भारतीय मानक ब्यूरो
(उपभोक्ता मामले, खाद्य एवं सार्वजनिक वितरण मंत्रालय, भारत सरकार)
BUREAU OF INDIAN STANDARDS
(Ministry of Consumer Affairs, Food & Public Distribution, Govt. of India

मानक भवन, 9, बहादुर शाह ज़फर मार्ग, नई दिल्ली – 110002
Manak Bhawan, 9, Bahadur Shah Zafar Marg, New Delhi – 110002
Phones: 23230131 / 2323375 / 23239402
Website: www.bis.org.in , www.bis.gov.in

व्यापक परिचालन मसौदा

हमारा संदर्भ : सीईडी 37/टी-1 **22 अगस्त 2025**

तकनीकी समिति : संरचनात्मक सुरक्षा विषय समिति, सीईडी 37

प्राप्तकर्ता :

क) सिविल इंजीनियरी विभाग परिषद्, सीईडीसी के सभी सदस्य
ख) सीईडी 37 के सभी सदस्य
ग) रूचि रखने वाले अन्य निकाय

प्रिय महोदय/महोदया,

निम्नलिखित भारतीय मानक का मसौदा संलग्न हैं:

प्रलेख संख्या	शीर्षक
सीईडी 37 (27769)WC	**भारतीय मानक मसौदा** **भवनों और संरचनाओं के लिए डिज़ाइन लोड (भूकंप की अन्य) — रीति सहिंता भाग 1 गतिहीन भार – भवन, निर्माण और भंडारित सामग्री का इकाई भार** *[आईएस 875 (भाग 1) का तीसरा पुनरीक्षण]* आईसीएस संख्या: 91.100

कृपया इस मानक के मसौदे का अवलोकन करें और अपनी सम्मतियॉ यह बताते हुए भेजे कि यदि यह मानक के रूप में प्रकाशित हो तो इस पर अमल करने में आपके व्यवसाय अथवा कारोबार में क्या कठिनाइयाँ आ सकती हैं।

सम्मतियाँ भेजने की अंतिम तिथि: 22/10/2025

टिप्पणियाँ, यदि कोई हों, बीआईएस ई-गवर्नेंस पोर्टल https://www.services.bis.gov.in/php/BIS_2.0/dgdashboard/draft/darftdetail/63/3/CED के माध्यम से ऑनलाइन भेजी जा सकती हैं।

वैकल्पिक रूप से, टिप्पणियाँ संलग्न प्रारूप में भी दर्ज की जा सकती हैं और ced@bis.gov.in या divya.s@bis.gov.in पर ईमेल की जा सकती हैं।

आपको अपनी टिप्पणियाँ प्रस्तुत करने के लिए लॉगिन करना पड़ सकता है, कृपया लॉगिन बनाएं।

यदि कोई सम्मति प्राप्त नही होती है अथवा सम्मति में केवल भाषा सम्बन्धी त्रुटि हुई तो उपरोक्त प्रलेख को यथावत अंतिम रूप दिया जाएगा। यदि सम्मित तकनीकी प्रकृति की हुई विषय समिति के अध्यक्ष के परामर्श से अथवा उनकी इच्छा पर आगे की कार्यवाही के लिए विषय समिति को भेजे जाने के बाद प्रलेख को अंतिम रूप दे दिया जाएगा ।

यह प्रलेख भारतीय मानक ब्यूरो की वैबसाइट www.bis.gov.in पर भी उपलब्ध हैं।

धन्यवाद।

भवदीय
ह/-
(श्री द्वैपायन भद्र)
वैज्ञानिक 'ई'/निदेशक एवं प्रमुख (सिविल इंजीनियरिंग)
ई-मेल: hced@bis.gov.in

संलग्न: उपरलिखित

भारतीय मानक ब्यूरो
(उपभोक्ता मामले, खाद्य एवं सार्वजनिक वितरण मंत्रालय, भारत सरकार)
BUREAU OF INDIAN STANDARDS
(Ministry of Consumer Affairs, Food & Public Distribution, Govt. of India

मानक भवन, 9, बहादुर शाह ज़फर मार्ग, नई दिल्ली – 110002
Manak Bhawan, 9, Bahadur Shah Zafar Marg, New Delhi – 110002
Phones: 23230131 / 2323375 / 23239402
Website: www.bis.org.in , www.bis.gov.in

WIDE CIRCULATION DRAFT

Our Reference: CED 37/T- 1 **22 August 2025**

Technical Committee: Structural Safety Sectional Committee, CED 37

Addressed To:

a) All Members of Civil Engineering Division Council, CEDC
b) All Members of CED 37
c) All others interested

Dear Sir/Madam,

Please find enclosed the following document:

Doc No.	*Title*
CED 37 (27769)WC	Draft Indian Standard **Design Loads (Other than Earthquake) for Buildings and Structures — Code of Practice Part 1 Dead Loads – Unit Weights of Building, Construction and Stored Materials** [*Third Revision of IS 875 (Part 1*)]. ICS No.: 91.100

Kindly examine the draft standard and forward your views stating any difficulties which you are likely to experience in your business or profession, if this is finally adopted as National Standard.

Last Date for comments: **22 October 2025**

Comments if any, may be sent online through the BIS e-governance portal at https://www.services.bis.gov.in/php/BIS_2.0/dgdashboard/draft/darftdetail/63/3/CED .

Alternatively, comments may also be recorded in the enclosed format and emailed at ced@bis.gov.in. or at divya.s@bis.gov.in.

You may be required to login to submit your comments, kindly create a login.

In case no comments are received or comments received are of editorial nature, you will kindly permit us to presume your approval for the above document as finalized. However, in case of comments of technical in nature are received then it may be finalized either in consultation with the Chairman, Sectional Committee or referred to the Sectional Committee for further necessary action if so desired by the Chairman, Sectional Committee.

The document is also hosted on BIS website www.bis.gov.in.

Thanking you,

Sd/-

(**Shri Dwaipayan Bhadra**)

Scientist 'E'/Director And Head
(Civil Engineering)

E-mail: **hced@bis.gov.in**

Encl: As above

FORMAT FOR SENDING COMMENTS ON THE DOCUMENT

[Please use A4 size sheet of paper only and type within fields indicated. Comments on each clause/sub-clause/ table/figure, etc, be stated on a fresh row. Information/comments should include reasons for comments, technical references and suggestions for modified wordings of the clause. **Comments through** https://www.services.bis.gov.in/php/BIS_2.0/WCDraft/comment_pdraft.php **shall be appreciated**.]

Doc. No.: CED 37(27769) WC **BIS Letter Ref**: CED 37/T-1

Title: Draft Indian Standard Design Loads (Other than Earthquake) for Buildings and Structures — Code of Practice Part 1 Dead Loads – Unit Weights of Building, Construction and Stored Materials [*Third Revision of IS 875 (Part 1)*].

ICS No.: 91.100

Last date of comments: **22 October 2025**

Name of the Commentator/ Organization: _____

Sl. No. (1)	Clause/Sub-clause/Para No. (2)	Comments/ Suggestions (3)	Modified Wording of the Clause (4)	Reasons/ Justifications for the Proposed Changes (5)
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

NOTE- Kindly insert more rows as necessary for each clause/table, etc

BUREAU OF INDIAN STANDARDS

DRAFT FOR COMMENTS ONLY

(*Not to be reproduced without the permission of BIS or used as an Indian Standard*)

DESIGN LOADS (OTHER THAN EARTHQUAKE) FOR BUILDINGS AND STRUCTURES — CODE OF PRACTICE PART 1 DEAD LOADS – UNIT WEIGHTS OF BUILDING, CONSTRUCTION AND STORED MATERIALS

[*Third Revision* of IS 875 (Part 1)]

ICS No. 91.100

Structural Safety Sectional Committee, CED 37 Last date of comments
22 October 2025

FOREWORD

(*Formal clauses will be added later*)

A building has to perform many functions satisfactorily. Amongst these functions are the utility of the building for the intended use and occupancy, structural safety, fire safety; and compliance with hygienic sanitation, ventilation and daylight standards. The design of the building is dependent upon the minimum requirements prescribed for each of the above functions. The minimum requirements pertaining to the structural safety of the buildings are being covered in the code by way of laying down minimum design loads which have to be assumed for dead loads, imposed loads, snow loads, and other external loads, the structure would be required to bear, Strict conformity to loading standards recommended in this code, it is hoped, will not only ensure the structural safety of the buildings which are being designed and constructed in the country and thereby reduce the hazards to life and property caused by unsafe structure, but also eliminate the waste caused by assuming unnecessary heavy loadings.

This standard deals with dead loads to be considered in the design of buildings and structures and this is given in the form of unit weight of materials. The unit weight of other materials that are likely to be stored in a structure are also included for the purpose of determining dead loads due to stored materials.

This Indian Standard was first published in 1957 for the guidance of civil engineers, designers and architects associated with planning and design of buildings to determine

loads acting on building and structures. It included the provisions for the basic design loads (dead loads, live loads, wind loads and seismic loads) to be considered in the design of buildings. In its first revision in 1964, the wind pressure provisions were modified on the basis of studies of wind phenomenon and its effect on structures, undertaken by the special committee in consultation with the Indian Meteorological Department. In addition to this, new clauses on wind loads for butterfly type structures were included; wind pressure coefficients for sheeted roofs both curved and sloping, were modified; seismic load provisions were deleted (separate code having been prepared) and metric system of weights and measurements was adopted.

With the increased adoption of the code, a number of comments were received on provisions on live load values adopted for different occupancies. Simultaneously, live load surveys have been carried out in America and Canada to arrive at realistic live loads based on actual determination of loading (movable and immovable) in different occupancies. Keeping this in view and other developments in the field of wind engineering, the Sectional Committee responsible for the preparation of the standard prepared in 1987 the second revision in the following five parts:

Part 1 Dead loads
Part 2 Imposed loads
Part 3 Wind loads
Part 4 Snow loads
Part 5 Special loads and loads combinations

It was further revised in 1987, and IS 1911:1967 ‘Schedule of unit weights of building materials (*second revision*)’ was incorporated in the standard.

Earthquake load are covered in separate standards, namely IS 1893 (Part 1 to 4) ‘Criteria for Earthquake Resistant Design of Structures’ which should be considered along with the above loads.

Since the publication of the second revision in 1987, there have been significant improvements in material technology leading to use of a number of new and improved materials for construction of buildings and structures. In this current revision, unit weights of many common new materials have been incorporated, and data on existing materials were reviewed and revised as necessary. The revisions of the corresponding Indian standards of the building materials have also been considered in this revision. Provisions relating to dead load for gardening and landscaping have also been introduced.

