

JIS

JAPANESE INDUSTRIAL STANDARD

Leather shoes

Ⓔ JIS S 5050—1992

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In the event of any doubt arising,
the original Standard in Japanese is to be final authority.



1. Scope

This Japanese Industrial Standard specifies the leather shoes for ordinary walking manufactured using leather⁽¹⁾ for uppers, hereinafter referred to as the "leather shoes".

Note (1) The material referred to as "leather" in this standard is the tanned skins of animals.

Remarks: Applicable standards to this Standard are shown as follows.

JIS K 6547-Testing Method for Color Fastness to Rubbing of Leather

JIS K 6548-Testing Method for Grain Crack of Leather (by Ball-Bursting Tester)

JIS K 6549-Testing Method for Water Vapour Permeability of Leather

JIS K 6550-Testing Methods for Leather

JIS K 6551-Leather for Shoes

JIS L 2101-Cotton Sewing Thread

JIS L 2310-Silk Sewing Thread

JIS L 2403-Flax and Ramie Sewing Thread

JIS S 5007-Rubber Soles for Shoe-Making

JIS S 5037-Sizing Systems for Shoes

2. Names of leather shoe parts

The names of leather shoe parts shall be in accordance with Appendix Table 1 and Appendix Figs. 1 to 8. However, the constructions shown of these figures provide tentative examples.

3. Classification

Leather shoes shall be classified as follows according to the users and manufacturing methods of leather shoes.

- (1) Classification by users Leather shoes shall be classified into men's shoes, women's shoes and children's shoes in accordance with JIS S 5037.
- (2) Classification by manufacturing methods The classification by manufacturing methods shall be as follows:

- (a) Leather shoes by Goodyear welt process The pulled-on periphery of the upper and the welt are sewn onto the rib made in the insole, using a hemming sewing machine. Then the outsole is placed on the welt and they are lockstitched along periphery, using a plain seam sewing machine. This process is hereinafter referred to as the "Process G".
- (b) Leather shoes by Silhouwelt process The pulled-on periphery of the upper and the welt are sewn onto the rib made in the insole, using a hemming sewing machine. Then adhesives are applied to the welt and the periphery of the outsole, and they are joined by a press. This process is hereinafter referred to as the "Process S".
- (c) Leather shoes by stitch-down process Pull the upper periphery outward and sew by lock stitch-down the upper periphery and the sole periphery using a plain seam sewing machine. This process is hereinafter referred to as the "Process Sd".
- (d) Leather shoes by Mckay process The outsole is provisionally attached to the pulled upper. The last is extracted thereafter, and the upper and the outsole are lockstitched in the insole, using a sole sewing machine. This process is hereinafter referred to as the "Process M".
- (e) Leather shoes by cement process The periphery of the upper is pulled onto the insole. Then adhesives are applied to the periphery of the upper and the outsole and they are joined by a press. This process is hereinafter referred to as the "Process C".
- (f) Leather shoes by californian process Join by stitching the upper periphery, the insole periphery and the platform cover, insert the last, pull on around it the platform cover and apply adhesives on the platform cover, and join soles by a clamp device. This process is hereinafter referred to as the "Process Ca".
- (g) Leather shoes of direct vulcanizing process The periphery of the upper is pulled on the insole and then this assembly is set on a vulcanizing press. Then unvulcanized rubber is inserted and the shoe bottom⁽²⁾ is attached by vulcanizing pressing, while moulding under pressure at high temperatures. This process is hereinafter referred to as the "Process V".

Note (2) The shoe bottom includes the outsole and the heel.

- (h) Leather shoes by injection moulding process The periphery of the upper is pulled on the insole and then this assembly is set in an injection moulding machine. Then unvulcanized rubber or synthetic resin is injected into the metal mould and the shoe bottom⁽²⁾ is moulded. This process is hereinafter referred to as the "Process I".

4. Quality

4.1 General items Leather shoes manufactured by various processes shall be made of the materials specified in 6. as the main materials and shall be well-balanced in shape and robust. They shall also conform to the following items:

- (1) Closed seams shall be reinforced.
- (2) In the Sd process, the periphery of the upper shall be in perfect contact with the periphery of the bottom⁽²⁾ at the end of the drawing.
- (3) The margin to draw up to in the periphery of the shoe upper shall be 10 mm or more for Processes M, C and Ca, and 3 mm or more for Processes V and I.
- (4) The hidden sewing shall be performed with the threads properly tightened and without causing open seams.
- (5) Plain seam sewing shall be performed in such a way that the threads are properly tightened and there is no float in the upper or lower thread.
- (6) The sole sewing threads by Process M shall not be out of the insole edge and shoe upper periphery.
- (7) The fitting part of heel shall have no gap.
- (8) Shoes shall be free from flaws, spots, stains and other serious defects that may detract from external appearances.

