# TI INDUSTRY GUIDE

TECHNICAL INSULATION
MAY 22

OWENS CORNING® PAROC®

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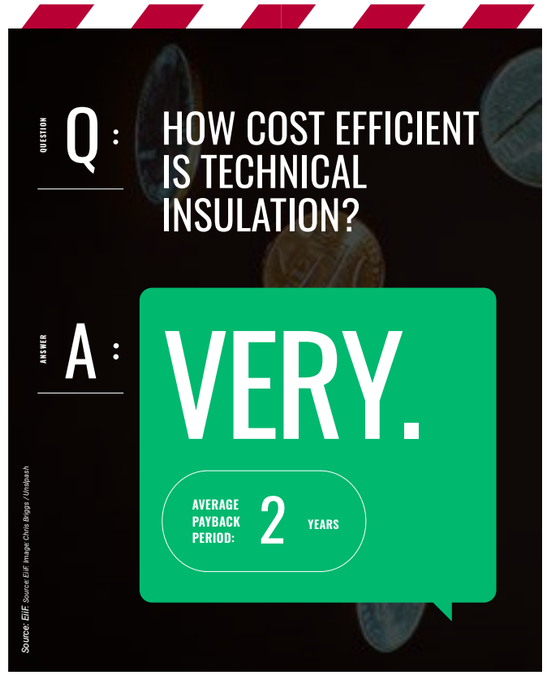


# A CLOSER LOOK AT SAVING ENERGY AND COSTS! THE CHEAPEST ENERGY IS THE ONE THAT YOU DON'T CONSUME

Investing in the right insulation reduces energy loss, improves sustainability (by reducing your $CO_2$ footprint) and saves costs.

This is very evident when you look at the facts.
Better still, the payback period for improving industrial insulation is, nowadays, less than two years. According to the latest EiiF Study (based on analyzing 2500 TIP-CHECKs)* most industrial insulation systems are outdated. So there's a lot of potential for significant energy and cost efficiencies.

When inspecting the (approximately) 2500 plants and technical installations across Europe over the past 10 years, not a single one was found that didn't have the potential to save costs and energy through the proper insulation solution.

That's why PAROC has created the following reference tables, to help you select the best PAROC insulation product for your plant's needs. Then, on our product pages, you'll get more detail on the technical features of each PAROC solution — as well as corresponding installation videos. Additionally, our calculation tool 'Calculus' can tell you what insulation solution is best for your application.

Finally, you can Contact Us to speak to the closest PAROC team in your area.

**https://www.eiif.org/*

**Read on to learn about the energy and cost savings you can expect with PAROC Stonewool insulation.**

**The performance of PAROC Pro insulation products for industrial applications is documented according to both ASTM and EN standards**





# A CLOSER LOOK AT ENERGY SAVING AND COST REDUCTION

*Studies have found that even the smallest flaws in exterior industrial insulation have a greater impact on absolute heat loss compared to large flaws or insufficient insulation.*

According to a EiiF study*, missing and insufficient industrial insulation across Europe are causing huge energy losses — 480 PJ per year, or the equivalent of Hungary's entire energy production.

For smooth and cost-effective operations, power plants and process industries need long lasting, reliable, maintenance-free and quick-to-install insulations that get working rapidly. With the right insulation product, return-on-investment can be experienced within mere years and malfunction losses will be cut dramatically.

With this in mind, how much can a single factory save with the optimum insulation installation? Based on the TIPCHECK Program even a small investment in the right insulation can provide rapid operational cost savings that far outweigh the initial capital investment.

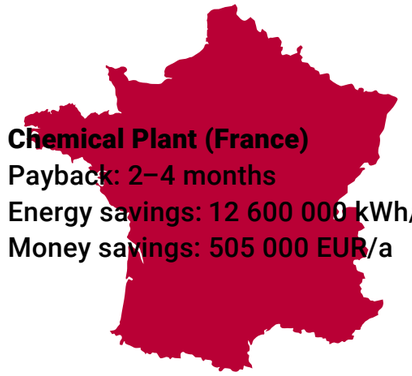
## COST AND ENERGY-SAVINGS IN ACTION

A large chemical plant in Italy was found to have 650m of piping that had missing or damaged insulation, as well as 300 flanges, 160 valves, and 3 tanks with no insulation at all. Based on a comprehensive audit, the plant's owner decided to invest in an insulation solution to reduce energy losses and improve cost savings and sustainability.

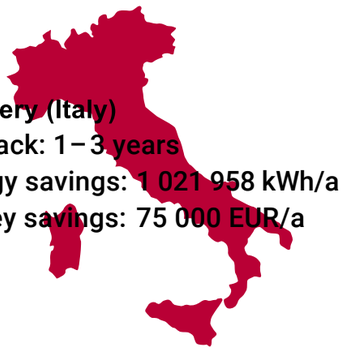
Recommended actions, which included installing new pipe sections, helped to save 11.100MWh which is equivalent to approximately 200.000 EUR and 2.240 tonnes of $CO_2$ annually.

## BEST PRACTICE IN INDUSTRY

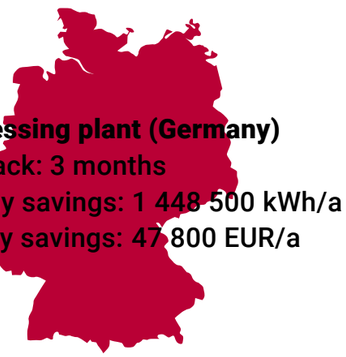
**Original Source of a graphic www.eiif.org[7]**



**Chemical Plant (France)**
**Payback: 2–4 months**
**Energy savings: 12 600 000 kWh/a**
**Money savings: 505 000 EUR/a**



**Refinery (Italy)**
**Payback: 1 – 3 years**
**Energy savings: 1 021 958 kWh/a**
**Money savings: 75 000 EUR/a**



**Processing plant (Germany)**
**Payback: 3 months**
**Energy savings: 1 448 500 kWh/a**
**Money savings: 47 800 EUR/a**

[5] https://data.europa.eu/euodp/data/dataset/information-on-energy-markets-in-eu-countries-with-national-energy-profiles
[6] https://www.eiif.org/sites/default/files/2018-11/1_TIPCHECK_Report%20%282%20ed%29.pdf
[7] https://www.eiif.org/sites/default/files/2018-12/EiiF_ClimateProtectionWithRapidPayback_EN_online.pdf

# PAROC® STONEWOOL SOLUTIONS

## LONG-LASTING SOLUTIONS WITH UNCHANGING PROPERTIES

In demanding industrial applications, it is absolutely essential that an insulation solution withstands very high temperatures without sagging. With a maximum service temperature of up to 700 °C, PAROC high-density products retain their form, compressive stress and thermal resistance over the entire lifetime of the plant.

## COMPRESSIVE STRENGTH

In industrial applications, good compressive strength can be important to the long-term performance of insulation products. In pipe insulation solutions, this property helps the products retain their nominal thickness during and after installation and this is particularly important when they are used on higher temperature pipes. It also helps to ensure that cladding materials can be accurately fitted with good uniformity and helps resist the effects of mechanical distortion of the cladding. In tank insulation especially, insulation slabs for walkable roofs must have good resistance to compression and need to fulfill requirements according to specifications. The declared values of PAROC Pro Roof Slabs (20 up to 80 kPa) for compressive stress have been determined in accordance with EN14303.

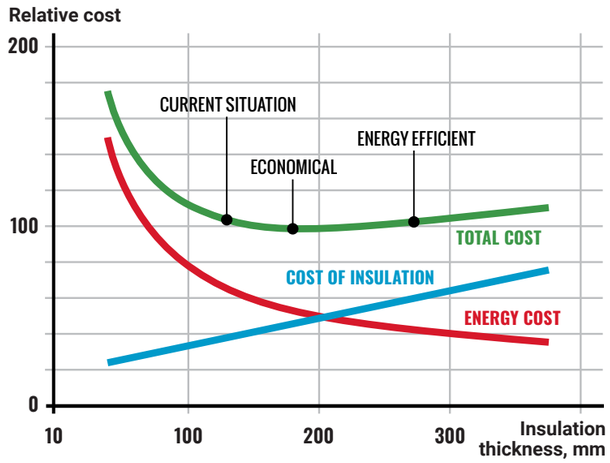
## ENVIRONMENTALLY FRIENDLY

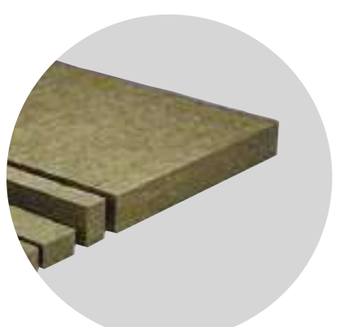
PAROC stonewool products are made from clean, natural material. They are environmentally friendly throughout their lifecycle, causing no harm to nature during or after their use. Stonewool does not contain any ingredients or chemicals that prevent or impede recycling.

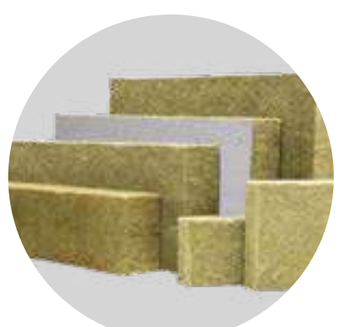
## CLASSIFIED SAFETY

PAROC products are safe to use. No CFCs or HCFCs are used in the production of the products. PAROC products also fulfill the requirements of Note Q of EU Commission Directive 97/69/EC. This means that stonewool fibres are biodegradable and are not classified as a possible carcinogen to humans. They do not contain asbestos. Health and safety data sheets for PAROC stonewool products are available at **www.paroc.com**.

**THE EFFECT OF ECONOMICAL AND ENERGY-EFFCIENT INSULATION ON ENERGY COSTS IN INDUSTRY**



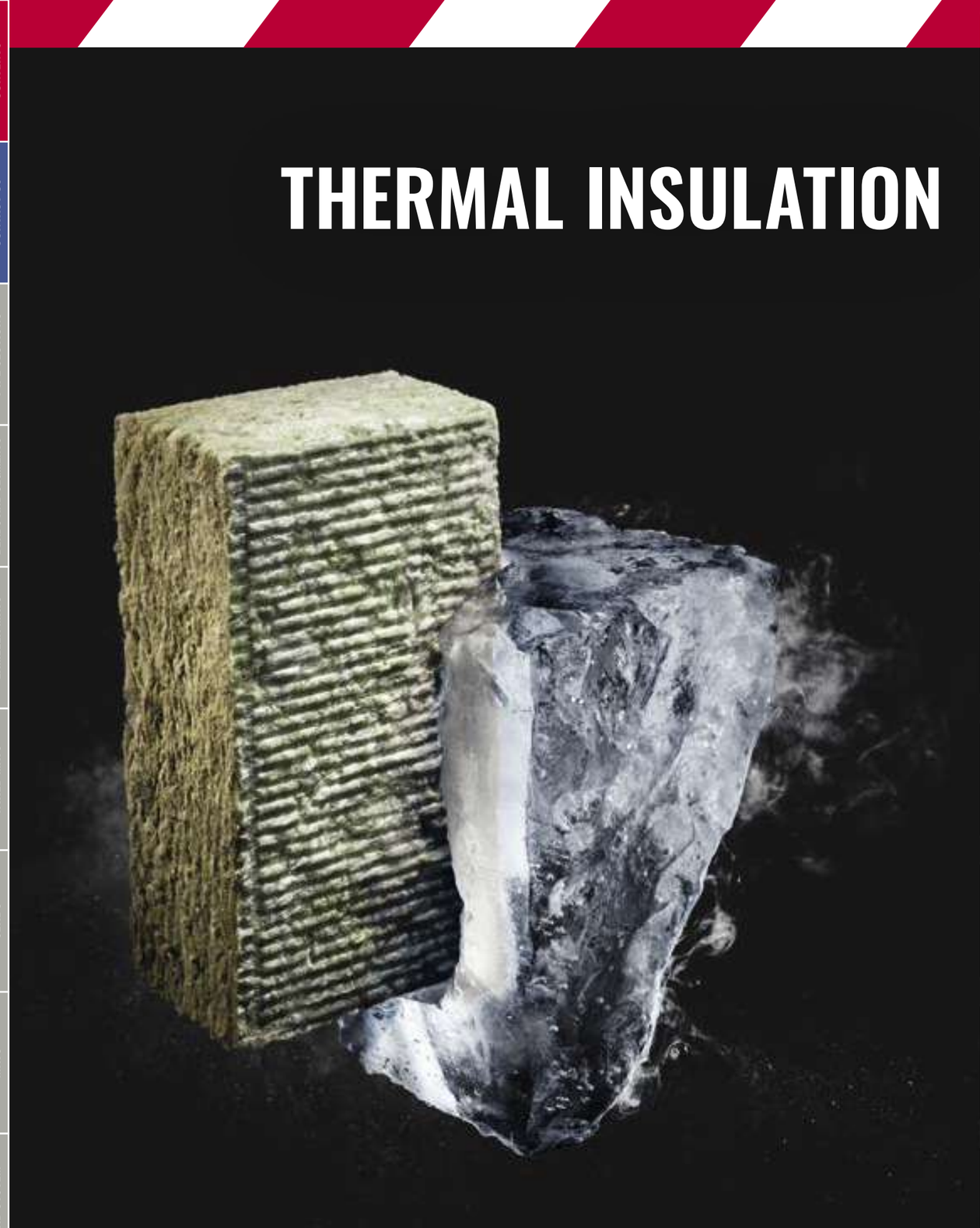









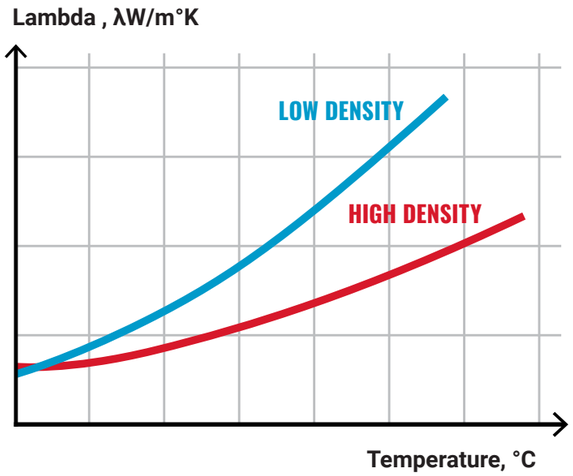
# THERMAL INSULATION



# THERMAL INSULATION

*The main objective of thermal insulation is to decrease heat transfer to the environment, keeping it as low as possible and preventing thermal bridging. The thermal conductivity (lambda) of the insulation material is one of the most important technical insulation properties - a lower lambda value means less heat loss, resulting in more efficient thermal insulation. Stonewool is particularly well-suited for thermal insulation due to its excellent, independently-verified technical properties. This is why it is one of the most widely used insulation material for industrial applications.*

### THE THERMAL CONDUCTIVITY OF STONEWOOL AT HIGHER TEMPERATURES




**PAROC Stonewool**

- Has excellent thermal insulation properties – also in high temperatures
- Consists of 95-98% of air with very low thermal conductivity
- Maintains its insulating performance and dimensions during the life cycle of a building
- For each tonne of $CO_2$ generated in the manufacturing process of stone wool, about 200 tonnes of $CO_2$ are saved by its thermal insulation properties over a 50-year period.

It sounds so easy: a good insulation reduces energy consumption and $CO_2$ emissions. Below graphics show the savings potential for 3 of Europe's biggest markets*

**https://www.eiif.org/*

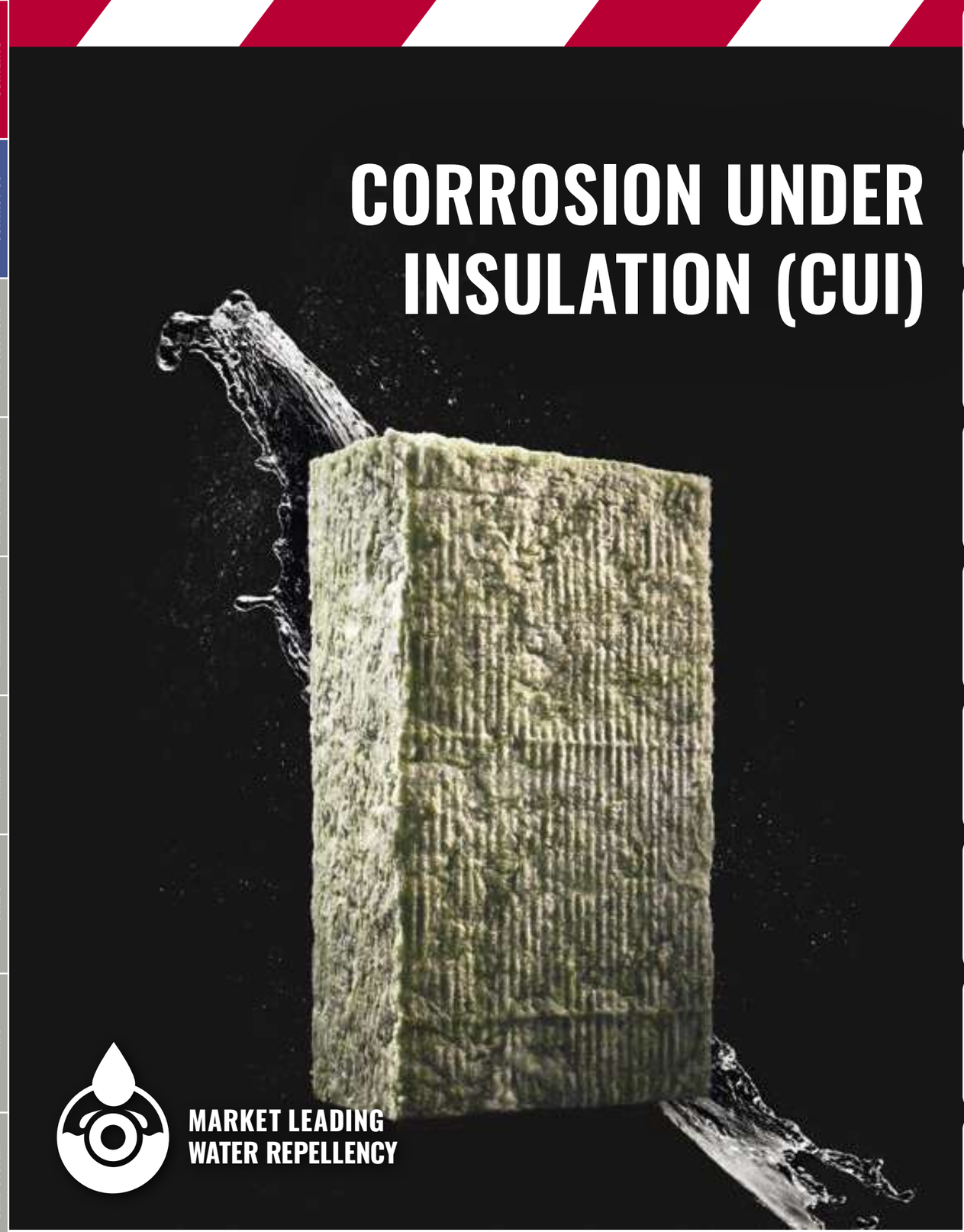
### THE TOTAL ANNUAL ENERGY SAVINGS AND EMISSIONS REDUCTION POTENTIAL BY IMPROVING INSULATION SOLUTIONS IN INDUSTRY FOR SELECTED COUNTRIES*

| | GERMANY | UNITED KINGDOM | FRANCE | ITALY |
|---|---|---|---|---|
| Energy savings potential | 3.466 ktoe | 1.183 ktoe | 1.288 ktoe | 1.458 ktoe |
| Emissions reduction potential | 9.981 kt | 3.480 kt | 3.423 kt | 3.861 kt |

**https://www.eiif.org/*





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# INDUSTRIAL INSULATION IMPROVES PRODUCTIVITY

*For Paroc, every day is a new opportunity to save energy, conserve resources and make decisions that help sustain our planet. We work to reduce our negative footprint and expand our positive handprint. Paroc products contribute to sustainability by creating an energy-efficient, fire safe and acoustically sound environment. We pay special attention to environmental aspects, such as energy efficiency, recycling and emissions.*

Properly planned and installed insulation solutions provide many advantages such as decreased heat losses, improved process control, reduced emissions and maintenance, as well as prevention of **corrosion under insulation (CUI)**.

CUI is one of the biggest challenges when it comes to insulation solutions for industrial applications. Paroc has been selling water repellent (WR) products for more than 20 years and has continously invested in research and development to improve its product properties. Latest tests from independent test laboratories prove that Paroc's WR product range for industrial applications has market-leading properties for stonewool insulation material – the **lowest water absorption and highest temperature range**. Additionally, Paroc has the **broadest product offering** of WR products including pipe sections, wired mats, mats and slabs.

## CORROSION UNDER INSULATION – UNDERSTANDING THE PROBLEM

Corrosion under insulation dramatically reduces the lifetime of piping and equipment, and increases the risk of leakages, shutdowns and potential injury to personnel in the area. A 2003 ExxonMobil study found that 40–60% of maintenance costs on industrial pipes is caused by CUI.

Corrosion under insulation basically refers to the external deterioration of carbon and low alloy steel piping, vessels and industrial equipment that occurs beneath externally clad or jacketed insulation as a result of penetration of water or moisture. CUI is an issue for both onshore and offshore operations, including petrochemical, refining and power sectors, among many others.

### The scale of the problem

Although the seriousness of CUI is increasingly acknowledged by professionals in the industrial sector, its consequences remain an ever-present issue. Wet insulation leads to corrosion under insulation, reduced insulation performance, leaks and fractures, all of which translates directly into additional inspection work, higher operating costs and increased weight.

A study by the National Association of Corrosion Engineers titled "Corrosion Costs and Preventive Strategies in the United States", commissioned by the American Congress in 2001, reported the direct national cost of corrosion to be US$ 276 billion per year, and that is without consideration of indirect costs such as energy loss[1]. As further studies of NACE show, the annual global cost of corrosion is US$ 2.5 trillion – equivalent to a roughly 3.4% of the world's gross domestic product[2].

