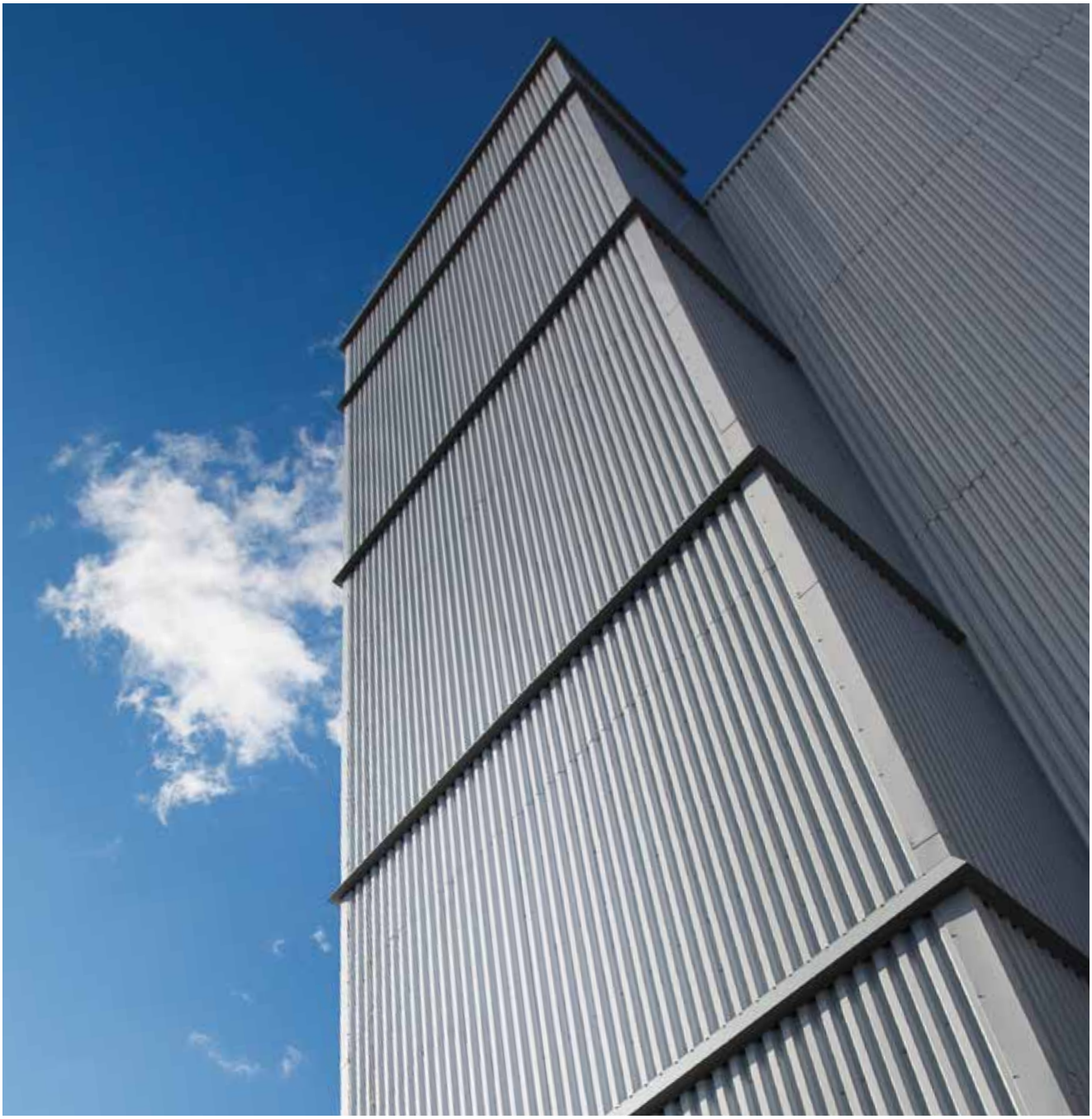
PAROC®
Better built environment

SOLUTIONS FOR HVAC INSULATIONS



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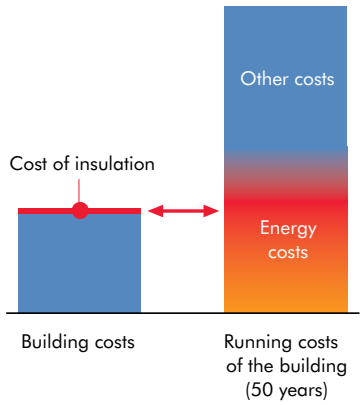
DESIGN IS THE BASIS FOR BEST VALUE

In designing an HVAC system, the accompanying insulation solution must be carefully considered. A good insulation solution not only protects against fire and condensation as well as offering good thermal resistance and sound insulation, it also offers the best value for the investment.



The total costs of the building during its lifetime. Source: VTT and Motiva Oy, Finland

DECREASE ENERGY USE

In addition to the obvious fire safety benefits of properly insulating an HVAC system, there are numerous other advantages for the building's owners and operators. One extremely important benefit is reduced heat transfer, leading to decreased energy use. This generates enormous savings in operating costs. By choosing an insulation solution that retains its properties over the entire lifetime of the building, the HVAC system will also have a longer service life and require less maintenance.

CONSIDER THE TOTAL COSTS

In order to choose an insulation solution that generates the lowest total costs, the total lifetime cost of the installation must be taken into account. The total lifetime cost is made up of material and installation costs and operating costs, which depend on energy prices, extent of use, and maintenance, for example. When the unlimited service life and lack of maintenance associated with PAROC stone wool solutions is considered, greater insulation thickness can obviously have a very positive effect on the total costs of an installation.

The average cost of insulation is typically about 5–10% of the HVAC system's building costs. An investment in insulation easily results in substantial savings in heating costs during the lifetime of the building.

VALUE THE ENVIRONMENT

One of the biggest threats to the global environment is climate change caused by greenhouse gases. Buildings consume almost 40% of the primary energy used in Europe. Ventilation and air conditioning, along with cooling systems, consume about 30% of the heating energy of new residential buildings.

As well as leading to lower energy consumption in the building, the right insulation solution contributes to a reduction in greenhouse gas emissions at the energy generation level.

Having a well-insulated HVAC system not only reduces the energy consumption for the benefit of the environment, it also significantly decreases the usage costs and maintenance costs regardless of the heating and heat delivery system used.

PAROC® STONE WOOL – NATURALLY DURABLE INSULATION FOR HVAC APPLICATIONS

Heating, ventilation, and air conditioning (HVAC) should make our buildings comfortable, healthy, and safe places in which to live and work. It is not enough, however, just to install the pipes and ducts. Durable, fire-safe and energy-efficient HVAC solutions must be built using durable, fire-safe and energy-efficient products. All PAROC products are made of stone wool, the properties of which make it ideal for HVAC applications.

