BLOME INTERNATIONAL

Surrounding You with Exceptional Protection

Boro-Block™
Borosilicate Glass Block

PRODUCT DESCRIPTION

Blome Boro-Block™ is a closed-cell, borosilicate foamed glass block that is based on a unique ceramic composition that exhibits outstanding chemical resistance, thermal stability, and excellent insulating properties. Boro-Block™ borosilicate glass block is one of the key components of the Blome Boro-Block™ Lining System. It has excellent resistance to all acids (except HF), many solvents, and weak alkalis (pH < 12). Boro-Block™ is completely closed cell and is impermeable to both liquids and gases and can resist temperatures up to 516˚C. Boro-Block™ provides a lightweight lining system that maintains its excellent thermal properties, such as low thermal conductivity and coefficient of thermal expansion, even in fully saturated, wet gas or liquid environments. The material's unique formulation exhibits excellent resistance to thermal shock and high temperatures.

TYPICAL USES

Blome Boro-Block™ is ideally suited for protecting the interiors of ductwork, chimneys, stacks and FGD absorber inlets/outlets servicing coal fired power plants and other facilities. It is typically applied to steel, concrete, brick and FRP substrates. The system's closed cell, glass block and elastomeric adhesive/membrane provide corrosion protection *and* outstanding thermal insulation, resulting in energy conservation, even in wet, acid flue gas environments. The thermal stability of Boro-Block™ makes it well suited for use in bypass/hot gas service conditions.

Boro-Block™ Linings may be used as a stand-alone lining or in combination with refractories, acid brick, or acid resistant gunites and castables. In these applications, a layer of Boro-Block™ behind the brick or monolithic lining can provide the necessary thermal insulation to replace several additional layers of brick or inches of monolithic linings. These dual layered linings provide a unique combination of corrosion protection and heat conservation at a minimum thickness and weight.

HANDLING CHARACTERISTICS

The block is installed in a manner similar to chemically-resistant masonry, utilizing Boro-Block™ Membrane 888 and Boro-Block Membrane to bond the block to the substrate, and to seal and form side joints between the faces of adjacent block.

SHELF LIFE

Shelf life of Boro-Block™ Borosilicate Glass Block is indefinite when stored in dry conditions protected from the elements. Shelf life for Boro-Block™ Membrane 888, Boro-Block™ Membrane, and Primer 75 is 24 months at 10-21°C (1 year at 40-45°C). Products must be kept in the original unopened containers.

PHYSICAL PROPERTIES – Boro-Block™ Borosilicate Glass Block

Property	Boro-Block™
Appearance / Color:	Cellular block with uniform surface / Dark grey-black
Density (ASTM C303):	0.19 – 0.22 g/cm^3
Thermal Conductivity @ 38˚C (ASTM C177):	0.058 W/m°K
Compressive Strength (ASTM C165):	2.0 MPa, min.
Flexural Strength (ASTM C203):	0.70 MPa, min
Coefficient of Thermal Expansion (ASTM E228):	5.5 x 10^{-6}/°C, max
Temperature Resistance (Block Only):	516 ˚C
Water Absorption (ASTM C240):	<0.20%/wt. (surface wetting only)
Water Vapor Permeability (ASTM E96):	0.0
Thermal Shock (water soaked – 20 °C-175 °C-20 °C):	Pass (no cracking or spalling after 20 cycles)
Surface burning (Propane flame – 5 minutes):	Will not burn or support combustion
Composition:	Foamed borosilicate glass consisting of: -SiO2 – 67%/wt., minimum -B2O3 – 10.5%/wt., minimum -Al2O3 – 3.5%/wt., minimum -Other alkali oxides – 16.5%/wt., maximum
% Closed cells (Cell Structure):	100% (Closed-celled)
Chemical Resistance:	Resistant to mineral acids including sulfuric acid, nitric acid, and hydrochloric acid, and oxides of sulfur and nitrogen. Not resistant to hydrofluoric acid/acid fluorides, or alkalis with a pH ≥ 12.

PHYSICAL PROPERTIES – Installed with Boro-Block™ Membrane 888

Property	Boro-Block™ Lining System
Adhesion to Steel:	1.1 MPa, min
Temperature Resistance (at bed joint-block interface):	200 °C, min
Water Absorption Rate:	<0.005 g/m^2/hr.

PHYSICAL PROPERTIES – Installed with Boro-Block™ Membrane

Property	Boro-Block™ Lining System
Adhesion to Steel:	1.0 MPa, min
Temperature Resistance (at bed joint-block interface):	150 °C, min
Water Absorption Rate:	<0.005 g/m^2/hr.

