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**General principles of testing methods for
colour fastness**

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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 Suga Weathering Technology Foundation (SWTF) / 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 L 0801:2004** is replaced with this Standard.

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General principles of testing methods for colour fastness

Introduction

This Japanese Industrial Standard has been prepared based on the sixth edition of **ISO 105-A01** published in 2010 with some modifications of the technical contents (standard adjacent fabrics, specimen, moisture conditioning of standard adjacent fabrics, conditions of observation and illumination).

The portions given sidelines or dotted underlines are the matters in which the contents of the original International Standard have been modified. A list of modifications with the explanations is given in Annex JA.

1 Scope

This Standard specifies the general and common requirements for testing the colour fastness of textiles and dyes.

NOTE : The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows.

ISO 105-A01 : 2010 *Textiles — Tests for colour fastness — Part A01 : General principles of testing* (MOD)

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21-1**.

2 Normative references

The following standards contain provisions which, 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 K 0557 *Water used for industrial water and wastewater analysis*

JIS L 0105 *General principles of physical testing methods for textiles*

NOTE : Corresponding International Standard : **ISO 139** *Textiles — Standard atmospheres for conditioning and testing* (MOD)

JIS L 0204-1 *Glossary of terms used in fiber — Part 1 : Natural fibres*

JIS L 0204-2 *Glossary of terms used in fibre — Part 2 : Man-made fibres*

JIS L 0204-3 *Glossary of terms used in fiber — Part 3 : Materials except natural and chemical fiber*

JIS L 0205 *Glossary of terms used in yarn*

JIS L 0206 *Glossary of terms used in textile industry (woven fabrics)*

JIS L 0207 Glossary of terms used in textile industry (Dyeing and finishing)

JIS L 0208 Glossary of terms used in textile industry — Testing

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

NOTE : Corresponding International Standard : **ISO 105-F10 : 1989 Textiles — Tests for colour fastness — Part F10 : Specification for adjacent fabric : Multifibre (MOD)**

JIS L 0804 *Grey scale for assessing change in colour*

NOTE : Corresponding International Standard : **ISO 105-A02 Textiles — Tests for colour fastness — Part A02 : Grey scale for assessing change in colour (MOD)**

JIS L 0805 *Grey scale for assessing staining*

NOTE : Corresponding International Standard : **ISO 105-A03 Textiles — Tests for colour fastness — Part A03 : Grey scale for assessing staining (MOD)**

JIS L 0808 Standard depths of shade

JIS L 0809 Instrumental determination of colour fastness — Change in colour and staining

JIS Z 8720 Standard illuminants and sources for colorimetry

3 Terms and definitions

For the purpose of this Standard, the terms and definitions given in **JIS L 0204-1**, **JIS L 0204-2**, **JIS L 0204-3**, **JIS L 0205**, **JIS L 0206**, **JIS L 0207** and **JIS L 0208** and the following apply.

3.1 textiles

raw materials such as cotton, silk, wool, chemical fibre, intermediate products such as yarns, woven fabrics, knitted fabrics, felts, and finished products such as clothes, bed-clothes, floor coverings, interior ornaments

3.2 specimen

sample to be used for testing, prepared in the specified shape and size

3.3 composite specimen

specimen made by sewing together one or two standard adjacent fabrics selected for assessment of stain onto the specimen

3.4 test-control specimen

specimen of known extent of colour change and/or staining during the test, used together with the test specimen to ensure that the test is conducted correctly

3.5 standard adjacent fabric

undyed cloth used for the test assessing staining

NOTE : There are two kinds of standard adjacent fabrics, namely, single-fibre

adjacent fabrics and multifibre adjacent fabrics (see JIS L 0803).

4 General matters

The general matters shall be as follows.