This standard contributes to the Sustainable Development Goal 9 ‘Build resilient infrastructure, promote sustainable industrialization and foster innovation’.

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 : 2022 ‘Rules for rounding off numerical

values (*second revision*)'. The number of significant places retained in the rounded off value should be periodically removed to create more space for the future falling blocks.

Draft Indian Standard

DESIGN LOADS (OTHER THAN EARTHQUAKE) FOR BUILDINGS AND STRUCTURES – CODE OF PRACTICE

PART 1 DEAD LOADS – UNIT WEIGHTS OF BUILDING, CONSTRUCTION AND STORED MATERIALS

[*Third Revision* of IS 875 (Part 1)]

1 SCOPE

1.1 This code (Part 1) covers unit weight of materials, and parts or components in a structure that apply to determination of dead loads in the design of structures. The unit weight of materials that are likely to be stored in a structure are also specified for the purpose of load calculations along with angles of material friction as appropriate.

1.2 The unit weight of materials is given in kN. The equivalent mass in kg may be determined by multiplying the weight by 1000 and dividing by acceleration due to gravity, 9.81 m/s^2.

1.3 In this code, the words ‘structure’ and ‘building’ interchangeably refer to buildings and all other types of structures.

NOTE–Table 1 gives the unit weight of individual building materials in alphabetical order.

2 REFERENCE

The standards listed in Annex A 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 these standards.

3 DEAD LOAD

3.1 Assessment of Dead Load

The dead load in a building shall comprise the weight of all walls, partitions, floors and roofs, and shall include the weights of all other permanent constructions (including built-in partitions, finishes, cladding and other similarly incorporated architectural and structural items, weight of fixed service equipment) in the building

3.2 The unit weight of materials used in construction of buildings and structures are specified in Table 1. Also mentioned alongside are the corresponding Indian Standards, if applicable.

3.3 Gardening and Landscaping

Elements on roof gardening or landscaping, including soil, plants, and drainage layers, along with other features like walkways, fences, and walls, are fixed in place and thus classified as dead loads. While the weight of walkways, fences, and walls remains constant. The weight of soil and drainage layers, which support plant growth, can vary significantly due to their ability to absorb and retain water. For load calculations, when the weight adds to other structural loads, the dead load should be based on fully saturated soil and drainage layers to account for maximum weight. If the weight is used to counteract uplift forces, calculations should assume the dry weight of soil and drainage layers. Vegetative or landscaped roof areas may retain even more water than fully saturated soil, either from rainfall or irrigation. This additional water retention should be included in the design to accurately assess load variations. In the design calculation of overturning, uplifting and sliding effects, the beneficial effects of soil shall not be considered. When the soil is used as dead weight and locked permanently, the same may be considered.

Table 1 Unit Weight of Building Materials
(*Clause* **2.2**)

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
1.	**Acoustical Material** (*see* IS 2526)			
	Eelgrass	10	0.57 to 0.765 x 10^{-2}	m^2
	Glass fibre, min	10	0.38 x 10^{-2}	m^2
	Hair	10	1.91 x 10^{-2}	m^2
	Mineral wool	10	1.345 x 10^{-2}	m^2
	Slag wool		2.65	m^3
	Cork		2.35	m^3
	Wood fibre board		5.9 to 6.15	m^3
	Wood particle Board			
	As per IS 312		3.92	m^3
	As per IS 1282		4.9 to 9.9	m^3
	As per IS 3478		8.9 to 11.8	m^3
	Compressed wood wool	-	3.95 to 4.45	m^3
	Mineral/glass wool quilts and mats	-	0.157 to 0.314	m^3
	Mineral compressed glass wool tiles	-	1.87 to 2.06	m^3
	Polyester board	-	1.87 to 2.06	m^3
2.	**Aggregate, Coarse**			
	Broken stone ballast			
	Dry, well-shaken	–	15.70 to 18.35	m^3
	Perfectly wet	–	18.85 to 21.95	m^3
	Shingles, 3 to 38 mm	–	14.35	m^3
	Broken bricks:			
	Fine	–	14.20	m^3
	Coarse	–	9.90	m^3
	Foam slag (foundry pumice)	–	6.85	m^3
	Cinder	–	7.85	m^3
	Slag			
	Iron slag		32.4	m^3
	Steel Slag		31 to 36	m^3
	Copper slag		31 to 36	m^3
	River pebbles		15	m^3
3.	**Aggregate, Fine**			

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
	Sand			
	Dry, clean	–	15.10 to 15.70	m^3
	River	–	18.05	m^3
	Wet	–	17.25 to 19.60	m^3
	Brick dust (SURKHI)	–	9.90	m^3
	Crushed stone sand (*see* IS 383)		19 to 20	m^3
	Quarry dust		14 to 20	m^3
4.	**Aggregate, Organic**			
	Saw dust, loose	–	1.55	m^3
	Peat			
	Dry	–	5.50 to 6.30	m^3
	Sandy, compact	–	7.85	m^3
	Wet, compact	–	13.35	m^3
5.	**Asbestos**			
	Felt	10	0.145	m^2
	Fibres:			
	Pressed	–	9.40	m^3
	Sprayed	10	0.02	m^2
	Natural	–	29.80	m^3
	Raw	–	5.90 to 8.85	m^2
6.	**Asbestos Cement Building Pipes** (*see* Sl No. 44 'pipes' in this Table)			
7.	**Asbestos Cement Gutters** [*see* IS 1626 (Part 2)]			
	Boundary wall gutters 510 mm × 150 mm × 255 mm 455 mm × 150 mm × 305 mm 305 mm × 150 mm × 225 mm 280 mm × 125 mm × 180 mm	 12.5 12.5 12.5 12.5	 0.180 0.158 0.129 0.106	 m m m m
	Valley gutters 915 mm × 205 mm × 230 mm 610 mm × 150 mm × 230 mm	 12.5 12.5 12.5 12.5	 0.250 0.162 0.146 0.131	 m m m m

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
	455 mm × 125 mm × 150 mm 405 mm × 125 mm × 255 mm			
	Half round gutters 150 mm 230 mm 305 mm	 9.5 9.5 9.5	 0.043 0.073 0.088	 m m m
8.	**Asbestos Cement Pressure Pipes** (*see* Sl No 44 'Pipes' in this Table)			
9.	**Asbestos Cement Sheeting** (*see* IS 459)			
	Corrugated (pitch – 146 mm)	6	0.118 to 0.130	m^2
	Semi-corrugated (pitch 388 mm)	6	0.118 to 0.127	m^2
	Plain	5	0.09	m^2
10.	**Bitumen**	–	0.8-1	m^3
11	**Binders**			
	Fly Ash loose		5.05 to 7.05	m^3
	Fly Ash compacted		16.00	m^3
	Ground Granulated blast furnace slag		14.9	m^3
	Silica fume		3.5 to 7	m^3
	Rice husk ash		1.0 to 3.5	m^3
	Metakaolin		8 to 10	m^3
12	**Blocks**			
	Lime-based solid blocks (*see* IS 3115), *min*	–	9.8	m^3
	concrete blocks [*see* IS 2185 (Part 1)]			
	Grade A (hollow)	–	15	m^3
	Grade B (hollow)	–	11 to 15	m^3
	Grade C (Solid)	–	18	m^3
	Autoclaved cellular concrete blocks [*see* IS 2185 (Part 3)]		4.42 to 9.81	m^3
13.	**Boards**			
	Cork boards [*see* IS 4253 (Part 1 and Part 2)]			

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
	Compressed		2.16 to 3.73	m^3
	Ordinary		2.15 to 3.72	m^3
	Fibre building boards (*see* IS 1658)			
	Medium hardboard	6, 8, 10, 12	3.43 to 7.84	m^3
	Standard hardboard	2,3,4,5,6,7	7.84 to 10.05	m^3
	Tempered hardboard	2.5, 3, 4, 5, 6	7.84 to 10.05	m^2
	Fibre cement boards (*see* IS 14862)		13 to 16	m^3
	Fibre insulation board, ordinary or flame-retardant type bitumen-bounded fibre insulation board (*see* IS 3348*), Max*	9, 12, 18, 25	3.924	M^3
	Plain gypsum plaster boards [*see* IS 2095 (Part 1)]			
	Type A	9.5, 12.5, 15	5.39	m3
	Type H1 and H2	9.5, 12.5, 15	5.88	m3
	Type D	9.5, 12.5, 15	7.84	m3
	Type F and FH	9.5, 12.5, 15	7.84	m3
	Type R1	9.5, 12.5, 15	8.33	m3
	Type R2	9.5, 12.5, 15	9.31	m3
	Type W	9.5, 12.5, 15	8.33	m3
	Coated/laminated gypsum plaster boards [*see* IS 2095 (Part 2)]	9.5, 12.5, 15	11.27	M^3
	Reinforced gypsum plaster boards and ceiling tiles [*see* IS 2095 (Part 3)], *min*			
	Fibre reinforced Gypsum		7.84	m^3
	Glass reinforced Gypsum plaster board		24.52	m^3
	Glass reinforced Gypsum plaster tiles		5.88	m^3

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
	Insulating board (*fibre*) (*see* IS 3348), *mean*		0.981	m^3
	Laminated board (*fibre*) Medium density (*see* IS 14587)		5.88 to 8.82	m^3
	Wood particle boards (*see* IS 3087)	–	4.90 to 8.85	m^3
	Low density wood particles boards for insulation purposes (*see* IS 3129)	–	3.52	m^3
	High density wood particle boards (*see* IS 3478)			
	Type 1 & 2, Grade A	–	11.30	m^3
	Type 1 & 2, Grade B	–	7.94	m^3
14.	**Bricks**			
	Common burnt clay bricks (*see* IS 1077)	–	15.70 to 18.85	m^3
	Engineering bricks	–	21.20	m^3
	Heavy duty bricks (*see* IS 2180)	–	24.50	m^3
	Pressed bricks	–	17.25 to 18.05	m^3
	Refractory bricks	–	17.25 to 19.60	m^3
	Sand cement bricks	–	18.05	m^3
	Sand lime bricks	–	20.40	m^3
	Pulverized Fuel-Ash Lime bricks (*see* IS 12894)		12 to 15	m^3
	Pulverized Fuel-Ash Cement bricks (*see* IS 16720)		10.8 to 19.6	m^3
	Acid resistance bricks (*see* IS 4860)		22.5 to 24.83	m^3
	Soil based bricks (*see* IS 1725)		17.5	m^3
	Perforated building bricks (*see* IS 2222)		6.8 to 7.75	m^3
	Calcium silicate bricks (*see* IS 4139)		25 to 29	m^3
15.	**Brick Chips and Broken Bricks** (*see* under Sl No. 2 'Broken Bricks' in this Table)			

