Designation: C 455 – 07

Standard Classification of Chrome, Chrome-Magnesia, Magnesia-Chrome, and Magnesia Brick[1]

This standard is issued under the fixed designation C 455; 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.

1. Scope

1.1 This classification categorizes machine-made refractory brick defined as chrome, chrome-magnesia, magnesia-chrome, and magnesia brick (see 3.1). It does not cover products made from electrically fused magnesium oxide or to products made by fusion casting. Its purpose is to describe classes distinguished by obvious differences in magnesium oxide (MgO) content except for chrome brick.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*

C 71 Terminology Relating to Refractories[2]

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

3. Terminology

3.1 For definitions of terms used in this classification, see Terminology C 71.

4. Significance and Use

4.1 This classification categorizes the defined types of refractory brick, with the exception of chrome brick, into distinct classes based on a nominal and minimal value for magnesium oxide content. Chrome brick are treated as a separate class without reference to magnesium oxide content. Such classes have historically been generally useful in relating the defined types to specific industrial applications and in developing product or purchasing specifications.

5. Basis of Classification

5.1 Chrome-magnesia, magnesia-chrome, and magnesia brick are classified by MgO content as shown in Table 1. Chrome brick is not classified by MgO content (see Table 1).

6. Test Methods

6.1 The determination of MgO on an ignited basis as required by this classification shall be determined by a combination of x-ray fluorescence (XRF) and inductively coupled plasma (ICP) using standard reference materials (SRM), including various types of minerals and refractory materials which are available from the National Institute of Standards and Technology and other appropriate sources.

7. Retests

7.1 Because of variables resulting from sampling and the lack of satisfactory reproducibility in tests conducted by different laboratories, the material may be resampled and retested when requested by either the manufacturer or the purchaser. This may apply in instances when the first test results do not conform to the requirements prescribed in this classification. The final results to be used shall be the average of at least two sets of results, each of which has been obtained by following in detail the specified testing procedures.

8. Keywords

8.1 brick; chrome; classification; magnesium oxide; magnesia; MgO; refractories

[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.

TABLE 1 Classification of Chrome,[A] Chrome-Magnesia, Magnesia-Chrome, and Magnesia Brick According to MgO Content

Class	MgO Content, %[B]	
	Nominal	Minimum
Chrome-Magnesia and Magnesia-Chrome Brick[C]		
30	30	25
40	40	35
50	50	45
60	60	55
70	70	65
80	80	75
Magnesia Brick[C]		
90	90	86
95	95	91
98	98	96

[A] Chrome brick—a refractory brick, which may be burned or unburned, manufactured predominately or entirely of refractory-grade chrome ore.
[B] Ignited basis.
[C] This classification applies to both chemically bonded and burned brick.