4.2 Performance

4.2.1 Outsole peeling strength The outsole peeling strength shall be tested in accordance with 8., and the results shall conform to the following requirements:

- (1) The peeling strength of the outsoles by Processes S, C and Ca shall be 147 N/25 mm or more for men's shoes and 98.1 N/25 mm or more for women's and children's shoes. However, when a tear claw with a length of other than 25 mm is used because of the toe shape, the peeling strength may be 59 N/cm or more for men's shoes and 39 N/cm or more for women's and children's shoes.
- (2) The peeling strength of the outsoles by Processes V and I shall be 147 N/25 mm or more. However, when a tear claw with a length of other than 25 mm is used because of the toe shape, the peeling strength may be 59 N/cm or more.

4.2.2 Number of stitches The number of stitches⁽³⁾ shall conform to the following items:

Note ⁽³⁾ The number of stitches means the number of stitches per 30 mm and is indicated as so "o stitches".

- (1) The number of stitches for principal portions on the shoe upper shall conform to Table 1.

Table 1. Number of stitches

Class of thread		Number of stitches (stitches)
Silk thread, machine sewing thread or synthetic fiber	No. 40	17 to 22
	No. 30	15 to 20
	No. 20	12 to 18
	No. 10	8 to 14
	No. 8	7 to 12
Ramie, linen or synthetic fiber	20/3	6 to 10
	20/6	6 to 10
	16/5	5 to 9

(2) The number of stitches (for hidden sewing, plain seam sewing and sole sewing shall conform to Table 2.

Table 2. Number of stitches according to sewing

Classes of sewing	Classes of thread	Class of outsole	Number of stitches (stitches)
Hidden sewing	16/6	—	3 to 5
	16/8		
	20/9		
Plain seam sewing	16/4	Leather	7 to 13
	16/5		
	16/6	Rubber or synthetic resin	5 to 9
	20/6		
	20/7		
Sole sewing	16/4	—	4 to 7
	16/5		
	16/6		
	20/6		
	20/7		

5. Size

The size shall conform to 3. in JIS S 5037.

6. Materials

6.1 Shoe upper materials The shoe upper materials shall be leather and conform to the following items:

- (1) The thickness of shoe upper materials shall conform to Table 3.

Table 3. Thickness of shoe upper materials

Unit: mm

Classes of leather		Men's shoes	Women's shoes	Children's shoes
Cattle	Calf	0.8 min.	0.7 min.	0.7 min.
	Kip	0.9 min.	0.8 min.	0.7 min.
	Cow or steer	1.3 min.	1.1 min.	1.0 min.
Horse	Cordovan	1.5 min.	—	—
	Others	1.2 min.	1.0 min.	1.0 min.
Pig		1.0 min.	1.0 min.	1.0 min.
Sheep (kid, goat)		0.7 min.	0.7 min.	0.7 min.
Others		0.7 min.	0.7 min.	—

- (2) The shoe upper materials shall be tested for the grain cracking and abnormalities in texture in accordance with 6. in JIS K 6548, and the results shall conform to Table 4.

Table 4. Quality of shoe upper materials

Classes	Load N	Height mm
Men's shoes	147 min.	6.0 min.
Women's shoes	117 min.	6.0 min.
Children's shoes	117 min.	6.0 min.

- (3) Water permeability of shoe upper materials shall be tested in accordance with JIS K 6549, and shall be 3.0 mg/cm² or more per 1 h. However, where the construction of a particular kind of shoes does not call for water permeability the above test may be omitted.

- (4) Colour fastness to rubbing of shoe upper leather shall be tested in accordance with JIS K 6547 and the results shall be Grade 2 or more of the grey scale for assessing staining. The white cloth to be used in this test shall be white cotton cloth for friction.
- (5) The chromium content of shoe upper tanned leather made by Process V shall be tested in accordance with 6.9 in JIS K 6550 and shall be within a range of 3.0 to 5.5 %.

6.2 Outsole material The outsole materials shall conform to the following items:

- (1) The thickness of the outsole materials shall be represented by the thinnest stamping area. The material shall be tested in accordance with JIS K 6550 or 4.1 in JIS S 5007 and the results shall conform to Table 5.

Table 5. Thickness of outsole material

Unit: mm

Class		Leather	Materials other than leather	
			Decorated	Not decorated
Men's shoes	Process G	4.0 min.	3.5 min.	4.0 min.
	Other than Process G	3.5 min.	3.0 min.	3.5 min.
Women's shoes	Process G	3.5 min.	3.0 min.	3.5 min.
	Other than Process G	3.0 min.	2.5 min.	2.5 min.
Children's shoes	Process G	3.0 min.	3.0 min.	3.0 min.
	Other than Process G	3.0 min.	2.5 min.	2.5 min.

- (2) When leather is used for the outsole, tensile strength, elongation and grain cracking shall conform to JIS K 6551.
- (3) When the outsole is rubber or synthetic resin, the material shall be tested in accordance with 4.2 to 4.5 in JIS S 5007, and conform to Table 6. However, the rubber test made by Process V shall be conducted on sample material vulcanized in solid state.

Tests for foamed polyurethane shall be performed on a plated sample 4.0 to 7.0 mm in thickness with skin layer made of the same material to be used for the outsole.