHAFTS. COMPROMISING THE FIRE COMPARTMENTATION STRATEGY.

Firestop systems are designed to seal penetrations of such services, including: Insulated and non-insulated combustible pipes Insulated and non-insulated non-combustible pipes Single cables and cable bundles Cable trays

These systems should be tested according to local governing fire standards and installed in line with the details shown in the fire test report.

At Armacell, safety comes first and maximum reliability is essential. As a systems solutions provider, we know firestop system requirements and standards and offer global support. This table provides an indicative overview of fire test standards for firestop systems globally.

| Standard     | Description                                                         | Geographic coverage    |
|--------------|---------------------------------------------------------------------|------------------------|
| EN 1366-3    | Penetration seals                                                   | Europe                 |
| EN 1366-4    | Linear joints                                                       | Europe                 |
| EN 13501-2   | Fire classification of construction products and building elements  | Europe                 |
| ISO 834      | Fire resistance tests                                               | Europe                 |
| UL 263       | Fire tests of building construction and materials                   | Asia, Middle East, USA |
| UL 1479      | Fire test of through-penetration firestops                          | Asia, Middle East, USA |
| UL 2079      | Tests for fire resistance of building joint systems                 | Asia, Middle East, USA |
| ASTM E814-13 | Standard test method for fire tests of penetration firestop systems | Asia, Middle East, USA |

## EUROPEAN STANDARDS

The European Standards applicable to firestop systems are EN1366-3, EN1366-4 and EN13501-2. Fire rating is measured as EI (integrity and insulation) for a specific time duration, and written as El 60, El 90, El 120, El 180 or El 240.

 E rating (integrity, "E" from French "Étanchéité"): This is the ability of a test component to stop fire

## **UL 1479 FOR THROUGH-PENETRATION FIRESTOPS**

This method exposes test samples of penetration firestops to a fire for a standard period of time and temperature and to an application of a hose stream. Ratings are then established based on the length of time the firestop is able to resist before the first development of through-openings or flaming on the unexposed surface, the acceptable limitation of thermal transmission and acceptable performance under the application of the hose stream test.

## **UL 2079 FOR FIRE RESISTANCE OF BUILDING JOINT SYSTEMS**

These tests are applicable to joint systems of various materials and construction intended for use in linear openings between adjacent fire resistive structures. The fire endurance ratings for joint systems are intended to register performance during the period of fire exposure and are not intended to be interpreted as having determined the acceptability of the joint systems for use before or after fire exposure.

bearing.



from spreading to an unexposed side as a result of penetration of flames or smoke.

• I rating (insulation, "I" from French "Isolation"): This is the ability of a test component to restrict the temperature rise of the non-heated side to below specified levels during the fire, which is not more than +140 °C and up to +180 °C.

Two ratings are established for each penetration firestop system:

 F rating (F = fire): based upon flame occurrence on the unexposed side of the test sample and acceptable hose stream performance

T rating (T = temperature) based on temperature rise and flame occurrence on the unexposed side of the test sample and acceptable hose stream performance.

The intent of these methods is to develop data to assist others in determining the suitability of the joint systems where fire resistance is required. These requirements are intended to evaluate the length of time that the types of joint systems specified will contain a fire during a predetermined test exposure. The test evaluates the joint system's resistance to heat and, in some instances, to a hose stream, while carrying an applied load if the assembly is load

# ARMAPROTECT FIRESTOP SOLUTIONS

ArmaProtect CB

floors





Coated fireboard system with

ArmaProtect ABLC Firestop coating and ArmaProtect ABLF

Ablative coated board system

Firestop filler mastic

Blank openings



| Fi<br>se | restop mortar for mixed fire<br>eals in walls and floors |
|----------|----------------------------------------------------------|
| •        | Blank openings                                           |

- Mixed and multiple services
- Cables, cable bundles and cable trays
- Conduit and conduit bundles
- Non-combustible and combustible pipes





for mixed fire seals in walls and Temporary or permanent

Firestop cushions for wall and floor openings sealing

Cables and cable trays

- ArmaProtect firestop systems: are easy to install and highly reliable.
  - have been globally tested.
  - are certified in numerous combinations and configurations, making the range a "one-stop-shop" solution
  - are easy to inspect and to maintain. •