EXCELLENT THERMAL INSULATION ON A WIDE SERVICE RANGE

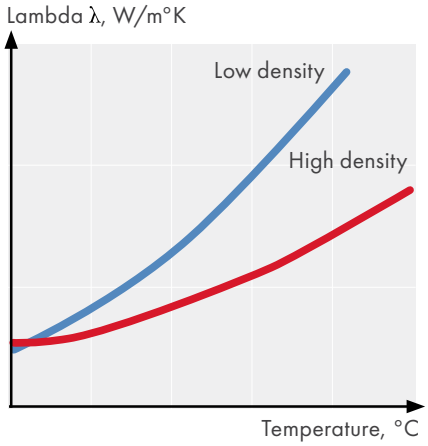
The main purpose of thermal insulation is to prevent heat flow to or from the application to the surroundings. The thermal conductivity of the insulation material is one of its most important properties. Stone wool has low thermal conductivity, which makes it highly resistant to heat transfer. Reducing heat transfer results in direct savings in energy usage and costs.

There is a need for comfort cooling in buildings to keep the temperatures on a desired level. When deciding on the insulation solution, attention should be paid to the fact that it costs approximately three times more to supply cooling than heating. For this reason, it is important that comfort cooling pipes are insulated in the same way as hot pipes, taking into account the economic and environmental aspects.

EFFECTIVE SOUND INSULATION

Air conditioning and ventilation equipment can create a lot of noise that can adversely affect the environment for a building's occupants and employees. Due to their porous fibre structure and optimal density, PAROC products provide good sound absorption and reduce unwanted noise. A quiet environment is a more pleasant one in which to live and work.

Graph 1.
Thermal conductivity of stone wool.



PROTECTION AGAINST FIRE

Stone wool is non-combustible as it is made of stone which does not burn or ignite. Stone wool insulation does not contribute to the spread of fire. On the contrary, it protects against fire. PAROC Stone wool is Euroclass A1 classified, which is the highest class of the building material fire performance.

LONG-LASTING SOLUTION WITH UNCHANGING PROPERTIES

Stone wool retains its form, compressive strength and thermal resistance, even at high temperatures, over the lifetime of the building. This means that a PAROC insulation solution stays efficient and saves you energy and money throughout the entire lifetime of the HVAC equipment.

ENVIRONMENTALLY FRIENDLY

PAROC stone wool products are made from clean, natural material. They are environmentally friendly throughout their lifecycle, causing no harm to nature during or after use. Stone wool 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 fulfil the requirements of Note Q of EU Commission Directive 97/69/EC. This means that stone wool fibres are biodegradable and are not classified as a possible carcinogen in humans. They do not contain asbestos.

Our health and safety data sheets are available on our web pages at www.paroc.com.

Stone wool is an extremely pure material, and both the Building Information Foundation RTS and Sisäilmayhdistys (the Finnish association for indoor air) classify PAROC Stone wool in the best M1 class because it does not pollute indoor air.

PAROC stone wool can withstand very high temperatures. On the left, a stone wool sample before the non-combustibility test and, on the right, after the test.

Stone wool does not melt even in contact with fire. PAROC stone wool improves fire resistance, which helps limit the damage if there is a fire.

LOW WATER ABSORPTION

Water absorption is an important property, since there are many applications where the insulation might be exposed to water, high humidity or other liquids. If the insulation absorbs water, this might increase damage to the installation e.g. corrosion and also dramatically lower the insulation properties of the product.

Tests according to EN 1609 and EN 13472 prove that PAROC products do not absorb or store moisture. The water absorption of PAROC stone wool products is clearly below the required 1 kg/m². A building insulated with PAROC products stays dry, which guarantees healthy indoor air and a long service life for the building and its HVAC system.

PAROC stone wool is non-capillary and does not absorb or store water.

SOLUTIONS TO PREVENT CORROSION

Moisture in uninsulated or poorly insulated pipes and ducts results in corrosion over time. Corrosion of the pipes and ducts can lead to leakages which cause damage to the building and equipment. To prevent corrosion and guarantee a long service life, the pipes and ducts must be insulated against condensation with products that have a non-permeable facing. The wide range of facings available with PAROC Hvac products means that vapour permeation can be kept to an absolute minimum.

QUALITY AND ENVIRONMENT

PAROC stone wool is known for its high quality, reliability and many uses. To process the stone and use the material effectively in different applications requires knowledge and skill. Our expert knowledge comes from many years of experience and from a clear desire to meet our customers' ever changing needs.

Paroc factories have been certified according to the ISO 9001 Quality Management System and ISO 14001 Environmental System standards. This means that we have a clear organization and a structured system to deal with issues related to quality and the environment.

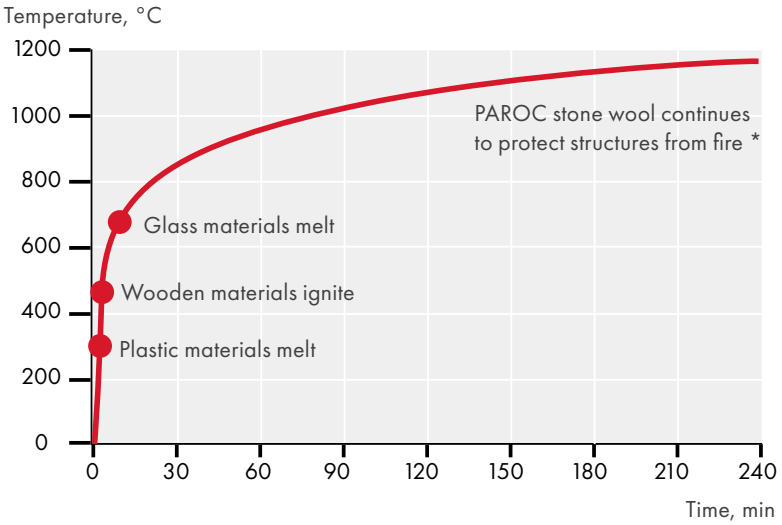
CERTIFIED AND TESTED PRODUCTS

As a manufacturer of building products, it is our responsibility to ensure that every product we put on the market fulfils the declared properties. All PAROC products are tested and have CE marking according to EN 14303. You can find more information about declared values for our products on our website at www.paroc.com

MAINTENANCE-FREE SOLUTIONS FOR YEARS TO COME

PAROC products retain their properties throughout the lifetime of the equipment being insulated, helping to reduce maintenance work and prolong service life. PAROC insulation solutions have been designed to make the installation process as quick and easy as possible. As well as making the installation itself safer and more economical, this also leads to fewer errors in installation, which increases the long-term reliability of the insulation.

