



JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS A 1450 : 2021

(JAFA/JSA)

Test methods for raised access floor

ICS 91.060.30

Reference number : JIS A 1450 : 2021 (E)

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Date of Establishment: 1997-04-20

Date of Revision: 2021-11-22

Date of Public Notice in Official Gazette: 2021-11-22

Investigated by: Japanese Industrial Standards Committee

Standards Board for ISO area

Technical Committee on Architecture

JIS A 1450 : 2021, First English edition published in 2022-07

Translated and published by: Japanese Standards Association
Mita MT Building, 3-13-12, Mita, Minato-ku, Tokyo, 108-0073 JAPAN

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Printed in Japan

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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 Access Floor Association (JAFA)/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 1450** : 2015), which has been technically revised.

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Test methods for raised access floor

1 Scope

This Japanese Industrial Standard specifies the test methods for raised access floor (hereafter referred to as floor).

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 1455 *Anti-static effect of floor coverings and installed floors — Methods of measurement and evaluation*

JIS B 7503 *Mechanical dial gauges*

JIS B 7507 *Vernier, dial and digital callipers*

JIS B 7512 *Steel tape measures*

JIS B 7514 *Steel straightedges*

JIS B 7524 *Feeler gauges*

JIS B 7534 *Carpenter's squares*

JIS B 8922 *Industrial wheels*

JIS K 8101 *Ethanol (99.5) (Reagent)*

JIS L 1021-16 *Textile floor coverings — Part 16 : Assessment of static electrical propensity — Walking test*

JIS L 4406 *Tile carpet*

JIS R 5201 *Physical testing methods for cement*

3 Terms and definitions

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

3.1

raised access floor

Alternative term : floor

double flooring system of which the floor top panels, etc. can be easily detached to allow access to the equipment, etc. in the underfloor space for maintenance purposes

3.2

panel

floor component which forms the upper surface

Note 1 to entry It includes surface finishing materials, if applied in the manufacturing process.

3.3

pedestal

floor component which supports panels

Note 1 to entry It includes cushioning material.

3.4

sheet

component which is laid on the sub-floor to prevent floor slippage

3.5

unit

a set of a panel and pedestals which is repeated to form an array constituting the floor

Note 1 to entry It includes cushioning material and sheet.

3.6

floor height

height from the sub-floor surface to the top of the surface finish material with the surface finish material being applied to the unit

4 Test items

The test items of the floor shall be in accordance with Table 1.

Table 1 Test items

Test item	Summary	Applicable subclause
Dimensional measurement	Check of product dimensions	6.1
Static load test	Check of defects caused by static load exerted by the weight of installed fixture and furniture such as a book shelf	6.2
Impact test	Check of defects caused by impact loads that can occur in an office, etc.	6.3
Rolling load test	Check of defects caused by dynamic load associated with travel of a carriage	6.4
Combustion test	Check of defects in case of fire under floor e.g. cable fire	6.5
Electrostatic propensity test	Check of degree of electric potential (voltage) to be charged when a person walked on the floor	6.6
Leakage resistance test	Check of leak resistance value to prevent electric shock accidents involving humans	6.7
Vibration test	Check of defects caused by earthquake	6.8

5 General conditions of tests

5.1 Conditions of test location and conditioning of test specimen

The conditions of test location and conditioning time of test specimen shall be in accordance with Table 2.

Table 2 Conditions of test location and conditioning time of test specimen

Item		Dimensional measurement, static load test, impact test, rolling load test, combustion test and vibration test	Electrostatic propensity test and leakage resistance test
Condition of test location	Temperature	20 °C ± 15 °C	20 °C ± 5 °C
	Humidity	(65 ± 20) %RH	(30 ± 10) %RH
Conditioning time of test specimen		24 h	

5.2 Surface finishing material

The surface finishing material which is to be actually applied to the floor shall be used for the test. If the material has not been selected yet, the following shall be used.

- Type : tile carpet
- Fibre : nylon 100 %
- Pile form : loop pile
- Pile length : 3.0 mm to 4.0 mm
- Backing material : polyvinyl chloride
- Total thickness : 6.0 mm to 7.0 mm
- Unit mass : 4.0 kg/m² to 6.0 kg/m²
- Human body electrification voltage : 2 kV max.

