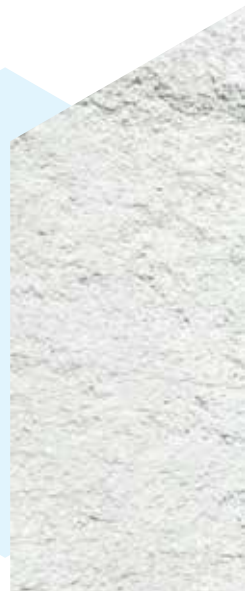




MINERAL
Fiber Solutions

**PERLI
WOOL**



→ RANGE OF PERLIWOOL® MORTARS

**PERLI
WOOL**



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1 ABOUT MINERAL FIBER SOLUTIONS

Mineral Fiber Solutions specialises in the production and supply of products for the passive fire protection and building insulation sector. From the start of our activities, **Mineral Fiber Solutions** has revolved around a policy of continuous improvement. That is why the company has made significant efforts and investment in research, development and innovation, collaborating with the main certification bodies and laboratories.

Through **Mineral Fiber Solutions** we offer you a wide range of products and services, ranging from products for fire protection, thermal insulation, sound insulation, spare parts and machinery accessories to services such as technical support, after-sales service, etc.

One of the defining elements of Mineral Fiber Solutions organisational approach is group work to optimise the benefits provided to customers

Customers have access to technical staff, trained by technicians and engineers, to provide solutions for any area in which **Mineral Fiber Solutions** has the requisite specialisation.





PERLIWOOL® is a new concept in dry-base spray-on mortars, composed of mineral wool and perlite with cement as the sole hydraulic binding agent, used mainly for the fire protection of construction elements.

In addition to being a specially-designed product for fire protection, **PERLIWOOL®** also has outstanding thermal and sound insulation properties.

PERLIWOOL® also prevents the formation of water condensation.

PERLIWOOL® does not contain gypsum, plaster or lime in its composition, nor does it include any toxic ingredients.

PERLIWOOL® has a rough appearance and a monolithic texture, once applied. Different finishes may be achieved through light smoothing with a float or roller, and a coat of suitable paint may be applied in order to create different shades for decorative effects, if required.

It is sprayed on directly using an air gun, with a dry process spraying machine, onto the elements to be protected. This, along with its excellent adhesion properties, means that the coating adapts perfectly to the element being protected without cracks or fissures, resulting in a continuous and elastic coating without joints.

Thanks to its small grain size and the absence of any imperfections in the mixture (small stones from the mineral wool), **PERLIWOOL®** may be used in spraying equipment without a grinding system or with the largest nozzle size open. This makes spraying faster and more efficient.



2.1 → PERLIWOOL® TECHNICAL SPECIFICATIONS

- Protects steel from the effects of corrosion. (Basic pH: 12).
- Does not contain gypsum, plaster or lime. Does not contain any toxic ingredients or pathogens and is asbestos-free.
- Its physical characteristics prevent the formation of condensation.
- Density: 300 kg/m³.
- Reaction to fire rating: A1.
- Flexural strength: 0.4 N/mm².
- Compressive strength: 0.4 N/mm².
- Coefficient of thermal conductivity: 0.078 W/mhK.
- Material adhesion: 0.019 N/mm².
- Sound absorption (15 mm): $\alpha_W = 0.60$ (H) Class C
- Sound absorption (30 mm): SAA = 0.89
NRC = 0.90
 $\alpha_W = 0.80$ (H) Class B
- Sound absorption (50 mm): SAA = 0.97
NRC = 1.00
 $\alpha_W = 1.00$ (H) Class A
- Weighted sound reduction: 48.6 dBA.*
- Packaging: 25 kg bags.
- Minimum practical thickness: 10 mm.
- Cure type: Drying.
- Initial set: between 12 and 24 hours, depending on ambient conditions and humidity level.
- Typical substrates: Steel structures, galvanised metal veneers, expanded metal mesh, concrete, brick, fibre cement, etc.
- Testing of a large quantity of solutions in an accredited laboratory.



* Values in situ for a wall composed of 12.5 cm ceramic brick plus spray-on application of PERLIWOOL® with an average thickness of 50 mm.

3

HOW TO APPLY PERLIWOOL®?

PERLIWOOL®, like most mortars, needs to be mixed with water to be applied to the desired surface.

As all the tests to certify its technical capabilities have been carried out using specific machinery to spray of the product, **PERLIWOOL®** can only be applied using the same type of systems as those used in the tests. Due to its lightness, **PERLIWOOL®** must be used with dry spraying or dry casting machines, as described in the machinery section.

3.1 → HOW TO APPLY PERLIWOOL®?

