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(*Incorporating* **IS : 1911-1967**)
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Indian Standard

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

PART 1 DEAD LOADS — UNIT WEIGHTS OF BUILDING MATERIALS AND STORED MATERIALS

(Second Revision)

(Incorporating Amendment No. 1)

UDC 624.042 : 006.76

BUREAU OF INDIAN STANDARDS
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Price Group 12

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PART 1 DEAD LOADS — UNIT WEIGHTS OF BUILDING MATERIALS AND STORED MATERIALS

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0. FOREWORD

0.1 This Indian Standard (Part 1) (Second Revision) was adopted by the Bureau of Indian Standards on 30 October 1987, after the draft finalized by the Structural Safety Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 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 buildings are being covered in this 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 structures, but also eliminate the wastage caused by assuming unnecessarily heavy loadings.

0.3 This Indian Standard code of practice was first published in 1957 for the guidance of civil engineers, designers and architects associated with planning and design of buildings. It included the provisions for the basic design loads (dead loads, live loads, wind loads and seismic loads) to be assumed 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.

0.3.1 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 has decided to prepare 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

Earthquake load is covered in a separate standard, namely IS : 1893-1984* which should be considered along with the above loads.

0.4 This standard deals with dead loads to be assumed in the design of buildings and same is given in the form of unit weight of materials. The unit weight of other materials that are likely to be stored in a building are also included for the purpose of load calculations due to stored materials.

0.4.1 This standard incorporates IS : 1911† published in 1967. The unit weight of materials incorporated in this standard are based on information available through published Indian Standards and various other publications.

0.4.2 This edition 3.1 incorporates Amendment No. 1 (December 1997). Side bar indicates modification of the text as the result of incorporation of the amendment.

0.4.3 The values given in this standard have been rounded off in accordance with IS : 2 - 1960‡.

*Criteria for earthquake resistanT design of structures (*third revision*).

†Schedule of unit weights of building materials (*first revision*).

‡Rules for rounding off numerical values (*revised*).

1. SCOPE

1.1 This code (Part 1) covers unit weight/mass of materials, and parts or components in a building that apply to the determination of dead loads in the design of buildings.

1.1.1 The unit weight/mass of materials that are likely to be stored in a building are also specified for the purpose of load calculations along with angles of internal friction as appropriate.

NOTE 1 — Table 1 gives the unit weight mass of individual building materials in alphabetical order; Table 2 covers the unit weight mass of parts or components of a building; and Appendix A gives unit weight mass of stored materials.

2. BUILDING MATERIALS

2.1 The unit weight/mass of materials used in building construction are specified in Table 1.

TABLE 1 UNIT WEIGHT OF BUILDING MATERIALS

MATERIAL	NOMINAL SIZE OR THICKNESS	WEIGHT/MASS		
	mm	kN	kg	per
(1)	(2)	(3)	(4)	(5)
1. *Acoustical Material*				
Eelgrass	10	5.70×10^{-3} to 7.65×10^{-3}	0.58 to 0.78	m^2
Glass fibre	10	3.80×10^{-3}	0.39	,,
Hair	10	19.10×10^{-3}	1.95	,,
Mineral wool	10	13.45×10^{-3}	1.37	,,
Slag wool	—	2.65	270	m^3
Cork	—	2.35	240	,,
2. *Aggregate, Coarse*				
Broken stone ballast:				
Dry, well-shaken	—	15.70 to 18.35	1 600 to 1 870	,,
Perfectly wet	—	18.85 to 21.95	1 920 to 2 240	,,
Shingles, 3 to 38 mm	—	14.35	1 460	,,
Broken bricks:				
Fine	—	14.20	1 450	,,
Coarse	—	9.90	1 010	,,
Foam slag (foundry pumice)	—	6.85	700	,,
Cinder*	—	7.85	800	,,
3. *Aggregate, Fine*				
Sand:				
Dry, clean	—	15.10 to 15.70	1 540 to 1 600	,,
River	—	18.05	1 840	,,
Wet	—	17.25 to 19.60	1 760 to 2 000	,,
Brick dust (*SURKHI*)	—	9.90	1 010	,,
4. *Aggregate, Organic*				
Saw dust, loose	—	1.55	160	,,
Peat:				
Dry	—	5.50 to 6.30	560 to 640	,,
Sandy, compact	—	7.85	800	,,
Wet, compact	—	13.35	1 360	,,
5. *Asbestos*				
Felt	10	0.145	15	m^2
Fibres:				
Pressed	—	9.40	960	m^3
Sprayed	10	0.02	2	m^2
Natural	—	29.80	3 040	m^3
Raw	—	5.90 to 8.85	600 to 900	,,
6. *Asbestos Cement Building Pipes* (*see* under 41 'Pipes' in this table)				

*Also used for filling purposes.

(*Continued*)

TABLE 1 UNIT WEIGHT OF BUILDING MATERIALS — *Contd*

MATERIAL	NOMINAL SIZE OR THICKNESS	WEIGHT/MASS		
	mm	kN	kg	per
(1)	(2)	(3)	(4)	(5)
7. *Asbestos Cement Gutters* [*see* IS : 1626 (Part 2)-1980*]				
Boundry wall gutters:				
400 × 150 × 250 mm	12.5	0.16	16.0	m
450 × 150 × 300 mm	12.5	0.16	16.0	,,
300 × 150 × 225 mm	12.5	0.13	13.0	,,
275 × 125 × 175 mm	10.0	0.085	8.5	,,
Valley gutters:				
900 × 200 × 225 mm	12.5	0.245	24.8	,,
600 × 150 × 225 mm	12.5	0.160	16.1	,,
450 × 125 × 150 mm	12.5	0.145	14.6	,,
400 × 125 × 250 mm	12.5	0.130	13.2	,,
Half round gutters:				
150 mm	9.5	0.043	4.4	,,
250 mm	9.5	0.079	8.1	,,
300 mm	9.5	0.087	8.9	,,
8. *Asbestos Cement Pressure Pipes* (*see* under 41 'Pipes' in this table)				
9. *Asbestos Cement Sheeting* (*See* IS : 459-1970†)				
Corrugated (pitch = 146 mm)	6	0.118 to 0.130	12.0 to 13.3	m^2
Semi-corrugated (pitch = 340 mm)	6	0.118 to 0.127	12.0 to 13.0	,,
Plain	5	0.09	9.16	,,
10. *Bitumen*	—	0.102	10.40	m^3
11. *Blocks*				
Lime-based solid blocks (*see* IS : 3115-1978‡)	—	8.65 to 12.55	880 to 1 280	,,
Hollow (open and closed cavity concrete blocks) [*see* IS : 2185 (Part 1)-1979§]				
Grade A (load bearing)	—	1.41	144	,,
Grade B (load bearing)	—	1.41 to 0.94	144 to 96	,,
Grade C (non-load bearing)	—	1.41 to 0.94	144 to 96	,,
Solid concrete blocks	—	17.65	1 800	,,
12. *Boards*				
Cork boards:				
Compressed	10	0.04	4	m^2
Ordinary	10	0.02	2	,,
Fibre building boards (*see* IS : 1658-1977‖)				
Medium hardboard	6	0.028 to 0.047	2.88 to 4.80	,,
	8	0.038 to 0.063	3.84 to 6.40	,,
	10	0.047 to 0.078	4.80 to 8.00	,,
	12	0.056 to 0.095	5.76 to 9.60	,,

*Specification for asbestos cement building pipes and pipe fittings, gutters and gutter fittings and roofing fittings: Part 2 Gutters and gutter fittings (*first revision*).

†Specification for unreinforced corrugated and semi-corrugated asbestos cement sheets (*second revision*).

‡Specification for lime based block (*first revision*).

§Specification for concrete masonry units: Part 1 Hollow and solid concrete blocks (*second revision*).

‖Specification for fibre hardboards (*second revision*).

(*Continued*)

TABLE 1 UNIT WEIGHT OF BUILDING MATERIALS — *Contd*

MATERIAL	NOMINAL SIZE OR THICKNESS	WEIGHT/MASS		
	mm	kN	kg	per
(1)	(2)	(3)	(4)	(5)
Standard hardboard	3	0.024 to 0.035	2.40 to 3.60	m^3
	4	0.031 to 0.047	3.20 to 4.80	,,
	5	0.039 to 0.059	4.00 to 6.00	,,
Tempered hardboard	6	0.047 to 0.071	4.80 to 7.20	,,
	9	0.071 to 0.106	7.20 to 10.80	,,
Fire insulation board (*see* IS : 3348-1965*)	9	0.035	3.6	,,
	12	0.047	4.8	,,
Fibre insulation board, ordinary or flame-retardant type, bitumen-bounded fibre insulation board	18	0.071	7.2	,,
	25	0.098	10.0	,,
Gypsum plaster boards (*see* IS : 2095-1982†)	9.5	0.069 to 0.098	7.0 to 10.0	,,
	12.5	0.093 to 0.147	9.5 to 15.0	,,
	15	0.110 to 0.154	11.25 to 15.75	,,
Insulating board (fibre)	12	0.034	3.5	,,
Laminated board (fibre)	6	0.034	3.5	,,
Wood particle boards (*see* IS : 3087-1985‡)				
Designation:				
FPSI	—	4.90 to 8.85	500 to 900	m^3
FPTH	—	4.90 to 8.85	500 to 900	,,
XPSO	—	4.90 to 8.85	500 to 900	,,
XPTU	—	4.90 to 8.85	500 to 900	,,
Wood particle boards for insulation purposes (*see* IS : 3129-1985§)	—	3.90	400	,,
High density wood particle boards (*see* IS : 3478-1966||)				
Type 1, Grade A	—	0.117	12	m^2
Type 1, Grade B	—	0.088	9	,,
Type 2, Grade A	—	0.117	12	,,
Type 2, Grade B	—	0.088	9	,,

NOTE 1 — Density of medium hardboard varies from 350 to 800 kg/m^3.

NOTE 2 — Density of normal hardboard varies from 800 to 1 200 kg/m^3.

NOTE 3 — Density of tempered hardboard varies according to treatment. The actual value may be had from the manufacturers.

NOTE 4 — All the three types of hardboards are manufactured to width of 1.2 m.

13. *Bricks*				
Common burnt clay bricks (*see* IS : 1077-1987¶)	—	15.70 to 18.85	1 600 to 1 920	m^3
Engineering bricks	—	21.20	2 160	,,
Heavy duty bricks (*see* IS : 2180-1985**)	—	24.50	2 500	,,
Pressed bricks	—	17.25 to 18.05	1 760 to 1 840	,,
Refractory bricks	—	17.25 to 19.60	1 760 to 2 000	,,
Sand cement bricks	—	18.05	1 840	,,
Sand lime bricks	—	20.40	2 080	,,
14. *Brick Chips and Broken Bricks* (*see* under 2 'Broken bricks' in this table)				
15. *Brick Dust* (*SURKHI*)	—	9.90	1 010	,,

*Specification for fibre insulation boards.

†Specification for gypsum plaster boards (*first revision*).

‡Specification for wood particle boards (medium density) for general purposes (*first revision*).

§Specification for low density particle boards (*first revision*).

||Specification for high density wood particle boards.

¶Specification for common burnt clay building bricks (*fourth revision*).

**Specification for heavy-duty burnt clay building bricks (*second revision*).

(*Continued*)

TABLE 1 UNIT WEIGHT OF BUILDING MATERIALS — *Contd*

MATERIAL	NOMINAL SIZE OR THICKNESS	WEIGHT/MASS		
	mm	kN	kg	per
(1)	(2)	(3)	(4)	(5)
16. *Cast Iron, Manhole Covers* (*see* IS : 1726*)				
Double triangular (HD)	500	1.16	118	Cover
	560	1.37	140	,,
Circular (HD)	500	1.16	118	,,
	560	1.37	140	,,
Circular (MD)	500	0.57	58	,,
	560	0.63	64	,,
Rectangular (MD)	—	0.78	80	,,
Rectangular (LD) :				
Single seal (Pattern 1)	—	0.23	23	,,
(Pattern 2)	—	0.15	15	,,
Double seal	—	0.28	29	,,
Square (LD) :				
Single seal	455	0.13	13	,,
	610	0.25	26	,,
Double seal	455	0.23	23	,,
	610	0.36	37	,,
17. *Cast Iron, Manhole Frames* (*see* IS : 1726*)				
Double triangular (HD)	500	1.09	111	Frame
	600	1.13	115	,,
Circular (HD)	500	0.83	85	,,
	560	1.06	108	,,
Circular (MD)	500	0.57	58	,,
	560	0.63	64	,,
Rectangular (MD)	—	0.63	64	,,
Rectangular (LD) :				
Single seal (Pattern 1)	—	0.15	15	,,
(Pattern 2)	—	0.10	10	,,
Double seal	—	0.23	23	,,
Square (LD) :				
Single seal	455	0.07	7	,,
	610	0.13	13	,,
Double seal	455	0.15	15	,,
	610	0.18	18	,,
18. *Cast Iron Pipes* (*see* under 41 'Pipes' in this table)				
19. *Cement* (*see* IS : 269-1976†)				
Ordinary and aluminous	—	14.10	1 440	m^3
Rapid-hardening	—	12.55	1 280	,,
20. *Cement Concrete, Plain*				
Aerated	—	7.45	760	,,
No-fines, with heavy aggregate	—	15.70 to 18.80	1 600 to 1 920	,,
No-fines, with light aggregate	—	8.65 to 12.55	880 to 1 280	,,
With burnt clay aggregate	—	17.25 to 21.20	1 760 to 2 160	,,
With expanded clay aggregate	—	9.40 to 16.50	960 to 1 680	,,
With clinker aggregate	—	12.55 to 17.25	1 280 to 1 760	,,
With pumice aggregate	—	5.50 to 11.00	560 to 1 120	,,
With sand and gravel or crushed natural stone aggregate	—	22.00 to 23.50	2 240 to 2 400	,,
With saw dust	—	6.30 to 16.50	640 to 1 680	,,
With foamed slag aggregate	—	9.40 to 18.05	960 to 1 840	,,

*Specification for cast iron manhole covers and frames.