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
16.	**Brick dust (SURKHI)**	–	9.00	m^3
17.	**Cast Iron, Manhole Covers** *(see* IS 1726)			
	Double triangular (HD)	500	1.16	Cover
		560	1.37	Cover
	Circular (HD)	500	1.16	Cover
		560	1.37	Cover
	Circular (MD)	500	0.57	Cover
		560	0.63	Cover
	Rectangular (MD)	–	0.78	Cover
	Rectangular (LD) :			
	Single seal (Pattern 1)	–	0.23	Cover
	Single seal (Pattern 2)	–	0.15	Cover
	Double seal	–	0.28	Cover
	Square (LD):			
	Single seal	455	0.13	Cover
		610	0.25	Cover
	Double seal	455	0.23	Cover
		610	0.36	Cover
18.	**Cast Iron, Manhole Frames** *(see* IS 1726)			
	Double triangular (HD)	500	1.09	Frame
		560	1.13	Frame
	Circular (HD)	500	0.83	Frame
		560	1.06	Frame
	Circular (MD)	500	0.57	Frame
		560	0.63	Frame
	Rectangular (MD)	–	0.63	Frame
	Rectangular (LD):			
	Single seal (Pattern 1)	–	0.15	Frame
	Single seal (Pattern 2)	–	0.10	Frame
	Double seal	–	0.23	Frame
	Square (LD):			
	Single seal	455	0.07	Frame
		610	0.13	Frame
	Double seal	455	0.15	Frame
		610	0.18	Frame

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
19.	**Cast Iron Pipes** (*see* under Sl No. 44 'Pipes' in this Table)			
20.	**Cement**			
	Ordinary (*see* IS 269) and aluminous (*see* 6452)	–	14.10	m^3
	Rapid-hardening (*see* IS 8041)	–	12.55	m^3
21.	**Ceilings**			
	Plaster on tile or concrete	13 mm thick	0.25	m^2
	Plaster on wood lath	25 mm thick	0.39	m^2
	Suspended metal lath and cement plaster	25 mm thick	0.74	m^2
	Suspended metal lath and gypsum plaster	25 mm thick	0.49	m^2
22.	**Cement Concrete, Plain**			
	Aerated		7.45	m^3
	No-fines, with heavy aggregate	–	15.70 to 18.80	m^3
	No-fines, with light aggregate	–	8.65 to 12.55	m^3
	With burnt clay aggregate	–	17.25 to 21.20	m^3
	With expanded clay aggregate	–	9.40 to 16.50	m^3
	With clinker aggregate	–	12.55 to 17.25	m^3
	With pumice aggregate	–	5.50 to 11.00	m^3
	With sand and gravel or crushed natural stone aggregate	–	22.00 to 23.50	m^3
	With saw dust	–	6.30 to 16.50	m^3
	With foamed slag aggregate	–	9.40 to 18.05	m^3
	With light weight cinder aggregate		6.4	m^3
	Light weight concrete		8 to 20	m^3
	Cellular concrete (Foam concrete)		3 to 5	m^3

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
	(*see* IS 6598)			
	Grade A, *max*		3.13	m^3
	Grade B		3.13 to 3.92	m^3
	Grade C		3.93 to 4.9	m^3
	Transparent concrete		15	m^3
	Glass fiber reinforced concrete		18 to 22	m^3
	Alkali activated (Geopolymer) concrete (*see* IS 17452)		24 to 25	m^3
	Shotcrete (*see* IS 9012)		22 to 25	m^3
	Ferro cement		22 to 25	m^3
	Roller compacted concrete		22 to 25	m^3
	Controlled low strength mix		22 to 25	m^3
	Plum concrete (*see* IS 457)		22 to 25	m^3
	Autoclaved Aerated Concrete		4.42 to 9.81	m^3
	Vermiculite concrete		6 to 9	m^3
23.	**Cement Concrete, Prestressed** (conforming to IS 1343)	–	23.50	m^3
24.	**Cement Concrete, Reinforced:**			
	With 1 percent steel	–	22.75 to 24.20	m^3
	With 2 percent steel	–	23.25 to 24.80	m^3
	With 5 percent steel	–	24.80 to 26.50	m^3
25.	**Damp-proofing** (*see* Sl No. 28 'Felt bituminous for waterproofing and damp proofing')			
26	**Earth filling** (*see* Sl No. 49 'Soils and gravels in Table 1)			
27.	**Expanded Metal** (conforming to IS 412)			
	Size of Mesh, Nominal			
	SWM	LWM		
	mm	mm		
	100	250	0.030	m^2
	100	250	0.024	m^2
	100	250	0.016	m^2
	75	200	0.042	m^2
	75	200	0.032	m^2
	75	200	0.021	m^2

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
	40	115	0.080	m^2
	40	115	0.060	m^2
	40	75	0.060	m^2
	40	75	0.028	m^2
	40	115	0.039	m^2
	40	75	0.039	m^2
	40	115	0.020	m^2
	40	75	0.020	m^2
	25	75	0.054	m^2
	25	75	0.038	m^2
	25	75	0.028	m^2
	25	75	0.021	m^2
	20	60	0.070	m^2
	20	50	0.070	m^2
	20	60	0.050	m^2
	20	50	0.050	m^2
	20	60	0.036	m^2
	20	50	0.036	m^2
	20	50	0.021	m^2
	20	60	0.021	m^2
	12.5	50	0.050	m^2
	12.5	50	0.050	m^2
	12.5	40	0.040	m^2
	12.5	50	0.030	m^2
	12.5	40	0.030	m^2
	12.5	50	0.025	m^2
	12.5	40	0.025	m^2
	10	40	0.050	m^2
	10	40	0.035	m^2
	10	40	0.028	m^2
	95	285	0.050	m^2
	95	285	0.028	m^2
	95	285	0.020	m^2
	6	25	0.074	m^2
	6	25	0.048	m^2
	6	25	0.038	m^2
	5	20	0.050	m^2
	3	15	0.041	m^2
28.	**Felt, Bituminous for Waterproof, and Damp–proofing** (*see* IS 1322)			

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
	Fibre base			
	Type 1 (under lay)	–	7.6×10^{-3}	m^2
	Type 2 (self-finished felt)	-	2.6×10^{-2}	m^2
	Hessian base			
	Type 3 (self-finished felt)			
	Grade 1	–	2.26×10^{-2}	m^2
	Grade 2	–	3.64×10^{-2}	m^2
29.	**Finishing** (*see* also 'Floor finishes' given under Sl No. 31 'Flooring' and 46 'Roofing' in Table 1)			
	Plaster:			
	Acoustic	10	0.08	m^2
	Anhydrite	10	0.21	m^2
	Barium Sulphate	10	0.28	m^2
	Fibrous	10	0.09	m^2
	Gypsum or lime	10	0.19	m^2
	Hydraulic lime or cement	10	0.23	m^2
	Plaster ceiling on wire netting	10	0.26	m^2
	NOTE – When wood or metal lathing is used, add	–	0.06	
30.	**Float Glass** (*see* IS 2835) **and Safety Glass** [*see* IS 2553 (Part 1)]			
	Sheet	2	0.049	m^2
		2.5	0.062	m^2
		3	0.074	m^2
		4	0.098	m^2
		5	0.123	m^2
		5.5	0.134	m^2
		6.5	0.167	m^2
		8	0.200	m^2
		10	0.250	m^2
		12	0.300	m^2
		15	0.375	m^2
		19	0.475	m^2
31.	**Flooring**			
	Asphalt flooring	10	0.22	m^2

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
	NOTE – For macadam finish, add	10	0.26	m^2
	Compressed cork	10	0.04	m^2
	Floors, structural:			
	Hollow clay blocks including reinforcement and mortar jointing between blocks, but excluding any concrete topping	100	1.47	m^2
		125	1.67	m^2
		150	1.86	m^2
		175	2.16	m^2
		200	2.55	m^2
	NOTE – Add extra for concrete topping			
	Hollow clay blocks including reinforcement and concrete ribs between blocks, but excluding any concrete topping	100	1.18	m^2
		115	1.27	m^2
		125	1.37	m^2
		140	1.47	m^2
		150	1.57	m^2
		175	1.76	m^2
		200	1.96	m^2
	NOTE – Add extra for concrete typing.			
	Hollow concrete units including any concrete topping necessary for constructional purposes	100	1.67	m^2
		125	1.96	m^2
		150	2.16	m^2
		175	2.35	m^2
		200	2.65	m^2
		230	3.14	m^2
	Floors, wood:			
	Hard wood	22	0.16	m^2
		28	0.20	m^2
	Soft wood	22	0.11	m^2
		28	0.13	m^2
	Weight of mastic used in laying wood block flooring	–	0.015	m^2
	NOTE – All thicknesses are ‘finished thicknesses’.			
	Floor finishes:			
	Clay floor tiles (*see* IS 1478)	12.5 to 25.4	0.10 to 0.2	m^2
	NOTE – This weight is ‘as laid’ but excludes screeding.			

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
	Magnesium oxychloride:			
	Normal type (saw dust filler)	10	0.142	m^2
	Heavy duty type (mineral filler)	10	0.216	m^2
	Parquet flooring	–	0.08 to 0.12	m^2
	Rubber (*see* IS 809)	3.2	0.048 to 0.062	m^2
		4.8	0.070 to 0.09	m^2
		6.4	0.093 to 0.130	m^2
	Terra cotta, filled 'as laid'	–	5.54 to 7.06	m^2
	Terrazzo paving 'as laid'	10	0.23	m^2
32.	**Foam Slag, Foundry Pumice**	–	6.85	m^3
33.	**Gutters, Asbestos Cement** (*see* under 7 '**Asbestos cement gutter**' in this Table)			
34.	**Gypsum**			
	Gypsum mortar [*see* IS 2547 (Part 1 and Part 2)]	–	18.6	m^3
	Gypsum powder (*see* IS 12679)	–	13.89 to 17.25	m^3
35.	**Iron**			
	Pig	–	70.60	m^3
	Gray, cast	–	68.95 to 69.90	m^3
	White, cast	–	74.30 to 75.70	m^3
	Wrought	–	75.70	m^3
36.	**Lime**			
	Lime concrete with burn clay Aggregate (*see* IS 2541)	–	18.80	m^3
	Lime mortar	–	15.70 to 18.05	m^3
	Lime plaster (*see* IS 2394)	–	17.25	m^3
	Lime stored in lumps, uncalcined	–	12.55 to 14.10	m^3
	Lime, unslaked, freshly burnt in pieces	–	8.60 to 10.20	m^3
	Lime slaked, fresh	–	5.70 to 6.30	m^3

