

SELECTION & SPECIFICATION DATA

Generic Type	Dry-spray fireproof mortar, composed of rock wool, perlite, and cement as a hydraulic binder. Fire-resistant, with thermal insulation properties and good sound absorption, for passive fire protection.
Description	Fireproof mortar made of rock wool with a multidirectional fibrous structure for passive fire protection of structural elements of steel, concrete, mixed concrete-steel floors, wood, compartmentalization, and firebreak strips. Fire resistance of up to 4 hours depending on the construction system.
Features	• CE marking and ETA 18/0456 • Formulated with rock wool and high-performance lightweight fillers that provide a very low-density system. • Non-combustible. • Very low thermal conductivity for the thermal improvement of the protected structure. • Very good acoustic absorption and airborne noise reduction. • Asbestos-free - Complies with Directive 2003/18/EC and Royal Decree 396/2006. Contains no toxic components or pathogenic elements. • Good adhesion on different substrates. • Reduced protection thicknesses. Savings in transportation and labor. • Wide range of fire protection solutions.
Color	Greyish white - greenish grey
Finish	Textured Can be smoothed.
Primer	PERLIWOOL can be applied on bare steel and on primed steel, being compatible with two-component epoxy anti-corrosive primers, as stated in the product's ETA. For its application on other substrates such as galvanized steel, concrete, and masonry, no prior priming or adhesion bridge is required. PERLIWOOL neither promotes nor prevents corrosion. Although it has a pH of 12, it does not favor corrosion. For more information, please contact Carboline Technical Service.
Application Thickness	Maximum thickness per coat of 15 mm.
Theoretical Coverage Rates	$3 \pm 15\% \text{ kg/m}^2/\text{cm}^1$ ¹ Average value obtained under laboratory conditions.
Limitations	It is not designed for exteriors beyond the normal construction phases and timescales. It must not be exposed to the rain or water leakage. It is not recommended as a refractory mortar or where normal operating temperatures exceed 90°C.
Topcoats	Generally not necessary. Allows a large number of finishes - rough, smooth or with a mortar surface hardener. To select the coating that is most suitable for the work environment, contact the Carboline Technical Service department.

SUBSTRATES & SURFACE PREPARATION

General	Before application, all substrates must be clean and free from loose particles, dirt, oil, grease, condensation, rust or any other substance that may affect adhesion. For applications on plaster or metal sheet, the use of a bonding bridge is recommended. For substrates with vibrations or impacts, we recommend the use of ribbed mesh or simple twist mesh within the sprayed PERLIWOOL coating.
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SUBSTRATES & SURFACE PREPARATION

Steel	If the steel structure is not primed, it must be cleaned by abrasive blasting until a cleanliness grade of Sa 2½ is achieved, in accordance with ISO 8501-1 or equivalent, and then proceed with the application of an anticorrosive primer. If it is primed, it must be clean, free of loose particles, dirt, grease, or condensation that could affect adhesion. Additionally, it must be ensured that the existing primer is compatible with PERLIWOOL mortar, in accordance with the product ETA. The use of mesh is not necessary, although its use is recommended on beam flanges wider than 500 mm, columns where it is applied on a single face, and profiles subject to large deformations. Contact Carboline Technical Service for more information.
Galvanized Steel	PERLIWOOL can be applied directly to galvanized steel without the need for primer or adhesion promoter. Make sure that the substrate is clean, free of loose particles, dirt, grease, condensation, or salts that may affect adhesion. For more information, contact Carboline Technical Service.
Concrete	PERLIWOOL can be applied directly on concrete and ceramic elements without the need for a primer or bonding promoter. Ensure that the substrate is clean, free of loose particles, decorative paints, dirt, grease, or condensation that may affect adhesion. If there are doubts about the condition of the substrate or if an old coating is present, the use of a metal mesh before applying the mortar is recommended. Contact Carboline Technical Service for more information.

PERFORMANCE DATA

All test data was generated under laboratory conditions. Field testing results may vary.