†Specification for ordinary and low heat Portland cement (*third revision*).

(*Continued*)

TABLE 1 UNIT WEIGHT OF BUILDING MATERIALS — *Contd*

	MATERIAL	NOMINAL SIZE OR THICKNESS	WEIGHT/MASS		
		mm	kN	kg	per
	(1)	(2)	(3)	(4)	(5)
21.	*Cement Concrete, Prestressed* (conforming to IS : 1343-1980*)	—	23.50	2 400	m^3
22.	*Cement Concrete, Reinforced*				
	With sand and gravel or crushed natural stone aggregate:				
	With 1 percent steel	—	22.75 to 24.20	2 310 to 2 470	,,
	With 2 percent steel	—	23.25 to 24.80	2 370 to 2 530	,,
	With 5 percent steel	—	24.80 to 26.50	2 530 to 2 700	,,
23.	*Cement Concrete Pipes* (*see* under 41 'Pipes' in this table)				
24.	*Cement Mortar*	—	20.40	2 080	,,
25.	*Cement Plaster*	—	20.40	2 080	,,
26.	*Cork*	—	2.35	240	,,
27.	*Expanded Metal* (conforming to IS : 412-1975†)				
	Reference No.	Size of Mesh, Nominal			
		SWM mm	LWM mm		
	1	100	250	0.030	3.08 m^2
	2	100	250	0.024	2.47 ,,
	3	100	250	0.016	1.60 ,,
	4	75	200	0.042	4.28 ,,
	5	75	200	0.032	3.29 ,,
	6	75	200	0.021	2.14 ,,
	7	40	115	0.080	8.02 ,,
	8	40	115	0.060	6.17 ,,
	9	40	75	0.060	6.17 ,,
	10	40	75	0.028	2.85 ,,
	11	40	115	0.039	4.01 ,,
	12	40	75	0.039	4.01 ,,
	13	40	115	0.020	2.04 ,,
	14	40	75	0.020	2.04 ,,
	15	25	75	0.054	5.53 ,,
	16	25	75	0.038	3.93 ,,
	17	25	75	0.028	2.81 ,,
	18	25	75	0.021	2.19 ,,
	19	20	60	0.070	7.15 ,,
	20	20	50	0.070	7.15 ,,
	21	20	60	0.050	5.09 ,,
	22	20	50	0.050	5.09 ,,
	23	20	60	0.036	3.63 ,,
	24	20	50	0.036	3.63 ,,
	25	20	60	0.021	2.18 ,,
	26	20	50	0.021	2.18 ,,
	27	12.5	50	0.050	5.04 ,,
	28	12.5	40	0.050	5.04 ,,
	29	12.5	50	0.040	4.00 ,,
	30	12.5	50	0.030	3.13 ,,
	31	12.5	40	0.030	3.13 ,,
	32	12.5	50	0.025	2.50 ,,
	33	12.5	40	0.025	2.50 ,,
	34	10	40	0.050	5.98 ,,
	35	10	40	0.035	3.59 ,,
	36	10	40	0.028	2.87 ,,

*Code of practice for prestressed concrete (*first revision*).

†Specification for expanded metal steel sheets for general purposes (*second revision*).

(*Continued*)

TABLE 1 UNIT WEIGHT OF BUILDING MATERIALS — *Contd*

MATERIAL	NOMINAL SIZE OR THICKNESS	WEIGHT/MASS		
	mm	kN	kg	per
(1)	(2)	(3)	(4)	(5)
Reference No.	Size of Mesh, Nominal			
	SWM mm / LWM mm			
37	9.5 / 28.5	0.050	5.19	m^2
38	9.5 / 28.5	0.028	2.81	,,
39	9.5 / 28.5	0.020	2.09	,,
40	6 / 25	0.074	7.55	,,
41	6 / 25	0.048	4.88	,,
42	6 / 25	0.038	3.90	,,
43	5 / 20	0.050	5.01	,,
44	3 / 15	0.041	4.28	,,
28. *Felt, Bituminous for Waterproofing and Damp-proofing* (*see* IS : 1322-1982*)				
Fibre base:				
Type 1 (Underlay)	—	8.34×10^{-3}	0.85	,,
Type 2 (Self-finished felt):				
Grade 1	—	21.48×10^{-3}	2.19	,,
Grade 2	—	30.21×10^{-3}	3.08	,,
Hessian base:				
Type 3 (Self finished felt):				
Grade 1	—	21.87×10^{-3}	2.23	,,
Grade 2	—	35.70×10^{-3}	3.64	,,
NOTE 1 — The weight of untreated based shall be taken as in the dry condition.				
NOTE 2 — The weights given above are indicative of the total weight of ingredients used in the manufacture of felt and not of the ingredients determined from a physical analysis of the finished material.				
29. *Foam Slag, Foundry Pumice*	—	6.85	700	m^3
30. *Glass* (*see* IS : 2835-1977†)				
Sheet	2.0	0.049	5.0	,,
	2.5	0.062	6.3	,,
	3.0	0.074	7.5	,,
	4.0	0.098	10.0	,,
	5.0	0.123	12.5	,,
	5.5	0.134	13.7	,,
	6.5	0.167	17.0	,,
31. *Gutters, Asbestos Cement* (*see* under 7 'Asbestos cement gutter' in this table)				
32. *Gypsum*				
Gypsum mortar	—	11.75	1 200	m^3
Gypsum powder	—	13.89 to 17.25	1 410 to 1 760	,,
33. *Iron*				
Pig	—	70.60	7 200	,,
Gray, cast	—	68.95 to 69.90	7 030 to 7 130	,,
White, cast	—	74.30 to 75.70	7 580 to 7 720	,,
Wrought	—	75.50	7 700	,,
34. *Lime*				
Lime concrete with burnt clay aggregate	—	18.80	1 920	,,

*Specification for bitumen felts for waterproofing and damp-proofing (*third revision*).
†Specification for flat transparent sheet glass (*second revision*).

(*Continued*)

TABLE 1 UNIT WEIGHT OF BUILDING MATERIALS — *Contd*

MATERIAL	NOMINAL SIZE OR THICKNESS	WEIGHT/MASS		
	mm	kN	kg	per
(1)	(2)	(3)	(4)	(5)
Lime mortar	—	15.70 to 18.05	1 600 to 1 840	m^3
Lime plaster	—	17.25	1 760	,,
Lime stone in lumps, uncalcined	—	12.55 to 14.10	1 280 to 1 440	,,
Lime, unslaked, freshly burnt in pieces	—	8.60 to 10.20	880 to 1 040	,,
Lime slaked, fresh	—	5.70 to 6.30	580 to 640	,,
Lime slaked, after 10 days	—	7.85	800	,,
Lime, unslaked (*KANKAR*)	—	11.55	1 180	,,
Lime, slaked (*KANKAR*)	—	10.00	1 020	,,
35. *Linoleum* (*see* IS : 653-1980*)				
Sheets and tiles	4.4	0.056 9	5.8	m^2
	3.2	0.040 2	4.1	,,
	2.0	0.026 5	1.7	,,
	1.6	0.021 5	2.2	,,
36. *Masonry, Brick*				
Common burnt clay bricks	—	18.85	1 920	m^3
Engineering bricks	—	23.55	2 400	,,
Glazed bricks	—	20.40	2 080	,,
Pressed bricks	—	22.00	2 240	,,
37. *Masonry, Stone*				
Cast	—	22.55	2 300	,,
Dry rubble	—	20.40	2 080	,,
Granite ashlar	—	25.90	2 640	,,
Granite rubble	—	23.55	2 400	,,
Lime stone ashlar	—	25.10	2 560	,,
Marble dressed	—	26.50	2 700	,,
Sand stone	—	22.00	2 240	,,
38. *Mastic Asphalt*	10	0.215	22	m^2
39. *Metal sheeting, Protected Galvanized Steel Sheets and Plain* (*see* IS : 277-1985†)				
Class 1	1.60	0.131	13.31	,,
	1.26	0.104	10.56	,,
	1.00	0.084	8.60	,,
	0.80	0.069	7.03	,,
	0.63	0.056	5.70	,,
Class 2	1.60	0.129	13.16	,,
	1.25	0.102	10.41	,,
	1.00	0.083	8.45	,,
	0.80	0.067	6.88	,,
	0.63	0.054	5.55	,,
Class 3	1.60	0.128	13.01	,,
	1.25	0.101	10.26	,,
	1.00	0.081	8.30	,,
	0.80	0.066	6.73	,,
	0.63	0.053	5.40	,,
Class 4	1.60	0.127	12.94	,,
	1.25	0.100	10.19	,,
	1.00	0.081	8.22	,,
	0.80	0.065	6.66	,,
	0.63	0.052	5.32	,,
40. *Mortar*				
Cement	—	20.40	2 080	m^3
Gypsum	—	11.80	1 200	,,
Lime	—	15.70 to 18.05	1 600 to 1 840	,,

*Specification for linoleum sheets and tiles (*second revision*).

†Specification for galvanized steel sheets (plain and corrugated) (*fourth revision*).

(*Continued*)

TABLE 1 UNIT WEIGHT OF BUILDING MATERIALS — *Contd*

MATERIAL	NOMINAL SIZE OR THICKNESS mm	WEIGHT/MASS kN	kg	per
(1)	(2)	(3)	(4)	(5)
41. *Pipes*				
Asbestos cement pipes [*see* IS : 1626 (Part) 1-1980*]	50	0.032 to 0.034	3.3 to 3.5	m^3
	60	0.032 to 0.043	3.3 to 4.4	,,
	80	0.051 to 0.054	5.2 to 5.5	,,
	90	0.052 to 0.060	5.3 to 6.1	,,
	100	0.058 to 0.065	5.9 to 6.6	,,
	125	0.072 to 0.086	7.3 to 8.8	,,
	150	0.086 to 0.108	8.8 to 11.0	,,
Asbestos cement pressure pipes (*see* IS : 1592-1980†)	50	0.056	5.7	,,
	80	0.067	6.8	,,
	100	0.090	9.2	,,
	125	0.139	14.2	,,
	150	0.175	17.8	,,
	200	0.264	26.9	,,
	250	0.380	38.8	,,
	300	0.539	55	,,
Cast iron Pipes:				
Rainwater pipes (*see* IS : 1230-1979‡)				
Standard overall length 1.8 m with socket	550	0.073	7.5	pipe
	75	0.108	11.0	,,
	100	0.137	14.0	,,
	125	0.196	20.0	,,
	150	0.255	26.0	,,
Standard overall length 1.5 m with socket	50	0.064	6.5	,,
	75	0.093	9.5	,,
	100	0.123	12.5	,,
	125	0.172	17.5	,,
	150	0.230	23.5	,,
Pressure pipes for water, gas and sewage:				
a) Centrifugally cast (*see* IS : 1536-1976§)				
i) Socket and spigot pipes:				
Barrel:				
Class LA	80	1.144	14.7	m
	100	0.182	18.6	,,
	125	0.237	24.2	,,
	150	0.295	30.1	,,
	200	0.432	44.0	,,
	250	0.582	59.3	,,
	300	0.750	76.5	,,
	350	0.944	96.3	,,
	400	1.146	116.9	,,
	450	1.383	141.0	,,
	500	1.620	165.2	,,
	600	2.156	219.8	,,
	700	2.778	283.2	,,
	750	3.111	317.2	,,
Class A	80	0.157	16.0	,,
	100	0.201	20.5	,,
	125	0.259	26.4	,,
	150	0.326	33.2	,,
	200	0.472	48.1	,,
	250	0.637	65.0	,,
	300	0.824	84.0	,,
	350	1.030	105.0	,,
	400	1.262	128.7	,,
	450	1.530	156.0	,,
	500	1.775	181.0	,,

*Specification for asbestos cement buildings pipes and pipe fittings, gutters and gutter fittings and roofing fittings: Part 1 Pipes and pipe fittings (*first revision*).