PACKAGING, ESTIMATING AND STORAGE - Installed with Boro-Block™ Membrane 888

Block per Carton – 38 mm thick / 51 mm thick	60 / 44
Dimensions	152mm x 229mm x 38mm or 51mm
Coverage (Boro-Block™)*	29 block/m^2*
Coverage (Boro-Block™ Membrane 888)*	38 mm Block – 6.39 kg/m^2* | 51 mm Block – 7.04 kg/m^2*

PACKAGING, ESTIMATING AND STORAGE - Installed with Boro-Block™ Membrane

Block per Carton – 38 mm thick / 51 mm thick	60 / 44
Dimensions	152mm x 229mm x 38mm or 51mm
Coverage (Boro-Block™)*	29 block/m^2*
Coverage (Boro-Block™ Membrane)*	38 mm Block – 4.47 kg/m^2* | 51 mm Block – 4.93 kg/m^2*

*Coverage does NOT include waste or overage

Boro-Block™ Borosilicate Glass Block

BID SPECIFICATIONS

For coverage rates with overage included, system compatibility and specification information, consult Blome International technical service, O'Fallon, MO at 800-886-3455.

JOBSITE ENVIRONMENTAL CONDITIONS

Weather conditions, especially dew point, should be constantly monitored. Final blast cleaning and application of membrane system must only be performed when the temperature of steel substrates will not fall within 3°C of the dew point. Dehumidification and/or temperature control may be necessary to meet this requirement. Use a surface thermometer to frequently monitor the temperature of steel substrates during membrane installation.

Boro-Block™ System is best applied while ambient temperatures are between 25°C and 45°C. Do not apply Boro-Block™ Membrane 888 at temperatures below 25°C. Do not apply Boro-Block™ Membrane at temperatures below 15°C For best results, keep system components at 25-30°C minimum, for 24 – 36 hours prior to installation. Avoid installing Boro-Block™ Membranes in direct sunlight. Installations of Boro-Block™ Membranes should be protected from water and weather during installation and curing.

SURFACE PREPARATION

Concrete substrates to which Boro-Block™ system will be applied must have a minimum 28-day cure or have a minimum compressive strength of 21 MPa. Minimum tensile strength of concrete must be 2.1 MPa when tested using a Schmidt Hammer. Concrete must be dry in accordance with ASTM D 4263 Plastic Sheet Test Method. The surface must be free of all laitance, oil and curing compounds.

Steel substrates should be prepared by abrasive blasting to achieve near white metal clean SSPC- SP 10. Blasted steel substrates must not be allowed to flash rust prior to installing membrane. Blasted steel surfaces must be primed with Blome Epoxy Primer 75.

Regardless of the surface, the area to be coated must be clean, dry, and free of all contaminants, both visible and non-visible. The surface must be free of chlorides, nitrates and sulfates and documented as such.

SAFETY PRECAUTIONS

Boro-Block™, Boro-Block™ Membranes Part A, Part B, mixes of them, and Primer 75 present various health hazards if handled improperly. Boro-Block™ dust will cause eye and respiratory tract irritation. Wear a respirator suitable for organic vapors, safety glasses with side shields, gloves, and long sleeve shirts to prevent all contact with skin and eyes. After working with Boro-Block™ components, wash thoroughly before eating, drinking, smoking or other activities.

MIXING AND APPLICATION (Primer and Membrane)

Blome Primer 75 is a 2-part, 100% solids, epoxy primer. It is mixed at 2 parts Resin to 1 part Hardener, and applied by brush, roller, or spray to properly prepared substrates. Mix only as much as can be used in 30 minutes (at 25°C – pot life is reduced at higher temperatures.) Apply at an average thickness of 0.15mm. Boro-Block™ Membrane 888 and Boro-Block™ Membrane may be applied when the primer is tack-free.

Blome Boro-Block™ Membrane 888 and Blome Boro-Block™ Membrane are best mixed with a drill motor driven paddle blade or “Jiffy” PS-1 mixer. All mixing and application equipment must be clean, dry, and free of any contaminants including Portland cement, other mortars, or resins. Boro-Block™ Membrane 888 is designed for use in warm climates (40-45 °C). The minimum application temperature is 25 °C. Boro-Block™ Membrane is designed for use in moderate climates (25-40 °C). The minimum application temperature is 15 °C. Thoroughly mix Part A prior to use.

Consult Boro-Block Membrane 888 and Boro-Block Membrane data sheets for complete mixing details. Mix only full kits - DO NOT split kits. Boro-Block™ Membranes are applied with a trowel on Boro-Block™ side joints and over prepared and primed substrate at a nominal thickness of 3mm.

CLEANUP

All tools, mixing equipment, gloves and application equipment should be cleaned immediately using a citrus or biodegradable cleanser, with hot water, while material is still wet. If material begins to cure, solvent-based cleaners will be required for removal.

WARRANTY

We warrant that our goods will conform to the description contained in the order and that we have good title to all goods sold. Our data sheets and other literature are to be considered accurate and reliable, but are used as guides only. WE GIVE NO WARRANTY OR GUARANTEE, WHETHER OF MERCHANT ABILITY OR FITNESS OF PURPOSE OR OTHERWISE, AND WE ASSUME NO LIABILITY IN CONNECTION THEREWITH. We are happy to give suggestions for applications; however, the user assumes all risks and liabilities in connection therewith regardless of any suggestion, we may give. We assume no liability for consequential or incidental damages. Our liability, in law and equity, shall be expressly limited to the replacement of non-conforming goods at our factory, or at our sole option, to repayment of the purchase price of the non-conforming goods.

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