Test Method	Results
Acoustic absorption According to ASTM C423-09a	NRC = 0.9, thickness 30 mm NRC = 1.00, thickness 50 mm
Acoustic absorption According to UNE-EN-ISO 354	α_w = 0.60 Clase C, espesor de 15 mm α_w = 0.80 Clase B, espesor de 30 mm α_w = 1.00 Clase A, espesor de 50 mm
Adhesion	>0.019N/mm ² (according to EGOLF EA/05)
Apparent density	285 ± 5 kg/m ³
Asbestos	Does not contain
Bending resistance	>0,4 N/mm ² (según EN 1015-11)
Compressive strength	>0,4 N/mm ² (según EN 1015-11)
Hardened density	300 kg/m ³
Reaction to fire	A1 (según EN13501-1)
Thermal conductivity	λ_{10} , dry, 90/90 = 0.060 W/m.K (UNE-EN 12667:2002) $\lambda_{D,90/90(23/50)}$ = 0.078 W/m.K (UNE-EN 12667:2002)

MIXING & THINNING

Mixer	The use of an application machine via dry method is recommended for transporting the mortar to the application area. Specific blowing, spraying, and injecting machines are compatible. Contact Carboline Technical Service for recommendations.
Mixing	The hydration and mixing of these mortars with water occurs at the nozzle and simultaneously. The water used must be clean to avoid clogging the water sprayers. The use of water filters is recommended to remove possible impurities. In the case of using blowing or injection machines for lightweight materials, the use of blowing accessories is recommended to ensure the mortar adheres better to the substrate. The regulation of the water flow may vary depending on the substrate onto which it is applied, weather conditions, height, distance to the substrate, as well as the experience and skill of the applicator.

MIXING & THINNING

Density	To obtain information and recommendations on how to obtain adequate density and performance, contact Carboline Technical Service.
Working Time	1 hour at 20°C. At higher temperatures, less usage time. The mortar can be compacted and shaped during the first hour after application. These times are indicative and may vary depending on ambient humidity and air circulation. The material's shelf life ends when it hardens and becomes unusable.

APPLICATION EQUIPMENT GUIDELINES

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

General	Specific spraying machines: Mortar feeding system by gravity, paddles, or screw auger. Blowing systems by fan, turbine, or volumetric compressor. Specific blowing or spraying machines: Mortar feeding system by paddles, screw auger, or gravity system. Blowing systems by fan or turbine. The use of blowing accessories that increase blowing power is advisable.
Pump	This material can be applied using a wide range of machines and dry application systems, among which the following stand out: TURBISOL 164/2 VEGATEC model JD-SI-01 ISOL INTERNATIONAL GM2+ XFLOC M95 Zellofant
Hose Length	Use flexible polyurethane hose reinforced with a rigid PVC spiral or antistatic flexible polyurethane hose reinforced with a rigid PVC spiral plus copper wire. The length of the hose will depend on the blowing power of the machine used. For single-phase 220 V equipment with fan, a maximum of 10 m is recommended, while for three-phase 380 V equipment and volumetric compressor systems such as Roots, up to 200 m of spray hose is recommended.
Nozzle/Gun	A nozzle with external or internal water spraying to the mortar transport tube can be used. Diameters of 50 to 60 mm depending on the desired finish. For small profiles, we recommend using a smaller diameter.

APPLICATION PROCEDURES

General	For projection on porous surfaces, it is recommended to perform a prior wetting of the substrate to be protected. Start the equipment according to the manufacturer's instructions and open the water valve to start the projection. The projection should be applied perpendicular to the substrate to be sprayed, projecting in passes of approximately 10 to 15 mm, applied from top to bottom on vertical projections, such as walls, metal profiles, or concrete columns. On sufficiently porous surfaces, it can be applied in thicknesses of 50 mm in 2 or 3 layers. Allowing a reasonable drying time between layers of about 30 to 60 minutes, so that the excess water is removed. It is recommended that the first coat does not exceed a thickness of 10 mm, until the excess water is removed. Once the application is finished, it is advisable to moisten the mortar with water. For high thicknesses, an adhesion promoter with metal mesh should be applied. Contact Carboline Technical Service if you need more information.
Finishing	Normally the finish has a rustic and rough texture. A smooth finish can be applied, in the wet state, giving a molding and smoothing to the substrate. Optionally, an END LIQUID finish can be applied, to harden the mortar finish and increase the strength of the support.

APPLICATION CONDITIONS

Condition	Material	Surface	Ambient	Humidity
Minimum	5°C (41°F)	5°C (41°F)	5°C (41°F)	0%
Maximum	38°C (100°F)	52°C (126°F)	43°C (109°F)	90%

The ambient and air temperature must be maintained 12 hours before, during, and after application. Mortars based on mineral rock fiber and cement are sensitive to water, so they must be properly protected. For additional recommendations, contact Carboline Technical Service.

CURING SCHEDULE

Surface Temp.	Between Coats
25°C (77°F)	45 Minutes

The application times for the coating are indicative and may vary depending on environmental conditions and air currents. In enclosed areas with little ventilation (basements, confined spaces, etc.), for the mortar to dry properly, it is recommended that the relative humidity does not exceed 60% and that there is adequate ventilation, which means at least 4 complete air changes per hour until the material is dry (or for at least 2 weeks after the application is finished).