ArmaProtect CT Firestop cable tube

**Firestop sealant** 

| Cable tube for fire seals in walls and floors |                                                                                                                                                                         | Ir<br>aı | itumescen<br>nd floors                         |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------------------------------------------------|
|                                               | Blank openings<br>Cables and cable bundles<br>Conduit and conduit bundles<br>Combustible pipes<br>HVAC split-line combinations<br>Ideally for retrofitting applications |          | Blank ope<br>Cables ar<br>Conduit a<br>Non-com |







| ArmaProtect FW1<br>Firestop wrap                                                           | ArmaProtect FW2<br>Firestop wrap                                                                                                                            | ArmaProtect FW3<br>Firestop wrap                                                                                                                                                                         |  |
|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Firestop wrap for fire seals in walls and floors                                           | Firestop wrap for fire seals in walls and floors                                                                                                            | Firestop wrap for fire seals in walls and floors                                                                                                                                                         |  |
| <ul> <li>Cable bundles up to Ø150mm</li> <li>Combustible pipes up to<br/>Ø160mm</li> </ul> | <ul> <li>Non-combustible pipes up to<br/>Ø323.9mm with combustible<br/>insulation</li> <li>Composite pipes</li> <li>Conduits and conduit bundles</li> </ul> | <ul> <li>Combustible pipes Ø≤160mm<br/>(without combustible insulation)</li> <li>Combustible pipes Ø≤110mm<br/>(with combustible insulation)</li> <li>Multi-layer composite pipes<br/>Ø≤110mm</li> </ul> |  |



| ArmaProtect FC1 and FC2<br>Firestop collar                                                                       | ArmaPro<br>Endless f                                                                          |
|------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| Firestop collar for fire seals in walls and floors                                                               | Endless f                                                                                     |
| For sealing of combustible pipes<br>without insulation up to Ø160<br>mm (FC1) and Ø400 mm (FC2),<br>respectively | <ul> <li>Combuinsulation</li> <li>Non-control</li> <li>insulation</li> <li>Multion</li> </ul> |

#### ARMAPROTECT EFC1 AND EFC2 ENDLESS FIRESTOP COLLAR /7



ArmaProtect EXPS

t firestop sealant for mixed fire seals in walls

enings nd cable bundles and conduit bundles bustible and combustible pipes

#### otect EFC1 and EFC2 firestop collar

firestop collar for fire seals in walls and floors

ustible pipes  $\emptyset \le 160 \text{ mm}$  (with and without sound tion) combustible pipes Ø≤ 108 mm (with combustible tion) layer composite pipes Ø≤ 110 mm¹

# SOLUTIONS WITH EN TESTING (ETA)

#### // For small to large openings

See relevant ETA for further installation details.

|                                         | SMALL                                                                                                                                                                 | MEDIUM                                                                                                   | LARGE                                                                                               |  |  |  |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|--|--|--|
|                                         | ArmaProtect CT <ul> <li>Pre-installed device</li> <li>Clean installation</li> <li>Easy re-penetration</li> <li>Openings up to Ø116mm</li> <li>Up to EI 120</li> </ul> | ArmaProtect CB                                                                                           | and maintenance                                                                                     |  |  |  |
| SUPERIOR<br>SOLUTION                    | ArmaProtect EXPS<br>• Up to EI 120<br>• Openings up to Ø150mm                                                                                                         | <ul> <li>Cable, pipe, mixed a</li> <li>Up to El 240</li> <li>Openings up to 1.4n respectively</li> </ul> | pipe, mixed and multiple penetrations<br>El 240<br>ngs up to 1.4m x 2.0m or 1.2m x 2.4m,<br>ctively |  |  |  |
|                                         | ArmaProtect ABLF<br>• Up to El 90<br>• Openings up to Ø160mm                                                                                                          |                                                                                                          |                                                                                                     |  |  |  |
| STANDARD<br>SOLUTION                    | ArmaProt<br>• Cable, p<br>• Up to El<br>• Opening                                                                                                                     | ect CM<br>ipe, mixed and multiple<br>240<br>Is up to 1.2m x 2.0m                                         | e penetrations                                                                                      |  |  |  |
| <b>For pipe pene</b><br>ee relevant ETA | <b>trations</b><br>for further installation details.                                                                                                                  |                                                                                                          |                                                                                                     |  |  |  |
|                                         | SMALL TO MEDIUM PIPE DIAMET                                                                                                                                           | ER                                                                                                       | LARGE PIPE DIAMETER                                                                                 |  |  |  |
|                                         | <ul> <li>ArmaProtect EFC1 and EFC2</li> <li>Flexible and clean installation</li> <li>Problem solver for special appli job site</li> </ul>                             | cations on                                                                                               | ArmaProtect FC2<br>■ Pre-formed product<br>■ Clean installation<br>■ Combustible pipes Ø< 400mm     |  |  |  |