†Specification for asbestos cement pressure pipes (*second revision*).

‡Specification for cast iron rainwater pipes and fittings (*second revision*).

§Specification for centrifugally cast (spun) iron pressure pipes for water, gas and sewage (*second revision*).

(*Continued*)

TABLE 1 UNIT WEIGHT OF BUILDING MATERIALS — *Contd*

MATERIAL	NOMINAL SIZE OR THICKNESS mm	WEIGHT/MASS		
		kN	kg	per
(1)	(2)	(3)	(4)	(5)
Class A	600	2.367	241.4	m
	700	3.056	311.6	,,
	750	3.422	348.9	,,
Class B	80	0.172	17.3	,,
	100	0.216	22.0	,,
	125	0.281	28.7	,,
	150	0.352	35.9	,,
	200	0.511	52.1	,,
	250	0.692	70.6	,,
	300	0.896	91.4	,,
	350	1.122	114.5	,,
	400	1.368	139.5	,,
	450	1.657	169.0	,,
	500	1.929	196.7	,,
	600	2.578	262.9	,,
	700	3.317	338.2	,,
	750	3.733	380.6	,,
Sockets for Class LA, Class A and Class B barrels	80	0.054	5.5	Socket
	100	0.069	7.1	,,
	125	0.090	9.2	,,
	150	0.113	11.5	,,
	200	0.165	16.8	,,
	250	0.225	22.9	,,
	300	0.292	29.8	,,
	350	0.368	37.5	,,
	400	0.454	46.3	,,
	450	0.549	56.0	,,
	500	0.647	66.0	,,
	600	0.876	89.3	,,
	700	1.145	116.8	,,
	750	1.292	131.7	,,
ii) Flanged pipe with screwed flanges:				
Barrel:				
Class A	80 to 300	Same as for centrifugally cast socket and spigot pipes, Class A		
Class B	80 to 300	Same as for centrifugally cast socket and spigot pipes, Class B		
Flanges for Class A and Class B barrels	80	0.042	4.3	Flange
	100	0.049	5.0	,,
	125	0.065	6.6	,,
	150	0.080	8.2	,,
	200	0.112	11.4	,,
	250	0.144	14.7	,,
	300	0.182	18.6	,,
b) Vertically cast socket and spigot pipes (*see* IS : 1537-1976*)				
Barrel:				
Class A	80 to 750	Same as for centrifugally cast socket and spigot pipes, Class A		
	800	3.82	389	m
	900	4.65	474	,,
	1 000	5.59	570	,,
	1 100	6.59	672	,,
	1 200	7.67	783	,,
	1 500	11.98	1 222	,,
Class B	80 to 750	Same as for centrifugally cast socket and spigot pipes, Class B		
	800	4.15	423	m
	900	5.07	516	,,
	1 000	6.07	619	,,
	1 100	7.23	739	,,
	1 200	8.35	851	,,
	1 500	13.07	1 333	,,

*Specification for vertically cast iron pressure pipes for water, gas and sewage (*first revision*).

(*Continued*)

TABLE 1 UNIT WEIGHT OF BUILDING MATERIALS — *Contd*

MATERIAL	NOMINAL SIZE OR THICKNESS mm	WEIGHT/MASS kN	kg	per
(1)	(2)	(3)	(4)	(5)
Socket for Class A and Class B barrels	80 to 750	Same as for centrifugally cast socket and spigot pipes, Class A and Class B		
	800	1.45	147	Socket
	900	1.79	182	,,
	1 000	2.18	222	,,
	1 100	2.60	265	,,
	1 200	3.07	313	,,
	1 500	4.91	501	,,
c) Sand cast (flanged pipes): Barrel:				
Class A	80 to 750	Same as for centrifugally cast socket and spigot pipes, Class A		
	800 to 1 500	Same as for vertically cast socket and spigot pipes, Class A		
Class B	80 to 750	Same as for centrifugally cast socket and spigot pipes, Class B		
	800 to 1 500	Same as for vertically cast socket and spigot pipes, Class B		
Flanges for Class A and Class B Barrels	80	0.036	3.7	Flange
	100	0.041	4.2	,,
	125	0.052	5.3	,,
	150	0.066	6.7	,,
	200	0.091	9.3	,,
	250	0.117	12.0	,,
	300	0.145	14.8	,,
	350	0.186	19.4	,,
	400	0.229	23.4	,,
	450	0.250	26.5	,,
	500	0.315	32.1	,,
	600	0.431	44.0	,,
	700	0.587	59.9	,,
	750	0.685	69.8	,,
	800	0.792	80.8	,,
	900	0.928	94.6	,,
	1 000	1.18	120.0	,,
	1 100	1.38	139.0	,,
	1 200	1.70	173.0	,,
	1 500	2.71	276.2	,,
Concrete pipes (*see* IS : 458-1971*)				
Class NP1 (unreinforced non-pressure pipes)	80	0.19	19	m
	100	0.22	22	,,
	150	0.30	31	,,
	250	0.40	41	,,
	300	0.69	70	,,
	350	0.84	86	,,
	400	0.95	97	,,
	450	1.17	119	,,
Class NP2 (reinforced concrete, light duty, non-pressure pipes)	80	0.196	20	,,
	100	0.235	24	,,
	150	0.324	33	,,
	250	0.510	52	,,
	300	0.736	75	,,
	350	0.902	92	,,
	400	1.02	104	,,
	450	1.26	128	,,
	500	1.38	141	,,
	600	1.89	193	,,
	700	2.19	223	,,
	800	2.81	287	,,
	900	3.51	358	,,

*Specification for concrete pipes (with and without reinforcement) (*second revision*).

(*Continued*)

TABLE 1 UNIT WEIGHT OF BUILDING MATERIALS — *Contd*

MATERIAL	NOMINAL SIZE OR THICKNESS mm	WEIGHT/MASS kN	kg	per
(1)	(2)	(3)	(4)	(5)
Class NP2 (reinforced concrete, light duty, non-pressure pipes)	1 000	4.30	438	m
	1 100	5.15	525	,,
	1 200	6.09	620	,,
	1 400	8.18	834	,,
	1 600	9.93	1 013	,,
	1 800	12.58	1 283	,,
Class NP3 (reinforced concrete, heavy duty, non-pressure pipes)	350	2.35	240	,,
	400	2.63	269	,,
	450	2.91	297	,,
	500	3.19	325	,,
	600	4.02	410	,,
	700	4.61	470	,,
	800	5.92	604	,,
	900	7.39	754	,,
	1 000	8.13	829	,,
	1 100	10.34	1 054	,,
	1 200	11.18	1 140	,,
Class P1 (reinforced concrete pressure pipes safe for 20 MPa pressure tests)	80	0.196	20	,,
	100	0.235	24	,,
	150	0.324	33	,,
	250	0.510	52	,,
	300	0.736	75	,,
	350	0.902	92	,,
	400	1.02	104	,,
	450	1.26	128	,,
	500	1.38	141	,,
	600	1.89	193	,,
	700	2.19	223	,,
	800	2.81	287	,,
	900	3.51	358	,,
	1 000	4.30	437	,,
	1 100	5.15	525	,,
	1 200	6.09	620	,,
Class P2 (reinforced concrete pressure pipes safe for 40 MPa pressure tests)	80	0.196	20	,,
	100	0.235	24	,,
	150	0.324	33	,,
	250	0.608	63	,,
	300	1.01	103	,,
	350	1.31	134	,,
	400	1.67	170	,,
	450	1.84	188	,,
	500	1.56	261	,,
	600	3.20	326	,,
Class P3 (reinforced concrete pressure pipes safe for 60 MPa pressure tests)	80	0.196	20	,,
	100	0.235	24	,,
	150	0.324	33	,,
	250	0.736	75	,,
	300	1.15	117	,,
	350	1.65	168	,,
	400	2.04	204	,,
Lead pipes [*see* IS : 404 (Part 1)-1977*] (service and distribution pipes to be laid underground):				
For working pressure 40 MPa	10	0.018	1.87	,,
	15	0.031	3.13	,,
	20	0.042	4.24	,,
	25	0.060	6.11	,,
	32	0.074	7.50	,,
	40	0.091	9.28	,,
	50	0.142	14.45	,,

*Specification for lead pipes: Part 1 For other than chemical purposes (*second revision*).

(*Continued*)

TABLE 1 UNIT WEIGHT OF BUILDING MATERIALS — *Contd*

MATERIAL	NOMINAL SIZE OR THICKNESS mm	WEIGHT/MASS kN	kg	per
(1)	(2)	(3)	(4)	(5)
For working pressure 70 MPa	10	0.022	2.26	m
	15	0.038	3.83	,,
	20	0.050	5.11	,,
	25	0.069	7.03	,,
	32	0.126	12.80	,,
	40	0.175	17.82	,,
For working pressure 100 MPa	10	0.029	2.96	,,
	15	0.048	4.88	,,
	20	0.067	6.86	,,
	(*see* Note below)			
	25	0.105	10.75	,,
	(*see* Note below)			
Service pipes to be fixed or laid above ground:				
For working pressure 40 MPa	10	0.014	1.45	,,
	15	0.021	2.15	,,
	20	0.027	2.74	,,
	25	0.036	3.67	,,
	32	0.059	6.00	,,
	40	0.091	9.28	,,
	50	0.142	14.45	,,
For working pressure 70 MPa	10	0.018	1.81	,,
	15	0.024	2.47	,,
	20	0.030	3.11	,,
	25	0.069	7.03	,,
	32	0.126	12.80	,,
	40	0.175	17.82	,,
For working pressure 100 MPa	10	0.029	2.96	,,
	15	0.048	4.88	,,
	20	0.067	6.86	,,
	(*see* Note below)			
	25	0.105	10.75	,,
	(*see* Note below)			
Cold water distribution pipes to be fixed or laid above ground:				
For working pressure 25 MPa	10	0.014	1.45	,,
	15	0.021	2.15	,,
	20	0.027	2.74	,,
	25	0.036	3.67	,,
	32	0.048	4.85	,,
	40	0.067	6.79	,,
	50	0.084	8.53	,,
For working pressure 40 MPa	10	0.014	1.45	,,
	15	0.021	2.15	,,
	20	0.027	2.74	,,
	25	0.036	3.67	,,
	32	0.059	6.00	,,
	40	0.091	9.29	,,
	50	0.142	14.45	,,
Hot water distribution pipes to be fixed or laid above ground:				
For working pressure 20 MPa	10	0.015	1.50	,,
	15	0.023	2.34	,,
	20	0.031	3.13	,,
	25	0.041	4.13	,,
	32	0.062	6.30	,,
	40	0.082	8.38	,,
	50	0.142	14.45	,,

NOTE — The maximum working pressure for these sizes is 90 MPa.

(*Continued*)

TABLE 1 UNIT WEIGHT OF BUILDING MATERIALS — *Contd*

MATERIAL	NOMINAL SIZE OR THICKNESS mm	WEIGHT/MASS kN	kg	per
(1)	(2)	(3)	(4)	(5)
For working pressure 35 MPa	10	0.015	1.50	m
	15	0.027	2.34	,,
	20	0.045	4.56	,,
	25	0.085	8.69	,,
	32	0.132	13.51	,,
Soil, waste, and soil and waste ventilation pipes	50	0.050	5.07	,,
	75	0.073	7.48	,,
	100	0.097	9.88	,,
	150	0.160	16.36	,,
Flushing and warning pipes	20	0.020	2.09	,,
	25	0.025	2.56	,,
	32	0.032	3.28	,,
	40	0.039	3.95	,,
	50	0.049	5.07	,,
Gas pipes:				
Heavy weight gas pipes	10	0.008	0.81	,,
	15	0.017	1.70	,,
	20	0.025	2.60	,,
	25	0.034	3.44	,,
	32	0.045	4.57	,,
	40	0.061	6.27	,,
	50	0.071	7.20	,,
Light weight gas pipes	10	0.008	0.81	,,
	15	0.012	1.21	,,
	20	0.020	2.09	,,
	25	0.029	2.99	,,
	32	0.037	3.74	,,
	40	0.047	4.76	,,
	50	0.058	5.87	,,
Stoneware, salt-glazed pipes (*see* IS : 651-1980*)	100	0.137	14	,,
	150	0.216	22	,,
	200	0.324	33	,,
	230 (*see* Note below)	0.412	42	,,
	250	0.510	52	,,
	300	0.775	79	,,
	350	0.980	100	,,
	400	1.26	128	,,
	450	1.44	147	,,
	500	1.77	180	,,
	600	2.35	240	,,
42. *Plaster* (*see also* 6 'Finishing' in Table 2)				
Cement	—	20.40	2 080	m^3
Lime	—	17.25	1 760	,,
Acoustic	10	0.078	8	m^2
Anhydrite	10	0.206	21	,,
Barium sulphate	10	0.284	29	,,
Fibrous	10	0.088	9	,,
Gypsum	10	0.186	19	,,
43. *Sheeting*				
Asbestos (*see* under 9 'Asbestos cement sheeting' in this table)				
Galvanized iron (*see* under 39 'Metal sheeting, protected' in this table)				
Glass (*see* under 30 'Glass' in this table)				
Plywood	1	0.007	0.7	,,

NOTE — This is non-preferred size and its manufacture is permitted for a limited period.

