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Gypsum boards

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry, through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by Gypsum Board Association of Japan (GBAJ)/Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14. Consequently **JIS A 6901:2009** is replaced with this Standard.

However, **JIS A 6901: 2009** may be applied in the **JIS** mark certification based on the relevant provisions of Article 19 Clause 1, etc. of the Industrial Standardization Law until September 21, 2015.

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Gypsum boards

1 Scope

This Japanese Industrial Standard specifies the gypsum board products (hereafter referred to as “GB”) used as the base and finishing material mainly for walls and ceilings of a building.

GB, for the purpose of this Standard, is a board composed of a core made of gypsum, which is a main material of the product, and a gypsum board lining paper covering both faces and longitudinal (direction of flow in moulding) edge of the gypsum core.

Sound absorbing perforated gypsum boards (GB-P) are covered in **JIS A 6301**.

NOTE: The comparison table between previous and current editions of this Standard on technically significant revisions is given in Annex B.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard.

JIS A 1321 *Testing method for incombustibility of internal finish material and procedure of buildings*

JIS A 1408 *Test methods of bending and impact for building boards*

JIS A 1412-2 *Test method for thermal resistance and related properties of thermal insulations — Part 2 : Heat flow meter apparatus*

JIS A 1420 *Determination of steady-state thermal transmission properties — Hot box method*

JIS A 6301 *Sound absorbing materials*

JIS B 7512 *Steel tape measures*

JIS B 7516 *Metal rules*

JIS C 1602 *Thermocouples*

JIS C 1605 *Mineral insulated thermocouples*

JIS K 7102 *Testing method for colour fastness of plastics upon exposure to light of the carbon arc*

JIS L 0804 *Grey scale for assessing change in colour*

3 General

GB is specified by the classification, size, thickness and edge profile selected according to its application. GB is used, for example, for base and finishing material of walls and ceilings in a building, and as composition material of fire protective, semi-fireproof,

fireproof and sound insulating structures. GB is fixed by nailing, screwing, stapling, sticking with gypsum-based or other adhesives, inserting in lay-in grids or securing by clips.

GB is made of a material of which the contained components are well controlled, and which does not affect the product quality adversely.

4 Classification

The classification and symbols of GB shall be as given in Table 1.

Table 1 Classification and symbols

Classification	Symbol	Remarks	Main use (informative)
Gypsum board	GB-R	Standard product of gypsum board.	Base material of wall and ceiling
Gypsum sheathing board	GB-S	Gypsum board of which the lining paper on both faces and gypsum core are waterproofed	Base material of wall and ceiling in indoor places such as kitchen and washroom
Reinforced gypsum board	GB-F	GB-R with inorganic fibre or the like mixed in its core. Inorganic material shall not include asbestos.	Base material of wall and ceiling, and composition material of fire protective and fireproof structure.
Gypsum lath board	GB-L	GB-R with rectangular dents provided on its face.	Base material of gypsum plastered wall
Decorated gypsum board	GB-D	GB-R with its face decorated.	Finishing material of wall and ceiling
Non-combustible laminated gypsum board	GB-NC	Gypsum board having an incombustible lining paper as the cover. In some products, the incombustible cover paper is decorated.	• Without decoration : Base material of wall and ceiling • With decoration : Finishing material of wall and ceiling
Gypsum board-regular-hard type	GB-R-H	Gypsum board with GB-R used as its base, having an impact resistance not less than approximately 1.2 times that of GB-F and a breaking load not less than approximately 1.3 times that of GB-R.	Base material of the wall for a partition, passage, corridor, etc., window back and of other fire protective, fireproof and sound insulating structures.
Gypsum sheathing board-hard type	GB-S-H	Gypsum board having the performance of GB-R-H, and with waterproof treatment.	Base material of wall and ceiling in indoor places such as kitchen and washroom
Decorated gypsum board-hard type	GB-D-H	Gypsum board having the performance of GB-R-H, with its face decorated.	Finishing material of wall and ceiling

Table 1 (concluded)