- Combustible pipes Ø< 160 mm (with and without sound insulation)
- Non-combustible pipes Ø< 108 mm (with combustible insulation)
- Multi-layer composite pipes Ø< 110 mm
- Up to EI 240
- SUPERIOR ArmaProtect FC1

#### SOLUTION

- Pre-formed product Clean installation
- Combustible pipes Ø≤160mm (without insulation)

#### Up to EI 240

- ArmaProtect FW3
- Flexible and clean installation ■ Combustible pipes Ø<160mm (without
- combustible insulation)
- Combustible pipes Ø<110mm (with combustible insulation)
- Multi-layer composite pipes Ø<110mm Up to El 120

- (without insulation)
- Up to EI 120

ArmaProtect FW2

installation

Up to EI 120

Flexible and clean

Non-combustible pipes

up to Ø323.9mm (with

combustible insulation)



// For small to large openings

EXCEPTIONAL ArmaProtect CT

#### Easy re-penetration Openings up to Ø116mm

Up to 3 h F rating

#### SUPERIOR ArmaProtect FW1 SOLUTION

 Flexible and clean installation

See relevant UL systems for further installation details.

SMALL

- Combustible pipes up to Ø160mm
- Cable bundles up to Ø150mm
- Up to 3 h fire rating ArmaProtect FW2
- Flexible and clean installation
- Non-combustible pipes up to Ø159mm
- Composite pipes Conduits and conduit
- bundles Up to 3 h fire rating

#### STANDARD ArmaProtect CM SOLUTION Up to 3 h F rating Openings up to 0.6m x 0.4m

#### // For pipe penetrations

See relevant UL systems for further installation details.

#### **COMBUSTIBLE PIPES** ArmaProtect FW1

- SUPERIOR
- SOLUTION
  - - Combustible pipes up to Ø160mm
    - Ø150mm
    - Up to 3 h fire rating





ARMAPROTECT EFC1 AND EFC2 ENDLESS FIRESTOP COLLAR /9

## SOLUTIONS WITH UL TESTING (ACC. TO UL 1479 / ASTM E814)

| MEDIUM                                  | LARGE |
|-----------------------------------------|-------|
| ArmaProtect CU                          |       |
| <ul> <li>Pre-formed product</li> </ul>  |       |
| <ul> <li>Clean installation</li> </ul>  |       |
| <ul> <li>Easy re-penetration</li> </ul> |       |
| <ul> <li>For temporary and</li> </ul>   |       |
| temporary use                           |       |
| <ul> <li>Openings up to</li> </ul>      |       |
| 400mm x 200mm                           |       |
| Up to 3 h F rating                      |       |

ArmaProtect CB Easy re-penetration and maintenance Also tested for bus bars and ducts Up to 3 h F rating Openings up to 0.6m x 0.4m





#### NON-COMBUSTIBLE PIPES

ArmaProtect FW2

- Flexible and clean installation
- Non-combustible pipes up to Ø159mm
- PE/AL/PE composite pipe up to Ø63mm
- Also tested for PE-HD conduits up to Ø100mm (conduits Ø≤ 32mm), PE-HD conduits up to Ø50mm with speed pipe bundles and clima split bundles
- Up to 3 h fire rating



# **INSTRUCTIONS FOR USE**

Ensure that surfaces are dry and free of dust and grease.







