



# PAROC FIRE PROTECTION SOLUTIONS FOR PIPE PENETRATIONS

STAIR  
MAX. RISE  
MIN. RUN  
MIN. TREAD  
MIN. HEADRO  
MIN. NOSING =

EXT. WALL CONSTRUCTION  
STUCCO  
BASE COAT  
1/2" RIGID INSUL. (R6)  
MEMBRANE  
EXT. SHEATHING  
STUDS @ 16" O.C.  
INSULATION  
VAP. BARRIER  
BOARD  
VALUE FOR  
INSUL.

19'-0"  
11'-4" NEW CO



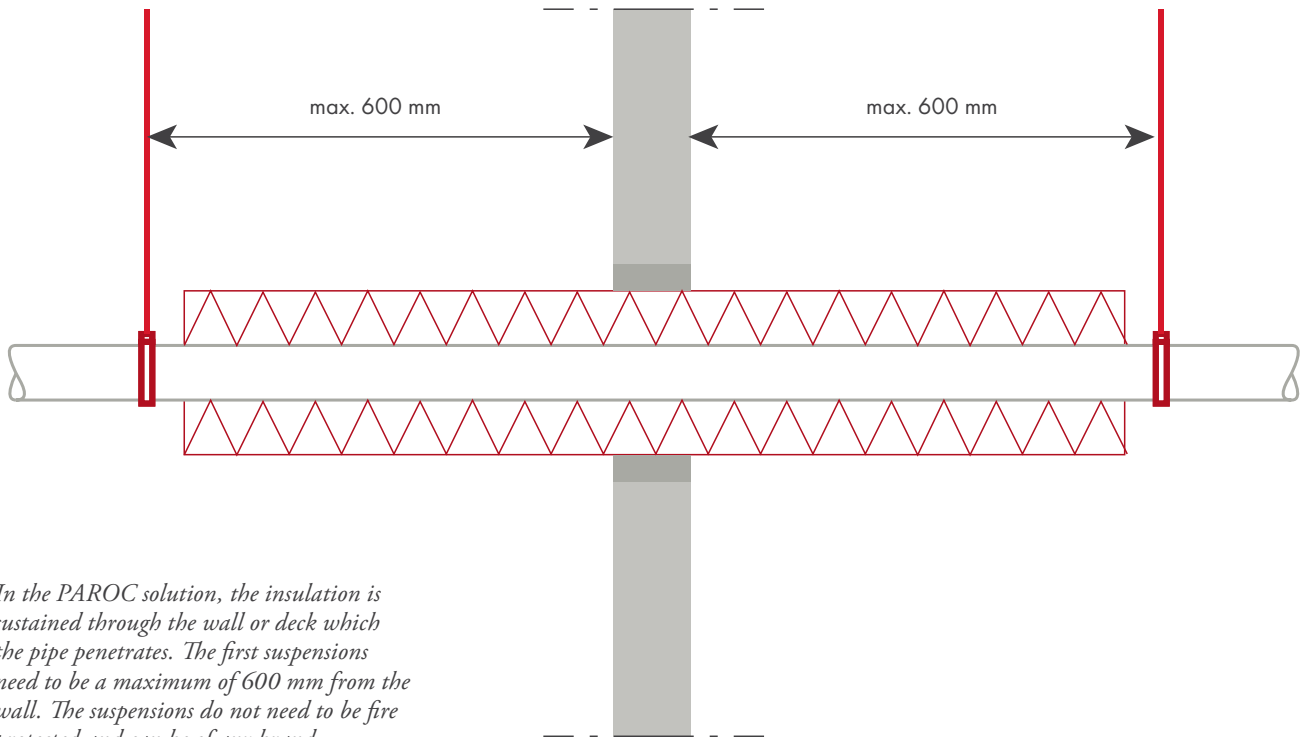
## APPROVED FIRE SAFETY WITH PAROC® STONE WOOL

EN 1366-3 is a harmonized European standard for fire resistance tests for penetration seals. The test method covers seals for pipes penetrating a fire-classified wall, e.g. an EI 90 wall. The sealing must prevent the fire from spreading for at least this time and have the same classification as the wall.

PAROC stone wool is Euroclass A1 classified, which is the highest class of building material fire performance. Using insulation solutions made with PAROC stone wool products therefore means long-term, maintenance-free fire protection that does not deteriorate with time, but keeps its insulating and fire protection properties.