*Specification for salt-glazed stoneware pipes and fittings (*fourth revision*).

(*Continued*)

TABLE 1 UNIT WEIGHT OF BUILDING MATERIALS — *Contd*

MATERIAL	NOMINAL SIZE OR THICKNESS mm	WEIGHT/MASS kN	kg	per
(1)	(2)	(3)	(4)	(5)
44. *Slagwool*	—	2.65	270	m^3
45. *Soils and Gravels*				
Aluvial ground, undisturbed	—	15.69	1 600	,,
Broken stone ballast:				
Dry, well-shaken	—	15.70 to 18.35	1 600 to 1 870	,,
Perfectly wet	—	18.85 to 21.95	1 920 to 2 240	,,
Chalk	—	15.70 to 18.85	1 600 to 1 920	,,
Clay:				
China, compact	—	21.95	2 240	,,
Clay fills:				
Dry, lumps	—	10.20	1 040	,,
Dry, compact	—	14.10	1 440	,,
Damp, compact	—	17.25	1 760	,,
Wet, compact	—	20.40	2 080	,,
Undisturbed	—	18.85	1 920	,,
Undisturbed, gravelly	—	20.40	2 080	,,
Earth:				
Dry	—	13.85 to 18.05	1 410 to 1 840	,,
Moist	—	15.70 to 19.60	1 600 to 2 000	,,
Gravel:				
Loose	—	15.70	1 600	,,
Rammed	—	18.85 to 21.20	1 920 to 2 160	,,
Kaolin, compact	—	25.50	2 600	,,
Loam:				
Dry, loose	—	11.75	1 200	,,
Dry, compact	—	15.70	1 600	,,
Wet, compact	—	18.85	1 920	,,
Loess, dry	—	14.10	1 440	,,
Marl, compact	—	17.25 to 18.85	1 760 to 1 920	,,
Mud, river, wet	—	17.25 to 18.85	1 760 to 1 920	,,
Peat:				
Dry	—	5.50 to 6.30	560 to 640	,,
Sandy, compact	—	7.85	800	,,
Wet, compact	—	13.35	1 360	,,
Rip-rap	—	12.55 to 14.10	1 280 to 1 440	,,
Sand:				
Dry, clean	—	15.10 to 15.70	1 540 to 1 600	,,
River	—	18.05	1 840	,,
Wet	—	17.25 to 19.60	1 760 to 2 000	,,
Shingles:				
Aggregate 3 to 38 mm	—	13.75	1 400	,,
Fine sand:				
Dry	—	15.70	1 600	,,
Saturated	—	20.40	2 080	,,
Silt, wet	—	17.25 to 18.85	1 760 to 1 920	,,
46. *Steel Sections* Hot rolled [*see* IS : 808 (Part 1)-1978*]				
Beams — Designation				
MB 100	—	0.113	11.5	m
MB 125	—	0.131	13.4	,,
MB 150	—	0.147	15.0	,,
MB 175	—	0.191	19.5	,,
MB 200	—	0.249	25.4	,,
MB 225	—	0.306	31.2	,,

*Dimensions for hot-rolled steel sections: Part 1 MB series (beams) (*second revision*).

(*Continued*)

TABLE 1 UNIT WEIGHT OF BUILDING MATERIALS — *Contd*

MATERIAL	NOMINAL SIZE OR THICKNESS mm	WEIGHT/MASS kN	kg	per
(1)	(2)	(3)	(4)	(5)
Beams — Designation				
MB 250	—	0.365	37.3	m
MB 300	—	0.452	46.1	,,
MB 350	—	0.514	52.4	,,
MB 400	—	0.604	61.6	,,
MB 450	—	0.710	72.4	,,
MB 500	—	0.852	86.9	,,
MB 550	—	1.00	104	,,
MB 600	—	1.21	123	,,
Columns — Designation [*see* IS : 808 (Part 2)-1978*]				
SC 100	—	0.196	20.0	,,
SC 120	—	0.257	26.2	,,
SC 140	—	0.327	33.3	,,
SC 160	—	0.411	41.9	,,
SC 180	—	0.495	50.5	,,
SC 200	—	0.591	60.3	,,
SC 220	—	0.690	70.4	,,
SC 250	—	0.839	85.6	,,
Channels — Designation [*see* IS : 808 (Part 3)-1979†]				
Medium weight channel sections with sloping flanges				
MC 75	—	0.070	7.14	,,
MC 100	—	0.098	10.0	,,
MC 125	—	0.165	16.8	,,
MC 150	—	0.192	19.6	,,
MC 175	—	0.219	22.3	,,
MC 200	—	0.256	26.1	,,
MC 225	—	0.300	30.6	,,
MC 250	—	0.356	36.3	,,
MC 300	—	0.419	42.7	,,
MC 350	—	0.491	50.1	,,
MC 400	—			
Medium weight channel sections with parallel flanges (*see* Note below)				
MCP 75	—	0.070	7.14	,,
MCP 100	—	0.094	9.56	,,
MCP 125	—	0.128	13.1	,,
MCP 150	—	0.165	16.8	,,
MCP 175	—	0.192	19.6	,,
MCP 200	—	0.219	22.3	,,
MCP 225	—	0.256	26.1	,,
MCP 250	—	0.300	30.6	,,
MCP 300	—	0.356	36.3	,,
MCP 350	—	0.419	42.7	,,
MCP 400	—	0.491	50.1	,,
Equal leg angles — Size [*see* IS : 808 (Part 5)-1976‡]				
ISA 2020	3.0	0.009	0.9	m
	4.0	0.011	1.1	,,
ISA 2525	3.0	0.011	1.1	,,
	4.0	0.014	1.4	,,
	5.0	0.018	1.8	,,
ISA 3030	3.0	0.014	1.4	,,
	4.0	0.018	1.8	,,
	5.0	0.022	2.2	,,

NOTE — These sections are steel in the developmental stage and may be available subject to agreement with the manufacturer.

*Dimensions for hot-rolled steel sections: Part 2 Columns — SC series (*second revision*).
†Dimensions for hot-rolled steel sections: Part 3 Channels, MC and MPC series (*second revision*).
‡Dimensions for hot-rolled steel sections: Part 5 Equal leg angles (*second revision*).

(*Continued*)

TABLE 1 UNIT WEIGHT OF BUILDING MATERIALS — *Contd*

MATERIAL	NOMINAL SIZE OR THICKNESS mm	WEIGHT/MASS kN	kg	per
(1)	(2)	(3)	(4)	(5)
ISA 3535	3.0	0.016	1.6	m
	4.0	0.021	2.1	,,
	5.0	0.026	2.6	,,
	6.0	0.029	3.0	,,
ISA 4050	3.0	0.018	1.8	,,
	4.0	0.024	2.4	,,
	5.0	0.029	3.0	,,
	6.0	0.034	3.5	,,
ISA 4545	3.0	0.021	2.1	,,
	4.0	0.027	2.7	,,
	5.0	0.033	3.4	,,
	6.0	0.039	4.0	,,
ISA 5050	3.0	0.023	2.3	,,
	4.0	0.029	3.0	,,
	5.0	0.037	3.8	,,
	6.0	0.044	4.5	,,
ISA 5555	5.0	0.040	4.1	,,
	6.0	0.048	4.9	,,
	8.0	0.063	6.4	,,
	10.0	0.077	7.9	,,
ISA 6060	5.0	0.044	4.5	,,
	6.0	0.053	5.4	,,
	8.0	0.069	7.0	,,
	10.0	0.084	8.6	,,
ISA 6565	5.0	0.048	4.9	,,
	6.0	0.057	5.8	,,
	8.0	0.076	7.7	,,
	10.0	0.092	9.4	,,
ISA 7070	5.0	0.052	5.3	,,
	6.0	0.062	6.3	,,
	8.0	0.081	8.3	,,
	10.0	0.100	10.2	,,
ISA 7575	5.0	0.056	5.7	,,
	6.0	0.067	6.8	,,
	8.0	0.087	8.9	,,
	10.0	0.108	11.0	,,
ISA 8080	6.0	0.072	7.3	,,
	8.0	0.094	9.6	,,
	10.0	0.116	11.8	,,
	12.0	0.137	14.0	,,
ISA 9090	6.0	0.080	8.2	,,
	8.0	0.106	10.8	,,
	10.0	0.131	13.4	,,
	12.0	0.155	15.8	,,
ISA 100100	6.0	0.090	9.2	,,
	8.0	0.119	12.1	,,
	10.0	0.146	14.9	,,
	12.0	0.174	17.7	,,
ISA 110110	8.0	0.131	13.4	,,
	10.0	0.163	16.6	,,
	12.0	0.193	19.7	,,
	16.0	0.252	25.7	,,
ISA 130130	8.0	0.156	15.9	,,
	10.0	0.193	19.7	,,
	12.0	0.230	23.5	,,
	16.0	0.301	30.7	,,
ISA 150150	10.0	0.225	22.9	,,
	12.0	0.268	27.3	,,
	16.0	0.351	35.8	,,
	20.0	0.432	44.1	,,
ISA 200200	12.0	0.362	36.9	,,
	16.0	0.476	48.5	,,
	20.0	0.588	60.0	,,
	25.0	0.725	73.9	,,

(*Continued*)

TABLE 1 UNIT WEIGHT OF BUILDING MATERIALS — *Contd*

MATERIAL	NOMINAL SIZE OR THICKNESS mm	WEIGHT/MASS kN	kg	per
(1)	(2)	(3)	(4)	(5)
Unequal leg angles — Size [*see* IS : 808 (Part 6)-1976*]				
ISA 3020	3.0	0.011	1.1	m
	4.0	0.014	1.4	,,
	5.0	0.018	1.8	,,
ISA 4025	3.0	0.015	1.5	,,
	4.0	0.019	1.9	,,
	5.0	0.024	2.4	,,
	6.0	0.027	2.8	,,
ISA 4530	3.0	0.017	1.7	,,
	4.0	0.022	2.2	,,
	5.0	0.027	2.8	,,
	6.0	0.032	3.3	,,
ISA 5030	3.0	0.018	1.8	,,
	4.0	0.024	1.8	,,
	5.0	0.029	3.0	,,
	6.0	0.034	3.5	,,
ISA 6040	5.0	0.036	3.7	,,
	6.0	0.043	4.4	,,
	8.0	0.057	5.8	,,
ISA 6545	5.0	0.040	4.1	,,
	6.0	0.048	4.9	,,
	8.0	0.063	6.4	,,
ISA 7045	5.0	0.042	4.3	,,
	6.0	0.051	5.2	,,
	8.0	0.066	6.7	,,
	10.0	0.081	8.3	,,
ISA 7550	5.0	0.046	4.7	,,
	6.0	0.055	5.6	,,
	8.0	0.073	7.4	,,
	10.0	0.088	9.0	,,
ISA 8050	5.0	0.048	4.9	,,
	6.0	0.058	5.9	,,
	8.0	0.076	7.7	,,
	10.0	0.092	9.4	,,
ISA 9060	6.0	0.067	6.8	,,
	8.0	0.087	8.9	,,
	10.0	0.108	11.0	,,
	12.0	0.128	13.0	,,
ISA 10065	6.0	0.074	7.5	,,
	8.0	0.087	9.9	,,
	10.0	0.120	12.2	,,
ISA 10075	6.0	0.078	8.0	,,
	8.0	0.103	10.5	,,
	10.0	0.127	13.0	,,
	12.0	0.151	15.4	,,
ISA 12571	6.0	0.090	9.2	,,
	8.0	0.119	12.1	,,
	10.0	0.146	14.9	,,
ISA 12595	6.0	0.099	10.1	,,
	8.0	0.131	13.4	,,
	10.0	0.162	16.5	,,
	12.0	0.193	19.7	,,
ISA 15075	8.0	0.134	13.7	,,
	10.0	0.167	17.2	,,
	12.0	0.198	20.2	,,
ISA 150115	8.0	0.160	16.3	,,
	10.0	0.197	20.1	,,
	12.0	0.235	24.0	,,
	16.0	0.308	31.4	,,
ISA 200100	10.0	0.225	22.9	,,
	12.0	0.268	27.3	,,
	16.0	0.351	35.8	,,

*Dimensions of hot-rolled steel sections: Part 6 Unequal leg angles (*second revision*).

