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JAPANESE INDUSTRIAL STANDARD

**Test methods for colour
fastness to dry cleaning**

JIS L 0860—1996

Translated and Published

by

Japanese Standards Association

Printed in Japan

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Test methods for colour fastness
to dry cleaning

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1. Scope This Japanese Industrial Standard specifies the test methods for colour fastness to dry cleaning of dyed textiles. The test method specified in this Standard, however, does not apply to the determination of colour fastness to the dry cleaning in a wide sense including stain removal, steam pressing, etc.

Remarks 1. The following standards are cited in this Standard:

JIS G 4303 Stainless steel bars

JIS K 1521 Perchloroethylene

JIS L 0801 General principles of test methods for colour fastness

JIS L 0803 Standard adjacent fabrics for staining of colour fastness test

JIS L 0804 Grey scale for assessing change in colour

JIS L 0805 Grey scale for assessing staining

2. The following standard is the corresponding International Standard to this Standard:

ISO 105-D01: 1993 Textiles — Tests for colour fastness — Part D01: Colour fastness to dry cleaning

2. Principle The composite specimen, or specimen together with the stainless steel balls or the stainless steel disk, is treated in the test solution and, after drying the colour fastness is assessed by comparing the colour change of the specimen with the grey scale for assessing change in colour and the staining of the standard adjacent fabric or the test solution with the grey scale for assessing staining.

3. Classification of test methods The test methods shall be classified as shown in Table 1 according to the test machines and tools, materials and methods of assessment to be used.

Table 1. Classification of test methods

Classification	Main testing machine and tools	Object to be assessed
Method A	Washing tester and stainless steel ball	Change in colour of specimen and staining of standard adjacent fabric
Method B	Washing tester and stainless steel disk	Change in colour of specimen and staining of test solution

4. Apparatus and materials The following apparatus and materials shall be used:

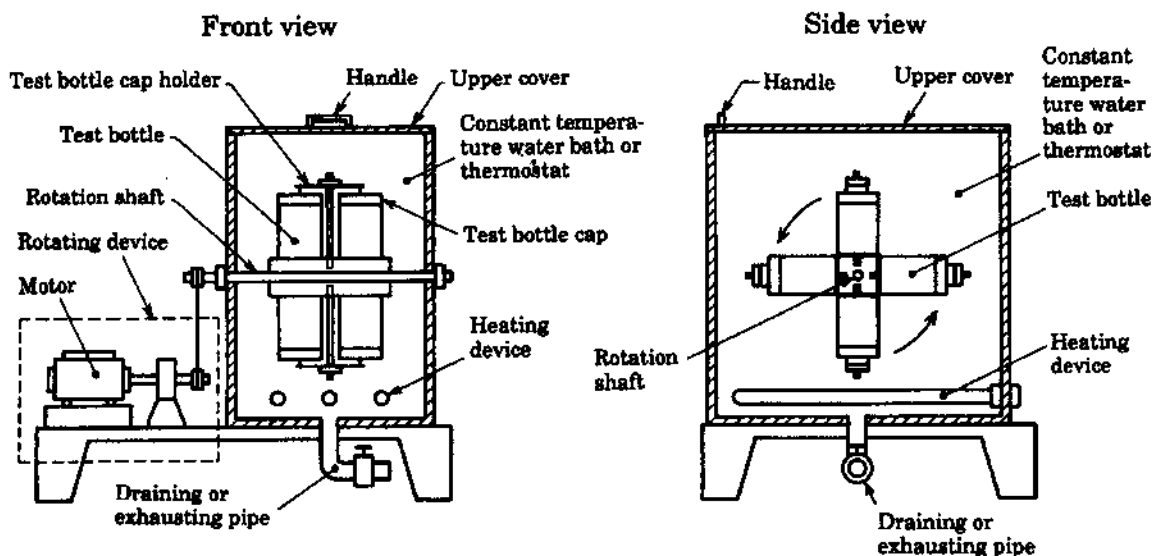
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- (1) **Washing tester** The washing tester shall consist of the test bottle in which composite specimen, test solution and stainless steel balls are put, the device to rotate the test bottle, and the constant temperature water bath or thermostat for keeping the test solution in the test bottle at the constant temperature necessary for the test, and shall conform to the following specification.

An example of apparatus is shown in Fig. 1.

- (a) **Test bottle** Cylindrical bottle of 550 ± 50 ml in capacity (75 ± 5 mm in inner diameter), made of glass or stainless steel, of a tightly closed type withstanding rotation.
- (b) **Rotating device** The device shall consist of a motor, a rotation shaft and test bottle holders installed on the rotation shaft radially, make the test bottle be mounted in such a state that the center line of the holding shaft of the test bottle holder and the center line of test bottle fall on the same line, and capable of revolving the test bottles at 40 ± 2 rotations per minute in the constant temperature water bath or thermostat.
- The distance from the center of rotation shaft to the bottom of the test bottle shall be 45 ± 10 mm.
- (c) **Constant temperature water bath or thermostat** This shall be equipped with a heating device capable of keeping the test solution in the revolving test bottle at specified temperature $\pm 2^\circ\text{C}$ and have the attachment for draining or exhausting.
- (d) **Stainless steel ball** Ball of approximately 6 mm in diameter made of SUS 304 specified in JIS G 4303.

