

SELECTION & SPECIFICATION DATA

Generic Type	Single package polymer cement.
Description	110 lbs/ft ³ (1,762 kg/m ³) high density armour coat that is applied over Pyrocrete materials to enhance durability in high abuse areas. Recommended areas of application include refineries, petrochemical, pharmaceutical facilities, pulp and paper mills, offshore platforms, nuclear and conventional power plants, factories, warehouses, institutional and biomedical facilities.
Features	<ul style="list-style-type: none"> • Easily applied by spray or trowel • Lightweight - less than 3.5 lbs/ft² (17 kg/m²) for typical application • Excellent bonding properties • Hard, durable armour coat • Fast overcoat time over Pyrocrete materials
Color	<p>Non-Uniform Speckled Gray</p> <p>Product color may vary due to variations in color of Portland cement.</p>
Finish	<p>Textured</p> <p>If a smooth finish is required, this may be done by trowel, roller or brush.</p>
Primer	Can be applied directly over green Pyrocrete. Do not apply to concrete that has been treated with curing solutions.
Application Thickness	3/8" (9.5 mm)
Theoretical Coverage Rates	<p>6.4 board foot per bag @ 110 pcf 0.59 m² @ 25.4 mm thick @ 1,726 kg/m³ 17.1 ft² (1.58 m²) @ 3/8" (9.5 mm)</p> <p>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. Coverage based on 50 lb. (22.7 kg) bags (one board ft = one ft² of material at one inch thick or 0.09 m² of material at 25.4 mm thick.</p>
Limitations	Not recommended for use as a refractory cement or where continuous operating temperatures exceed 200°F (93°C).
Topcoats	<p>Generally not required. In severely corrosive atmospheres, topcoats may be used for added durability and chemical resistance. consult Carboline Fireproofing Technical Service for selection of the coating most suitable for the operating environment.</p> <p>Seal Coat – In corrosive environments, use an appropriate topcoat. If topcoating is required, apply Carboguard 1340 as a seal coat. Carboguard 1340 may be applied after 24 hours of final application. Consult the Carboguard 1340 Product Data Sheet for minimum and maximum cure times.</p> <p>Top Coat – Surface hardness should be a minimum Shore DO 64 as measured with a durometer prior to application of the topcoat. Normally, this minimum dry time is 10 days at 70°F (21°C) and 40 days at 40°F (4°C), for thickness of 1" (25.4 mm) or less.</p> <p>Caulking – For exterior installations, Acrilast caulk should be applied at all termination joints between Pyrocrete and the substrate. Contact Carboline Fireproofing Technical Service for full information.</p>

Pyrocrete Hardcoat 4500

PRODUCT DATA SHEET



SUBSTRATES & SURFACE PREPARATION

General	Before applying, the substrate coating must be free of all oil, grease, condensation, or other contamination. Hardcoat 4500 may be applied over Pyrocrete materials after a minimum cure of 4 hours at 70°F (21°C) and 50% relative humidity and before a maximum cure of 14 days at 70°F (21°C) and 50% relative humidity. The underlying Pyrocrete should then be dampened with water prior to application of Hardcoat 4500.
Concrete	Before applying Hardcoat 4500, the surface must be free of all oil, grease, condensation, or other contamination. Do not use if concrete has been treated with curing solutions. Test patches may be required to ensure compatibility.

PERFORMANCE DATA (TYPICAL VALUES)

Test Method	Results
ASTM C190 Tensile Strength	447 psi (3.0 MPa)
ASTM C901 Compressive Strength	4,550 psi (31.3 MPa)
ASTM D2240 Durometer Hardness (Shore D)	90
ASTM D2794 Impact Resistance	Indents at 30 foot pounds
ASTM D790 Flexural Strength	1,440 psi (9.9 MPa)
ASTM E605 Density	110 lb./ft ³ (1,726 kg/m ³)
Coverage 50 lb. (22.7 kg) bag	6.4 Bd.Ft. (0.59 m ² @ 25.4 mm) 17.1 ft ² (1.58 m ²) @ 3/8" (9.5 mm)
Shear Bond Strength	136 psi (937 kPa)

MIXING & THINNING

Mixer	Use a heavy-duty mortar mixer with rubber tipped blades that will scrape the sides and bottom of the mixer. A 50 lb. (22.7 kg) bag of Pyrocrete Hardcoat typically requires a mixer volume of 8 ft ³ (227 L) minimum. Do not use pan type mixers.
Mixing	Target water level: 1 gallon (3.8 liters) Water level range: 1.0 - 1.3 gallons (3.8 - 5.1 liters) Add clean, potable water to a mortar mixer with rubber tipped blades. With mixer running slowly, add powder and mix for 5 minutes until a homogeneous mortar-like consistency is achieved.
Pot Life	2 hours at 70°F (21°C) and less at higher temperatures. Pot life ends when the material thickens 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.

