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मानक

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IS 2095-1 (2011): Gypsum Plaster Boards, Part 1: Plain Gypsum Plaster Boards [CED 4: Building Limes and Gypsum Products]



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“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक
जिप्सम के प्लास्टर बोर्डों की विशिष्टि
भाग 1 सादे जिप्सम के प्लास्टर बोर्ड
(तीसरा पुनरीक्षण)

Indian Standard
GYPSUM PLASTER BOARDS — SPECIFICATION
PART 1 PLAIN GYPSUM PLASTER BOARDS
(*Third Revision*)

ICS 91.100.10

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

FOREWORD

This Indian Standard (Part 1) (Third Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Building Lime and Gypsum Products Sectional Committee had been approved by the Civil Engineering Division Council.

The internal surfaces of walls and ceilings of most of the buildings are finished internally by applying plaster in one or more coats. In order to reduce the demand of site labour, the use of building board, such as gypsum plaster board, fibre hard board, cement coir board and asbestos cement building board as covering for walls and ceiling is increasing steadily. Gypsum boards have the specific advantage of being lighter than the boards of similar nature, such as fibre hard boards and asbestos cement building boards. Gypsum boards also possess better fire-resisting, thermal and sound insulating properties.

Sufficient quantities of natural gypsum and by-product gypsum are available in India. Though natural gypsum has been mostly used in the manufacture of gypsum boards, by-product gypsum after suitable treatment if required, is also equally suitable for manufacturing such boards.

Gypsum boards may be manufactured as plain, laminated and reinforced boards. Reinforcing materials generally used as glass, paper, vegetable fibres, etc.

The boards may be used to provide dry lining finishes to masonry walls, to ceilings, to steel or timber framed partitions, or as claddings to structural steel columns and beams, or in the manufacture of prefabricated partition panels. Laminated gypsum boards are used for laying for concrete ceiling. With concrete it combines firmly and represents readymade interior plastering. Glass reinforced gypsum boards (GRG) are pseudo ductile materials having reasonably high flexural and impact strengths. GRG can be sawn, drilled, screwed or nailed like timber. It is resistant to white ant and termite and completely non-combustible. Being isotropic in character, thin GRG panels may be used compared to timber panels, hence cost effective. GRG composite can be used as substitute for timber for panel door, wall paneling, partitions, false ceiling, etc, and also as furniture components. The gypsum boards may be fixed by nailing, screwing, or sticking with gypsum based or other adhesives. They may also be inserted in lay-in grids and/or secured by clips.

Gypsum boards specified in the standard have been covered in three parts. Part 1 covers plain boards, Part 2 covers laminated/coated boards, and Part 3 covers reinforced boards. This part deals with plain gypsum plaster boards, its manufacture, tests and sampling.

The significant modifications in this revision include the following:

- a) Incorporation of Amendment No. 1, 2 and 3.
- b) The requirement of mass of plaster has been modified.
- c) The requirement of limits of water absorption has been modified.
- d) The requirements of taper width, depth and tolerances for dimensions have been brought in line with ISO Standard.

The mass of plaster required per unit area of the board shall be mutually agreed between the purchaser and the manufacturer [*see also* IS 2542 (Part 2/Sec 2), for guidance]. The limits of water absorption shall be mutually agreed between the purchaser and the manufacturer [*see also* IS 2542 (Part 2/Sec 6) for guidance].

This revision also brings the standard in line with the provisions of the International Standard, ISO 6308 on 'Gypsum plasterboard — Specification' published by International Organization for Standardization (ISO).

A scheme for labeling environment friendly products known as ECO Mark is also included. The ECO Mark would be administered by the Bureau of Indian Standards (BIS) under the *BIS Act*, 1986 as per the Resolution No. 71 dated 21 February 1991 and No. 425 dated 28 October 1992 published in the Gazette of the Government

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Indian Standard

GYPSUM PLASTER BOARDS — SPECIFICATION

PART 1 PLAIN GYPSUM PLASTER BOARDS

(*Third Revision*)

1 SCOPE

1.1 This standard lays down the requirements for gypsum plaster board intended to be used as a vertical or horizontal lining in building. It includes boards manufactured to receive either direct surface decoration or gypsum plaster finishes.

