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Doorsets

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Foreword

This Japanese Industrial Standard has been 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 Japan Sash Manufacturers Association (JSMA)/Japanese Standards Association (JSA) with a draft being attached, based on the provision of Article 12, paragraph (1) of the Industrial Standardization Act applied mutatis mutandis pursuant to the provision of Article 16 of the said Act. This edition replaces the previous edition (**JIS A 4702:2015**), which has been technically revised.

However, **JIS A 4702: 2015** may be applied in the **JIS** mark certification based on the relevant provisions of Article 30, paragraph (1), etc. of the Industrial Standardization Act until 21 February 2022.

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Doorsets

1 Scope

This Japanese Industrial Standard specifies requirements for the manually operated swing and sliding doorsets (hereafter referred to as doorsets) to be installed mainly at the entryway through the exterior wall or the indoor partition wall of buildings. This Standard is not applicable to doors used for providing access to a veranda or to the outside that cannot be locked from outside, or revolving doors.

A list of technically significant revisions from the previous edition with reasons is given in Annex B.

2 Normative references

Part or all of the provisions of the following standards, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

- JIS A 1416 *Acoustics — Method for laboratory measurement of airborne sound insulation of building elements*
- JIS A 1513 *Windows and doorsets — General rule for test method*
- JIS A 1515 *Windows and doorsets — Wind resistance test*
- JIS A 1516 *Windows and doorsets — Air permeability test*
- JIS A 1517 *Windows and doorsets — Watertightness test under dynamic pressure*
- JIS A 1518 *Doorsets — Soft heavy body impact test*
- JIS A 1519 *Windows and doorsets — Determination of opening and closing forces*
- JIS A 1521 *Doorsets — Diagonal deformation test under static load*
- JIS A 1523 *Doorsets — Static torsion test*
- JIS A 1524 *Doorsets — Vertical load test*
- JIS A 1530 *Windows and doors — Resistance to repeated opening and closing — Test method*
- JIS A 2102-1 *Thermal performance of windows and doors — Calculation of thermal transmittance — Part 1 : General*
- JIS A 2102-2 *Thermal performance of windows and doors — Calculation of thermal transmittance — Part 2 : Numerical method for frames*
- JIS A 2103 *Thermal performance of windows and doors — Calculation of solar heat gain coefficient*
- JIS A 4710 *Windows and doorsets — Thermal resistance test*

- JIS A 5558 *Unplasticized polyvinyl chloride (PVC-U) profiles for fabrication of windows and doors*
- JIS A 5905 *Fiberboards*
- JIS A 5908 *Particleboards*
- JIS G 3302 *Hot-dip zinc-coated steel sheet and strip*
- JIS G 3313 *Electrolytic zinc-coated steel sheet and strip*
- JIS G 4304 *Hot-rolled stainless steel plate, sheet and strip*
- JIS G 4305 *Cold-rolled stainless steel plate, sheet and strip*
- JIS H 4000 *Aluminium and aluminium alloy sheets, strips and plates*
- JIS H 4100 *Aluminium and aluminium alloy extruded profiles*
- JIS H 8602 *Combined coatings of anodic oxide and organic coatings on aluminium and aluminium alloys*
- JIS K 6744 *Polyvinyl chloride prepainted and laminated metal sheet and strip*
- JIS Z 8401 *Rounding of numbers*
- Japan Agricultural Standard for sawn lumber
- Japan Agricultural Standard for glued laminated timber
- Japan Agricultural Standard for plywood
- Japan Agricultural Standard for laminated veneer lumber

3 Terms and definitions

For the purpose of this Standard, the following terms and definitions apply.

3.1

doorset

door unit consisting of a door frame and a door leaf(ves), pre-assembled at the factory so that it can be treated as one integral component when installed at the site

Note to entry 1 A doorset may be without a sill, i.e. framed with a jamb and a head only, or incorporate glass screen at its periphery.

3.2

frame

member of a doorset inside which a door leaf(ves) is fitted, and which comes into contact with the wall opening in installation

3.3

door leaf

generic term for the movable parts of a doorset such as a swinging door leaf, and a sliding door leaf

3.4

swing

type of doorset whose door leaf(ves) moves outside the plane of the frame

3.5

sliding

type of doorset whose door leaf(ves) moves within the plane of the frame

3.6

FIX window

window consisting of a glass etc. fixed within the frame of the doorset, and therefore without opening/closing function

4 Grades

The wind pressure resistance, airtightness, watertightness, sound insulation, heat insulation, solar heat gain and diagonal deformation of doorsets are classified into the grades as shown in Table 1.

5 Performance

Performance requirements selected from Table 1 as appropriate for the intended use of the doorset shall apply. The torsional strength, vertical load strength, opening and closing force, resistance to repeated opening and closing and impact resistance are mandatory requirements. For the wind pressure resistance, airtightness, watertightness, sound insulation, solar heat insulation, solar heat gain and diagonal deformation, a grade appropriate for the intended use of the doorset shall be selected.