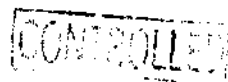
Fig. 1. An example of washing tester



- (2) **Stainless steel disk** The disk of 30 ± 2 mm in diameter, 3 ± 0.5 mm in thickness and 20 ± 2 g in mass.

- (3) Dryer The same as specified in 4. (3) of JIS L 0801 and equipped with forced exhaust device.
- (4) Standard adjacent fabric The union cloth specified in JIS L 0803.
- (5) Cotton cloth The undyed and unfinished twill fabric of 270 ± 70 g/m² in mass.
- (6) Grey scale for assessing change in colour As specified in JIS L 0804.
- (7) Grey scale for assessing staining As specified in JIS L 0805.
- (8) Perchloroethylene As specified in JIS K 1521.
- (9) Anionic surface active agent Sodium salt di 2-ethylhexyl sulfosuccinate.
- (10) Nonionic surface active agent Polyoxyethylene nonylphenylether (EO: 8) of HLB12, water content 1% or less and cloud point (1% aqueous solution) 15°C to 25°C.
- (11) Test tube Of approximately 25 mm in diameter.
5. Preparation of specimen 5.1 of JIS L 0801 applies.
6. Preparation of composite specimen 5.2 of JIS L 0801 applies to the preparation of the composite specimen used in the Method A. However, one sheet of the standard adjacent fabric given in 4. (4) shall be used by sewing it on one side of the specimen to make the composite specimen.
7. Preparation of test solution
- 7.1 Method A Dissolve 5 g of anionic surface active agent and 5 g of nonionic surface active agent in 1 l of perchloroethylene and, after adding 1 ml of water ⁽¹⁾ to it, stir up sufficiently to make it uniform and transparent solution.
- Note ⁽¹⁾ The water specified in 4. (10) of JIS L 0801 shall be used.
- 7.2 Method B Use perchloroethylene only.
8. Procedure
- 8.1 Method A Place 100 ml of the test solution prepared in accordance with 7. and 20 stainless steel balls in the test bottle of the washing tester and, after pre-heating the test bottle to raise the temperature of the test solution up to $40 \pm 2^\circ\text{C}$, put the composite specimen in it and close it tightly and mount it in the washing tester to operate it for 30 min at $40 \pm 2^\circ\text{C}$. Next, stop operating and take out the composite specimen from the test bottle. After rinsing lightly with 100 ml of perchloroethylene, remove surplus solution by placing the composite specimen between filter papers or dry white cotton cloths and dry the specimen and the standard adjacent fabric which are sewn together in the dryer at 60°C to 65°C . Exhaustion shall be made forcedly toward out of the door.

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8.2 Method B Prepare two cotton cloths of the size of 100 mm × 100 mm to make one bag by sewing three sides of them. Put the specimen and the 12 sheets of stainless steel disk in this bag and close the mouth of bag in a suitable way. Place the bag in which the specimen and the stainless steel disks were put in the test bottle and add 200 ml of perchloroethylene of the temperature of $30 \pm 2^\circ\text{C}$ to treat it in the specified apparatus for 30 min at $30 \pm 2^\circ\text{C}$. Next, pull the specimen out of the bag taken out of test container to remove surplus liquid by putting it between filter papers or dry white cotton cloths and dry it in the dryer at 60°C to 65°C . Finally, filtrate the solvent remaining in the container by filter paper or the like, put this liquid in a test tube put in front of white card and compare it with perchloroethylene not used yet to assess the degree of colouring using the grey scale for assessing staining. Exhaustion shall be made forcedly toward out of the door.

9. Assessment

9.1 Method A To the assessment of change in colour of specimen and staining of standard adjacent fabric, 9. of JIS L 0801 applies.

9.2 Method B To the test result, 9. of JIS L 0801 applies.

The degree of coloring of test solution after the test is assessed by the method written in 8.2.

10. Test record The test results shall be recorded as shown below in accordance with 10. of JIS L 0801. For staining, the grade of the most remarkably stained part and the name of its textile shall be recorded.

When necessary, the grade of required textile and the name of its textile may be recorded.

Example 1. Dry cleaning test Method A, change in colour grade 4, staining grade 3 - 4 (cotton)

Example 2. Dry cleaning test Method A, change in colour grade 4, staining grade 3 - 4 (silk), grade 4 (nylon), grade 3 (silk)

Example 3. Dry cleaning test Method B, change in colour grade 4, staining on test solution grade 3 - 4