Graph 2.
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. Standard combustion curve ISO 834.



* Technical Research Centre of Finland, combustion test PAL2103a/92

SERVICE AND KNOWHOW

Rock-hard facts mixed with information about our services and support that is what you'll find in this brochure. At Paroc, we are not only producers of stone wool insulation products – we also offer advice and services to make your job easier. So, we have developed a range of practical tools that are both appreciated and much used. If there is anything you are not sure about or if something is missing – here we are! We gratefully receive any feedback on how we can make our service even better.

SAVE ENERGY AND CALCULATE WITH PAROC CALCULUS

Paroc has made the product selection process as easy as possible. Thermal insulation thickness is determined starting with the function the insulation will serve. Some of the common requirements are that the insulation solution must be profitable, give a specified heat loss, provide a fixed surface temperature, prevent condensation and prevent freezing.

In order for these requirements to be complied with, calculations of the necessary insulation are made. You can calculate and test the most economical insulation thickness for your individual requirements using the PAROC Calculus technical insulation calculation program, which can be downloaded for free from our website at www.paroc.com.

TRAINING AT THE PAROC® ACADEMY

PAROC Academy is the name of our concept of education and awareness around the insulation and energy-wise construction. In our 75 years of operation, we have accumulated a lot of practical experience that we are happy to share with you. We arrange customized training e.g. in insulation theory, laws and regulations, combined with practical exercises. Contact us if you are interested and we will organise a training session that meets your needs.

TAILORED SOLUTIONS

At Paroc we can bring you numerous benefits for your product development. Already at the design stage you should think about what characteristics the insulation should have. Then you just need to get in touch with our product managers. At Paroc, we are experts in value-added insulation products and customized solutions. In many cases, we choose to make a personal visit to the site to see which insulation solution would be the most appropriate and how it should be designed.

WWW.PAROC.COM
The latest product news and the most current product information are always available on our website. At www.paroc.com, you can order product declarations and approvals or brochures. On our knowhow pages you will also find a large amount of theoretical knowledge on such issues as fire safety, energy efficiency and sustainability.

TECHNICAL SUPPORT
Every year we receive thousands of questions about insulation theory and products. No question is too big or too small for our insulation experts. We can advise on the need to insulate, the right products to choose, installation methods, and laws and regulations. If we cannot answer your question directly, we will ask for help from our wide network of contacts in all areas of the insulation field.

Many prefabricated chimney-elements include integrated PAROC Chimney Sections, which are easy to install and have exact dimensions.

A WIDE RANGE OF APPLICATIONS

The HVAC systems of modern buildings perform a multitude of roles, as this image illustrates. From hot and cold water pipes to smoke and exhaust pipes, the system must be insulated by a solution that is able to provide fire protection, good thermal insulation properties and, where necessary, sound insulation. Another key role of the insulation is to prevent condensation building up and causing damage to the pipes and surrounding structures and equipment.

