



JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

☞ **JIS A 5423** : 2004
(FECMI/JSA)

**Decorated cement shingles for
dwelling roofs**

ICS 91.060.20; 91.100.10

Reference number : **JIS A 5423 : 2004 (E)**

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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 Federation of Construction Material Industries, Japan (FECMI)/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 5423 : 2003** is replaced with this Standard.

In the revision of this Standard, it is decided not to use the fibre reinforced cement boards containing asbestos, corresponding to the prohibition of using the fibre reinforced cement boards containing asbestos, by the enforcement of “the government ordinance to amend a part of enforcement order of Industrial Safety and Health Law” October 1, 2004.

This Standard has been made based on **ISO 9125 : 1990** *Fibre-cement slates and fittings* and **ISO 9383 : 1995** *Products in fibre-reinforced cement—Short corrugated or asymmetrical section sheets and fittings for roofing* for the purposes of making it easier to compare this Standard with International Standards; to prepare Japanese Industrial Standard conforming with International Standards; and to propose a draft of an International Standard which is based on Japanese Industrial Standard.

Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

Date of Establishment: 1976-05-01

Date of Revision: 2004-10-01

Date of Public Notice in Official Gazette: 2004-10-01

Investigated by: Japanese Industrial Standards Committee
Standards Board
Technical Committee on Architecture

JIS A 5423:2004, First English edition published in 2005-05

Translated and published by: Japanese Standards Association
4-1-24, Akasaka, Minato-ku, Tokyo, 107-8440 JAPAN

In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

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Printed in Japan

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Decorated cement shingles for dwelling roofs

Introduction This Japanese Industrial Standard has been prepared based on **ISO 9125** *Fibre-cement slates and fittings* published in 1990 as the first edition and **ISO 9383** *Products in fibre-reinforced cement—Short corrugated or asymmetrical section sheets and fittings for roofing* published in 1995 as the first edition with some modifications of the technical contents.

Portions sidelined or underlined with dots are the modified items of original International Standards. A list of modification with the explanations is given in annex 1 (informative).

1 Scope This Standard specifies decorated board⁽³⁾ (hereafter referred to as “cement shingles for roofs”) shingled on the foundation of sheathing roof board⁽²⁾, press formed, used mainly for dwelling roofs, using cement, silicate material, fibre material except for asbestos board⁽¹⁾, admixture and so on as main material.

Notes (1) Refers to organic fibre such as pulp, chemical fibre and so on.

(2) Refers to structural plywood specified in Japanese Agricultural Standards, those the thickness is 9 mm or over or that has the equivalent yield strength with this, and be able to fix cement shingles for roofs with nail, screw and so on.

(3) Refers to those the whole part or the surface part of board is coloured with mixing colouring agent with raw material, and those material to be printed, be painted, be splayed or be enameled on its surface, and those material corrugation and so on to be formed.

Remarks : The International Standards corresponding to this Standard are as follows.

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standards and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21**.

ISO 9125 : 1990 *Fibre-cement slates and fittings* (MOD)

ISO 9383 : 1995 *Products in fibre-reinforced cement—Short corrugated or asymmetrical section sheets and fittings for roofing* (MOD)

2 Normative references The following standards contain provisions which, through reference in this Standard, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

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 1415 *Methods of exposure to laboratory light sources for polymeric material of buildings*
- JIS A 1435 *Test methods for frost resistance of exterior wall materials of buildings (Freezing and thawing method)*
- JIS B 7512 *Steel tape measures*
- JIS B 7516 *Metal rules*
- JIS K 1464 *Desiccants, activated for industrial dehumidification*
- JIS K 8123 *Calcium chloride*
- JIS R 6111 *Artificial abrasives*

3 Classification The classification of cement shingles for roofs shall be as shown in table 1 according to those shapes.

Table 1 Classification by shape

Classification	Shape
Flat cement shingles for roofs	Shape shall be flat. And the plate on which small indent marks exist is included.
Corrugated cement shingles for roofs	Shape shall be round wave shape or ribbed wave shape.

4 Quality

4.1 Appearance The appearance of cement shingles for roofs shall be in accordance with table 2.

Table 2 Appearance of cement shingles for roofs

Classification of defaults	Level of acceptance
Cracks or penetrating cracks.	Be unacceptable.
Chipping, twist and blending of foreign matter outside of the purpose of decoration, and cleft, chipping and peeling off ⁽⁴⁾ of decoration layer outside of the purpose of decoration.	Shall not be detrimental to use.
Unevenness, dents, marking, luster, uneven colour tone, stain, abrasion and scratch outside of the purpose of decoration.	Shall not be distinguished when watched ⁽⁵⁾ from the distance of 2 m.

Notes ⁽⁴⁾ Includes falling off.