## PAROC WR PRODUCTS:

- **10 × less water absorption than the requirements of the toughest standard (EN13472/24h)**
- **2 × less water absorption than best competitor according to EN13472/24h**
- **Highest temperature range <300°C / 572°F**
- **Safe to use during painting operations and certified according to the requirements of the coating compatibility standard VDMA 24364**
- **More than 20 years' experience with WR mineral wool products for industrial applications**
- **Broadest WR offering range on the market including pipe sections, wired mats, mats and slabs**

## DID YOU KNOW?

**According to Ecofys studies, the impact of insufficient, missing or damaged insulation in the industrial sector has the annual savings potential equivalent to the energy consumption of 10 million households[3].**

## PAROC WR PRODUCTS PROVIDE EXCELLENT PROTECTION AGAINST CUI.

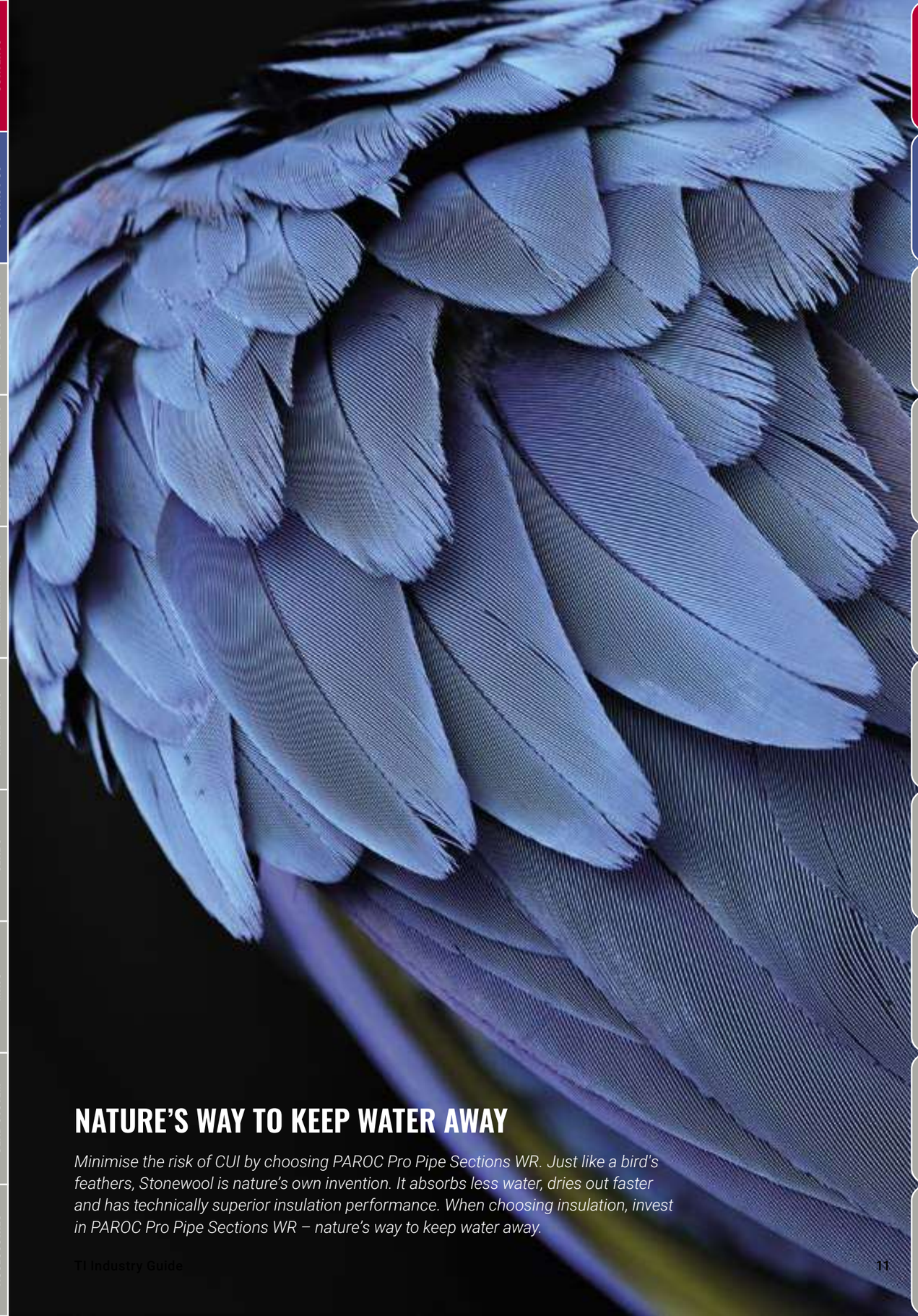
**Very high water repellency and permeability, preventing absorption and allowing moisture to easily egress the insulation.**

**Very low water-leachable chloride content and acidic compounds, which effectively reduce the risk for external stress cracking.**

[1] http://impact.nace.org/documents/ccsupp.pdf
[2] http://impact.nace.org/economic-impact.aspx
[3] https://www.eiif.org/sites/default/files/2018-12/EiiF_ClimateProtectionWithRapidPayback_EN_online.pdf







## NATURE'S WAY TO KEEP WATER AWAY

*Minimise the risk of CUI by choosing PAROC Pro Pipe Sections WR. Just like a bird's feathers, Stonewool is nature's own invention. It absorbs less water, dries out faster and has technically superior insulation performance. When choosing insulation, invest in PAROC Pro Pipe Sections WR – nature's way to keep water away.*

### DID YOU KNOW?

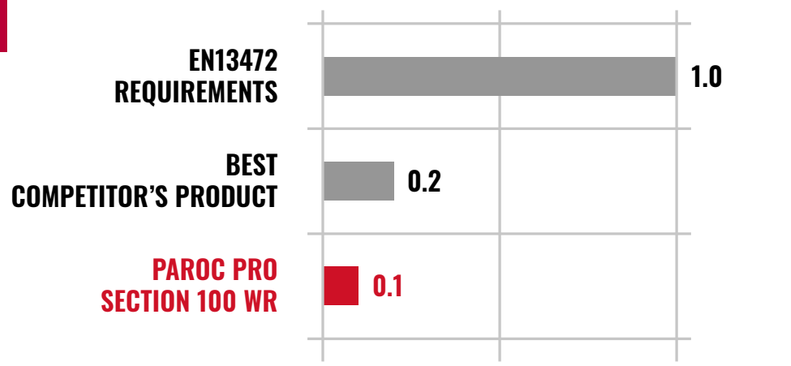
**In 2006 an ageing petrochemical plant facility on the USA's Gulf Coast had a leak from a 4-inch hydrocarbon line. The leak resulted in a massive fire that in turn destroyed half the unit and cost the company US$50 million. The cause was CUI[4].**

### CUI AFFECTS INDUSTRIAL PLANTS IN THE FOLLOWING WAYS:

- **Operational**
- **Economical**
- **Safety**

# MARKET-LEADING WATER ABSORPTION PROPERTIES FOR STONEWOOL INSULATION

## 10 × BETTER THAN THE REQUIREMENTS OF THE TOUGHEST STANDARDS AVAILABLE (EN1609 AND EN13472)*




## Why choose Paroc?

| | | |
|---|---|---|
| | **LOWEST WATER ABSORPTION*** | **PAROC pipe sections maintain effective protection against CUI by providing market-leading water absorption properties. Third party tests prove that the properties of PAROC Pro Section WR 100 are more than 10 × better than the toughest requirements on the market, absorbing less than 0.1 kg/m² when tested against compliance with EN13472.** |
| | **SUPER SHORT DRY-OUT TIME*** | **Extremely short period of a potential corrosive environment between the pipe and the insulation material. A fibrous, open-pore structure allows any bulk water to drain away and for vapor to dry out naturally.** |
| | **HIGHEST TEMPERATURE RANGE*** | **Performing and keeping the superior water absorption properties at temperatures up to 300°C, ensuring the best water repellency ever seen for stonewool products.** |
| | **VERY LOW CONTENT OF LEACHABLE CHLORIDES** | **The content of water-leachable ions such as chlorides, sodiums, silicates and fluorides in PAROC stonewool does not exceed 10ppm, meeting the standards of ASTM C795. PAROC's products are chemically inert to steelwork to mitigate risk of corrosion.** |

* Claims based on independent third party comparison involving products from major mineral wool manufacturers, conducted by Eurofins Lab 19036 on 16th of August 2019.
[4] www.intertek.com/articles/2010-08-corrosion-under-insulation



# DRY INSULATION ALWAYS PERFORMS BETTER THAN WET INSULATION

Low water absorption is a critical property of good insulation. Most industrial insulation solutions are at risk of being exposed to water, high humidity or other liquids.

Water in the insulation material will dramatically decrease performance and add weight to the insulation, in addition to increasing the likelihood of corrosion of equipments' surfaces.

### PAROC'S STONEWOOL IS WATER REPELLENT – A TWOFOLD BENEFIT!

- **DURING INSTALLATION – provides short-term protection against water exposure**
- **DURING SERVICE – delays water ingress and reduces water absorption**

Corrosion is accelerated by the duration of any wetness, therefore protection against water trapped under or in the insulation material itself becomes a function of time. In other words:

**Less water and faster dry-out = less corrosion**

PAROC WR Pipe Sections are tested at independent laboratories according to European (EN), British (BS) and American (ASTM) standards.

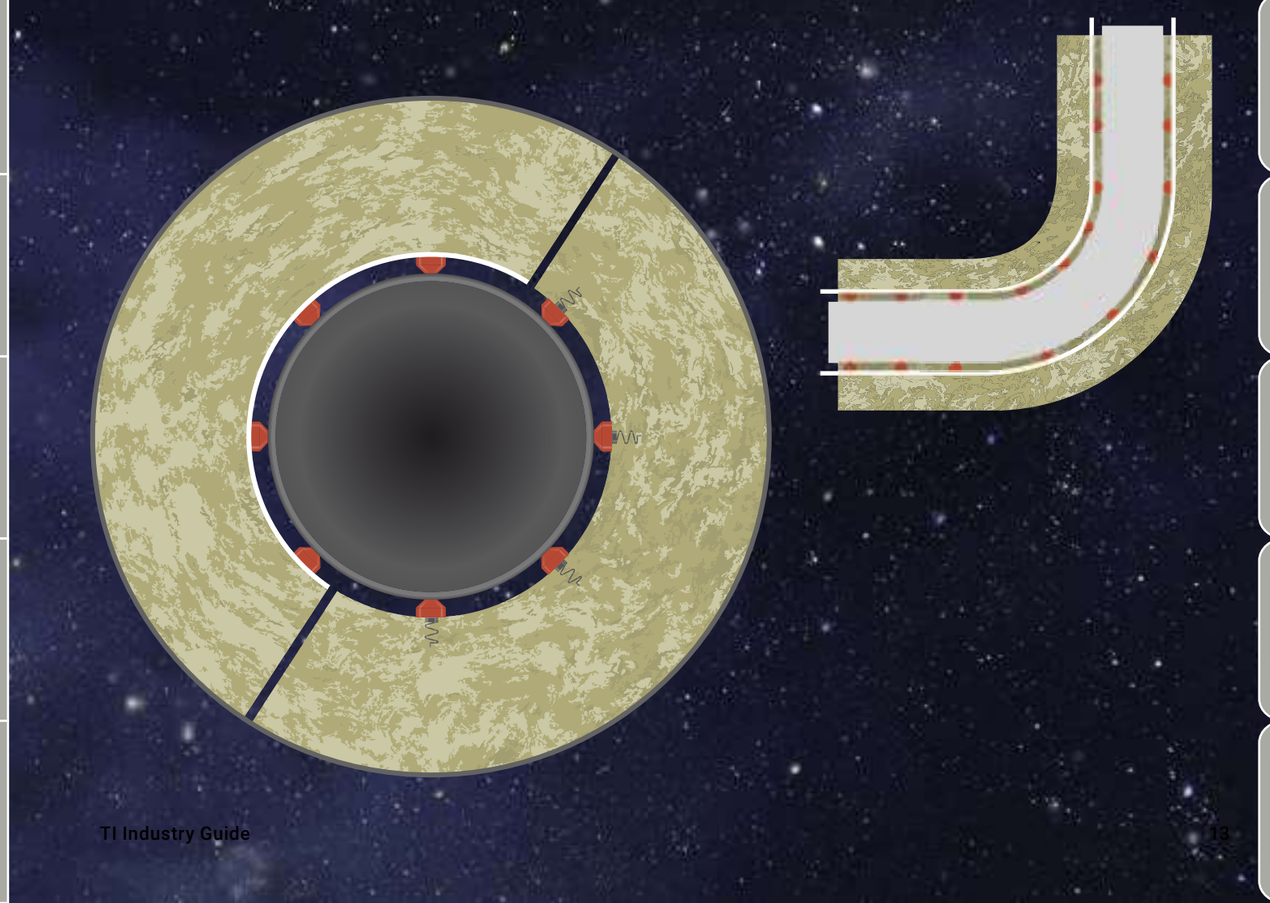
### A SOLUTION TO PREVENT CORROSION

A key to protecting insulated metal surfaces from exposure to moisture and other harmful substances is to use highly water-repellent, non-hygroscopic, chemically robust and durable insulation material.

According to AGI Q 132, the maximum content of chloride ions (Cl- ) shall not exceed 10ppm. PAROC Stonewool fulfills this requirement. In addition, the range of protective facings and foils increases process functionality.

When it comes to CUI, the elbow of a pipe is normally the weakest part of the insulation. Fortunately there is a solution for this problem: PAROC Pro Curve WR and PAROC CUI Spacers to reduce the risk of CUI up to 250 °C and save valuable installation time.

There are 2 options to install the spacers:
**1.** mounted on a belt for pipes ≥ 200 mm diameter
**2.** as single spacers with springs for pipes with ≤30 mm diameter

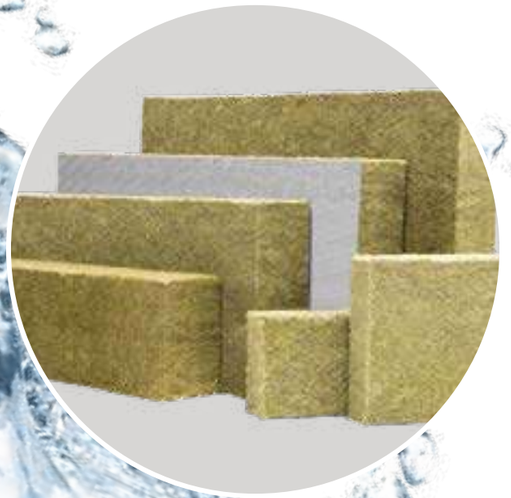


# PAROC WR PRODUCTS

MARKET LEADING
WATER REPELLENCY

PAROC PRO WIRED MATS WR

PAROC PRO CURVE WR
PAROC CUI SPACERS



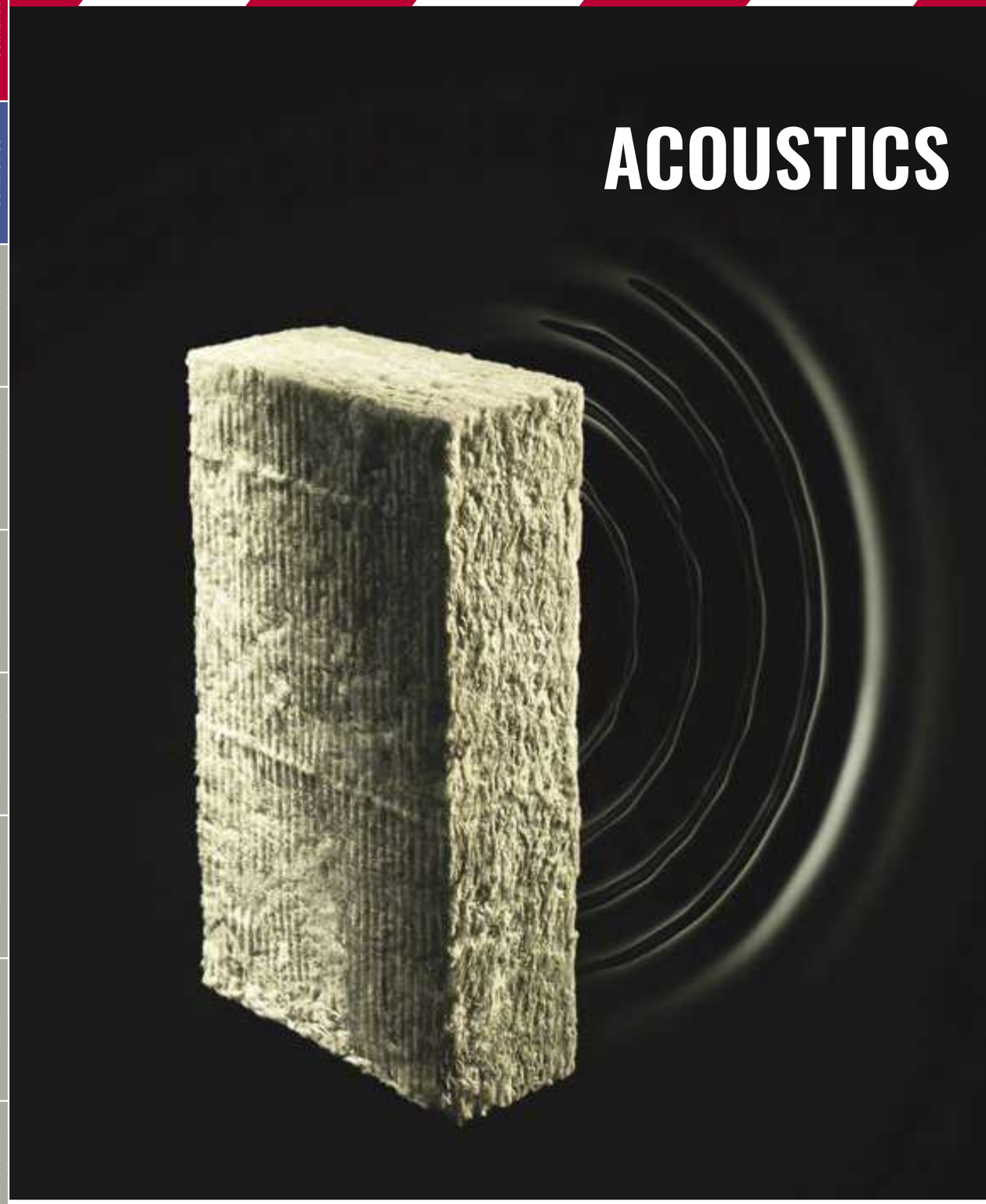
PAROC PRO SLABS WR

PAROC PRO SECTIONS WR





# ACOUSTICS

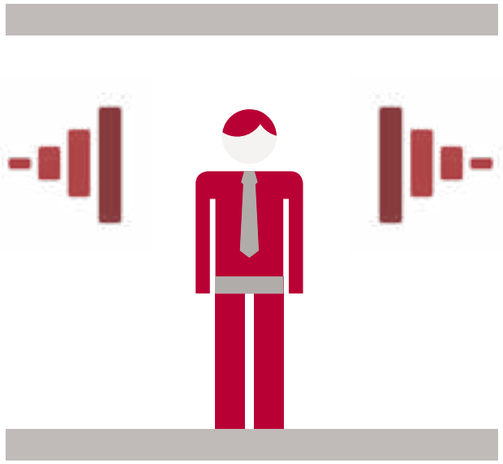


# SOUND ABSORPTION

A material's sound absorbing properties are expressed by the sound absorption coefficient, α, (alpha), as a function of the frequency. α ranges from 0 (total reflection) to 1.00 (total absorption).

The sound absorption coefficient is normally measured by the room method. The measurements are done in a large room known as a reverberation room, which is designed to create a diffuse or random incidence sound field (i.e. one with a uniform distribution of acoustic energy and random direction of sound incidence over a short time period).

This measuring method follows an international standard designated EN ISO 354. Sound absorbing properties are classified according to EN ISO 11654.



**Absorption coefficients of some common materials**

Following table shows the absorption coefficient of some common materials. Look at it as more of a guide than an absolute.

| Material | Frequency Hz | | | | | |
|---|---|---|---|---|---|---|
| | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| **Concrete** | 0.02 | 0.02 | 0.02 | 0.04 | 0.05 | 0.05 |
| **Gypsum board, solid backing** | 0.03 | 0.03 | 0.02 | 0.03 | 0.04 | 0.05 |
| **Gypsum board, on studs** | 0.3 | 0.15 | 0.1 | 0.05 | 0.04 | 0.05 |
| **Curtains** | 0.10 | 0.15 | 0.40 | 0.55 | 0.60 | 0.60 |
| **Carpet, Haircord on felt** | 0.10 | 0.15 | 0.25 | 0.30 | 0.30 | 0.30 |
| **Mineral wool, 50 mm** | 0.20 | 0.65 | 1.00 | 1.00 | 1.00 | 1.00 |

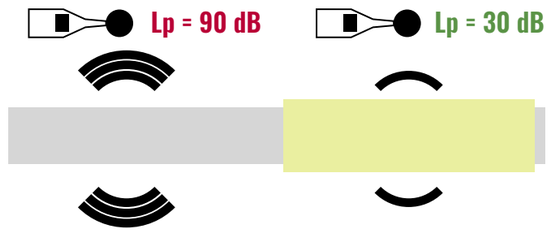
## EFFECTIVE NOISE REDUCTION

High-speed air, steam and liquid movements in industrial processes create a lot of noise, which can adversely affect the working environment of employees. Due to their porous fibre structure and high density, PAROC products – especially when installed as multi-layer solutions – provide good sound insulation, creating a more pleasant working environment. PAROC provides competitive and certified solutions according to the industrial standard for insertion loss **ISO 15665**. PAROC products meet the requirements for Class A, B, C and D (Shell Class).





# STANDARD MEASUREMENT




**Focus on obtaining INSERTION LOSS**

$D_W$ Insertion Loss = difference (in dB) between sound power level radiated from a noise source before and after the application of the acoustic insulation

**ISO15665 Solutions List - Paroc**

| n° | Measured Class | n°test | Insulation | Type | Density (kg/mc) | Thickness (mm) | Cladding |
|---|---|---|---|---|---|---|---|
| 1 | **A2 - B2** | 02.05 GLA-1441.5-19 | PAROC Pro Section WR 120 | Pipe Section | 120 | 100 | Stainless sheet thickness of 0.027 inch. ( 0.7 mm) |
| 2 | **A2 - B2** | 02.05 GLA-1441.4-19 | PAROC Pro Section WR 120 | Pipe Section | 120 | 100 | Aluminum sheet thickness of 0.039 inch. ( 1 mm) |
| 3 | **B2** | 02.05 GLA-1441.2-19 | PAROC Pro Section WR 120 | Pipe Section | 120 | 102 | Aluminum sheet thickness of 0.02 inch. |
| 4 | **B2** | 02.05 GLA-1441.3-19 | PAROC Pro Section WR 120 | Pipe Section | 120 | 102 | Steel plate thickness of 0.016 inch. |
| 5 | **A2,B2,C2** | 02.05 GLA-1441.7-19 | PAROC Pro Section WR 120 | Pipe Section | 120 | 102 | Vinyl thickness of 0.1 inch and aluminum sheet thickness of 0.020 inch. |
| 6 | **A2,B2,C2** | 02.05 GLA-1441.6-19 | PAROC Pro Section WR 120 | Pipe Section | 120 | 102 | Vinyl thickness of 0.1 inch and steel plate thickness of 0.016 inch. |
| 9 | **B2** | 06.05 GLA-1441.14-19 | PAROC Industrial Mineral Wool Wrap Insulation | Mat | 100 | 51 | Stainless sheet thickness of 0.027 inch. ( 0.7 mm) |
| 10 | **B2** | 06.05 GLA-1441.15-19 | PAROC Industrial Mineral Wool Wrap Insulation | Mat | 100 | 51 | Aluminum sheet thickness of 0.039 inch. ( 1 mm) |
| 11 | **A2 - B2** | 08.05 GLA-1441.21-19 | PAROC Pro Section WR 120 | Pipe Section | 120 | 51 | Stainless sheet thickness of 0.027 inch. ( 0.7 mm) |
| 12 | **A2** | 08.05 GLA-1441.24-19 | PAROC Pro Section WR 120 | Pipe Section | 120 | 51 | Aluminum sheet thickness of 0.039 inch. ( 1 mm) |
| 14 | **A2** | 08.05 GLA-1441.23-19 | PAROC Pro Section WR 120 | Pipe Section | 120 | 51 | Steel plate thickness of 0.016 inch. |
| 15 | **B2** | 08.05 GLA-1441.16-19 | PAROC Industrial Mineral Wool Wrap Insulation | Mat | 100 | 100 | Aluminum sheet thickness of 0.020 inch |
| 16 | **B2** | 08.05 GLA-1441.17-19 | PAROC Industrial Mineral Wool Wrap Insulation | Mat | 100 | 100 | Steel plate thickness of 0.016 inch. |
| 17 | **A2,B2,C2** | 08.05 GLA-1441.19-19 | PAROC Industrial Mineral Wool Wrap Insulation | Mat | 100 | 100 | Vinyl thickness of 0.1 inch and steel plate thickness of 0.016 inch |
| 18 | **A2,B2,C2** | 08.05 GLA-1441.18-19 | PAROC Industrial Mineral Wool Wrap Insulation | Mat | 100 | 100 | Vinyl thickness of 0.1 inch and aluminum sheet thickness of 0.020 inch |
| 25 | **D2** | GLA-1463.6 / 19 | PAROC Pro Section WR 120 | Pipe Section | 120 | 50+60 | Vinyl thickness of 0.1 inch between MW layers - 2 Vinyl thickness of 0.1 inch and steel plate thickness of 0.027 inch. |

# ACOUSTICAL SPECIFICATIONS ISO 15665

- All projects with acoustical performance are made for the specific requirements of each pipe
- The international standard used to define minimum acoustical performance of an insulation pipe is ISO15665
- For specifications, we look for the most cost-effective requirements in acoustic parameters that achieve the same level of performance


*Download new PAROC Acoustic Guide for Technical Information*

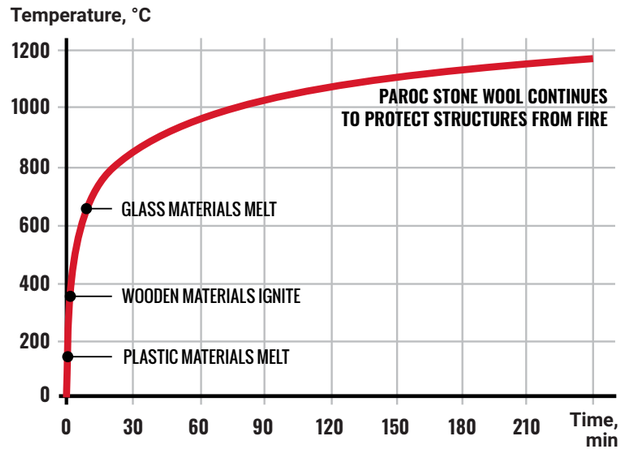
# FIRE PROTECTION



## FIRE PROTECTION

*The main objective of thermal insulation is to keep heat transfer to the environment as low as possible and to avoid thermal bridges. Innovative stonewool insulation meets the highest fire protection requirements as it consists of natural stone. It is non-flammable, with no burning droplets and no fire propagation. This makes it popular for structural fire protection.*

**THE BEHAVIOUR OF CERTAIN CONSTRUCTION MATERIALS IN A "STANDARD FIRE"***




* A "standard fire" simulates the development of temperatures in a fire in a normal room space according to the standard combustion curve ISO 834.

### PAROC STONEWOOL

- **Is non-combustible**
- **Is classified in Euroclass A1 - the highest European fire class for building material**
- **Maintains its fire protective properties up to 1000 °C**
- **Can protect structures from collapsing for up to 4 hours**
- **Prevents fire from spreading**
- **Protects combustible materials for up to 60 minutes**
- **Doesn't need maintenance - protects during the life-time of the building**
- **Gives extra time for people to escape**
- **Can be used in extreme conditions like the marine industry and power plants**
- **Releases only a very small amount of smoke during a fire**




# PAROC CALCULUS:
# DESIGN ENERGY-EFFICIENT INSULATION TAILORED TO YOUR PROJECT

PAROC® Calculus is a technical insulation calculation program for dimensioning thermal insulation for different HVAC, Process Industry and Marine applications e.g. pipes, ventilation ducts and process industry tanks. With PAROC Calculus it is also possible to calculate the heat loss for insulated and uninsulated valves and flanges, which usually increases the risk of heat loss. Additionally, the heat loss caused by thermal bridges in pipe and duct suspensions can be taken into account.

With PAROC Calculus you can design energy efficient and economical insulation solutions for different HVAC and process industry applications with PAROC products.