2 REFERENCES

The Indian Standards listed below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

<i>IS No.</i>	<i>Title</i>
2469 : 1976	Glossary of terms relating to gypsum (<i>first revision</i>)
2542 (Part 2/ Sec 1 to 8) : 1981	Methods of test for gypsum plaster, concrete and products: Part 2 Gypsum products (<i>first revision</i>)
2547 (Part 1) : 1976	Gypsum building plaster: Part 1 Excluding premixed light weight plasters (<i>first revision</i>)
4905 : 1968	Methods for random sampling
12679 : 1987	Specification for by-product gypsum for use in plaster, blocks and boards

3 TERMINOLOGY

3.1 For the purpose of this standard, the definitions given in IS 2469 shall apply.

4 TYPES

4.1 Gypsum plaster boards are classified according to their use.

4.1.1 *Gypsum Wallboards*

Gypsum wallboard has a face to which decoration may be applied.

4.1.2 *Gypsum Wallboard with Reduced Water Absorption Rate*

These boards have additives in the core and/or the

paper liners to reduce the water absorption rate. They may be suitable for special applications in buildings where reduced absorption properties are required to improve the performance of the board. Unless stated otherwise, decoration may be applied to the face.

4.1.3 *Gypsum Wallboard with Improved Core Cohesion at High Temperatures*

These boards may have mineral fibre and/or additives such as dolomites, etc, in the gypsum core to improve core cohesion at high temperatures. They have a face suitable for direct decoration.

4.1.4 *Gypsum Plaster Baseboard*

These boards have a face suitable to receive gypsum plaster and may be perforated during primary manufacture.

4.1.5 *Gypsum Plaster Baseboard with Improved Core Cohesion at High Temperatures*

These boards may have additives such as mineral fibres etc, in the gypsum core to improve core cohesion at high temperatures. They have a face suitable to receive gypsum plaster and may be perforated during primary manufacture.

5 MATERIALS

5.1 *Gypsum Plaster*

Gypsum plaster shall conform to IS 2547 (Part 1). By-product gypsum conforming to the requirements of IS 12679 shall also be used for the preparation of plaster.

6 MANUFACTURE

6.1 Gypsum plaster boards consist of a gypsum plaster core with or without fibre encased in and firmly bonded to strong durable paper liners to form rectangular boards. Core shall be dried across full width. The face and back papers shall be securely bonded to the core. The paper surfaces may vary according to the use of the particular type of board, and the core may contain additive to impart additional properties. The longitudinal edges are paper covered and profiled to suit the application.

6.2 Edge and End Profiles

The paper covered edges of gypsum wall boards are square, tapered, bevelled or rounded (*see* Fig. 1 to Fig. 4). The paper covered edges of gypsum baseboard are square or rounded (*see* Fig. 1 and Fig. 4). Other profiles may be produced for special purposes. The ends of gypsum plaster board are square-cut.

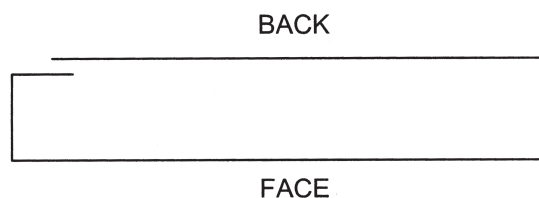


FIG. 1 SQUARE EDGE

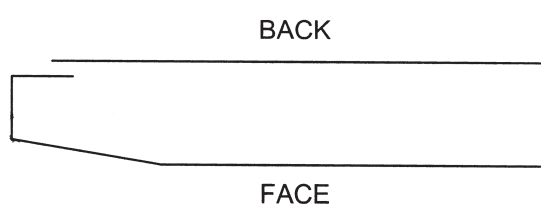


FIG. 2 TAPERED EDGE

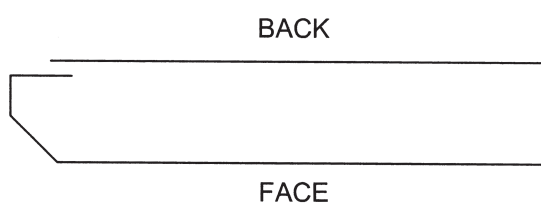


FIG. 3 BEVELLED EDGE

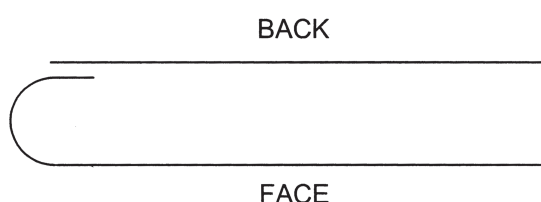


FIG. 4 ROUNDED EDGE

7 REQUIREMENTS

7.1 Dimensions

The dimensions of the wallboard shall be as given in Table 1.