Wastewater pipes

Pipe penetrations

Preinsulated ventilation machine

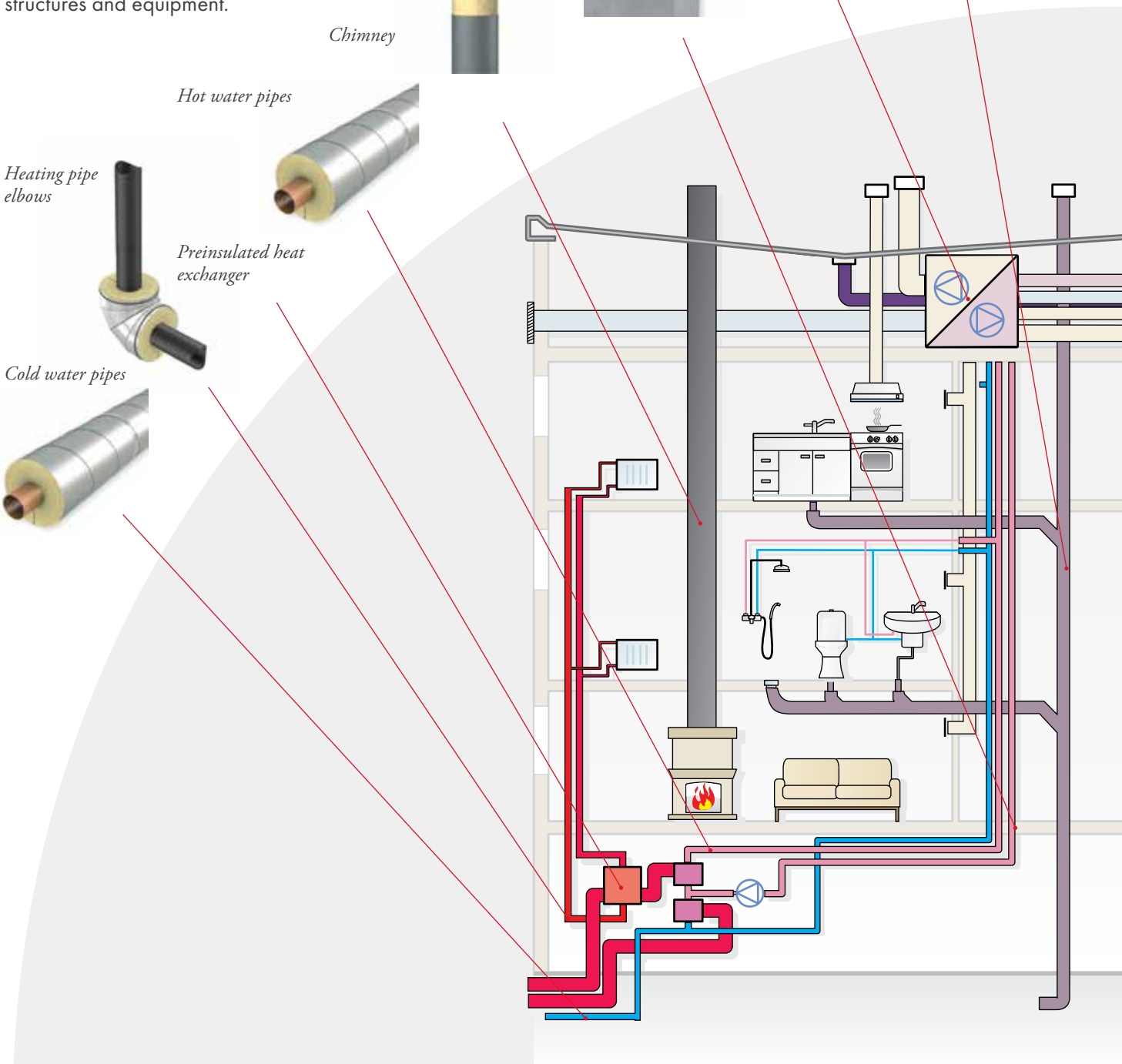
Chimney

Hot water pipes

Heating pipe elbows

Preinsulated heat exchanger

Cold water pipes



Drainpipes

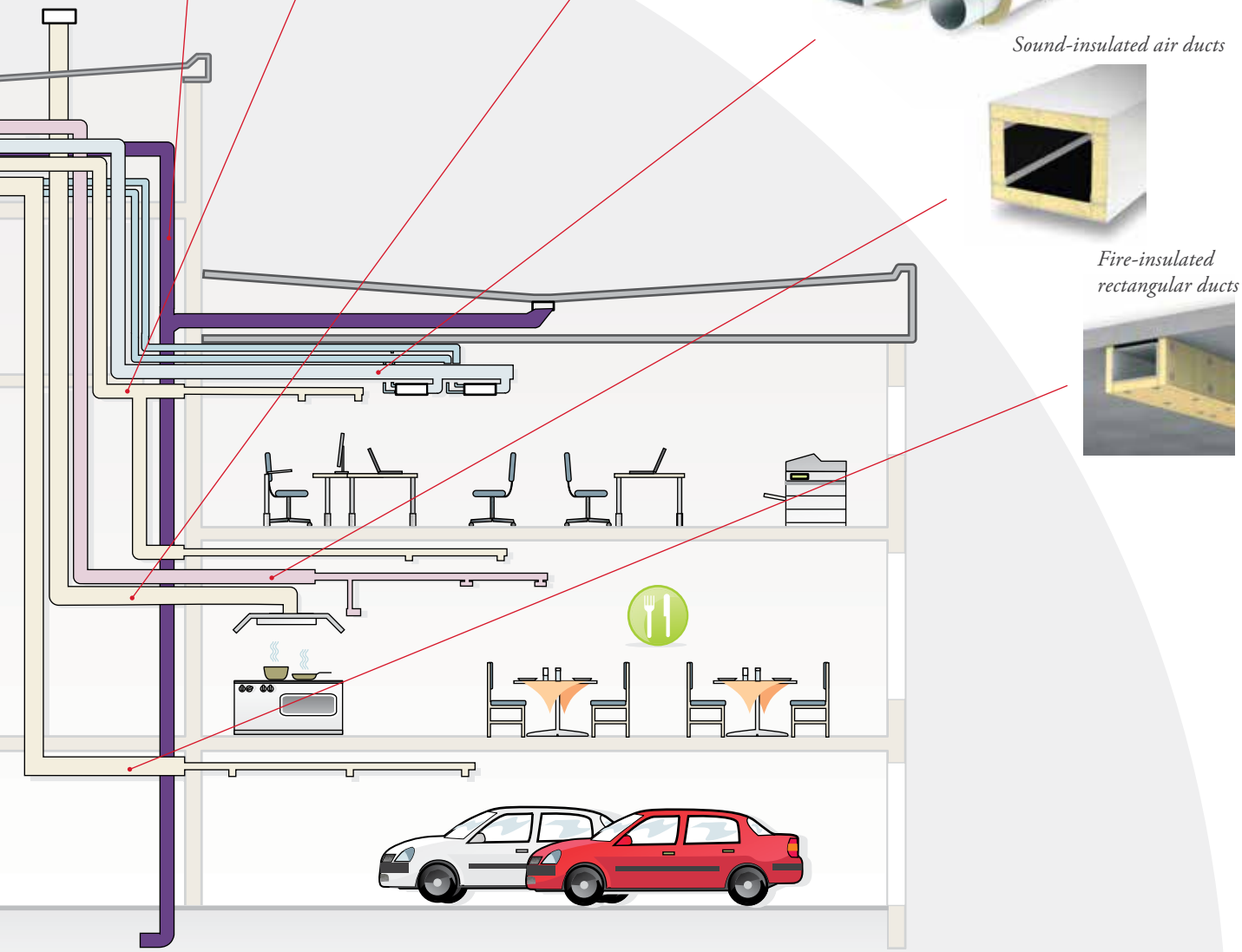
Thermally insulated air ducts

Fire-insulated air ducts

Condensation-insulated air ducts

Sound-insulated air ducts

Fire-insulated rectangular ducts



INSULATION SOLUTIONS FOR PIPING SYSTEMS

Pipes are integral parts of HVAC systems, and their insulation requirements vary depending on whether they transport warm or cold water. The primary reason for insulating pipes is to keep the temperature of the water in the pipes within the correct margins. The benefit you get with the proper insulation solutions are reduced energy consumption and lower operating costs.

SAVING ENERGY

Hot water pipes and heating water pipes are warm pipes and they need be effectively insulated so that the water is at the right temperature where it is used. Furthermore, by reducing heat loss, the insulation should minimise energy consumption, hence reducing operating costs. Heating water pipes are insulated in order to restrict heat loss, to keep the water inside the pipes warm and to ensure that the heat is transported to the right place at the right time. Similarly, this is needed for cold pipes since it is even more expensive to reduce the temperature than to increase the temperature of the medium in the pipe.

HEALTH CONSIDERATIONS

Keeping the correct temperature in pipes prevents bacterial growth. If drinking water in cold pipes gets warm, it can lead to bacterial growth (e.g. Legionnaires' disease) within the water. This is obviously undesirable, and an issue that authorities are taking increasing notice of. In order to ensure that the water in cold water pipes stays cold, the pipes must have sufficient thermal insulation to prevent heat from the surrounding environment being transferred to the pipes.

BENEFITS OF PAROC PIPE INSULATIONS:

- Full product range for pipes and pipe elbows – easy and fast design
- Minimised heat loss – lower energy cost
- Maintain the correct temperature – prevent bacterial growth
- Environmentally effective solution – reduced CO_2 emissions
- Products with facing need no additional cladding – time and money saved in installation
- Fire-safe insulation material – more evacuation time in case of fire
- Long-lasting, maintenance-free solutions – investment for life

PREVENTING CONDENSATION

Warm air contains moisture that condenses when it meets a cold surface. The surface must be insulated so that the outer surface temperature of the insulation becomes higher than the condensation temperature of the surrounding air. Over time, condensation can cause damage to pipes that reduces their service life.

The most important element in the insulation solution in terms of reducing water vapour transmission is the water vapour barrier. Paroc supplies a range of different products faced with an aluminium foil water vapour barrier for use in cold pipe applications.