### PAROC FIRE PROTECTION SOLUTIONS FOR PIPE PENETRATIONS

- Maintenance-free, long-term solution
- Prevents fire from spreading for up to 120 minutes
- Tested according to harmonised European standard EN 1366-3
- For combustible and non-combustible pipes
- Based on one product: PAROC Hvac Section AluCoat T
- Provides fire protection, thermal and condensation insulation



*In the PAROC solution, the insulation is sustained through the wall or deck which the pipe penetrates. The first suspensions need to be a maximum of 600 mm from the wall. The suspensions do not need to be fire protected and can be of any brand.*

**FIRE PROTECTION FOR UP TO 120 MINUTES**

PAROC fire protection solutions for pipe penetrations includes fire resistance classes up to EI 120.

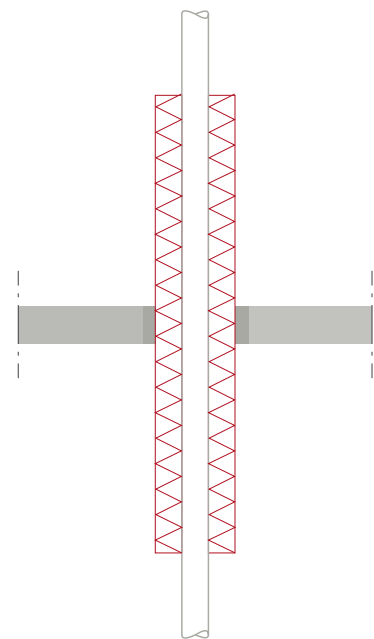
In the fire resistance classification “E” stands for “integrity”, which is the capacity of the penetration to withstand flames, hot gases and smoke. “I” stands for “insulation”, to prevent heat from spreading to surrounding structures. The number stands for the number of minutes for which the construction prevents the spread of fire.

**FOR VARIOUS APPLICATIONS**

PAROC fire solutions for pipe penetrations cover a large number of different pipe types: conventional copper and iron pipes, and also steel, stainless steel, cast iron, plastic and composite pipes of different thicknesses.

The solution can be used in rigid decks and walls, such as concrete or aerated concrete. It is also tested and classified for fire rated flexible walls e.g. gypsum boards and studs.

Pipes used for drinking water, heating water, comfort cooling and unventilated sewage pipes are all included in the solution.



*Insulation sustained through the deck which the pipe penetrates.*

**INSULATION CASES**

Local insulation means the pipe is insulated locally at the penetration with one 1200 mm long pipe section and in most cases this is enough. In some cases, continued insulation is required. This means that the pipe is insulated for the entire length inside the fire compartment. The tables on pages 6–7 show whether local or continuous insulation should be used.

In the PAROC solutions, the insulation is sustained through the wall which the pipe penetrates. This is an advantage if the pipe also needs to be insulated against condensation.

**PAROC SOLUTIONS IN PRACTICE**

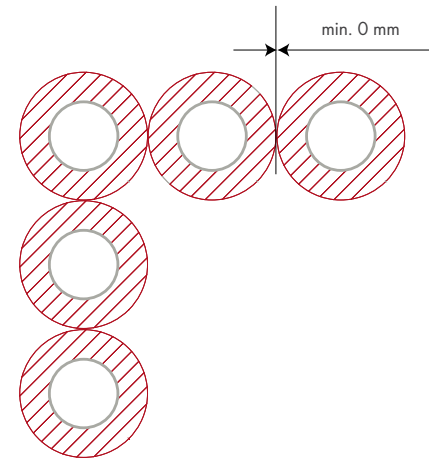
To choose a pipe penetration solution of the correct thickness, you need the following information:

**The material, diameter and thickness of the pipe:** the required insulation thickness and insulation case are different depending on the pipe material and dimensions. See the tables for various pipe types on pages 6–7.

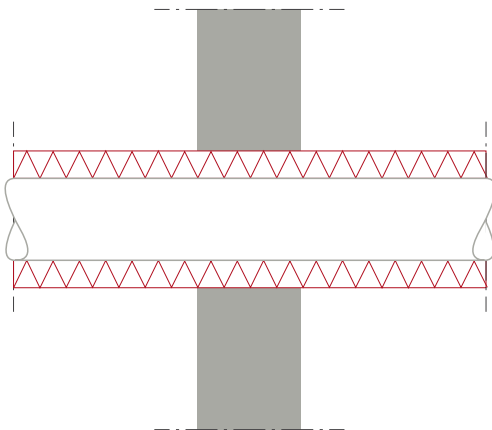
**The fire resistance classification of the wall or deck:** If the wall or deck is e.g. fire resistance class EI 90, it is important that the penetration is approved for at least EI 90 (90 minutes).