Classification		Symbol	Remarks	Main use (informative)
Structural gypsum board	Class A	GB-St-A	Gypsum board having the performance of GB-F, with enhanced lateral nail resistance. They are classified into Class A and Class B according to lateral nail resistance.	Face material for bearing wall
	Class B	GB-St-B		
Gypsum board-humidity control type		GB-R-Hc	Gypsum board having the performance of GB-R, GB-S, GB-F, GB-L, GB-D, GB-NC, GB-R-H, GB-S-H, GB-D-H, GB-St-A and GB-St-B, respectively, with the humidity control performance enhanced about 3 times, expressed with "Hc" attached to the end of each symbol.	Base material and finishing material of wall and ceiling suitable for maintaining indoor humidity within a fixed limit by humidity control performance
Gypsum sheathing board-humidity control type		GB-S-Hc		
Reinforced gypsum board-humidity control type		GB-F-Hc		
Gypsum lath board-humidity control type		GB-L-Hc		
Decorated gypsum board-humidity control type		GB-D-Hc		
Non-combustible laminated gypsum board-humidity control type		GB-NC-Hc		
Gypsum board-regular-hard-humidity control type		GB-R-H-Hc		
Gypsum sheathing board-hard-humidity control type		GB-S-H-Hc		
Decorated gypsum board-hard-humidity control type		GB-D-H-Hc		
Structural gypsum board-humidity control type-Class A		GB-St-A-Hc		
Structural gypsum board-humidity control type-Class B		GB-St-B-Hc		
Decoration on GB-D, GB-NC, GB-D-H, GB-D-Hc, GB-NC-Hc and GB-D-H-Hc shall be given on the face by printing, overlaying, embossing, painting and so on.				

5 Quality

5.1 Appearance

The front and back faces, edge and end of GB shall be free from chips, cracks, stains, flaws, etc. detrimental to use.

5.2 Performance

The performance shall be as follows.

- a) When GB is tested in accordance with clause 7, all the test pieces (all the number of tests performed) shall satisfy the requirements given in Table 2 to Table 12 that are relevant to its type.

Table 2 Performance of gypsum board (GB-R)

Performance requirement items		Thickness mm		
		9.5	12.5	15.0
Mass per unit area kg/m^2		6.2 to 9.0	8.1 to 11.7	9.8 to 14.0
Specific gravity		0.65 to 0.90	0.65 to 0.90	0.65 to 0.90
Water content %		3 max.		
Breaking load N	Longitudinal	360 min.	500 min.	650 min.
	Transverse	140 min.	180 min.	220 min.
Incombustibility or heat generation property		Incombustibility grade 2 or heat generation property grade 2 or better	Incombustibility grade 1 or heat generation property grade 1	Incombustibility grade 1 or heat generation property grade 1
Heat resistance $\text{m}^2\cdot\text{K/W}$		0.043 min.	0.057 min.	0.068 min.

Table 3 Performance of gypsum sheathing board (GB-S)

Performance requirement items		Thickness mm			
		9.5	12.5	15.0	16.0
Mass per unit area kg/m^2		6.2 to 9.0	8.1 to 11.7	9.8 to 14.0	10.4 to 14.9
Specific gravity		0.65 to 0.90	0.65 to 0.90	0.65 to 0.90	0.65 to 0.90
Water content %		3 max.			
Breaking load ^{a)} N	Dry	360 min.	500 min.	650 min.	700 min.
	Wet	220 min.	300 min.	390 min.	420 min.
Peeling resistance at water absorption		No separation of the lining paper from the gypsum core.			
Water absorbing property	Total water absorption %	10 max.			
	Surface water absorption g	2 max.			
Incombustibility or heat generation property		Incombustibility grade 2 or heat generation property grade 2 or better			
Heat resistance $\text{m}^2\cdot\text{K/W}$		0.040 min.	0.052 min.	0.063 min.	0.067 min.
Note ^{a)} Given breaking load values assume the load applied in the longitudinal direction.					

Table 4 Performance of reinforced gypsum board (GB-F)

Performance requirement items		Thickness mm					
		12.5	15.0	16.0	18.0	21.0	25.0
Mass per unit area kg/m ²		9.4 to 12.4	11.3 to 14.7	12.0 to 15.7	13.5 to 17.6	15.8 to 20.4	18.8 to 24.2
Specific gravity		0.75 to 0.95	0.75 to 0.95	0.75 to 0.95	0.75 to 0.95	0.75 to 0.95	0.75 to 0.95
Water content %		3 max.					
Breaking load N	Longitudinal	500 min.	650 min.	680 min.	750 min.	850 min.	1 000 min.
	Transverse	180 min.	220 min.	230 min.	270 min.	320 min.	380 min.
Impact resistance		The diameter of the dent shall not exceed 25 mm, and there shall be no penetrating fissures.					
Flame resistance		There shall be no fall of broken board.					
Incombustibility or heat generation property		Incombustibility grade 1 or heat generation property grade 1					
Heat resistance m ² ·K/W		0.052 min.	0.063 min.	0.067 min.	0.075 min.	0.088 min.	0.104 min.