⁽⁵⁾ The brightness of watching shall avoid direct sunlight, and be the daylight from the north window or equivalent lighting to this at least 540 lx.

4.2 Characteristics of cement shingles for roofs The characteristics of cement shingles for roofs shall satisfy the specification of table 3 when tested by clause 6.

Table 3 Characteristics

Classifi- cation	Break- ing load	Water absorp- tion	Warp- ing by water absorp- tion	Water perme- ability	Impact resist- ance	Abra- sion resist- ance	Weather- ability	Freezing and thawing resist- ance	Incom- bustibility
	N	%	mm						
Flat cement shingles for roofs	245 or over ⁽⁶⁾	28 or under	4 or under	No notice- able wet- ting nor drain on the rear surface.	No sepa- ration of decora- tion layer, bulging up, nor cleft of rear surface.	No ex- posure of sub- strate.	No cracks or sepa- ration of decoration layer, nor noticeable discolora- tion or colour fading.	No notice- able change on the appear- ance nor peering off between the layers.	First grade of incombustibility.
Corru- gated cement shingles for roofs	490 or over		—						

Note ⁽⁶⁾ In the case when the specimen's size as specified in table 5 cannot be taken as a specimen of flat cement shingles for roofs, choose the shorter span length than that of specimen as close as possible to the dimension specified in table 5, and obtain the breaking load by loading at the centre of both supporting points.

Bending moment for width of 1 cm of specimen shall be 61 N·cm or over.

Information : If there is orientation of fibre because of producing method, breaking load loaded parallel to the direction of fibre is usually about 70 % of that loaded rectangular to the direction of fibre.

5 Dimension and tolerances

5.1 Dimension Typical dimension of cement shingles for roofs shall be as shown in table 4. This rule, however, does not apply under the agreement between the purchaser and the manufacturer.

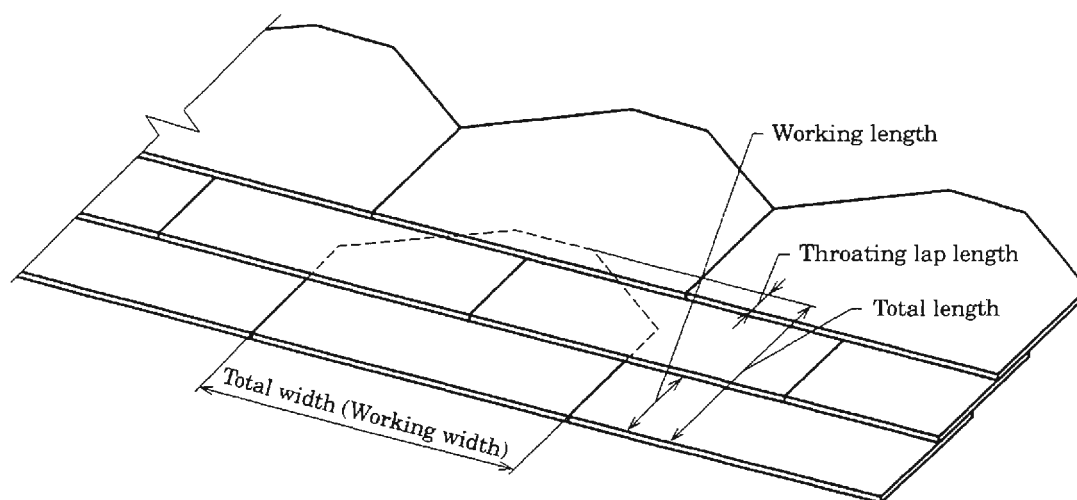
General examples of execution are shown in figures 1 and 2.