- a) The colour fastness means the resistance of colour of textiles to various actions during manufacturing process or subsequent use and storage thereof. The individual standards of the testing methods for colour fastness specify the various testing methods for each of these actions and various standard materials, equipment and others which are shown in these testing methods.
- b) Generally, the standards of colour fastness testing methods can be used not only for assessing the colour fastness of textiles of various shapes and types but also for assessing the colour fastness of dyes.
- c) The colour fastness is assessed by the change in colour and staining. In the colour fastness test, either the change in colour of the specimen or the staining of undyed adjacent cloth attached to the specimen is examined, or both of these conditions are individually examined.
- d) The rating of colour fastness is expressed with the numerals of 1 to 5, with Grade 1 indicating the lowest degree and Grade 5 indicating the highest. However, the rating of colour fastness to light is expressed with the numerals of 1 to 8, with Grade 1 indicating the lowest degree and Grade 8 indicating the highest.
- e) For the most part, individual colour fastness methods are concerned with colour fastness to a single agent.
- f) The conditions in the tests have been chosen to correspond as closely as possible to the treatment conditions usually employed in manufacturing and to the conditions of ordinary use. At the same time, they have been kept as simple and reproducible as possible. In the case where these conditions fail to duplicate all the conditions under which a particular textile product is manufactured or used, interested parties may agree to add special test conditions to be taken into account in assessing the colour fastness, in which case, the added condition shall be clearly indicated in the test report.
- g) For matters specified in this Standard that are also specified in individual testing method standards, the specification in the individual standards shall take precedence.

5 Common equipments and materials to be used for test

The common equipments and materials to be used for the tests shall be as follows.

- a) Thermostatic water bath and thermostatic bath, capable of setting the specified test conditions.
- b) Hydroextractor, such as centrifugal hydroextractor, squeezing roller, weight (approximately 2 kg per 100 cm² in mass) or hand iron (approximately 2.7 kg).

- c) **Dryer**, capable of controlling to the specified temperature, desirably provided with an air blower.
- d) **Standard adjacent fabrics**, as specified in JIS L 0803.
- e) **Test-control specimen**, made of the specified cloth dyed in the specified method (see 6.3).
- f) **Grey scale for assessing change in colour**, as specified in JIS L 0804.
- g) **Grey scale for assessing staining**, as specified in JIS L 0805.
- h) **Standard depths of colour**, as specified in JIS L 0808.
- i) **Surrounding field and mask** The surrounding field shall be of achromatic colour $N5$ ¹⁾ ($Y_2C =$ approximately 20 %) ²⁾ of colour of No.1-2 of grey scale for assessing change in colour. It shall be laid under a specimen for the assessment of the specimen. The mask shall be of colour $N2.5$ ¹⁾ ($Y_2C =$ approximately 4.5 %.) ²⁾.

Notes ¹⁾ It is the expression in accordance with the notation of achromatic colour specified in JIS Z 8721.

²⁾ This is Y of stimulus values in JIS Z 8701.

j) **Reagents and test solutions**

- 1) Reagents to be used, if specified in JIS standards, shall be in accordance with the JIS specification.
- 2) The solutions shall be prepared using water of Grade A1 specified in JIS K 0557 or water at least equivalent thereto unless otherwise specified. The concentration of treatment solution shall be expressed in ml/L or g/L.

6 Preparation of specimens and composite specimens

6.1 Preparation of specimens

6.1.1 Fabrics

The specimens of specified dimensions shall be taken from the products such as woven fabrics, knitted fabrics, felts, etc. The fabrics shall be free from wrinkles, so that the treatment they receive may result in uniform action over the whole area. The size of the specimen shall usually be 100 mm × 40 mm.

6.1.2 Yarns

The yarns of half the mass of standard adjacent fabric (two pieces) shall be taken and arranged closely in parallel or wound in parallel on a frame (for example, on a U-shaped wire frame) to make it into a thin sheet.

For dry treatment, yarns may be wound in parallel and closely on a white cardboard. For wet treatment without accompanying standard adjacent fabric, hanks of yarns, weighing approximately 0.5 g, tied at both ends may be used.

6.1.3 Loose fibres

The loose fibres of half the mass of standard adjacent fabric (two pieces) shall be