Table 1 Performance

Performance	Test conditions or test values for respective grades	Criterion	Test sub-clause
Torsional strength ^{a)}	Applied load 200 N	No abnormalities in opening and closing and no damages detrimental to use.	9.2
Vertical load strength ^{a)}	Applied load 500 N	Residual displacement not exceeding 3 mm. No abnormalities in opening and closing and no damages detrimental to use.	9.3
Opening and closing force	Applied load 50 N	Smooth opening and closing of the door leaf(ves).	9.4
Resistance to repeated opening and closing	Number of openings and closings 100,000 times	No abnormalities in opening and closing and no damages detrimental to use.	9.5

Table 1 (continued)

Performance	Test conditions or test values for respective grades		Criterion	Test sub-clause
Impact resistance ^{a)} , ^{b)}	Sandbag drop height 170 mm		No detrimental deformation, no abnormalities in opening and closing and no damages detrimental to use after one drop impact. Fracture of glass is not a cause for rejection.	9.6
Wind pressure resistance	Grade	Maximum pressure	a) No dislodgement or breakage of the door leaf during pressurization b) In the case of sliding doorsets, the meeting stiles ^{c)} , butting stiles ^{d)} and meeting intermediate mullion ^{e)} shall not show a displacement greater than 1/70 of their inner dimension measured in parallel to them. c) In the case of swing doorsets, the frame, transom bar ^{f)} and mullion ^{g)} or other members that are in contact with the periphery of the door leaf shall not show a relative displacement ^{h)} greater than 15 mm. d) In the case of double swing doorsets etc., the meeting stile shall not show a displacement ^{h)} greater than 1/70 of its inner dimension measured in parallel to it. e) For doorsets having a transom bar and mullion, the deflection rate of the transom bar and mullion shall not exceed 1/100. f) For doorsets comprising glass panel(s) at least one of which is 6.8 mm or more in thickness, the deflection rate of respective members shall conform to Table 2. g) No abnormalities in opening and closing and no abnormalities in use after depressurization.	9.7
	S-1	800 Pa		
	S-2	1 200 Pa		
	S-3	1 600 Pa		
	S-4	2 000 Pa		
	S-5	2 400 Pa		
	S-6	2 800 Pa		
	S-7	3 600 Pa		
Airtightness	Grade	Airtightness grade line	The airflow rate shall not exceed the airtightness grade line as shown in Figure 1.	9.8
	A-1	A-1 grade line		
	A-2	A-2 grade line		
	A-3	A-3 grade line		
	A-4	A-4 grade line		
Watertightness	Grade	Median value of pressure differential	None of the following water penetration into the indoor side as detailed in JIS A 1517 shall occur during pressurization. a) Outflowing b) Splashing c) Gushing d) Overflowing from the sill etc.	9.9
	W-1	100 Pa		
	W-2	150 Pa		
	W-3	250 Pa		
	W-4	350 Pa		
	W-5	500 Pa		

Table 1 (continued)

Performance	Test conditions or test values for respective grades		Criterion	Test sub-clause
Sound insulation	Grade	Sound insulation grade line	The sound transmission losses at 16 frequencies between 125 Hz to 4 000 Hz inclusive shall satisfy either a) or b) in the following with respect to the sound insulation grade line specified in Figure 2.	9.10
	T-1	T-1 grade line		
	T-2	T-2 grade line		
	T-3	T-3 grade line		
	T-4	T-4 grade line		
a) All the sound transmission losses measured at 16 frequencies between 125 Hz to 4 000 Hz inclusive shall be equal to or above the applicable sound insulation grade line. Where measurements at some frequency bands fail to meet the applicable grade line, conformance to the grade shall be regarded as established as far as the total of non-conforming measurements is not more than 3 dB. b) The sound transmission losses at all the frequency bands shall be converted according to the following formula and the resulting six conversion values shall be equal to or above the applicable sound insulation grade line. $TL_{\text{oct}} = -10 \log_{10} \left[\frac{1}{3} \left(10^{-\frac{TL_{125}}{10}} + 10^{-\frac{TL_{250}}{10}} + 10^{-\frac{TL_{4000}}{10}} \right) \right]$ where, TL_{oct} : sound transmission loss conversion value in octave band (dB) TL_i: sound transmission loss at each of 125 Hz, 250 Hz, 500 Hz, 1 000 Hz, 2 000 Hz and 4 000 Hz in 1/3 octave band (dB) The sound transmission loss at 125 Hz in 1/1 octave band shall be converted from those at the frequencies 125 Hz and 160 Hz in 1/3 octave band, and the sound transmission loss at 4 000 Hz in 1/1 octave band, from those at frequencies 3 150 Hz and 4 000 Hz in 1/3 octave band, according to the following formula. $TL_{\text{oct}125} = -10 \log_{10} \left[\frac{1}{2} \left(10^{-\frac{TL_{125}}{10}} + 10^{-\frac{TL_{160}}{10}} \right) \right]$ $TL_{\text{oct}4\,000} = -10 \log_{10} \left[\frac{1}{2} \left(10^{-\frac{TL_{3\,150}}{10}} + 10^{-\frac{TL_{4\,000}}{10}} \right) \right]$ The conversion values shall be rounded to the nearest integer. Conformance to the applicable grade shall be regarded as established if the total of the conversion values not meeting the applicable grade line is not more than 3 dB.				