Pennguard™ 55 Block

SELECTION & SPECIFICATION DATA

Type

Foamed borosilicate glass

Description

Pennguard 55 Block is a closed-cell borosilicate glass block. It is offered in 6- and 9-inch (150 and 225 mm) modules, with standard thicknesses of 1.5 or 2 inches (38 or 51 mm).

Uses

- Centerpiece component of the Pennguard Block Lining System. Normally used with a substrate primer and Pennguard Adhesive/Membrane.
- Offers a unique approach to protect flue gas handling equipment such as ductwork, chimneys and scrubber inlets and outlets found in coal fired power plants and other industrial facilities.
- Used in hot process vessel applications. Low thermal conductivity reduces heat transfer to the underlying substrate. A 1-inch (25 mm) thickness may replace up to 10 inches (250 mm) of dense acid brick components in reducing the heat transfer to the substrate

Features

- Protects from acid condensate corrosion
- Excellent insulation even in saturated flue gas
- Suitable for scrubbed, reheat and bypass gas conditions
- Apply to steel, concrete, gunite, ceramic brick, fiber and glass reinforced plastic (FRP/GRP), and rubber membranes
- Low thermal expansion
- Low thermal conductivity
- Virtually impermeable
- The system is capable of bridging cracks in concrete and ceramic brick substrates.
- Suitable for vertical and overhead application
- Lightweight, easy to cut
- Factory Mutual (FM) tested and approved for use in chimney flues

Limitations

Not for use beyond its chemical resistance or thermal capabilities. Do not use in caustic or hydrofluoric acid environments. Consult ErgonArmor with specific questions.

INSTALLATION GUIDANCE

Reference Specifications

CES-350 ErgonArmor Specification for Installation of the Pennguard Block Lining System

Installation Conditions

Pennguard 55 Block, when used as part of the Pennguard Block Lining System, is designed for installation at temperatures between 50°F (10°C) and 95°F (35°C).

SAFETY

Safety

Trimming and handling this product presents a number of hazards. Read and follow the hazard information, precautions and first aid directions on the individual product labels and safety data sheets before using.

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PACKAGING & ESTIMATING

Product	Code	Packaging
Pennguard 55 Block 1.5 x 6 x 9 inches (38 mm x 152 mm x 229 mm)	19579	60 block carton
Pennguard 55 Block 2 x 6 x 9 inches (51 mm x 152 mm x 229 mm).	19580	48 block carton

Theoretical Coverage

A 60-block carton of 1.5-inch (38 mm) block will cover 22.5 square feet (2.09 sm). A 48-block carton of 2-inch (51 mm) block will cover 18 square feet (1.67 sm).

Block trimming and normal project wastage will reduce actual coverage.

Consult ErgonArmor for specific application advice and estimating assistance.

Storage & Shelf Life

Maintain products in original packaging and sealed until ready for use. Estimated shelf life for Pennguard Block is indefinite. Store in a dry area to prevent cardboard carton degradation.

TYPICAL PHYSICAL PROPERTIES

Property	Typical Value
Color and appearance	Black foamed block
Density, ASTM C303	12 lb/ft^3 (192 kg/m^3)
Compressive strength, ASTM C240, C165	>200 psi (1.38 MPa)
Flexural strength, ASTM C203	>90 psi (0.62 MPa)
Coefficient of thermal expansion 77°F-572°F (25°C-300°C), ASTM E228	3.1 x 10^{-6}/°F (5.5 x 10^{-6}/°C)
Moisture absorption, ASTM C240	0.1 (surface wetting only)
Closed cell content, proprietary test method	100%
Thermal conductivity, ASTM C518, C177 at:	
100°F (38°C)	0.51 BTU/hr·ft·°F (0.074 W/m·K)
200°F (93°C)	0.57 BTU/hr·ft·°F (0.083 W/m·K)
300°F (149°C)	0.64 BTU/hr·ft·°F (0.093 W/m·K)
400°F (204°C)	0.73 BTU/hr·ft·°F (0.106 W/m·K)
Service temperature	The maximum service temperature of the Pennguard Block Lining System is 390°F (199°C). The maximum service temperature of Pennguard 55 Block itself is higher. Maximum service temperature is a function of thermal shock resistance, resistance to deformation under load, and consideration for a suitable engineering safety factor. In certain conditions higher limits may apply. Consult ErgonArmor for specific applications.
Fire resistance	Factory Mutual (FM) approved Consult ErgonArmor for details.

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