



CHEMICAL RESISTANT BRICK AND TILE

SPECIFICATIONS

Corrosion resistant masonry construction utilizes units that meet the requirements of ASTM C279 "Standard Specification for Chemical Resistant Masonry Units" and ASTM C1160 "Standard Specification for Chemical Resistant Carbon Brick".

ASTM C279

Covers solid, kiln fired brick and tile made from clay, shale or mixtures thereof. These units are suitable for indoor and outdoor use in masonry construction subjected to chemical environments.

Three types are available:

Type I For use where low absorption and high acid resistance are not major factors.

Type II For use where lower absorption and higher acid resistance are required.

Type III For use where minimum absorption and maximum acid resistance are required.

ASTM C1160

Covers machine-made, uncured carbon brick produced from low ash calcined petroleum coke. These units are suitable for use in masonry construction which will be exposed to hydrofluoric acid, fluoride salts and high concentrations of alkalis such as sodium and potassium hydroxide. All chemical resistance and physical properties are determined using ASTM C1106, "Standard Test Methods for Chemical Resistance and Physical Properties of Carbon Brick"

ASTM C279 - RED SHALE AND FIRE CLAY PHYSICAL AND CHEMICAL REQUIREMENTS

Designation	Modulus of Rupture (Brick or Tile Flatwise)		Water Absorption Maximum % by 2 Hour Boiling Test		H ₂ SO ₄ Solubility Maximum % Weight Loss
	Average of 5 Brick or Tile	Low Individual	Average of 5 Brick or Tile	High Individual	Average of 5 Brick or Tile
Type I	1,250 psi. (8.6 MPa)	1,000 psi. (6.9 MPa)	6.0%	7.0%	20%
Type II	1,250 psi. (8.6 MPa)	1,000 psi. (6.9 MPa)	4.0%	5.0%	12%
Type III	1,250 psi. (8.6 MPa)	1,000 psi. (6.9 MPa)	1.0%	1.5%	8%

ASTM C279 - RED SHALE AND FIRE CLAY TOLERANCE ON WARPAGE

Minimum Face Dimensions	Maximum Permissible Warpage
8" (203.2 mm.) and Under	3/32" (2.4 mm.)
Over 8" (203.2 mm.) to 12" (304.8 mm.)	1/8" (3.2 mm.)
Over 12" (304.8 mm.) to 16" (406.4 mm.)	5/32" (4.0 mm.)

**ASTM C1160 - CARBON BRICK
PHYSICAL REQUIREMENTS**

Property	Value
Compressive Strength, Minimum	6,000 psi. (41.4 MPa)
Modulus of Rupture, Minimum	1,500 psi. (10.3 MPa)
Water Absorption, Maximum	10%
Ash, Maximum	8%

**ASTM C1160 - CARBON BRICK
PERMISSIBLE VARIATIONS IN DIMENSIONS**

Specified Dimensions	Maximum Permissible Variations in Dimensions Between Largest & Smallest Unit in One Lot*
2" (50.8 mm.) and Under	1/16" (1.6 mm.)
Over 2" (50.8 mm.) to 4" (101.6 mm.)	1/8" (3.2 mm.)
Over 4" (101.6 mm.) to 9" (228.6 mm.)	3/16" (4.8 mm.)
Over 9" (228.6 mm.) to 12" (304.8 mm.)	1/4" (6.4 mm.)

*Size of the lot shall be determined by agreement between the purchaser and the seller.

**ASTM C1160 - CARBON BRICK
TOLERANCE ON WARPAGE**

Maximum Face Dimension	Maximum Permissible Deviation
9" (228.6 mm.) and Under	1/16" (1.6 mm.)
Over 9" (228.6 mm.) to 12" (304.8 mm.)	3/32" (2.4 mm.)

CHEMICAL RESISTANCE

Chemical	Types I, II, III	Carbon Brick
Acids	R	R
Alkalies	C	R
Fluoride Salts	NR	R
Other Salts	R	R
Bleaches	R	C
Solvents	R	R

KEY:

R = Recommended

C = Conditional

NR = Not Recommended

The chemical resistance information provided is intended as a guide only. Red Shale and Fire Clay Brick are not recommended for use in areas of continuous exposure to hydrofluoric acid, fluoride salts and high concentrations of alkalies, such as sodium and potassium hydroxide. Carbon Brick must be used for these mediums. Factors influencing brick selection are chemicals present and their concentrations, temperatures, sustained or intermittent immersion, splash or fumes and anticipated physical impositions. Consult ATLAS' Customer Service Department for assistance in selecting the proper brick or tile for the intended end use.

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