**PAROC Calculus features:**

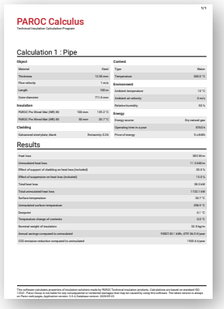
- Easy to use interface
- Works on pc, tablets and mobile phones
- Calculations for heat loss, surface temperature and temperature drop in pipes, ventilation ducts, process industry tanks, valves and flanges.
- Easy input of pipe diameters and duct dimensions (predefined)
- Thermal bridges of pipe and duct suspensions
- Print out your calculations to pdf
- All calculations are based on equations described in the EN ISO 12241 standard.

**Step 1** Select application

Extract the results after the desired selection of the calculation options

After selecting your calculation options

Printout in Portable Document Format (pdf)




**Step 2** Calculate with surface temperature display - cladding systems, suspensions and substructures can optionally be used for the calculation

Access
Calculus online

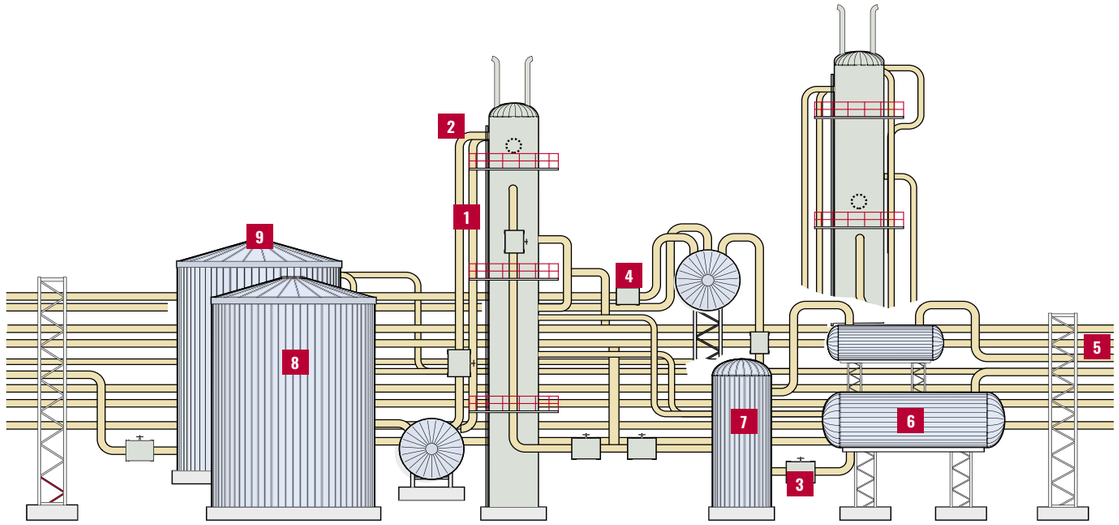
# APPLICATIONS



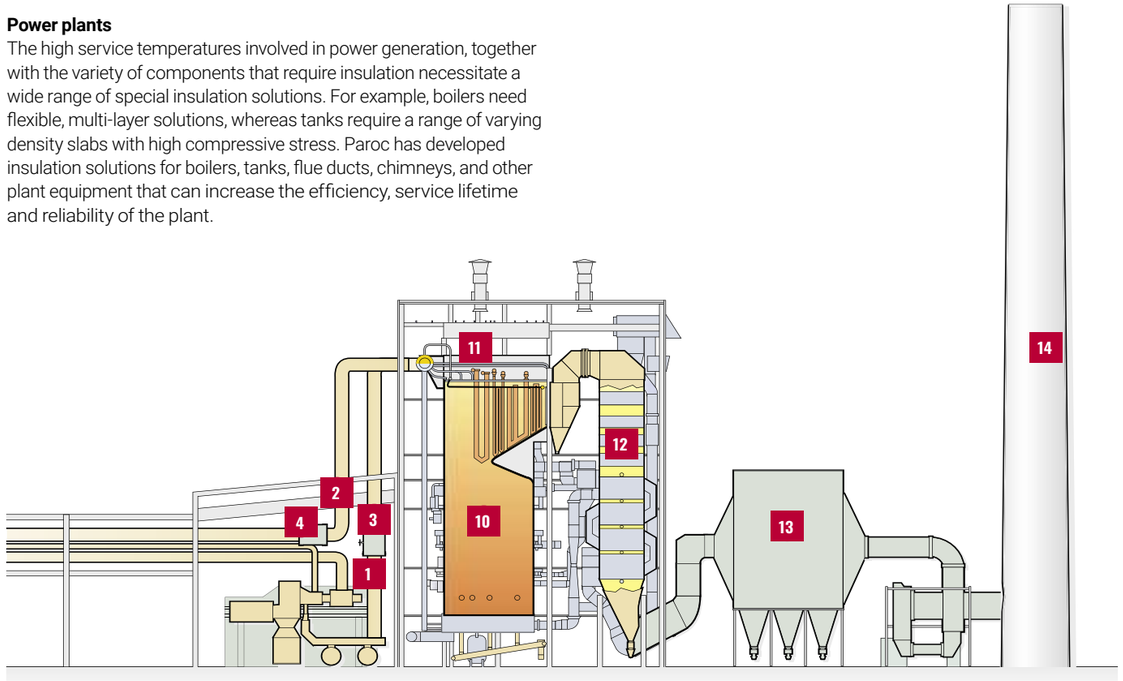


# APPLICATIONS

**Process industries**
Process industries demand specialist insulation solutions. The temperature in the pipelines must remain within certain parameters, heat loss must be minimised, and the whole process must be reliable, durable and safe. Paroc's industrially manufactured, mutually compatible insulation components provide the same insulation capacity both for straight pipe sections and pipe elbows, helping to maintain optimal performance throughout the pipeline.




**Power plants**
The high service temperatures involved in power generation, together with the variety of components that require insulation necessitate a wide range of special insulation solutions. For example, boilers need flexible, multi-layer solutions, whereas tanks require a range of varying density slabs with high compressive stress. Paroc has developed insulation solutions for boilers, tanks, flue ducts, chimneys, and other plant equipment that can increase the efficiency, service lifetime and reliability of the plant.



1 High-temperature pipeline

2 High-temperature pipe elbow

3 Valve insulation box

4 Flange insulation box

5 Heated pipeline

6 Heat exchanger

7 Pressure vessel

8 Tank wall

9 Tank roof

10 Boiler wall

11 Boiler penthouse

12 Flue duct

13 Exhaust gas filter wall

14 Industrial chimney





# INSULATION SOLUTIONS FOR PIPEWORK

Pipes are a crucial component in industrial processes. Whether in power plants or process industries, well-designed and efficient pipework is a prerequisite for a properly functioning operation and low maintenance costs. For industrial use, we have a large range of pipe section solutions designed for various requirements consisting of industrially manufactured, mutually compatible insulation components for straight pipes and pipe elbows.

## EFFECTIVE PAROC PIPE INSULATION SOLUTIONS

Insulation products are chosen according to the operating temperature of the pipe. Insulation can be implemented with standard products or, for high temperatures, with high-density pipe sections. Often one-layer solutions are suitable, but for more demanding specifications, double- or even multi-layer solutions are required. Double-layer insulation with PAROC Pro Lock insulation are tight without any gaps due to overlapping in lengthwise and crosswise joints.

Our solutions comprise standard pipe insulation, double or multi-layer pipe insulation and pipe elbow insulation. The table shows the main products and combinations of products for different applications.

## RAPID AND ECONOMICAL INSTALLATION

PAROC pipe sections are dimensionally accurate and compatible with factory-made components, such as bends and segments. Installation is straight-forward, easy and results in technically superior insulation performance. The components do not need to be further measured or modified on-site, nor do they require any additional metal support structure associated with wired mats. This eliminates a common cause of heat loss.

The benefits of PAROC pipe insulation solutions are particularly significant when insulating pipe elbows. The same material, with the same properties is used, but without the need for on-site cutting and supporting rings that make installing traditional mat insulation so time-consuming.

## DOUBLE-LAYER PIPE INSULATION SOLUTIONS

Double-layer insulation solutions are needed for temperatures higher than 250 °C and when the insulation thickness is over 80 - 100 mm.

PAROC products which have DL in their product name are single products based on two product pieces, one fitted inside the other. Layers are installed separately. The parts are precisely measured during production to ensure compatibility and a good fit guaranteeing perfect insulation.

Double-layer products (DL) are handled as one e.g. each package includes all of the product pieces required for both the inner and outer layers, eliminating unnecessary waste. This eases the logistics, both in delivery to the building site and at the site itself. The solution, therefore, saves on costs, helps keep the site tidy and provides first-class insulation properties.

- **For service temperatures of over 250 °C, at least two layers of insulation are recommended.**
- **If the total insulation thickness is 80 - 100 mm or more, we recommend using double-layer products (DL) or PAROC Lock Sections.**
- **We strongly suggest to use products with a density of 140 kg/m³ as the first layer when the pipe temperature exceeds 350 °C.**

**Table 1. Recommended insulation products for industrial pipework insulation.**

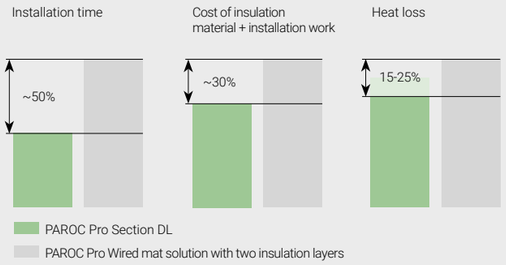
| PAROC solutions for industrial pipework insulation | | |
|---|---|---|
| **Temp. °C** | **Insulation for straight pipes** | **Insulation for pipe elbows** |
| ≤250 | PAROC Pro Section 100 | PAROC Pro Segment 100, PAROC Pro Bend 100 |
| ≤250 | PAROC Pro Lock 100 | PAROC Pro Segment 100 or<br>PAROC Pro Segment 100 + PAROC Pro Segment 100 |
| >250 | PAROC Pro Section 100 or<br>PAROC Pro Section 100 + PAROC Pro Section 100 | PAROC Pro Segment 100 or<br>PAROC Pro Segment 100 + PAROC Pro Segment 100 |
| >350 | PAROC Pro Lock 140 or<br>PAROC Pro Section 140 + PAROC Pro Section 100 | PAROC Pro Segment 140 or<br>PAROC Pro Segment 140 + PAROC Pro Segment 100 |

*Pipeline insulated with pipe sections in one layer.*

*High-temperature pipeline insulated with pipe sections in two layers.*

*Double-layer insulation can be replaced with PAROC Pro Lock 100 or 140 (z-lock), a tongue-and-groove pipe insulation that can be installed in a single work period.*

**Graph 1.**




The comparison is based on the average of costs calculated for different pipe sizes. It shows that the PAROC Pro Section double-layer solution is both cost-effective and time-saving, not to mention that the PAROC Pro Section double-layer solution has 15 - 25% less heat loss, if the insulation thickness is the same. Note that wired mat insulation requires additional supporting structures.

Cladding material and its installation costs are not included in the example.

*Comparison of PAROC Pro Section double-layer solution and PAROC Pro Wired Mat solution with the same insulation thickness.*

## Benefits of PAROC industrial pipework insulation solutions:

- Full product range for pipes and pipe elbows – rapid, easy design process
- Tight solutions without gaps in joints – minimum heat loss
- Solutions without supporting structures – improved energy efficiency
- Controlled process temperature – process works efficiently
- Environmentally effective solution – reduced $CO_2$ emissions
- Compatible pipe sections and elbow insulations – time and money saved on installation, minimum waste on-site
- Exact dimensioning – fits with pre-fabricated cladding
- Double-layer (DL) products delivered nested, one inside the other – more effective logistics
- Very low water absorption and low chloride content in products – eliminate risk of corrosion
- Long-lasting solutions with low maintenance costs – investment for life

## MULTI-LAYER PIPE INSULATION SOLUTIONS

If the total insulation thickness is so great that the thickness of available products in two layers is not sufficient, three or more layers of insulation are used.

## PAROC PIPE SECTION SOLUTION COMPARED TO WIRED MAT INSULATION

One of the primary advantages of PAROC pipe section solution over wired mat insulation is the ease and accuracy of the installation process. By using the PAROC Pro Section double-layer solution, heat loss can be reduced by at least 15 - 25% compared to wired mat insulation with the same insulation thickness.

Insulating pipes with the PAROC Pro Lock solution also brings other benefits compared to the PAROC Pro Wired Mat solution. The insulation thickness can be reduced significantly with the pipe section insulation solution. This also reduces insulation material costs, cladding costs and labour costs.

With pipe sections, the installation time is shorter. This means that scaffolding and other equipment is needed for a shorter period and general on-site costs are lower. Furthermore, the pipe section insulation does not sag over time, so its thickness and effectiveness remain stable over the whole lifetime of the pipeline.

Paroc has developed special solutions for pipe elbow insulation which perform as effectively as straight pipe insulation. Prefabricated PAROC Pro Segments and PAROC Pro Bends are a technically effective, fast and economic way to insulate pipe elbows.

Watch the video about how to save costs with PAROC Pro Pipe sections







# INSULATION SOLUTIONS FOR PIPE ELBOWS

Paroc has developed special solutions for pipe elbow insulation which perform as effectively as straight pipe insulation. Prefabricated PAROC Pro Segments and PAROC Pro Bends are a technically effective, fast and economic way to insulate pipe elbows.

## PAROC PRO SEGMENTS

PAROC Pro Segments are insulation components for large pipe elbows. The benefits of double-layer insulation can also be utilised in pipe elbows by using double-layer segments, where the seams are sealed in order to minimise heat loss.

We produce PAROC Pro Segments for 90°pipe elbows with a standard radius of 1.5D and 2.5D.

## PAROC PRO BENDS

PAROC Pro Bend 100 is used for small and medium-sized pipe elbows. It is available with a standard radius of 1.5D.

On request, we can produce segments or bends for any elbow radius and insulation thickness. For more information, please contact your local Paroc representative.

## VALVES AND FLANGES

Valves and flanges of pipelines must be insulated using separate, easy-to-open jacketing. An aluminium foil-faced wired mat is attached to the inside surface of the jacketing, with the foil facing inwards. This makes service and maintenance work easy and clean to perform, and the same jacketing, with its insulation, can be reused several times.

## HEATED PIPELINES

Viscous fluids must be heated so that they can be transferred in pipelines. Pipes equipped with heating cables or steam tracers are first covered with aluminium foil so that heat is better distributed over the surface of the pipe. Insulation is then installed over the pipe in the normal manner, taking into account the altered outer diameter.

## SUPERHEATED STEAM PIPELINES AND TURBINE TUBES

Turbine tubes operate at high temperatures of up to 540 °C and demand a good, multi-layer thermal insulation solution. The insulation thicknesses are normally around 200 - 300 mm. The fixing of the insulation and cladding is very demanding, not only due to the high service temperatures, but also because of vibrations during operation. High density, double or multi-layer insulation solutions are recommended for insulating very high-temperature pipelines such as turbine tubes. See the recommended insulation solution in the table on page 10.

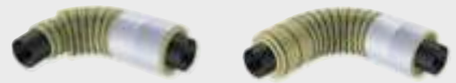
## TURBINES

Turbine bodies are very complex in shape, with many outlets and round forms. This kind of high-temperature equipment should be insulated with high-density wired mats. The diverse form of the constructions make aluminium-faced wired mats a perfect solution. The fixing of the insulation and cladding is very demanding, not only due to the high service temperatures, but also because of vibrations during operation.

## NOISE REDUCTION IN INDUSTRIAL PIPELINES

Pipelines transporting high-speed airflow or high-pressure steam require noise reduction insulation. PAROC high-density pipe sections are a good solution for these applications. They do not require any additional support structure on horizontal pipelines, which in many cases makes the total thermal insulation or noise reduction worse. In double or multi-layer insulation solutions, it is also worthwhile to have a heavy facing layer between the wool layers to improve noise reduction.

*Double-layer segment solution on a pipe elbow continues with PAROC Pro Lock 100 pipe sections.*



*Double-layer segment solution on a pipe elbow continues with PAROC Pro Lock 100 pipe sections.*

*PAROC Pro Bends are designed to make installation quick, easy and efficient.*

*Remember to insulate all valves and flanges!*

*Insulation of a heated pipeline.*

*High-temperature pipe insulation always has a multi-layer construction.*

*The most harmful low-frequency noise can be reduced considerably with a high-density multi-layer solution.*

# INSULATION SOLUTIONS FOR TANKS

*Storage tanks of various shapes and sizes are integral parts of many industrial processes. The temperature of the stored material can vary greatly from one process to another, necessitating a thermal insulation solution that performs well over a wide service temperature range.*

## STONEWOOL INSULATION OFFERS LIFELONG PROTECTION

PAROC stonewool slabs are the optimum solution for insulating storage tanks and other large cylindrical or flat surfaces. They provide superior thermal insulation over wide service temperature ranges due to low air permeability. Their high compressive stress remains effective regardless of temperature fluctuations for the entire lifetime of the tank. Thus, the insulation slabs require no additional support structures which could create cold bridges.

The water-repellent and non-combustible nature of stonewool gives further protection to the tank, and increases its operating life. Additionally, as with all PAROC industrial insulation solutions, the installation process is both cost-effective and straight forward.

Paroc has a range of stonewool insulation slabs designed particularly for tank insulation applications. Specially made tank wall slabs are available in a range of densities to suit different tank temperatures. For roof insulation, higher-density load-bearing slabs are recommended.

## INSULATION OF TANK WALLS

Due to temperature differences between the insulation and cladding, the "chimney effect", where air flows upwards, occurs in high tank walls. Because of this, it is important to use dense enough insulation slabs to prevent air movement inside the insulation, and minimise heat convection (see graph 2). You can calculate the heat loss or cooling times of tanks with different insulation solutions with the PAROC Calculus tool. You should select the right product and density according to local requirements or insulation specifications.

Tank wall insulation can be installed with different fixing and supporting methods. These vary from country to country and depend on the specifications used.

## INSULATION OF TANK ROOFS

Tank roofs can be insulated with rigid PAROC Pro Roof Slabs. The slabs themselves do not need any fixing, but the cladding must be supported through the insulation. Supporting structures can vary according to different specifications and standards. Insulation slabs for walkable roofs need to have good resistance to compression and need to fulfill requirements according to specifications.

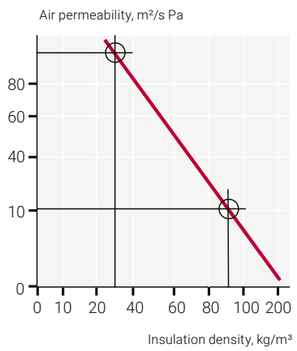
*The insulation slabs can be fixed with welded pins.*

*Tank roofs can be insulated with rigid PAROC Pro Roof Slabs.*

### Benefits of PAROC tank insulation:

- Tight solutions without gaps in joints – minimum heat loss
- Low air permeability of products – maximum performance even in the most demanding conditions
- Controlled temperature of the content – energy efficiency in storing
- Environmentally effective solution – reduced $CO_2$ emissions
- Products with high compressive stress for tank roofs – withstand load during installation and maintenance
- Long-lasting solutions with low maintenance costs – investment for life

**Graph 2.**




*Air movement decreases when using higher-density products.*





# INSULATION SOLUTIONS FOR PROCESS EQUIPMENT

*Process equipment needs different insulation and cladding options based on its size and operating temperatures.*

## WIRED MAT INSULATION FOR EQUIPMENT

Wired mats are often the best insulation material for equipment with a lot of curves and outlets. Various pieces of small equipment, like heat exchangers, are insulated with flexible wired mats. A lot of this equipment is multiform, with uneven surfaces, and therefore flexible insulation is needed to fill up all the corners. When using flexible wired mats, it is necessary to secure the cladding with structures like supporting rings, in order to prevent the insulation from sagging.

## INSULATION OF PRESSURE VESSELS

For pressure vessels, stonewool slabs or wired mats are used depending on the sizes and dimensions in question. Wired mats are used for smaller diameter vessels, for larger ones different density stonewool slabs can also be used according to the required temperatures.

The insulation fixing method is dependent on whether welding to the vessel's surface is permitted or not. Whenever it is possible, welded pins are the easiest choice, but an alternative method is to fix the insulation with steel bands.

*Small equipment, such as heat exchangers, is insulated with flexible wired mats.*

*For pressure vessels, stonewool slabs or wired mats are used depending on the sizes and dimensions in question.*

### Benefits of PAROC process equipment insulation:

- Controlled process temperature – process works efficiently
- Environmentally effective solution – reduced $CO_2$ emissions
- Double or multi-layer solutions – no cold bridges and reduced risk of corrosion
- Long-lasting solutions with low maintenance costs – investment for life

# INSULATION SOLUTIONS FOR FLUE DUCTS

*Flue ducts are easy to insulate with PAROC Pro Slab 80, using either one layer or multi-layer insulation solutions.*

**Benefits of PAROC flue duct insulation:**

- Environmentally effective solution – reduced $CO_2$ emissions
- Long-lasting solutions with low maintenance costs – investment for life
- Controlled process temperature – process works efficiently

Many process industries involve the transfer of large volumes of air or other gases. The ventilation processes of paper machines, for example, involve a lot of energy that must be recovered. The airflow volumes associated with the ventilation of industrial processes are in a class of their own when compared to major conventional structures. High flow speeds, fluctuations in temperature and pressure, together with the sheer size of the ducts and equipment, require high mechanical strength from the structures protecting them.

## THE OPTIMUM SOLUTION FOR EACH APPLICATION

In process industries, energy flow management is vital for the functionality and economy of the operation. Such demanding applications require insulation solutions designed and developed specifically for that purpose. PAROC flue duct insulation solutions provide superior thermal insulation at high service temperatures and help prevent condensation. They also have good mechanical strength.

In flue duct applications, a double layer of insulation is usually used in order to prevent cold bridges. Generally, both layers are slabs, but it is possible to combine slabs with wired mats. The optimal insulation material depends on the temperatures and type of channel. For rectangular channels, slabs are easier to install, but wired mats may also be used.

Flue ducts are easy to insulate with PAROC Pro Slab 80, using either one layer or multi-layered insulation solutions. The slabs are fixed with pins and washers. The insulation construction can vary according to specifications.



# INSULATION SOLUTIONS FOR BOILERS

*The inner layer of insulation is aluminium-faced wired mat. The outer layer can be insulated with PAROC Pro Slab 80, specially developed for this purpose.*

*Boiler penthouses are normally insulated with wired mats or with wired mats and slabs.*

**Benefits of PAROC boiler insulation:**

- Double or multi-layer solutions – no cold bridges and reduced risk of corrosion
- Flexibility and mechanical strength of products – proper insulation even under considerable temperature variations
- Controlled process temperature – process works efficiently
- Environmentally effective solution – reduced $CO_2$ emissions
- Long-lasting solutions with low maintenance costs – investment for life

The high service temperatures and special structure of power plant boilers, together with the need to limit thermal radiation from their large surface area, places particular demands on the insulation solution. The casing and plumbing of boilers are constantly moving due to heat expansion and the vibrations caused by attached equipment such as burners and fans. In addition to the very high temperatures of boilers in general, the temperatures can vary in different parts of the construction.

## SPECIAL DEMANDS – EFFECTIVE SOLUTIONS

Due to the high service temperatures involved, several layers of insulation are required in order to provide a sufficiently strong and thick solution. This demands a variable insulation solution depending on the type of boiler. Paroc has a range of stonewool insulation slabs and mats specially designed for boiler insulation applications. Usually, insulation solutions with two to four layers are needed. The inner layer is normally a wired mat and the outer layers can be wired mats or slabs.

The insulation material should be flexible in order to fill all the gaps and allow for heat expansion. In between the insulation layers, it is good to have pure aluminium foil (AL1 facing) to prevent heat radiation inside the insulation.

When put into use for the first time after the insulation has been installed, the boiler should not be heated at a rate more than 50 °C per hour.

## BOILER WALLS

The insulation of boilers is demanding, as heat expansion must be taken into account in all structures. The insulation of the pipe wall is fixed with pins welded to tin tubes. The insulation structure is faced with corrugated steel or aluminium cladding. The inner layer of insulation is aluminium-faced PAROC Pro Wired Mat 80 AL1. The outer layer can be insulated with the same product or PAROC Pro Slab 80, specially developed for this purpose.

## BOILER PENTHOUSES

On the top of boilers there are series of pipe junctions. These pipe junctions must be insulated with a special insulation structure of the boiler penthouse. The main structure is composed of flat bars and heavy-duty steel net. It is normally insulated with wired mats only, or wired mats and slabs. The whole structure is faced with heavy-duty corrugated steel plates. On the top of these are steel plates capable of bearing the weight of maintenance workers.

# INSULATION SOLUTIONS FOR EQUIPMENT AND FILTERS

The design and installation of thermal insulation in the walls of a boiler plant's flue gas cleaning equipment is of critical importance to its service life and functionality. A good insulation solution prevents the interior walls cooling below the point where the acid contained in the flue gas condenses and forms corrosive deposits. In this respect, it is crucial that no cold areas form on the interior wall.

## OPTIMAL INSULATION PROPERTIES

The operational characteristics of PAROC stonewool products are ideally suited for such applications. They provide excellent thermal insulation in the temperature range of flue gases, have low air permeability, are moisture resistant and offer good compressive stress in roof structures. In addition PAROC stonewool has very low chloride and fluoride content, which helps to minimise corrosion.