REQUIRED MACHINERY AND INSTRUMENTATION

For the correct application of **PERLIWOOL®**, the following equipment is required:

- **Spraying machine for the material in its dry state.**
- **Specific nozzle** to mix mortar with water.
- **Suitable hose to convey PERLIWOOL®** to the working area and water hose to convey the water from the water supply to the working area.
- **Water pump.** Only necessary in cases where the on-site water network does not have the necessary pressure and flow. For cases when there is no water supply, a water tank will also be necessary.
- **Covering means**, e.g. plastic sheets, to cover areas prone to soiling, e.g. tiles, ceramics, aluminium etc.
- **Thickness gauge** to check applied thicknesses.
- **Personal protective equipment** as described in the **PERLIWOOL®** safety data sheet.

3.2 → HOW TO APPLY PERLIWOOL®?

TYPES OF MACHINES SUPPORTED

Various machines are compatible with **PERLIWOOL®** application. The most common are specific machines which are suitable for spraying mineral fibre mortar and machines suitable for blowing mineral fibre or cellulose fluff. The main difference between the two is that the machines specifically designed for spraying have more powerful blowing systems, while blowing accessories are recommended for the blowing machines. The blowing force is important as it helps **PERLIWOOL®** to adhere better to the foundation, considering one of the possible causes of material detachment is the inadequate application of the material with blowing systems that are not powerful enough. The most commonly used machines are:



SPECIFIC SPRAYING MACHINES:

- Mortar feeding system using blades or shaftless spiral.
- Blowing systems using fan, turbine or Roots type volumetric compressor.



SPECIFIC BLOWING MACHINES:

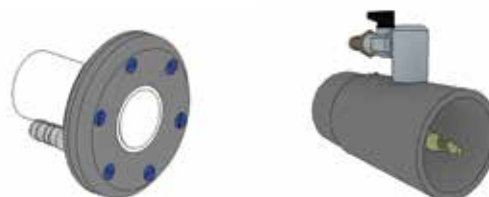
- Mortar feeding system using blades, shaftless spiral or gravity system.
- Blowing systems using fans or turbines.

It is advisable to adapt the hose length required to supply **PERLIWOOL®** to the machinery. The maximum recommended hose lengths range from 10 linear meters for 220V machines with fans to 200 linear meters for 380V machines and Roots type volumetric compressor systems.

3.3 → HOW TO APPLY PERLIWOOL®?

**TYPES OF SPRAY
NOZZLES**

THE NOZZLE USED FOR SPRAYING IS OF GREAT IMPORTANCE AS IT IS WHERE THE MORTAR IS MIXED WITH THE WATER.



There are two main types of nozzles on the market: nozzles that spray externally from the mortar transport tube and nozzles that spray internally from the mortar transport tube. All nozzles are composed of an inlet for the water hose and an inlet for the hose that transports the mortar. It is advisable to install a water valve to shut off the water flow. It is also advisable to control the switching on and off of the machine used from the application area. Depending on the type of application, it is advisable to use nozzles with a larger or smaller diameter. The most commonly used diameters are 50 mm or 60 mm, the smaller diameter is used to spray **PERLIWOOL®** onto small surfaces, such as metal profiles, and the larger diameter for larger surface applications such as slabs, party walls, etc.

3.4 → HOW TO APPLY PERLIWOOL®?

TYPES OF HOSES

THE MAIN FUNCTION OF THE HOSES IS TO SUPPLY WATER AND MORTAR TO THE SPRAY NOZZLE.



The most commonly used hoses for supplying **PERLIWOOL®** are those designed to withstand the wear and tear caused by the mortar. Polyurethane hoses, reinforced with a rigid PVC spiral, are commonly used. As for the water hose, any type of commercially available hose adapted to the diameter of the spray nozzle and water supply connectors can be used. The hose that supplies the material to the machine and the nozzle is connected to the machine by means of flanges. The water hose can be connected in the same way.

3.5 →

HOW TO APPLY PERLIWOOL®? SURFACE PREPARATION

Before spraying, all surfaces must be completely clean of residue and poorly adhered particles, remains of lamination, rust crusts, poorly adhered paint, etc.

For surfaces that cannot be coated, either due to the impossibility of adhesion or because they are not in the ideal conditions for spraying, metal mesh-type bonding agents must be used to ensure correct adhesion of the mortar.

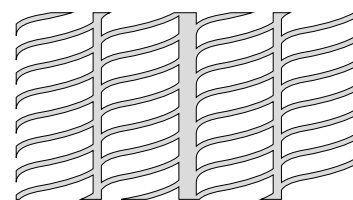


3.5.a SURFACES SUITABLE FOR PROJECTION:

The most common surfaces suitable for spraying are steel profiles which are free of impurities, steel with anti-rust primer (except those with oil-based primers), galvanised metal sheets, expanded metal mesh, bricks, cement renders and concrete. When applying on gypsum or plaster it is advisable to use bonding agents.

