

SELECTION & SPECIFICATION DATA

Generic Type	Gypsum-based fireproof mortar, expanded light aggregates (perlite and vermiculite), hydraulic binders, set retarders and additives for passive fire protection.
Description	Gypsum-based fireproof mortar for passive fire protection. It has the widest range of construction solutions on the market. Structural steel elements, concrete, concrete sheet composite slabs, timber structures, fire compartmentation and firestop strips. Fire resistance of up to 4 hours depending on the construction system.
Features	<ul style="list-style-type: none"> • CE Marked & ETA 12/0005 • Formulation with expanded light aggregates (perlite and vermiculite). • Non-combustible. • Good acoustic performance at 25 mm thickness. • Good thermal performance. • Asbestos-free – Complies with regulations 2003/18/EC and RD 396/2006. • Good adhesion on different substrates. • Low abrasion with the use of spraying equipment. • Multipurpose solution, with a wide range of fire protection solutions.
Color	White
Finish	Textured Rough. If a smooth finish is required, this may be done by trowel, roller or brush . Perlifoc can be top-coated if required.
Primer	PERLIFOC can be applied on bare steel and on primed steel, and it is compatible with different primer families, as stated on its CE marking. For application on other substrates such as galvanised steel, concrete, timber and masonry, no prior priming or bonding bridge is required. Contact the Carboline Technical Service for further information and approved primers.
Application Thickness	Maximum thickness per coat of 30mm.
Theoretical Coverage Rates	8.5 +/-15% kg/m ² /cm ¹ Field results will vary depending upon application parameters. Coverage based on theoretical gross yield without loss. Material losses during mixing and application must be taken into account when estimating project requirements - typically 15%.
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. Not recommended for use as a refractory cement or where continuous operating temperatures exceed 90°C.
Topcoats	Generally not required. In severely corrosive atmospheres, topcoats may be used for added durability and chemical resistance. Consult Carboline Technical Service for selection of the coating most suitable for the operating environment.

SUBSTRATES & SURFACE PREPARATION

General	Before application, all the substrate coating must be clean and free of loose particles, dirt, oil, grease, condensation, or other contamination that may affect the adhesion.
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SUBSTRATES & SURFACE PREPARATION

Steel | PERLIFOC adheres perfectly to this type of substrate and, in general, to all metallic surfaces, provided they are perfectly clean. If the steel structure is not primed, it must be cleaned using an abrasive material to an Sa 2 ½ grade of cleanliness, in accordance with ISO 8501 or equivalent. Clean the substrate to be protected to remove any traces of dirt/rust; for surfaces with old plaster/old material, it is suggested that you wash with pressurised water or by vigorous mechanical brushing, followed by a thorough cleaning of the substrate with sandblasting or similar. For beam/column widths greater than 500 mm, the use of mesh on the flange of the beam/column is recommended. Furthermore, the use of wire mesh is also recommended in the event of single-sided application on sections, square or round profiles or profiles that will be subject to high deformation.

Galvanized Steel | PERLIFOC can be directly applied to galvanised steel without the need for priming or an adhesion promoter. Ensure that the substrate is clean, free from loose particles, dirt, grease, condensation or salts that could affect adhesion. When the surface does not offer sufficient levels of adhesion, mesh or an adhesion promoter can be applied to ensure proper application.

Galvanised Steel ventilation ducts In addition to the above requirements, washing with pressurised water or strong mechanical brushing is suggested. The use of a nervometal mesh is required over the entire perimeter of the duct prior to the application of PERLIFOC.

Concrete | PERLIFOC can be directly applied to concrete without the need for priming or an adhesion promoter. Ensure that the substrate is clean, free from loose particles, decorative paints, dirt, grease or condensation that could affect adhesion. If there are doubts about the condition of the substrate or it has an old coating, the use of a metal mesh prior to application of the mortar is recommended. Contact Carboline Technical Service for further information.

Wood | Clean the timber beam or column substrate to be protected to remove any traces of dirt; for surfaces with old plaster/old material, it is suggested that you wash with pressurised water or by vigorous mechanical brushing. As timber is a porous material that absorbs water, prior to the application of PERLIFOC, a nervometal mesh must be fixed in place to ensure good adhesion and prevent cracking.

PERFORMANCE DATA (TYPICAL VALUES)

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

Test Method	Results
Adhesion	>0.1MPa (in accordance with EGOLF SM/5)
Apparent Density	600-760 kg/m ³
Asbestos	Does not contain
Flexural Strength	>1MPa (in accordance with EN 1015-11)
Hardened Density ¹	850 kg/m ³ (DISCONTINUOUS machine) 900 kg/m ³ (CONTINUOUS machine)
Reaction to Fire	A1 (in accordance with EN 13501-1)
Resistance to Compression	>3MPa (in accordance with EN1015-11)
Sound Absorption	a_w =0.55 (in accordance with UNE-EN-ISO 354 and 25mm thickness)
Thermal Conductivity	0.122 W/m.K (UNE-EN 12667:2002)

¹ Average value obtained under laboratory conditions.