## INSULATION WITHOUT THERMAL BRIDGES

It is important to avoid thermal bridges, because they can create areas where acidic vapours condense. Critical areas such as wall bracing structures, adhesive surfaces, and access covers are usually insulated effectively using double or multi-layer insulation solutions with overlapping seams. Generally, both layers are slabs, but it is possible to combine slabs with wired mats. Flat surfaces can be insulated with slabs such as PAROC Pro Slab 80, or with wired mats. The installation properties of the solutions enable tight insulation of wide flat surfaces.

## ELECTROSTATIC PRECIPITATORS

Paroc has developed a range of products that are suitable for use in desulphurisation equipment and electrostatic precipitators. Electrostatic precipitators can be insulated with PAROC Pro Slab 80. In some cases, wired mats or multi-layer insulation solutions combining slabs and mats, are also used. The insulation is fixed with pins and washers and it is important to minimise all possible cold bridges in the construction.

*Electrostatic precipitators can be insulated with PAROC Pro Slab 80.*

**Benefits of PAROC equipment and filter insulation:**

- Tight solutions without gaps in joints – minimum heat loss
- Controlled process temperature – process works efficiently
- Environmentally effective solution – reduced $CO_2$ emissions
- Rigid slabs – easy installation
- Long-lasting solutions with low maintenance costs – investment for life





# INSULATION SOLUTIONS FOR INDUSTRIAL CHIMNEYS

Most industrial plants feature concrete chimneys which need to be insulated. When insulating industrial chimneys, the primary concern is to prevent the surface temperature of the internal steel channels from dropping to the point where the gases can condense and form corrosive deposits. Preventing the formation of such deposits prolongs the service life of the chimney.

## WIRED MAT INSULATION

The round internal structures of chimneys are usually insulated with flexible wired mat insulation solutions, with special attention being paid to preventing the formation of corrosive acid droplets. PAROC Pro Wired Mat 80 AL1 and 100 AL1 are ideal products for insulating the round channels inside concrete chimneys.

The aluminium foil and net of the insulation provide dust protection and a good base for attachments. This helps prevent the insulation from sagging and also results in more pleasant, dust-free conditions when doing maintenance work.

*PAROC Pro Wired Mat 80 AL1 and 100 AL1 are ideal products for insulating the round channels inside concrete chimneys.*

**Benefits of PAROC chimney insulation:**

- Wired mat insulation – easy to install on large round channels
- Aluminium foil faced insulation – easy maintenance work inside concrete chimneys

| Industrial Pipeworks: Process pipelines | Industrial Pipeworks: High temperature pipelines | Industrial Pipeworks: Super-heated steam pipelines | Industrial Pipeworks: Pipe elbows | Tanks: Tank roofs | Tanks: Tank walls | Pressure vessels | Industrial Boilers: Flue ducts | Industrial Boilers: Boiler walls | Industrial Boilers: Boiler penthouses | Equipment and filters | Industrial chimneys | Industrial special constructions | District heating lines | Columns | Recommended products | Nominal density kg/m³ | Max service temperatur (C and Fahrenheit) | 0° 100° 200° 300° 400° 500° 600° 700° |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Pipe sections** | | | | | | | | | | | | | | | | | | |
| ■ | | | | | | | | | | | | | ■ | | PAROC Pro Section WR 100 | 100 | 640°C 1184°F | ★★ ★★★ |
| □ | | | | | | | | | | | | | □ | | PAROC Pro Section 100 | 100 | 640°C 1184°F | ★★★ |
| ■ | | | | | | | | | | | | | ■ | | PAROC Pro Section WR 140 | 140 | 680°C 1256°F | ★ ★★ |
| □ | | | | | | | | | | | | | □ | | PAROC Pro Section 140 | 140 | 680°C 1256°F | ★★★ |
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| ■ | | | | | | | | | | | | | ■ | | PAROC Pro Lock WR 100 | 100 | 640°C 1184°F | ★★ |
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| ■ | ■ | ■ | | | | | | | | | | | ■ | | PAROC Pro Lock WR 140 | 140 | 680°C 1256°F | ★★ ★★★ |
| □ | □ | □ | | | | | | | | | | | □ | | PAROC Pro Lock 140 | 140 | 680°C 1256°F | ★★ ★★★ ★★ |
| **Segmens, Curves, Bends** | | | | | | | | | | | | | | | | | | |
| | | | ■ | | | | | | | | | | | | PAROC Pro Curve WR 100 | 100 | 640°C 1184°F | ★★ ★★★ |
| | | | □ | | | | | | | | | | | | PAROC Pro Curve 100 | 100 | 640°C 1184°F | ★★★ |
| | | | ■ | | | | | | | | | | | | PAROC Pro Curve WR 140 | 140 | 680°C 1256°F | ★ ★★ |
| | | | □ | | | | | | | | | | | | PAROC Pro Curve 140 | 140 | 680°C 1256°F | ★★★ |
| | | | ■ | | | | | | | | | | | | PAROC Pro Segment WR 100 | 100 | 640°C 1184°F | ★★ ★★★ |
| | | | □ | | | | | | | | | | | | PAROC Pro Segment 100 | 100 | 640°C 1184°F | ★★★ |
| | | | ■ | | | | | | | | | | | | PAROC Pro Segment WR 140 | 140 | 680°C 1256°F | ★ ★★ |
| | | | □ | | | | | | | | | | | | PAROC Pro Segment 140 | 140 | 680°C 1256°F | ★★★ |
| | | | ■ | | | | | | | | | | | | PAROC Pro Segment WR DL 100 | 100 | 640°C 1184°F | ★★ ★ ★★★ |
| | | | □ | | | | | | | | | | | | PAROC Pro Segment DL 100 | 100 | 640°C 1184°F | ★ ★★★ |
| | | | ■ | | | | | | | | | | | | PAROC Pro Segment WR DL 140 | 140 | 680°C 1256°F | ★ ★★★ |
| | | | □ | | | | | | | | | | | | PAROC Pro Segment DL 140 | 140 | 680°C 1256°F | ★ ★★★ |
| | | | ■ | | | | | | | | | | | | PAROC Pro Bend WR 100 | 100 | 640°C 1184°F | ★★ ★★★ |
| | | | □ | | | | | | | | | | | | PAROC Pro Bend 100 | 100 | 640°C 1184°F | ★★★ |
| | | | ■ | | | | | | | | | | | | PAROC Pro Bend WR 140 | 140 | 680°C 1256°F | ★ ★★ |
| | | | □ | | | | | | | | | | | | PAROC Pro Bend 140 | 140 | 680°C 1256°F | ★★★ |

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| Industrial Pipeworks: Process pipelines | High temperature pipelines | Super-heated steam pipelines | Pipe elbows | Tanks: Tank roofs | Tank walls | Pressure vessels | Industrial Boilers: Flue ducts | Boiler walls | Boiler penthouses | Equipment and filters | Industrial chimneys | Industrial special constructions | District heating lines | Columns | Recommended products | Nominal density kg/m³ | Max service temperatur (C and Fahrenheit) | 0° 100° 200° 300° 400° 500° 600° 700° |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Slabs** | | | | | | | | | | | | | | | | | | |
| | | | | | ■ | ■ | | | | | | | | | PAROC Pro Slab WR 350 | 40 | 350°C 662°F | ★★★ |
| | | | | | ■ | ■ | | | | | | | | | PAROC Pro Slab 350 AluCoat | 40 | 350°C 662°F | ★★★ |
| | | | | | ▨ | ▨ | | | | | | | | | PAROC Pro Slab WR 350 AluCoat | 40 | 350°C 662°F | ★★★ |
| | | | | | ■ | ■ | | | | | | | | | PAROC Pro Slab WR 450 | 60 | 450°C 842 °F | ★ ★★★ |
| | | | | | ■ | ■ | ■ | | | | | | | | PAROC Pro Slab 450 AluCoat | 60 | 450°C 842 °F | ★ ★★★ |
| | | | | | ▨ | ▨ | | | | | | | | | PAROC Pro Slab WR 450 AluCoat | 60 | 450°C 842 °F | ★ ★★★ |
| | | | | | ■ | ■ | ■ | ■ | ■ | ■ | | | | | PAROC Pro Slab WR 640 | 80 | 640°C 1184°F | ★ ★★★ |
| | | | | | ■ | ■ | | | | | | | | | PAROC Pro Slab 640 AluCoat | 80 | 640°C 1184°F | ★ ★★★ |
| | | | | | ▨ | ▨ | | | | | | | | | PAROC Pro Slab WR 640 AluCoat | 80 | 640°C 1184°F | ★ ★★★ |
| | | | | | | ■ | ■ | ■ | ■ | ■ | | | | | PAROC Pro Slab WR 660 | 100 | 660°C 1220°F | ★★ ★★★ |
| | | | | | | ■ | ■ | ■ | ■ | ■ | | ■ | | | PAROC Pro Slab 660 AluCoat | 100 | 660°C 1220°F | ★★ ★★★ |
| | | | | | | ▨ | ▨ | ▨ | ▨ | ▨ | | ▨ | | | PAROC Pro Slab WR 660 AluCoat | 100 | 660°C 1220°F | ★★ ★★★ |
| | | | | | | ■ | ■ | ■ | ■ | ■ | | ■ | | | PAROC Pro Slab WR 680 | 120 | 680°C 1256°F | ★ ★★ ★★★ |
| | | | | | | ■ | ■ | ■ | ■ | ■ | | ■ | | | PAROC Pro Slab 680 AluCoat | 120 | 680°C 1256°F | ★ ★★ ★★★ |
| | | | | | | ▨ | ▨ | ▨ | ▨ | ▨ | | ▨ | | | PAROC Pro Slab WR 680 AluCoat | 120 | 680°C 1256°F | ★ ★★ ★★★ |
| | | | | | | ■ | ■ | ■ | ■ | ■ | | ■ | | | PAROC Pro Slab WR 700 | 150 | 700°C 1292°F | ★ ★★ ★★★ |
| | | | | | | ■ | ■ | ■ | ■ | ■ | | ■ | | | PAROC Pro Slab 700 AluCoat | 150 | 700°C 1292°F | ★ ★★ ★★★ |
| | | | | | | ▨ | ▨ | ▨ | ▨ | ▨ | | ▨ | | | PAROC Pro Slab WR 700 AluCoat | 150 | 700°C 1292°F | ★ ★★ ★★★ |
| **Lamella Mats** | | | | | | | | | | | | | | | | | | |
| | | | | | ■ | | | | | | | | ■ | | PAROC Pro Lamella Mat AluCoat | 50 | 500°C 932°F | ★★★ ★★ ★ |
| | | | | | ▨ | | | | | | | | ▨ | | PAROC Pro Lamella Mat WR AluCoat | 50 | 500°C 932°F | ★★★ ★★ ★ |
| | | | | | ■ | | | | | | | | ■ | | PAROC Pro Lamella Mat 80 AluCoat | 80 | 500°C 932°F | ★ ★★ ★★★ |
| | | | | | ▨ | | | | | | | | ▨ | | PAROC Pro Lamella Mat WR 80 AluCoat | 80 | 500°C 932°F | ★ ★★ ★★★ |
| | | | | | | | | | | | | | ■ | | PAROC Pro Lamella Mat 100 AluCoat | 100 | 500°C 932°F | ★ ★★ ★★★ |
| | | | | | | | | | | | | | ▨ | | PAROC Pro Lamella Mat WR 100 AluCoat | 100 | 500°C 932°F | ★ ★★ ★★★ |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Wired Mats** | | | | | | | | | | | | | | | | | | |
| ■ | | | | ■ | | ■ | | | | | | | ■ | ■ | PAROC Pro Wired Mat WR 550 | 65 | 550°C 1022°F | ★★★ ★★ ★ |
| ■ | | | | ■ | | ■ | | | | | | | ■ | ■ | PAROC Pro Wired Mat 550 AL1 | 65 | 550°C 1022°F | ★★★ ★★ ★ |
| ■ | | | | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | PAROC Pro Wired Mat 660 | 80 | 660°C 1220°F | ★★★ ★★ ★ |
| ■ | | | | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | PAROC Pro Wired Mat WR 660 | 80 | 660°C 1220°F | ★★★ ★★ ★ |
| ■ | | | | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | PAROC Pro Wired Mat 660 AL1 | 80 | 660°C 1220°F | ★★★ ★★ ★ |
| | ■ | ■ | | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | PAROC Pro Wired Mat 680 | 100 | 680°C 1256°F | ★★★ ★★ ★ |
| | ■ | ■ | | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | PAROC Pro Wired Mat WR 680 | 100 | 680°C 1256°F | ★★★ ★★ ★ |
| | ■ | ■ | | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | PAROC Pro Wired Mat 680 AL1 | 100 | 680°C 1256°F | ★★★ ★★ ★ |
| | ■ | ■ | | ■ | | ■ | | | ■ | | | | ■ | ■ | PAROC Pro Wired Mat 130 | 130 | 680°C 1256°F | ★ ★★ ★★★ |
| | ■ | ■ | | ■ | | ■ | | | ■ | | | | ■ | ■ | PAROC Pro Wired Mat WR 130 | 130 | 680°C 1256°F | ★ ★★ ★★★ |
| | ■ | | | | | ■ | | | ■ | | | | ■ | ■ | PAROC Pro Wired Mat 130 AL1 | 130 | 680°C 1256°F | ★ ★★ ★★★ |
| **Mats** | | | | | | | | | | | | | | | | | | |
| ■ | | | | | | ■ | | | | | | ■ | ■ | ■ | PAROC Pro Mat 50 | 50 | 350°C 662°F | ★★★ ★★ ★ |
| | | | | | | ■ | | | | | | | ■ | ■ | PAROC Pro Mat 50 AluCoat | 50 | 350°C 662°F | ★★★ ★★ ★ |
| ■ | | | | | | ■ | | ■ | ■ | | | ■ | ■ | ■ | PAROC Pro Mat 70 | 70 | 350°C 662°F | ★★★ ★★ ★ |
| | | | | | | ■ | | | | | | | ■ | ■ | PAROC Pro Mat 70 AluCoat | 70 | 350°C 662°F | ★★★ ★★ ★ |
| ■ | | | | | | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | PAROC Pro Mat 80 | 80 | 550°C 1022°F | ★★ ★★★ |
| | | | | | | | | | | ■ | | | ■ | ■ | PAROC Pro Mat 80 AluCoat | 80 | 550°C 1022°F | ★★ ★★★ |
| | | | | | | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | PAROC Pro Mat 100 | 100 | 550°C 1022°F | ★★ ★★★ |
| | | | | | | | | | | ■ | | | ■ | ■ | PAROC Pro Mat 100 AluCoat | 100 | 550°C 1022°F | ★★ ★★★ |
| **Loose Wool** | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | ■ | | ■ | | | PAROC Pro Loose Wool | | 600°C 1112°F | ★★★ ★★ ★ |

| Roof Slabs | 10 kPa | 20 kPa | 30 kPa | 40 kPa | 50 kPa | 60 kPa | 70 kPa | 80 kPa |
|---|---|---|---|---|---|---|---|---|
| PAROC Pro Roof Slab 20 kPa | ■ | ■ | | | | | | |
| PAROC Pro Roof Slab WR 20 kPa | ■ | ■ | | | | | | |
| PAROC Pro Roof Slab 30 kPa | ■ | ■ | ■ | | | | | |
| PAROC Pro Roof Slab 50 kPa | ■ | ■ | ■ | ■ | ■ | | | |
| PAROC Pro Roof Slab WR 50 kPa | ■ | ■ | ■ | ■ | ■ | | | |
| PAROC Pro Roof Slab WR 80 kPa | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |

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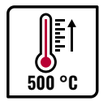
# PAROC PRODUCTS FOR INDUSTRIAL APPLICATIONS

## EXPLANATION OF SYMBOLS

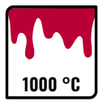
### TECHNICAL SPECIFICATIONS

Nominal density


Maximum service temperature



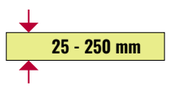

Melting point



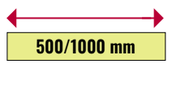

Non-combustible


### DIMENSIONS

Thickness

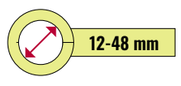



Width

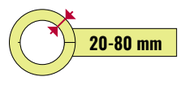



Length


Inner diameter




Insulation thickness




Section length

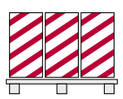

### ADDITIONAL INFORMATION

Data sheet

Accessories


Installation video

Packing details



Dimension Guide



# PIPE SECTIONS

## PAROC PRO SECTION WR 100
## PAROC PRO SECTION 100

**Concentric, dimensionally accurate stone wool pipe sections, in one or two segments, slotted on one side**

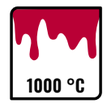
**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC CUI Spacers

### APPLICATION

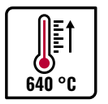
- Pipelines for industrial and power plants, district heating and exhaust pipes, technical systems, chimneys

### TECHNICAL SPECIFICATIONS

- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 13472
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 13472
- AS quality according to EN 13468 and AGI Q 132
- LABS conformity, tested according to VDMA 24364: 2018-05
- Insulation code number 10.04.03.64.99
- Quality monitored according to VDI 2055
- CE designation code: MW-EN 14303-T8 / T9-ST (+) 640-WS1-CL10












Nominal value of the thermal conductivity λ according to DIN EN ISO 8497

| t | °C | 50 | 100 | 150 | 200 | 250 | 300 |
|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.039 | 0.045 | 0.054 | 0.064 | 0.077 | 0.092 |



# PIPE SECTIONS

## PAROC PRO SECTION WR 120

## PAROC PRO SECTION 120

**Concentric, dimensionally accurate stone wool pipe sections, in one or two segments, slotted on one side**

**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC CUI Spacers

### APPLICATION

- Pipelines for industrial and power plants, district heating and exhaust pipes, technical systems, chimneys

### TECHNICAL SPECIFICATIONS

- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 13472
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 13472
- AS quality according to EN 13468 and AGI Q 132
- LABS conformity, tested according to VDMA 24364: 2018-05
- Insulation code number 10.04.03.64.99
- Quality monitored according to VDI 2055
- CE designation code: MW-EN 14303-T8 / T9-ST (+) 640-WS1-CL10



Nominal value of the thermal conductivity λ according to DIN EN ISO 8497

| t | °C | 50 | 100 | 150 | 200 | 250 | 300 | 400 |
|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.041 | 0.047 | 0.054 | 0.063 | 0.073 | 0.085 | 0.110 |




# PIPE SECTIONS

## PAROC PRO SECTION WR 140

## PAROC PRO SECTION 140

**PAROC Pro Section 140 is a non-combustible stonewool pipe section for industrial pipe lines**

**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC CUI Spacers

### APPLICATION

- Pipework for Industry and power plants, district heating and exhaust lines

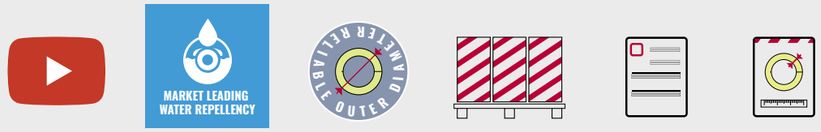
### TECHNICAL SPECIFICATIONS

- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 13472
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 13472
- AS quality according to EN 13468 and AGI Q 132
- LABS conformity, tested according to VDMA 24364: 2018-05
- Insulation code number 10.04.03.64.99
- Quality monitored according to VDI 2055
- CE designation code: MW-EN 14303-T8/T9-ST(+)680-WS1-CL10



Nominal value of the thermal conductivity λ according to DIN EN ISO 8497

| t | °C | 50 | 100 | 150 | 200 | 250 | 300 | 400 |
|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.041 | 0.047 | 0.054 | 0.063 | 0.073 | 0.092 | 0.110 |



# PIPE SECTIONS

## PAROC PRO CURVE WR 100
## PAROC PRO CURVE WR 120
## PAROC PRO CURVE WR 140

**PAROC Pro Section WR 120 is a non-combustible stonewool pipe section for industrial pipe lines where the risk of CUI (corrosion under insulation) is present**

**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC CUI Spacers

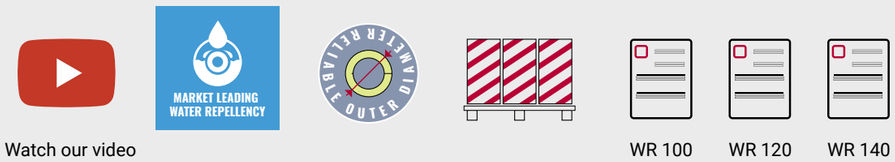
### APPLICATION
- Insulation of pipe elbows

### TECHNICAL SPECIFICATIONS
- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 13472
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 13472
- AS quality according to EN 13468 and AGI Q 132
- LABS conformity, tested according to VDMA 24364: 2018-05
- Insulation code number 10.04.03.64.99
- Quality monitored according to VDI 2055
- CE designation code: MW-EN 14303-T8 / T9-ST (+) 640-WS1-CL10


| Inner diamter of pipe mm | Available dimensions PAROC Pro Curve (WR) 100 and (WR) 140 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 114' | 140' | 168' | 219' | 273' | 324' | 356' | 406' | 457' | 508' | 612' | 762' | 914' |
| 30 | x | x | x | x | x | x | x | x | x | x | | | |
| 40 | x | x | x | x | x | x | x | x | x | x | x | | |
| 50 | x | x | x | x | x | x | x | x | x | x | x | x | x |
| 60 | | x | x | x | x | x | x | x | x | x | x | x | x |
| 70 | | x | x | x | x | x | x | x | x | x | x | x | x |
| 80 | | | x | x | x | x | x | x | x | x | x | x | x |
| 90 | | | x | x | x | x | x | x | x | x | x | x | x |
| 100 | | | x | x | x | x | x | x | x | x | x | x | x |
| 120 | | | x | | | x | | | | | | | |

Nominal value of the thermal conductivity λ according to DIN EN ISO 8497

| t | °C | 50 | | | 100 | | | 150 | | | 200 | | | 250 | | | 300 | | | 400 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PAROC Pro Curve WR:** | | **100** | **120** | **140** | **100** | **120** | **140** | **100** | **120** | **140** | **100** | **120** | **140** | **100** | **120** | **140** | **100** | **120** | **140** | **100** | **120** | **140** |
| $\lambda_{N,P}$ | W/mK | 0.045 | 0.041 | 0.041 | 0.045 | 0.047 | 0.047 | 0.054 | 0.054 | 0.054 | 0.064 | 0.063 | 0.063 | 0.077 | 0.073 | 0.073 | 0.092 | 0.085 | 0.092 | | 0.110 | 0.110 |




Watch our video on energy efficiency with PAROC Pro Sections!



