

**भारतीय मानक मसौदा**

**कागज़ और संबद्ध उत्पादों के लिए नमूना चयन और परीक्षण  
पद्धतियाँ**

भाग 8 — कागज़, बोर्ड, लुगदी और सेलूलोज़ नैनोमटेरियल्स के लिए परीक्षण  
पद्धतियाँ

अनुभाग 3 — एसिड घुलनशील मैग्नीशियम, कैल्शियम, मैंगनीज, लोहा, तांबा, सोडियम  
और पोटेशियम का निर्धारण

***Draft Indian Standard***

**Methods of Sampling and Test for Paper and Allied  
Products**

Part 8 — Methods of Test for Paper, Board, Pulps and cellulose  
nanomaterials

Section 3 — Determination of acid-soluble magnesium, calcium,  
manganese, iron, copper, sodium and potassium

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ICS 85.040; 85.060

## NATIONAL FOREWORD

*(formal clauses to be added later)*

Presence of different elements such as calcium, manganese, iron, copper, sodium, etc. affects the quality and performance characteristics of the paper, pulp and boards. Some of the examples of effect could be list as excessive amount of calcium salt can adversely affect the sizing characteristics whereas traces of copper, iron and manganese could lead to discolouration and impact on the dyeing properties. It is therefore essential to standardize the methods of quantification of such elements in paper, board, pulp and cellulosic nanomaterials.

ISO has published test method standards related to paper, pulp and board under three broad categories namely 'Paper, board and pulps', 'Paper and board' and 'Pulps'. Related Indian Standards published in IS 1060 (Parts 1, 2 and 3) 'Methods of sampling and test for paper and allied products' and IS 6213 series of standards published for 'Methods of test for pulps' are widely recognized and used in India. To maintain consistency with the prevailing international practices and to retain the existing test methods series, the committee responsible for formulating this standard decided to harmonize the methods of tests prescribed in IS 1060 series and IS 6213 series with those published by ISO and publish these adopted test methods standards in subsequent parts/ sections of IS 1060 series or IS 6213 series.

Related Indian Standards on methods of test have been published in the following other parts of IS 1060 series on 'Methods of sampling and test for paper and allied products':

Part 4 Methods of test for paper, board and pulp

Part 5 Methods of test for paper and board

Part 6 Methods of test for paper

Part 7 Methods of test for board

This standard is being published as Part 8 'Methods of test for paper, board, pulps and cellulose nanomaterials' of IS 1060 series. This Section of IS 1060 (Part 8) describes the determination of acid-soluble magnesium, calcium, manganese, iron, copper, sodium and potassium in all types of paper, board, pulp and cellulose nanomaterials samples. The other sections of IS 1060 (Part 8) are:

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|-------|---|
| Sec 1 | Determination of residue (ash content) on ignition at 525 °C<br>CHD 15 (25952) WC |
| Sec 2 | Determination of residue (ash content) on ignition at 900 °C<br>CHD 15 (25962) WC |

- Sec 4        Determination of dry matter content by oven-drying method — Materials  
                 in solid form  
                 CHD 15 (26254) WC
- Sec 5        Determination of dry matter content by oven-drying method —  
                 Suspensions of cellulosic nanomaterials  
                 CHD 15 (26256) WC

This standard was first published as IS 1060 (Part 4/Sec 11) in 2014 by identical adoption of ISO 12830 : 2011, prescribing the methods of test for determination of acid-soluble magnesium, calcium, manganese, iron, copper, sodium and potassium in paper, board and pulp.

The relevant methods of test standards have also been published in the following parts of IS 6213 series and updated from time to time:

Part 12 Determination of calcium content (*first revision*)

Part 13 Determination of copper content (*first revision*)

Part 14 Determination of iron content (*first revision*)

Part 15 Determination of manganese content (*first revision*)

During the formulation and revision of above parts of IS 6213 series due weightage was given to then existing ISO Standards.