(*Continued*)

TABLE 1 UNIT WEIGHT OF BUILDING MATERIALS — *Contd*

MATERIAL	NOMINAL SIZE OR THICKNESS mm	WEIGHT/MASS kN	kg	per
(1)	(2)	(3)	(4)	(5)
ISA 200150	10.0	0.264	26.9	m
	12.0	0.315	32.1	,,
	16.0	0.414	42.2	,,
	20.0	0.510	52.0	,,
Cold formed light gauge structural steel sections (*see* IS : 811-1965*) :				
Light gauge sections — angles Size:				
100 × 100	3.15	0.047	4.81	,,
	4.0	0.060	6.07	,,
80 × 80	2.5	0.030	3.05	,,
	3.15	0.037	3.82	,,
	4.0	0.047	4.82	,,
60 × 60	2.0	0.018	1.82	,,
	2.5	0.022	2.26	,,
	3.15	0.028	2.83	,,
	4.0	0.035	3.56	,,
50 × 50	1.6	0.012	1.21	,,
	2.0	0.015	1.51	,,
	2.5	0.018	1.87	,,
	3.15	0.023	2.34	,,
	4.0	0.029	2.93	,,
40 × 40	1.2	0.007	0.75	,,
	1.6	0.009	0.96	,,
	2.0	0.012	1.19	,,
	2.5	0.014	1.48	,,
	3.15	0.018	1.84	,,
30 × 30	1.2	0.005	0.56	,,
	1.6	0.007	0.71	,,
	2.0	0.009	0.88	,,
	2.5	0.010	1.08	,,
20 × 20	1.2	0.004	0.36	,,
	1.6	0.005	0.46	,,
	2.0	0.006	0.56	,,
Channels without lips Size:				
100 × 100	3.15	0.070	7.15	,,
	4.0	0.088	9.01	,,
80 × 80	2.5	0.044	4.52	,,
	3.15	0.056	5.66	,,
	4.0	0.070	7.12	,,
60 × 60	2.0	0.026	2.69	,,
	2.5	0.033	3.35	,,
	3.15	0.041	4.18	,,
	4.0	0.051	5.24	,,
50 × 50	1.6	0.018	1.79	,,
	2.0	0.022	2.23	,,
	2.5	0.027	2.76	,,
	3.15	0.034	3.44	,,
	4.0	0.042	4.30	,,
40 × 40	1.25	0.011	1.12	,,
	1.6	0.014	1.42	,,
	2.0	0.017	1.75	,,
	2.5	0.021	2.17	,,
	3.15	0.026	2.70	,,
30 × 30	1.21	0.008	0.82	,,
	1.6	0.010	1.04	,,
	2.0	0.013	1.28	,,
	2.5	0.015	1.58	,,

*Specification for cold formed light gauge structural steel sections (*revised*).

(*Continued*)

TABLE 1 UNIT WEIGHT OF BUILDING MATERIALS — *Contd*

MATERIAL	NOMINAL SIZE OR THICKNESS mm	WEIGHT/MASS kN	kg	per
(1)	(2)	(3)	(4)	(5)
Channels without lips Size:				
20 × 20	1.25	0.005	0.53	m
	1.6	0.007	0.66	,,
	2.0	0.008	0.81	,,
200 × 50	2.00	0.045	4.58	,,
	2.50	0.056	5.70	,,
	3.15	0.070	7.14	,,
	4.00	0.088	9.01	,,
180 × 50	2.00	0.042	4.27	,,
	2.50	0.052	5.31	,,
	3.15	0.065	6.65	,,
	4.00	0.082	8.38	,,
160 × 50	2.00	0.039	3.95	,,
	2.50	0.048	4.92	,,
	3.15	0.060	6.16	,,
140 × 40	1.60	0.026	2.67	,,
	2.00	0.033	3.33	,,
	2.50	0.041	4.13	,,
	3.15	0.051	5.17	,,
120 × 40	1.60	0.024	2.42	,,
	2.00	0.030	3.01	,,
	2.50	0.037	3.74	,,
100 × 40	1.25	0.017	1.70	,,
	1.60	0.021	2.17	,,
	2.00	0.026	2.70	,,
	2.50	0.033	3.35	,,
80 × 30	1.25	0.013	1.31	,,
	1.60	0.016	1.67	,,
	2.00	0.020	2.07	,,
	2.50	0.025	2.56	,,
60 × 30	1.25	0.011	1.12	,,
	1.60	0.014	1.42	,,
	2.00	0.017	1.75	,,
50 × 30	1.25	0.010	1.02	,,
	1.60	0.013	1.29	,,
	2.00	0.016	1.60	,,
Channels with lips Size:				
100 × 100	2.00	0.051	5.24	,,
	2.50	0.063	6.50	,,
	3.15	0.082	8.36	,,
	4.00	0.103	10.48	,,
80 × 80	1.60	0.033	3.33	,,
	2.00	0.041	4.14	,,
	2.50	0.052	5.32	,,
	3.15	0.065	6.62	,,
60 × 60	1.25	0.019	1.94	,,
	1.60	0.024	2.45	,,
	2.00	0.031	3.20	,,
	2.50	0.039	3.95	,,
50 × 50	1.25	0.016	1.64	,,
	1.60	0.020	2.08	,,
	2.00	0.025	2.57	,,
40 × 40	1.25	0.013	1.35	,,
	1.60	0.017	1.70	,,
	2.00	0.020	2.09	,,
30 × 30	1.25	0.009	0.95	,,
	1.60	0.012	1.20	,,

(*Continued*)

TABLE 1 UNIT WEIGHT OF BUILDING MATERIALS — *Contd*

MATERIAL	NOMINAL SIZE OR THICKNESS mm	WEIGHT/MASS		
		kN	kg	per
(1)	(2)	(3)	(4)	(5)
Channels with lips Size:				
200 × 80	1.60	0.047	4.84	m
	2.00	0.059	6.02	,,
	2.50	0.075	7.67	,,
	3.15	0.094	9.59	,,
	4.00	0.118	12.05	,,
180 × 80	1.60	0.045	4.59	,,
	2.00	0.056	5.71	,,
	2.50	0.071	7.28	,,
	3.15	0.089	9.10	,,
	4.00	0.112	11.42	,,
160 × 80	1.60	0.043	4.34	,,
	2.00	0.053	5.39	,,
	2.50	0.068	6.89	,,
	3.15	0.084	8.60	,,
	4.00	0.106	10.79	,,
140 × 70	1.60	0.038	3.84	,,
	2.00	0.047	4.76	,,
	2.50	0.058	5.91	,,
	3.15	0.075	7.61	,,
	4.00	0.094	9.54	,,
120 × 60	1.25	0.025	2.52	,,
	1.60	0.031	3.21	,,
	2.00	0.041	4.14	,,
	2.50	0.050	5.12	,,
	3.15	0.063	6.38	,,
100 × 50	1.25	0.021	2.13	,,
	1.60	0.027	2.71	,,
	2.00	0.033	3.35	,,
	2.50	0.043	4.34	,,
80 × 40	1.25	0.017	1.74	,,
	1.60	0.022	2.20	,,
	2.00	0.027	2.72	,,
60 × 30	1.25	0.012	1.25	,,
	1.60	0.015	1.57	,,
50 × 30	1.25	0.011	1.15	,,
	1.60	0.014	1.45	,,
Hat sections Size:				
100 × 100	2.50	0.068	6.89	,,
	3.15	0.089	9.05	,,
	4.00	0.115	11.73	,,
80 × 80	2.00	0.043	4.39	,,
	2.50	0.056	5.71	,,
	3.15	0.072	7.36	,,
60 × 60	1.60	0.026	2.63	,,
	2.00	0.034	3.45	,,
	2.50	0.043	4.34	,,
50 × 50	1.60	0.022	2.25	,,
	2.00	0.028	2.88	,,
40 × 40	1.25	0.013	1.36	,,
	1.60	0.018	1.83	,,
100 × 50	1.60	0.034	3.51	,,
	2.00	0.044	4.45	,,
	2.50	0.054	5.51	,,
80 × 40	1.25	0.021	2.15	,,
	1.60	0.028	2.83	,,
	2.00	0.034	3.51	,,
60 × 30	1.25	0.016	1.64	,,
	1.60	0.020	2.08	,,
50 × 25	1.25	0.013	1.35	,,
100 × 150	3.15	0.101	10.28	,,
	4.00	0.134	13.68	,,

(*Continued*)

TABLE 1 UNIT WEIGHT OF BUILDING MATERIALS — *Contd*

MATERIAL	NOMINAL SIZE OR THICKNESS mm	WEIGHT/MASS kN	kg	per
(1)	(2)	(3)	(4)	(5)
Hat sections Size:				
80 × 120	3.15	0.089	9.08	m
	4.00	0.113	11.48	,,
60 × 90	2.50	0.050	5.12	,,
	3.15	0.067	6.82	,,
	4.00	0.084	8.59	,,
50 × 75	2.00	0.033	3.37	,,
	2.50	0.043	4.44	,,
	3.15	0.055	5.64	,,
40 × 60	1.60	0.021	2.14	,,
	2.00	0.028	2.82	,,
	2.50	0.035	3.55	,,
Rectangular box sections Size:				
200 × 100	1.60	0.072	7.35	,,
	2.00	0.090	9.16	,,
180 × 90	1.60	0.065	6.60	,,
	2.00	0.081	8.22	,,
160 × 80	1.60	0.057	5.85	,,
	2.00	0.071	7.28	,,
140 × 70	1.60	0.050	5.09	,,
	2.00	0.062	6.34	,,
120 × 60	1.60	0.043	4.34	,,
	2.00	0.053	5.39	,,
100 × 50	1.25	0.028	2.82	,,
	1.60	0.035	3.58	,,
80 × 40	1.25	0.022	2.23	,,
	1.60	0.028	2.83	,,
60 × 30	1.25	0.016	1.64	,,
	1.60	0.020	2.08	,,
50 × 30	1.25	0.014	1.44	,,
	1.60	0.018	1.83	,,
Square box section Size:				
200 × 200	1.60	0.097	9.86	,,
	2.00	0.121	12.30	,,
180 × 180	1.60	0.087	8.86	,,
	2.00	0.108	11.04	,,
160 × 160	1.60	0.764	77.85	,,
	2.00	0.096	9.79	,,
140 × 140	1.60	0.067	6.85	,,
	2.00	0.084	8.53	,,
120 × 120	1.60	0.057	5.85	,,
	2.00	0.071	7.28	,,
100 × 100	1.25	0.037	3.80	,,
	1.60	0.047	4.84	,,
80 × 80	1.25	0.030	3.01	,,
	1.60	0.038	3.84	,,
60 × 60	1.25	0.022	2.23	,,
	1.60	0.028	2.83	,,
50 × 50	1.25	0.018	1.84	,,
	1.60	0.023	2.33	,,
Rolled steel tee bars (*see* IS : 1173-1978*)				
Designation				
ISNT 20	—	0.009	0.9	,,
ISNT 30	—	0.014	1.4	,,
ISNT 40	—	0.034	3.5	,,
ISNT 50	—	0.044	4.5	,,
ISNT 60	—	0.053	5.4	,,
ISNT 80	—	0.094	9.6	,,
ISNT 100	—	0.147	15.0	,,
ISNT 150	—	0.223	22.8	,,

*Specification for hot-rolled and slit steel tee bars (*second revision*).