Other performance of tile carpets than above shall be in accordance with Class 1 specified in **JIS L 4406**.

5.3 Measuring instruments

The measuring instruments shall be in accordance with the following.

- a) **Vernier callipers**, of 0.05 mm in the minimum reading value specified in **JIS B 7507** or that having an accuracy equal or superior to this.
- b) **Steel tape measure**, specified in **JIS B 7512** or that having an accuracy equal or superior to this.
- c) **Straightedge**, of Grade B specified in **JIS B 7514** or that having an accuracy equal or superior to this.

- d) **Feeler gauge**, specified in **JIS B 7524** or that having an accuracy equal or superior to this.
- e) **Load meter**, of 100 N or under in the minimum reading value and of which the measuring accuracy is ± 1 % of the reading, or any load meter at least equivalent thereto.
- f) **Displacement meter**, of 0.1 mm or under in the minimum reading value, or that having an accuracy equivalent to or better than the dial gauge specified in **JIS B 7503**.
- g) **Stopwatch**, of 0.1 s or under in the minimum reading value.
- h) **Insulation tester**, which includes 1 M Ω in the measuring range when energized by 500 V and of which the measuring accuracy is ± 10 % of the reading, or any insulation tester at least equivalent thereto.
- i) **Carpenter's square**, specified in **JIS B 7534** or that having an accuracy equivalent or superior to this.

5.4 Test specimen

The test specimen shall be selected at random from finished products.

5.5 Expression of test results

The test result values shall be expressed by rounding down numerals of 4 or less and rounding up those of 5 or more.

6 Tests

6.1 Dimensional measurement

6.1.1 Measuring method

The dimensional measurement shall be as follows. For the floors for which dimensional precision is required by the agreement between the interested parties, the dimensional measurement shall be performed in accordance with Annex A.

- a) **Length of panel** Measure the length (l) of two adjacent sides of a panel as shown in Figure 1 using the steel tape measure specified in 5.3 b).

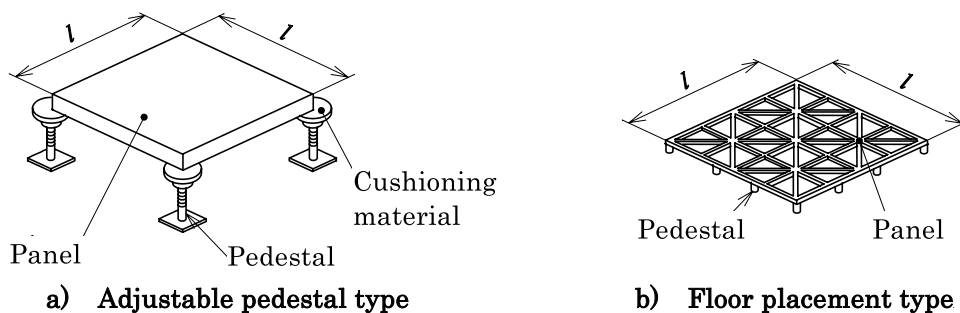
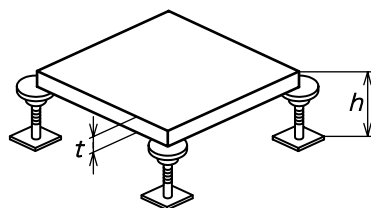


Figure 1 Measurement of length of panel (example)

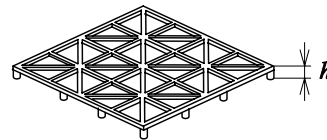
- b) **Height of unit** For the adjustable pedestal type panel in **a)**, measure in the same way the height of the unit (h) and thickness of the panel (t)¹⁾ when the unit is set to the standard floor height as shown in Figure 2. For the floor placement type panel in **b)**, measure the height (h) at one corner of the panel using the steel tape measure specified in **5.3 b)**.

The surface finishing materials, if applied in the manufacturing process, shall be included in the measurement.