#### // Consumption guide

Check usage of stainless steel strap and firestop inlay of ArmaProtect EFC1 or EFC2 system on the diameter of the pipe with the required number of layers. Before cutting, consider the number of required layers and potential need of firestop wrap overlap according to third party published listings or national approvals / assessments.

#### Exemplary estimation based on pipe diameter

| Pipe Ø [mm]                       | 32   | 32   | 40   | 40   | 50   | 50   | 63   | 63   | 75   | 75   |
|-----------------------------------|------|------|------|------|------|------|------|------|------|------|
| Insulation thickness [mm]         |      | 4    | -    | 4    | -    | 4    | -    | 4    | -    | 4    |
| Number of layers                  | 2    | 2    | 2    | 2    | 2    | 2    | 3    | 3    | 3    | 3    |
| Required length for inlay         | 250  | 320  | 320  | 360  | 375  | 440  | 685  | 780  | 800  | 895  |
| Number of steel strap<br>elements | 12   | 14   | 14   | 15   | 16   | 17   | 18   | 20   | 21   | 23   |
| Number of hooks                   | 2    | 2    | 2    | 2    | 2    | 2    | 3    | 3    | 3    | 3    |
| Pipe Ø [mm]                       | 90   | 90   | 110  | 110  | 125  | 125  | 140  | 140  | 160  | 160  |
|                                   |      |      |      |      |      |      |      |      |      |      |
| Insulation thickness [mm]         |      | 4    | -    | 4    | -    | 4    |      | 4    |      | 4    |
| Number of layers                  | 4    | 4    | 4    | 4    | 5    | 5    | 6    | 6    | 6    | 6    |
| Required length for inlay         | 1290 | 1400 | 1545 | 1660 | 2190 | 2425 | 2860 | 3050 | 3365 | 3530 |
| Number of steel strap<br>elements | 25   | 27   | 29   | 31   | 32   | 34   | 36   | 38   | 40   | 42   |
| Number of hooks                   | 3    | 3    | 3    | 3    | 4    | 4    | 4    | 4    | 4    | 4    |
|                                   |      |      |      |      |      |      |      |      |      |      |

| Pipe Ø [mm]                       | 32   | 32   | 40   | 40   | 50   | 50   | 63   | 63   | 75   | 75   |
|-----------------------------------|------|------|------|------|------|------|------|------|------|------|
| nsulation thickness [mm]          |      | 4    | -    | 4    | -    | 4    | -    | 4    | -    | 4    |
| Number of layers                  | 2    | 2    | 2    | 2    | 2    | 2    | 3    | 3    | 3    | 3    |
| Required length for inlay         | 250  | 320  | 320  | 360  | 375  | 440  | 685  | 780  | 800  | 895  |
| Number of steel strap<br>elements | 12   | 14   | 14   | 15   | 16   | 17   | 18   | 20   | 21   | 23   |
| Number of hooks                   | 2    | 2    | 2    | 2    | 2    | 2    | 3    | 3    | 3    | 3    |
| Pipe Ø [mm]                       | 90   | 90   | 110  | 110  | 125  | 125  | 140  | 140  | 160  | 160  |
|                                   |      |      |      |      |      |      |      |      |      |      |
| nsulation thickness [mm]          |      | 4    | -    | 4    | -    | 4    | -    | 4    | -    | 4    |
| Number of layers                  | 4    | 4    | 4    | 4    | 5    | 5    | 6    | 6    | 6    | 6    |
| Required length for inlay         | 1290 | 1400 | 1545 | 1660 | 2190 | 2425 | 2860 | 3050 | 3365 | 3530 |
| Number of steel strap<br>elements | 25   | 27   | 29   | 31   | 32   | 34   | 36   | 38   | 40   | 42   |
| Number of hooks                   | 3    | 3    | 3    | 3    | 4    | 4    | 4    | 4    | 4    | 4    |
|                                   |      |      |      |      |      |      |      |      |      |      |

Take note of potential material loss during application at the job site.

