



Standard Specification for Clay Flue Linings¹

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

1. Scope

1.1 This specification establishes the criteria for acceptance, prior to installation, of clay flue linings used for conveying hot gases in masonry chimneys.

1.2 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

2. Referenced Documents

2.1 ASTM Standards:

C 67 Test Methods for Sampling and Testing Brick and Structural Clay Tile²

C 301 Test Methods for Vitriified Clay Pipe²

C 896 Terminology Relating to Clay Products²

3. Terminology

3.1 *Definitions*—Clay, fire clay, shale, and surface clay are as defined in Terminology C 896.

4. Classification

4.1 *Types*—Flue linings acceptable under this specification shall be designated as rectangular nonmodular, rectangular modular, round or oval.

5. Materials and Manufacture

5.1 Flue linings shall be manufactured from fire clay, shale, surface clay, or a combination of these materials that when formed and fired to suitable temperatures, shall yield a product that is strong, durable, serviceable, and conforms to this specification.

6. Physical and Chemical Requirements

6.1 Absorption:

6.1.1 The absorption of clay flue linings shall not exceed 8.0 % when tested in accordance with Test Methods C 301.

6.1.2 *Test Specimens*— Five dry test specimens shall be obtained from the five flue liners to be tested and shall measure as closely as possible to 4 in. (100 mm) by 4 in. (100 mm) per

side. All rough edges shall be ground off and loose particles removed.

6.1.3 If any of the test specimens fail to meet the requirements, the manufacturer shall be allowed to retest on two additional specimens for each one that failed. The flues will be acceptable if all the subsequent specimens for retest meet the requirements.

6.2 Acid Resistance:

6.2.1 This is a test used to determine the resistance of clay flue liners to the action of acids encountered in chimneys. This test shall be performed only when specified.

6.2.2 The flue liner shall be acceptable if the acid soluble material does not exceed 0.25 % when tested in accordance with Test Methods C 301.

6.2.3 *Test Specimens*— Select one test specimen from each size of flue liner. The specimens shall measure about 2 in. (50 mm) by 2 in. (50 mm) per side and weigh not more than 200 g. They shall be sound pieces with all edges freshly broken, free of cracks or shattered edges, and shall be thoroughly cleaned.

6.3 Freeze-Thaw Cycle Test:

6.3.1 When flue liners are tested in accordance with Test Methods C 67, Section 8 on structural clay tile, there shall be no breakage and the percentage of weight loss shall not exceed 0.5 %.

6.3.2 *Test Specimens*— Five dry test specimens shall be obtained from the five flue liners to be tested and shall measure as closely as possible to 4 in. (100 mm) by 4 in. (100 mm) per side. All rough edges shall be ground off and loose particles removed.

7. Sizes and Dimensions

7.1 Flue linings shall be specified and furnished in the dimensions prescribed in Tables 1-4.

7.2 Variations in dimensions in Tables 1-4 shall not exceed $\pm\frac{1}{2}$ in. (± 13 mm) for outside dimensions. Permissible wall thickness variation is $\pm\frac{1}{8}$ in. (± 3 mm) for all flue liners, except that there shall be no limit for plus variation in round flue linings. Variations in dimensions of round flue lining shall not exceed those shown in Table 3. The maximum difference in the diagonal dimensions of rectangular modular flue lining shall not exceed $\frac{1}{2}$ in. (13 mm) for sizes up to and including 12 in. (305 mm) by 12 in. (305 mm) and $\frac{3}{4}$ in. (19 mm) for larger sizes.

¹ This specification is under the jurisdiction of ASTM Committee C-4 on Vitriified Clay Pipe and is the direct responsibility of Subcommittee C04.20 on Methods of Test and Specifications.

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² *Annual Book of ASTM Standards*, Vol 04.05.