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
	Lime slaked, after 10 days	–	7.85	m^3
	Lime, unslaked (KANKAR)	–	11.55	m^3
	Lime, slaked (KANKAR)	–	10.00	m^3
37.	**Linoleum** (*see* IS 653)			
	Sheets and tiles	4.5	0.0569	m^2
		3.2	0.0402	m^2
		2.0	0.0265	m^2
		1.65	0.0215	m^2
38.	**Masonry**			
	Brick Masonry (excluding plaster)			
	With common burnt clay bricks (*see* IS 1077)	–	19.25	m^3
	Engineering bricks	–	21.2	m^3
	Glazed bricks	–	20.40	m^3
	Pressed bricks	–	18.65	m^3
	Block Masonry			
	With lime based solid blocks		13.55	m^3
	Hollow concrete blocks			
	Grade A		15.4	m^3
	Grade B		12.00	m^3
	Solid Concrete Blocks		18.15	m^3
	Autoclaved cellular concrete blocks		9.1 to 11.1	m^3
39.	**Masonry, Stone**			
	Cast	–	21.75	m^3
	Dry rubble	–	20.40	m^3
	Granite ashlar	–	25.00	m^3
	Granite rubble	–	23.55	m^3
	Lime stone ashlar	–	25.10	m^3
	Marble dressed	–	26.50	m^3
	Sand stone	–	22.00	m^3
40.	**Mastic asphalt**	10	0.216	m^2
41.	**Metal sheeting, protected galvanized steel sheets, plain** (*see* IS 277)			

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
	Class A (corrugated)	1.60	0.131	m^2
		1.00	0.104	m^2
		0.9	0.084	m^2
		0.80	0.069	m^2
		0.63	0.056	m^2
	Class B (corrugated)	1.60	0.129	m^2
		1.00	0.102	m^2
		0.9	0.083	m^2
		0.80	0.067	m^2
		0.63	0.054	m^2
	Class C (corrugated)	1.60	0.128	m^2
		1.00	0.101	m^2
		0.9	0.081	m^2
		0.80	0.066	m^2
		0.63	0.053	m^2
	Class D (corrugated)	1.60	0.127	m^2
		1.00	0.100	m^2
		0.9	0.081	m^2
		0.80	0.065	m^2
		0.63	0.052	m^2
42.	**Mortar**			
	Cement	–	20.40	m^3
	Gypsum	–	11.75	m^3
	Lime	–	15.70 to18.05	m^3
43.	**Pipes**			
	Asbestos cement pipes [*see* IS 1626 (Part 1)]	50	0.032 to 0.034	m
		60	0.032 to 0.043	m
		80	0.051 to 0.054	m
		90	0.052 to 0.060	m
		100	0.058 to 0.065	m
		125	0.072 to 0.086	m
		150	0.086 to 0.108	m
	Asbestos cement pressure pipes	50	0.056	m
		80	0.067	m
		100	0.090	m
		125	0.139	m

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
	[(*see* IS 1592)	150	0.175	m
		200	0.264	m
		250	0.380	m
		300	0.539	m
	Cast iron pipes (*see* IS 1729			m^3
	Standard overall length 1.8 m with socket	50	0.073	pipe
		75	0.108	pipe
		100	0.137	pipe
		125	0.196	pipe
		150	0.255	pipe
	Standard overall length 1.5 m with socket	50	0.064	pipe
		75	0.093	pipe
		100	0.123	pipe
		125	0.172	pipe
		150	0.230	Pipe
	Pressure pipes for water, gas and sewage:			
	a) Centrifugally cast (*see* IS 1536)			
	Socket and spigot pipes			
	Barrel:			
	Class LA	80	0.145	m
		100	0.182	m
		125	0.237	m
		150	0.297	m
		200	0.432	m
		250	0.582	m
		300	*0.750*	m
		350	0.944	m
		400	1.146	m
		450	1.383	m
		500	1.620	m
		600	2.156	m
		700	2.718	m
		750	3.111	m
	Class A	80	0.151	m
		100	0.201	m
		125	0.259	m
		150	0.326	m
		200	0.472	m

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
		250	0.637	m
		300	0.824	m
		350	1.030	m
		400	1.262	m
		450	1.530	m
		500	1.775	m
		600	2.367	m
		700	3.056	m
		750	3.422	m
	Class B	80	0.172	m
		100	0.216	m
		125	0.281	m
		150	0.352	m
		200	0.511	m
		250	0.692	m
		300	0.896	m
		350	1.112	m
		400	1.368	m
		450	1.657	m
		500	1.929	m
		600	2.578	m
		700	3.317	m
		750	3.733	m
	Sockets for Class LA, Class A and Class B barrels	80	0.054	Socket
		100	0.069	Socket
		125	0.090	Socket
		150	0.113	Socket
		200	0.165	Socket
		250	0.225	Socket
		300	0.292	Socket
		350	0.368	Socket
		400	0.454	Socket
		450	0.549	Socket
		500	0.647	Socket
		600	0.876	Socket
		700	1.145	Socket
		750	1.292	Socket
	Flanged pipe with screwed flanges:			
	Barrel:			

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
	Class A	80 to 300	Same as for centrifugally cast socket and spigot piles, Class A	
	Class B	80 to 300	Same as for centrifugally cast socket and spigot piles, Class B	
	Flanges for Class A and Class B barrels	80	0.042	Flange
		100	0.049	Flange
		125	0.065	Flange
		150	0.080	Flange
		200	0.112	Flange
		250	0.144	Flange
		300	0.182	Flange
	Vertically cast socket and spigot pipes (*see* IS 1537)			
	Barrel: Class A	80 to 750	Same as for centrifugally cast socket and spigot pipes, Class A	
		800	3.82	m
		900	4.65	m
		1 000	5.59	m
		1 100	6.59	m
		1 200	7.67	m
		1 500	11.98	m
	Class B	80 to 750	–	–
		800	–	m
		900	5.07	m
		1 000	6.07	m
		1 100	7.23	m
		1 200	8.35	m
		1 500	13.07	m
	Socket of Class A and Class B barrels	80 to 750	–	–
		800	–	Socket
		900	179	Socket
		1 000	218	Socket
		1 100	260	Socket
		1 200	360	Socket
		1 500	491	Socket
	Sand cast (flanked pipes)			
	Barrel:			
	Class A	80 to 750	Same as for centrifugally cast socket and spigot pipes, Class A	
		800 to 1 500	–	

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
	Class B	80 to 750	Same as for vertically cast socket and spigot pipes, Class B	
		800 to 1 500		
	Flanges for Class A and Class B barrels	80	0.036	Flange
		100	0.041	Flange
		125	0.052	Flange
		150	0.066	Flange
		200	0.091	Flange
		250	0.117	Flange
		300	0.145	Flange
		350	0.186	Flange
		400	0.229	Flange
		450	0.250	Flange
		500	0.315	Flange
		600	0.431	Flange
		750	0.587	Flange
		700	0.685	Flange
		800	0.792	Flange
		900	0.928	Flange
		1 000	1.18	Flange
		1 100	1.38	Flange
		1 200	1.70	Flange
		1 500	2.71	Flange
	Concrete pipes (*see* IS 458)			
	Class NP 1 (unreinforced non- pressure pipes)	80	0.19	m
		100	0.22	m
		150	0.30	m
		250	0.40	m
		300	0.69	m
		350	0.84	m
		400	0.95	m
		450	1.17	m
	Class NP 2 (reinforced concrete, light duty, non-pressure pipes)	80	0.196	m
		100	0.215	m
		150	0.324	m
		250	0.510	m
		300	0.736	m
		350	0.902	m
		400	1.02	m

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
		450	1.26	m
		500	1.38	m
		600	1.89	m
		700	2.19	m
		800	2.81	m
		900	3.51	m
		1 000	4.30	m
		1 100	5.15	m
		1 200	6.09	m
		1 400	8.18	m
		1 600	9.93	m
		1 800	12.58	m
	Class NP 3 (reinforced concrete, heavy duty, non-pressure pipes)	350	2.35	m
		400	2.63	m
		450	2.91	m
		500	3.19	m
		600	4.02	m
		700	4.61	m
		800	5.92	m
		900	7.39	m
		1 000	8.13	m
		1 100	10.34	m
		1 200	11.18	m
	Class P1 (reinforced concrete pressure pipes safe for 20 MPa pressure tests)	80	0.196	m
		100	0.235	m
		150	0.324	m
		250	0.510	m
		300	0.736	m
		350	0.902	m
		400	1.02	m
		450	1.26	m
		500	1.38	m
		600	1.89	m
		700	2.19	m
		800	2.81	m
		900	3.51	m
		1 000	4.30	m
		1 100	5.15	m
		1 200	6.09	m

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
	Class P2 (reinforced concrete pressure pipes safe for 40 MPa pressure tests)	80	0.196	m
		100	0.235	m
		150	0.324	m
		250	0.608	m
		300	1.01	m
		350	1.31	m
		400	1.67	m
		450	1.84	m
		500	1.56	m
		600	3.20	m
	Class P3 (reinforced concrete pressure pipes safe for 60 MPa pressure tests)	80	0.196	m
		100	0.235	m
		150	0.324	m
		250	0.736	m
		300	1.15	m
		350	1.65	m
		400	2.04	m
	Lead pipes [*see* IS 404 (Part 1)] (service and distribution pipes 10 be laid underground) :			
	For working 40 MPa	10	0.018	m
		13	0.031	m
		20	0.042	m
		25	0.060	m
		30	0.074	m
		40	0.091	m
		50	0.142	m
	For working 70 MPa	10	0.022	m
		15	0.038	m
		20	0.050	m
		25	0.069	m
		32	0.126	m
		40	0.175	m
	For working 100 MPa	10	0.029	m
		15	0.048	m
		20	0.067	m
		25	0.105	m
	Service pipes to be fixed or laid above ground:			
		10	0.014	m

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
	For working pressure 40 MPa	15	0.021	m
		20	0.027	m
		25	0.036	m
		32	0.059	m
		40	0.091	m
		50	0.142	m
	For working pressure 70 MPa	10	0.018	m
		15	0.024	m
		20	0.030	m
		25	0.069	m
		32	0.126	m
		40	0.175	m
	For working pressure 100 MPa	10	0.029	m
		15	0.048	m
		20	0.067	m
		25	0.105	m
	Cold water distribution pipes to be fixed or laid above ground:			
	For working pressure 25 MPa	10	0.014	m
		15	0.021	m
		20	0.027	m
		25	0.036	m
		32	0.048	m
		40	0.067	m
		50	0.084	m
	For working pressure 40 MPa	10	0.014	m
		15	0.021	m
		20	0.027	m
		25	0.036	m
		32	0.059	m
		40	0.091	m
		50	0.142	m
	Hot water distribution pipes to be fixed or laid above ground:			
	For working pressure 20 MPa	10	0.015	m
		15	0.023	m
		20	0.031	m
		25	0.041	m
		32	0.062	m
		40	0.082	m