# **MAIN APPLICATIONS** ACC. ETA-22/0061







Drywall, concrete wall, aerated concrete wall, masonry

wall, shaft wall, concrete floor

up to EI 120 U/C resp. EI 120 U/U<sup>1</sup>

≥ 100 mm (wall)

≥ 100 mm (wall) > 40 mm (shaft wall)
 > 150 mm (floor)

≥ 40 mm (shaft wall) ≥ 150 mm (floor)

# Gap Filler (max. gap width 30 n

, ≥94 ,

(also possible for concrete floor application)

Application with multiple pipe penetration in flexible and rigid wall

#### In drywalls, solid walls and concrete floors<sup>1</sup>

Base material

Base material thickness

Seal thickness

Penetrants

- Combustible pipes  $\emptyset \le 160 \text{ mm}$  (with & without sound insulation)<sup>1</sup> ٠
- Combustible pipes  $\emptyset \le 108 \text{ mm}$  (with combustible insulation)<sup>1</sup>
- Non-combustible pipes  $\emptyset \le 108 \text{ mm}$  (with combustible insulation)<sup>1</sup>

Multi-layer composite pipes Ø < 110 mm<sup>1</sup> •

<sup>1</sup> Further applications tested also tested up to EI-240-U/C. See ETA 22/0061 for further installation details.

#### // Typical ETA approved systems<sup>1</sup>

#### Application in flexible and rigid wall

<sup>1</sup> See ETA 22/0061 for further installation details.



#### Application in concrete floor





dimensions in mm

construction on bot sides of the wall

#### Application in flexible and rigid wall with angle between 45° and 90° $\,$



Application with pipe with bow on the bottom side of the floor and connection sleeve within the floor

#### Application with pipe positioned directly in the corner of the wall



#### **TECHNICAL DATA - ARMAPROTECT EFC1 AND EFC2**

| Brief description                   | ArmaProtect EFC1 and EFC2 are endless firestop collars as solution for covering various pipe diameters and design variants.                                                                                      |  |  |  |  |  |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|
| Material type                       | Stainless steel strap with self-adhesive flexible intumescent strip on blowing graphite technology.                                                                                                              |  |  |  |  |  |
| Product colour range                | Stainless steel (strap) and anthrazite (intumescent strip).                                                                                                                                                      |  |  |  |  |  |
| Special features                    | Easy visual inspection.                                                                                                                                                                                          |  |  |  |  |  |
| Product range                       | Self-adhesive firestop wrap: 10 m x 40 mm x 2 mm, stainless steel strap: 3 m (including 18 hooks).                                                                                                               |  |  |  |  |  |
| Applications                        | Endless Firestop collar for fire seals in walls and floors for combustible pipes (with and without insulation) and non-combustible pipes (with combustible insulation).                                          |  |  |  |  |  |
| Installation                        | For professional use only. Refer to third party published listings, national approvals / assessments and Armacell's product literature for specific application details as well as before handling this product. |  |  |  |  |  |
| Declaration of Performance<br>(DoP) | ArmaProtect EFC1 and ArmaProtect EFC2                                                                                                                                                                            |  |  |  |  |  |

#### Approvals and compliance

| THE REPORT OF THE PARTY OF |                              |  |  |
|----------------------------|------------------------------|--|--|
| Specification compliance   | • ETA 22/0061 acc. EN 1366-3 |  |  |
|                            |                              |  |  |