(*Continued*)

TABLE 1 UNIT WEIGHT OF BUILDING MATERIALS — *Contd*

MATERIAL	NOMINAL SIZE OR THICKNESS mm	WEIGHT/MASS		
		kN	kg	per
(1)	(2)	(3)	(4)	(5)
Designation				
ISHT 75	—	0.150	15.3	m
ISHT 100	—	0.196	20.0	,,
ISHT 125	—	0.269	27.4	,,
ISHT 150	—	0.288	29.4	,,
ISST 100	—	0.079	8.1	,,
ISST 150	—	0.154	15.7	,,
ISST 200	—	0.279	28.4	,,
ISST 250	—	0.368	37.5	,,
ISLT 50	—	0.040	4.0	,,
ISLT 75	—	0.070	7.1	,,
ISLT 100	—	0.125	12.7	,,
ISJT 75	—	0.034	3.5	,,
ISJT 87.5	—	0.039	4.0	,,
ISJT 100	—	0.049	5.0	,,
ISJT 112.5	—	0.063	6.4	,,
Steel sheet piling sections (*see* IS : 2314-1963*)				
Designation	—			
ISPS 1 021 Z	—	0.483	49.25	,,
ISPS 1 625 U	—	0.641	65.37	,,
ISPS 2 222 U	—	0.811	82.70	,,
ISPS 100 F	—	0.541	55.20	,,
47. *Stone*				
Agate	—	25.50	2 600	m^3
Aggregate	—	15.70 to 18.85	1 600 to 1 920	,,
Basalt	—	27.95 to 29.05	2 850 to 2 960	,,
Cast	—	21.95	2 240	,,
Chalk	—	21.50	2 190	,,
Dolomite	—	28.25	2 880	,,
Emery	—	39.25	4 000	,,
Flint	—	25.40	2 590	,,
Gneiss	—	23.55 to 26.40	2 400 to 2 690	,,
Granite	—	25.90 to 27.45	2 640 to 2 800	,,
Gravel:				
Loose	—	15.70	1 600	,,
Moderately rammed, dry	—	18.85	1 920	,,
Green stone	—	28.25	2 880	,,
Gypsum	—	21.95 to 23.55	2 240 to 2 400	,,
Laterite	—	20.40 to 23.55	2 080 to 2 400	,,
Lime stone	—	23.55 to 25.90	2 400 to 2 640	,,
Marble	—	26.70	2 720	,,
Pumice	—	7.85 to 11.00	800 to 1 120	,,
Quartz rock	—	25.90	2 640	,,
Sand stone	—	21.95 to 23.54	2 240 to 2 400	,,
Slate	—	27.45	2 800	,,
Soap stone	—	26.45	2 700	,,
48. *Tar, Coal*				
Crude (*see* IS : 212-1983†)	—	9.90	1 010	,,
Naphtha, light (*see* IS : 213-1968‡)	—	9.90	1 010	,,
Naphtha, heavy	—	9.90	1 010	,,
Road tar (*see* IS : 215-1961§)	—	9.90	1 010	,,
Pitch (*see* IS : 216-1961||)	—	9.90	1 010	,,
49. *Thermal Insulation*				
Unbonded glass wool	—	12.75 to 23.55	1 300 to 2 400	,,
Unbonded glass rock and slag wool	—	11.30 to 19.60	1 150 to 2 000	,,
Expanded polystyrene	—	1.45 to 2.95	150 to 300	,,
Cellular concrete				
Grade A	—	Up to 29.40	Up to 3 000	,,
Grade B	—	29.50 to 39.20	3 010 to 4 000	,,
Grade C	—	39.30 to 49.00	4 010 to 5 000	,,
Performed calcium silicate insulation (for temperature up to 650°C)	—	19.60 to 34.30	2 000 to 3 500	,,

*Specification for steel sheet piling sections.
†Specification for crude coal tar for general use (*second revision*).
‡Specification for coal-based naphtha (*first revision*).
§Specification for road tar (*revised*).
||Specification for coal tar pitch (*revised*).

(*Continued*)

TABLE 1 UNIT WEIGHT OF BUILDING MATERIALS — *Contd*

MATERIAL	NOMINAL SIZE OR THICKNESS mm	WEIGHT/MASS		
		kN	kg	per
(1)	(2)	(3)	(4)	(5)
50. *Terra Cotta*	—	18.35 to 23.25	1 870 to 2 370	m^3
51. *Terrazzo*				
Paving	10	0.24	24	m^2
Cast partitions	40	0.93	95	,,
52. *Tiles*				
Mangalore pattern (*see* IS : 654-1972*)	—	0.02 to 0.03	2 to 3	Tile
Polystyrene wall tiles (*see* IS : 3463-1966†)	99 × 99	0.013	1.35	m^2
	148.5 × 148.5	0.013	1.35	,,
53. *Timber*				
Typical Indian timbers (*see* IS : 399-1963‡)				
Aglaia	—	8.34	850	m^3
Aini	—	5.83	595	,,
Alder	—	3.63	370	,,
Amari	—	6.13	625	,,
Amla	—	7.85	800	,,
Amra	—	4.41	450	,,
Anjan	—	8.33	850	,,
Arjun	—	7.99	815	,,
Ash	—	7.06	720	,,
Axlewood	—	8.82	900	,,
Babul	—	7.70	785	,,
Baen	—	7.70	785	,,
Bahera	—	7.99	815	,,
Bakota	—	4.21	430	,,
Balasu	—	7.55	770	,,
Ballagi	—	11.13	1 135	,,
Banati	—	4.41	450	,,
Benteak	—	6.62	675	,,
Ber	—	6.91	705	,,
Bhendi	—	7.55	770	,,
Bijasal	—	7.85	800	,,
Birch	—	6.13	625	,,
Black chuglam	—	7.85	800	,,
Black locust	—	8.34	850	,,
Blue gum	—	8.34	850	,,
Blue pine	—	5.05	515	,,
Bola	—	6.42	655	,,
Bonsum	—	5.20	530	,,
Bullet wood	—	8.78	895	,,
Casuarina	—	8.34	850	,,
Cettis	—	6.42	655	,,
Champ	—	4.85	495	,,
Chaplash	—	5.05	515	,,
Chatian	—	4.07	415	,,
Chikrassy	—	6.62	675	,,
Chilauni	—	6.42	655	,,
Chilla	—	7.85	800	,,
Chir	—	5.64	575	,,
Chuglam:				
Black	—	7.85	800	,,
White (silver grey-wood)	—	6.91	705	,,
Cinnamon	—	6.42	655	,,
Cypress	—	5.05	515	,,
Debdaru	—	6.28	640	,,
Deodar	—	5.35	545	,,
Devdam	—	7.06	720	,,
Dhaman:				
Grewia tiliofolia	—	7.70	785	,,
Grewia vestita	—	7.40	755	,,
Dhup	—	6.42	655	,,
Dilenia	—	6.13	625	,,

*Specification for clay roofing tiles, Mangalore pattern (*second revision*).

†Specification for polystyrene wall tiles.

‡Classification of commercial timbers and their zonal distribution (*revised*).

(*Continued*)

TABLE 1 UNIT WEIGHT OF BUILDING MATERIALS — *Contd*

MATERIAL	NOMINAL SIZE OR THICKNESS mm	WEIGHT/MASS		
		kN	kg	per
(1)	(2)	(3)	(4)	(5)
Dudhi	—	5.49	560	m^3
Ebony	—	8.19	835	,,
Elm	—	5.20	530	,,
Eucalyptus	—	8.33	850	,,
Figs	—	4.56	465	,,
Fir	—	4.14	450	,,
Frash	—	6.62	675	,,
Gamari	—	5.05	515	,,
Gardenia	—	7.40	755	,,
Garuga	—	5.98	610	,,
Geon	—	4.07	415	,,
Gluta	—	7.06	720	,,
Gokul	—	4.07	415	,,
Grewia sp.	—	7.55	770	,,
Gurjan	—	7.70	785	,,
Gutel	—	4.41	450	,,
Haldu	—	6.62	675	,,
Hathipaila	—	5.84	595	,,
Hiwar	—	7.70	785	,,
Hollock	—	5.98	610	,,
Hollong	—	7.21	735	,,
Hoom	—	7.21	735	,,
Horse chestnut	—	5.05	515	,,
Imli	—	8.97	915	,,
Indian Chestnut	—	6.28	640	,,
Indian Hemlock	—	3.92	400	,,
Indian Oak	—	8.48	865	,,
Indian Olive	—	10.35	1 065	,,
Irul	—	8.33	850	,,
Jack	—	5.83	595	,,
Jaman	—	7.70	785	,,
Jarul	—	6.13	625	,,
Jathikai	—	5.05	515	,,
Jhingan	—	5.63	575	,,
Jutili	—	7.85	800	,,
Kadam	—	4.85	495	,,
Kail	—	5.05	515	,,
Kaim	—	6.42	655	,,
Kambli	—	4.07	415	,,
Kanchan	—	6.62	675	,,
Kanjuj	—	5.84	595	,,
Karada	—	8.34	850	,,
Karal	—	7.99	815	,,
Karani	—	6.28	640	,,
Karar	—	5.34	545	,,
Kardahi	—	9.27	945	,,
Karimgotta	—	3.92	400	,,
Kasi	—	5.83	595	,,
Kasum	—	10.84	1 105	,,
Kathal	—	5.85	595	,,
Keora	—	6.13	625	,,
Khair	—	9.90	1 010	,,
Khasipine	—	5.05	515	,,
Kindal	—	7.55	770	,,
Kokko	—	6.28	640	,,
Kongoo	—	9.76	995	,,
Kuchla	—	8.63	880	,,
Kumbi	—	7.70	785	,,
Kurchi	—	5.20	530	,,
Kurung	—	9.76	995	,,
Kusum	—	11.28	1 150	,,
Kuthan	—	4.71	480	,,
Lakooch	—	6.28	640	,,
Lambapatti	—	5.34	545	,,
Lampati	—	5.05	515	,,
Laurel	—	8.33	850	,,
Lendi	—	7.40	755	,,
Machilus:				
Gamblei	—	5.05	515	,,
Macrantha	—	5.20	530	,,
Maharukh	—	4.07	415	,,

(*Continued*)

TABLE 1 UNIT WEIGHT OF BUILDING MATERIALS — *Contd*

MATERIAL	NOMINAL SIZE OR THICKNESS	WEIGHT/MASS		
	mm	kN	kg	per
(1)	(2)	(3)	(4)	(5)
Mahogany	—	6.62	675	m^3
Mahua	—	8.97	915	,,
Maina	—	5.64	575	,,
Makai	—	3.14	320	,,
Malabar neem	—	4.41	450	,,
Mango	—	6.77	690	,,
Maniawga	—	7.40	755	,,
Maple	—	5.64	575	,,
Mesua	—	9.76	995	,,
Milla	—	9.12	930	,,
Mokha	—	7.99	815	,,
Mulberry	—	6.62	675	,,
Mullilam	—	7.21	735	,,
Mundani	—	6.77	690	,,
Murtenga	—	7.70	785	,,
Myrabolan	—	9.27	945	,,
Narikel	—	5.49	560	,,
Nedunar	—	5.05	515	,,
Oak	—	8.48	865	,,
Padauk	—	7.06	720	,,
Padri	—	7.06	720	,,
Palang	—	5.98	610	,,
Pali	—	6.28	640	,,
Papita	—	3.28	335	,,
Parrotia	—	8.48	865	,,
Persian lilac	—	5.84	595	,,
Piney	—	6.13	625	,,
Ping	—	8.97	915	,,
Pinus insignis	—	6.13	625	,,
Pipli	—	5.83	595	,,
Pitraj	—	6.77	690	,,
Poon	—	6.42	655	,,
Poplar	—	4.41	450	,,
Pula	—	3.78	385	,,
Pyinma	—	5.98	610	,,
Rajbrikh	—	8.48	865	,,
Red sanders	—	10.84	1 105	,,
Rohini	—	11.33	1 155	,,
Rosewood (black wood)	—	8.19	835	,,
Rudrak	—	4.71	480	,,
Sal	—	8.48	865	,,
Salai	—	5.64	575	,,
Sandal wood	—	8.97	915	,,
Sandan	—	8.34	850	,,
Satin wood	—	9.41	960	,,
Saykaranji	—	7.40	755	,,
Seleng	—	4.85	495	,,
Semul	—	3.78	385	,,
Silver oak	—	6.28	640	,,
Siris	—	3.92	400	,,
Kala-siris	—	7.21	735	,,
Safed-siris	—	6.28	640	,,
Sisso	—	7.70	785	,,
Spruce	—	4.71	480	,,
Suji	—	2.65	270	,,
Sundri	—	9.41	960	,,
Talauma	—	5.64	575	,,
Tanaku	—	2.99	305	,,
Teak	—	6.28	640	,,
Toon	—	5.05	515	,,
Udal	—	2.50	255	,,
Upas	—	3.14	320	,,
Uriam	—	7.40	755	,,
Vakai	—	9.41	960	,,
Vellapine	—	5.83	595	,,
Walnut	—	5.64	575	,,
White bombwe	—	5.98	610	,,
White cedar	—	7.06	720	,,
White chuglam (silver grey-wood)	—	6.91	705	,,
White dhup	—	4.22	430	,,
Yon	—	8.33	850	,,
NOTE — The unit of timbers correspond to average unit weight of typical Indian timbers at 12 percent moisture content.				
54. *Water*				
Fresh	—	9.81	1 000	m^3
Salt	—	10.05	1 025	,,
55. *Wood-Wool Building Slabs*	10	0.059	6	,,