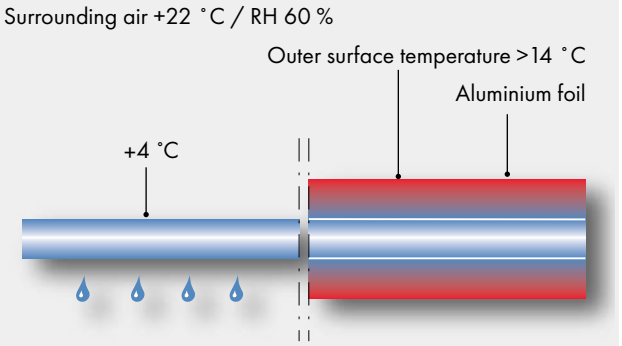
PROTECTION AGAINST FREEZING

If a cold water pipe is situated in an unheated area – outside or in a cellar, for example – the pipe and its contents need to be protected against freezing. If the contents of the pipe freeze, not only does the HVAC system cease to function, but the pipes could burst, causing extensive damage. The use of a good thermal insulation solution, the thickness depending on the individual case, offers effective protection against freezing.

RIGHT PRODUCTS AND EASY DIMENSIONING

Paroc has a range of products and solutions that are specially designed for both hot and cold pipes. You can find the right product for your application in the product selection table on page 16. With the PAROC Calculus technical insulation calculation program you can easily dimension the insulation solution. In order to use this software, you will need to input data such as the pipe dimensions, material temperature, and ambient temperature. The set applied insulation thickness, set heat loss, or set surface temperature are also required to complete the calculations.

When the outer temperature is +22 °C and the pipes inner temperature is +4 °C, insulation is needed to prevent condensation. Aluminium foil-faced insulation prevents condensation build-up, which would not only damage the pipe but, as seen on the un-insulated pipe, drip and cause damage to surrounding constructions.



WITH THE PAROC CALCULUS PROGRAM YOU CAN EASILY DIMENSION THE INSULATION SOLUTION. CALCULATIONS ARE BASED ON EQUATIONS DESCRIBED IN STANDARD EN ISO 12241.

WARM PIPES

For hot water pipes, any heat loss is energy loss which results in increased costs. Only the boilers can heat the water to the correct temperature, after which the pipes must ensure that it arrives at its destination at the right temperature – otherwise the system cannot be considered to be functioning correctly.

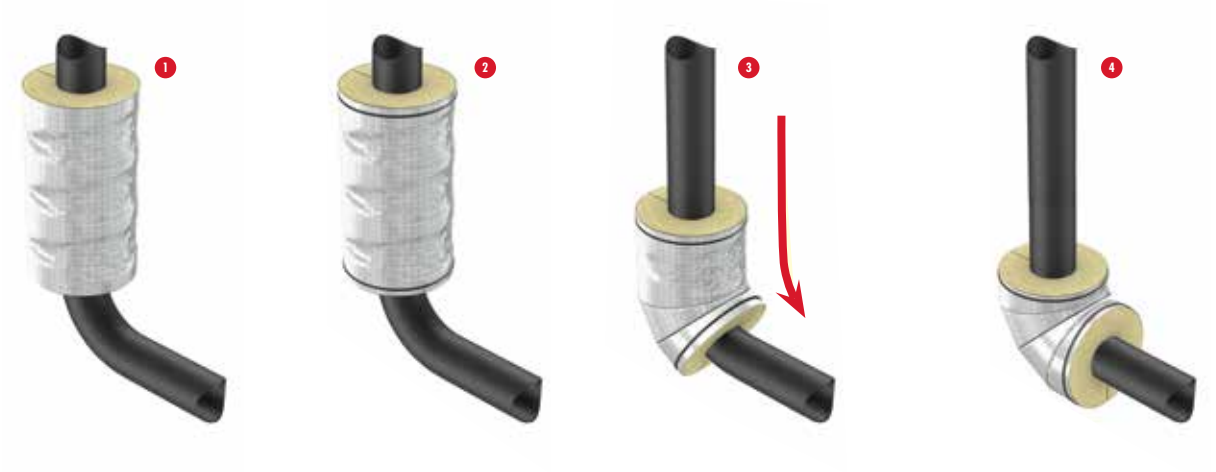
Alternatively, a set heat loss may be required in order to produce a set surface temperature in the pipe, and the insulation thickness needs to be calculated carefully in order to achieve this. In these cases, insulation can be used to eliminate the risk of burns from the outer surface of the pipe.

COLD PIPES

Cold water and comfort cooling pipes are insulated in order to restrict heat flowing from the surrounding environment to the pipes. The primary concern when insulating cold pipes is to prevent warming of the contents of the pipes in order to keep their temperature within the required margins, and also to prevent condensation and freezing.

The regulations concerning allowed heat loss or maximum surface temperatures vary from country to country and are defined in local specifications and building codes. For more information, please check your country website.

Use PAROC Hvac Bend AluCoat T to insulate the pipe elbows as effectively as straight pipes. The insulation work is quick, easy, and error-free.



PRODUCTS AND SOLUTIONS

Effective insulation is not restricted to straight pipe sections, as Paroc has a good solution for pipe elbows as well. PAROC Hvac Section AluCoat T and PAROC Hvac Bend AluCoat T are ideal for thermal and condensation insulation for pipes.

In most cases, these products don't require any additional cladding, which makes the installation work quick and easy. If there is a need for insulation to have an appearance that blends into the background, we recommend PAROC Hvac GreyCoat sections and bends.

Pipes insulated with PAROC Hvac Section GreyCoat T products.

INSTALLATION

In addition to the material properties of the insulation solution, the effectiveness of the solution depends greatly on how well it is installed.

PAROC Hvac Section AluCoat T, with its self-adhesive tape in the longitudinal joint, makes insulating pipes quick and easy. We recommend taping the radial joints separately and adding spiral steel wire to ensure long-term fixing.

In case of condensation insulation, all joints need to be well taped to ensure that water vapour from the surrounding warmer environment does not come into contact with the colder pipe surface and cause condensation.

SMOKE AND EXHAUST PIPES

Smoke and exhaust pipes are exposed to very high temperatures in everyday use. Therefore, they require a non-combustible insulation solution that keeps its form and compression strength even at high temperatures, ensuring that the fire-resistance properties are retained.

PAROC Pro Section 100 and PAROC Pro Wired Mat 100 provide excellent thermal insulation and fire protection for your pipes. Insulation also increases the service life of the pipes by preventing flue gases from cooling to the point where they would condense and leave corrosive deposits on the inner surface of the pipe.

DRAINPIPES AND WASTEWATER PIPES

When cold rainwater is led from the roof through the building, the drainpipe should be insulated against condensation to prevent the warm indoor air from condensing on the pipe. The best product for this purpose is PAROC Hvac Section AluCoat T, with all joints carefully taped. Similarly, wastewater pipes inside buildings need to be insulated against condensation and, depending on local specifications, should also be insulated against fire and sound in certain areas. This is normally done with PAROC Pro Wired Mat 100 or PAROC Pro Section 100.