ISO has further revised the standard in 2019 expanding the title and scope to cover cellulose nanomaterials as well. Recognizing the benefits of following uniform practices globally, the committee responsible for formulation of this standard, has decided to adopt latest version of ISO 12830 and publish it as part of IS 1060 (Part 8) series, which provides methods of test for paper, board, pulp and cellulose nanomaterials. This standard supersedes the following Indian Standards:

a) IS 1060 (Part 4/Sec 11) : 2014 'Determination of acid-soluble magnesium, calcium, manganese, iron, copper, sodium and potassium'; and

b) IS 6213 'Methods of test for Pulp'

Part 12 : 2013 Determination of calcium content (*first revision*)

Part 13 : 2013 Determination of copper content (*first revision*)

Part 14 : 2013 Determination of iron content (*first revision*)

Part 15 : 2013 Determination of manganese content (*first revision*)

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

- a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'; and
- 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 exist. The corresponding Indian Standards, which are to be substituted in their respective places, are listed below along with their degree of equivalence for the editions indicated:

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
ISO 186 Paper and board — Sampling to determine average quality	IS 1060 (Part 5/Sec 1) : 2014/ISO 186 : 2002 Methods of sampling and test for paper and allied products: Part 5 Methods of test for paper and board, Section 1 Sampling to determine average quality.	Identical with ISO 186 : 2002
	CHD 15 (26254) WC/ ISO 638-1 : 2022 Methods of test for pulp: Part 8 Paper, board, pulps and cellulosic nanomaterials, Section 4 Determination of dry matter content by oven-drying method — Materials in solid form. (Under development)	Identical with ISO 638-1 : 2022
ISO 638 Paper, board and pulps — Determination of dry matter content — Oven-drying method	CHD 15 (26256) WC/ISO 638-2 : 2022 Methods of test for pulp: Part 8 Paper, board, pulps and cellulosic nanomaterials, Section 5 Determination of dry matter content by oven-drying method — Suspensions of cellulosic nanomaterials. (Under development)	Identical with ISO 638-2 : 2022

{Superseding IS 1060 (Part 4/Sec 11),  
IS 6213 (Part 12), IS 6213 (Part 13), IS 6213 (Part 14) and IS 6213 (Part 15)}

ISO 1762 Paper, board and pulps — Determination of residue (ash) on ignition at 525 °C	CHD 15 (25952) WC/ISO 1762 : 2019 Methods of sampling and test for paper and allied products: Part 8 Methods of test for paper, board, pulps and cellulose nanomaterials, Section 1 Determination of residue (ash content) on ignition at 525 °C. (Under development)	Identical with ISO 1762 : 2019
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The Committee has reviewed the provisions of the following International Standard referred in this adopted standard and has decided that it is acceptable for use in conjunction with this standard:

<i>International Standard</i>	<i>Title</i>
ISO 7213	Pulps — Sampling for testing
ISO 3696	Water for analytical laboratory use — Specification and test methods

In this adopted standard, reference appears to certain International Standards where the standard atmospheric conditions to be observed are stipulated which are not applicable to tropical/subtropical countries. The applicable standard atmospheric conditions for Indian conditions are  $(27 \pm 2)$  °C and  $(65 \pm 5)$  percent relative humidity and shall be observed while using this standard.

In reporting the result of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'.

**'FOR COMPLETE TEXT OF THE DOCUMENT, KINDLY REFER ISO 12830 : 2019**

**Note:** The technical content of the document has not been enclosed as these are identical with the corresponding ISO Standard. For obtaining the copy of the complete ISO Standard,

Please contact:

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**DRAFT FOR COMMENTS ONLY**

**Doc: CHD 15 (25971) WC**

**IS 1060 (Part 8/Sec 3) : 20XX**

**ISO 12830 : 2019**

**July 2024**

**{Superseding IS 1060 (Part 4/Sec 11),**

**IS 6213 (Part 12), IS 6213 (Part 13), IS 6213 (Part 14) and IS 6213 (Part 15)}**

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