

SELECTION & SPECIFICATION DATA

Generic Type	Fire-resistant mortar for passive fire protection of metal structures and concrete structures.
Description	Fire-resistant mortar based on Portland cement, low density, with high fire performance for the protection of metal and concrete structures. Density 375 kg/m ³ . High fire performance, optimized consumption, and savings on materials. Suitable for the architecture and construction market.
Features	• Formulation with high-performance lightweight aggregates. • Cellulosic fire resistance EN 1363 up to 4 hours. • Exceptional coverage, great thickness. • Non-combustible. • High durability. • Sprayed with a discontinuous machine to optimize performance. • Asbestos-free. Complies with regulations 2003/18/EC and RD 396/2006. • Excellent adhesion to metallic and concrete substrates. • Lightweight – one fifth the weight of concrete for the same fire protection. • Low abrasiveness on spraying equipment. Savings on consumables. • Low protection thickness. • Chloride and sulfur-free: does not require special primer. • Tolerates a wide range of weather conditions.
Color	Grey. Product colour may vary due to variations in the colour of Portland cement.
Finish	Textured If a smooth finish is required, it can be smoothed with a trowel, roller, straight edge or brush, normally within 1 to 2 hours after application of PYROCRETE 60.
Primer	Pyrocrete 60 can be applied directly over concrete or primed metal, and is compatible with different types of primers. For application on concrete, no prior priming or bonding agent is required. Pyrocrete 60 neither promotes nor prevents corrosion. Contact Carboline Technical Service for more information.
Application Thickness	Maximum thickness per layer 25 mm on concrete substrate and maximum thickness per layer 15 mm on steel. Not recommended for use as a refractory mortar or where normal operating temperatures exceed 90 °C.
Theoretical Coverage Rates	3.2 ± 15% kg/m²/cm Average value obtained in laboratory conditions, with a kneading speed of 60 rpm and a time of 90 s. If any of these parameters are modified, both the final density and the yield could be altered.

SELECTION & SPECIFICATION DATA

Topcoats	It is generally not necessary. In corrosive environments, use an appropriate topcoat. If a topcoat is required, apply Carboguard 1340 as a sealing coat. Carboguard 1340 should be thinned 20% with Carboline Thinner 2. Carboguard 1340 can be applied 24 hours after the final application of Pyrocrete 40. Refer to the Carboguard 1340 product data sheet for minimum and maximum curing times. For outdoor exposure, finish with a coating resistant to ultraviolet radiation; consult Carboline Technical Service for advice. For outdoor installations, all termination joints between Pyrocrete 60 and the substrate must be sealed.
	In highly corrosive atmospheres, contact Carboline Technical Service for selection of the most suitable coating for the required exposure.

SUBSTRATES & SURFACE PREPARATION

General	Prior to application, the substrate must be clean and free of loose particles, dirt, oil, grease, condensation or any other substance that may affect adhesion. Contact Carboline Technical Service for more information.
Steel	If the steel structure is not primed, it must be cleaned with an abrasive material to achieve a cleanliness rating of Sa 2 ½, in accordance with ISO 8501 or equivalent. If it is primed, it must be clean and free of loose particles, dirt, grease or condensation that could affect adhesion. In addition, it must be ensured that the existing primer is compatible with PYROCRETE 60 mortar. Mesh is not required according to testing standards; however, its use is recommended on exposed profiles on façades, as well as in interior areas where there are battens or façade anchors, as these elements may generate vibrations during the profile's service life. Reinforcement mesh must be applied to beam flanges wider than 500 mm, pillars with a single projected face, hollow tubular profiles with high massiveness and profiles subject to large deformations. Contact Carboline Technical Service for more information.
Concrete	PYROCRETE 60 can be applied directly to concrete without the need for primer or adhesion promoter. Ensure that the substrate is clean and free of loose particles, decorative paint, dirt, grease or water that could affect adhesion. If there are doubts about the condition of the substrate or it has an old coating, the use of metal mesh is recommended before applying the mortar. On very dry concrete substrates, it is advisable to moisten the substrate for 8-12 hours before applying the mortar. PYROCRETE 60 mortar should not be applied to water-saturated surfaces. Contact Carboline Technical Services for more information.

MIXING & THINNING

Mixer	Machine: Discontinuous.
	Use a plaster mortar mixer or similar with a capacity of at least 100 litres and capable of rotating at 60 rpm with rubber-tipped blades that clean the sides of the hopper. Densities and performance may vary when using this type of mixing equipment. Contact Carboline Technical Service for recommendations.