MIXING & THINNING

Mixer	<p>1. DISCONTINUOUS. Use a gypsum mortar mixer or similar with a capacity of at least 100 litres and capable of rotating at 60 rpm with rubber-tipped blades that wipe the sides of the hopper.</p> <p>2. CONTINUOUS. Contact Carboline Technical Service for recommendations. Densities may vary when using this type of mixing equipment.</p>
Mixing	<p>Always mix with clean drinking water. The mixer should be kept clean and free from any previously mixed materials which could cause premature setting of the PERLIFOC T. A 2-bag mix with discontinuous machines is recommended. The mixing time should be approximately 1.5 minutes when mixing at 60 rpm. Use 10 litres of water per 20kg bag. First add water to the hopper with the blades stopped. With the mixer on, add mortar to the water and start to mix. The water flow rate must be adjusted to between 500 and 600 litres/h in the case of a continuous machine.</p>
Pot Life	<p>1 hour at 20°C, the higher the temperature the shorter the pot life. These times are for guidance and can vary depending on the ambient humidity and air currents. Pot life ends when the material thickens and becomes unusable.</p>
Density	<p>To obtain more information and recommendations on how to obtain adequate density and performance, contact Carboline Technical Service.</p>

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.

Pump	<p>This material may be pumped with a wide range of piston, rotor stator and squeeze pumps designed to pump cement & plaster materials, including: PFT – model # ZP 3 L Multimix (Discontinuous) Putzmeister – model # S5EV (Discontinuous) Wall Goe – model # JP70-L (Discontinuous) Putzmeister – model # MP25 (Continuous) PFT – model # G4 Smart (Continuous) Essick – model # FM9/FM5E (Continuous) Hy-Flex – model # HZ-30E (Continuous)</p>
Ball Valves	<p>Ball valves must be fitted on at least one end of the spray hose to facilitate cleaning.</p>
Material Hose	<p>Use a flexible hose of between 5 and 10m in length and at least 25mm inner diameter. Working pressure of at least 30 bar.</p>
Nozzle/Gun	<p>From 10 to 16mm diameter depending on the desired finish. 10mm diameter on metal substrates.</p>
Compressor	<p>The compressor must be capable of maintaining a minimum of 4 to 5 atms (58.8 and 73.5 psi) and 250 to 300l/min at the nozzle.</p>
Air Line	<p>Use a line with an inner diameter of 10mm and a minimum burst pressure of 7 bar (100 psi).</p>
Spray Lance	<p>Maximum length of 600mm and minimum inner diameter of 25mm, with a material shut-off ball valve and air shut-off valve.</p>

APPLICATION PROCEDURES

General | Thicknesses of 30mm or less can be applied in a single coat. When additional coats are required to reach the specified thickness, it is recommended to spray the subsequent coats once the previous coat has started to set. If the previous coat has set and is dry, wet the surface with water before applying additional coats. Contact Carboline Technical Service if more information is required.

Finishing | Normally the finish is a sprayed texture.

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 air and ambient temperatures must be maintained 24 hours before, during and 24 hours after application. Mortars based on Portland cement are sensitive to water and therefore must be adequately protected. For additional recommendations, contact Carboline Technical Service.

CURING SCHEDULE

Surface Temp.	Dry to Recoat
25°C (77°F)	4 Hours

The recoating times are for guidance and could vary depending on the ambient 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 RH does not exceed 60% and there is adequate ventilation, which means at least 4 complete air exchanges per hour until the PERLIFOC is dry (or at least 2 weeks after the end of the application).

CLEANUP & SAFETY

Cleanup | The case, mixer and hoses should be cleaned with clean, potable water at least once every 4 hours at 21°C, and more often at higher temperatures. Pass sponges or plenty of water through the hoses to remove residual material that remains in it. Excess wet PERLIFOC T mortar overspray must be cleaned with soapy or clean, potable water. Dry sprayed mortar may require chipping and/or scraping to remove.

Safety | Follow all safety precautions on the Material Safety Data Sheet. It is recommended that personal protective equipment be worn, including spray suits, gloves, eye protection and respirators.

Overspray | Adjacent surfaces shall be protected from damage and overspray. Sprayed fireproofing materials may be difficult to remove from surfaces and may cause damage to architectural finishes. Cured overspray may require chipping and/or scraping to remove.

Ventilation | In enclosed areas, ventilation shall be 4 complete air exchanges per hour until the material is dry.

TESTING / CERTIFICATION / LISTING

Fire Resistance	<ul style="list-style-type: none"> • <i>Fire resistance in accordance with RWS standard carried out in accredited laboratories:</i> • Protection of metal structures (EN 13381-4) • Open beams and columns and tubular profiles up to R240 • Protection of concrete structures (EN 13381-3) • Beams, columns, solid slabs, walls and floor slabs up to REI 240 • Protection of concrete steel composite slabs (EN 13381-5) • Protection of composite slabs up to REI 240 • Timber structure (EN 1365-2) • REI 180 fire rating • Ventilation ducts in accordance with EN 1366-1 • Fire rating up to EI 180. • PERLIFOC partition wall in accordance with EN 1364-1 • EI 120 fire rating • Vertical structural elements (EN 1364-1) • EI 120 fire rating • PERLIFOC suspended ceiling in accordance with EN 1364-2 • EI 180 fire rating
Reaction to Fire	<p>Firestop strips in accordance with EN 1363-1 and "Fire resistance test for fire strips between party wall/roof" protocol. EI 120 fire rating Reaction to fire (classified in accordance with EN 13501-1) Classification A1</p>

PACKAGING, HANDLING & STORAGE

Shelf Life	12 months (minimum) when kept at recommended storage conditions.
Shipping Weight (Approximate)	20kg/bag (56 bags/pallet)
Storage	Store indoors and in a dry environment between 0°C and 50°C Material must be kept dry or clumping may occur.
Packaging	20kg bags

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.