3.5.b BONDING AGENTS:

The only bonding agents that have been tested and approved by an accredited laboratory are metal bonding agents, such as ribbed mesh or triple twisted metal mesh. It is the responsibility of the applicator to use chemical bonding agents.



3.6→ HOW TO APPLY PERLIWOOL®? PREPARATION FOR THE WORKS

ALL NECESSARY SAFETY MEASURES MUST BE TAKEN TO PROTECT PERSONNEL IN ACCORDANCE WITH CURRENT REGULATIONS AND THE PERLIWOOL® SAFETY DATA SHEET.



The optimum application temperature for **PERLIWOOL®** is between 5 and 50 °C. If the temperature is below 5 °C, it is advisable to use a heating system to keep the supports at the correct temperature. It is recommended to plan the layout of the electricity and water connections well before starting the job, in order to install the appropriate means to supply them to the work area. Make sure the water pressure and flow rate are adequate. Check that the electrical current is adequate for the machine used. Connect the mortar and water supplying hoses to the machine and water supply respectively. Subsequently connect them to the spray nozzle. Pour the mortar into the hopper of the spraying machine. When necessary, proceed to cover any elements susceptible to staining.



3.7 → HOW TO APPLY PERLIWOOL®?

APPLICATION PROCESS

IT IS RECOMMENDED THAT THE MACHINE BE PLACED AS FAR AWAY AS POSSIBLE FROM THE WORK AREA, AS IT SHOULD NOT GET WET OR BE IN A DAMP AREA.

For more information, see the technical and safety data sheet for the machine used. It is advisable to pre-wet the surface to be protected. Start the machine according to the manufacturer's instructions and open the water flow. The material should be applied perpendicular to the surface that will be sprayed, projecting passes of 10 - 15 mm approximately, it should be applied from top to bottom in vertical applications, such as walls, metal profiles, concrete pillars, and at the convenience of the applicator in horizontal applications. It is important not to over-water the mortar, as excess water can cause poor adhesion or detachment of the product at the time of application or afterwards. One of the advantages of this type of mortar is that it drains excess water, so it is advisable to let the mortar drain for a few minutes between coats. Once the application is finished, it is advisable to wet the mortar with water.

3.8 → HOW TO APPLY PERLIWOOL®?

THICKNESS TESTING

THE USE OF THICKNESS MEASURING TOOLS IS RECOMMENDED.



It is advisable for the operator who applies the product to use thickness measuring tools. The thickness of the product is what determines the technical qualities of **PERLIWOOL®**. For this reason, it is important to use the minimum thickness recommended by the manufacturer for each construction solution.

The procurement of certification by engineering firms or external certifying authorities attesting the suitability of the installation is recommended once the work has been completed. For this purpose, it is advisable to obtain an average of the applied thicknesses, calculated according to the regulations in force.

3.9→ HOW TO APPLY PERLIWOOL®? FINISHES PERLIWOOL®

PERLIWOOL® ALLOWS FOR A WIDE RANGE OF FINISHES TO SUIT DIFFERENT AESTHETIC TASTES. THE MOST OUTSTANDING FINISHES ARE:

Finishes with visible PERLIWOOL®:

- Classic or rustic finish: Once **PERLIWOOL®** is sprayed, it forms a continuous rough layer, resulting in a rustic finish.
- Smooth finish: When **PERLIWOOL®** is wet, it can be flattened and moulded at will, resulting in a smooth and original finish.
- Finishes with **END LIQUID**: **END LIQUID** is a liquid finishing product which hardens the mortar. **END LIQUID** is flame retardant, which makes it ideal for applications that require fire resistance.



Finishes with not visible PERLIWOOL®:

PERLIWOOL® can be covered with almost all dry and wet wall partition systems, as well as with any existing false ceiling system on the market, installation systems independent of the mortar itself.

4

PERLIWOOL® RECYCLING

PERLIWOOL® IS A FULLY RECYCLABLE PRODUCT, AS IT MAINTAINS ITS TECHNICAL PROPERTIES AND CAN BE USED TO FILL CHAMBERS FOR THERMAL INSULATION AND ACOUSTIC ABSORPTION.



It should never be reused for spraying, since the machines used are not prepared for spraying the material when wet, as it could damage them and the product would lose its adherence capacity once set.

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STORAGE

PERLIWOOL® may be used for up to one year after manufacturing. It must be kept sealed up and dry.





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