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
		50	0.142	m
	For working pressure 35 MPa	10	0.015	m
		15	0.027	m
		20	0.045	m
		25	0.085	m
		32	0.132	m
	Soil, waste, and soil and waste ventilation pipes	50	0.050	m
		75	0.073	m
		100	0.097	m
		150	0.160	m
	Flushing and warning pipes	20	0.020	m
		25	0.025	m
		32	0.032	m
		40	0.039	m
		50	0.049	m
	Gas pipes:			
	Heavy weight gas pipes	10	0.008	m
		15	0.017	m
		20	0.025	m
		25	0.034	m
		32	0.045	m
		40	0.061	m
		50	0.071	m
	Light weight gas pipes	10	0.008	m
		15	0.012	m
		20	0.020	m
		25	0.029	m
		32	0.037	m
		40	0.047	m
		50	0.058	m
	Stoneware, salt-glazed pipes (*see* IS 651)	100	0.137	m
		150	0.216	m
		200	0.324	m
		230	0.412	m
		250	0.510	m
		300	0.775	m
		350	0.980	m
		400	1.26	m
		450	1.44	m

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
		500	1.77	m
		600	2.35	m
44.	**Plaster**			
	Cement	10	0.204	m^2
	Lime	10	0.172	m^2
	Acoustic	10	0.078	m^2
	Anhydrite	10	0.206	m^2
	Barium sulphate	10	0.284	m^2
	Fibrous	10	0.088	m^2
	Gypsum	10	0.186	m^2
45.	**Roofing**			
	Asbestos cement sheeting			
	(*see* 'Asbestos cement sheeting' in Table 1)			
	Allahabad tiles (single) including battens (*see* Note below)	–	0.83	m^2
	Allahabad tiles (double) including battens (*see* Note below)	–	1.67	m^2
	Country tiles (single) including battens (*see* Note below)	–	0.69	m^2
	Country tiles (double) including battens (*see* Note below)	–	1.18	m^2
	Mangalore tiles battens (*see* Note below)	–	0.64	m^2
	Mangalore tiles bedded in mortar over flat tiles (*see* Note below)	–	1.08	m^2
	Mangalore tiles with flat tiles (*see* Note below)	–	0.78	m^2
	Copper sheet roofing including laps and rolls	0.56	0.08	m^2

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
	Flat roofs:	0.72	0.10	m^2
	Clay tiles- hollow clay blocks/ clay floor tiles (*see* Sl No. 31 'Flooring')			
	Concrete hollow units (*see* Sl No. 31 'Flooring' in this Table)			
	Galvanized iron sheeting (*see* Sl No. '41 Metal sheeting, protected')			
	Glazed Roofing:			
	Glazing with aluminum alloy bars for spans up to 3 m	6.4	0.19	m^2
	Glazing with lead-covering steel bars at 0.6 m centres	6.4	0.25 to 0.28	m^2
	States on battens	–	0.34 to 0.49	m^2
	Thatch with battens	–	0.34 to 0.49	m^2
	NOTE – Weights acting vertically on horizontally projection to be multiplied by cosine of roof angle to obtain weights normal to the roof surface.			
	Roof finished			
	Bitumen macadam	10	0.22	m^2
	Felt roofing (*see* 28 'Felt bituminous for water-proofing and damp-proofing' in Table 1)	10	0.008	m^2
	Glass silk quilted	0.5	0.05	m^2
	Lead sheet	0.8	0.07	m^2
	Mortar screeding	10	0.21	m^2
46.	**Sheeting**			
	Asbestos (*see* under Sl No. 9 'asbestos cement sheeting' in this Table)			
	Galvanized iron (*see* under Sl No.39 'metal sheeting, protected' in this table)			
	Glass (*see* under Sl No.30 'Glass' in this table)			
	Plywood (*see* IS 303)	1	0.007	m^3
47.	**Slugwool**	–	2.65	m^3
48.	**Soils and Gravels**			
	Alluvial ground, undisturbed	–	15.69	m^3
	Broken stone ballast:			
	Dry, well-shaken	–	15.70 to 18.35	m^3
	Perfectly wet	–	18.85 to 21.95	m^3
	Chalk		15.70 to 18.85	m^3
	Clay:			
	China, compact	–	21.95	m^3
	Clay fills:			

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
	Dry, lumps	–	10.20	m^3
	Dry, compact	–	14.10	m^3
	Damp, compact	–	17.25	m^3
	Wet , compact	–	20.40	m^3
	Undisturbed	–	18.85	m^3
	Undisturbed, gravelly	–	20.40	m^3
	Crush stone sand (Msand)	–	–	–
	Earth:			
	Dry	–	13.85 to 18.05	m^3
	Moist	–	15.70 to 19.60	m^3
	Gravel:			
	Loose	–	15.70	m^3
	Rammed	–	18.85 to 21.20	m^3
	Kaolin, compact	–	25.50	m^3
	Loam:			
	Dry, loose	–	11.75	m^3
	Dry, compact	–	15.70	m^3
	Wet, compact	–	18.85	m^3
	Loess, dry	–	14.10	m^3
	Marl, compact	–	17.25 to 18.85	m^3
	Mud, river, wet	–	17.25 to 18.85	m^3
	Peat:			
	Dry	–	5.50 to 6.30	m^3
	Sandy, compact	–	7.85	m^3
	Wet, compact	–	13.35	m^3
	Rip-rap	–	12.55 to 14.10	m^3
	Sand:			
	Dry, clean	–	15.10 to 15.70	m^3
	River	–	18.05	m^3
	Wet	–	17.25 to 19.60	m^2
	Shingles:			
	Aggregate 3 to 38 mm	–	13.75	m^2
	Fine sand:			
	Dry	–	15.70	m^2
	Saturated	–	20.40	m^2
	Silt, wet	–	17.25 to 18.85	m^2
49	***Steel sections***			
	Density of steel sections shall be taken as 78.50 kg/m^3			

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
	Weight of hot rolled sections (ISJB, ISLB, ISMB, ISWB, ISNPB, ISWPB, ISSC, ISHB, ISJC, ISLC, ISMC, ISMPC, ISA, ISPBP) shall be referred from (*see* IS 808)			
	Weight of hollow steel sections shall be referred from (*see* IS 4923)			
	Weight of cold formed light gauge structural steel sections shall be referred from (*see* IS 811)			
	Weight of rolled and slit T bars shall be referred from (*see* IS 1173)			
	Weight of steel sheet piling sections shall be referred from (*see* IS 2314)			
50.	**Stone**			
	Agate	–	25.50	m^3
	Aggregate	–	15.70 to 18.85	m^3
	Basalt	–	27.95 to 29.05	m^3
	Cast	–	21.95	m^3
	Chalk	–	21.50	m^3
	Dolomite	–	28.25	m^3
	Emery	–	39.25	m^3
	Flint	–	25.40	m^3
	Gneiss	–	23.55 to 26.40	m^3
	Granite	–	25.90 to 27.45	m^3
	Gravel:			
	Loose	–	15.70	m^3
	Moderately rammed, dry	–	18.85	m^3
	Green stone	–	28.25	m^3
	Gypsum	–	21.95 to 23.55	m^3
	Kota			
	Laterite	–	20.40 to 23.55	m^3
	Lime stone	–	23.55 to 25.90	m^3
	Marble	–	26.70	m^3
	Pumice	–	7.85 to 11.00	m^3
	Quartz rock	–	25.90	m^3
	Sand stone	–	21.95 to 23.54	m^3
	Slate	–	27.45	m^3
	Soap stone	–	26.45	m^3
51.	**Tar, Coal**			
	Crude (*see* IS 212)	–	9.90	m^3
	Naphtha, light	–	9.90	m^3
	Naphtha, heavy	–	9.90	m^3

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
	Road tar	–	9.90	m^3
	Pitch (*see* IS 216)	–	9.90	m^3
52.	**Thermal Insulation**			
	Unbonded glass wool	–	12.75 to 23.55	m^3
	Unbonded rock and slag wool	–	11.30 to 19.60	m^3
	Cellular concrete			
	Grade A	–	Up to 29.40	m^3
	Grade B	–	29.50 to 39.20	m^3
	Grade C	–	39.30 to 49.00	m^3
	Performed calcium silicate Insulation (for temperature up to 650°C)	–	19.60 to 34.30	m^3
53.	**Tiles and stone cladding**			
	Terra-cotta	–	18.35 to 23.25	m^2
	Terrozzo			
	Paving	10	0.24	m^2
	Cast partitions	40	0.93	m^2
	Tiles			
	Mangalore pattern (*see* IS 654)	–	0.02 to 0.03	Tile
	Polystyrene wall tiles	99 x 99	0.013	m^2
		148.5 x 148.5	0.013	m^2
	Pressed ceramic tiles, glazed and unglazed (*see* IS 15622)		22	m^3
	Concrete paving blocks (*see* IS 15658)		24	m^3
54.	**Timber**			
	Typical Indian timbers (*see* IS 399)			
	Aglaia	–	8.34	m^3
	Aini	–	5.83	m^3
	Alder	–	3.63	m^3
	Amari	–	6.13	m^3
	Amla	–	7.85	m^3

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
	Amra	–	4.41	m^3
	Anjan	–	8.33	m^3
	Arjun	–	7.99	m^3
	Ash	–	7.06	m^3
	Axlewood	–	8.82	m^3
	Babul	–	7.70	m^3
	Baen	–	7.70	m^3
	Bahera	–	7.99	m^3
	Bakota	–	4.21	m^3
	Balasu	–	7.55	m^3
	Ballagi	–	11.13	m^3
	Bamboo			
	Banati	–	4.41	m^3
	Benteak	–	6.62	m^3
	Ber	–	6.91	m^3
	Bhendi	–	7.55	m^3
	Bijasal	–	7.85	m^3
	Black chuglam	–	6.13	m^3
	Birch	–	7.85	m^3
	Black locust	–	8.34	m^3
	Blue gum	–	8.34	m^3
	Blue pine	–	5.05	m^3
	Bola	–	6.42	m^3
	Bonsum	–	5.20	m^3
	Bullet wood	–	8.78	m^3
	Casuarina	–	8.34	m^3
	Cettis	–	6.42	m^3
	Champ	–	4.85	m^3
	Chaplash	–	5.05	m^3
	Chatian	–	4.07	m^3
	Chikrassy	–	6.62	m^3
	Chilauni	–	6.42	m^3
	Chilla	–	7.85	m^3
	Chir	–	5.64	m^3
	Chuglam:			
	Black	–	7.85	m^3
	White (silver grey-wood)	–	6.91	m^3
	Cinnamon	–	6.42	m^3