Table 5 Performance of gypsum lath board (GB-L)

Performance requirement items		Thickness mm	
		9.5	12.5
Mass per unit area kg/m ²		6.2 to 9.0	8.1 to 11.7
Specific gravity		0.65 to 0.90	0.65 to 0.90
Water content %		3 max.	
Breaking load N	Longitudinal	180 min.	250 min.
	Transverse	125 min.	160 min.

Table 6 Performance of decorated gypsum board (GB-D)

Performance requirement items		Thickness mm		
		9.5	12.5	15.0
Mass per unit area kg/m ²		6.2 to 9.0	8.1 to 11.7	9.8 to 14.0
Specific gravity		0.65 to 0.90	0.65 to 0.90	0.65 to 0.90
Water content %		3 max.		
Breaking load ^{a)} N	Longitudinal	360 min.	500 min.	650 min.
	Transverse	140 min.	180 min.	220 min.
Resistance to change in colour		No. 3 or over grey scale for assessing change in colour. The surface shall be free from cracks, blisters or wrinkles.		
Impact resistance ^{b)}		The diameter of the dent shall not exceed 25 mm, and there shall be no penetrating fissures.		
Incombustibility or heat generation property		Incombustibility grade 2 or heat generation property grade 2 or better	Incombustibility grade 1 or heat generation property grade 1	Incombustibility grade 1 or heat generation property grade 1
Heat resistance m ² ·K/W		0.043 min.	0.057 min.	0.068 min.
Notes ^{a)} The breaking load for boards with embossed face shall be 75 % or greater of the value shown in this table.				
^{b)} Not applicable to boards with embossed face.				

Table 7 Performance of non-combustible laminated gypsum board (GB-NC)

Performance requirement items		Thickness mm
		9.5
Mass per unit area kg/m ²		6.2 to 9.0
Specific gravity		0.65 to 0.90
Water content %		3 max.
Breaking load ^{a)} N	Longitudinal	360 min.
	Transverse	140 min.
Resistance to change in colour ^{b)}		No. 3 or over grey scale for assessing change in colour. The board face shall be free from cracks, blisters or wrinkles.
Impact resistance ^{c)}		The diameter of the dent shall not exceed 25 mm, and there shall be no penetrating fissures.
Incombustibility or heat generation property		Incombustibility grade 1 or heat generation property grade 1
Heat resistance m ² ·K/W		0.043 min.
Notes ^{a)} The breaking load for boards with embossed face shall be 75 % or greater of the value shown in this table. ^{b)} Not applicable to boards without decoration on the face. ^{c)} Applicable to boards with decorated face, but not applicable to those with embossed face.		

Table 8 Performance of gypsum board-regular-hard type (GB-R-H)

Performance requirement items		Thickness mm		
		9.5	12.5	15.0
Mass per unit area kg/m ²		8.6 to 14.5	11.3 to 18.9	13.5 to 22.5
Specific gravity		0.90 to 1.45	0.90 to 1.45	0.90 to 1.45
Water content %		3 max.		
Breaking load N	Longitudinal	500 min.	700 min.	910 min.
	Transverse	200 min.	250 min.	310 min.
Impact resistance		The diameter of the dent shall not exceed 20 mm, and there shall be no penetrating fissures.		
Incombustibility or heat generation property		Incombustibility grade 2 or heat generation property grade 2 or better	Incombustibility grade 1 or heat generation property grade 1	Incombustibility grade 1 or heat generation property grade 1
Heat resistance m ² ·K/W		0.026 min.	0.035 min.	0.042 min.