The dimensions of the baseboard shall be as given in Table 2.

The lengths of the two longitudinals of the boards shall not differ more than ± 3 mm per metre length of the diagonal.

NOTE — Gypsum plaster boards may also be manufactured in other dimensions subject to mutual agreement between the purchaser and the manufacturer.

Table 1 Dimensions of Gypsum Wallboards
(Clause 7.1)

Dimensions of Wallboard	Value mm	Tolerance mm
(1)	(2)	(3)
Width	1 800 to 3 600 in steps of 100	0 -6
Length	600, 900 and 1 200	0 -5
Thickness	9.5 12.5, 15, 19, 23 and 25	± 0.5 ± 0.6

Table 2 Dimensions of Gypsum Baseboards
(Clause 7.1)

Dimensions of Baseboard	Value mm	Tolerance mm	
		Non-perforated	Perforated
(1)	(2)	(3)	(4)
Width	400 and 900	0 -8	0 -8
Length	1 200, 1 500 and 1 800	0 -6	0 -16
Thickness	9.5 and 12.5	± 0.6	± 0.6

7.2 Taper Profile

Taper width shall be in the range 40 to 80 mm. Taper depth shall be in the range 0.6 to 1.9 mm.

7.3 Transverse Strength

Breaking load for gypsum plaster boards shall be in accordance with Table 3.

Table 3 Breaking Load of Gypsum Plaster Boards

Types of Board	Thickness mm	Breaking Load, Min N	
		Transverse Direction	Longitudinal Direction
(1)	(2)	(3)	(4)
Wallboard	9.5	140	360
	12.5	180	500
	15.0	220	650
	19.0	250	750
	23.0	300	850
Baseboard	25.0	380	1 000
	9.5	125	180
	12.5	165	235

8 TESTS

8.1 The methods of tests for the requirements specified in 7.1 and 7.3 shall be in accordance with IS 2542 (Part 2/Sec 1 to 8).

8.2 Measurement of Taper Profile

8.2.1 Taper Width

Measure the taper profile on each edge 300 mm from

the end of each board (five samples). Determine the taper width to an accuracy of ± 2 mm by applying a steel rule to the face of the wallboard near the edge parallel to the end, as shown in Fig. 5.

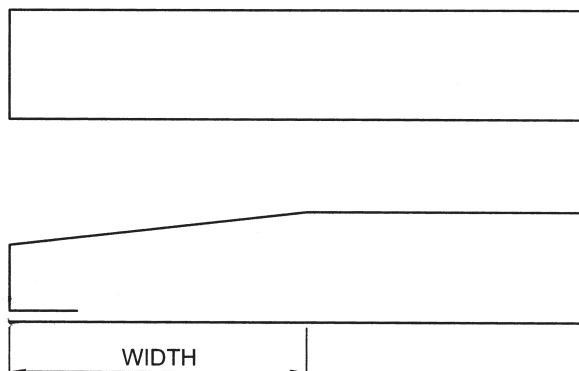
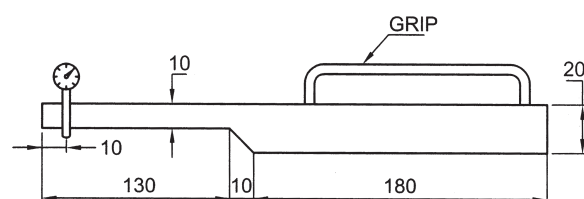


FIG. 5 MEASUREMENT OF TAPER WIDTH

Record the distance between the edge and the point where the rule touches the face of the board as the taper width.

8.2.2 Taper Depth

Measure the taper depth using a micrometer mounted on a special device, as shown in Fig. 6. The micrometer shall be accurate to ± 0.01 mm.



All dimensions in millimetres.

FIG. 6 MEASUREMENT OF TAPER DEPTH

Perform the measurement as follows:

Put the measuring device on the face of the board, with the micrometer 150 mm from the edge, and adjust the scale of the meter to zero. Move the device towards the edge and take the reading 10 mm from the edge.

