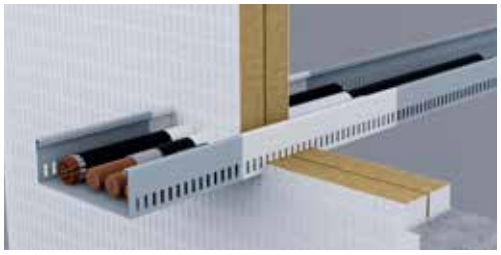
INSTALL IT. ENSURE SAFETY.

ArmaProtect™

Armacell's dedicated firestopping products are designed to provide fire-safe circumstances in the event of a fire emergency.

www.armacell.eu

Enhancing safety levels to protect property and save lives



armacell®

ArmaProtect®

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 SYSTEMS INCLUDE

// 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
- Fire rated air transfer grilles (mechanical or intumescent)

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

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 country-dependent 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 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.

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

Compartmentation contributes to a holistic fire safety strategy, and firestop systems is an integral measure to be considered.

STANDARDS

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.

WITH ARMACELL YOU'RE ALWAYS ON THE SAFE SIDE.

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 EI 60, EI 90, EI 120, EI 180 or EI 240.

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

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.

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.

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.

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 bearing.

ARMAPROTECT
FIRESTOP SOLUTIONS

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.

Large, global approved range

Excellent fire performance

ArmaProtect CM

Firestop mortar for mixed fire seals 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

ArmaProtect CB
ArmaProtect ABLC,
ArmaProtect ABLF

Ablative coated fireboard system for mixed fire seals in walls and floors with firestop coating and firestop filler mastic

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

ArmaProtect CU

Firestop cushions for wall and floor openings

- Temporary or permanent sealing
- Cables and cable trays

ArmaProtect CT

Cable tube for fire seals in walls and floors

- Blank openings
- Cables and cable bundles
- Conduit and conduit bundles
- Combustible pipes
- HVAC split-line combinations
- Ideally for retrofitting applications

ArmaProtect EXPS

Intumescent firestop sealant for mixed fire seals in walls and floors

- Blank openings
- Cables and cable bundles
- Conduit and conduit bundles
- Non-combustible and combustible pipes

ArmaProtect FW1

Firestop wrap for fire seals in walls and floors

- Cable bundles up to Ø150mm
- Combustible pipes up to Ø160mm

ArmaProtect FW2

Firestop wrap for fire seals in walls and floors

- Non-combustible pipes up to Ø323.9mm with combustible insulation
- Composite pipes
- Conduits and conduit bundles

ArmaProtect FW3

Firestop wrap for fire seals in walls and floors

- Combustible pipes Ø≤160mm (without combustible insulation)
- Combustible pipes Ø≤110mm (with combustible insulation)
- Multi-layer composite pipes Ø≤110mm

ArmaProtect FC1 and FC2

Firestop collar for fire seals in walls and floors

- For sealing of combustible pipes without insulation up to Ø160 mm (FC1) and Ø400 mm (FC2), respectively

ArmaProtect EFC1 and EFC2

Endless firestop collar for fire seals in walls and floors

- Combustible pipes Ø≤ 160 mm (with and without sound insulation), Ø≤ 110 mm (with combustible insulation)
- Non-combustible pipes Ø≤ 108 mm (with combustible insulation)
- Multi-layer composite pipes Ø≤ 110 mm

SOLUTIONS WITH EN TESTING (ETA)

For small to large openings

See relevant ETA for further installation details.

	SMALL	MEDIUM	LARGE
EXCEPTIONAL SOLUTION ★★★	ArmaProtect CT ▪ Pre-installed device ▪ Clean installation ▪ Easy re-penetration ▪ Openings up to Ø116mm ▪ Up to EI 120		
SUPERIOR SOLUTION ★★☆	ArmaProtect EXPS ▪ Up to EI 120 ▪ Openings up to Ø160mm ArmaProtect ABLF ▪ Up to EI 90 ▪ Openings up to Ø160mm	ArmaProtect CB ▪ Easy re-penetration and maintenance ▪ Cable, pipe, mixed and multiple penetrations ▪ Up to EI 240 ▪ Openings up to 1.4m x 2.0m or 1.2m x 2.4m, respectively	
STANDARD SOLUTION ★☆☆	ArmaProtect CM ▪ Cable, pipe, mixed and multiple penetrations ▪ Up to EI 240 ▪ Openings up to 1.2m x 2.0m		

For pipe penetrations

See relevant ETA for further installation details.

	SMALL TO MEDIUM PIPE DIAMETER	LARGE PIPE DIAMETER
EXCEPTIONAL SOLUTION ★★★	ArmaProtect EFC1 and EFC2 ▪ Flexible and clean installation ▪ Problem solver for special applications on job site ▪ Combustible pipes Ø≤ 160 mm (with and without sound insulation), Ø≤ 110 mm (with combustible insulation) ▪ Non-combustible pipes Ø≤ 108 mm (with combustible insulation) ▪ Multi-layer composite pipes Ø ≤ 110 mm ▪ Up to EI 240	ArmaProtect FC2 ▪ Pre-formed product ▪ Clean installation ▪ Combustible pipes Ø≤ 400mm (without insulation) ▪ Up to EI 120
SUPERIOR SOLUTION ★★☆	ArmaProtect FC1 ▪ 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) ▪ Multi-layer composite pipes Ø≤110mm (with combustible insulation) ▪ Up to EI 120	ArmaProtect FW2 ▪ Flexible and clean installation ▪ Non-combustible pipes up to Ø323.9mm (with combustible insulation) ▪ Up to EI 120

European Technical Assessments:
ETA-21/1024, ETA-21/1025, ETA-21/1026, ETA-21/1099, ETA-22/0060, ETA-22/0061, ETA-22/0062, ETA-22/0063, ETA-22/0064

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

For small to large openings

See relevant UL systems for further installation details.

	SMALL	MEDIUM	LARGE
EXCEPTIONAL SOLUTION ★★★	ArmaProtect CT ▪ Pre-installed device ▪ Clean installation ▪ Easy re-penetration ▪ Openings up to Ø116mm ▪ Up to 3 h F rating	ArmaProtect CU ▪ Pre-formed product ▪ Clean installation ▪ Easy re-penetration ▪ For temporary and temporary use ▪ Openings up to 400mm x 200mm ▪ Up to 3 h F rating	
SUPERIOR SOLUTION ★★☆	ArmaProtect FW1 ▪ Flexible and clean installation ▪ 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	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	
STANDARD SOLUTION ★☆☆		ArmaProtect CM ▪ 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	NON-COMBUSTIBLE PIPES
SUPERIOR SOLUTION ★★☆	ArmaProtect FW1 • Flexible and clean installation • Combustible pipes up to Ø160mm • Also tested for cable bundles up to Ø150mm • Up to 3 h fire rating	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

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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 3,200 employees and 27 production plants in 19 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.

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For more information, please visit:
www.armacell.com