CLEANUP & SAFETY

Cleanup	The box, the mixer, and the hoses must be cleaned with potable water. The mortar transport hose must be completely clean between uses to avoid possible blockages of the conduit. Excess wet or dry sprayed mortar must be cleaned with a brush or scraper by scraping.
Safety	Follow all safety precautions described in the mortar safety data sheet. The use of personal protective equipment is recommended, including application suits, masks, gloves, and eye protection.
Overspray	Adjacent surfaces should be protected against damage and splashing. Sprayed fireproof materials can be difficult to remove from surfaces and can damage architectural finishes.
Ventilation	In enclosed areas, ventilation must be no less than 4 complete air exchanges per hour until the material is dry.

TESTING / CERTIFICATION / LISTING

General	Acoustic Tests according to UNE EN ISO 354 standards, conducted in accredited laboratories. Acoustic Absorption: aw=0.60 Class C thickness of 15 mm aw=0.80 Class B thickness of 30 mm aw=1.00 Class A thickness of 50 mm Acoustic Tests according to ASTM C423-09a standards, conducted in accredited laboratories. Sound Reduction Coefficient: NRC=0.90 thickness of 30 mm NRC=1.00 thickness of 50 mm
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TESTING / CERTIFICATION / LISTING

Environmental	DAP –EPD The International EPD System. According to ISO 14025:2006 and EN 15804:2012 +A2:2019 /AC 2021. Standardized document that provides detailed information about the environmental impact generated by the product throughout the product's life cycle. For more information visit: www.environdec.com .
	GREEN Certification - Assessment of reference efficiency in buildings belonging to the Green Building Council Spain (GBCe) group. Its aim is to provide environmental information about construction products and systems, in order to demonstrate their environmental, social, and economic benefits. It indicates the credits it contributes to the LEED V4 system and the credits it contributes to the system according to BREEAM ES. For more information, visit: https://gbce.es
Fire Resistance	Fire resistance according to EN standards carried out in accredited laboratories: Protection of metal structures (EN 13381-4) Beams and open pillars and tubular profiles up to R240 Protection of concrete structures (EN 13381-3) Beams, pillars, solid slabs, walls, and floors up to REI 240 Protection of mixed concrete and steel floors (EN 13381-5) Protection of composite slabs up to REI 180 Protection of wooden structural elements according to EN 13381-7/ UNE EN 1363-1 Start of charring $t_{ch} = 64'$ Charring rate $B_2 = 0.4$ mm/min Vertical compartmentalization according to EN 1364-1 Fire classification EI 180 Firebreak strip according to EN 1363-1 Fire resistance test of joint/firebreak strip/roof. Classified system up to EI 120.
Reaction to Fire	Reaction to fire according to EN standards carried out in accredited laboratories: Reaction to fire (Classified according to EN13501-1) Classification A1

PACKAGING, HANDLING & STORAGE

Shelf Life	12 months
Shipping Weight (Approximate)	480 kg (60 bags/pallet)
Storage	Store indoors and in dry environments between 0°C and 50°C. Material must be kept dry or clumping of material may occur.
Packaging	8 kg/bag (plastic bag)

WARRANTY

To the best of our knowledge the technical data contained herein is true and accurate on the date of publication and is subject to change without prior notice. User must contact Carboline to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. Carboline warrants our products to be free of manufacturing defects in accord with applicable Carboline quality control procedures. THIS WARRANTY IS NOT VALID WHEN THE PRODUCT IS NOT: (1) APPLIED IN ACCORDANCE WITH CARBOLINE'S SPECIFICATIONS, AND/OR (2) PROPERLY STORED, CURED, AND USED UNDER NORMAL OPERATING CONDITIONS. Carboline assumes no responsibility for coverage, performance, injuries, or damages resulting from use of the product. If this product is found not to perform as specified upon inspection by a Carboline representative during the warranty period, Carboline's sole obligation, if any, is to replace the Carboline product(s) proven to be defective or refund the purchase price thereof, at Carboline's sole option. Carboline shall not be liable for any other losses or damages. This warranty excludes (1) labor and costs of labor for the application or removal of any product, and (2) any incidental or consequential damages, whether based on breach of express or implied warranty, negligence, strict liability or any other legal theory. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY CARBOLINE, EXPRESS OR IMPLIED, STATUTORY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. All of the trademarks referenced above are the property of Carboline International Corporation unless otherwise indicated. The whole text of this Product Data Sheet, as well as the documents derived from it, have been written in English, and for legal purposes the English version shall prevail.