Note ¹⁾ The thickness of a panel (t) means the thickness of representative portion of the panel.



a) Adjustable pedestal type



b) Floor placement type

Figure 2 Measurement of height of unit (example)

6.1.2 Record of results

The test record shall include the following information.

- Length of panel (l) (to the nearest 0.5 mm)
- Height of unit (h) and thickness of panel (t) in the case of adjustable pedestal type panel (to the nearest 0.5 mm)
- Whether the surface finishing material is applied or not, and name of the material, if applied

6.2 Static load test

6.2.1 Test apparatus

The test apparatus shall be as follows (see Figure 3).

- Loading apparatus** A hydraulic jack, compression testing machine, etc.
- Indenter** A steel cylinder of which the bottom shape is $50 \text{ mm} \pm 0.2 \text{ mm}$ in diameter and 10 mm to 50 mm in thickness.
- Spherical seat**, set on the upper indenter to eliminate the influence of biasing load.

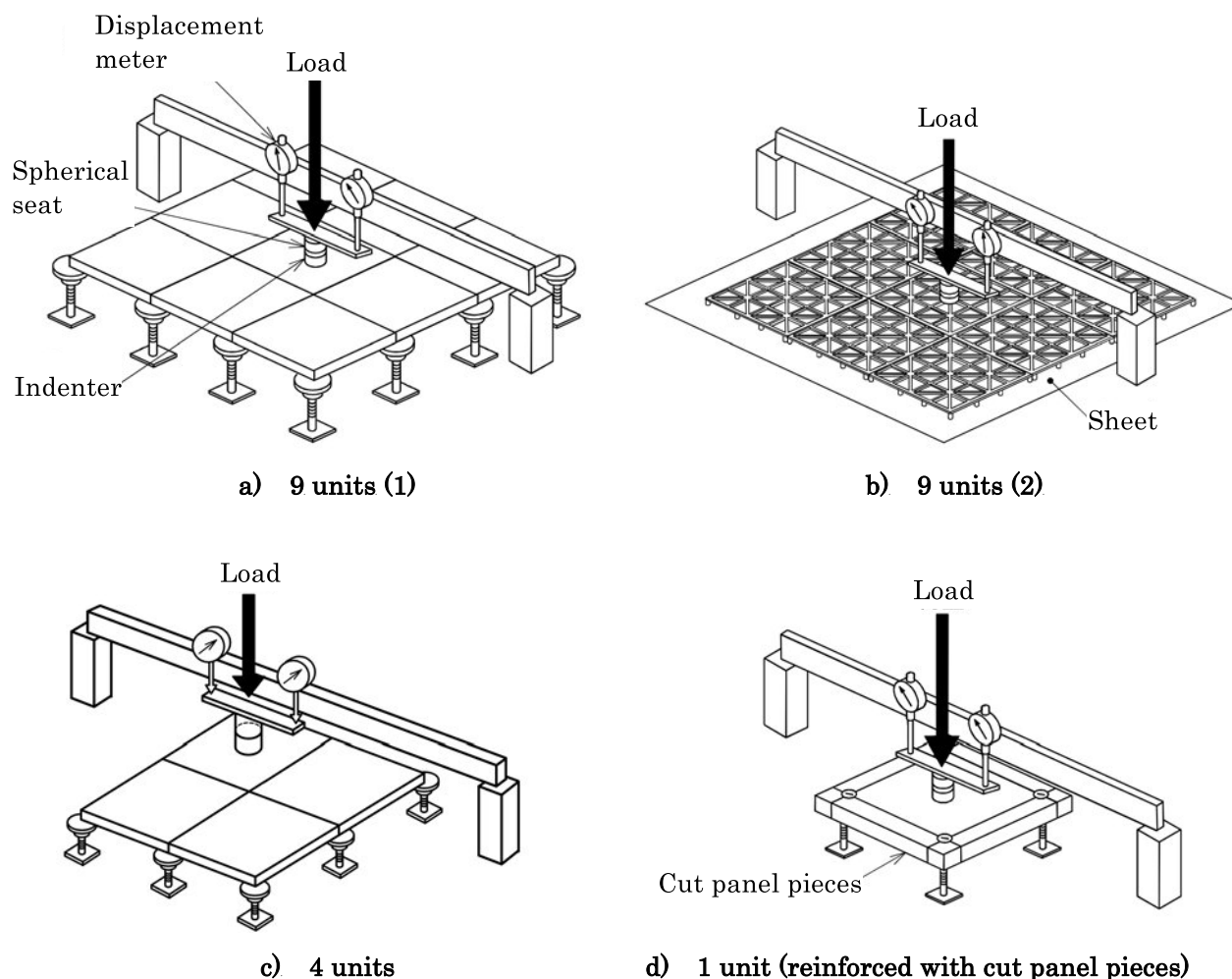


Figure 3 Static load test (example)

6.2.2 Test procedure

The static load test shall be performed in accordance with the following procedures.

The test shall be performed either with 9 units laid in three vertical and lateral rows as shown in Figure 3 a) and Figure 3 b), or with less than 9 units as shown in Figure 3 c) and Figure 3 d). The test specimen may be reinforced around the edge with the same cut pieces as that under test as shown in Figure 3 d).

- a) **Setting of test specimen** Set (fix) the test specimen in accordance with the product specifications (in the same condition as actual service). Pedestals may be mechanically fixed when the degree of deformation and damage by mechanical fixing e.g. bolting is equal to or greater than that by adhesive fixing.

In addition, set the test specimen to a sufficiently rigid component without applying the surface finishing material.

- b) **Loading points** Loading shall be made at two weakest portions of the unit, i.e. one with the greatest deformation and the other with the greatest residual deformation resulting from applying the specified load.

If the two portions coincide, loading may be made at one point.

- c) **Establishment of zero point** The deformation at the loading point on which a load of 200 N is applied for 1 min through the spherical seat specified in **6.2.1 c)** and the indenter specified in **6.2.1 b)** shall be defined as the zero point of deformation.
