



CHEMPRUF 2211 SERIES

ChemPruf 2211 Lining System
ChemPruf 2211 C Lining System
ChemPruf 2211 AO Lining System

DESCRIPTION

CHEMPRUF 2211 SERIES of linings are highly chemical resistant fabric reinforced lining systems. Applied to concrete and steel substrates, the CHEMPRUF 2211 SERIES Lining Systems are composed of a **novolac bisphenol F epoxy** resin, an inert filled basecoat, fabric reinforcement and an inert filled topcoat. The 1/8" (3.2 mm.) linings can be used in immersion service to 190°F (88°C) and in intermittent service to 200°F (93°C).

The CHEMPRUF 2211 SERIES is designed for primary or secondary containment applications for tanks, trenches, containment dikes, absorbers, scrubbers and floors. The CHEMPRUF 2211 SERIES may be used as a lining or as a membrane in conjunction with chemically resistant brick sheathing. When used as a membrane, the lining can be used at higher process temperatures.

CHEMICAL RESISTANCE

CHEMPRUF 2211 SERIES Lining Systems are resistant to broad range of strong acids, such as 98% sulfuric acid, nitric acid to 40%, chromic acid to 20%, alkalies, as well as many organic solvents, such as butyl acetate, ethyl alcohol, toluene, xylene and 1,1,1-trichloroethane. Refer to the CHEMPRUF 2000 SERIES Chemical Resistance Chart, 4-2000, for specific information. Typical of novolac bisphenol F epoxy systems, contact with certain concentrated acids may cause the surface of CHEMPRUF 2211 SERIES Lining Systems to change color. This color change will not affect the chemical resistance.

ChemPruf 2211 is a silica filled basecoat and topcoat with an intermediate layer of fiberglass reinforcement system.

ChemPruf 2211 C is a carbon filled basecoat and topcoat with an intermediate layer of carbon fabric reinforcement system. The carbon filled system offers excellent chemical resistance to environments exposed to hydrofluoric acid, fluoboric acid, fluosilicic acid and sodium hydroxide.

ChemPruf 2211 AO is a silica filled basecoat, an intermediate layer of fiberglass reinforcement and a aluminum oxide filled topcoat system. This abrasion

PHYSICAL PROPERTIES

PROPERTY	TEST METHOD	TYPICAL VALUE	
		2211	2211 C
Density, Composite	ASTM C905	115 lb./cu. ft. (1.84 g./cc.)	83 lb./cu. ft. (1.33 g./cc.)
Tensile Strength, Composite 7 days @ 77°F (25°C)	ASTM D638	3,700 psi. (25.5 MPa)	6,100 psi. (42.1 MPa)
Compressive Strength, Mortar 7 days @ 77°F (25°C)	ASTM C579	13,400 psi. (92.4 MPa)	14,000 psi. (96.5 MPa)
Flexural Strength, Composite 7 days @ 77°F (25°C)	ASTM C580	8,000 psi. (55.2 MPa)	7,100 psi. (49.0 MPa)
Coefficient of Thermal Expansion, Composite in./in./°F (cm./cm./°C)	ASTM C531	1.5 x 10 ⁻⁵ (2.7 x 10 ⁻⁵)	3.26 x 10 ⁻⁵ (5.87 x 10 ⁻⁵)
Temp. Resistance, Composite Immersion Continual, °F (°C) Immersion Intermittent, °F (°C) Dry Heat, °F (°C)		190°F (88°C) 200°F (93°C) 225°F (107°C)	190°F (88°C) 200°F (93°C) 225°F (107°C)
Hardness, Barcol		50	45
Cure Rate @ 77°F (25°C), Max. Chemical Resistance		7 days	7 days

resistant system is preferred for service conditions with abrasive slurries, high velocity air containing particulate matter or environments exposed to flourides, flouride salts and sodium hydroxide.

CHEMPRUF 2211 SERIES Consists of:

PRIMER

ChemPruf E Primer, a two-component, moisture-tolerant, brush or roller applied, solvent free penetrating primer.

BASECOAT / TOPCOAT

ChemPruf 2211, a novolac bisphenol F epoxy resin, silica filled basecoat and topcoat, each trowel coat applied at a nominal thickness of 1/16" (1.6 mm.).

ChemPruf 2211 C, a novolac bisphenol F epoxy resin, carbon filled basecoat and topcoat, each trowel coat applied at a nominal thickness of 1/16" (1.6 mm.).

ChemPruf 2211 AO, a novolac bisphenol F epoxy resin, silica filled basecoat and aluminum oxide filled topcoat, each trowel coat applied at a nominal thickness of 1/16" (1.6 mm.).

