Designation: ~~C27 – 98 (Reapproved 2013)~~ C27 – 98 (Reapproved 2018)

Standard Classification of Fireclay and High-Alumina Refractory Brick[1]

This standard is issued under the fixed designation C27; 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 U.S. Department of Defense.

1. Scope

1.1 This classification covers machine-made fireclay and high-alumina refractory brick, and its purpose is to set forth the various classes and types of these materials in accordance with their normal and characteristic properties, which are important in their use.

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.3 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

C16 Test Method for Load Testing Refractory Shapes at High Temperatures
C24 Test Method for Pyrometric Cone Equivalent (PCE) of Fireclay and High-Alumina Refractory Materials
C113 Test Method for Reheat Change of Refractory Brick
C133 Test Methods for Cold Crushing Strength and Modulus of Rupture of Refractories
C134 Test Methods for Size, Dimensional Measurements, and Bulk Density of Refractory Brick and Insulating Firebrick

NOTE 1—Chemical analysis of refractory products is determined by a combination of ~~x-ray~~X-ray fluorescence (XRF) and inductively coupled plasma (ICP) using standard reference materials (SRM), including various types of minerals and refractory materials that are available from the National Institute of Standards and Technology[3] and other appropriate sources.

3. Significance and Use

3.1 Alumina-silica refractory brick is produced from various combinations of alumina and silica-containing materials. These bricks can vary in chemical composition from almost 100 % alumina and little silica to almost 100 % silica and little alumina. It is therefore useful to establish a classification scheme based on physical properties and chemical analysis. One group, fireclay brick, is classified based on physical properties since some overlap of alumina and silica content can occur. A second group, high-alumina brick, is classified primarily based on alumina content. The classification allows those familiar with refractory materials to group similar products from various suppliers in a standard and consistent manner.

4. Basis of Classification

4.1 *Fireclay Brick* are divided into five different classes:

4.1.1 ~~Super-duty,~~ Super duty,
4.1.2 ~~High-duty,~~ High duty,
4.1.3 Semi-silica,
4.1.4 ~~Medium-duty,~~ Medium duty, and
4.1.5 ~~Low-duty.~~ Low duty.

[1] This classification is under the jurisdiction of ASTM Committee C08 on Refractories and is the direct responsibility of Subcommittee C08.92 on The Joseph E. Kopanda Subcommittee for Editorial, Terminology and Classification.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] Available from the National Institute of Standards and Technology (NIST), Gaithersburg, MD 20899.