MIXING & THINNING

Mixing	Always mix with clean potable water. The mixer must be kept clean and free of any previously mixed material that may cause premature setting of the product. Mixing of 2 bags with batch machines is recommended. Use between 14 to 15 liters of water per 15 kg bag depending on the substrate. First, add water to the hopper with the blades stopped. With the mixer on, add mortar to the water and start mixing. The mixing time should be approximately 1.5 minutes per batch at 60 rpm.
Pot Life	1 hour at 20°C, the higher the temperature, the shorter the use time. These times are approximate and may also vary depending on ambient humidity and draughts. The service life of the material ends when it hardens and becomes unusable.
Density	• Target paste density: 550 - 750 kg/m³. Paste density measurements are critical to obtaining adequate hardened mortar densities. When checking paste densities, use the following procedures. • Equipment required: • 1 litre (1000 cc) plastic cup or known volume. • Small metal spatula. • Scale accurate to 1 gram. • Determining the paste density of Pyrocrete 60: • Weigh the empty beaker and then tare the scales. • Use the spatula to fill the beaker completely with mixed mortar (do not deform the beaker). • Remove excess material from the top of the beaker by placing the vertical edge of the spatula on the top edge of the beaker. Use a sawing motion to level the mortar. • Pyrocrete 60 mixed flush with the top of the beaker. • Weigh the beaker filled with mortar to the nearest gram. • Record the weight of the material in grams. This value is equal to the paste density in kg/m³(g/l). For more information and recommendations on how to obtain the proper density and yield, contact your Carboline representative.

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 can be pumped with a wide range of piston, rotor, stator and compressor pumps designed to pump cement and gypsum materials, including: PFT - model # ZP 3 L Multimix (Discontinuous) Putzmeister - model # S5EV (Discontinuous) Wall Goe - model # JP70-L. (Discontinuous) Ball valves should be located at least at the end of the spray hose to facilitate cleaning.
Material Hose	Use flexible spray hose of 5 to 10m length and at least 25mm inner diameter. Working pressure at least 30 bar. Minimum length of the spray lance 300mm and minimum inside diameter 25mm. With ball valve for material shut-off and air shut-off valve.
Nozzle/Gun	From 10 to 16 mm depending on the desired finish.
Compressor	The pump compressor must be capable of maintaining a minimum of 2 bar (30 psi) and 250 to 300 l/min at the nozzle.
Air Line	Use an internal diameter of 16 mm. Hose with a minimum burst pressure of 100 psi (7 bar).

Pyrocrete 60

PRODUCT DATA SHEET



APPLICATION PROCEDURES

General

Pyrocrete 60 can be applied by spraying and/or trowelling. The thickness of the material will depend on the application method, weather conditions and the equipment used. Thicknesses of 25 mm or less can be applied in one pass. When additional layers are required to achieve the specified thickness, it is recommended that subsequent layers be applied once the previous layer has begun to set. Previous layers should be sprayed or scratched after application. If the previous layer has set and is dry, moisten the surface with water before applying additional layers. Contact Carboline Technical Services for further information.

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%

Fresh Pyrocrete 60 must be protected from rain or running water for 24 hours after application. In conditions of low humidity, high temperature, direct sun or wind, the surface of Pyrocrete 60 should be kept moist for at least 12 hours after application by water mist or plastic sheeting to control water loss.

Caution: Do not start spraying if the ambient temperature is expected to drop below 2°C within 24 hours after application. For additional recommendations contact Carboline Technical Service.

CURING SCHEDULE

Surface Temp.	Between Coats
21°C (70°F)	8 Hours

Pyrocrete 60 can be recoated after 8 hours at 21°C. Recoating times are approximate and may vary depending on environmental conditions and air currents. In enclosed areas with poor 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, with at least 4 complete air changes per hour until the material is dry (or for at least 2 weeks after application).

CLEANUP & SAFETY

Cleanup

The liner, mixer and hose must be cleaned with potable water at least once every 4 hours at 21°C or more often at higher temperatures. Sponges or plenty of water should be passed through the hose to remove any remaining material in the hose. Excess wet sprayed Pyrocrete 60 mortar should be cleaned up with clean potable water. Dry mortar due to spraying may require scraping to remove.

Safety

Follow all safety precautions described in the mortar safety data sheet. The use of personal protective equipment, including application suits, gloves and eye protection is recommended.

Overspray

Adjacent surfaces must be protected from damage and splashing. Sprayed-on fireproofing materials can be difficult to remove from surfaces and may damage architectural finishes.

Ventilation

In enclosed areas, ventilation should not be less than 4 full air exchanges per hour until the material is dry.

TESTING / CERTIFICATION / LISTING

General	Pyrocrete 60 has been tested to:
	EN 1363-1. Fire resistance tests. Part 1: General requirements and Standard.
	EN 13381-3. Test methods for determining the contribution to the fire resistance of structural members. Applied protection to concrete members by Applus Laboratories.
	EN 13381-4. Test methods for determining the contribution to the fire resistance of structural members. Applied passive protection products to steel members by Applus Laboratories.

PACKAGING, HANDLING & STORAGE

Shelf Life	12 to 24 months maximum, provided the product is stored under the recommended conditions.
Shipping Weight (Approximate)	630 kg (42 bags/pallet)
Storage	Store indoors and in a dry environment.
	The material must be kept dry or lumps may occur.
Packaging	15 kg bag, 42 bags per pallet.

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.