8.3 For any other optional test requirements, reference may also be made to appropriate sections under IS 2542 (Part 2).

9 SAMPLING AND CRITERIA FOR CONFORMITY

9.1 Scale of Sampling

9.1.1 Lot

In any consignment, all the boards of the same size, manufactured in the same factory under similar

conditions of production, shall be grouped together to constitute a lot.

9.1.2 The number of boards to be selected from the lot depends upon the lot size and shall be in accordance with Table 4.

9.1.2.1 The boards shall be selected from the lot at random. In order to ensure the randomness of selection, the procedures given in IS 4905 may be followed.

Table 4 Sample Size
(Clause 9.1.2)

Lot Size	Sample Size for Dimensional Requirements mm	Acceptance Number	Sample Size for Transverse Strength Test
(1)	(2)	(3)	(4)
Up to 500	5	0	2
501 to 1 000	8	0	3
1 001 to 3 000	13	1	5
3 001 and above	20	1	8

9.2 Number of Tests and Criteria for Conformity

9.2.1 Each board selected in accordance with col 1 and 2 of Table 4 shall be subjected to the tests for the dimensional requirements. Any board failing to meet one or more of the requirements shall be considered as 'defective'. If the number of boards found defective in the corresponding acceptance number given in col 3 of Table 4, the lot shall be considered as conforming to the dimensional requirements.

9.2.2 The lot which has been found as conforming to the dimensional requirements shall then be subjected to transverse strength test (and water absorption test, optional). For this purpose, the number of boards to be selected shall be in accordance with col 1 and 4 of Table 4. The lot shall be considered as conforming to these requirements if no defective is found.

9.2.3 The lot shall be considered as conforming to the requirements of the specification if **9.2.1** and **9.2.2** are satisfied.

10 FINISH

10.1 The surfaces of the boards shall be true and free from imperfections that would render the boards unfit for use with or without decoration

11 ADDITIONAL REQUIREMENTS FOR ECO MARK

11.1 General Requirements

11.1.1 The product shall conform to the requirements for quality and performance as specified in the standard.

11.1.2 The product manufacturer must produce the

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consent clearance from the concerned State Pollution Control Board as per the provisions of *Water (Prevention and Control of Pollution) Act, 1974* and *Air (Prevention and Control of Pollution) Act, 1981* and *Water (Prevention and Control of Pollution) Cess Act, 1977* along with the authorization, if required under *Environment (Protection) Act, 1986* and the Rules made thereunder to BIS while applying for ECO Mark appropriate with enforced Rules and Regulations of the Forest Department.

11.1.3 The product or product packaging may display in brief the criteria based on which the product has been labelled environment friendly.

11.1.4 The material used for product packing shall be recyclable, reusable or biodegradable.

11.2 Specific Requirements

11.2.1 Building boards generally used as partitioning, panelling, cladding and false ceiling shall be made from industrial wastes such as by-product gypsum.

NOTE — The manufacturer shall provide documentary evidence by way of certificate or declaration to this effect to BIS while applying for ECO Mark.

12 PACKING AND MARKING

12.1 Gypsum plaster boards shall be transported so as to be kept them dry and free from moisture.

12.2 The product shall be packed in such packages which are made from recyclable/reusable for biodegradable materials and declared by the manufacturer and may be accompanied with detailed instructions for proper use.

12.3 Each board shall be clearly and permanently marked with the following information:

- a) Manufacturer's name or trade-mark;
- b) Size of board;
- c) Year of manufacture; and
- d) List of identified critical ingredients in descending order of quantity, percent by mass.

12.4 BIS Certification Marking

The gypsum plaster boards may also be marked with the Standard Mark.

12.4.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

ANNEX A

(Foreword)

COMMITTEE COMPOSITION

Building Lime and Gypsum Products Sectional Committee, CED 4

<i>Organization</i>	<i>Representative(s)</i>
In personal capacity (B-702, Saket Dham, Sector-61, Noida 201301)	DR C. L. VERMA (Chairman)
AIMIL Ltd, New Delhi	DR V. M. SHARMA MS NIDHI SARTHALIA (<i>Alternate</i>)
Archaeological Survey of India, New Delhi	SHRI R. S. JAMWAL
Building Materials & Technology Promotion Council, New Delhi	SHRI J. K. PRASAD SHRI C. N. JHA (<i>Alternate</i>)
Cement Manufacturers Association, Noida	SHRI JEREMIE ROMBAUT SHRI T. T. PAUL (<i>Alternate</i>)
Central Building Research Institute, Roorkee	DR MRIDUL GARG DR NEERAJ JAIN (<i>Alternate</i>)
Central Public Works Department, New Delhi	SUPERINTENDING ENGINEER (S&S) SHRI R. SUBRAMANIAN (<i>Alternate</i>)
Central Road Research Institute, New Delhi	SHRI SUDHIR MATHUR SHRI J. B. SENGUPTA (<i>Alternate</i>)