# PIPE SECTIONS

## PAROC PRO SECTION WR DL 100
## PAROC PRO SECTION DL 100

**Stonewool pipe section in two layers for industrial pipelines**

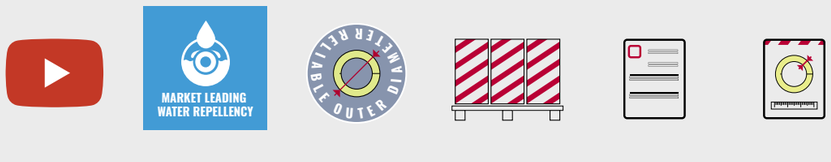
**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC CUI Spacers

### APPLICATION
- Thermal insulation of industrial pipework for higher insulation thicknesses or where there is required insulation in two layers

### TECHNICAL SPECIFICATIONS
- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 13472
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 13472
- LABS conformity, tested according to VDMA 24364: 2018-05
- Reaction to Fire, Euroclass $A1_L$
- Chloride Ions, Cl- < 10 ppm
- CE designation Code MW-EN 14303-T8/T9-ST(+)640-WS1-CL10



| t | °C | 50 | 100 | 200 | 300 |
|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.039 | 0.045 | 0.064 | 0.092 |



# PIPE SECTIONS

## PAROC PRO SECTION WR DL 120
## PAROC PRO SECTION DL 120

**Stonewool pipe section in two layers for industrial pipelines**

**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC CUI Spacers

### APPLICATION

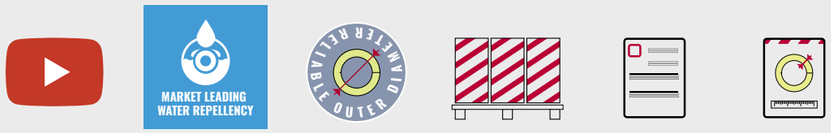
- Thermal insulation of industrial pipework for higher insulation thicknesses or where there is required insulation in two layers

### TECHNICAL SPECIFICATIONS

- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 13472
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 13472
- LABS conformity, tested according to VDMA 24364: 2018-05
- Reaction to Fire, Euroclass $A1_L$
- Chloride Ions, Cl- < 10 ppm
- CE designation Code MW-EN 14303-T8/T9-ST(+)640-WS1-CL10



| t | °C | 50 | 100 | 200 | 250 | 300 | 400 |
|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.041 | 0.047 | 0.063 | 0.073 | 0.085 | 0.110 |






# PIPE SECTIONS

## PAROC PRO SECTION WR DL 140
## PAROC PRO SECTION DL 140

**Stonewool pipe section in 2 layers for industrial pipe lines**

**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC CUI Spacers

### APPLICATION

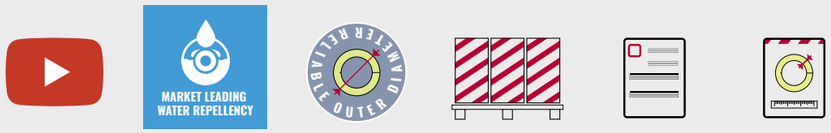
- Thermal insulation of industrial pipework for higher insulation thicknesses or where there is required insulation in two layers

### TECHNICAL SPECIFICATIONS

- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 13472
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 13472
- LABS conformity, tested according to VDMA 24364: 2018-05
- Reaction to Fire, Euroclass $A1_L$
- Chloride Ions, Cl- < 10 ppm
- CE designation Code MW-EN 14303-T8/T9-ST(+)680-WS1-CL10



| t | °C | 50 | 100 | 200 | 300 | 400 |
|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.041 | 0.047 | 0.063 | 0.085 | 0.110 |



# PIPE SECTIONS

## PAROC PRO SECTION WR DL1
## PAROC PRO SECTION DL1

**Stonewool pipe section in 2 layers for industrial pipe lines**

**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC CUI Spacers

### APPLICATION

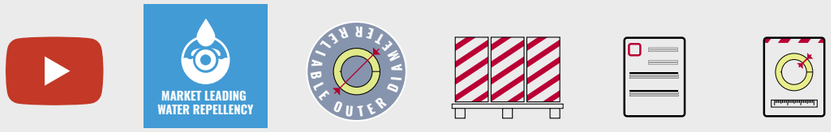
- Thermal insulation of industrial pipework for higher insulation thicknesses or where there is required insulation in two layers

### TECHNICAL SPECIFICATIONS

- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 13472
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 13472
- LABS conformity, tested according to VDMA 24364: 2018-05
- Reaction to Fire, Euroclass $A1_L$
- Chloride Ions, Cl- < 10 ppm
- CE designation Code
  PS140: MW-EN 14303-T8/T9-ST(+)680-WS1-CL10;
  PS100: MW-EN 14303-T8/T9-ST(+)640-WS1-CL10



| t | °C | 50 | | 100 | | 150 | | 200 | | 250 | | 300 | | 400 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PS140 | PS100 | PS140 | PS100 | PS140 | PS100 | PS140 | PS100 | PS140 | PS100 | PS140 | PS100 | PS140 | PS100 |
| $\lambda_{N,P}$ | W/mK | 0.039 | 0.041 | 0.047 | 0.045 | 0.054 | 0.054 | 0.063 | 0.064 | 0.073 | 0.077 | 0.085 | 0.092 | 0.041 | 0.041 |






# PIPE SECTIONS

## PAROC PRO CURVE WR 100 DL
## PAROC PRO CURVE WR 120 DL
## PAROC PRO CURVE WR 140 DL

**PAROC Pro Section WR 120 is a non-combustible stonewool pipe section for industrial pipe lines where the risk of CUI (corrosion under insulation) is present**

**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC CUI Spacers

### APPLICATION

- Insulation of pipe elbows

### TECHNICAL SPECIFICATIONS

- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 13472
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 13472
- AS quality according to EN 13468 and AGI Q 132
- LABS conformity, tested according to VDMA 24364: 2018-05
- Insulation code number 10.04.03.64.99
- Quality monitored according to VDI 2055
- CE designation code: MW-EN 14303-T8 / T9-ST (+) 640-WS1-CL10


| Thickness | mm | Available dimensions PAROC Pro Curve | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 114' | 140' | 168' | 219' | 273' | 324' | 356' |
| | 30 | 180 | 206 | 232 | 284 | 336 | 388 | 414 |
| | 40 | 193 | 219 | 245 | 297 | 349 | 401 | 440 |
| | 50 | 219 | 245 | 271 | 323 | 375 | 427 | 453 |
| | 60 | | 258 | 284 | 336 | 388 | 440 | 479 |
| | 70 | | 284 | 310 | 362 | 414 | 466 | 492 |

| Thickness | mm | Available dimensions PAROC Pro Curve | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 114' | 140' | 168' | 219' | 273' | 324' | 356' |
| | 80 | | | 323 | 375 | 427 | 479 | 518 |
| | 90 | | | 349 | 401 | 453 | 505 | 531 |
| | 100 | | | 362 | 414 | 479 | 518 | 557 |
| | 120 | | | 414 | | | | 596 |

Nominal value of the thermal conductivity λ according to DIN EN ISO 8497

| t | °C | 50 | | | 100 | | | 200 | | | 250 | | | 300 | | | 400 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PAROC Pro Curve WR DL** | | **100** | **120** | **140** | **100** | **120** | **140** | **100** | **120** | **140** | **100** | **120** | **140** | **100** | **120** | **140** | **100** | **120** | **140** |
| $\lambda_{N,P}$ | W/mK | 0.045 | 0.041 | 0.041 | 0.045 | 0.047 | 0.047 | 0.064 | 0.063 | 0.063 | 0.077 | 0.073 | 0.073 | 0.092 | 0.085 | 0.092 | | 0.110 | 0.110 |


Watch our video
on energy efficiency with
PAROC Pro Sections!

# PIPE SECTIONS

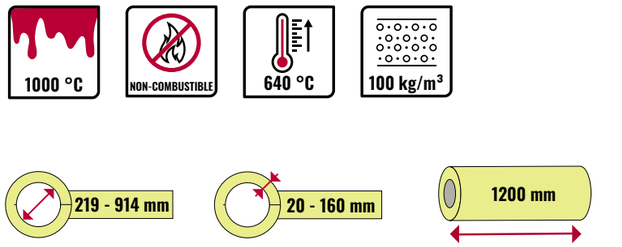
## PAROC PRO LOCK WR 100
## PAROC PRO LOCK 100

**Stonewool pipe section with a z-joint on the longitudinal and circumferential seams**

**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC CUI Spacers

### APPLICATION
- Pipework for Industry and power plants, district heating and exhaust lines

### TECHNICAL SPECIFICATIONS
- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 13472
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 13472
- AS-quality according to EN 13468 and AGI Q 132
- LABS conformity, tested according to VDMA 24364: 2018-05
- Insulation material index number 10.04.03.40.10
- Quality monitored according to VDI 2055
- CE-designation code: MW-EN 14303-T8/T9-ST(+)640-WS1-CL10




Nominal value of the thermal conductivity λ according to DIN EN ISO 8497

| t | °C | 50 | 100 | 150 | 200 | 250 | 300 |
|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.039 | 0.045 | 0.054 | 0.064 | 0.077 | 0.092 |






# PIPE SECTIONS

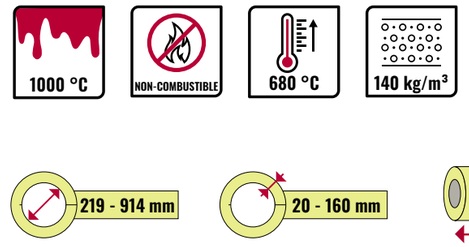
## PAROC PRO LOCK WR 140
## PAROC PRO LOCK 140

**Stonewool pipe section with a z-joint on the longitudinal and circumferential seams**

**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC CUI Spacers

### APPLICATION
- Thermal insulation of industrial pipework at high temperatures

### TECHNICAL SPECIFICATIONS
- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 13472
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 13472
- AS-quality according to EN 13468 and AGI Q 132
- LABS conformity, tested according to VDMA 24364: 2018-05
- Insulation material index number 10.04.03.40.10
- Quality monitored according to VDI 2055
- CE-designation code: MW-EN 14303-T8/T9-ST(+)680-WS1-CL10




Nominal value of the thermal conductivity λ according to DIN EN ISO 8497

| t | °C | 50 | 100 | 150 | 200 | 250 | 300 | 400 |
|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.041 | 0.047 | 0.054 | 0.063 | 0.073 | 0.085 | 0.110 |

# SAVING TIME AND MONEY

*PAROC Pro Lock gives same advantages of double layer insulation in one application (single-layer solution) – saving time and money. Through its innovative z-lock, cut into the ends and down the length of the section, heat losses are reduced by up to 25% and installation time is reduced by 30%. This insulation solution is unique and only supplied by Paroc.*

There are a great number of opportunities within the industrial sector for reducing heat losses. Far too often, specifications from previous projects that are decades out of date are simply adopted without prior consideration. Better insulation for industrial processes offers many advantages: energy and costs are saved, $CO_2$ emissions are reduced and processes are more efficient.

Steam and other hot fluids are often channeled through pipelines and installations in industrial plants. For optimal production processes, it is usually desirable For optimum production processes, retaining heat is important. High amounts of heat and energy are needed for most industrial processes. Within the EU, the industrial sector accounts for over 27% of final energy consumption so any energy savings will also help sustainability causes as well as cost-efficiencies.

## PAROC PRO LOCK – THE BEST FOR PIPES!

PAROC Pro Lock simulates overlapping double layers in one application – saving time and money.

Optimising energy consumption is a priority in all industrial plants as it guarantees optimal functionality, efficiency, and profits.

When operating temperatures exceed 250 °C, or required thickness exceeds 160 mm, overlapping double layer insulation is required. Paroc offers double layer solutions, but through innovation also offers its Pro Lock option, which simulates overlapping double layers in one application.

Industrial pipelines are insulated efficiently using the PAROC Pro Lock industrial pipe section. Expansions of the pipeline at high temperatures are offset by the z-lock cut into the ends and down the length of the section, and heat losses are reduced. Compatible double layer segments may be used for pipe bends, which guarantee optimal insulation for the entire pipeline.

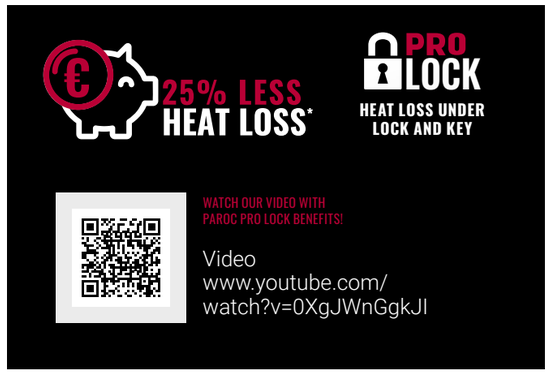
For most applications, PAROC Pro Lock WR 100 is suitable. However, when temperatures exceed 350 °C there is PAROC Pro Lock WR 140.

## BENEFITS COMPARED TO WIRED MATS:

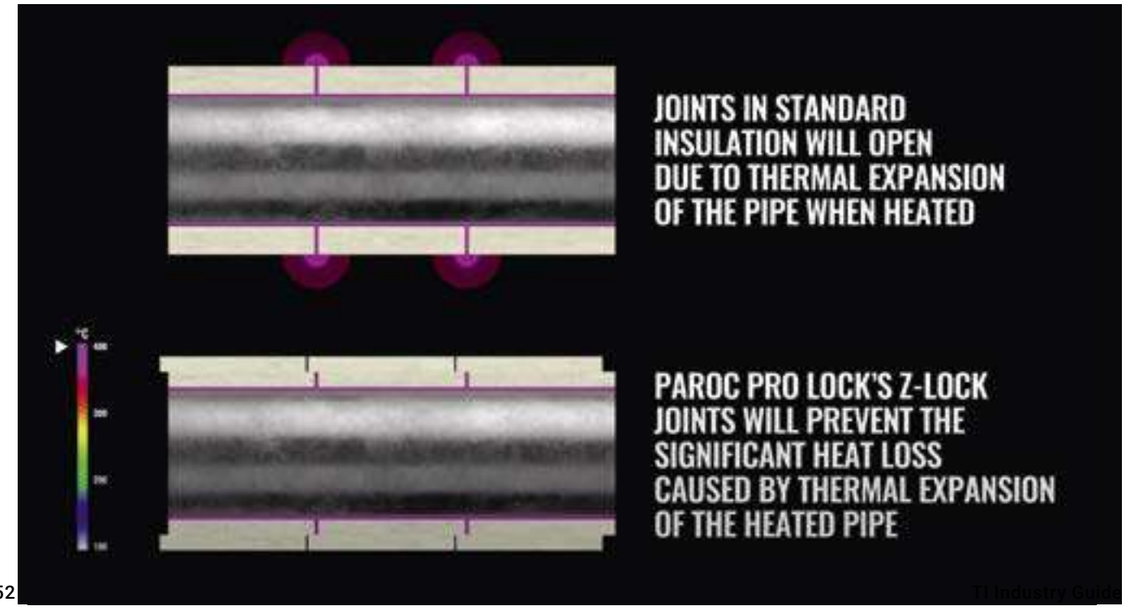
PAROC PRO LOCK SAVES INSTALLATION TIME UP TO 30%*

- **Technically superior solution without cold bridges**
- **25% less heat loss compared to wired mat insulation solutions**
- **Thinner insulation solution**
  - Less surface area and cladding material
  - Takes less space in processes
  - Lower installation costs, less installation time (compared to 2 layer solution)
- **No supporting structure needed**
- **Thermal expansion of metal pipe does not open the z-lock joints**
- **Reduction in down-time on the plant during maintenance**
- **Contributes to sustainability**

**compared to standard pipe insulation (internal testing)*




**compared to wired mat insulation solutions*








# BENDS AND SEGMENTS

## PAROC PRO SEGMENT WR 100
## PAROC PRO SEGMENT 100

**Ready cut segment for medium and big size pipe elbows made of non-combustible stone wool pipe section**

**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC CUI Spacers

### APPLICATION

- Best insulation solution for big pipe elbows without heat bridges

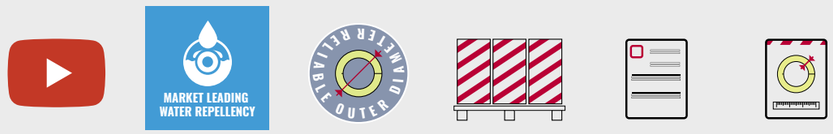
### TECHNICAL SPECIFICATIONS

- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 13472
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 13472
- AS quality according to EN 13468 and AGI Q 132
- LABS conformity, tested according to VDMA 24364: 2018-05
- Insulation code number 10.04.03.64.99
- Quality monitored according to VDI 2055
- CE designation code: MW-EN 14303-T8 / T9-ST (+) 640-WS1-CL10



Nominal value of the thermal conductivity λ according to DIN EN ISO 8497

| t | °C | 50 | 100 | 150 | 200 | 250 | 300 |
|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.039 | 0.045 | 0.054 | 0.064 | 0.077 | 0.092 |



# BENDS AND SEGMENTS

## PAROC PRO SEGMENT WR 120

## PAROC PRO SEGMENT 120

**Ready cut segment for medium and big size pipe elbows made of non-combustible stone wool pipe section**

**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC CUI Spacers

### APPLICATION

- Best insulation solution for big pipe elbows without heat bridges

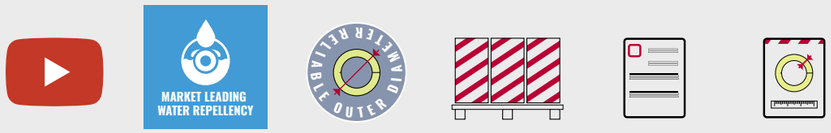
### TECHNICAL SPECIFICATIONS

- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 13472
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 13472
- AS quality according to EN 13468 and AGI Q 132
- LABS conformity, tested according to VDMA 24364: 2018-05
- Insulation code number 10.04.03.64.99
- Quality monitored according to VDI 2055
- CE designation code: MW-EN 14303-T8 / T9-ST (+) 640-WS1-CL10



Nominal value of the thermal conductivity λ according to DIN EN ISO 8497

| t | °C | 50 | 100 | 150 | 200 | 250 | 300 | 400 |
|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.041 | 0.047 | 0.054 | 0.063 | 0.073 | 0.085 | 0.110 |






# BENDS AND SEGMENTS

## PAROC PRO SEGMENT WR 140

## PAROC PRO SEGMENT 140

**Ready cut segment for medium and big size pipe elbows made of non-combustible stone wool pipe section**

**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC CUI Spacers

### APPLICATION

- Best insulation solution for big pipe elbows without heat bridges

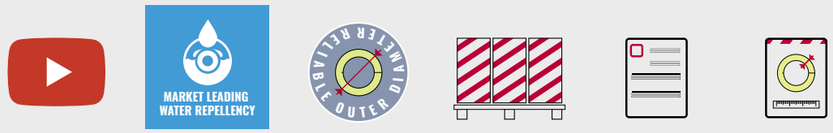
### TECHNICAL SPECIFICATIONS

- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 13472
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 13472
- AS quality according to EN 13468 and AGI Q 132
- LABS conformity, tested according to VDMA 24364: 2018-05
- Insulation code number 10.04.03.64.99
- Quality monitored according to VDI 2055
- CE designation code: MW-EN 14303-T8 / T9-ST (+) 680-WS1-CL10



Nominal value of the thermal conductivity λ according to DIN EN ISO 8497

| t | °C | 50 | 100 | 150 | 200 | 250 | 300 | 400 |
|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.041 | 0.047 | 0.054 | 0.063 | 0.073 | 0.085 | 0.110 |



# BENDS AND SEGMENTS

## PAROC PRO SEGMENT WR 100 DL
## PAROC PRO SEGMENT 100 DL

**Cut segment in double layer for medium and big size pipe elbows in high temperature made of non-combustible stone wool pipe section**

**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC CUI Spacers

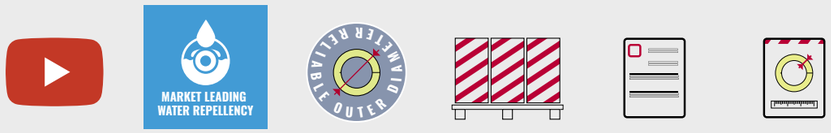
### APPLICATION
- Best insulation solution for big pipe elbows without heat bridges

### TECHNICAL SPECIFICATIONS
- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 13472
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 13472
- AS quality according to EN 13468 and AGI Q 13
- LABS conformity, tested according to VDMA 24364: 2018-05
- Reaction to Fire, Euroclass $A1_L$
- Chloride Ions, Cl- < 10 ppm
- CE designation Code MW-EN 14303-T8/T9-ST(+)640-WS1-CL10



Nominal value of the thermal conductivity λ according to DIN EN ISO 8497

| t | °C | 50 | 100 | 150 | 200 | 250 | 300 |
|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.039 | 0.045 | 0.054 | 0.064 | 0.077 | 0.092 |






# BENDS AND SEGMENTS

## PAROC PRO SEGMENT WR 120 DL
## PAROC PRO SEGMENT 120 DL

**Cut segment in double layer for medium and big size pipe elbows in high temperature made of non-combustible stone wool pipe section**

**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC CUI Spacers

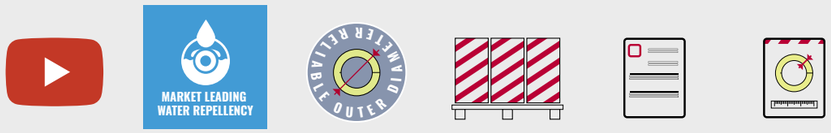
### APPLICATION
- Best insulation solution for big pipe elbows without heat bridges

### TECHNICAL SPECIFICATIONS
- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 13472
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 13472
- AS quality according to EN 13468 and AGI Q 13
- LABS conformity, tested according to VDMA 24364: 2018-05
- Reaction to Fire, Euroclass $A1_L$
- Chloride Ions, Cl- < 10 ppm
- CE designation Code MW-EN 14303-T8/T9-ST(+)640-WS1-CL10



Nominal value of the thermal conductivity λ according to DIN EN ISO 8497

| t | °C | 50 | 100 | 150 | 200 | 250 | 300 | 400 |
|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.041 | 0.047 | 0.054 | 0.063 | 0.073 | 0.085 | 0.110 |



# BENDS AND SEGMENTS

## PAROC PRO SEGMENT WR 140 DL
## PAROC PRO SEGMENT 140 DL

**Cut segment in double layer for medium and big size pipe elbows in high temperature made of non-combustible stone wool pipe section**

**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC CUI Spacers

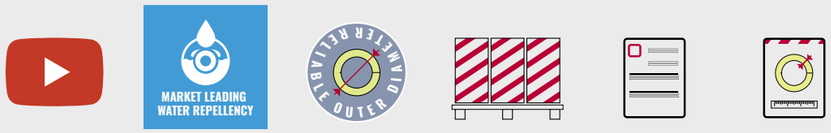
### APPLICATION
- Best insulation solution for big pipe elbows without heat bridges

### TECHNICAL SPECIFICATIONS
- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 13472
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 13472
- AS quality according to EN 13468 and AGI Q 13
- LABS conformity, tested according to VDMA 24364: 2018-05
- Reaction to Fire, Euroclass $A1_L$
- Chloride Ions, Cl- < 10 ppm
- CE designation Code MW-EN 14303-T8/T9-ST(+)680-WS1-CL10



Nominal value of the thermal conductivity λ according to DIN EN ISO 8497

| t | °C | 50 | 100 | 150 | 200 | 250 | 300 | 400 |
|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.041 | 0.047 | 0.054 | 0.063 | 0.073 | 0.085 | 0.110 |






# BENDS AND SEGMENTS

## PAROC PRO SEGMENT WR DL1
## PAROC PRO SEGMENT DL1

**Cut segment in double layer for medium and big size pipe elbows in high temperature made of non-combustible stone wool pipe section**

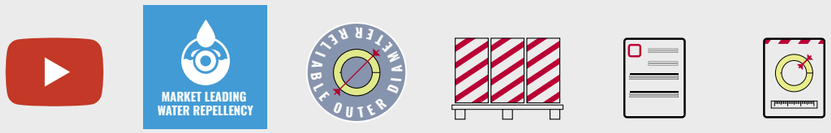
**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC CUI Spacers

### APPLICATION
- Thermal insulation of pipe elbows in industrial pipework

### TECHNICAL SPECIFICATIONS
- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 13472
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 13472
- AS quality according to EN 13468 and AGI Q 13
- LABS conformity, tested according to VDMA 24364: 2018-05
- Reaction to Fire, Euroclass $A1_L$
- Chloride Ions, Cl- < 10 ppm
- CE designation Code
  PS140: MW-EN 14303-T8/T9-ST(+)680-WS1-CL10
  PS100: MW-EN 14303-T8/T9-ST(+)640-WS1-CL10



| t | °C | 50 | | 100 | | 150 | | 200 | | 250 | | 300 | | 400 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PS140 | PS100 | PS140 | PS100 | PS140 | PS100 | PS140 | PS100 | PS140 | PS100 | PS140 | PS100 | PS140 | PS100 |
| $\lambda_{N,P}$ | W/mK | 0.039 | 0.041 | 0.047 | 0.045 | 0.054 | 0.054 | 0.063 | 0.064 | 0.073 | 0.077 | 0.085 | 0.092 | 0.041 | 0.041 |



# PIPE BENDS AND SEGMENTS

## PAROC PRO BEND WR 100

## PAROC PRO BEND 100

**Prefabricated insulation component made of stonewool**

**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC CUI Spacers

### APPLICATION

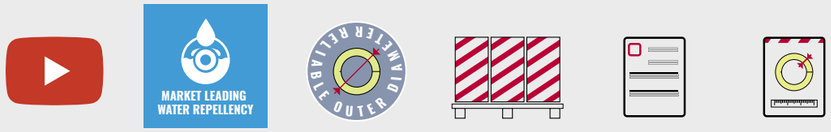
- Thermal insulation of industrial pipework at high temperatures

### TECHNICAL SPECIFICATIONS

- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 13472
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 13472
- AS quality according to EN 13468 and AGI Q 13
- LABS conformity, tested according to VDMA 24364: 2018-05
- Reaction to Fire, Euroclass $A1_L$
- Chloride Ions, Cl- < 10 ppm
- CE designation Code MW-EN 14303-T8/T9-ST(+)640-WS1-CL10



| t | °C | 50 | 100 | 200 | 300 |
|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.039 | 0.045 | 0.064 | 0.092 |








# PIPE BENDS AND SEGMENTS

## PAROC PRO BEND WR 120

## PAROC PRO BEND 120

**Prefabricated insulation component made of stonewool**

**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC CUI Spacers

### APPLICATION

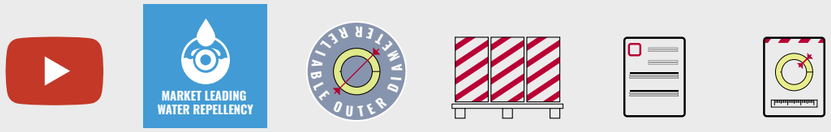
- Thermal insulation of industrial pipework at high temperatures

### TECHNICAL SPECIFICATIONS

- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 13472
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 13472
- AS quality according to EN 13468 and AGI Q 13
- LABS conformity, tested according to VDMA 24364: 2018-05
- Reaction to Fire, Euroclass $A1_L$
- Chloride Ions, Cl- < 10 ppm
- CE designation Code MW-EN 14303-T8/T9-ST(+)640-WS1-CL10



| t | °C | 50 | 100 | 200 | 300 | 400 |
|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.041 | 0.047 | 0.063 | 0.085 | 0.110 |



# PIPE BENDS AND SEGMENTS

## PAROC PRO BEND WR 140
## PAROC PRO BEND 140

**Prefabricated insulation component made of stonewool**

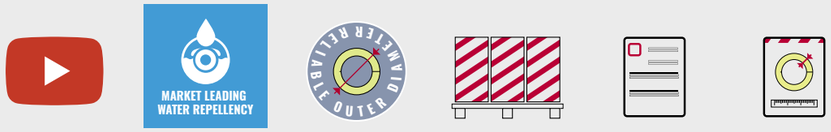
**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC CUI Spacers

