



Designation: F 1312 – 90 (Reapproved 1997)

An American National Standard

Standard Specification for Brick, Insulating, High Temperature, Fire Clay¹

This standard is issued under the fixed designation F 1312; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This specification covers one type of thermal insulating brick for use as backup insulation for refractory furnace linings of boiler furnaces.

1.2 The values stated in inch-pound units are to be regarded as standard. The SI units in parentheses are for information purposes only and may be approximate.

2. Referenced Documents

2.1 ASTM Standards:

C 93 Test Methods for Cold Crushing Strength and Modulus of Rupture of Insulating Firebrick²

C 134 Test Methods for Size, Dimensional Measurements, and Bulk Density of Refractory Brick and Insulating Firebrick²

C 210 Test Method for Reheat Change of Insulating Firebrick²

2.2 Federal Specifications:

PPP-B-601 Boxes, Wood, Cleated-Plywood³

PPP-B-621 Boxes, Wood, Nailed and Lock Corner³

PPP-B-636 Box, Fireboard³

2.3 Military Specification:

MIL-L-10547 Liners, Case, and Sheet, Overwrap; Vapor-proof or Waterproof, Flexible³

2.4 Military Standards:

MIL-STD-105 Sampling Procedures and Tables for Inspection by Attributes³

MIL-STD-129 Marking for Shipment and Storage³

MIL-STD-147 Palletized Unit Load 40 Inch by 48 Inch 4-Way (Partial) Pallet Skids, Runners, or Pallet Type Base³

3. Ordering Information

3.1 Orders for material under this specification shall include

the following information as necessary to describe the material adequately:

3.1.1 ASTM designation and year of issue,

3.1.2 Dimensions required (see 6.1), and

3.1.3 Optional requirements, if any (see S1 through S3).

4. Material and Manufacture

4.1 Bricks shall be composed of heat-resistant materials which have been burned or fired to produce the desired density, strength, and structure.

5. Physical and Mechanical Properties

5.1 The average bulk density shall not exceed 45.0 lb/ft³ (720 kg/m³) (see 9.2).

5.2 The modulus of rupture shall average not less than 100 psi (700 kPa) (see 9.3).

5.3 Bricks shall show an average reheat change of not more than 1 % when heated at 2450°F (1343°C) (see 9.4).

6. Dimensions and Permissible Variations

6.1 Insulating brick shall be furnished in the dimensions specified (see 3.1.2). Standard size brick shall be 9 by 4½ by 2½ in. (229 by 114 by 64 mm), 9 by 4½ by 2 in. (229 by 114 by 51 mm), or 9 by 4½ by 1¼ in. (229 by 114 by 32 mm), as specified.

6.2 Standard size brick shall not vary more than $\pm 1/16$ in. (2 mm) from specified dimensions of 2 in. (51 mm) or greater, nor more than $\pm 1/32$ in. (1 mm) from specified dimensions less than 2 in. (see 9.2).

6.3 For special shapes, no dimension shall vary more than $1/16$ in. (2 mm) from the dimensions specified (see 9.2).

7. Workmanship, Finish, and Appearance

7.1 Bricks shall be of homogeneous structure, free from cracks, laminations, segregations, void defects, or soft centers. All corners and edges shall be sufficiently strong to prevent excessive crumbling or chipping when handled or shipped.

8. Sampling

8.1 For purposes of sampling, an inspection lot for examination and tests shall consist of all material of the same size and shape offered for delivery at one time.

¹ This specification is under the jurisdiction of ASTM Committee F-25 on Ships and Marine Technology and is the direct responsibility of Subcommittee F25.07 on General Requirements.

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² Annual Book of ASTM Standards, Vol 15.01.

³ Available from Standardization Documents, Order Desk, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.