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
	Cypress	–	5.05	m^3
	Debdaru	–	6.28	m^3
	Deodar	–	5.35	m^3
	Devdam	–	7.06	m^3
	Dhaman:			
	Grewia tiliofolia	–	7.70	m^3
	Grewia vestita	–	7.40	m^3
	Dhup	–	6.42	m^3
	Dilenia	–	6.13	m^3
	Dudhi	–	5.49	m^3
	Ebony	–	8.19	m^3
	Elim	–	5.20	m^3
	Eucalyptus	–	8.33	m^3
	Figs	–	4.56	m^3
	Fir	–	4.14	m^3
	Frash	–	6.62	m^3
	Gamari	–	5.05	m^3
	Gardenia	–	7.40	m^3
	Garuga	–	5.98	m^3
	Geon	–	4.07	m^3
	Gluta	–	7.06	m^3
	Gokul	–	4.07	m^3
	Grewia sp.	–	7.55	m^3
	Gurjan	–	7.70	m^3
	Gutel	–	4.41	m^3
	Haldu	–	6.62	m^3
	Hathipaila	–	5.84	m^3
	Hiwar	–	7.70	m^3
	Hollock	–	5.98	m^3
	Hollong	–	7.21	m^3
	Hoom	–	7.21	m^3
	Horse chestnut	–	5.05	m^3
	Imli	–	8.97	m^3
	Indian Chestnut	–	6.28	m^3
	Indian Hemlock	–	3.92	m^3
	Indian Oak	–	8.48	m^3
	Indian Olive	–	10.35	m^3
	Irul	–	8.33	m^3
	Jack	–	5.83	m^3

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
	Jaman	–	7.70	m^3
	Jarul	–	6.13	m^3
	Jathtkai	–	5.05	m^3
	Jhingan	–	5.63	m^3
	Jutili	–	7.85	m^3
	Kadam	–	4.85	m^3
	Kail	–	5.05	m^3
	Kaim	–	6.42	m^3
	Kambli	–	4.07	m^3
	Kanchan	–	6.62	m^3
	Kanjuj	–	5.84	m^3
	Karada	–	8.34	m^3
	Karal	–	7.99	m^3
	Karani	–	6.28	m^3
	Karar	–	5.34	m^3
	Kardahi	–	9.27	m^3
	Karimgotta	–	3.92	m^3
	Kasi	–	5.83	m^3
	Kasum	–	10.84	m^3
	Kathal	–	5.85	m^3
	Keora	–	6.13	m^3
	Khair	–	9.00	m^3
	Khasipine	–	5.05	m^3
	Kindal	–	7.55	m^3
	Kokko	–	6.28	m^3
	Kongoo	–	9.76	m^3
	Kuchla	–	8.63	m^3
	Kumbi	–	7.70	m^3
	Kurchi	–	5.20	m^3
	Kurung	–	9.76	m^3
	Kusum	–	11.28	m^3
	Kuthan	–	4.71	m^3
	Lakooch	–	6.28	m^3
	Lambapatti	–	5.34	m^3
	Lampati	–	5.05	m^3
	Laurel	–	8.33	m^3
	Lendi	–	7.40	m^3
	Machilus:			
	Gamblei	–	5.05	m^3

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
	Macrantha	–	5.20	m^3
	Maharukh	–	4.07	m^3
	Mahogany	–	6.62	m^3
	Mahua	–	8.97	m^3
	Maina	–	5.64	m^3
	Makai	–	3.14	m^3
	Malabar neem	–	4.41	m^3
	Mango	–	6.77	m^3
	Maniawga	–	7.40	m^3
	Maple	–	5.64	m^3
	Mesua	–	9.76	m^3
	Milla	–	9.12	m^3
	Mokha	–	7.99	m^3
	Mulberry	–	6.62	m^3
	Mullilam	–	7.21	m^3
	Mundani	–	6.77	m^3
	Murtenga	–	7.70	m^3
	Myrabolan	–	9.27	m^3
	Narikel	–	5.49	m^3
	Nedunar	–	5.05	m^3
	Oak	–	8.48	m^3
	Padauk	–	7.06	m^3
	Padri	–	7.06	m^3
	Palang	–	5.98	m^3
	Pali	–	6.28	m^3
	Papita	–	3.28	m^3
	Parrotia	–	8.48	m^3
	Persian lilac	–	5.84	m^3
	Piney	–	6.13	m^3
	Ping	–	8.97	m^3
	Pinus insignis	–	6.13	m^3
	Pipli	–	5.83	m^3
	Pitraj	–	6.77	m^3
	Poon	–	6.42	m^3
	Poplar	–	4.41	m^3
	Pula	–	3.78	m^3
	Pyinma	–	3.98	m^3
	Rajbrikh	–	8.48	m^3
	Red sanders	–	10.84	m^3

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
	Rohini	–	11.33	m^3
	Rosewood (black wood)	–	8.19	m^3
	Rudrak	–	4.71	m^3
	Sal	–	8.48	m^3
	Salai	–	5.64	m^3
	Sandal wood	–	8.97	m^3
	Sadan	–	8.34	m^3
	Satin wood	–	9.41	m^3
	Saykaranji	–	7.40	m^3
	Seleng	–	4.85	m^3
	Semul	–	3.78	m^3
	Silver oak	–	6.28	m^3
	Siris	–	3.92	m^3
	Kala-siris	–	7.21	m^3
	Safed- siris	–	6.28	m^3
	Siaso	–	7.70	m^3
	Spruce	–	4.71	m^3
	Suji	–	2.65	m^3
	Sundri	–	9.41	m^3
	Talauma	–	5.64	m^3
	Tanaku	–	2.09	m^3
	Teak	–	6.28	m^3
	Toon	–	5.05	m^3
	Udal	–	2.50	m^3
	Upas	–	3.14	m^3
	Uriam	–	7.40	m^3
	Vakai	–	9.41	m^3
	Vellapine	–	5.83	m^3
	Walnut	–	5.64	m^3
	White bombwe	–	5.98	m^3
	White cedar	–	7.06	m^3
	White chuglam (silver grey-wood)	–	6.91	m^3
	White dhup	–	4.22	m^3
	Yon	–	8.33	m^3
	NOTE – The unit of timbers correspond to average unit of typical Indian timbers at 12 percent moisture content.			
55.	**Water**			
	Fresh	–	10.0	m^3

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
	Salt	–	10.05	m^3
56.	**Wood – Wool Building Slabs**	10mm	0.059	m^2
57.	**Walling** (*see* IS 6072)			
	Autoclaved reinforced cellular concrete wall slabs			
	Class A	–	8.35 to 9.80	m^2
	Class B	–	7.35 to 8.35	m^2
	Class C	–	6.35 to 7.35	m^2
	Class D	–	5.40 to 6.35	m^2
	Class E	–	4.40 to 5.40	m^2
	Brick masonry (*see* 38 'Masonry Brick' in Table 1)			
	Blocks masonry (*see* 11 'Block' in Table 1)			
	Stone masonry (*see* 37 'Masonry Stone' in Table 1)			
	Partitions 39			
	Brick wall	100	1.91	m^2
	Cinder concrete	75	1.13	m^2
	Galvanized on sheet	–	0.15	m^2
	Hollow glass block (bricks)	100	0.88	m^2
	Hollow blocks per 200 mm of thickness			
	Ballast or stone concrete	200	0.201	m^2
	Clay	200	0.201	m^2
	Clinker concrete	200	0.220	m^2
	Coke breeze concrete	200	9.176	m^2
	Diatomaceous earth	200	0.093	m^2
	Gypsum	200	0.137	m^2
	Pumice concrete	200	0.177	m^2
	Slag concrete, air-cooled	200	0.196	m^2
	Slag concrete foamed	200	0.186	m^2
	Lath and plaster	–	0.392	m^2
	Solid blocks per 20 mm of thickness			
	Ballast or stone	20	0.451	m^2
	Clinker concrete	20	0.300	m^2
	Coke breeze concrete	20	0.221	m^2

Sl No.	Materials	Nominal Size or Thickness mm	Weight	
			kN	per
(1)	(2)	(3)	(4)	(5)
	Pumice concrete	20	0.221	m^2
	Slag concrete, foamed	20	0.250	m^2
	Terrazzo cast partitions	40	0.932	m^2
	Timber studding plastered	–	9.981	m^2
	NOTE For unit weight of fixtures and fittings required to buildings including builder's hardware, reference may be made to appropriate Indian standards.			

3 STORED AND MISCELLANEOUS MATERIALS

3.1 Units weights of stored and miscellaneous materials intended for dead load calculation and other general purposes are given in Table 2.

3.2 Table 2 gives unit weight of stored materials, and the table shall not be used for volume calculations or any other similar purposes.

Table 2 Unit Weights of Stored and Miscellaneous Materials
[*Clauses* 3.1 *and* 3.2]

Sl No.	Materials	Weight KN/m^3	Angle of Friction, Degrees
(1)	(2)	(3)	(4)
1.	**Agriculture and Food Products**		
	Butter	8.45	–
	Coffee in bags	5.50	–
	Drinks in bottle, in boxes	7.35	–
	Eggs, packed	2.95	–
	Fats, oil	5.80	–
	Fish meal	4.90	45
	Flour in sacks up to 1 m height	2.20 to 5.90	–
	Forage (bales)	1.25	–
	Fruits	3.45	–
	Grains:		
	Barley	6.75	27
	Corn, shelled	7.55	27
	Flax seed	7.35	30
	Oats	5.30	30

Sl No.	Materials	Weight KN/m^3	Angle of Friction, Degrees
(1)	(2)	(3)	(4)
	Rice	6.55	33
	Soyabeans	7.35	30
	Wheat	8.15	28
	Wheat flour	6.85	30
	Grain sheaves up to 4 m stack height	0.98	30
	Grain sheaves over 4 m stack height	1.45	30
	Grass and clover	3.45	–
	Hay:		–
	Compressed	1.65	–
	Loose up to about 3 m stack height	0.69	–
	Honey	14.10	–
	Hops:		
	In stacks	1.65	–
	In cylinder hop bins	4.60	–
	Sewn up or compressed in cylindrical shape in hop cloth	2.85	–
	Malt:		
	Crushed	3.90	20
	Germinated	1.85	–
	Meat and meat products	7.05	–
	Milk	10.05	–
	Molasses	4.40	–
	Onion in bags	5.40	0
	Oil cakes, crushed	5.80	0
	Potatoes	7.05	30
	Preserves (tins in cases)	4.90 to7.85	–
	Bags	7.05	–
	Bulk	9.40	–
	Seeds:		
	Heaps	4.90 to 7.85	25
	Sacks	3.90 to 6.85	–
	Straw and chaff:		
	Loose up to about 3 m stack height	0.45	–
	Compressed	1.65	–
	Sugar:		
	Crystal	7.35	30
	Cube sugar in boxes	7.85	–
	Sugar beet, pressed out	7.85	–
	Tobacco bundles	3.45	–
	Vinegar	10.40	–
2.	**Chemicals and Allied Materials**		