REINFORCING FABRIC

ChemPruf 10 oz. Reinforcing Fabric, 10 oz./sq. yd. (339 g./m²) woven fiberglass reinforcing fabric for use with ChemPruf 2211 or ChemPruf 2211 AO Lining Systems.

ChemPruf Carbon Fabric, 5.6 oz./yd² (159 g./m²) carbon fabric for use with ChemPruf 2211 C Lining Systems.

SATURANT

ChemPruf 2211 Saturant, a novolac bisphenol F epoxy resin, roller applied to the reinforcing fabric.

SMOOTHING LIQUID

ChemPruf E Smoothing Liquid, a one-component, roller applied material used to smooth the basecoat and topcoat surface.

FINISHER* (OPTIONAL)

ChemPruf 211, a two-component novolac bisphenol F epoxy resin, brush or roller applied sealer.

ChemPruf 121, a two-component, flake filled bisphenol F epoxy resin, brush or roller applied sealer.

*Depending on service conditions, ATLAS may recommend use of an optional finisher.

AVAILABLE COLORS

ChemPruf 2211 is available in natural and gray.

ChemPruf 2211 C is available in black.

ChemPruf 2211 AO is available in brown.

ChemPruf 211 is available in white and gray.

ChemPruf 121 is available in white and gray.

ADDITIONAL INFORMATION

For specific information pertaining to Surface Preparation, Packaging or Mixing and Application, refer to the following ATLAS literature:

- Surface Preparation Data Sheet (PS-30)
- ChemPruf 2211 Lining System Installation Instructions (I-4-2211)
- ChemPruf 2211 C Lining System Installation Instructions (I-4-2211C)
- ChemPruf 2211 AO Lining System Installation Instructions (I-4-2211AO)
- ChemPruf 121 Data Sheet (4-121PI)
- Lining System Termination Drawing (4-3000DG)
- Termination at Drain Drawing (4-3001DG)
- Control Joint & Structural Crack Drawing (4-3003DG)
- Horizontal / Vertical Transition Drawing (4-3004DG)
- Pipe Outlets Drawing (4-3005DG)

SURFACE PREPARATION

The substrate must be structurally sound, clean, dry and free of all contaminants, such as sealers, curing compounds, coatings, oil, dirt, dust and water. Previously applied coatings or paint must be removed.

Concrete: The prepared concrete substrate shall have a minimum tensile strength of 250 psi. (1.72 MPa). Concrete surface must be sufficiently cured and comply with moisture testing as prescribed by ACI Test Method 515 R-16 "Dryness of Surface". Concrete surfaces should be grit blasted to a finish similar to the profile of 100 to 120 grit sandpaper.

Cracks in the concrete substrate 1/16" (1.6 mm.) wide or greater must be opened to a minimum 1/4" (6.4 mm.) cleaned, primed and filled with ChemPruf 2211.

Carbon Steel: Metal surfaces should be grit blasted to a SSPC-SP5 or NACE #1 white metal blast cleaned surface finish. Profile height must be 3 (0.076 mm.) to 4 mils (0.102 mm.).

TEMPERATURE DURING APPLICATION

Store all materials referred to in this Data Sheet at 70°F (21°C) to 80°F (27°C) for 24 hours prior to use. Minimum temperature for installation is 65°F (18°C). Do not apply when the relative humidity is greater than 75% or the substrate temperature is less than 5°F (3°C) above the dew point.

APPLICATION

1. Apply ChemPruf E Primer with a brush or roller.
2. Trowel apply a 1/16" (1.6 mm.) WFT basecoat. Imbed the ChemPruf Fabric and roll into the wet basecoat. Apply ChemPruf 2211 saturant with a medium nap roller. Allow saturant coat to harden.
3. Trowel apply a 1/16" (1.6 mm.) WFT topcoat. Smooth with a short nap roller lightly wetted with ChemPruf E Smoothing Liquid. Allow to harden.
4. If ATLAS recommends use of an optional finisher, apply ChemPruf 211 or ChemPruf 121 with a short nap roller. Depending on service conditions, two coats may be required.

Protect uncured primer, basecoat, saturant, topcoat and finisher coat(s) from moisture contamination until minimum cure time is attained.

INSPECTION

1. Inspect lining for imperfections after basecoat, fabric and saturant have hardened. Repair defects and imperfections prior to application of the topcoat.
2. When specified or required, spark test for pinholes using 100 volts per mil (0.025 mm.) of lining thickness. Spark testing of ChemPruf 2211 and ChemPruf 2211 AO Lining Systems applied to concrete substrates requires ChemPruf E Primer with ATLAS® Carbon Powder.

MEMBRANE

When the ChemPruf 2211 Lining System is to be used as a membrane with chemical resistant masonry sheathing, a release agent, such as silicone or paste wax, must be applied to the surface of the lining system. Apply the release agent after the ChemPruf 2211 has attained the minimum drying time. The use of a release agent allows the masonry sheathing to move independent of the lining system.