<i>Organization</i>	<i>Representative(s)</i>
Central Soil & Materials Research Station, New Delhi	SHRI MURARI RATNAM SHRI RAJEEV KUMAR (<i>Alternate</i>)
Delhi Development Authority, New Delhi	SHRI J. M. JOSHI SHRI SATYA PRAKASH (<i>Alternate</i>)
Directorate of Mines & Geology, Udaipur	SHRI S. G. BOHRA SHRI N. M. PITLIYA (<i>Alternate</i>)
Dyerstone Lime Co (P) Ltd, Delhi	SHRI N. MACEDO
ESHAN Industries, Jalgaon	SHRI R. K. VISHAMBHARNATH AGRAWAL SHRI VIJAY BARHATE (<i>Alternate</i>)
Fly Ash Unit, Department of Science & Technology, New Delhi	DR VIMAL KUMAR
Geological Survey of India (WR), Jaipur	DIRECTOR (ENGG. GEOLOGY DIVISION)
Grasim Industries Limited, Mumbai	SHRI A. K. JAIN SHRI A. K. TIWARI (<i>Alternate</i>)
Gujarat Engineering Research Institute, Vadodara	SHRI L. V. ASHARA SHRI S. H. MAKWANA (<i>Alternate</i>)
Housing and Urban Development Corporation Ltd, New Delhi	SHRI SAMIR MITRA SHRI RAJESH SHARMA (<i>Alternate</i>)
IDL Buildware Limited, Hyderabad	SHRI S. L. J. JACHUCK
Institute for Solid Waste Research and Ecological Balance (INSWAREB), Vishakhapatnam	DR N. BHANUMATHIDAS SHRI N. KALIDAS (<i>Alternate</i>)
Khadi & Village Industries Commission, New Delhi	SHRI S. BANDHOPADHYAY DIRECTOR (LIME) (<i>Alternate</i>)
Lime Manufacturers Association of India, New Delhi	SHRI VIDYA P. AGARWAL SHRI PRANJAL JAUHAR (<i>Alternate</i>)
Military Engineer Services, Engineer-in-Chief's Branch, New Delhi	SHRI KANWARJIT MANIPAL SHRI A. K. JAIN (<i>Alternate</i>)
National Council for Cement and Building Materials, Ballabgarh	DR M. M. ALI DR U. K. MANDAL (<i>Alternate</i>)
National Institute of Technology, Warangal	DR. C. B. KAMESHWARE RAO
National Test House (ER), Kolkata	SHRI D. V. S. PRASAD SHRI S. THIRUMALAI KOLUNDU (<i>Alternate</i>)
Public Works Department, New Delhi	SHRI BRIJ BHUSHAN BHATIA SHRI NAVIN KUMAR GARG (<i>Alternate</i>)
Public Works Department, Government of Rajasthan, Jaipur	SHRI B. P. CHAUHAN SHRI S. L. MAHIPAL (<i>Alternate</i>)
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The Institution of Engineers (India), Kolkata	SHRI S. C. BASU ROY, FIE SHRI H. L. CHAWLA, FIE (<i>Alternate</i>)
BIS Directorate General	SHRI A. K. SAINI, Scientist 'F' & Head (Civ Engg) [Representing Director General (<i>Ex-officio</i>)]

Member Secretary

SHRI S. ARUN KUMAR
Scientist 'C' (Civ Engg), BIS

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of India. For a product to be eligible for marking with ECO logo, it shall also carry the ISI Mark of BIS besides meeting additional optional environment friendly requirements. For this purpose, the Standard Mark of BIS would be a single mark being a combination of the ISI Mark and the ECO logo. Requirements to be satisfied for a product to qualify for the BIS Standard Mark for ECO friendliness will be optional; manufacturing units will be free to opt for the ISI Mark alone also.

The composition of the Committee responsible for the formulation of this standard is given at Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Bureau of Indian Standards

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Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards : Monthly Additions'.

This Indian Standard has been developed from Doc No.: CED 4 (7703).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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