Table 9 Performance of gypsum sheathing board-hard type (GB-S-H)

Performance requirement items		Thickness mm			
		9.5	12.5	15.0	16.0
Mass per unit area kg/m ²		8.6 to 14.5	11.3 to 18.9	13.5 to 22.5	14.4 to 23.9
Specific gravity		0.90 to 1.45	0.90 to 1.45	0.90 to 1.45	0.90 to 1.45
Water content %		3 max.			
Breaking load ^{a)} N	Dry	500 min.	700 min.	910 min.	970 min.
	Wet	300 min.	420 min.	550 min.	580 min.
Impact resistance		The diameter of the dent shall not exceed 20 mm, and there shall be no penetrating fissures.			
Peeling resistance at water absorption		No separation of the lining paper from the gypsum core.			
Water absorbing property	Total water absorption %	10 max.			
	Surface water absorption g	2 max.			
Incombustibility and heat generation property		Incombustibility grade 2 or heat generation property grade 2 or better			
Heat resistance m ² ·K/W		0.026 min.	0.035 min.	0.042 min.	0.044 min.
Note ^{a)} Given breaking load values assume the load applied in the longitudinal direction.					

Table 10 Performance of decorated gypsum board-hard type (GB-D-H)

Performance requirement items		Thickness mm		
		9.5	12.5	15.0
Mass per unit area kg/m ²		8.6 to 14.5	11.3 to 18.9	13.5 to 22.5
Specific gravity		0.90 to 1.45	0.90 to 1.45	0.90 to 1.45
Water content %		3 max.		
Breaking load ^{a)} N	Longitudinal	500 min.	700 min.	910 min.
	Transverse	200 min.	250 min.	310 min.
Resistance to change in colour		No. 3 or over grey scale for assessing change in colour. The board face shall be free from cracks, blisters or wrinkles.		
Impact resistance ^{b)}		The diameter of the dent shall not exceed 20 mm, and there shall be no penetrating fissures.		
Incombustibility or heat generation property		Incombustibility grade 2 or heat generation property grade 2 or better	Incombustibility grade 1 or heat generation property grade 1	Incombustibility grade 1 or heat generation property grade 1
Heat resistance m ² ·K/W		0.026 min.	0.035 min.	0.042 min.
Notes ^{a)} The breaking load for boards with embossed face shall be 75 % or greater of the value shown in this table.				
^{b)} Not applicable to boards with embossed face.				

- b) For structural gypsum board (GB-St), those satisfying both the performance requirements given in Table 4 and the lateral nail resistance given in Table 11 for the longitudinal and transverse tests, regardless of their thickness, shall be accepted as GB-St.

Table 11 Performance of structural gypsum board (GB-St)

Lateral nail resistance N	Class A ^{a)}	750 min.
	Class B	500 min.
Note ^{a)} The heat resistance, mass per unit area and specific gravity requirements for Class A shall be as given in Table 8.		

- c) For gypsum board-humidity control type (GB-Hc), those satisfying both the performance requirements given in Table 2 to Table 11 and the humidity control performance given in Table 12, regardless of their class and thickness, shall be accepted as GB-R-Hc, GB-S-Hc, GB-F-Hc, GB-L-Hc, GB-D-Hc, GB-NC-Hc, GB-R-H-Hc, GB-S-H-Hc, GB-D-H-Hc, GB-St-A-Hc or GB-St-B-Hc.

Table 12 Performance of gypsum board-humidity control type (GB-Hc)

Humidity control performance g/m ²	150 min.
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6 Shape, dimensions, mass per unit area, specific gravity and dimensional tolerances

6.1 Shape

The shape shall be as follows. The edge profiles of GB shall be as shown in Figure 1.

Other edge profiles shall be subject to the agreement between the purchaser and the manufacturer.

- The longitudinal and transverse directions of GB shall be approximately at right angles to each other.
- The edge should be approximately at right angles to the front face. This does not apply to edges processed for a special purpose.
- Tapered edge shall be 0.6 mm to 1.9 mm in depth, and 40 mm to 80 mm in width.
- Bevelled edge shall be 2 mm to 6 mm in depth, and 2 mm to 6 mm in width.

