Perlifoc T

PRODUCT DATA SHEET

SELECTION & SPECIFICATION DATA

Generic Type	Fireproof mortar based on Portland cement, medium density, with high fire performance for protection of concrete structures in tunnels.
Description	Fireproof mortar for passive fire protection of concrete structures in tunnels. Fire resistance of up to 3 hours in accordance with the RWS curve.
Features	• Low thickness for protection of up to 3 hours in accordance with the RWS curve. • Low density giving low abrasion on spray equipment consumable parts. • Formulation with light high performance fillers. • Non-combustible. • High durability and hardness. • Spraying by continuous machine is recommended to optimise the performance of PERLIFOC T. • Asbestos-free - complies with the regulations 2003/18/EC and RD 396/2006. • Good adhesion to concrete substrates. • Tolerates a wide range of weather conditions.
Color	Grey - product colour may vary due to variations in colour of Portland cement.
Finish	Textured Rough. If a smooth finish is required, this may be done by trowel, roller or brush . Perlifoc T can be top-coated if required.
Primer	PERLIFOC T neither promotes nor prevents corrosion. PERLIFOC T can be applied directly onto bare concrete, and it is compatible with different generic primer families. For application onto concrete, 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 25mm.
Theoretical Coverage Rates	4.6 +/-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	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.
Concrete	PERLIFOC T can be applied directly onto 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 the adhesion. For use in protection of concrete structures in tunnels, or if there are doubts about the condition of the substrate or it has an old coating system installed, the use of a metal mesh prior to application of PERLIFOC T is recommended. Contact Carboline Technical Service for further information.

PERFORMANCE DATA (TYPICAL VALUES)

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

Test Method	Results
Adhesion	>0.15MPa (in accordance with EGOLF SM/5)
Adhesion-Cohesion	>0.086MPa (in accordance with ASTM E736/E736M-19)
Apparent Density	450 +/- 15% kg/m³
Asbestos	Does not contain
ASTM D2240 Durometer Hardness (Shore DO)	64
Consumption	4.6 +/- 15% kg/m²/cm[1]
Flame and Smoke Performance	Class A (in accordance with ASTM E84-21)
Flexural Strength	>1MPa (in accordance with EN 1015-11)
Hardened Density[1]	>640 +/- 15% kg/m³
Resistance to Compression	>1.5MPa (in accordance with EN1015-11) >0.406MPa (in accordance with ASTM E761/E761M-19 at 10% deformation)

[1] Average value obtained under laboratory conditions.

MIXING & THINNING

Mixer

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.
2. **CONTINUOUS.**
Contact Carboline Technical Service for recommendations. Densities may vary when using this type of mixing equipment.

Mixing

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 19.3+/-1 litres of water per 22.7kg bag. First add water to the hopper with the blades stopped. With the mixer on, add mortar to the water and start to mix.

Pot Life

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.

Density

Target density in paste form: 800 - 900kg/m³). The in-paste density measurements are critical to obtaining correct dry densities. When checking in-paste densities, use the following procedures:
Equipment needed:
• 1 litre (1000 cc) or known volume plastic vessel
• Small metal spatula
• Scale accurate to 1 gram
Determination of PERLIFOC T in-paste density:
• Weigh the empty vessel to the nearest gram, then tare the scale.
• Use the spatula to fill the vessel completely with mixed material (do not deform the vessel).
• Remove the excess material on top of the vessel by placing the vertical edge of the spatula on the top edge of the vessel. Use a sawing motion to level the mixed PERLIFOC T mortar flush with the top of the cup.
• Weigh the filled vessel to the nearest gram.
• Record the weight of material in grams. This value equals the wet density in grams/litre and kg/m³
• To calculate the wet density of the material in lb./ft³, multiply the value in grams/litre by 0.0624.

MIXING & THINNING

To obtain more information and recommendations on how to obtain adequate density and performance, contact Carboline Technical Service.

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

This material may be pumped with a wide range of piston, rotor stator and squeeze pumps designed to pump cement & plaster materials, including:
Essick - model# FM9/FM5E (Continuous)
Putzmeister - model# S5EV (Discontinuous)
Hy-Flex - model# HZ-30E (Continuous)
PFT - model# ZP 3 L Multimix (Discontinuous)
Wall Goe - model#JP70-L (Discontinuous)
Putzmeister - model# MP25 (Continuous)
PFT - model~ G4 Smart (Continuous)

Ball Valves

Ball valves must be fitted on at least one end of the spray hose to facilitate cleaning.

Material Hose

Use a flexible hose of between 5 and 10m in length and at least 25mm inner diameter. Working pressure of at least 30 bar.

Nozzle/Gun

From 10 to 16mm depending on the desired finish.

Compressor

The compressor must be capable of maintaining a minimum of 2 bar (30 psi) and 250 to 300l/min at the nozzle.

Air Line

Use a line with an inner diameter of 10mm and a minimum burst pressure of 7 bar (100 psi).

Spray Lance

Maximum length of 600mm and minimum inner diameter of 25mm, with a material shut-off ball valve and air shut-off valve.

APPLICATION PROCEDURES

General

Thicknesses of 25mm 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	4°C (39°F)	4°C (39°F)	4°C (39°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
21°C (70°F)	2 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 T 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.

PACKAGING, HANDLING & STORAGE

Shelf Life	24 months (minimum) when kept at recommended storage conditions.
Shipping Weight (Approximate)	22.7kg/bag (35 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	50 lb. (22.7 kg) bags

WARRANTY

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