MIL-B-16008C
20 September 1965
SUPERSEDING
MIL-I-16008B
30 November 1960
(See 6.2)

MILITARY SPECIFICATION

BRICK, INSULATING, HIGH TEMPERATURE, FIRE CLAY

This specification is mandatory for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

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

2. APPLICABLE DOCUMENTS

2.1 The following documents of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

SPECIFICATIONS

FEDERAL

PPP-B-601 - Boxes, Wood, Cleated-Plywood.
PPP-B-621 - Boxes, Wood, Nailed and Lock-Corner.
PPP-B-636 - Box, Fiberboard.
QQ-S-781 - Steel Strapping, Flat.

MILITARY

MIL-L-10547 - Liners, Case, and Sheet, Overwrap; Vaporproof or Waterproof, Flexible.

FSC 9350

STANDARDS

MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-129 - Marking for Shipment and Storage.

(Copies of specifications, standards, drawings, and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. - The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal, shall apply.

UNIFORM CLASSIFICATION COMMITTEE
Uniform Freight Classification Rules.

(Application for copies should be addressed to the Official Classification Committee, 1 Park Avenue at 33rd Street, New York, N. Y. 10016.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
C93 - Crushing Strength and Modulus of Rupture of Insulating Fire Brick at Room Temperature.
C210 - Reheat Change of Insulating Fire Brick, Standard Method of Test For.
C437 - Size and Bulk Density of Insulating Fire Brick.

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pa. 19103.)

(Technical society and technical association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

3. REQUIREMENTS

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

3.2 Dimensions. - Insulating brick shall be furnished in the dimensions specified (see 6.1). Standard size brick shall be 9 by 4-1/2 by 2-1/2 inches, 9 by 4-1/2 by 2 inches, or 9 by 4-1/2 by 1-1/4 inches, as specified.

3.3 Dimension tolerances.

3.3.1 Standard size. - Standard size brick shall not vary more than plus or minus 1/16 inch from specified dimensions 2 inches or greater, nor more than plus or minus 1/32 inch from specified dimensions less than 2 inches (see 4.3.1).

3.3.2 Special shapes. - For special shapes, no dimension shall vary more than 1/16 inch from the dimensions specified (see 4.3.1).

3.4 Density. - The average bulk density shall not exceed 45.0 pounds per cubic foot (see 4.3.1).

3.5 Modulus of rupture. - The modulus of rupture shall average not less than 100 pounds per square inch (see 4.3.2).

3.6 Reheat change. - Bricks shall show an average reheat change of not more than 1 percent when heated at 2450 F (see 4.3.3).

3.7 Marking. - Bricks shall be marked with the manufacturer's name or trade-mark by suitable indentation or stamping.

3.8 Workmanship. - 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.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. - Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.2 Sampling for quality conformance inspection. - Sampling for quality conformance inspection shall be performed in accordance with MIL-STD-105, except as otherwise specified herein. 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.

4.2.1 Inspection of the end item. -

4.2.1.1 Examination of the end item. - Examination of the end item shall be made in accordance with 4.2.1.1.1 through 4.2.1.1.4. The lot size, for purpose of determining the sample size in accordance with MIL-STD-105, shall be in units of bricks (see 4.2.1.1.1 and 4.2.1.1.2) and in units of shipping containers (see 4.2.1.1.3).

4.2.1.1.1 Examination of the end item for defects in appearance and workmanship. - The sample unit for the following examination shall be one brick:

Examine	Defect
Appearance and workmanship	Material not as specified.
	Not free from cracks, laminations, segregations, and void surface defects.
	Corners or edges chipped or crumbled affecting serviceability.
	Shape of brick not as required.

4.2.1.1.2 Examination of the end item for defects in dimensions. - The sample unit for the following examination shall be one brick:

Examine	Defect
Standard brick	Specified dimension 2 inches or greater varies by more than plus or minus 1/16 inch from specified. Specified dimension less than 2 inches varies by more than plus or minus 1/32 inch from dimension specified.
Special shape brick	Length, width, or thickness varies by more than plus or minus 1/16 inch from size specified.

4.2.1.1.3 Examination of preparation for delivery. - An examination shall be made to determine that the packing and markings comply with the requirements of Section 5 of this specification. The sample unit for the following examination shall be one shipping container, fully packed, selected just prior to the closing operation. Shipping containers, fully prepared for delivery, shall be examined for closure defects.

Examine	Defect
Packing	Not as specified.
	Container not as specified, closures not accomplished by specified or required methods or materials.
	Any nonconforming component, component missing, damaged or otherwise defective, affecting serviceability.

Examine	Defect
Packing	Inadequate application of components; such as, incomplete closures of case liners, container flaps, loose or inadequate strappings, bulged or distorted containers.
Count	Number of bricks per container less than specified or indicated quantity.
Weight	Gross or net weight exceeds specified requirements..
Markings	Omitted, illegible, incorrect, incomplete, or not as specified (see 5.2).