**MULTIPLE FUNCTIONS WITH ONE PRODUCT**  
 PAROC fire protection solutions for pipe penetrations are based on one product: PAROC Hvac Section AluCoat T. A wide range of sizes is available. The product has an AluCoat facing which works as a vapour barrier and eliminates the risk of damage caused by condensation.

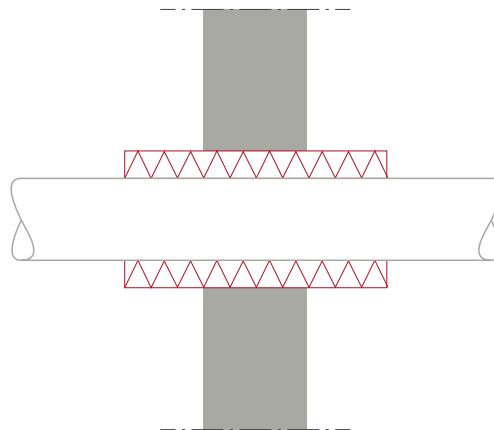
*PAROC fire protection solutions for pipe penetrations can be used when the distance between the pipes is small. The free distance between insulated pipes can be 0 mm when using PAROC pipe sections.*



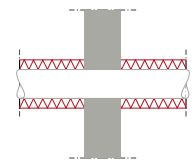
*Continuous sustained (CS)*



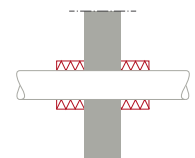
*Local sustained (LS)*



*Continuous interrupted (CI)*

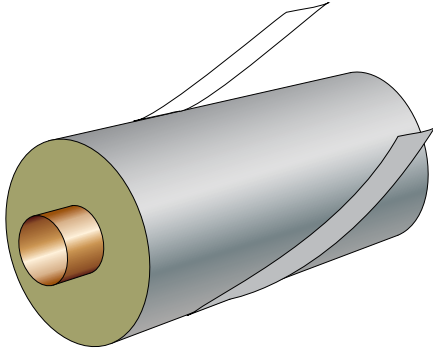


*Local interrupted (LI)*

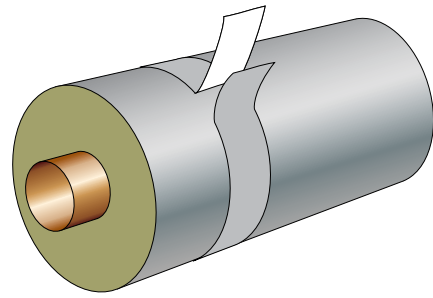


*The drawings above describe different insulation cases. PAROC fire protection solutions for pipe penetrations are sustained insulation solutions. The sustained solution is the only possible one if you need to insulate the pipes against condensation.*

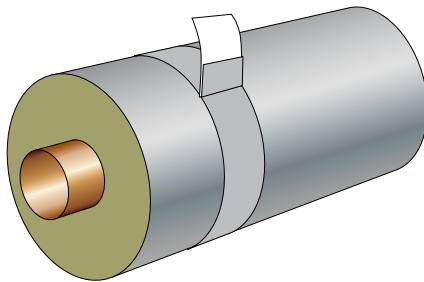
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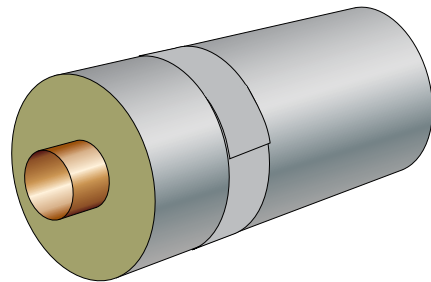
2



3



4



*When using tape instead of galvanized wire, you should secure the tape as shown in the illustration.*

**FIXING THE INSULATION**

Apart from the longitudinal tape on the product, the insulation needs to be fixed with galvanized wire or with tape to ensure the fastening of the section. Use three bonds of galvanised wire per section or if you use tape, three strips of tape are needed per section.

**SEALING THE GAP**

The gap between the insulation and the wall shall be maximum 30 mm. In a flexible construction, the gap shall be insulated with PAROC stone wool and sealed with a non-combustible material such as gypsum plaster. In a rigid construction the gap shall be sealed with a non-combustible material, e.g. concrete.

