

भारतीय मानक ब्यूरो**DRAFT FOR WIDE CIRCULATION***(Not to be reproduced without permission of BIS or used as an Indian Standard)***भारतीय मानक प्रारूप****अग्निसह मोर्टारस — भाग 7: तापन पर आयाम में स्थायी परिवर्तन ज्ञात करना***Draft Indian Standard***Refractory mortars — Part 7: Determination of permanent change in dimensions on heating**

ICS 81.080

Refractories Sectional Committee, MTD 15

Last date of comment:
07/12/2023**NATIONAL FOREWORD**

This draft Indian Standard (Part 7) which is identical to ISO 13765-7:2021 'Refractory mortars — Part 7: Determination of permanent change in dimensions on heating' issued by the International Organization for Standardization (ISO), and subject to its finalization, is to be adopted by the Bureau of Indian Standards on the recommendation of the Refractories Sectional Committee and approval of the Metallurgical Engineering Division Council.

This draft Indian Standard (Part 7) has been prepared and recommended for adoption after thoroughly reviewing the already existing indigenous Indian standards on drying shrinkage measurement namely IS 13185 : 1991 'Method of Test for Determination of Drying Shrinkage of Refractory Mortars' and on testing of air-setting mortars namely IS 11452 : 1985 'Methods of testing air-setting refractory mortars' vis-a-vis the corresponding ISO standard namely ISO 13765-7:2021 'Refractory mortars — Part 7: Determination of permanent change in dimensions on heating' and other six parts of the aforementioned ISO standard which were already adopted as Indian Standards under dual numbering system mentioned below. During the review, it was observed that the indigenous Indian standard, namely IS 13185 : 1991 'Method of Test for Determination of Drying Shrinkage of Refractory Mortars', covered only the drying shrinkage of refractory mortars as compared to ISO 13765-7:2021 'Refractory mortars — Part 7: Determination of permanent change in dimensions on heating' which covers determination of permanent change in dimensions on heating (drying and/or firing) of refractory mortars. Hence, this draft Indian Standard (Part 7), over and above prescribing the test method for determination of firing shrinkage also covers the determination of drying shrinkage as given in IS 13185 : 1991 'Method of Test for Determination of Drying Shrinkage of Refractory Mortars' and hence supersedes IS 13185 : 1991 'Method of Test for Determination of Drying Shrinkage of Refractory Mortars'.

Further, the methods of testing air-setting refractory mortars were earlier also covered in IS 11452 : 1985 'Methods of testing air-setting refractory mortars'. This Indian Standard IS 11452 : 1985 'Methods of testing air-setting refractory mortars' specified the test methods of all types of air-setting mortars available in premixed state (dry/wet) or as two components (powder and liquid binder supplied separately). The test methods described in IS 11452 : 1985 'Methods of testing air-setting refractory mortars' were sieve analysis, chemical analysis, bond strength, refractoriness and, drying and firing shrinkage. However, the standard lacked consistency measurement methods which is the measure of the viscosity of the material in its ready-to-use state and is considered a vital requirements for any type of mortar and is already covered in IS 16052 (Part 1) : 2013/ISO 13765-1 : 2004 Refractory Mortars : Part 1 Determination of consistency using the penetrating cone method. The Sectional Committee while reviewing felt necessary to withdraw the Indian standard IS 11452 as the test methods for determination of bond strength/flexural bond strength , sieve analysis, drying and firing shrinkage were already covered in IS 16052 (Part 4) : 2013/ISO 13765-3 : 2004 'Refractory Mortars : Part 4 Determination of flexural bonding strength', IS 16052 (Part 5) : 2013/ISO 13765-5 : 2004 'Refractory Mortars : Part 5 Determination of grain size distribution (sieve analysis)' and this part of Indian standard (Part 7) respectively. The method for determination of refractoriness or Pyrometric Cone Equivalent (PCE) or softening point are covered in IS 1528 (Part1) : 2010 'Methods of sampling and physical tests : Part 1 Determination of Pyrometric Cone Equivalent (PCE) or softening point for refractory materials (*third revision*)'. Hence, the Indian Standard IS 11452 is to be withdrawn and superseded by IS 16052 (Part4), IS 16052 (Part5) , IS 16052 (Part 7) for determination of bond strength, sieve analysis and, drying and firing shrinkage respectively.

This Indian Standard has been issued in several parts. Other parts of this Indian Standard are:

IS 16052 (Part 1) : 2013/ISO 13765-1 : 2004 Refractory Mortars : Part 1 Determination of consistency using the penetrating cone method

IS 16052 (Part 2) : 2013/ISO 13765-2 : 2004 Refractory Mortars : Part 2 Determination of consistency using the reciprocating flow table method

IS 16052 (Part 3) : 2013/ISO 13765-3 : 2004 Refractory Mortars : Part 3 Determination of joint stability

IS 16052 (Part 4) : 2013/ISO 13765-3 : 2004 Refractory Mortars : Part 4 Determination of flexural bonding strength

IS 16052 (Part 5) : 2013/ISO 13765-5 : 2004 Refractory Mortars : Part 5 Determination of grain size distribution (sieve analysis)

IS 16052 (Part 6) : 2013/ISO 13765-6 : 2004 Refractory Mortars : Part 3 Determination of moisture content of ready-mixed mortars

The text of ISO standard has been approved as suitable for publication as in Indian Standard without deviations. Certain terminologies and conventions are, however, not identical with those used in Indian Standard. Attention is especially drawn to the following:

- a) Wherever the words 'International Standard' appear referring to this standard, it should be read as 'Indian Standard'.
- b) Comma (,) has been used as a decimal marker while in Indian Standards the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exists. The corresponding Indian Standards which are to be substituted in their place are listed below along with their degree of equivalence for the edition indicated:

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
ISO 8656-1:1988, Refractory products — Sampling of raw materials and unshaped products — Part 1: Sampling scheme.	IS 1528 (Part 7) : 2011 Methods of sampling and physical tests for refractory materials: Part 7 Methods of sampling and criteria for conformity (<i>second revision</i>)	Not Equivalent
ISO 13765-1, Refractory mortars — Part 1: Determination of consistency using the penetrating cone method	IS 16052 (Part 1) : 2013/ ISO 13765-1 : 2004 Refractory mortars — Part 1: Determination of consistency using the penetrating cone method	Identical
ISO 13765-2, Refractory mortars — Part 2: Determination of consistency using the reciprocating flow table method.	IS 16052 (Part 2) : 2013/ ISO 13765-2:2004 Refractory mortars — Part 2: Determination of consistency using the reciprocating flow table method.	Identical
ISO 13765-3, Refractory mortars — Part 3: Determination of joint stability.	IS 16052 (Part 3) : 2013/ ISO 13765-3:2004 Refractory mortars — Part 3: Determination of joint stability.	Identical

In reporting the result of a test or analysis made in accordance with this standard, is to be rounded off, it shall be done in accordance with IS 2: 2022 'Rules for rounding off numerical- values (second revision)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

The scope of the standard is as follows:

SCOPE

This document describes the method for determining the permanent change in dimensions on heating (drying and/or firing) of refractory mortars.

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IS 16052 (Part 7):XXXX/ ISO 13765-7:2021

The complete document/text of ISO 13765-7:2021 'Refractory mortars — Part 7: Determination of permanent change in dimensions on heating' may be made available, on request to:

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