### APPLICATION
- Thermal insulation of industrial pipework at high temperatures

### TECHNICAL SPECIFICATIONS
- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 13472
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 13472
- AS quality according to EN 13468 and AGI Q 13
- LABS conformity, tested according to VDMA 24364: 2018-05
- Reaction to Fire, Euroclass $A1_L$
- Chloride Ions, Cl- < 10 ppm
- CE designation Code MW-EN 14303-T8/T9-ST(+)680-WS1-CL10



| t | °C | 50 | 100 | 200 | 300 | 400 |
|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.041 | 0.047 | 0.063 | 0.085 | 0.110 |






# LAMELLA MATS

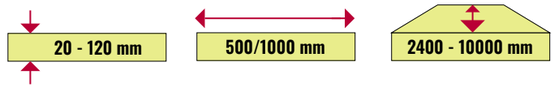
## PAROC PRO LAMELLA MAT WR ALUCOAT
## PAROC PRO LAMELLA MAT ALUCOAT

**Stonewool lamella mat laminated on one side with a grid-reinforced aluminum foil**

**Accessories (pages 95 - 98):**
PAROC AluCoat Tape
PAROC Alu Tape
PAROC HT Tape
PAROC Hvac Dots
PAROC Head Pins Insulated
PAROC Head Pins
PAROC Spatula
PAROC Welding Device

### APPLICATION
- A high flexural and compressive strength guarantees a support structure-free laying of pipelines, tanks, boilers, in industrial and power plants, district heating lines

### TECHNICAL SPECIFICATIONS
- Water absorption< 0,1 kg/m² at temperatures up to 250 °C for water-repellent version according to EN 1609
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 1609
- AS quality according to EN 13468 and AGI Q 132
- LABS conformity, tested according to VDMA 24364: 2018-05
- Insulation code number 10.03.02.99.05
- Quality monitored according to VDI 2055
- Compressive strength > 10 kPa according to EN 826
- The surface temperature of the lamination must be limited to 80 °C
- CE designation code: MW-EN 14303-T4-ST (+) 500-WS1-MV2-CL10

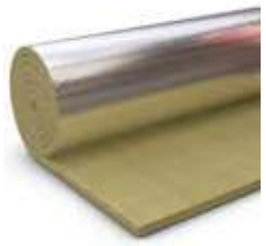

| t | °C | 50 | 100 | 200 | 300 |
|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.045 | 0.055 | 0.081 | 0.120 |

# LAMELLA MATS

## PAROC PRO LAMELLA MAT WR 80 ALUCOAT
## PAROC PRO LAMELLA MAT 80 ALUCOAT

**Non-combustible stone wool insulation for thermal and condensation insulation of ventilation ducts and equipment. It has a reinforced aluminium foil facing**

**Accessories (pages 95 - 98):**
PAROC AluCoat Tape
PAROC Alu Tape
PAROC HT Tape
PAROC Hvac Dots
PAROC Head Pins Insulated
PAROC Head Pins
PAROC Spatula
PAROC Welding Device



### APPLICATION

- A high flexural and compressive strength guarantees a support structure-free laying of pipelines, tanks, boilers, in industrial and power plants, district heating lines

### TECHNICAL SPECIFICATIONS

- Water absorption< 0,1 kg/m² at temperatures up to 250 °C for water-repellent version according to EN 1609
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 1609
- AS quality according to EN 13468 and AGI Q 132
- LABS conformity, tested according to VDMA 24364: 2018-05
- Insulation code number 10.03.02.99.05
- Quality monitored according to VDI 2055
- The surface temperature of the lamination must be limited to 80 °C
- CE designation code: MW-EN 14303-T4-ST (+) 500-WS1-MV2-CL10



| t | °C | 10 | 50 | 100 | 200 | 300 | 400 | 500 |
|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.042 | 0.047 | 0.055 | 0.074 | 0.100 | 0.132 | 0.174 |






# LAMELLA MATS

## PAROC PRO LAMELLA MAT WR 100 ALUCOAT
## PAROC PRO LAMELLA MAT 100 ALUCOAT

**Stonewool lamella mat laminated on one side with a grid-reinforced aluminum foil**

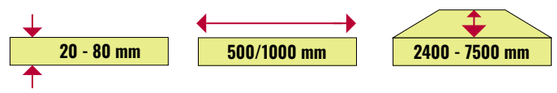
**Accessories (pages 95 - 98):**
PAROC AluCoat Tape
PAROC Alu Tape
PAROC HT Tape
PAROC Hvac Dots
PAROC Head Pins Insulated
PAROC Head Pins
PAROC Spatula
PAROC Welding Device

### APPLICATION

- A high flexural and compressive strength guarantees a support structure-free laying of pipelines, tanks, boilers, in industrial and power plants, district heating lines

### TECHNICAL SPECIFICATIONS

- Water absorption< 0,1 kg/m² at temperatures up to 250 °C for water-repellent version according to EN 1609
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 1609
- AS quality according to EN 13468 and AGI Q 132
- LABS conformity, tested according to VDMA 24364: 2018-05
- Insulation code number 10.03.02.99.05
- Quality monitored according to VDI 2055
- The surface temperature of the lamination must be limited to 80 °C
- CE designation code: MW-EN 14303-T4-ST (+) 500-WS1-MV2-CL10


| t | °C | 10 | 50 | 100 | 200 | 300 | 400 | 500 |
|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.042 | 0.047 | 0.055 | 0.074 | 0.100 | 0.132 | 0.174 |


# WIRED MATS

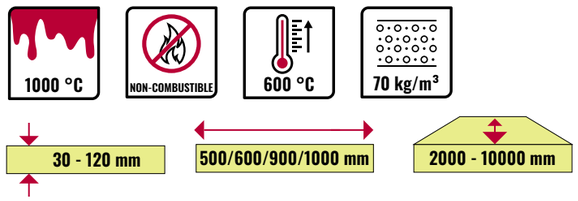
## PAROC PRO WIRED MAT WR 550
## PAROC PRO WIRED MAT 550
## PAROC PRO WIRED MAT 550 AL1
## PAROC PRO WIRED MAT WR 550 AL1

**Stonewool wired mat with galvanized net. Available also with stainless steel net and/or sewing wire with water-repellent features**

**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC HT Tape
PAROC Pro Cladding Support

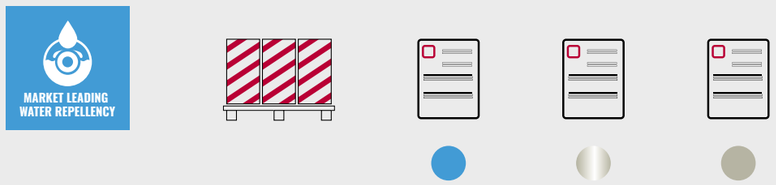
### APPLICATION
- Pipelines, containers, boilers, apparatus, in industrial and power plants, district heating lines

### TECHNICAL SPECIFICATIONS
- Water absorption< 0,1 kg/m² at temperatures up to 250 °C for water-repellent version according to EN 1609
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 1609
- AS quality according to EN 13468 and AGI Q 132
- LABS conformity, tested according to VDMA 24364: 2018-05
- Insulation code number 10.01.02.50.08 according to AGI Q 132
- Quality monitored according to VDI 2055
- Non-flammable
- CE designation code: MW-EN 14303-T2-ST (+) 640-WS1-CL10




| t | °C | 10 | 50 | 100 | 200 | 300 | 400 | 500 | 600 |
|---|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.037 | 0.042 | 0.049 | 0.067 | 0.093 | 0.126 | 0.166 | 0.215 |

**COMBINE WITH PAROC PRO CLADDING SUPPORT (WR) 100 AND (WR) 140 TO REDUCE HEAT LOSS BAND THERMAL BRIDGES. CAN SUBSTITUTE STANDARD METAL RINGS UNDER HEAVY METAL CLADDING.**






# WIRED MATS

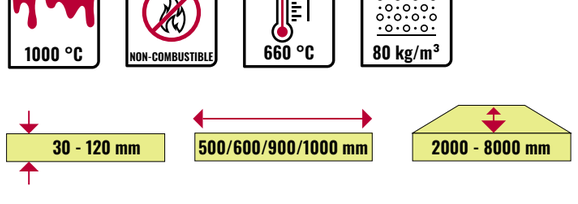
## PAROC PRO WIRED MAT WR 660
## PAROC PRO WIRED MAT 660
## PAROC PRO WIRED MAT 660 ALUCOAT
## PAROC PRO WIRED MAT WR 660 ALUCOAT
## PAROC PRO WIRED MAT 660 AL1
## PAROC PRO WIRED MAT WR 660 AL1
## PAROC PRO WIRD MAT 80 COMFORT*
## PAROC PRO WIRED MAT LE 80
## PAROC PRO WIRED MAT LE 80 COMFORT*

**Stonewool mat with wire thread quilting on galvanized wire mesh**

**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC HT Tape
PAROC Head Pins Insulated
PAROC Head Pins
PAROC Pro Cladding Support

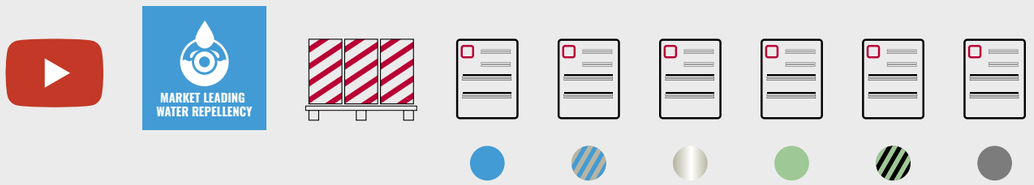
### APPLICATION
- Pipelines, containers, boilers, apparatus, in industrial and power plants, district heating lines

### TECHNICAL SPECIFICATIONS
- Water absorption< 0,1 kg/m² at temperatures up to 250 °C for water-repellent version according to EN 1609
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 1609
- AS quality according to EN 13468 and AGI Q 132
- LABS conformity, tested according to VDMA 24364: 2018-05
- Insulation code number 10.01.03.60.10 according to AGI Q 132
- Quality monitored according to VDI 2055
- CE designation code: MW-EN 14303-T2-ST (+) 660-WS1-CL10




| t | °C | 50 | 100 | 200 | 300 | 400 | 500 | 600 | 660 |
|---|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.040 | 0.046 | 0.062 | 0.084 | 0.111 | 0.146 | 0.190 | 0.213 |

**COMBINE WITH PAROC PRO CLADDING SUPPORT (WR) 100 AND (WR) 140 TO REDUCE HEAT LOSS BAND THERMAL BRIDGES. CAN SUBSTITUTE STANDARD METAL RINGS UNDER HEAVY METAL CLADDING.**




**only available in certain markets*

# WIRED MATS

**PAROC PRO WIRED MAT WR 680**
**PAROC PRO WIRED MAT 680**
**PAROC PRO WIRED MAT 680 ALUCOAT**
**PAROC PRO WIRED MAT WR 680 ALUCOAT**
**PAROC PRO WIRED MAT 680 AL1**
**PAROC PRO WIRED MAT WR 680 AL1**
**PAROC PRO WIRED MAT 100 COMFORT***
**PAROC PRO WIRED MAT LE 100**
**PAROC PRO WIRED MAT LE 100 COMFORT***

**Stonewool mat with wire thread quilting on galvanized wire mesh**

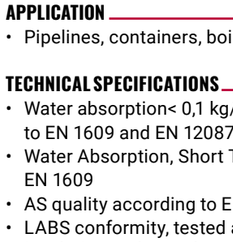
**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC HT Tape
PAROC Head Pins Insulated
PAROC Head Pins
PAROC Pro Cladding Support

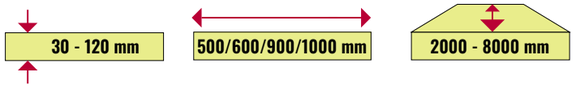
## APPLICATION

- Pipelines, containers, boilers, apparatus, in industrial and power plants, district heating lines

## TECHNICAL SPECIFICATIONS

- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 1609 and EN 12087
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 1609
- AS quality according to EN 13468 and AGI Q 132
- LABS conformity, tested according to VDMA 24364: 2018-05
- Insulation code number 10.01.03.60.10 according to AGI Q 132
- Quality monitored according to VDI 2055
- CE designation code: MW-EN 14303-T2-ST (+) 680-WS1-CL10




| t | °C | 50 | 100 | 150 | 200 | 250 | 300 | 400 | 500 | 600 | 680 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.039 | 0.045 | 0.051 | 0.059 | 0.068 | 0.078 | 0.102 | 0.131 | 0.167 | 0.196 |

**COMBINE WITH PAROC PRO CLADDING SUPPORT (WR) 100 AND (WR) 140 TO REDUCE HEAT LOSS BAND THERMAL BRIDGES. CAN SUBSTITUTE STANDARD METAL RINGS UNDER HEAVY METAL CLADDING.**

MARKET LEADING WATER REPELLENCY

*only available in certain markets



# WIRED MATS

**PAROC PRO WIRED MAT WR 130**
**PAROC PRO WIRED MAT 130**
**PAROC PRO WIRED MAT 130 ALUCOAT**
**PAROC PRO WIRED MAT WR 130 ALUCOAT**
**PAROC PRO WIRED MAT 130 AL1**
**PAROC PRO WIRED MAT WR 130 AL1**

**Stonewool mat with wire thread quilting on galvanized wire mesh**

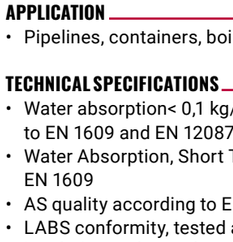
**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC HT Tape
PAROC Head Pins Insulated
PAROC Head Pins
PAROC Pro Cladding Support

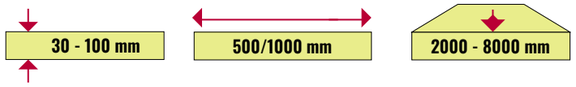
## APPLICATION

- Pipelines, containers, boilers, apparatus, in industrial and power plants, district heating lines

## TECHNICAL SPECIFICATIONS

- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 1609 and EN 12087
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 1609
- AS quality according to EN 13468 and AGI Q 132
- LABS conformity, tested according to VDMA 24364: 2018-05
- Insulation code number 10.01.04.60.13 according to AGI Q 132
- Quality monitored according to VDI 2055
- CE designation code: MW-EN 14303-T2-ST (+) 680-WS1-CL10

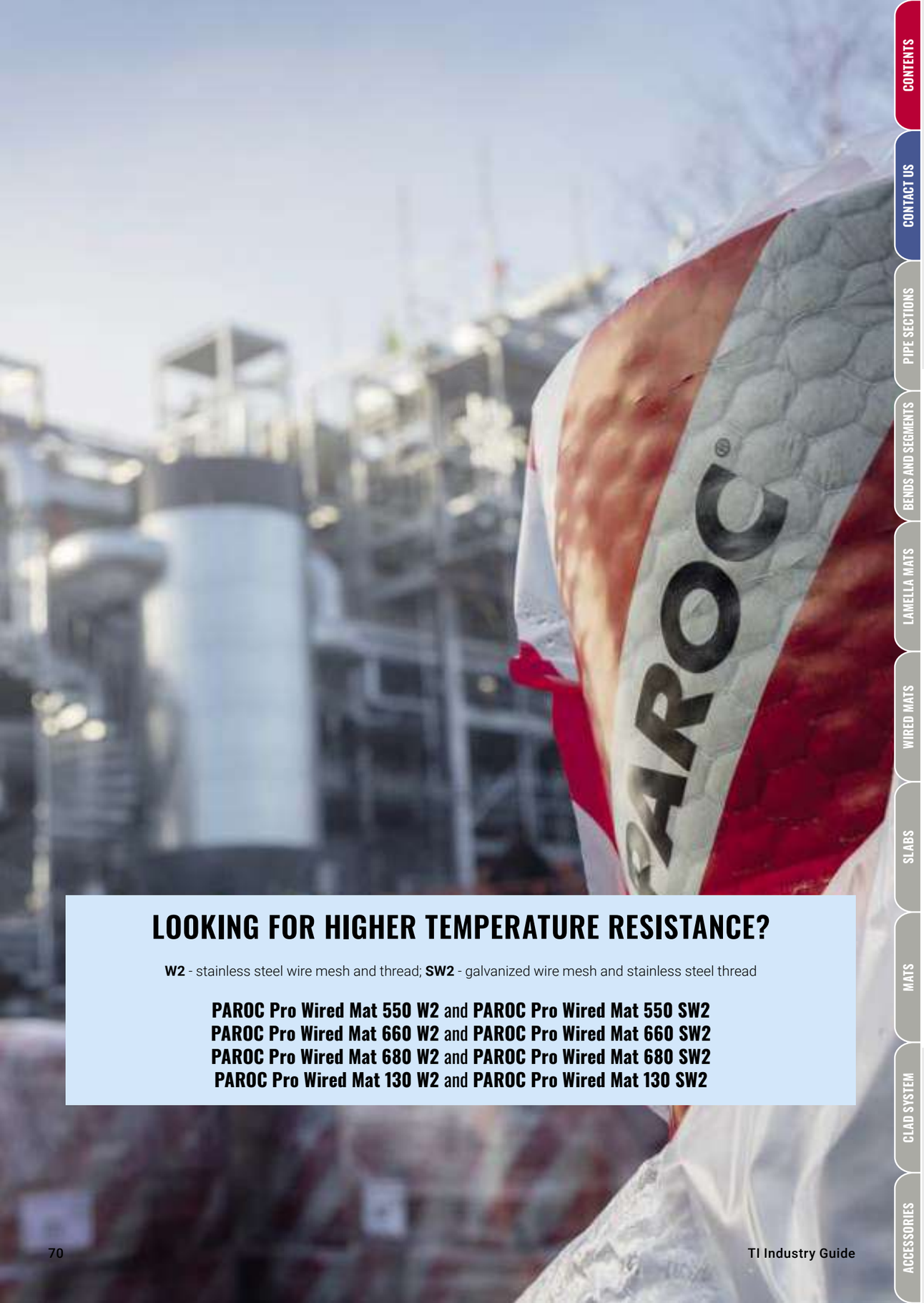



| t | °C | 50 | 100 | 200 | 300 | 400 | 500 | 600 |
|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.041 | 0.046 | 0.059 | 0.077 | 0.100 | 0.128 | 0.161 |

**COMBINE WITH PAROC PRO CLADDING SUPPORT (WR) 100 AND (WR) 140 TO REDUCE HEAT LOSS BAND THERMAL BRIDGES. CAN SUBSTITUTE STANDARD METAL RINGS UNDER HEAVY METAL CLADDING.**

MARKET LEADING WATER REPELLENCY



## LOOKING FOR HIGHER TEMPERATURE RESISTANCE?

**W2** - stainless steel wire mesh and thread; **SW2** - galvanized wire mesh and stainless steel thread

**PAROC Pro Wired Mat 550 W2** and **PAROC Pro Wired Mat 550 SW2**
**PAROC Pro Wired Mat 660 W2** and **PAROC Pro Wired Mat 660 SW2**
**PAROC Pro Wired Mat 680 W2** and **PAROC Pro Wired Mat 680 SW2**
**PAROC Pro Wired Mat 130 W2** and **PAROC Pro Wired Mat 130 SW2**



# SLABS

## PAROC PRO ROOF SLAB WR 20 kPa
## PAROC PRO ROOF SLAB 20 kPa

**Non-combustible stonewool slab**

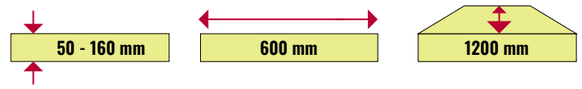
**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC Pallet Hoods
PAROC Hvac AluCoat Tape
PAROC Head Pins Insulated
PAROC Head Pins
PAROC Welding Device
PAROC Alu Tape
PAROC HT Tape

### APPLICATION

- Industrial tank roofs. It is strong enough to withstand light walking load during installation and maintenance

### TECHNICAL SPECIFICATIONS

- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 1609
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 1609
- Water soluble ions < 10 ppm according to EN 14303:2009+A1:2013 (EN 13468)
- LABS conformity, tested according to VDMA 24364: 2018-05
- Compressive strength > 20 kPa according to EN 14303:2009+A1:2013 (EN 826)
- CE designation code: MW-EN 14303-T5-CS(10)20-ST(+)550-WS1-CL10


Nominal value of the thermal conductivity λ according to DIN EN 12667

| t | °C | 50 | 100 | 200 | 300 | 400 | 500 |
|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.043 | 0.047 | 0.065 | 0.095 | 0.138 | 0.196 |


# SLABS

## PAROC PRO ROOF SLAB 30 kPa*

**Non-combustible stonewool slab**

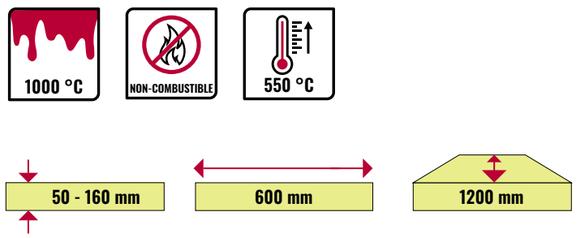
**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC Pallet Hoods
PAROC Hvac AluCoat Tape
PAROC Head Pins Insulated
PAROC Head Pins
PAROC Welding Device
PAROC Alu Tape
PAROC HT Tape

### APPLICATION

- Industrial tank roofs. It is strong enough to withstand normal walking load during installation and maintenance

### TECHNICAL SPECIFICATIONS

- Water soluble ions < 10 ppm according to EN 14303:2009+A1:2013 (EN 13468)
- LABS conformity, tested according to VDMA 24364: 2018-05
- Compressive strength > 30 kPa according to EN 14303:2009+A1:2013 (EN 826)
- CE designation code: MW-EN 14303-T5-CS(10)30-ST(+)550-WS1-CL10




Nominal value of the thermal conductivity λ according to DIN EN 12667

| t | °C | 50 | 100 | 200 | 300 | 400 | 500 |
|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.043 | 0.047 | 0.065 | 0.095 | 0.138 | 0.196 |

*only available in certain markets



# SLABS

## PAROC PRO ROOF SLAB WR 50 kPa
## PAROC PRO ROOF SLAB 50 kPa

**Non-combustible stonewool slab for industrial tank roofs. It is very strong and can withstand up to 50 kPa load during installation and maintenance**

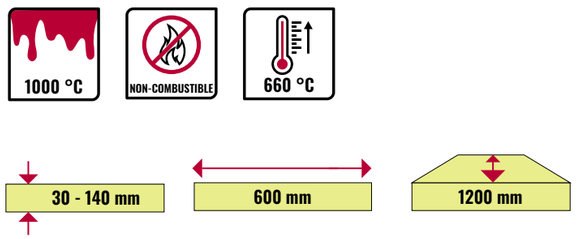
**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC Pallet Hoods
PAROC Hvac AluCoat Tape
PAROC Head Pins Insulated
PAROC Head Pins
PAROC Welding Device
PAROC Alu Tape
PAROC HT Tape

### APPLICATION

- For industrial tank roofs. It is strong enough to withstand heavy walking loads during installation and maintenance

### TECHNICAL SPECIFICATIONS

- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 1609
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 1609
- Water soluble ions < 10 ppm according to EN 14303:2009+A1:2013 (EN 13468)
- LABS conformity, tested according to VDMA 24364: 2018-05
- Compressive strength > 50 kPa according to EN 14303:2009+A1:2013 (EN 826)
- CE designation code: MW-EN 14303-T5-CS(10)50-ST(+)660-WS1-CL10




Nominal value of the thermal conductivity λ according to DIN EN 12667

| t | °C | 50 | 100 | 200 | 300 | 400 | 500 | 600 |
|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.042 | 0.046 | 0.060 | 0.081 | 0.110 | 0.147 | 0.192 |

# SLABS

## PAROC PRO ROOF SLAB 80 kPa*

**Non-combustible stonewool slab for industrial tank roofs. It is very strong and can withstand up to 80 kPa load during installation and maintenance**

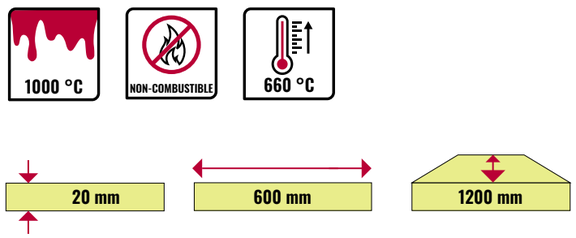
**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC Pallet Hoods
PAROC Hvac AluCoat Tape
PAROC Head Pins Insulated
PAROC Head Pins
PAROC Welding Device
PAROC Alu Tape
PAROC HT Tape

### APPLICATION

- For industrial tank roofs. It is strong enough to withstand extreme working loads during installation and maintenance

### TECHNICAL SPECIFICATIONS

- Water soluble ions < 10 ppm according to EN 14303:2009+A1:2013 (EN 13468)
- LABS conformity, tested according to VDMA 24364: 2018-05
- Compressive strength > 80 kPa according to EN 14303:2009+A1:2013 (EN 826)
- CE designation code: MW-EN 14303-T5-CS(10)80-ST(+)660-WS1-CL10




Nominal value of the thermal conductivity λ according to DIN EN 12667

| t | °C | 50 | 100 | 200 | 300 | 400 | 500 | 600 |
|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.042 | 0.046 | 0.060 | 0.081 | 0.110 | 0.147 | 0.192 |