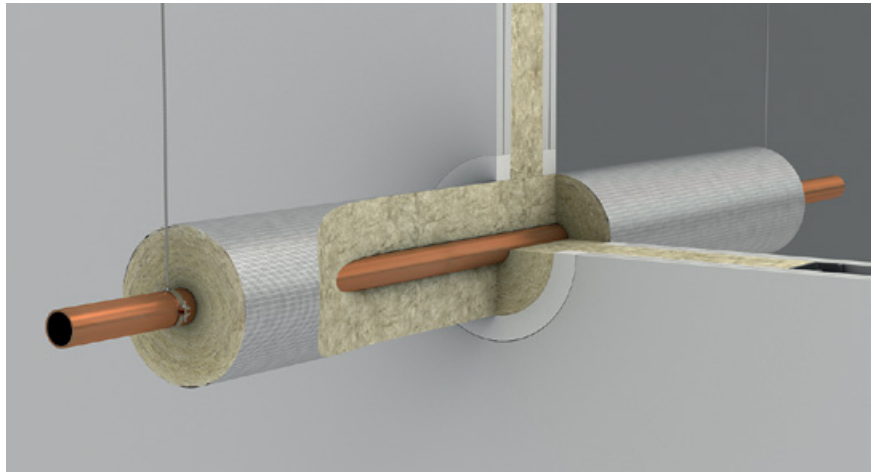
## COPPER PIPES

**APPLICATIONS:**

- Drinking water
- Heating water pipe, etc.

**SUPPORTING STRUCTURES:**

- Flexible or rigid wall
- Rigid deck



EI90 WALL AND DECK WITH COPPER PIPE				
PAROC HVAC SECTION ALUCOAT T				
Pipe diameter (mm)	Pipe thickness (mm)	Insulation case*	Insulation length (mm)	Insulation thickness (mm)
≤10	≥ 0,8	LS, CS	1200	20–50
>10–22	≥ 1,0	LS, CS	1200	20–80
>22–42	≥ 1,2	LS, CS	1200	20–80
>42–54	≥ 1,5	LS	1200	30
		CS	-	30–100
>54–89	≥ 2,0	CS	-	40–100
>89–108	≥ 2,5	CS	-	40–100

\* LS = local sustained, CS = continued sustained (see page 4 for more information)

## IRON PIPES

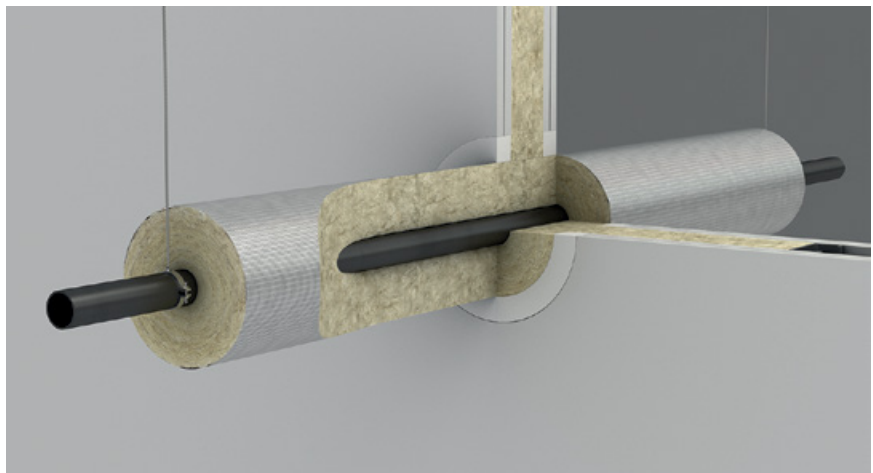
(iron, cast iron, steel, stainless steel)

**APPLICATIONS:**

- Drinking water
- Heating water pipe, etc.

**SUPPORTING STRUCTURES:**

- Flexible or rigid wall
- Rigid deck



EI90 WALL AND DECK WITH IRON PIPES				
PAROC HVAC SECTION ALUCOAT T				
Pipe diameter (mm)	Pipe thickness (mm)	Insulation case*	Insulation length (mm)	Insulation thickness (mm)
≤10	≥ 0,8	LS, CS	1200	20–50
>10–22	≥ 1,0	LS, CS	1200	20–80
>22–42	≥ 1,2	LS, CS	1200	20–80
>42–54	≥ 3,0	LS, CS	1200	30–100
>54–89	≥ 4,0	LS, CS	1200	40–100
>89–108	≥ 4,0	CS	-	40–100
>108–219	≥ 4,2	CS	-	50–100

\* LS = local sustained, CS = continued sustained (see page 4 for more information)

## COMPOSITE PIPES

### APPLICATIONS:

- Drinking water
- Heating water pipe, etc.