Pump	This material can be pumped with a wide range of piston, rotor stator and squeeze pumps designed to pump cement & plaster materials including: Essick - model# FM9/FM5E (Rotor Stator/2L4) Putzmeister - model# S5EV (Rotor Stator/2L6) Hy-Flex - model# HZ-30E (Rotor Stator/2L6) Hy-Flex - model# H320E (Piston) Strong Mfg. - model# Spraymate 60 (Rotor Stator/2L6) Airtech - model# Swinger (Piston) Mayco - model# PF30 (Dual Piston)
-------------	--

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.

		Thomsen - model# PTV 700 (Dual Piston)
Trowel		Standard plasterers' hawk and trowel may be used. A rubber float may also aid in finishing.
Material Hose		Minimum 1" (25.4 mm) I.D. hose with 300 psi minimum bursting pressure. For lengths over 50' (15 m) use 1½" to 3" (38 mm to 76 mm) I.D. hose. Do not reduce hose diameter by more than ¼" (6.4 mm) per 25' (7.6 m) unless a tapered conical reducer equipped with swivel fitting is used. A 10' (3m) length of ¾" (19 mm) I.D. hose may be added at the gun for use as a whip.
Nozzle/Gun		Binks - part# 7E2 (47-49 fluid tip / 3/8"-1/2" air cap) Graco - part# 204000(3/8" - 1/2" fluid tip / air cap) Speeflow - part# 701(3/8" - 1/2" fluid tip / air cap) Airtech - Internal mix with 3/8" - 1/2" fluid tip Standard plasterers gun with 3/8" - 1/2" fluid tip
Compressor		Be certain that the air supply is a minimum 22 cfm at 100 psi (689 kPa) and higher when distances longer than 75' (22 m) are required.
Air Line		Use ½" (12.7 mm) I.D. line, with a minimum bursting pressure of 100 psi (689 kPa).

APPLICATION PROCEDURES

General		<p>Hardcoat 4500 may be applied by spray and/or trowel. Material build will depend on application method, weather conditions and equipment used. Apply in one monolithic coat. Over-working of material may result in sagging. It is recommended that the total required thickness of 3/8" (9.5 mm) be applied over Pyrocrete in one monolithic coat within a 24 hour period. If this is not possible, the preceding Pyrocrete coat should be left as sprayed or scored after application. The Pyrocrete material should then be dampened with water before application of Hardcoat 4500.</p> <ul style="list-style-type: none"> • Minimum time to achieve the full thickness over Pyrocrete materials is 4 hours at 70°F (21°) and 50% relative humidity. This would be less at higher temperatures. • Maximum time to achieve the full thickness over Pyrocrete materials is 14 days at 70°F (21°) and 50% relative humidity. This would be less at higher temperatures.
Finishing		Material can be left as sprayed or finished with a trowel for better aesthetics.

APPLICATION CONDITIONS

Condition	Material	Surface	Ambient	Humidity
Minimum	4°C (40°F)	4°C (40°F)	4°C (40°F)	0%
Maximum	38°C (100°F)	52°C (125°F)	43°C (110°F)	95%

Pyrocrete Hardcoat 4500

PRODUCT DATA SHEET



CURING SCHEDULE

Surface Temp.	Dry to Recoat
21°C (70°F)	2 Hours

Fresh Pyrocrete must be protected from rain or running water for 24 hours at 70°F (21°C). In low humidity, high temperature, direct sun or wind, the Pyrocrete surface should be kept damp for at least 12 hours by applying a water mist or wrapping in plastic sheets to reduce rapid water loss.

Caution: Do not start work if ambient temperatures are expected to drop below 35°F (2°C) for 24 hours after application. Material shall reach a hardness of Shore DO 64 prior to handling and topcoating.

CLEANUP & SAFETY

Cleanup | Pump, mixer and hose should be cleaned with clean, potable water at least once every 4 hours at 70°F (21°C), and more often at higher temperatures. Sponges should be run through the hoses to remove residual material. Wet Pyrocrete overspray must be cleaned up with soapy or clean, potable water. Cured overspray 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) | 50 lb. (22.7 kg)

Storage | Store indoors in a dry environment between -20°F - 150°F (-29°C - 66°C)
Material must be kept dry or clumping may occur.

Packaging | 50 lb. (22.7 kg) 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 Company to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. We guarantee our products to conform to Carboline quality control. We assume no responsibility for coverage, performance, injuries or damages resulting from use. Carbolines sole obligation, if any, is to replace or refund the purchase price of the Carboline product(s) proven to be defective, at Carbolines option. Carboline shall not be liable for any loss or damage. 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.