- d) **Measurement of deformation volume** Using the loading apparatus specified in **6.2.1 a)**, apply load at the loading speed of 2 000 N/min or at the displacement rate of 5 mm/min, confirm the specified load using the load meter specified in **5.3 e)**, and measure the deformation volume under load by means of a displacement meter specified in **5.3 f)**. Then set back the load to 200 N and after holding under this load for 1 min, measure the deformation volume and take this value as the residual deformation. The specified load shall be as agreed between the interested parties. Examples of the specified load and applicable use conditions are shown in Table 3.

The load which works on the top end of the indenter shall be taken as the load and the amount of descent of the indenter shall be taken as the deformation.

Table 3 Examples of the specified load and applicable use conditions

Specified load	Applicable use condition
2 000 N	Setting of relatively light equipment, book shelf, etc. is assumed.
3 000 N	Setting of common equipment, book shelf, etc. is assumed.
4 000 N	Setting of relatively heavy equipment, book shelf, etc. is assumed.
5 000 N	Setting of important equipment such as a host computer is assumed.

6.2.3 Record of test results

The test record shall include the following information.

- a) Value of the specified load
- b) Number of units in test specimen, setting condition of test specimen and loading points. The loading points shall be shown diagrammatically.
- c) Height of the unit (to the nearest 0.5 mm)
- d) Deformation volume under specified load (to the nearest 0.1 mm)
- e) Residual deformation volume (to the nearest 0.1 mm)

6.3 Impact test

6.3.1 Test apparatus

The test apparatus shall be as follows (see Figure 4 and Figure 5).

- a) **Impactor (sandbag for impact test)** A sandbag for impact test (hereafter referred to as sandbag) shall be a cylindrical canvas bag, $20 \text{ kg}^{+0.1}_0 \text{ kg}$ in total mass when stuffed with sand, about 190 mm in diameter of the bottom face and about 600 mm in height, with the top closed. An example of the sandbag is shown in Figure 4. The sand to be stuffed in the bag shall have a particle size distribution conforming to that of standard sand specified in **JIS R 5201**. Prior to use, lay the sandbag with its