### SUPPORTING STRUCTURES:

- Flexible or rigid wall
- Rigid deck

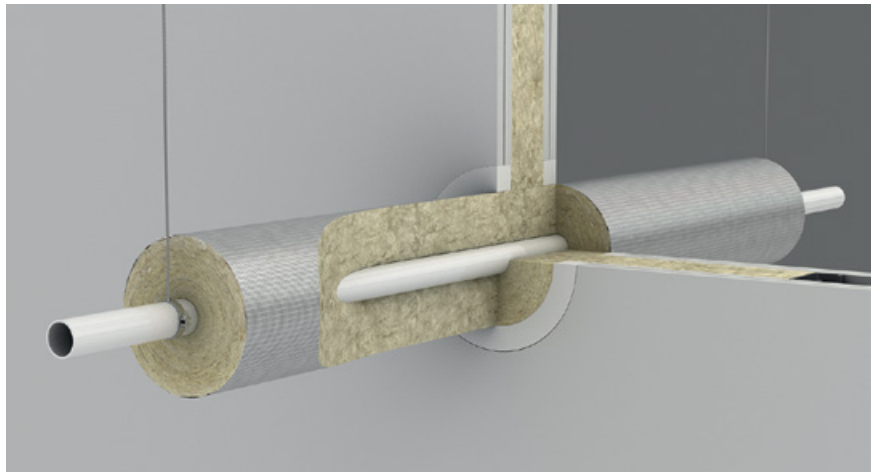
### INSULATION CASES AND INSULATION LENGTH:

- Local sustained (LS), minimum insulation length 1200 mm
- Continuous sustained (CS)

### INSULATION THICKNESS:

20–80 mm

Tested composite pipes (PP-Al-PP and PE-Al-PE) are shown in the tables on the right.



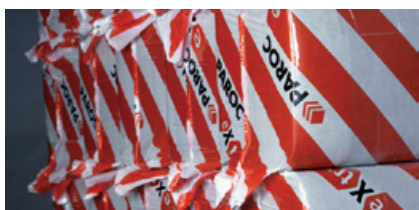
**EI120 WALL AND DECK WITH COMPOSITE PIPES (PP-AL-PP)**

Pipe diameter (mm)	Pipe thickness (mm)	Aluminium core thickness (mm)
≤32	≥ 4,5	≥ 0,15
>32–40	≥ 5,6	
>40–50	≥ 6,9	
>50–63	≥ 8,7	
>63–75	≥ 10,4	
>75–90	≥ 15,0	
>90–110	≥ 15,1	

**EI120 WALL AND DECK WITH COMPOSITE PIPES (PE-AL-PE)**

Pipe diameter (mm)	Pipe thickness (mm)	Aluminium core thickness (mm)
≤16	≥ 2,0	≥ 0,2
>16–20	≥ 2,0	≥ 0,4
>16–20	≥ 2,25	≥ 0,2
>20–25	≥ 2,5	≥ 0,2
>20–26	≥ 3,0	≥ 0,5
>25–32	≥ 3,0	≥ 0,35
>26–32	≥ 3,0	≥ 0,6
>32–40	≥ 3,5	≥ 0,85
>32–40	≥ 4,0	≥ 0,35
>40–50	≥ 4,0	≥ 1,0
>40–50	≥ 4,5	≥ 0,5
>50–63	≥ 4,5	≥ 1,2
>50–63	≥ 6,0	≥ 0,6
>63–75	≥ 5,0	≥ 1,35
>63–75	≥ 7,5	≥ 0,7
>75–90	≥ 8,5	≥ 0,9
>90–110	≥ 10,0	≥ 1,0

Paroc is the leading manufacturer of energy-efficient insulation solutions in the Baltic Sea region. The cornerstones of our operations are customer and personnel orientation, constant innovation, profitable growth and sustainable development. Paroc products include building insulation, technical insulation, marine and offshore insulation, sandwich panels and acoustic products. The products are manufactured in Finland, Sweden, Lithuania, Poland and Russia. Paroc has sales and representative offices in 14 European countries.



Building Insulation offers a wide range of products and solutions for all traditional building insulation. The building insulation products are mainly used for the thermal, fire and sound insulation of exterior walls, roofs, floors and basements, intermediate floors and partitions.



Sound absorbing ceilings and wall panels for interior acoustic control, as well as industrial noise control products, are available in the range.



Technical Insulation products are used for thermal, fire and sound insulation in building techniques, industrial processes and pipe work, industrial equipment and ship structures.



Sandwich panels are fire proof lightweight steel-faced panels with a core material of stone wool. Paroc panels are used for façades, partitions and ceilings in public, commercial and industrial buildings.



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