Unit: mm

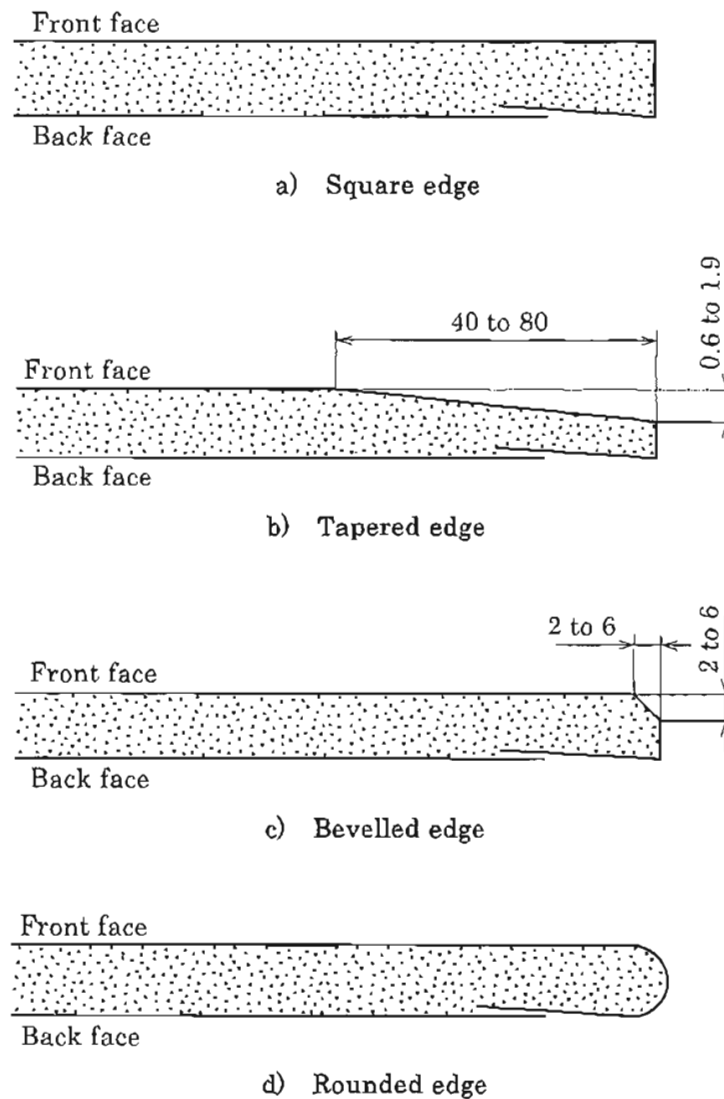


Figure 1 Edge profiles of GB

6.2 Dimensions, mass per unit area, and specific gravity

The dimensions, mass per unit area, and specific gravity shall be as follows.

- a) **Thickness** The thickness shall be as specified in Table 13, and shall not exceed the thickness tolerance given in Table 20.

Table 13 Thickness of GB

Unit: mm

Thick- ness	Classification					
	GB-R	GB-S	GB-F	GB-L	GB-D	GB-NC
	GB-R-H	GB-S-H	GB-F-Hc	GB-L-Hc	GB-D-H	GB-NC-Hc
	GB-R-Hc	GB-S-Hc	GB-St-B		GB-D-Hc	
	GB-R-H-Hc	GB-S-H-Hc	GB-St-B-Hc		GB-D-H-Hc	
	GB-St-A					
	GB-St-A-Hc					
9.5	○ ^{a)}	○	—	○	○	○
12.5	○	○	○	○	○	—
15.0	○	○	○	—	○	—
16.0	—	○	○	—	—	—
18.0	—	—	○	—	—	—
21.0	—	—	○	—	—	—
25.0	—	—	○	—	—	—
Note ^{a)} Not applicable to GB-St-A and GB-St-A-Hc.						

b) **Length and width** The length and width shall be as specified in Table 14 to Table 19.

Lengths and widths that are not specified in these tables shall be subject to agreement between the purchaser and the manufacturer. The length and width shall not exceed the tolerances given in Table 20.

Table 14 Length and width of gypsum board (GB-R) and gypsum board-regular-hard type (GB-R-H)

Unit: mm

Length	Width		
	606	910	1 210
1 820	—	○	—
2 420	○	○	○
2 730	—	○	—
3 030	—	○	—
This table also applies to GB-R-Hc, GB-R-H-Hc, GB-St-A, and GB-St-A-Hc.			

Table 15 Length and width of gypsum sheathing board (GB-S) and gypsum sheathing board-hard type (GB-S-H)

Unit: mm

Length	Width	
	910	1 210
1 820	○	—
2 420	○	○
2 730	○	—
3 030	○	—
This table also applies to GB-S-Hc and GB-S-H-Hc.		