Table 4 Dimension

Unit: mm

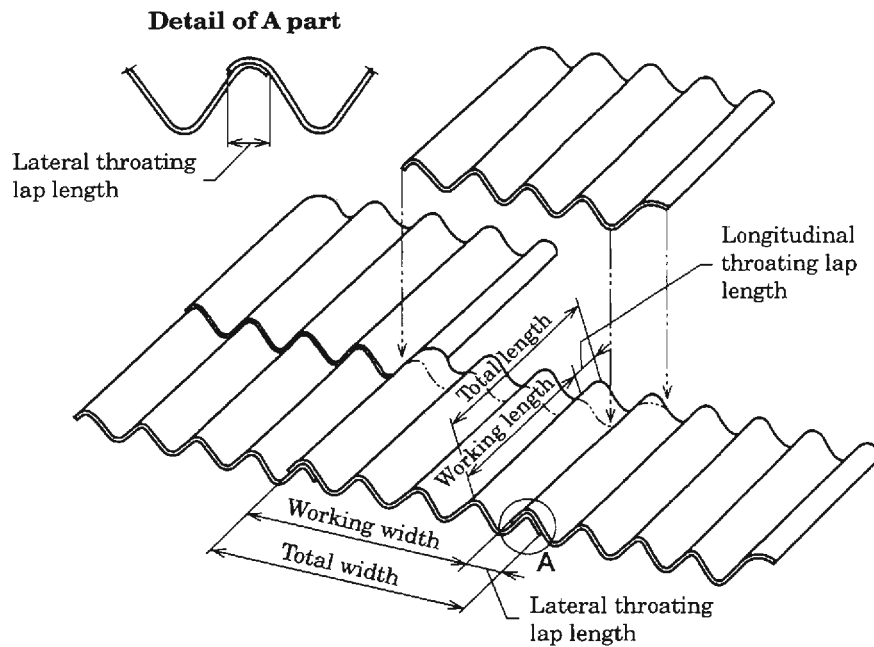
Classifica- tion	Total length	Total width (for each working width)					Thick- ness	Dimension of execution		
		600	606	900	910	1 050		Work- ing length	Throating lap length	
									Longitudinal	Lateral
Flat cement shingles for roofs	350	—	606	900	—	—	4.5 to 6.5	150	50 min.	—
	414	600	606	—	910	—		182		
	500	—	606	—	—	—		225		
Corrugated cement shingles for roofs	550	—	—	950	—	—		450	100 min.	50 min.
	555	—	—	—	960	—		455		
	600	—	—	950	—	1 100		500		

Remarks : Generally the side surface must be almost rectangular to the surface. This does not apply when the side surface is formed with special purpose.



- Remarks 1 For cement shingles for roofs, two or more nail holes shall be settled to hold to the substrate material, generally.
- 2 Suitable throating may be installed to lap part or bottom waterspout.

Figure 1 Flat cement shingles for roofs (example)



- Remarks 1 For cement shingles for roofs, two or more nail holes shall be settled to hold to the substrate material, generally.
- 2 Suitable throating may be installed to lap part or bottom waterspout.
- 3 Total width, working width and lateral throating lap length are as shown in projection data.

Figure 2 Corrugated cement shingles for roofs (example)

5.2 Tolerances of dimension Tolerances of dimension shall be as table 5.

Table 5 Tolerances of dimension

Classification	Tolerance to indicated value		
	Thickness %	Total length mm	Total width mm
Flat cement shingles for roofs	± 10	± 3	± 3
Corrugated cement shingles for roofs	± 10	± 10	± 5

6 Tests

6.1 Test piece The test piece shall be taken from the central part excluding the surrounding part, and the dimension and the wet condition at the testing time of the test piece shall be as table 6.

Table 6 Dimension and the wet condition at the testing time of the test piece

Unit: mm

Name		Dimension of test piece [length ⁽⁷⁾ × width]		Wet condition at the testing time
		Flat cement shingles for roofs	Corrugated cement shingles for roofs	
Dimension measuring test piece		Whole piece		Air dried condition ⁽⁸⁾
Breaking load test piece		300 × 250	550 × 400	
Water absorption test piece		100 × 100		According to 6.4.
Warping by water absorption test piece		320 × 150	—	Air dried condition ⁽⁸⁾
Water permeability test piece		200 × 200		
Impact resistance test piece		500 × 400 ⁽⁹⁾		
Abrasion resistance test piece		50 × 50		
Weatherability test piece		150 × 50		
Freezing and thawing resistance test piece		300 × 250		According to 6.10.
Incombustibility test piece	Substrate material	Height	50 ± 3	According to JIS A 1321.
		Other two sides	40 ± 2	
	Surface	220 × 220		

Notes ⁽⁷⁾ If there is orientation of fibre of flat cement shingles for roofs, the test specimen shall be taken so that the run of texture be parallel to the longitudinal direction.

⁽⁸⁾ The condition to be left the test piece as it in the well-ventilated chamber for seven days or more, or the equivalent condition.

⁽⁹⁾ When the specified dimension of test piece for flat cement shingles for roofs cannot be obtained, the test piece shall be as the whole products.

6.2 Measurement of dimension

6.2.1 Flat cement shingles for roofs The measurement of dimension of flat cement shingles for roofs shall be as follows:

- Thickness** Measure the two points within the range of flat measuring diameter of 6 mm or over of circular, 20 mm or more inside of the edge (lateral) of the specimen, with a micrometer reading to 0.05 mm or finer. The arithmetic mean of two values shall be the thickness of the test specimen. If there are unevenness marking for the purpose of decoration, avoiding the significant part, the convex part shall be measured.
- Total length and total width** The test specimen shall be placed on the flat plate and measure the total length and the total width at nearly the centre of the test specimen for one point, using a convex rule of grade 1, scale value 1 mm specified in JIS B 7512 or a scale of grade 1, scale value 1 mm specified in JIS B 7516.