*only available in certain markets



# SLABS

## PAROC PRO SLAB WR 350
## PAROC PRO SLAB 350
## PAROC PRO SLAB 350 ALUCOAT
## PAROC PRO SLAB WR 350 ALUCOAT

**Non-combustible stonewool insulation slab**

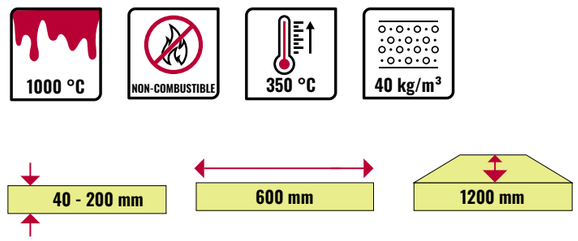
**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC Pallet Hoods
PAROC Hvac AluCoat Tape
PAROC Head Pins Insulated
PAROC Head Pins
PAROC Welding Device
PAROC Alu Tape
PAROC HT Tape

### APPLICATION

- Insulation of boilers (walls and penthouses), vessels, tanks (walls), flue ducts, equipment and filters

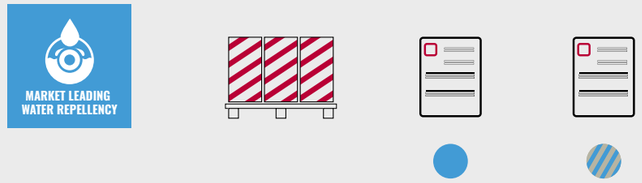
### TECHNICAL SPECIFICATIONS

- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 1609
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 1609
- Water soluble ions < 10 ppm according to EN 14303:2009+A1:2013 (EN 13468)
- LABS conformity according to VDMA 24364
- Quality monitored according to VDI 2055
- CE designation code:
  MW-EN 14303-T3-ST (+) 350-WS1-CL
  MW-EN 14303-T3-ST(+)350-WS1-MV2-CL10




Nominal value of the thermal conductivity λ according to DIN EN 12667

| t | °C | 50 | 100 | 150 | 200 | 300 | 350 |
|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.042 | 0.053 | 0.066 | 0.083 | 0.125 | 0.148 |



# SLABS

## PAROC PRO SLAB WR 450
## PAROC PRO SLAB 450
## PAROC PRO SLAB 450 ALUCOAT
## PAROC PRO SLAB WR 450 ALUCOAT

**Non-combustible stonewool insulation slab**

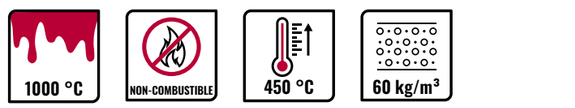
**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC Pallet Hoods
PAROC Hvac AluCoat Tape
PAROC Head Pins Insulated
PAROC Head Pins
PAROC Welding Device
PAROC Alu Tape
PAROC HT Tape

### APPLICATION

- Insulation of boilers (walls and penthouses), vessels, tanks (walls), flue ducts, equipment and filters

### TECHNICAL SPECIFICATIONS

- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 1609
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 1609
- Water soluble ions < 10 ppm according to EN 14303:2009+A1:2013 (EN 13468)
- LABS conformity according to VDMA 24364
- Quality monitored according to VDI 2055
- CE designation code:
  MW-EN 14303-T3-ST (+) 450-WS1-CL 10
  MW-EN 14303-T5-ST(+)450-WS1-MV2-CL10





Nominal value of the thermal conductivity λ according to DIN EN 12667

| t | °C | 50 | 100 | 150 | 200 | 300 | 400 | 450 |
|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.040 | 0.047 | 0.056 | 0.067 | 0.095 | 0.129 | 0.149 |

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# SLABS

## PAROC PRO SLAB WR 640
## PAROC PRO SLAB 640
## PAROC PRO SLAB 640 ALUCOAT
## PAROC PRO SLAB WR 640 ALUCOAT

**Non-combustible stonewool insulation slab**

**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC Pallet Hoods
PAROC Hvac AluCoat Tape
PAROC Head Pins Insulated
PAROC Head Pins
PAROC Welding Device
PAROC Alu Tape
PAROC HT Tape

### APPLICATION

- Insulation of boilers (walls and penthouses), vessels, tanks (walls), flue ducts, equipment and filters

### TECHNICAL SPECIFICATIONS

- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 1609
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 1609
- Water soluble ions < 10 ppm according to EN 14303:2009+A1:2013 (EN 13468)
- LABS conformity according to VDMA 24364
- CE designation code:
  MW-EN 14303-T3-ST (+) 640-WS1-CL 10
  MW-EN 14303-T5-ST(+)640-WS1-MV2-CL10



Nominal value of the thermal conductivity λ according to DIN EN 12667

| t | °C | 50 | 100 | 150 | 200 | 300 | 400 | 500 | 600 | 640 |
|---|---|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.039 | 0.045 | 0.053 | 0.062 | 0.084 | 0.112 | 0.144 | 0.185 | 0.203 |

**25 - 250 mm for AluCoat version*


# SLABS

## PAROC PRO SLAB WR 660
## PAROC PRO SLAB 660
## PAROC PRO SLAB 660 ALUCOAT
## PAROC PRO SLAB WR 660 ALUCOAT

**Non-combustible stonewool insulation slab**

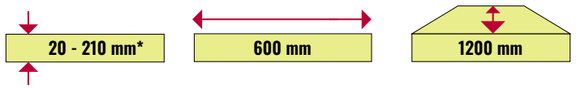
**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC Pallet Hoods
PAROC Hvac AluCoat Tape
PAROC Head Pins Insulated
PAROC Head Pins
PAROC Welding Device
PAROC Alu Tape
PAROC HT Tape

### APPLICATION

- Insulation of boilers (walls and penthouses), vessels, tanks (walls), flue ducts, equipment and filters

### TECHNICAL SPECIFICATIONS

- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 1609
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 1609
- Water soluble ions < 10 ppm according to EN 14303:2009+A1:2013 (EN 13468)
- LABS conformity according to VDMA 24364
- CE designation code:
  MW-EN 14303-T2-ST (+) 660-WS1-CL 10
  MW-EN 14303-T5-ST(+)660-WS1-MV2-CL10


Nominal value of the thermal conductivity λ according to DIN EN 12667

| t | °C | 50 | 100 | 150 | 200 | 300 | 400 | 500 | 600 | 660 |
|---|---|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.039 | 0.045 | 0.052 | 0.060 | 0.081 | 0.107 | 0.140 | 0.175 | 0.200 |

**25 - 210 mm for AluCoat version*




# SLABS

## PAROC PRO SLAB WR 680
## PAROC PRO SLAB 680
## PAROC PRO SLAB 680 ALUCOAT
## PAROC PRO SLAB WR 680 ALUCOAT

**Non-combustible stonewool insulation slab**

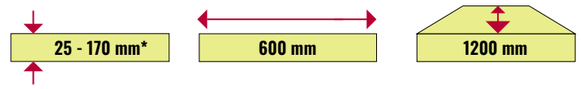
**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC Pallet Hoods
PAROC Hvac AluCoat Tape
PAROC Head Pins Insulated
PAROC Head Pins
PAROC Welding Device
PAROC Alu Tape
PAROC HT Tape

### APPLICATION

- Insulation of boilers (walls and penthouses), vessels, tanks (walls), flue ducts, equipment and filters

### TECHNICAL SPECIFICATIONS

- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 1609
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 1609
- Water soluble ions < 10 ppm according to EN 14303:2009+A1:2013 (EN 13468)
- LABS conformity according to VDMA 24364
- CE designation code:
  MW-EN 14303-T2-ST (+) 680-WS1-CL 10
  MW-EN 14303-T5-ST(+)660-WS1-MV2-CL10


Nominal value of the thermal conductivity λ according to DIN EN 12667

| t | °C | 50 | 100 | 150 | 200 | 300 | 400 | 500 | 600 | 680 |
|---|---|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.041 | 0.046 | 0.052 | 0.059 | 0.077 | 0.099 | 0.128 | 0.162 | 0.192 |

**25 - 170 mm for AluCoat version*


# SLABS

## PAROC PRO SLAB WR 700
## PAROC PRO SLAB 700
## PAROC PRO SLAB 700 ALUCOAT
## PAROC PRO SLAB WR 700 ALUCOAT

**Non-combustible stonewool insulation slab**

**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC Pallet Hoods
PAROC Hvac AluCoat Tape
PAROC Head Pins Insulated
PAROC Head Pins
PAROC Welding Device
PAROC Alu Tape
PAROC HT Tape

### APPLICATION
- Insulation of boilers (walls and penthouses), vessels, tanks (walls), flue ducts, equipment and filters

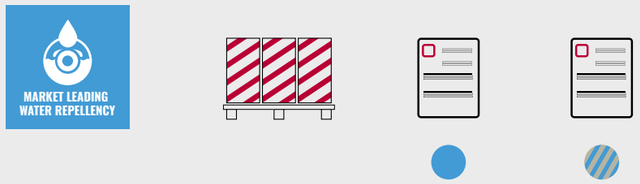
### TECHNICAL SPECIFICATIONS
- Water absorption< 0,1 kg/m² at temperatures up to 300 °C for water-repellent version according to EN 1609
- Water Absorption, Short Term WS, (Wp) ≤ 1 kg/m² for non water-repellant version according to EN 1609
- Water soluble ions < 10 ppm according to EN 14303:2009+A1:2013 (EN 13468)
- LABS conformity according to VDMA 24364
- CE designation code:
  MW-EN 14303-T3-ST (+) 700-WS1-CL 10
  MW-EN 14303-T5-ST(+)700-WS1-MV2-CL10



Nominal value of the thermal conductivity λ according to DIN EN 12667

| t | °C | 50 | 100 | 150 | 200 | 300 | 400 | 500 | 600 | 700 |
|---|---|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.041 | 0.046 | 0.052 | 0.059 | 0.077 | 0.099 | 0.128 | 0.162 | 0.200 |

**25 - 140 mm for AluCoat version*






# MATS

## PAROC PRO MAT 50
## PAROC PRO MAT 50 ALUCOAT

**Non-combustible stone wool mat for industrial applications**

**Accessories (pages 95 - 98):**
PAROC AluCoat Tape
PAROC Alu Tape
PAROC Pallet Hoods
PAROC Head Pins Insulated
PAROC Head Pins
PAROC Spatula
PAROC Pro Knife
PAROC HT Tape
PAROC Pro Cladding Support

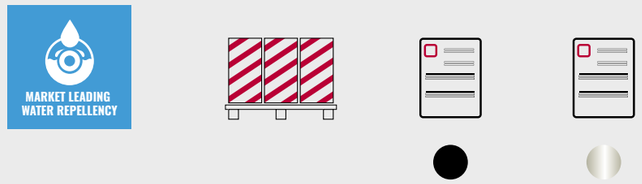
### APPLICATION
- Thermal insulation of flat or irregularly shaped equipment where surface temperature is rather low

### TECHNICAL SPECIFICATIONS
- Water absorption, short term ≤ 1 kg/m² according to EN 13472
- Surface temperature of the facing must not exceed 80 °C
- CE designation code:
  MW-EN 14303-T2-ST(+)350-WS1-CL10
  MW-EN 14303-T2-ST(+)350-WS1-MV2- CL10



| t | °C | 50 | 100 | 150 | 200 | 250 | 300 | 400 |
|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.042 | 0.054 | 0.068 | 0.085 | 0.106 | 0.132 | 0.199 |

**COMBINE WITH PAROC PRO CLADDING SUPPORT (WR) 100 AND (WR) 140 TO REDUCE HEAT LOSS BAND THERMAL BRIDGES. CAN SUBSTITUTE STANDARD METAL RINGS UNDER HEAVY METAL CLADDING.**



# MATS

## PAROC PRO MAT 70

### PAROC PRO MAT 70 ALUCOAT

**Non-combustible stone wool mat for industrial applications**

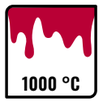
**Accessories (pages 95 - 98):**
PAROC AluCoat Tape
PAROC Alu Tape
PAROC Pallet Hoods
PAROC Head Pins Insulated
PAROC Head Pins
PAROC Spatula
PAROC Pro Knife
PAROC HT Tape
PAROC Pro Cladding Support

### APPLICATION

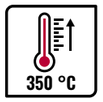
- Thermal insulation of flat or irregularly shaped equipment where surface temperature is rather low

### TECHNICAL SPECIFICATIONS

- Water absorption, short term ≤ 1 kg/m² according to EN 13472
- Surface temperature of the facing must not exceed 80 °C
- CE designation code:
  MW-EN 14303-T2-ST(+)350-WS1-CL10
  MW-EN 14303-T2-ST(+)350-WS1-MV2- CL10












| t | °C | 50 | 100 | 150 | 200 | 250 | 300 | 400 |
|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.042 | 0.048 | 0.056 | 0.067 | 0.080 | 0.097 | 0.142 |

**COMBINE WITH PAROC PRO CLADDING SUPPORT (WR) 100 AND (WR) 140 TO REDUCE HEAT LOSS BAND THERMAL BRIDGES. CAN SUBSTITUTE STANDARD METAL RINGS UNDER HEAVY METAL CLADDING.**








# MATS

## PAROC PRO MAT 80

### PAROC PRO MAT 80 ALUCOAT

**Non-combustible stone wool mat for industrial applications**

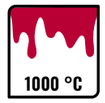
**Accessories (pages 95 - 98):**
PAROC AluCoat Tape
PAROC Alu Tape
PAROC Pallet Hoods
PAROC Head Pins Insulated
PAROC Head Pins
PAROC Spatula
PAROC Pro Knife
PAROC HT Tape
PAROC Pro Cladding Support

### APPLICATION

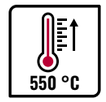
- Thermal insulation of flat or irregularly shaped equipment where surface temperature is rather low
- For thermal insulation purposes when insulating flat or irregularly shaped equipment

### TECHNICAL SPECIFICATIONS

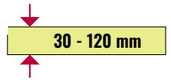
- Water absorption, short term ≤ 1 kg/m² according to EN 13472
- Surface temperature of the facing must not exceed 80 °C
- CE designation code:
  MW-EN 14303-T2-ST(+)550-WS1-CL10
  MW-EN 14303-T2-ST(+)550-WS1-MV2- CL10














| t | °C | 50 | 100 | 150 | 200 | 250 | 300 | 400 | 500 |
|---|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.043 | 0.047 | 0.055 | 0.065 | 0.078 | 0.095 | 0.138 | 0.196 |

**COMBINE WITH PAROC PRO CLADDING SUPPORT (WR) 100 AND (WR) 140 TO REDUCE HEAT LOSS BAND THERMAL BRIDGES. CAN SUBSTITUTE STANDARD METAL RINGS UNDER HEAVY METAL CLADDING.**


# MATS

## PAROC PRO MAT 100

## PAROC PRO MAT 100 ALUCOAT

**Non-combustible stone wool mat for industrial applications**

**Accessories (pages 95 - 98):**
PAROC AluCoat Tape
PAROC Alu Tape
PAROC Pallet Hoods
PAROC Head Pins Insulated
PAROC Head Pins
PAROC Spatula
PAROC Pro Knife
PAROC HT Tape
PAROC Pro Cladding Support

### APPLICATION

- Thermal insulation of flat or irregularly shaped equipment where surface temperature is rather low

### TECHNICAL SPECIFICATIONS

- Water absorption, short term ≤ 1 kg/m² according to EN 13472
- Surface temperature of the facing must not exceed 80 °C
- CE designation code:
  MW-EN 14303-T2-ST(+)550-WS1-CL10
  MW-EN 14303-T2-ST(+)550-WS1-MV2- CL10

1000 °C | NON-COMBUSTIBLE | 550 °C | 100 kg/m³

30 - 120 mm | 1000 mm | 2000 - 8000 mm

| t | °C | 50 | 100 | 150 | 200 | 250 | 300 | 400 | 500 |
|---|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.043 | 0.047 | 0.055 | 0.065 | 0.078 | 0.095 | 0.138 | 0.196 |

**COMBINE WITH PAROC PRO CLADDING SUPPORT (WR) 100 AND (WR) 140 TO REDUCE HEAT LOSS BAND THERMAL BRIDGES. CAN SUBSTITUTE STANDARD METAL RINGS UNDER HEAVY METAL CLADDING.**

MARKET LEADING WATER REPELLENCY





# MATS

## PAROC PRO LOOSE MAT 50

**Stonewool mat with low binder content**

**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC Welding Device
PAROC Pallet Hood

### APPLICATION

- Irregular shapes and filling when stone wool need to be used as a loose wool insulation

### TECHNICAL SPECIFICATIONS

- Water absorption, short term ≤ 1 kg/m² according to EN 13472
- CE designation code: MW-EN 14303-T2-ST(+/250)350-WS1-CL10

1000 °C | NON-COMBUSTIBLE | 350 °C | 50 kg/m³

40 - 120 mm | 1000 mm | 2500 - 7000 mm

| t | °C | 50 | 100 | 150 | 200 | 250 | 300 | 400 |
|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.042 | 0.054 | 0.068 | 0.085 | 0.106 | 0.132 | 0.199 |

MARKET LEADING WATER REPELLENCY

# MATS

## PAROC PRO LOOSE MAT 70

**Stonewool mat with low binder content**

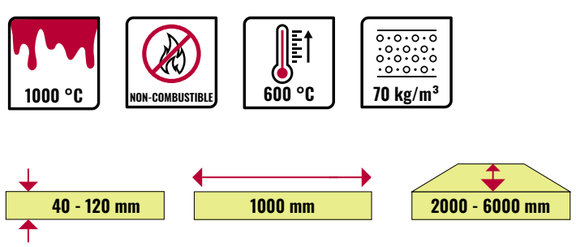
**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC Welding Device
PAROC Pallet Hood

### APPLICATION

- Irregular shapes and filling when stone wool need to be used as a loose wool insulation

### TECHNICAL SPECIFICATIONS

- Water absorption, short term ≤ 1 kg/m² according to EN 13472
- CE designation code: MW-EN 14303-T2-ST(+/250)600-WS1-CL10




| t | °C | 50 | 100 | 150 | 200 | 250 | 300 | 400 |
|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.042 | 0.048 | 0.056 | 0.067 | 0.080 | 0.097 | 0.142 |






# MATS

## PAROC PRO LOOSE MAT 80

**Stonewool mat with low binder content**

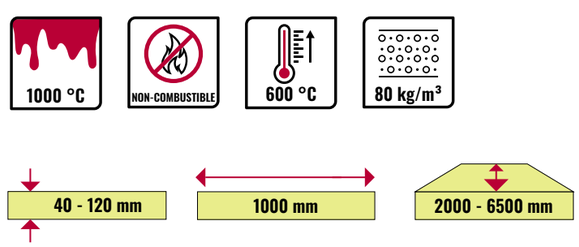
**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC Welding Device
PAROC Pallet Hood

### APPLICATION

- Irregular shapes and filling when stone wool need to be used as a loose wool insulation

### TECHNICAL SPECIFICATIONS

- Water absorption, short term ≤ 1 kg/m² according to EN 13472
- CE designation code: MW-EN 14303-T2-ST(+/250)600-WS1-CL10




| t | °C | 50 | 100 | 150 | 200 | 250 | 300 | 400 | 500 |
|---|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.043 | 0.047 | 0.055 | 0.065 | 0.078 | 0.095 | 0.138 | 0.196 |

# MATS

## PAROC PRO LOOSE MAT 100

**Stonewool mat with low binder content**

**Accessories (pages 95 - 98):**
PAROC Pro Knife XTK001/003
PAROC Welding Device
PAROC Pallet Hood

### APPLICATION

- Irregular shapes and filling when stone wool need to be used as a loose wool insulation

### TECHNICAL SPECIFICATIONS

- Water absorption, short term ≤ 1 kg/m² according to EN 13472
- CE designation code: MW-EN 14303-T2-ST(+)600-WS1-CL10



| t | °C | 50 | 100 | 150 | 200 | 250 | 300 | 400 | 500 |
|---|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.043 | 0.047 | 0.055 | 0.065 | 0.078 | 0.095 | 0.138 | 0.196 |





# PAROC CLAD SYSTEM: INSULATION SOLUTION FOR EXTERNAL PIPEWORK AND DUCTWORK APPLICATIONS

## UV-RESISTANT, IMPERMEABLE TO WATER, SALT WATER RESISTANT

In today's world, insulation systems that are economically sustainable, efficient through time saving installation across a wide range of applications, are in demand.

The Clad-System by PAROC effectively insulates pipework and ventilation systems quickly, safely, and sustainably with a special highly durable multiple layer composite film for external applications. It reliably protects PAROC stone wool against moisture, environmental impact, and chemical substances.

As a result of the high temperature resistance of our Pro (industrial) stone wool products which is the base insulation material for the Clad-System, it can be used on temperatures up to 680°C. Therefore, it protects against temperature losses on high temperature systems and steam lines for example.

## COMPREHENSIVE TEST REPORTS AVAILABLE

In order to increase the range of applications the Clad-Film underwent specific tests. For example, testing included for safety of use in food industry applications (food contact applications according to EC 1935/2004, EU 10/2011, EC 2023/2006 as well as the German Food and essential Commodities and Animal Feed Code, or LFGB for short).

In addition, the Clad-Surface is smooth, easy to clean and due to its resistance to chemical substances - provides bacteria no ground on which to grow on, so it can be used in laboratories and clean rooms.

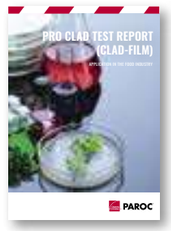
The Clad-System by PAROC can also be used in coastal applications, since its resistance to salt air and salt water has been proven along with successful puncture resistance testing in accordance with DIN EN 14 477 resulting in the Clad-System offering protection against "bird pecking" which is further supplemented by its sturdy base material.

Another major advantage of the Clad-Surface can be found when personal protection is of importance. Due to a higher emission ratio (ε 0.65) of the Clad-Film, insulation thicknesses can be reduced when compared to insulation in conjunction with metal cladding (low emissivity), resulting in a cost saving.

## UNLOCKING FURTHER APPLICATION POSSIBILITIES

PAROC Clad-System offers further application possibilities due to its fully metal-free and non-corroding surface which reduces the weight of a construction and is maintenance friendly. In addition to the system being perfectly suited for all building services, due to its watertight installation it can be used in areas in danger of flooding. The system can also be used to insulate pipework or ventilation systems which require weather protection in areas where space is limited or tight, which make inflexible metal covering systems difficult to use.

Installation of the Clad-System is made easy by comprehensive instructions, specific accessories such as matching tape, Clad Dots (circular prefabricated tape for covering fastenings and cut-outs), along with documentation and test reports.





# CLAD-SYSTEM

## PAROC PRO SECTION 140 CLAD T

**Stonewool pipe section with a uv-resistant, fibre reinforced aluminium coating**

**Accessories (pages 93, 96 - 99):**
PAROC Clad Tape
PAROC Pro Knife XTK001/003
PAROC Pallet Hoods
PAROC Clad Alu Tape

### ADDITIONAL SYSTEM PRODUCTS

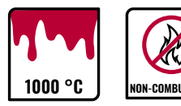
PAROC CURVE CLAD

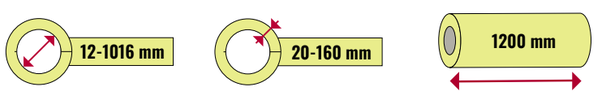
PAROC BEND CLAD

PAROC SEGMENT CLAD

**APPLICATION**
- Thermal insulation of outdoor pipelines
- Due to a weather-resistant aluminum coating, outdoor installation without additional cladding systems; additionally the mineral wool is protected from mechanical loads, moisture as well as chemical substances

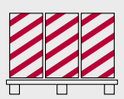
**TECHNICAL SPECIFICATIONS**
- Water-repellent according to EN 1609
- AS quality according to EN 13468 and AGI Q 132
- Classified wall and ceiling penetrations
- Fire resistance duration up to 120 min
- The surface temperature of the lamination must be limited to 80 °C
- CE designation Code: MW-EN 14303-T8/T9-ST(+)680-WS1-MV2-CL10




Nominal value of the thermal conductivity λ according to DIN EN 12667

| t | °C | 50 | 100 | 150 | 200 | 250 | 300 | 400 |
|---|---|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.041 | 0.047 | 0.054 | 0.063 | 0.073 | 0.085 | 0.110 |

Video PAROC
Clad-System



# CLAD-SYSTEM

## PAROC PRO LAMELLA MAT CLAD

**Stonewool lamella mat with UV-resistant, fibre reinforced aluminium coating**

**Accessories (pages 93, 96 - 99):**
PAROC Clad Tape
PAROC Clad Dots
PAROC Clad AluTape
PAROC Head Pins Insulated
PAROC Pro Knife XTK001/003
PAROC Schweißgerät - ZTM 100
PAROC Spatula
PAROC Pallet Hoods
PAROC Pro Roof Wedge

**APPLICATION**
- Outdoor insulation of ventilation ducts, pipelines and containers;
- The insulation system does not require any further cladding systems; additionally
- The mineral wool is protected from mechanical loads, moisture and chemical substances

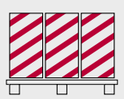
**TECHNICAL SPECIFICATIONS**
- Water-repellent according to EN 1609
- AS quality according to EN 13468 and AGI Q 132
- LABS conformity, tested according to VDMA 24364: 2018-05
- Compressive strength > 10 kPa according to EN 826
- The surface temperature of the lamination must be limited to 80 °C
- CE designation Code: MW-EN 14303-T4-ST(+)500-WS1-MV2-CL10



Nominal value of the thermal conductivity λ according to DIN EN 12667

| t | °C | 10 | 50 | 100 | 200 | 300 |
|---|---|---|---|---|---|---|
| $\lambda_{N,P}$ | W/mK | 0.039 | 0.045 | 0.055 | 0.081 | 0.120 |

Video PAROC
Clad-System

# CLAD-SYSTEM ACCESSORIES

## PAROC CLAD DOTS

**PAROC Clad Dots are the optimal solution when it comes to cover pins' heads**

| Ø mm | Piece / roll | Rolls per box |
|---|---|---|
| 90 | 100 | 6 |

## PAROC CLAD TAPE

**Water resistant butyl rubber tape with very high tack and very high ageing resistance**

**Application**

- Used amongst others for masking of Clad faced products. The Clad sealing tape can be used as moisture and diffusion barriers; ideal for sealing the joints when using PAROC Clad products.
- Permanently seal pipes and ventilation ducts facings in heating, ventilation and air conditioning engineering. The butyl sealing tapes are also used as moisture and diffusion barriers in underground construction. PAROC Clad Tape gives a great finish and safe installation

| Length mm | Width mm | Rolls per box |
|---|---|---|
| 10000 | 30 | 20 |
| 10000 | 50 | 12 |
| 10000 | 75 | 8 |
| 10000 | 100 | 6 |

## PAROC CLAD ALU TAPE

**Water resistant acryl tape with very high tack and very high ageing resistance for pipe elbows**

| Lenght m | Width mm | Rolls per box |
|---|---|---|
| 10 | 50 | 12 |

## PAROC PRO ROOF WEDGE

**Stonewool wedge plate with a gradient of at least 3%**

| Thickness mm | Length mm | Width mm |
|---|---|---|
| 25/60 | 1200 | 600 |
| 42/60 | 1200 | 600 |

**Additional accessories:**
PAROC Spatula
PAROC Head Pins Insulated





# TECHNICAL INSULATION AND ENERGY EFFICIENCY – THE FORGOTTEN HEROES OF CLIMATE CHANGE PREVENTION?

*All sectors and corporations are focused on achieving low-carbon and climate-neutral operations. Different international and national targets are set to combat climate change, with roadmaps primarily focused on digitalisation, electrification, material efficiency, and the circular economy as sustainable solutions.*

Yet, energy efficiency tends to lag behind all of these other methods as a potential solution. Perhaps because it isn't as 'modern' or revolutionary. But investing in your plant's energy efficiency can make all the difference in your overall sustainability and contribution to the planet. It's an effective and simple change that promotes a low-carbon future and reduces the emissions from industrial processes during their lifecycle.