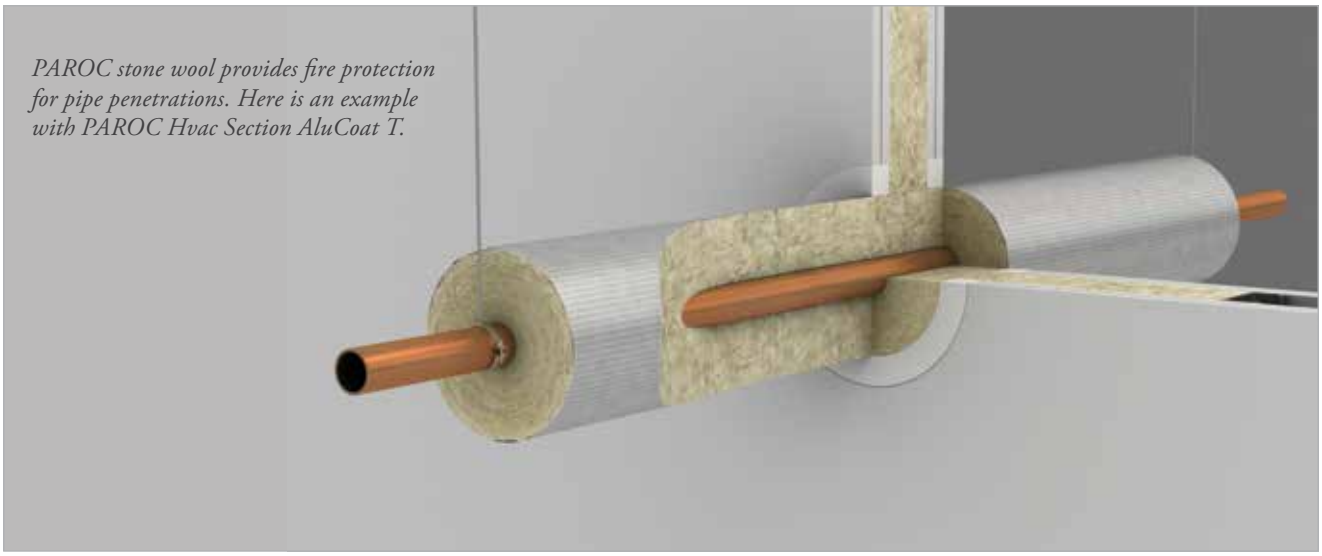
Wastewater pipes are fitted with PAROC pipe sections primarily to insulate against fire and sound. Sometimes thermal insulation is also needed.

Drainpipes inside the building are insulated with PAROC Hvac Section AluCoat T to protect against condensation.

FIRE-RATED PIPE PENETRATIONS

Pipes passing from one fire area to another can often present problems because they provide a potential channel through which fire could spread in a building. There are several ways of ensuring that pipe penetrations do not become a conduit for fire. One of them is to insulate the pipe penetrations with non-combustible PAROC stone wool products.

Pipe penetrations insulated with PAROC products provide superior fire protection. Pipe penetrations should be tested according to the harmonised EN 1366-3 standard. Even though the testing standard is harmonised, requirements and solutions can vary from country to country. Please ask your local Paroc representative for more information about pipe penetrations.



PAROC stone wool provides fire protection for pipe penetrations. Here is an example with PAROC Hvac Section AluCoat T.

PRODUCT SELECTION FOR PIPE INSULATION

Application	PAROC Pro Section 100	PAROC Hvac Section AluCoat T	PAROC Hvac Bend AluCoat T	PAROC Pro Wired Mat 100	PAROC Chimney Section
Hot water pipes		●	●		
Heating pipes		●	●		
Cold water pipes		●	●		
Pipe penetrations		●			
Comfort cooling pipes		●	●		
Wastewater pipes	●	●	●	●	
Drainpipes		●	●		
Smoke and exhaust pipes	●			●	● *

* Industrially manufactured chimneys

Regulations and dimensions vary from country to country. In addition to the information given in the table and on our website, your local Paroc representative will be happy to provide you with further details about local regulations.

INSULATION SOLUTIONS FOR VENTILATION SYSTEMS

Ventilation systems require insulating for a number of reasons: fire, thermal, sound, and condensation insulation, both individually and in any combination. Paroc has a wide range of advanced products and tested solutions that are specially designed to answer the insulation requirements of ventilation systems.

THERMAL INSULATION

Ventilation systems require thermal insulation in order to restrict and control heat loss. In ducts that transport warm air, reducing unnecessary heat loss is financially and environmentally beneficial. By properly insulating the ducts you will restrict the unwanted heating of the surrounding environment and reduce the energy usage, which saves you money.

CONDENSATION INSULATION

With a high humidity, air can easily condense on the outer surface of ducts containing material with a lower temperature than the ambient air temperature. Once this has happened, the water can start dripping and cause damage and discoloration to ceilings and floors. Over time it can cause damage to the ducts that reduces their service life. With the correct insulation solution this kind of condensation is prevented and the service life of the ducts is prolonged.

BENEFITS OF PAROC VENTILATION INSULATIONS:

- Minimised heat loss – lower energy cost
- Multiple functions in one product – fire, thermal, condensation and sound insulation
- Environmentally effective solution – reduced CO_2 emissions
- Products with facing need no additional cladding – time and money saved in installation
- Fire-safe insulation material – more evacuation time in case of fire
- Long-lasting, maintenance-free solutions – investment for life

WARM AIR

When transporting warm air through long ventilation ducts, the temperature of the air should be kept at the specified temperature. If a specific heat loss is required, the installation specifications must be taken into account when planning the insulation solution and its thickness. This is most easily done using our free dimensioning software, PAROC Calculus, which is available from our website at www.paroc.com.

COOL AIR

Ducts that transport cool air also need a good thermal insulation solution because it costs approximately three times more to provide cooling compared to heating. Another purpose of insulation is to prevent condensation by maintaining the lower temperature inside the duct through insulating them from the warmer ambient air temperature. If the cool air in the duct is heated by the surrounding air, not only will the HVAC system function less effectively, but more energy will be needed to maintain the correct temperature of the duct.

With properly insulated ducts, this is easily achieved, meaning the whole ventilation system can work as designed and less equipment calibration is required.

