
**Textiles — Tests for colour fastness —
Part X19:
Colour fastness to rubbing (Gakushin
test method)**

Textiles — Essais de solidité des coloris —

*Partie X19: Solidité des coloris au frottement (Méthode d'essai
Gakushin)*

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 38, *Textiles*, Subcommittee SC 1, *Tests for coloured textiles and colorants*.

A list of all parts in the ISO 105 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Textiles — Tests for colour fastness —

Part X19:

Colour fastness to rubbing (Gakushin test method)

1 Scope

This document specifies the test method for determining the resistance of the colour of textiles of all kinds to rubbing off and staining other materials using convex specimen stage (Gakushin test method). Two test methods are specified, one with a dry rubbing cloth and one with a wet rubbing cloth.

This document is applicable to textiles made from all kinds of fibres in the form of yarn or fabric, including textile floor coverings and other pile fabrics, whether dyed or printed.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 105-A01, *Textiles — Tests for colour fastness — Part A01: General principles of testing*

ISO 105-A03, *Textiles — Tests for colour fastness — Part A03: Grey scale for assessing staining*

ISO 105-A04, *Textiles — Tests for colour fastness — Part A04: Method for the instrumental assessment of the degree of staining of adjacent fabrics*

ISO 105-F09, *Textiles — Tests for colour fastness — Part F09: Specification for cotton rubbing cloth*

ISO 139, *Textiles — Standard atmospheres for conditioning and testing*

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

4 Principles

The test specimen on the convex specimen stage is rubbed by the cotton rubbing cloth fastened to the rubbing finger with a reciprocating motion. After the test is carried out, the cotton rubbing cloth is assessed by comparing with the grey scale for assessing staining or instrumentally.

5 Apparatus

5.1 Rubbing meter

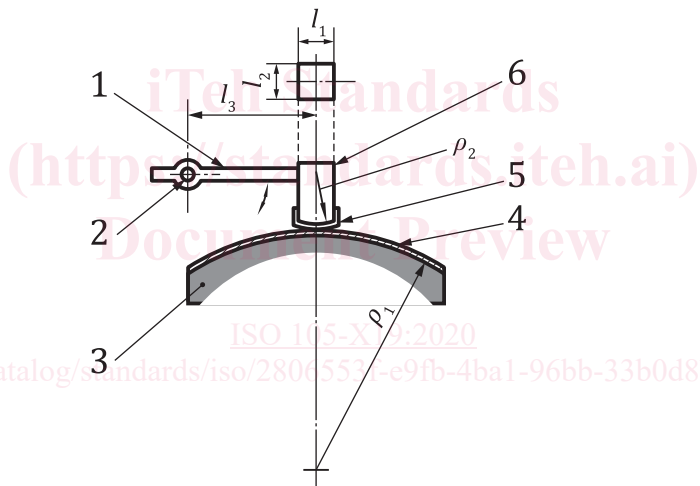
Suitable testing device for determining the colour fastness to rubbing (Gakushin test method) is shown in [Figure 1](#) and [Annex A](#), consisting of convex specimen stage, rubbing finger, arm and a cycle counter with automatic stop which are specified as follows.

5.1.1 Convex specimen stage, shall be (200 ± 1) mm radius of curvature (ρ_1) and reciprocates (120 ± 3) mm with 30 reciprocations per minute. The test specimen fastened by clamps on the convex specimen stage is rubbed with the cotton rubbing cloth fastened to rubbing finger by moving to and fro in a straight line along (100 ± 3) mm track.

5.1.2 Rubbing finger, shall be a rounded surface of $(20 \pm 0,5)$ mm squares with (45 ± 1) mm radius of curvature (ρ_2) capable of being fastened the cotton rubbing cloth ([5.2](#)).

5.1.3 Arm, one end is connected to the fulcrum shaft and the other end is connected to rubbing finger. The rubbing finger shall exert a downward force of $(2 \pm 0,1)$ N and is capable of being moved along with the convex specimen stage.

Dimensions in millimetres



Key

l_1	$20 \pm 0,5$	1	arm
l_2	$20 \pm 0,5$	2	fulcrum shaft
l_3	110 ± 1	3	convex specimen stage
ρ_1	200 ± 1	4	test specimen
ρ_2	45 ± 1	5	cotton rubbing cloth
		6	rubbing finger

Figure 1 — Typical diagram of rubbing meter (Gakushin test method)

5.2 Cotton rubbing cloth, in accordance with ISO 105-F09, is at least 50 mm squares.

5.3 Grey scale for assessing staining, in accordance with ISO 105-A03.

5.4 Spectrophotometer or colorimeter for assessing staining, in accordance with ISO 105-A04.