4.2.1.1.4 Inspection levels and acceptable quality levels (AQL's) for examination. - The inspection levels for determining the sample size, and the acceptable quality levels (AQL's) expressed in defects per 100 units, shall be as follows:

Examination paragraph	Inspection level	Acceptable quality level
4.2.1.1.1	S-4	2.5
4.2.1.1.2	S-3	2.5
4.2.1.1.3	S-2	4.0

4.2.2 Testing of the end item. - The end item shall be tested for the applicable characteristics as shown in table I from each lot presented for examination for each size and shape of brick. The sample unit shall be one brick. The sample size shall be as shown in table I. There shall be no evidence of failure to meet the applicable unit or average requirements shown in table I.

Table 1 - Instructions for testing.

Characteristic	Specification reference: Requirement	Specification reference: Test method	Requirements applicable to: Individual unit	Requirements applicable to: Lot average	Number Determinations per unit	Results reported as: Pass or Fail	Results reported as: Numerically to nearest 1/	Sample size
Density	3.4	4.3.1	---	X	1	---	0.1 lb/cu. ft.	10
Modulus of rupture	3.5	4.3.2	---	X	1	---	p.s.i	10
Reheat change	3.6	4.3.3	---	X	1	---	0.1 percent	3

1/ Test reports shall include all values on which average results are based.

4.3 Test procedures. -

4.3.1 Dimensions and bulk density. - Dimensions and bulk density shall be determined in accordance with the method specified in ASTM C134, except that the sample size for examination of dimensions shall be governed by 4.2.1.1.4.

4.3.2 Modulus of rupture. - The modulus of rupture shall be determined in accordance with the method specified in ASTM C93.

4.3.3 Reheat change. - The reheat change shall be determined in accordance with ASTM C210, except that the test specimens shall be maintained at a temperature of 2450°F for 24 hours.

5. PREPARATION FOR DELIVERY

5.1 Packing. -

5.1.1 Level A. - Not more than 25 straight 9 by 4-1/4 by 2-1/2 inch bricks or equivalent number of split bricks or special shapes shall be packed in snug fitting wood-cleated plywood, nailed wood or fiberboard boxes conforming to PPP-B-601 (overseas type), PPP-B-621 (class 2) or PPP-B-636 (class weather-resistant), respectively. Shipping containers shall have case liners conforming to MIL-L-10547. Case liners shall be closed and sealed in accordance with the appendix to MIL-L-10547. Case liners for fiberboard boxes conforming to PPP-B-636 may be omitted provided the boxes are waterproof sealed with tape in accordance with the box specification and the appendix thereto. Void spaces shall be completely filled with cushioning material to prohibit movement of bricks within the container. Boxes shall be closed and strapped in accordance with the applicable box specification or appendix thereto.

5.1.2 Level B. - Not more than 25 straight 9 by 4-1/2 by 2-1/2 inch bricks or equivalent number of split bricks or special shapes shall be packed in suitable style corrugated or solid fiberboard boxes conforming to the special requirements of PPP-B-636. Boxes having a minimum mullen test of 200 pounds conforming to PPP-B-636 may be used where the gross weight per carton does not exceed 88 pounds. The boxes shall be strapped with one girthwise and one lengthwise tension tied steel band of a minimum 3/8 by 0.015 inch flat steel strapping conforming to QQ-S-781. Void spaces within the containers shall be filled with cushioning material to prohibit movement within.

5.1.3 Level C. - The bricks shall be packed in a manner to insure carrier acceptance and safe delivery to destination at the lowest applicable rate. Containers shall comply with the Uniform Freight Classification Rules or other carrier regulations applicable to the mode of transportation.

5.2 Marking. - In addition to any special marking required by the contract or order, shipping containers shall be marked in accordance with MIL-STD-129 and as follows: "STORE IN DRY PLACE".

6. NOTES

6.1 Ordering data. - Procurement documents should specify the following:

(a) Title, number, and date of this specification.
(b) Dimensions required (see 3.2).
(c) Applicable level of packing required (see 5.1).

6.2 CHANGES FROM PREVIOUS ISSUE. THE EXTENT OF CHANGES (DELETIONS, ADDITIONS, ETC.) PRECLUDE THE ANNOTATION OF THE INDIVIDUAL CHANGES FROM THE PREVIOUS ISSUE OF THIS DOCUMENT.

Custodians:
Navy - SH
Air Force - 69

Review activities:
Navy - SH, YD
Air Force - 69

User activities:
Army - MO

Preparing activity:
Navy - SH
(Project 9350-0038)

SPECIFICATION ANALYSIS SHEET

Form Approved
Budget Bureau No. 119-R004

INSTRUCTIONS

This sheet is to be filled out by personnel either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity *(as indicated on reverse hereof)*.

SPECIFICATION

ORGANIZATION *(Of submitter)* | CITY AND STATE

CONTRACT NO. | QUANTITY OF ITEMS PROCURED | DOLLAR AMOUNT $

MATERIAL PROCURED UNDER A

☐ DIRECT GOVERNMENT CONTRACT ☐ SUBCONTRACT

1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?

A. GIVE PARAGRAPH NUMBER AND WORDING.

B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES.

2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID

3. IS THE SPECIFICATION RESTRICTIVE?

☐ YES ☐ NO IF "YES", IN WHAT WAY?

4. REMARKS *(Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)*

SUBMITTED BY *(Printed or typed name and activity)* | DATE

DD FORM 1 APR 63 1426 REPLACES NAVSHIPS FORM 4863, WHICH IS OBSOLETE C-8278

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