PRODUCTS AND SOLUTIONS

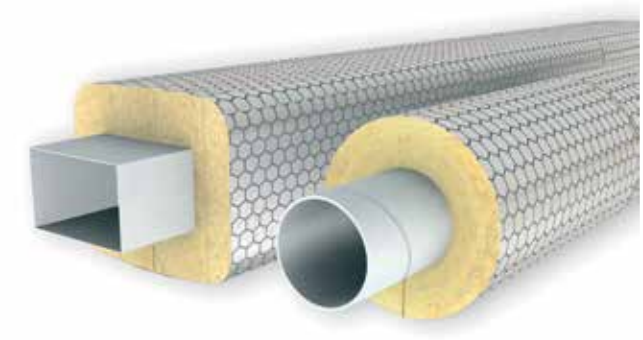
PAROC aluminium foil-faced mats, lamella mats or even wired mats can all be used in thermal insulation applications involving round ducts, while for rectangular ducts PAROC aluminium foil-faced slabs and lamella mats are ideal.

The most common condensation insulation products for ducts are PAROC lamella mats and aluminium foil faced mats with carefully taped joints. PAROC AluCoat and GreyCoat products provide a good vapour barrier for condensation insulation needs.

The installation specifications must be taken into account when planning the insulation solution and its thickness. If a specific heat loss is set, the insulation thickness can be calculated. This is most easily done using our free dimensioning software, PAROC Calculus, which is available from our website at www.paroc.com.

To prevent condensation, the facing material should have a good vapour barrier. PAROC AluCoat products are the best solution and should be installed with bands, and all joints taped very carefully.

Thermal insulation with aluminium foil-faced mats and lamella mats are installed either with aluminium bands or pins and washers; wired mats are installed with galvanized wire or clams.



WITH THE PAROC CALCULUS PROGRAM YOU CAN EASILY DIMENSION THE INSULATION SOLUTION. CALCULATIONS ARE BASED ON EQUATIONS DESCRIBED IN STANDARD EN ISO 12241.

FIRE PROTECTION OF VENTILATION DUCTS

Because ducts often pass from one fire area to another, ventilation systems demand proper fire protection to prevent fire from spreading inside the building. PAROC products provide maintenance-free fire protection for the whole lifetime of the installation.

RELIABLE FIRE SAFETY

In addition to their insulating properties, PAROC solutions provide a reliable structural fire safety solution that can eliminate the need for mechanical fire safety equipment, such as sprinklers and dampers.

Buildings with a commercial or domestic kitchen need flue ducts to carry the fumes out of the building. PAROC fire insulation products are ideal for this application, as they prevent the spread of fires caused by burning fat in the ducts.

WALL PENETRATIONS

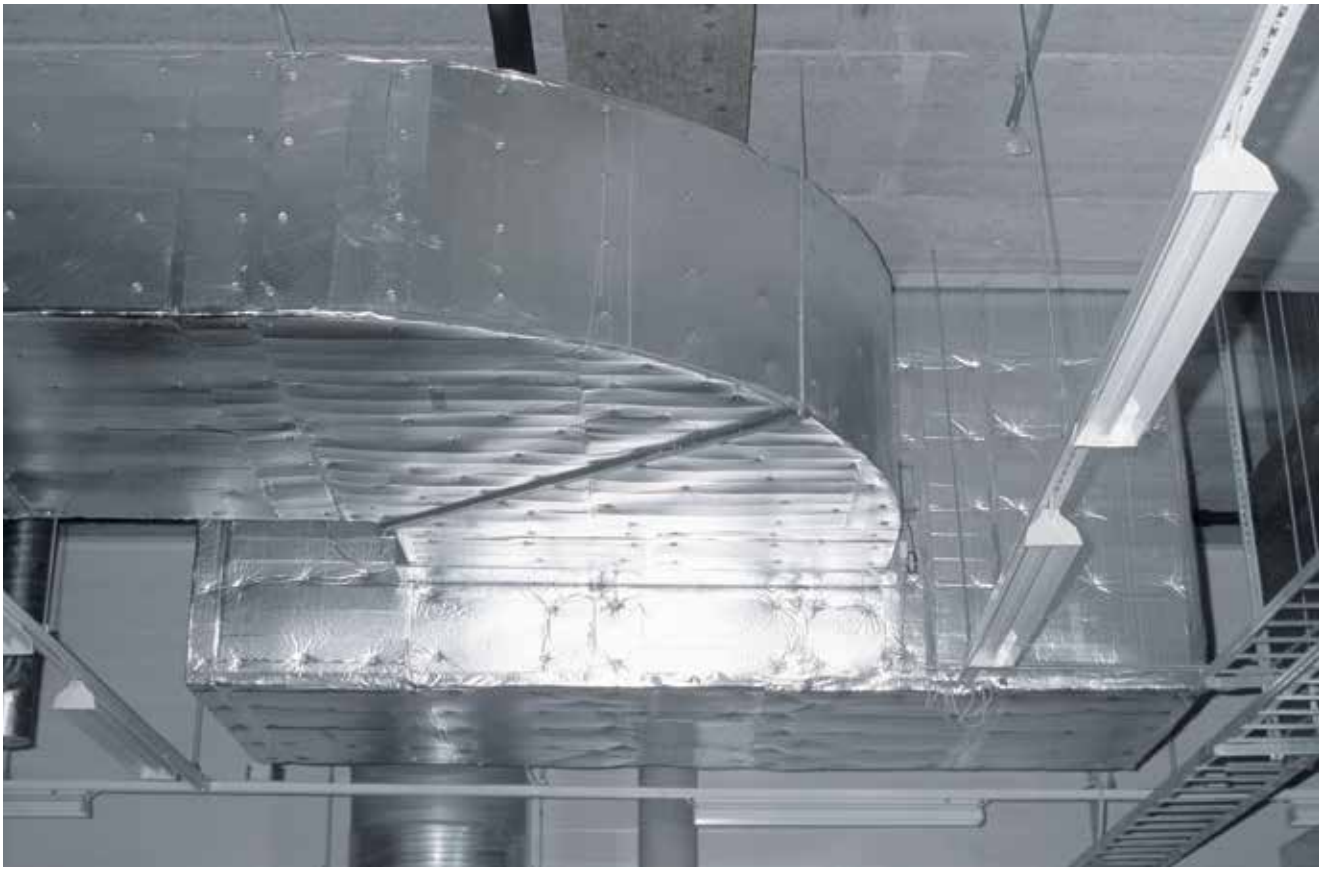
Wall penetrations are an important part of a fire-resistant duct system, and it is crucial that they are prepared according to an approved system. PAROC stone wool is an excellent material used in several solutions. The penetration must be designed so that the temperature on the unexposed side does not get too high, but also prevents flames from passing through the wall. Penetrations need to be able to withstand fire for as long as the wall does.