3. BUILDING PARTS AND COMPONENTS

3.1 The unit weights of building parts or components are specified in Table 2.

TABLE 2 UNIT WEIGHTS OF BUILDING PARTS OR COMPONENTS

MATERIAL	NOMINAL SIZE OR THICKNESS	WEIGHT/MASS		
	mm	kN	kg	per
1. *Ceilings*				
Plaster on tile or concrete	1.3 cm	0.25	25	m^2
Plaster on wood lath	2.5 cm	0.39	40	,,
Suspended metal lath and cement plaster	2.5 cm	0.74	75	,,
Suspended metal lath and gypsum plaster	2.5 cm	0.49	50	,,
2. *Cement Concrete, Plain* (*see* 20 'Cement concentrate, plain' in Table 1)				
3. *Cement Concrete, Reinforced* (*see* 21 'Cement concrete, reinforced' in Table 1)				
4. *Damp-Proofing* (*see* 28 'Felt bituminous for waterproofing and damp proofing' in Table 1)				
5. *Earth Filling* (*see* 45 'Soils and gravels' in Table 1)				
6. *Finishing* (*see also* 'Floor finishes' given under 7 'Flooring' and 8 'Roofing' in Table 1)				
Aluminium foil	—	← Negligible →		
Plaster:				
Acoustic	10	0.08	8	m^2
Anhydrite	10	0.21	21	,,
Barium sulphate	10	0.28	29	,,
Fibrous	10	0.09	9	,,
Gypsum or lime	10	0.19	19	,,
Hydraulic lime or cement	10	0.23	23	,,
Plaster ceiling on wire netting	10	0.26	27	,,
NOTE — When wood or metal lathing is used, add	—	0.06	6	,,
7. *Flooring*				
Asphalt flooring	10	0.22	22	,,
NOTE — For macadam finish, add	10	0.26	27	,,
Compressed cork	10	0.04	4	,,
Floors, structural:				
Hollow clay blocks including reinforcement and mortar jointing between blocks, but excluding any concrete topping	100	1.47	150	,,
	125	1.67	170	,,
	150	1.86	190	,,
	175	2.16	220	,,
	200	2.55	260	,,
NOTE — Add extra for concrete topping				
Hollow clay blocks including reinforcement and concrete ribs between blocks, but excluding any concrete topping	100	1.18	120	,,
	115	1.27	130	,,
	125	1.37	140	,,
	140	1.47	150	,,
	150	1.57	160	,,
	175	1.76	180	,,
	200	1.96	200	,,

NOTE — Add extra for concrete topping.

(*Continued*)

TABLE 2 UNIT WEIGHTS OF BUILDING PARTS OR COMPONENTS — *Contd*

MATERIAL	NOMINAL SIZE OR THICKNESS	WEIGHT/MASS		
	mm	kN	kg	per
Hollow concrete units including any concrete topping necessary for constructional purposes	100	1.67	170	m^2
	125	1.96	200	,,
	150	2.16	220	,,
	175	2.35	240	,,
	200	2.65	270	,,
	230	3.14	320	,,
Floors, wood:				
Hard wood	22	0.16	16	,,
	28	0.20	20.5	,,
Soft wood	22	0.11	11	,,
	28	0.13	13.5	,,
Weight of mastic used in laying wood block flooring	—	0.015	1.5	,,
NOTE — All thicknesses are 'finished thicknesses'.				
Floor finishes:				
Clay floor tiles (*see* IS : 1478-1969*)	12.5 to 25.4	0.10 to 0.2	10 to 20	,,
NOTE — This weight is 'as laid' but excludes screeding.				
Magnesium oxychloride:				
Normal type (saw dust filler)	10	0.142	14.5	,,
Heavy duty type (mineral filler)	10	0.216	22	,,
Parquet flooring	—	0.08 to 0.12	8 to 12	,,
Rubber (*see* IS : 809-1970†)	3.2	0.048 to 0.062	4.9 to 6.3	,,
	4.8	0.070 to 0.09	7.1 to 9.5	,,
	6.4	0.093 to 0.130	9.5 to 13.2	,,
Terra cotta, filled 'as laid'	—	5.54 to 7.06	570 to 720	m^3
Terrazzo paving 'as laid'	10	0.23	24	m^2
8. *Roofing*				
Asbestos cement sheeting (*see* 'Asbestos cement sheeting' in Table 1).				
Allahabad tiles (single) including battens (*see* Note below)	—	0.83	85	,,
Allahabad tiles (double) including battens (*see* Note below)	—	1.67	170	,,
Country tiles (single) with battens (*see* Note below)	—	0.69	70	,,
Country tiles (double) with battens (*see* Note below)	—	1.18	120	,,
Mangalore tiles with battens (*see* Note below)	—	0.64	65	,,
Mangalore tiles bedded in mortar over flat tiles (*see* Note below)	—	1.08	110	,,
Mangalore tiles with flat tiles (*see* Note below)	—	0.78	80	,,
Copper sheet roofing including laps and rolls	0.56	0.08	8	,,
	0.72	0.10	10	,,
Flat Roofs:				
Clay tiles hollow (*see* 7 'Flooring' in this table)				
Concrete hollow precast (*see* 7 'Flooring' in this table)				
Galvanized iron sheeting (*see* 39 'Metal sheeting, protected' in Table 1)				
Glazed Roofing:				
Glazing with aluminium alloy bars for spans up to 3 m	6.4	0.19	19.5	,,
Glazing with lead-covered steel bars at 0.6 m centres	6.4	0.25 to 0.28	26 to 29	,,
States on battens	—	0.34 to 0.49	35 to 50	,,
Thatch with battens	—	0.34 to 0.49	35 to 50	,,

NOTE — Weights acting vertically on horizontal projection to be multiplied by cosine of roof angle to obtain weights normal to the roof surface.

*Specification for clay flooring tiles (*first revision*).

†Specification for rubber flooring materials for general purposes (*first revision*).

(*Continued*)

TABLE 2 UNIT WEIGHTS OF BUILDING PARTS OR COMPONENTS — *Contd*

MATERIAL	NOMINAL SIZE OR THICKNESS	WEIGHT/MASS		
	mm	kN	kg	per
Roof finishes:				
Bitumen mecadam	10	0.22	22	m^2
Felt roofing (see 28 'Felt, bituminous for water-proofing and damp-proofing' in Table 1)	10	0.008	0.8	,,
Glass silk, quilted	0.5	0.05	5	,,
Lead sheet	0.8	0.07	7	,,
Mortar screeding	10	0.21	21	,,
9. *Walling* (IS : 6072-1971*)				
Autoclaved reinforced cellular concrete wall slabs				
Class A	—	8.35 to 9.80	850 to 1 000	m^3
Class B	—	7.35 to 8.35	750 to 850	,,
Class C	—	6.35 to 7.35	650 to 750	,,
Class D	—	5.40 to 6.35	550 to 650	,,
Class E	—	4.40 to 5.40	450 to 550	,,
Brick masonry (*see* 36 'Masonry, brick' in Table 1)				
Concrete blocks (*see* 11 'Block' in Table 1)				
Stone masonry (*see* 37 'Masonry, stone' in Table 1)				
Partitions:				
Brick wall	100	1.91	195	m^2
Cinder concrete	75	1.13	115	,,
Galvanized iron sheet	—	0.15	15	,,
Hollow glass block (bricks)	100	0.88	90	,,
Hollow blocks per 200 mm of thickness:				
Ballast or stone concrete	20	0.201	20.5	,,
Clay	20	0.201	20.5	,,
Clinker concrete	20	0.220	22.5	,,
Coke breeze concrete	20	9.176	18	,,
Diatomaceous earth	20	0.093	9.5	,,
Gypsum	20	0.137	14	,,
Pumice concrete	20	0.177	18	,,
Slag concrete, air-cooled	20	0.196	20	,,
Slag concrete, foamed	20	0.186	19	,,
Lath and plaster	—	0.392	40	,,
Solid blocks per 20 mm of thickness:				
Ballast or stone	20	0.451	46	,,
Clinker concrete	20	0.300	30.5	,,
Coke breeze concrete	20	0.221	22.5	,,
Pumice concrete	20	0.221	22.5	,,
Slag concrete, foamed	20	0.250	25.5	,,
Terrazzo cast partitions	40	0.932	95	,,
Timber studding plastered	—	9.981	100	,,

NOTE — For unit weight of fixtures and fittings required to buildings including builder's hardware, reference may be made to appropriate Indian Standards.

*Specification for autoclaved reinforced cellular concrete wall slabs.

4. STORE AND MISCELLANEOUS MATERIALS

4.1 Units weights of store and miscellaneous materials intended for dead load calculations and other general purposes are given in Appendix A.

APPENDIX A

[*Clauses* 1.1.1 (*Note*) *and* 4.1]

UNIT WEIGHTS OF STORE AND MISCELLANEOUS MATERIALS

MATERIAL	WEIGHT/MASS		ANGLE OF FRICTION, DEGREES
	kN/m^3	kg/m^3	
1. *Agricultural and Food Products*			
Butter	8.45	860	—
Coffee in bags	5.50	560	—
Drinks in bottles, in boxes	7.35	750	—
Eggs, packed	2.95	300	—
Eats, oil	5.80	590	—
Fish meal	4.90	500	45
Flour in sacks up to 1 m height	2.20 to 5.90	225 to 600	—
Forage (bales)	1.25	125	—
Fruits	3.45	350	—
Grains:			
Barley	6.75	690	27
Corn, shelled	7.55	770	27
Flax seed	7.35	750	30
Oats	5.30	540	30
Rice	6.55	670	33
Soyabeans	7.35	750	30
Wheat	8.15	830	28
Wheat flour	6.85	700	30
Grain sheaves up to 4 m stack height	0.98	100	30
Grain sheaves over 4 m stack height	1.45	150	30
Grass and clover	3.45	350	—
Hay:			
Compressed	1.65	170	—
Loose up to about 3 m stack height	0.69	70	—
Honey	14.10	1 440	—
Hops:			
In sacks	1.65	170	—
In cylindrical hop bins	4.60	470	—
Sewn up or compressed in cylindrical shape in hop cloth	2.85	290	—
Malt:			
Crushed	3.90	400	20
Germinated	1.85	190	—
Meat and meat products	7.05	720	—
Milk	10.05	1 025	—
Molasses	4.40	450	—
Onion in bags	5.40	550	0
Oil cakes, crushed	5.80	590	0
Potatoes	7.05	720	30
Preserves (tins in cases)	4.90 to 7.85	500 to 800	—
Salt:			
Bags	7.05	720	—
Bulk	9.40	960	30
Seeds:			
Heaps	4.90 to 7.85	500 to 800	25
Sacks	3.90 to 6.85	400 to 700	—
Straw and chaff:			
Loose up to about 3 m stack height	0.45	45	—
Compressed	1.65	170	—
Sugar:			
Crystal	7.35	750	30
Cube sugar in boxes	7.85	800	—
Sugar beet, pressed out	7.85	800	—
Tobacco bundles	3.45	350	—
Vinegar	10.40	1 080	—

Material	Weight/Mass		Angle of Friction, Degrees
	kN/m^3	kg/m^3	
2. *Chemicals and Allied Materials*			
Acid, hydrochloric	11.75	1 200	—
Acid, nitric 91%	14.80	1 510	—
Acid, sulphuric 87%	17.55	1 790	—
Alcohol	7.65	780	—
Alum, pearl, in barrel	5.20	530	—
Ammonia, liquid	8.85	900	—
Ammonium chloride, crystalline	8.15	830	30-40
Ammonium nitrate	7.05 to 9.80	720 to 1 000	25
Ammonium sulphate	7.05 to 9.00	720 to 920	32-45
Beeswax	9.40	960	—
Benzole	8.90	910	—
Benzene hexachloride	8.75	890	45
Bicarbonate of soda	6.40	650	30
Bone	18.65	1 900	—
Borax	17.15	1 750	—
Calcite	26.50	2 700	—
Camphor	9.70	990	—
Carbon disulphide	12.75	1 300	—
Casein	13.25	1 350	—
Caustic soda	13.85	1 410	—
Creosole	10.50	1 070	—
Dicalcium phosphate	6.65	6.80	45
Disodium phosphate	3.90 to 4.80	400 to 490	30-45
Iodine	48.55	4 950	—
Oils in bottles or barrels	5.70 to 8.90	580 to 910	—
Oil, linseed:			
In barrels	5.70	580	—
In drums	7.05	720	—
Oil, turpentine	8.50	865	—
Paints	9.40	960	—
Paraffin wax	7.85 to 9.40	800 to 960	—
Petroleum	9.90	1 010	—
Phosphorus	17.85	1 820	—
Plastics:			
Cellulose acetate	12.25 to 13.35	1 250 to 1 360	—
Cellulose nitrate	13.25 to 15.70	1 350 to 1 600	—
Methyl methacrylate	11.60	1 185	—
Phenol formaldehyde	12.55	1 280	—
Polystryrene	10.40	1 060	—
Polyvinyl chloride (Perspex)	11.75 to 13.25	1 200 to 1 350	—
Resin bonded sheet	12.85 to 13.55	1 310 to 1 380	—
Urea formaldehyde	13.25 to 13.55	1 350 to 1 380	—
Potash	14.40	1 470	—
Potassium	8.65	880	—
Potassium nitrate	9.90	1 010	—
Red lead, dry	20.70	2 110	—
Red lead, paste	87.30	8 900	—
Rosin in barrels	6.75	690	—
Rubber:			
Raw	8.90 to 9.40	910 to 960	—
Vulcanized	8.90 to 9.10	910 to 930	—
Saltpetre	9.91	1 010	—
Sodium silicate in barrels	8.35	850	—
Sulphur	20.10	2 050	—
Talc	27.45	2 800	—
Varnishes	9.40	960	—
Vitriol, blue, in barrels	7.05	720	—
3. *Fuels*			
Brown coal	6.85	700	—
Brown coal briquettes heaped	7.85	800	35