Another worrying trend is the belief that technical insulation is just another maintenance cost item instead of being the energy and cost saver that it is. The industry under-invests in insulation and compromises on its quality as it pursues cost savings and, when designing buildings, so little space is reserved for building technology that sufficient insulation is not possible.

This is like "throwing the baby out with the bathwater". What you gain from short-sighted cost savings, you lose in energy efficiency, maintenance costs and the length of the technical life-cycle – not to mention impacts the climate.

## BECOMING CARBON-NEUTRAL WITH HIGH-QUALITY INSULATION

It is generally acknowledged that the management of energy flows is one of the most important factors affecting the efficiency and performance of industrial processes. High-quality insulation is an effective way to improve the energy efficiency of processes and an investment that has a very short payback period. Cost savings and benefits to the climate can be achieved as soon as insulation has been installed and, most importantly, this happens regardless of what energy source is used. There's even room to tighten installation requirements across the industry to further boost sustainability and other benefits. When deciding on an insulation solution, it always pays to consider the overall benefits of each solution. From sustainability and energy savings to cost efficiencies and a reduction in maintenance costs. Taking this approach, plant owners can ensure their equipment and piping is performing at its best, fully protected, and that their plant is helping in the ongoing battle against climate change.

## INSULATION PRODUCTS AND KNOW-HOW EXIST – BUT IS THERE THE WILL?

Our world is facing a crunch point and it's only by coming together to create a carbon-neutral society that we can ensure our planet's long-term survival. There have long been insulation solutions that cut energy losses, protect personnel and improve cost savings, but the onus is on plant owners to invest in the right insulation. Foresight is needed to understand the immediate and long-term benefits of using appropriate insulation products. Similarly, there must be more oversight of the entire construction and industrial processes of a plant to ensure carbon neutrality is optimised across all equipment and pipings' lifecycles. It's a tall order that requires a sea-change in many organisation's thinking, but it will be worth if for your overall plant performance and Earth's wellbeing.

# SELECTION TABLE
# FOR MULTILAYER PIPE INSULATION PIPE SECTIONS AND SEGMENTS

| Inner diameter | Nominal insulation thickness, mm | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 20 | 25 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 150 | 160 |
| mm | Outer diameter, mm | | | | | | | | | | | | | | | |
| 12/15 | 52 | 62 | 72 | 92 | 115 | | | | | | | | | | | |
| 18 | 62 | 72 | 82 | 102 | 115 | 141 | | | | | | | | | | |
| 22 | 62 | 72 | 82 | 102 | 128 | 141 | 167 | 180 | | | | | | | | |
| 28 | 72 | 82 | 92 | 102 | 128 | 154 | 167 | 193 | | | | | | | | |
| 35 | 72 | 82 | 92 | 115 | 141 | 154 | 180 | 193 | 219 | 232 | | | | | | |
| 42 | 82 | 92 | 102 | 128 | 141 | 167 | 180 | 206 | 219 | 245 | | | | | | |
| 48 | 92 | 102 | 115 | 128 | 154 | 167 | 193 | 206 | 232 | 245 | | | | | | |
| 54 | 92 | 102 | 115 | 128 | 154 | 180 | 193 | 219 | 232 | 258 | | | | | | |
| 57 | 102 | 102 | 115 | 141 | 154 | 180 | 193 | 219 | 232 | 258 | | | | | | |
| 60 | 102 | 115 | 115 | 141 | 154 | 180 | 206 | 219 | 245 | 258 | | | | | | |
| 64 | 102 | 115 | 128 | 141 | 167 | 180 | 206 | 219 | 245 | 258 | 284 | 310 | | | | |
| 70 | 115 | 115 | 128 | 154 | 167 | 193 | 206 | 232 | 245 | 271 | 284 | 310 | | | | |
| 76 | 115 | 128 | 141 | 154 | 180 | 193 | 219 | 232 | 258 | 271 | 297 | 310 | | | | |
| 84 | | | 141 | 167 | 180 | 206 | 219 | 245 | 258 | 284 | 310 | 323 | | | | |
| 89 | 128 | 141 | 154 | 167 | 193 | 206 | 232 | 245 | 271 | 284 | 310 | 323 | | | | |
| 102 | 141 | 154 | 167 | 180 | 206 | 219 | 245 | 258 | 284 | 297 | 323 | 336 | | | | |
| 108 | | 154 | 167 | 193 | 206 | 232 | 245 | 271 | 284 | 310 | 323 | 349 | | | | |
| 114 | | 167 | 180 | 193 | 219 | 232 | 258 | 271 | 297 | 310 | 336 | 349 | | | | |
| 121 | | 167 | 180 | 206 | 219 | 245 | 258 | 284 | 297 | 323 | 336 | 362 | | | | |
| 127 | | 180 | 193 | 206 | 232 | 245 | 271 | 284 | 310 | 323 | 349 | 362 | | | | |
| 133 | | 180 | 193 | 219 | 232 | 258 | 271 | 297 | 310 | 336 | 349 | 375 | | | | |
| 140 | | 193 | 206 | 219 | 245 | 258 | 284 | 297 | 323 | 336 | 362 | 375 | | | | |
| 156 | | 206 | 219 | 232 | 258 | 271 | 297 | 310 | 336 | 362 | 375 | 401 | | | | |
| 159 | | 206 | 219 | 245 | 258 | 284 | 297 | 323 | 336 | 362 | 375 | 401 | | | | |
| 168 | | 219 | 232 | 245 | 271 | 284 | 310 | 323 | 349 | 362 | 388 | 414 | | | | |
| 178 | | 232 | 232 | 258 | 284 | 297 | 323 | 336 | 362 | 375 | 401 | 414 | | | | |
| 194 | | 245 | 258 | 271 | 297 | 310 | 336 | 349 | 375 | 388 | 414 | | | | | |
| 208 | | | 271 | 284 | 310 | 323 | 349 | 362 | 388 | 414 | 427 | | | | | |
| 219 | | | 284 | 297 | 323 | 336 | 362 | 375 | 401 | 414 | 440 | 453 | 479 | 505 | 518 | 544 |
| 230 | | | 284 | 310 | 336 | 349 | 375 | 388 | 414 | 427 | 453 | 466 | 492 | 505 | 531 | 544 |
| 240 | | | 297 | 323 | 336 | 362 | 375 | 401 | 414 | 440 | 466 | 479 | 505 | 518 | 544 | 557 |
| 245 | | | 310 | 323 | 349 | 362 | 388 | 401 | 427 | 440 | 466 | 479 | 505 | 531 | 544 | 570 |
| 259 | | | 323 | 336 | 362 | 375 | 401 | 414 | 440 | 453 | 479 | 505 | 518 | 544 | 557 | 583 |
| 273 | | | 336 | 349 | 375 | 388 | 414 | 427 | 453 | 479 | 492 | 518 | 531 | 557 | 570 | 596 |
| 289 | | | 349 | 375 | 388 | 414 | 427 | 453 | 466 | 492 | 505 | 531 | 544 | 570 | 583 | 609 |
| 295 | | | 349 | 375 | 401 | 414 | 440 | 453 | 479 | 492 | 518 | 531 | 557 | 570 | 596 | 609 |
| 305 | | | 362 | 388 | 401 | 427 | 440 | 466 | 479 | 505 | 531 | 544 | 570 | 583 | 609 | 622 |
| 324 | | | 388 | 401 | 427 | 440 | 466 | 479 | 505 | 518 | 544 | 570 | 583 | 609 | 622 | 648 |
| 356 | | | 414 | 440 | 453 | 479 | 492 | 518 | 531 | 557 | 570 | 596 | 622 | 635 | 661 | 674 |
| 371 | | | 427 | 453 | 466 | 492 | 505 | 531 | 557 | 570 | 596 | 609 | 635 | 648 | 674 | 687 |
| 377 | | | 440 | 453 | 479 | 492 | 518 | 531 | 557 | 583 | 596 | 622 | 635 | 661 | 674 | 700 |
| 406 | | | 466 | 492 | 505 | 531 | 544 | 570 | 583 | 609 | 622 | 648 | 661 | 687 | 700 | 726 |
| 426 | | | 492 | 505 | 531 | 544 | 570 | 583 | 609 | 622 | 648 | 661 | 687 | 700 | 726 | 752 |
| 457 | | | 518 | 531 | 557 | 583 | 596 | 622 | 635 | 661 | 674 | 700 | 713 | 739 | 752 | 778 |
| 479 | | | 544 | 557 | 583 | 596 | 622 | 635 | 661 | 674 | 700 | 713 | 739 | 765 | 778 | 804 |
| 490 | | | 544 | 570 | 596 | 609 | 635 | 648 | 674 | 687 | 713 | 726 | 752 | 765 | 791 | 804 |
| 508 | | | 570 | 583 | 609 | 622 | 648 | 674 | 687 | 713 | 726 | 752 | 765 | 791 | 804 | 830 |
| 533 | | | | 609 | 635 | 648 | 674 | 687 | 713 | 739 | 752 | 778 | 791 | 817 | 830 | 856 |
| 558 | | | | 635* | 661 | 674 | 700 | 713 | 739 | 752 | 778 | 804 | 817 | 843 | 856 | 882 |
| 612 | | | | 687* | 713 | 726 | 752 | 778 | 791 | 817 | 830 | 856 | 869 | 895 | 908 | 934 |
| 630 | | | | 713* | 726 | 752 | 765 | 791 | 804 | 830 | 856 | 869 | 895 | 908 | 934 | 947 |
| 665 | | | | 739* | 765 | 791 | 804 | 830 | 843 | 869 | 882 | 908 | 921 | 947 | 960 | 986 |
| 714 | | | | | 817 | 830 | 856 | 869 | 895 | 908 | 934 | 960 | 973 | 999 | 1012 | 1038* |
| 720 | | | | | 817 | 843 | 856 | 882 | 895 | 921 | 934 | 960 | 986 | 999 | 1025 | 1038* |
| 762 | | | | | 856 | 882 | 908 | 921 | 947 | 960 | 986 | 999 | 1025 | 1038 | 1064* | 1077* |
| 813 | | | | | 908 | 934 | 947 | 973 | 999 | 1012 | 1038 | 1051 | 1077 | 1090 | 1116* | 1129* |
| 822 | | | | | 921 | 947 | 960 | 986 | 999 | 1025 | 1038 | 1064 | 1077 | 1103 | 1116 | 1142 |
| 914 | | | | | 1012 | 1038 | 1051 | 1077 | 1090 | 1116 | 1129 | 1155 | 1168 | 1194 | 1220 | |
| 1016 | | | | | | | 1155 | 1181 | 1194 | 1220 | | | | | | |

Blank box - not made

414 Underlined - delivered hinged or halves (F1) according to request (F1 disallows AluCoat T)

427 Red - delivered only in halves (F1)

Not made with facings

Not made in 140 kg density

635* Red with asterisk - not made in WR 140 kg density

Boundary of selection available with facing AluCoat T

Boundary of selection available as Pro Lock





# ACCESSORIES

## PAROC PALLET HOODS

**Application**
- Protective, waterproof hood ideal for covering pallets against dirt, moisture and dust

| Length mm | Width mm | Max. pallet size in mm | PU |
|---|---|---|---|
| 1600 | 1200 | 1200 x 1200 | 10 |
| 2900 | 3300 | 2300 x 1150 und 2400 x 1000 | 1 |

## PAROC PRO KNIFE – XTK 001

- Particularly suitable for cutting PAROC products (Clad systems)
- Number scale on the blade (determination of insulation thickness)

| Blade | Grind blade | Item |
|---|---|---|
| approx.300 mm | Serrated edge (serrated) | XTK 001 |

## PAROC PRO KNIFE – XTK 003

- Suitable for cutting PAROC products
- Number scale on the blade (determination of insulation thickness)

| Blade | Grind blade | Item |
|---|---|---|
| approx.300 mm | Smooth finish | XTK 003 |

## PAROC SPATULA

**Plastic spatula for supporting pressure and for optical smoothing of the tape**

| Length mm | Width mm | PU Pieces / box |
|---|---|---|
| 100 | 70 | 20 |

## PAROC CUI SPACERS

## PAROC HEAD PINS INSULATED

**Application**
- Fastening of PAROC products

**Technical specifications**
- Pin made of St37 copper-plated and insulated
- Plate made of St37 galvanized

| Length mm | Plate diameter [mm] | Number of pieces/box |
|---|---|---|
| 19.0 | 30 | 1000 |
| 22.2 | 30 | 1000 |
| 28.5 | 30 | 1000 |
| 30.5 | 30 | 1000 |
| 38.0 | 30 | 1000 |
| 41.0 | 30 | 1000 |
| 47.6 | 30 | 1000 |
| 50.0 | 30 | 1000 |
| 54.0 | 30 | 1000 |
| 58.0 | 30 | 1000 |
| 60.5 | 30 | 1000 |
| 62.0 | 30 | 1000 |
| 68.0 | 30 | 500 |
| 72.0 | 30 | 500 |
| 78.0 | 30 | 500 |
| 89.0 | 30 | 500 |
| 98.5 | 30 | 500 |
| 101.6 | 30 | 500 |

## PAROC HEAD PINS

**Application**
- Fastening of PAROC products

**Technical specifications**
- Pin made of St37 copper-plated and insulated
- Plate made of St37 galvanized

| Length mm | Plate diameter [mm] | Number of pieces/box |
|---|---|---|
| 19.0 | 30 | 1000 |
| 22.2 | 30 | 1000 |
| 28.5 | 30 | 1000 |
| 30.5 | 30 | 1000 |
| 38.0 | 30 | 1000 |
| 41.0 | 30 | 1000 |
| 47.6 | 30 | 1000 |
| 50.0 | 30 | 1000 |
| 54.0 | 30 | 1000 |
| 58.0 | 30 | 1000 |
| 60.5 | 30 | 1000 |
| 62.0 | 30 | 1000 |
| 68.0 | 30 | 500 |
| 72.0 | 30 | 500 |
| 78.0 | 30 | 500 |
| 89.0 | 30 | 500 |
| 98.5 | 30 | 500 |
| 101.6 | 30 | 500 |





ACCESSORIES

## PAROC WELDING DEVICE

**Application**
- The PAROC capacitor discharge welding device PPWD has been designed for welding directly through the insulation. With this, you will be able to fasten the insulation to a surface in a one process step.

| Capacity | Energy supply | Welding time | Weight | Size | Warranty |
|---|---|---|---|---|---|
| 132.000 µF | 230 V, 10A fuse protection | from 1 to 3 ms | 11 kg | 430 mm x 165 mm x 180 mm | 12 months |

## PAROC HVAC ALUCOAT TAPE

**Fiberglass reinforced aluminum tape with acrylic pressure sensitive low temperature flame-retardant acrylic adhesive and siliconized release paper liner. PAROC logo printed on the surface**

**Application**
- Ideal for sealing joints when using PAROC AluCoat products such as sections, lamella mats or slabs
- Gives a great finish and safe installation

**Technical specifications**
- Surface temperature of the insulation (processing temperature) +5 °C to +40 °C
- Temperature resistance -35 °C to +120 °C
- The surface of the insulation must be dry, free of dust and grease - dry storage at an ambient temperature of +18 °C to +25 °C and protected from direct sunlight

| Length mm | Width mm | Rolls per box | Cartons/pallet |
|---|---|---|---|
| 50000 | 50 | 24 | 24 |
| 50000 | 75 | 16 | 24 |

## PAROC HVAC ALU TAPE

**Aluminum tape with acrylic pressure sensitive low temperature flame-retardant acrylic adhesive and siliconized release paper liner. PAROC logo printed on the surface**

| Length mm | Width mm | Rolls per box | Cartons/pallet |
|---|---|---|---|
| 25000 | 50 | 54 | 24 |
| 25000 | 75 | 36 | 24 |
| 25000 | 150 | 12 | 24 |

# ACCESSORIES

## PAROC HT TAPE

**Special-purpose high temperature protection tape featuring superior adhesive strength.**
**Maximal working temperature is 350 °C (peak), 250 °C (continuously)**

**Application**
- Ideal for PAROC Fire Place Slabs and other high temperature applications.
- Highly temperature resistant and age resistant.

| Length mm | Width mm | Rolls per box | Cartons/pallet |
|---|---|---|---|
| 50000 | 50 | 24 | 24 |
| 50000 | 80 | 18 | 24 |
| 50000 | 110 | 12 | 24 |

## PAROC HVAC DOTS

**The best solution for covering the head pins used on lamella mat on a duct in a fast, clean, even, moisture-proof and convenient way**

**Application**
- Large portfolio of accessories:
  Complete system including PAROC Head Pin, spatula, PAROC Hvac Lamella Mat AluCoat, PAROC Hvac Tape and PAROC Hvac Dots
- For less waste on the construction site
- Maintenance-free - will last as long as insulation
- Only spatula needed for fixation

| Ø mm | Piece / roll | Rolls per box |
|---|---|---|
| 60 | 750 | 8 |

## PAROC PRO CLADDING SUPPORT 100 AND 140

**Mineral wool supporting ring**

**Application**
- Easy to use and an obvious solution which can substitute standard metal supporting rings for heavy metal claddings without creating thermal bridges
- Beneficial when using material with poor compression strength for pipe insulation

| Thickness mm | Diameter mm | Maximum service temperature |
|---|---|---|
| 50 - 120 | 114 - 1016 | 640 °C - PAROC Pro Cladding Support 100<br>680 °C - PAROC Pro Cladding Support 140 |

*Other dimensions on request*





# PAROC TRAINS TIPCHECK ENGINEERS TO SUPPORT THE INDUSTRY IN SAVING MONEY, ENERGY AND $CO_2$

*Did you know that the tremendous energy savings potential of technical insulation in the industry is 620 PJ? As a consequence, 15 coal-fired power plants of 500 MW could be switched off. Industrial insulation is a Best Available Technique which could help Europe's industry to reduce its energy consumption by 4%. (Source: EiiF)*

From their experience, the European industrial insulation Foundation (EiiF) is convinced that there is a significant energy saving and $CO_2$ mitigation potential related to improved thermal insulation in industry and that this potential is currently untapped despite being cost-effective to implement. Against this background, EiiF commissioned Ecofys to identify the Energy and $CO_2$ savings potential of industrial insulation in EU27.

The study shows a savings potential of industrial insulation of 620 PJ for Energy and 49Mt for $CO_2$. This energy savings potential is equivalent to:

**15 coal-fired power plants of 500 MW or**
**The energy consumption of 10 million households or**
**The energy consumption of the Dutch industry.**

The annual $CO_2$ reductions potential is equivalent to 18 million middle class cars each running 12.500 kilometers per year.

The potential can be tapped cost-effectively. Insulating bare surfaces to cost-effective levels and repairing damaged insulation in industries EU-wide requires initial investments of about 900 million Euro. This one time investment would represent an energy savings potential of about 460 PJ, which at current prices would save industries 3.5 billion Euros every year.

In order to provide the industry with a standardized, high quality thermal energy audit tool focusing on the thermal performance of technical insulation systems the EiiF founded the TIPCHECK Programme. TIPCHECKs quantify the amount of energy and money an industrial facility is losing with its current insulation system (including uninsulated parts).

The TIPCHECK programme is also a qualification programme for insulation engineers to become EiiF certified thermal energy auditors, also known as TIPCHECK engineers. Auditors that can support you in evaluating insulation systems of existing facilities, planned projects or retrofits and demonstrate how more efficient insulation could save energy, save money and contribute to a cleaner environment through reduced $CO_2$ emissions.

Paroc has now trained a number of Tipcheck Engineers in order to increase its service level and support the market even better with energy saving advice.

More information about the Tipcheck

***Ecofys** is a leading consultancy agency in renewable energy, energy & carbon efficiency, energy systems & markets and energy & climate policy. They support public and corporate organisations alike to adapt to changes and identify new opportunities quickly.*

*The **European Industrial Insulation Foundation (EiiF)** is a European nonprofit foundation registered in Switzerland. It has been set up to promote and establish the use of industrial insulation as a widely understood and accepted means of achieving sustainability. Since its foundation EiiF has established itself as a resource for industries that need to reduce $CO_2$ emissions and save energy.*

# NATIONAL AND INTERNATIONAL STANDARDS

*Paroc follows below-mentioned standards and can provide advice and support on request:*

ISO 12241 · CINI · FESI · SFS · VDI · DIN · AGI

BS · PN · SSG · NORSOK · NF · FZ · ASTM

and more





# SUSTAINABILITY

CONTENTS
CONTACT US
PIPE SECTIONS
BENDS AND SEGMENTS
LAMELLA MATS
WIRED MATS
SLABS
MATS
CLAD SYSTEM
ACCESSORIES

# 01 INSULATION IS A KEY TO THE SOLUTION

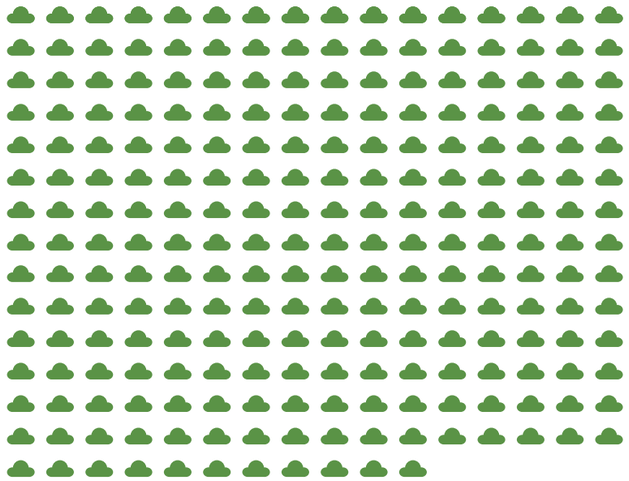
**SPEND**

1

tonne $CO_2$

in producing energy efficient stonewool insulation

**SAVE**



200 t $CO_2$ over a 50-year period

75% of the total energy reduction potential of buildings comes from insulation





moisture proof

durable

# PAROC LASTS A LIFE CYCLE

fire safe

sound reducing

reusable

energy efficient

safe

Paroc stonewool maintains its insulating performance and dimensions during the life cycle of a building.

# CONTACT





## CONTACT US

- Paroc Headquarter
- Factory/Subsidiary
- Sales office

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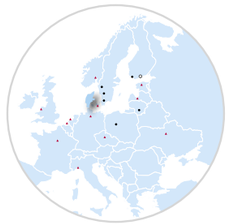

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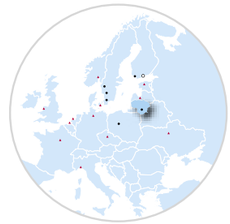

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*Building Insulation offering covers a wide range of products and solutions for all traditional building insulation. The building insulation products are mainly used for the thermal, fire and sound insulation of exterior walls, roofs, floors and basements, 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 offering includes thermal, fire and sound insulation in HVAC systems, industrial processes and pipework, industrial equipment as well as shipbuilding and offshore industry.*

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