| Property                               | Value/Assessment                                           | Standard/Test method                                     |            |  |  |  |  |
|----------------------------------------|------------------------------------------------------------|----------------------------------------------------------|------------|--|--|--|--|
| Temperature range                      |                                                            |                                                          |            |  |  |  |  |
| Operating temperature                  | -40°C to 70°C (40°F to 158°F)                              |                                                          |            |  |  |  |  |
| Application temperature                | 5°C to 25°C (41°F to 77°F)                                 |                                                          |            |  |  |  |  |
| Storage and transportation temperature | 5°C to 30°C (41°F to 77°F)                                 |                                                          |            |  |  |  |  |
| Thermal conductivity                   |                                                            |                                                          |            |  |  |  |  |
| Declared thermal conductivity          | clared thermal conductivity θm 0°C                         |                                                          |            |  |  |  |  |
|                                        | λd [W/(m·K)]                                               | 0.403                                                    |            |  |  |  |  |
| Mechanical properties                  |                                                            |                                                          |            |  |  |  |  |
| Density                                | 1200 ± 10 kg/m <sup>3</sup>                                | 200 ± 10 kg/m <sup>3</sup>                               |            |  |  |  |  |
| Start of intumescent reaction          | > 190°C                                                    | > 190°C                                                  |            |  |  |  |  |
| Expansion ratio                        | 18 to 34 fold                                              |                                                          |            |  |  |  |  |
| Blowing pressure                       | > 0.8 N/mm²                                                |                                                          |            |  |  |  |  |
| Fire performance                       |                                                            |                                                          |            |  |  |  |  |
| Reaction to fire                       | Class A1 (stainless steel collar) / Class E (intumescent s | strip)                                                   | EN 13501-1 |  |  |  |  |
| Resistance to fire                     | See Annex                                                  |                                                          |            |  |  |  |  |
| Health and environment                 |                                                            |                                                          |            |  |  |  |  |
| Emission of dangerous<br>substances    | No dangerous substances.                                   | ETA 22/0061                                              |            |  |  |  |  |
| Other technical features               |                                                            |                                                          |            |  |  |  |  |
| Durability and serviceability          | Use category type Ý,                                       | EOTA TR 024                                              |            |  |  |  |  |
| Safety information                     | Please refer to the safety data sheet available on our we  |                                                          |            |  |  |  |  |
| Shelf life                             | No shelf life.                                             |                                                          |            |  |  |  |  |
| Storage                                | Store in a cool and dry place with an ambient temperature  | re of 5 °C to 25 °C and protect from frost and sunlight. |            |  |  |  |  |

# Endless firestop collar

| Item         | Description                                                                                          | Content  |  |
|--------------|------------------------------------------------------------------------------------------------------|----------|--|
| PRO-EFC1-10m | ArmaProtect EFC1 Endless Firestop collar comprised of 10m firestop wrap and 3m stainless steel strap | 1 set(s) |  |
| PRO-EFC2-10m | ArmaProtect EFC2 Endless Firestop collar comprised of 10m firestop wrap and 3m stainless steel strap | 1 set(s) |  |

#### Firestop wrap.

| ltem       | Description                             | Content  |
|------------|-----------------------------------------|----------|
| PRO-ID-SET | ArmaProtect ID identification plate set | 5 pieces |

#### ARMAPROTECT EFC1 AND EFC2 ENDLESS FIRESTOP COLLAR /15

All data and technical information are based on results achieved under the specific conditions defined according to the testing standards referenced. Despite taking every precaution to ensure that said data and technical information are up to date, Armacell does not make any representation or warranty, express or implied, as to the accuracy, content or completeness of said data and technical information. Armacell also does not assume any liability towards any person resulting from the use of said data or technical information. Armacell reserves the right to revoke, modify or amend this document at any moment. It is the customer's responsibility to verify if the product is suitable for the intended application. The responsibility for professional and correct installation and compliance with relevant building regulations lies with the customer. This document does not constitute nor is part of a legal offer or contract. By ordering/receiving product you accept the Armacell General Terms and Conditions of Sale applicable in the region.

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# ABOUT ARMACELL

As the inventors of flexible foam for equipment insulation and a leading provider of engineered foams, Armacell develops innovative and safe thermal, acoustic and mechanical solutions that create sustainable value for its customers. Armacell's products significantly contribute to global energy efficiency making a difference around the world every day. With more than 3,000 employees and 24 production plants in 16 countries, the company operates two main businesses, Advanced Insulation and Engineered Foams. Armacell focuses on insulation materials for technical equipment, high-performance foams for high-tech and lightweight applications and next generation aerogel blanket technology.