Sl No.	Materials	Weight KN/m^3	Angle of Friction, Degrees
(1)	(2)	(3)	(4)
	Acid, hydrochloric	11.75	–
	Acid, nitric 91 percent	14.80	–
	Acid, sulphuric 87 percent	17.55	–
	Alcohol	7.65	–
	Alum, pearl in barrel	5.20	–
	Ammonia, liquid	8.85	–
	Ammonium, chloride, crystalline	8.15	30 to 40
	Ammonium nitrate	7.05 to 9.80	25
	Ammonium sulphate	7.05 to 9.00	32 to 45
	Beeswax	9.40	–
	Benzole	8.90	–
	Benzene hexachloride	8.75	–
	Bicarbonate of soda	6.40	–
	Bone	18.65	–
	Borax	17.15	–
	Calcite	26.50	–
	Camphor	9.70	–
	Carbon disulphide	12.75	–
	Casein	13.25	–
	Caustic soda	13.85	–
	Creosole	10.50	–
	Dicalcium phosphate	6.65	–
	Disodium phosphate	3.90 to 4.80	30 to 45
	Iodine	48.55	–
	Oils in bottle or barrels	5.70 to 8.90	–
	Oil, linsee:		
	In barrels	5.70	–
	In drums	7.05	–
	Oil, turpentine	8.50	–
	Paints	9.40	–
	Paraffin wax	7.85 to 9.40	–
	Petroleum	9.90	–
	Phosphorus	17.85	–
	Plastics and polymers:		
	Cellulose acetate	12.25 to 13.35	–
	Cellulose nitrate	13.25 to 15.70	–
	Methyl methacrylate (IS 14753)	11.57 to 11.77	–
	Phenol formaldehyde	12.55	–
	Expanded Polystyrene (IS 4671)	0.15 to 0.35	–
	Extruded polystyrene	0.21	
	Polyvinyl chloride (Perspex)	11.75 to 13.25	–

Sl No.	Materials	Weight KN/m^3	Angle of Friction, Degrees
(1)	(2)	(3)	(4)
	Resin bonded sheet	12.85 to 13.55	–
	Urea formaldehyde	13.25 to 13.55	–
	Extruded polystyrene	0.21	
	Polyurethane	0.59 to 0.66	
	Polyethylene (IS 2508)	9.81 to 19.6	
	Polyvinyl Butaryl	11	
	Polycarbonate (IS 14443)	12	
	Ethylene tetrafluoroethylene	17	
	Polytetrafluoroethylene [IS 14635 (part 2)]	22	
	Potash	14.40	–
	Potassium	8.65	–
	Potassium nitrate	9.90	–
	Red lead, dry	20.70	–
	Red lead, paste	87.30	–
	Rosin in barrels	6.75	–
	Rubber:		
	Raw	8.90 to 9.40	–
	Vulcanized	8.90 to 9.10	–
	Saltpeter	9.91	–
	Sodium silicate in barrels	8.35	–
	Sulphur	20.10	–
	Talc	27.45	–
	Varnishes	9.40	–
	Vitriol, blue, in barrels	7.05	–
3.	**Fuels**		
	Brown coal	6.83	–
	Brown coal briquettes heaped	7.85	35
	Brown coal briquettes stacked	12.75	–
	Charcoal	2.95	–
	Coal:		
	Untreated, mine-moist	9.80	35
	In washeries	11.75	0
	Dust	6.85	25
	All other sorts	8.35	35
	Coke:		
	Furnace or gas	4.90	35
	Brown coal, low-temperature	9.80	35
	Hard, raw coal	8.35	35
	Hard, raw coal, mine-damp	9.80	35
	Diesel oil	9.40	0

Sl No.	Materials	Weight KN/m^3	Angle of Friction, Degrees
(1)	(2)	(3)	(4)
	Firewood, chopped	3.90	45
	Petrol	6.75	0
	Wood in chips	1.95	45
	Wood shaving, loose	1.45	35
	Wood shaving, shaken down	2.45	35
4.	**Manures**		
	Animal manures:		
	Loosely heaped	11.75	45
	Stacked dung up to 25 m stack height	17.65	45
	Artificial manures	11.75	24 to 30
5.	**Metals and Alloys**		
	Aluminium	25.30 to 26.60	
	Cast	25.30 to 26.60	–
	Wrought	25.90 to 27.45	–
	Sheet per mm of thickness per m^2	0.028	–
	Antimony, pure:		
	Amorphous	60.90	–
	Solid	65.70	–
	Bismuth:		
	Liquid	98.07	–
	Solid	95.02 to 97.9	–
	Cadmium:		
	Cast	83.75 to 84.05	–
	Wrought	85.03	–
	Calcium	15.60	–
	Chromium	63.95 to 66.00	–
	Cobalt:		
	Cast	83.25 to 85.10	–
	Wrought	88.45	–
	Copper:		
	Cast	86.20 to 87.65	–
	Wrought	86.70 to 87.65	–
	Sheet per mm of thickness	0.09	–
	Gold:		
	Cast	188.75 to 189.55	–
	Wrought	189.55	–
	Iron:		
	Pig	70.60	–
	Grey, cast	68.95 to 69.90	–
	White, cast	74.35 to 75.70	–
	Wrought	75.50	–

Sl No.	Materials	Weight KN/m^3	Angle of Friction, Degrees
(1)	(2)	(3)	(4)
	Lead:		
	Cast	111.20	–
	Liquid	105.00	–
	Wrought	111.40	–
	Sheet per mm of thickness	0.11	–
	Magnesium	16.45 to 17.15	–
	Manganese	72.55	–
	Mercury	133.35	–
	Nickel	81.20 to 87.20	–
	Platinum	210.25	–
	Silver:		
	Cast	102.0 to 102.85	–
	Liquid	93.15	–
	Wrough	103.35 to 103.55	–
	Sodium:		
	Liquid	9.10	–
	Solid	9.30	–
	Tungsten	188.30	–
	Uranium	180.45	–
	Zinc		
	Cast	68.95 to 70.20	–
	Wrought	70.50	–
	Sheet per mm of thickness	0.07	–
	Alloys:		
	Aluminium and copper		
	Aluminium 10 percent copper 90 percent	75.40	–
	Aluminium 5 percent copper 95 percent	82.00	–
	Aluminium 3 percent copper 97 percent	85.10	–
	Aluminium 91 percent zinc 9 percent	27.45	–
	Babbit metal tin 90 percent	71.70	–
	Lead 5 percent copper 5 percent		
	Wood’s metal bismuth 50 percent	95.00	–
	Lead 25 percent cadmium 12.5 percent		
	Tin 12.5 percent		
	Brasses:		
	Muntz metal (copper 60 percent, zinc 40 percent)	80.60	–

Sl No.	Materials	Weight KN/m^3	Angle of Friction, Degrees
(1)	(2)	(3)	(4)
	Red (copper 90 percent, zinc 10 percent)	84.25	–
	White (copper 50 percent, zinc 50 percent)	80.30	–
	Yellow (copper 70 percent, zinc 30 percent)		
	Cast	82.75	–
	Drawn	85.10	–
	Rolled	83.85	–
	Bronzes:		
	Bell metal (copper 80 percent, tin 20 percent)	85.60	–
	Gun metal (copper 90 percent, tin 10 percent)	86.10	–
	Cadmium and tin	75.40	–
	German Silver:		
	Copper 52 percent, zinc 26 percent, nickel 22 percent	82.75	–
	Copper 59 percent, zinc 30 percent, nickel 11 percent	81.70	–
	Copper 63 percent, zinc 30 percent, nickel 7 percent	81.40	–
	Gold and Copper:		
	Gold 98 percent, copper 2 percent	184.75	–
	Gold 90 percent, copper 10 percent	168.20	–
	Lead and Tin:		
	Lead 87.5 percent, tin 12.5 percent	103.85	–
	Lead 30.5 percent, tin 69.5 percent	81.10	–
	Monel metal cast (nickel 70 percent, copper 30 percent)	87.00	–
	Steel:		
	Cast	77.00	–
	Wrought	76.30	–
	Black plate per mm of thickness	0.08	–
	Steel sections (*see* 46 'steel sections' in Table 1)		
6.	**Miscellaneous Materials**		
	Aggregate, coarse	10.80 to 15.70	30
	Ashes, coal, dry, 12 mm and under	5.50 to 6.30	40

Sl No.	Materials	Weight KN/m^3	Angle of Friction, Degrees
(1)	(2)	(3)	(4)
	Ashes, coal, dry, 75 mm and under	5.50 to 6.30	38
	Ashes, coal, wet 12 mm and under	7.05 to 7.85	52
	Ashes, coal, wet 75 mm and under	7.05 to 7.85	50
	Asphalt, crushed 12 mm and under	7.05	30 to 45
	Ammonium nitrate, polls	3.55 to 8.35	27
	Bone	18.65	–
	Books and files, stacked	8.35	–
	Calcium ammonium nitrate	9.80	28
	Copper sulphate, ground	11.75	30
	Chalk	21.95	–
	Chinaware, earthenware, stacked (including cavities)	10.80	–
	Clinker, furnace, clean	7.85	30
	Diammonium phosphate	7.85 to 8.50	29
	Double salt (ammonium sulphate nitrate)	7.05 to 9.30	34
	Filling cabinet and cupboards with contents in records offices, libraries, archives	5.90	–
	Flue dust, boiler house, dry	5.50 to 7.05	30
	Fly ash, pulverised	5.50 to 7.05	–
	Glass, solid	23.50 to 26.70	–
	Wool	0.16 to 1.18	–
	In sheets	25.50	–
	Glue	12.55	–
	Gypsum, calcined, 12mm and under	8.60 to 9.40	40
	Gypsum, calcined, powdered	9.40 to 12.55	45
	Gypsum, raw, 25 mm and under	14.10 to 15.70	30 to 45
	Hides:		
	Dry	8.65	–
	Salted } Only green	8.90	–
	Ice		
	Leather put in rows	7.85	–
	Lime, ground 3 mm and under	9.40	> 45
	Lime, hydrated 3 mm and under	6.30	30 to 45
	Lime, hydrated, pulverized	5.00 to 6.30	30 to 45
	Lime pebble	8.25 to 8.75	
	Limestone, agricultural 3 mm and under	10.60	
	Limestone, crushed	13.30 to 14.10	30 to 45
	Limestone dust	8.65 to 14.90	30 to 45