MATERIAL	WEIGHT/MASS		ANGLE OF FRICTION, DEGREES
	kN/m^3	kg/m^3	
Brown coal briquettes, stacked	12.75	1 300	—
Charcoal	2.95	300	—
Coal:			
Untreated, mine-moist	9.80	1 000	35
In washeries	11.75	1 200	0
Dust	6.85	700	25
All other sorts	8.35	850	35
Coke:			
Furnace or gas	4.90	500	35
Brown coal, low-temperature	9.80	1 000	35
Hard, raw coal	8.35	850	35
Hard, raw coal, mine-damp	9.80	1 000	35
Diesel oil	9.40	960	0
Firewood, chopped	3.90	400	45
Petrol	6.75	690	0
Wood in chips	1.95	200	45
Wood shavings, loose	1.45	150	35
Wood shavings, shaken down	2.45	250	35
4. *Manures*			
Animal manures:			
Loosely heaped	11.75	1 200	45
Stacked dung, up to about 2.5 m stack height	17.65	1 800	45
Artificial manures	11.75	1 200	24.30
5. *Metals and Alloys*			
Aluminium			
Cast	25.30 to 26.60	2 580 to 2 710	—
Wrought	25.90 to 27.45	2 640 to 2 800	—
Sheet per mm of thickness per m^2	0.028	2.8	—
Antimony, pure:			
Amorphous	60.90	6 210	—
Solid	65.70	6 700	—
Bismuth:			
Liquid	98.07	10 000	—
Solid	95.02 to 97.09	9 690 to 9 900	—
Cadmium:			
Cast	83.75 to 84.05	8 540 to 8 570	—
Wrought	85.03	8 670	—
Calcium	15.60	1 590	—
Chromium	63.95 to 66.00	6 520 to 6 730	—
Cobalt:			
Cast	83.25 to 85.10	8 490 to 8 680	—
Wrought	88.45	9 020	—
Copper:			
Cast	86.20 to 87.65	8 790 to 8 940	—
Wrought	86.70 to 87.65	8 840 to 8 940	—
Sheet per mm of thickness	0.09	8.7	—
Gold:			
Cast	188.75 to 189.55	19 250 to 19 330	—
Wrought	189.55	19 330	—
Iron:			
Pig	70.60	7 200	—
Grey, cast	68.95 to 69.90	7 030 to 7 130	—
White, cast	74.35 to 75.70	7 580 to 7 720	—
Wrought	75.50	7 700	—

Material	Weight/Mass		Angle of Friction, Degrees
	kN/m^3	kg/m^3	
Lead:			
Cast	111.20	11 340	—
Liquid	105.00	10 710	—
Wrought	111.40	11 360	—
Sheet per mm of thickness	0.11	11	—
Magnesium	16.45 to 17.15	1 680 to 1 750	—
Manganese	72.55	7 400	—
Mercury	133.35	13 600	—
Nickel	81.20 to 87.20	8 280 to 8 890	—
Platinum	210.25	21 440	—
Silver:			
Cast	102.0 to 102.85	10 400 to 10 490	—
Liquid	93.15	9 500	—
Wrought	103.35 to 103.55	10 540 to 10 560	—
Sodium:			
Liquid	9.10	930	—
Solid	9.30	950	—
Tungsten	188.30	19 200	—
Uranium	180.45	18 400	—
Zinc:			
Cast	68.95 to 70.20	7 030 to 7 160	—
Wrought	70.50	7 190	—
Sheet per mm of thickness	0.07	7	—
Alloys:			
Aluminium and copper			
Aluminium 10%, copper 90%	75.40	7 690	—
Aluminium 5%, copper 95%	82.00	8 360	—
Aluminium 3%, copper 97%	85.10	8 680	—
Aluminium 91%, zinc 9%	27.45	2 800	—
Babbit metal (tin 90%, lead 5%, copper 5%)	71.70	7 310	—
Wood's metal (bismuth 50%, lead 25%, cadmium 12.5%, tin 12.5%)	95.00	9 690	—
Brasses:			
Muntz metal (copper 60%, zinc 40%)	80.60	8 220	—
Red (copper 90%, zinc 10%)	84.25	8 590	—
White (copper 50%, zinc 50%)	80.30	8 190	—
Yellow (copper 70%, zinc 30%):			
Cast	82.75	8 440	—
Drawn	85.10	8 680	—
Rolled	83.85	8 550	—
Bronzes:			
Bell metal (copper 80%, tin 20%)	85.60	8 730	—
Gun metal (copper 90%, tin 10%)	86.10	8 780	—
Cadmium and tin	75.40	7 690	—
German Silver:			
Copper 52%, zinc 26%, nickel 22%	82.75	8 440	—
Copper 59%, zinc 30%, nickel 11%	81.70	8 330	—
Copper 63%, zinc 30%, nickel 7%	81.40	8 300	—
Gold and Copper:			
Gold 98%, copper 2%	184.75	18 840	—
Gold 90%, copper 10%	168.20	17 150	—

MATERIAL	WEIGHT/MASS		ANGLE OF FRICTION, DEGREES
	kN/m^3	kg/m^3	
Lead and Tin:			
Lead 87.5%, tin 12.5%	103.85	10 590	—
Lead 30.5%, tin 69.5%	81.10	8 270	—
Monel metal, cast (nickel 70%, copper 30%)	87.00	8 870	—
Steel:			
Cast	77.00	7 850	—
Wrought mild	76.80	7 830	—
Black plate per mm of thickness	0.08	8	—
Steel sections (*see* 46 'Steel sections' in Table 1)			
6. *Miscellaneous Materials*			
Aggregate, coarse	10.80 to 15.70	1 100 to 1 600	30
Ashes, coal, dry, 12 mm and under	5.50 to 6.30	560 to 645	40
Ashes, coal, dry, 75 mm and under	5.50 to 6.30	560 to 645	38
Ashes, coal, wet, 12 mm and under	7.05 to 7.85	720 to 800	52
Ashes, coal, wet, 75 mm and under	7.05 to 7.85	720 to 800	50
Asphalt, crushed, 12 mm and under	7.05	720	30-45
Ammonium nitrate, prills	3.55 to 8.35	360 to 850	27
Bone	18.65	1 900	—
Books and files, stacked	8.35	851	—
Calcium ammonium nitrate	9.80	1 000	28
Copper sulphate, ground	11.75	1 200	30
Chalk	21.95	2 240	—
Chinaware, earthenware, stacked (including cavities)	10.80	1 100	—
Clinker, furnace, clean	7.85	800	30
Diammonium phosphate	7.85 to 8.50	800 to 865	29
Double salt (ammonium sulphate nitrate)	7.05 to 9.30	720 to 950	34
Filling cabinets and cupboards with contents, in records offices, libraries, archives	5.90	600	—
Flue dust, boiler house, dry	5.50 to 7.05	560 to 720	≥ 30
Fly ash, pulverised	5.50 to 7.05	560 to 720	—
Glass:			
Glass, solid	23.50 to 26.70	2 400 to 2 720	—
Wool	0.16 to 1.18	16 to 120	—
In sheets	25.50	2 600	—
Glue	12.55	1 280	—
Gypsum, calcined, 12 mm and under	8.60 to 9.40	889 to 960	40
Gypsum, calcined, powdered	9.40 to 12.55	960 to 1 280	45
Gypsum, raw, 25 mm and under	14.10 to 15.70	1 440 to 1 600	30-45
Hides			
Dry, Salted } Only green	8.65	880	—
Ice	8.90	910	—
Leather put in rows	7.85	800	—
Lime, ground, 3 mm and under	9.40	960	≥ 45
Lime, hydrated, 3 mm and under	6.30	640	30-45
Lime, hydrated, pulverized	5.00 to 6.30	510 to 640	30-45
Lime pebble	8.25 to 8.75	840 to 890	≥ 45
Limestone, agricultural, 3 mm and under	10.60	1 080	30-45
Limestone, crushed	13.30 to 14.10	1 355 to 1 440	30-45
Limestone dust	8.65 to 14.90	880 to 1 520	38-45
Magnesite, caustic, in powder form	7.85	800	—
Magnesite, sinter and magnesite, granular	19.60	2 000	—
Phosphate, rock, pulverized	9.40	960	40-52
Phosphate rock	11.75 to 13.35	1 200 to 1 360	30-45
Phosphate sand	14.10 to 15.70	1 440 to 1 600	30-45
Potassium carbonate	7.95	810	30-45
Potassium chloride, pellets	18.85 to 20.40	1 920 to 2 080	30-45
Potassium nitrate	4.85	495	≥ 30
Potassium sulphate	6.55 to 7.45	670 to 760	45
Pyrites, pellets	18.85 to 20.40	1 920 to 2 080	30-45

MATERIAL	WEIGHT/MASS		ANGLE OF FRICTION, DEGREES
	kN/m^3	kg/m^3	
Pumice	5.80 to 9.90	590 to 1 010	—
Rubbish:			
Building	13.80	1 410	—
General	6.30	645	—
Salt, common, dry, coarse	6.30 to 10.00	640 to 1 020	30-45
Salt, common, dry, fine	11.00 to 12.55	1 120 to 1 280	30-45
Salt cake, dry, coarse	13.35	1 360	30
Salt cake, dry, pulverized	11.20 to 13.35	1 140 to 1 360	35
Sand, bank, damp	17.25 to 20.40	1 760 to 2 080	45
Sand, bank, dry	14.10 to 17.25	1 440 to 1 760	30
Sand, silica, dry	14.10 to 15.70	1 440 to 1 600	30-35
Saw dust, loose	1.57	160	30
Silica gel	4.40	450	30-45
Soda ash, heavy	8.65 to 10.20	880 to 1 040	35
Soda ash, light	4.70 to 6.00	480 to 610	37
Sodium nitrate, granular	11.00 to 12.55	1 120 to 1 280	24
Sulphur, crushed, 12 mm and under	7.85 to 8.25	800 to 840	35-45
Sulphur, 76 mm and under	8.65 to 13.35	880 to 1 360	32
Sulphur, powdered	7.85 to 9.40	800 to 960	30-45
Single superphosphate (S.S.P.), granulated	7.65 to 8.25	780 to 840	37
Slag, furnace, crushed	14.90	1 520	35
Steel goods:			
Cylinders, usually stored for carbonic acid, etc	13.80	1 410	—
Sheets, railway rails, etc, usually stored	44.00	4 490	—
Trisodium phosphate	9.40	960	30-45
Triple superphosphate	7.85 to 8.65	800 to 880	30-45
Turf	2.85 to 5.70	2 910 to 5 810	—
Urea, prills	6.40	650	23-26
7. *Ores*			
Antimony	29.80	3 040	—
Ferrous sulphide	26.50	2 700	—
Ferrous sulphide ore waste after roasting	13.85	1 400	—
Iron ore, compact storing	29.80	3 040	—
Magnesium ore	19.60	2 000	—
8. *Textiles, Paper and Allied Materials*			
Cellulose in bundles	7.35	750	—
Cotton, compressed	12.75	1 300	—
Flax, piled and compressed in bales	2.95	300	—
Furs	8.90	910	—
Jute in bundles	6.85	700	—
Paper:			
In bundles and rolls	6.85	700	—
Newspapers in bundles	3.90	400	—
Put in rows	10.80	1 100	—
Thread in bundles	4.90	500	—
Wood, compressed	12.75	1 300	—

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Review of Indian Standards

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