PRODUCTS AND SOLUTIONS

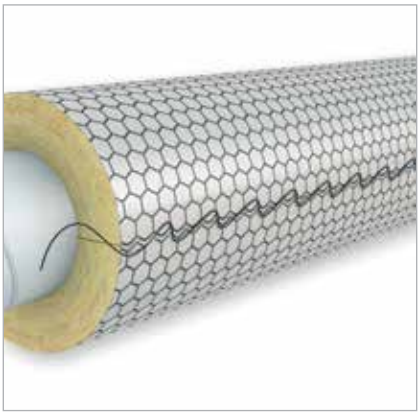
PAROC products are classified as non-combustible according to the EN ISO 1182 international standard. PAROC wired mats, fire slabs, and pipe sections can all be used for duct-related fire insulation applications in all types of structures and solutions, without restrictions. Not all products on the market classified as non-combustible can be used as fire insulation.

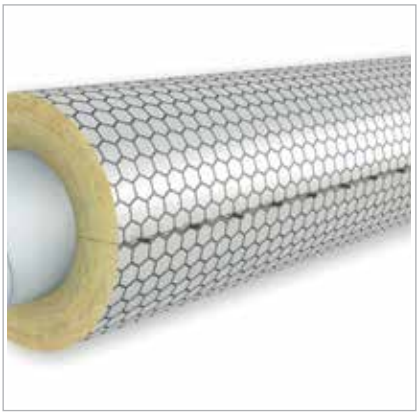
Testing of fire-resistant ducts can be performed according to the harmonised EN 1366-1 standard. Even though the testing can be carried out according to a harmonised standard, fire regulations vary from country to country. In addition to the information given here, and on our website, your local Paroc representative will be happy to provide you with further details about local regulations.

Fire insulation of the ventilation system can be carried out with PAROC fire slabs for rectangular ducts, and PAROC wired mats for both circular and rectangular ducts. Slabs are fixed with pins and washers or screws, while wired mats are fixed from the net to each other.

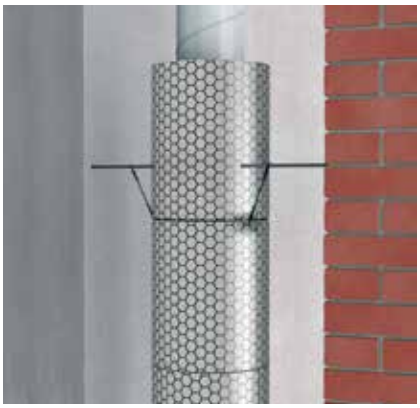


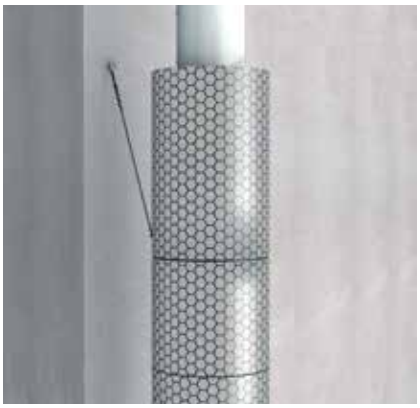
On circular ducts, the wired mat is cut to the right length according to the outer diameter of the insulation. The pieces of mat are fixed to each other from the net either with separate wire, hooks, or by rounding the eyes of the net together.



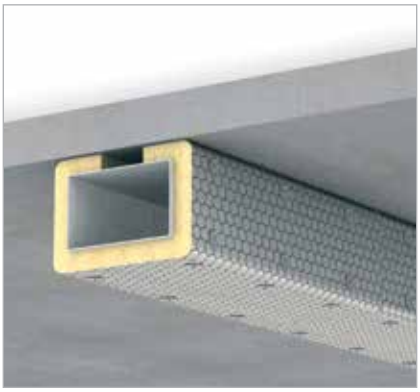


With long vertical ducts, the insulation needs to be fixed to the concrete building structure. This can be done with steel wire or steel bars and wire. Methods vary locally, so please check the valid requirements.





Rectangular ducts close to a fireproof ceiling are fixed with pins. If the distance from the duct to the ceiling is less than the required fire insulation thickness, the upper side is allowed to remain uninsulated. If the distance is the same, only part of the upper side requires insulation. Because the rules and regulations vary from country to country, they must always be checked locally.



NOISE REDUCTION OF VENTILATION DUCTS

Ventilation system equipment and the sound of air moving through ducts can create a lot of unwanted noise, which usually needs to be attenuated to make the environment more pleasant to live and work in. Because of their porous fibre structure and optimal density, PAROC products are ideally suited to noise reduction solutions.

INSULATION INSIDE THE DUCT

For sound insulation or attenuation applications, Paroc provides a range of products which are the most common form of sound insulation inside ducts.

The PAROC InVent product family has a number of slabs faced with glass fabrics or tissues on either one or both sides. They can be used inside ducts and as an absorbent material inside sound dampers in ventilation systems. These slabs have facings which are strong enough to allow mechanical cleaning of the insides of the ducts.

INSULATION OUTSIDE THE DUCT

Ducts work as a sound channel, carrying sound from one room to another. The insulation used outside the duct helps to reduce the amount of sound escaping through the duct wall. PAROC Hvac wired mats and slabs are ideal for this purpose.

When it is necessary to reduce the transportation of noise in the air flow, it is effective to install PAROC InVent slabs inside the duct.

PRODUCT SELECTION FOR VENTILATION INSULATION

The table shows examples of alternative products for selected insulation applications.

Application		PAROC Hvac Fire Mats	PAROC Hvac Mat AluCoat	PAROC Hvac Lamella Mat AluCoat	PAROC Hvac fire slabs	PAROC Hvac Slab AluCoat	PAROC InVent Slabs
Thermally insulated ducts	Circular		●	●			
	Rectangular			●		●	
Fire-insulated ducts*	Circular	●					
	Rectangular	●			●		
Condensation-insulated ducts	Circular		●	●			
	Rectangular		●	●			
Noise-reduced ducts	Circular	●					
	Rectangular	●				●	●
Ventilation machines					●	●	●
Silencing equipment							●
Other equipment				●	●	●	

*Regulations and dimensions vary from country to country. In addition to the information given in the table and on our website, your local Paroc representative will be happy to provide you with further details about local regulations.

Hartwall Areena, Helsinki

Paroc is the leading manufacturer of energy-efficient insulation solutions in the Baltic Sea region. The cornerstones of our operations are customer and personnel orientation, constant innovation, profitable growth and sustainable development. Paroc products include building insulation, technical insulation, marine and offshore insulation, sandwich panels and acoustic products. The products are manufactured in Finland, Sweden, Lithuania and Poland and as of 2013 also in Russia. Paroc has sales and representative offices in 14 European countries.

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

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

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

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

PAROC®

TECHNICAL INSULATION
Applications
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Replaces: January 2014
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