PRODUCT SPECIFICATION

The lining system shall be ChemPruf 2211 Series as manufactured by Atlas Minerals & Chemicals, Inc.

ChemPruf 2211 Lining System, a novolac bisphenol F epoxy resin lining system. The lining system shall consist of a silica filled basecoat and topcoat, each trowel applied at a nominal thickness of 1/16" (1.6 mm.), with an intermediate layer of 10 oz./yd² (339 g./m²) fiberglass fabric reinforcement. Service conditions as determined by the manufacturer may require the application of the optional ChemPruf 211 or ChemPruf 121.

ChemPruf 2211 C Lining System, a novolac bisphenol F epoxy resin lining system. The lining system shall consist of a carbon filled basecoat and topcoat each trowel applied at a nominal thickness of 1/16" (1.6 mm.) with an intermediate layer of 5.6 oz./yd² (159 g./m²) carbon fabric reinforcement. Service conditions as determined by the manufacturer may require the application of the optional ChemPruf 211 or ChemPruf 121.

ChemPruf 2211 AO Lining System, a novolac bisphenol F epoxy resin lining system. The lining system shall consist of a silica filled basecoat and aluminum oxide filled topcoat each trowel applied at a nominal thickness of 1/16" (1.6 mm.), with an intermediate layer of 10 oz./yd² (339 g./m²) fiberglass fabric reinforcement. Service conditions as determined by the manufacturer may require the application of the optional ChemPruf 211 or ChemPruf 121.

CLEANING OF TOOLS AND EQUIPMENT

Steel wool, soap and warm water will remove the materials referred to in this Data Sheet from mixing tools and equipment if cleaning is done immediately after use. Solvents, such as methyl ethyl ketone, toluene or xylene, will have to be used after the material has begun to harden. Fully hardened material will have to be removed by mechanical means.

Dispose of residues and wastes in accordance with the directions in the Material Safety Data Sheets and government regulations.

STORAGE AND SHELF LIFE

ChemPruf 2211 Resin must be stored at temperatures above 50°F (10°C) to prevent crystallization. Uncrystallized resin is a clear, amber-colored liquid while crystallized resin has a milky, translucent appearance. If crystals form, heat slowly to 120°F (49°C) and stir until crystals dissolve. Cool before using. This will not affect the chemical or physical properties of the finished product.

Store all materials in a cool, dry environment. Keep all materials out of direct sunlight and temperatures above 86°F (30°C). Protect from freezing. In unopened original containers, ChemPruf E Primer Resin and Hardener, ChemPruf 2211 Hardener and ChemPruf 211 Resin and Hardener have a shelf life of approximately one year. ChemPruf 2000 S

Powder, ChemPruf C Powder, ChemPruf 2000 AO Powder, ATLAS Carbon Powder, ChemPruf E Smoothing Liquid, ChemPruf Carbon Fabric and ChemPruf 10 oz. Reinforcing Fabric can be stored indefinitely.

MAINTENANCE

Should the liner be damaged in any way, it can be repaired by thoroughly cleaning and reapplying the ChemPruf 2211 Series Lining System.

PRECAUTIONS

The materials referred to in this Data Sheet are for Industrial Use Only. They contain materials that present handling and potential health hazards. Consult Material Safety Data Sheets and the container labels for complete precautionary information.

TECHNICAL SERVICES

ATLAS maintains a staff of Technical Service Representatives who are available to assist you with the use of ATLAS products. In the event of difficulties with the application of ATLAS materials, the installation should be stopped immediately and ATLAS' Technical Service Department consulted for assistance.

WARRANTY

ATLAS warrants that its products will be free from defects in workmanship and materials under normal use for a period of one (1) year from the date of shipment by ATLAS (provided the products are installed before the expiration of the shelf life). THERE ARE NO EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR THE PURPOSE FOR THIS PRODUCT WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. ATLAS' LIABILITY FOR ALLEGED BREACH OF THIS WARRANTY SHALL BE LIMITED TO REPAIR OR REPLACEMENT OF THE DEFECTIVE PRODUCT (BUT NOT INCLUDING REMOVAL OF THE DEFECTIVE PRODUCT OR INSTALLATION OF REPLACEMENT PRODUCTS). ATLAS SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES DURING THE WARRANTY PERIOD OR THEREAFTER. **ATLAS' WARRANTY IS VOIDED IF PAYMENT FOR PRODUCT IS NOT RECEIVED IN FULL.**

Note: Atlas makes it a practice to continuously update and enhance our CCM (Corrosion Resistant Construction Materials) products. This may result in slight discrepancies between our printed Data Sheets and the current version. For the most recent version of any Data Sheet, please visit our Web site at www.atlasmin.com