

## भारतीय मानक ब्यूरो

DRAFT FOR WIDE CIRCULATION

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*भारतीय मानक प्रारूप*

रीफ्रेक्टरीज — इम्पल्स एक्ससिटेशन ऑफ़ वाइब्रेशन के द्वारा उत्पित  
ताप में डायनामिक यंग'स मॉड्युलस (म ओ इ) निर्धारित करना

*Draft Indian Standard*

**Refractories — Determination of dynamic Young's modulus  
(MOE) at elevated temperatures by impulse excitation of vibration**

ICS 81.080

Refractories Sectional Committee, MTD 15.

Last date of comment:  
19/12/2023

### NATIONAL FOREWORD

This draft Indian Standard which is identical with ISO 22605:2020 “Refractories — Determination of dynamic Young's modulus (MOE) at elevated temperatures by impulse excitation of vibration” 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.

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:

- Wherever the words 'International Standard' appear referring to this standard, it should be read as 'Indian Standard'.
- 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<br/>Equivalence</i> |
|-------------------------------|--------------------------------------|----------------------------------|
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|--|---|----------------|
| ISO 5022, Shaped refractory products — Sampling and acceptance testing.  | IS 1528 (Part 7) : 2010 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 8656-1, Refractory products — Sampling of raw materials and unshaped products — Part 1: Sampling scheme.                                     | IS 1528 (Part 7) : 2010 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 12680-1, Methods of test for refractory products — Part 1: Determination of dynamic Young's modulus (MOE) by impulse excitation of vibration | MTD 15 (23810) Methods of test for refractory products: Part 1 Determination of dynamic Young's modulus (MOE) by impulse excitation of vibration.                           | Identical      |
| ISO 16835, Refractory products — Determination of thermal expansion  | IS 1528 (Part 19) : 2020 Methods of Sampling and Physical Tests for Refractory Materials: Part 19 Determination of Thermal Expansion ( <i>First Revision</i> )              | Identical      |
| IEC 60584-1, Thermocouples — Part 1: EMF specifications and tolerances   | IS 16923 (Part 1) : 2018 Thermocouples Part 1 EMF Specifications and Tolerances ( <i>First Revision</i> )   | Identical      |
| IEC 60584-2, Thermocouples <sup>1)</sup> — Part 2: Tolerances  | IS 16923 (Part 1) : 2018 Thermocouples Part 1 EMF Specifications and Tolerances ( <i>First Revision</i> )   | Identical      |

- 1) The International Standard IEC 60584-2 : 1982 “Thermocouples — Part 2: Tolerances” has been replaced by IEC60584-1: 2013 “Thermocouples — Part 1: EMF specifications and tolerances” which is adopted as a Indian Standard IS 16923 (Part 1) : 2018 “Thermocouples Part 1 EMF Specifications and Tolerances (*First Revision*)” under dual numbering system.

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 specifies a method for determining the dynamic Young’s modulus of rectangular cross-section bars and circular cross-section specimens of refractories by impulse excitation of

vibration at elevated temperature. The dynamic Young's modulus is determined using the resonant frequency of the specimen in its flexural mode of vibration.

This document does not address the safety issues associated with its use. It is responsibility of the users of this standard to establish appropriate safety and health practices.

**The complete document/text of ISO 22605:2020 “Refractories — Determination of dynamic Young's modulus (MOE) at elevated temperatures by impulse excitation of vibration” may be made available, on request to:**

संजीव मैनी / **Sanjiv Maini**

वरिष्ठ निदेशक, वैज्ञानिक 'एफ' एवं प्रमुख / **Senior Director, Scientist 'F' & Head**

धातुकर्म अभियांत्रिकी विभाग / **Metallurgical Engg. Department**

भारतीय मानक ब्यूरो / **Bureau of Indian Standards,**

मानक भवन, नई दिल्ली / **Manak Bhavan, 9, B.S.Z. Marg,**

**New Delhi-110002**

**E-mail: mtd@bis.gov.in, mtd15@bis.gov.in**

**Tel: + 91 11 23231085**