Sl No.	Materials	Weight KN/m^3	Angle of Friction, Degrees
(1)	(2)	(3)	(4)
	Magnesite, caustic, in powder form	7.85	–
	Magnesite sinter and Magnesite granular	19.60	–
	Phosphate, rock, pulverized	9.40	40 to 52
	Phosphate rock	11.75 to 13.35	30 to 45
	Phosphate sand	14.10 to 15.70	30 to 45
	Potassium carbonate	7.95	30 to 45
	Potassium chloride, pellets	18.85 to 20.40	30 to 45
	Potassium nitrate	4.85	> 30
	Potassium sulphate	6.55 to 7.45	45
	Pyrites, pellets	18.85 to 20.40	30 to 45
	Pumice	5.80 to 9.90	–
	Rubbish:		
	Building	13.80	–
	General	6.30	–
	Salt, common, dry, coarse	6.30 to 10.00	30 to 45
	Salt, common, dry, fine	11.00 to 12.55	30 to 45
	Salt cake, dry, coarse	13.35	30
	Salt cake, dry, pulverized	11.20 to 13.35	35
	Sand, bank. damp	17.25 to 20.40	45
	Sand, bank, dry	14.10 to 17.25	30
	Sand, silica, dry	14.10 to 15.70	30 to 45
	Saw dust	1.57	30
	Silica gel	4.40	30 to 45
	Soda ash, heavy	8.67 to 10.20	35
	Soda ash, light	4.70 to 6.00	37
	Sodium nitrate, granular	11.00 to 12.55	24
	Sulphur, crushed, 12 mm and under	7.85 to 8.25	35 to 45
	Sulphur, 76 mm and under	8.65 to 13.35	32
	Sulphur, powdered	7.85 to 9.40	30 to 45
	Single superphosphate (S.S.P), granulated	7.65 to 8.25	37
	Slag, furnace, crushed	14.90	35
	Steel goods:		
	Cylinders, usually stored for Carbonic acid, etc	13.80	
	Sheets, railway rails, etc, usually stored	44.00	
	Trisodium phosphate	9.40	30 to 45
	Triple superphosphate	7.85 to 8.65	30 to 45
	Turf	2.85 to 5.70	–

Sl No.	Materials	Weight KN/m^3	Angle of Friction, Degrees
(1)	(2)	(3)	(4)
	Urea, prills	6.40	23 to 26
7.	**Ores**		
	Antimony	29.80	–
	Ferrous sulphide	26.50	–
	Ferrous sulphide ore waste after roasting	13.85	–
	Iron ore, compact storing	29.80	–
	Magnesium ore	19.60	–
8.	**Textiles, Paper and Allied Materials**		
	Cellulose in bundles	7.35	–
	Cotton, compressed	12.75	–
	Flax, piles and compressed in bales	2.95	–
	Furs	8.80	–
	Jute in bundles	6.85	–
	Paper:		
	In bundles and rolls	6.85	–
	Newspaper in bundles	3.90	–
	Put in rows	10.80	–
	Thread in bundles	4.90	–
	Wood, compressed	12.75	–

ANNEX A
(*Clause* 2)

LIST OF REFERRED STANDARDS

IS No.	*Title*
IS 212 : 2021	Crude coal tar for general use (*third revision*)
IS 216: 2006	Coal tar pitch - Specification (*second revision*)
IS 269: 2015	Ordinary Portland Cement–Specification (*sixth revision*)
IS 277: 2018	Galvanized steel strips and sheets (Plain and Corrugated) - Specification (*seventh revision*)
IS 303: 2024	Plywood for General Purposes–Specification (*fourth revision*)
IS 383: 2025	Coarse and Fine Aggregate for Concrete - Specification (*fourth revision*) under revision Doc No: CED 2(27866)
IS 399: 1963	Classification of Commercial Timbers and their Zonal Distribution (*revised*)
IS 404 (Part1): 1993	Lead pipes - Specification: Part 1 for other than chemical purposes (*third revision*)
IS 412: 1975	Specification for expanded metal steel sheets for general purposes (*second revision*)
IS 457: 1957	Code of practice for general construction of plain and reinforced concrete for dams and other massive structures
IS 458: 2021	Precast Concrete Pipes (with and without Reinforcement) (*fifth r*evision)
IS 459: 1992	Corrugated and semi - Corrugated asbestos cement sheets - Specification (*third revision*)
IS 651: 2007	Glazed stoneware pipes and fittings - Specification (*sixth revision*)
IS 653: 1992	Linoleum Sheets And Tiles - Specification (*third revision*)
IS 654: 2025	Clay Roofing Tiles Mangalore Pattern – Specification (*fifth revision*) Under Revision Doc No: CED 30 (27732)
IS 808: 2021	Hot Rolled Steel Beam, Column, Channel and Angle Sections - Dimensions and Properties (*fourth revision*)
IS 809: 1992	Rubber flooring materials for general purposes - Specification (*first revision*)
IS 811: 1987	Specification for cold formed light gauge structural steel sections (*second revision*)
IS 1077: 2025	Common burnt clay building bricks - Specification (*sixth revision*) Under Revision Doc No: CED 30 (26161)
IS 1173: 1978	Specification for Hot Rolled and Slit Steel Tee Bars (*second revision*)
IS 1322: 1993	Bitumen Felts for Water Proofing and Damp-proofing - Specification (*fourth revision*)
IS 1343: 2012	Prestressed Concrete - Code of Practice (*second revision*)
IS 1478: 2023	Clay Flooring Tiles Specification (*third revision*)

IS 1536: 2023	Centrifugally cast (Spun) iron pressure pipes for water, gas and sewage - Specification (*fifth revision*)
IS 1537: 1976	Specification for vertically cast iron pressure pipes for water, gas and sewage (*first revision*)
IS 1592: 2003	Asbestos cement pressure pipes and joints - Specification (*fourth revision*)
IS 1626	Asbestos cement building pipes and pipe fittings, gutters and gutter fittings and roofing fitting
(Part 1): 1994	Part 1 pipe and pipe fittings (*second revision*)
(part 2): 1994	Part 2 gutter and gutter fittings (*second revision*)
IS 1658: 2006	Fibre hardboards - Specification (*third revision*)
IS 1725: 2023	Stabilized Soil Blocks Used in General Building Construction — Specification (*Third Revision*)
IS 1726: 1991	Cast iron manhole covers and frames - Specification (*third revision*)
IS 1729:2023	Sand Cast Iron Spigot and Socket Pipes, Fittings And Accessories–Specification (*third revision*)
IS 2095	Gypsum plaster boards - Specification:
(Part 1):2011	Part 1 plain gypsum plaster boards (*fourth revision*)
(Part 2): 2022	Part 2 Coated laminated gypsum plaster boards (*third revision*)
(Part 3): 2022	Part 3 Reinforced Gypsum Plaster Boards and Ceiling Tiles (*fourth revision*)
IS 2180: 2025	Specification for heavy duty burnt clay building bricks (*fourth revision*) *Under Revision* CED 30(26671)
IS 2185	Concrete masonry units - Specification
(Part 1): 2005	Part 1 hollow and solid concrete blocks (*third revision*)
(Part 3): 1984	Part 3 Autoclaved Cellular Aerated Concrete Blocks
IS 2222: 2025	Specification for burnt clay perforated building bricks (*fourth revision*) *Under Revision* CED 30 (28174)
IS IS 2314	Steel Sheet Piling Section — Specification
(Part 1) : 2023	Part 1 Hot Rolled Sheet Pile (*second revision*)
(Part 2) : 2023	Part 2 Cold Formed Sheet Pile (*second revision*)
IS 2394: 1984	Code of Practice For Application of Lime Plaster Finish (*first revision*)
IS 2508 : 2024	Polyethylene Films and Sheets–Specification (*fourth revision*)
IS 2526: 1963	Code of practice for acoustical design of auditoriums and conference halls
IS 2541: 1991	Preparation and use of lime concrete - Code of practice (*second revision*)
IS 2547:	Specification for gypsum building plaster
(Part 1) : 1976	Part 1 excluding premixed lightweight plasters (*first revision*)
(Part 2) : 1976	Part 2 premixed lightweight plasters (*first revision*)
IS 2553 (Part 1) : 2018	Safety glass - Specification Part 1 architectural, building and general uses (*fourth revision*)
2835: 1987	Specification for flat transparent sheet glass (*third revision*)

3087: 2005	Particle boards of wood and other lingnocellulosic materials (medium density) for general purposes –Specification (*second revision*)
3115: 1992	Lime based blocks - Specification (*second revision*)
3129: 1985	Specification for low density particle boards
3348: 1965	Specification For Fibre Insulation Boards
3478: 1966	Specification for High Density Wood Particle Boards
4139: 1989	Calcium Silicate Bricks - Specification (Second Revision)
IS 4253	Cork composition sheets - Specification
(Part 1) : 2008	Part 1 plain cork sheets (*second revision*)
(Part 2) : 2008	Part 2 cork and rubber (*second revision*)
4671: 2018	Expanded polystyrene for thermal insulation purposes (*second revision*)
4860: 1968	Specification for acid - Resistant bricks
4923: 2017	Hollow steel sections for structural use - Specification (*third revision*)
6072: 2023	Autoclaved Reinforced Cellular Concrete Wall Slabs - Specifications (*first revision*)
6598: 2018	Cellular concrete for thermal insulation - Specification (*first revision*)
IS 8041 : 1990	Rapid Hardening Portland Cement - Specification (*second revision*)
9012: 1978	Recommended Practice for Shotcreting
12679: 2023	By-Product Gypsum for Construction - Specification (*second revision*)
12823: 2015	Prelaminated Particle Boards from Wood and other Lignocellulosic Material - Specification (*first revision*)
12894: 2002	Pulverized fuel ash - Lime bricks - Specification (*first revision*)
14443: 1997	Polycarbonate sheets - Specification
14587: 2023	Prelaminated Medium Density Fibre Board - Specification
IS 14635	Fluoropolymer dispersions and moulding and extrusion materials
(Part 1) : 2020	Part 1 designation system (*first revision*)
(Part 2) : 2020	Part 2 preparation of test specimens and determination of properties (*first revision*)
14753: 1999	Polymethyl methacrylate (pmma) (acrylic) sheets
14862: 2000	Fibre cement flat sheets - specification
15622: 2017	Pressed Ceramic Tiles - Specification (*first revision*)
15658: 2001	Concrete Paving Blocks - Specification (*first revision*)
16720: 2018	Pulverized Fuel Ash-Cement Bricks- Specification
17452: 2020	Use of Alkali Activated Concrete for Precast Products - Guidelines