

INTERNATIONAL
STANDARD

ISO
105-A01

Fifth edition
1994-08-15

Textiles — Tests for colour fastness —

Part A01:

General principles of testing

iTeh STANDARD PREVIEW

(standards.iteh.ai)

Textiles — Essais de solidité des teintures —

Partie A01: Principes généraux pour effectuer les essais

ISO 105-A01:1994

<https://standards.iteh.ai/catalog/standards/sist/2821217d-dba0-4725-8db4-801365b11a6e/iso-105-a01-1994>



Reference number
ISO 105-A01:1994(E)

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 105-A01 was prepared by Technical Committee ISO/TC 38, *Textiles*, Subcommittee SC 1, *Tests for coloured textiles and colorants*.

This fifth edition cancels and replaces the fourth edition (ISO 105-A01:1989), of which it constitutes a technical revision.

ISO 105 was previously published in 13 "parts", each designated by a letter (e.g. "Part A"), with publication dates between 1978 and 1985. Each part contained a series of "sections", each designated by the respective part letter and by a two-digit serial number (e.g. "Section A01"). These sections are now being republished as separate documents, themselves designated "parts" but retaining their earlier alphanumeric designations.

ISO 105 consists of the following parts, under the general title *Textiles — Tests for colour fastness*:

General principles:

- *Part A01: General principles of testing*
- *Part A02: Grey scale for assessing change in colour*
- *Part A03: Grey scale for assessing staining*
- *Part A04: Method for the instrumental assessment of the degree of staining of adjacent fabrics*

© ISO 1994

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Organization for Standardization
Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

- Part A05: Method for the instrumental assessment of the change in colour of a test specimen
- Part A06: Instrumental determination of standard depth

Colour fastness to light and weathering:

- Part B01: Colour fastness to light: Daylight
- Part B02: Colour fastness to artificial light: Xenon arc fading lamp test
- Part B03: Colour fastness to weathering: Outdoor exposure
- Part B04: Colour fastness to artificial weathering: Xenon arc fading lamp test
- Part B05: Detection and assessment of photochromism
- Part B06: Colour fastness to artificial light at high temperatures: Xenon arc fading lamp test
- Part B08: Quality control of light fastness reference materials

Colour fastness to washing and laundering:

- Part C01: Colour fastness to washing: Test 1
- Part C02: Colour fastness to washing: Test 2
- Part C03: Colour fastness to washing: Test 3
- Part C04: Colour fastness to washing: Test 4
- Part C05: Colour fastness to washing: Test 5

- Part C06: Colour fastness to domestic and commercial laundering

Colour fastness to dry cleaning:

- Part D01: Colour fastness to dry cleaning
- Part D02: Colour fastness to rubbing: Organic solvents

Colour fastness to aqueous agents:

- Part E01: Colour fastness to water
- Part E02: Colour fastness to sea water
- Part E03: Colour fastness to chlorinated water (swimming-pool water)
- Part E04: Colour fastness to perspiration
- Part E05: Colour fastness to spotting: Acid
- Part E06: Colour fastness to spotting: Alkali
- Part E07: Colour fastness to spotting: Water
- Part E08: Colour fastness to hot water
- Part E09: Colour fastness to potting

- Part E10: Colour fastness to decatizing
- Part E11: Colour fastness to steaming
- Part E12: Colour fastness to milling: Alkaline milling
- Part E13: Colour fastness to acid-felting: Severe
- Part E14: Colour fastness to acid-felting: Mild

Standard adjacent fabrics:

- Part F: Standard adjacent fabrics
- Part F10: Specification for standard adjacent fabric: Multifibre

Colour fastness to atmospheric contaminants:

- Part G01: Colour fastness to nitrogen oxides
- Part G02: Colour fastness to burn-gas fumes
- Part G03: Colour fastness to ozone in the atmosphere
- Part G04: Colour fastness to oxides of nitrogen in the atmosphere at high humidities

Measurement of colour and colour differences:

- Part J01: Measurement of colour and colour differences
- Part J02: Method for the instrumental assessment of whiteness
- Part J03: Calculation of colour differences

Colour fastness to bleaching agencies:

- Part N01: Colour fastness to bleaching: Hypochlorite
- Part N02: Colour fastness to bleaching: Peroxide
- Part N03: Colour fastness to bleaching: Sodium chlorite (mild)
- Part N04: Colour fastness to bleaching: Sodium chlorite (severe)
- Part N05: Colour fastness to stoving

Colour fastness to heat treatments:

- Part P01: Colour fastness to dry heat (excluding pressing)
- Part P02: Colour fastness to pleating: Steam pleating

Colour fastness to vulcanization:

- Part S01: Colour fastness to vulcanization: Hot air
- Part S02: Colour fastness to vulcanization: Sulfur monochloride
- Part S03: Colour fastness to vulcanization: Open steam

Miscellaneous tests:

- Part X01: Colour fastness to carbonizing: Aluminium chloride
- Part X02: Colour fastness to carbonizing: Sulfuric acid
- Part X04: Colour fastness to mercerizing
- Part X05: Colour fastness to organic solvents
- Part X06: Colour fastness to soda boiling
- Part X07: Colour fastness to cross-dyeing: Wool
- Part X08: Colour fastness to degumming
- Part X09: Colour fastness to formaldehyde
- Part X10: Assessment of migration of textile colours into polyvinyl chloride coatings
- Part X11: Colour fastness to hot pressing
- Part X12: Colour fastness to rubbing
- Part X13: Colour fastness of wool dyes to processes using chemical means for creasing, pleating and setting
- Part X14: Colour fastness to acid chlorination of wool: Sodium dichloroisocyanurate
- Part X15: Colour fastness to hot-water extraction cleaning of textile floor coverings

Colorant characteristics:

- Part Z01: Colour fastness to metals in the dye-bath: Chromium salts
- Part Z02: Colour fastness to metals in the dye-bath: Iron and copper
- Part Z03: Inter-compatibility of basic dyes for acrylic fibres
- Part Z04: Dispersibility of disperse dyes
- Part Z07: Determination of application solubility and solution stability of water-soluble dyes
- Part Z08: Determination of the electrolyte stability of reactive dyes
- Part Z09: Determination of cold water solubility of water-soluble dyes

iTeh STANDARD PREVIEW
This page intentionally left blank
(standards.iteh.ai)

ISO 105-A01:1994

<https://standards.iteh.ai/catalog/standards/sist/2821217d-dba0-4725-8db4-801365b11a6e/iso-105-a01-1994>

Textiles — Tests for colour fastness —

Part A01: General principles of testing

1 Scope

1.1 This part of ISO 105 provides general information about the methods for testing colour fastness of textiles for the guidance of users. The uses and the limitations of the methods are pointed out, several terms are defined, an outline of the form of the methods is given and the contents of the clauses constituting the methods are discussed. Procedures common to a number of the methods are discussed briefly.

1.2 By **colour fastness** is meant the resistance of the colour of textiles to the different agents to which these materials may be exposed during manufacture and their subsequent use. The change in colour and staining of undyed adjacent fabrics are assessed as fastness ratings. Other visible changes in the textile material under test, for example surface effects, change in gloss or shrinkage, should be considered as separate properties and reported as such. Any loose fibres from the specimen adhering to the adjacent fabrics shall be removed before assessment of staining.

1.3 The methods may be used not only for assessing colour fastness of textiles but also for assessing colour fastness of dyes. When a method is so used, the dye is applied to the textile in specified depths of colour by stated procedures and the material is then tested in the usual way.

1.4 For the most part, individual methods are concerned with colour fastness to a single agent, as the agents of interest in a particular case, and the order of application, will generally vary. It is recognized that experience and future developments in practice may

justify procedures in which two or more agents are combined.

1.5 The conditions in the tests have been chosen to correspond closely to treatments usually employed in manufacture and to conditions of ordinary use. At the same time, they have been kept as simple and reproducible as possible. As it cannot be hoped that the tests will duplicate all the conditions under which textiles are processed or used, the fastness ratings should be interpreted according to the particular needs of each user. They provide, however, a common basis for testing and reporting colour fastness.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 105. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 105 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 105-A02:1993, *Textiles — Tests for colour fastness — Part A02: Grey scale for assessing change in colour.*

ISO 105-A03:1993, *Textiles — Tests for colour fastness — Part A03: Grey scale for assessing staining.*

ISO 105-A04:1989, *Textiles — Tests for colour fastness — Part A04: Method for the instrumental assessment of the degree of staining of adjacent fabrics.*

ISO 105-A05:—¹⁾, *Textiles — Tests for colour fastness — Part A05: Method for the instrumental assessment of the change in colour of a test specimen.*

ISO 105-B01:—²⁾, *Textiles — Tests for colour fastness — Part B01: Colour fastness to light: Daylight.*

ISO 105-B02:—³⁾, *Textiles — Tests for colour fastness — Part B02: Colour fastness to artificial light: Xenon arc fading lamp test.*

ISO 105-B03:—⁴⁾, *Textiles — Tests for colour fastness — Part B03: Colour fastness to weathering: Outdoor exposure.*

ISO 105-B04:—⁵⁾, *Textiles — Tests for colour fastness — Part B04: Colour fastness to weathering: Xenon arc.*

ISO 105-B06:1992, *Textiles — Tests for colour fastness — Part B06: Colour fastness to artificial light at high temperatures: Xenon arc fading lamp test.*

ISO 139:1973, *Textiles — Standard atmospheres for conditioning and testing.*

ISO 3696:1987, *Water for analytical laboratory use — Specification and test methods.*

3 General principle

A specimen of the textile to be tested, with adjacent fabric attached if staining is to be assessed, is subjected to the action of the agent in question. The extent of any change in colour and that of any staining of the adjacent fabric are assessed and expressed in fastness numbers.

4 Outline of form of the methods

The headings of the principal clauses of the individual test methods are as follows:

“Introduction”

“Scope”

“Normative references”

“Principle”

“Apparatus and reagents” (or “Reference materials and apparatus”)

“Test specimen”

“Procedure”

“Test report”

5 The “Scope” clause

5.1 Under this heading in each method are given the intended use of the method, its limitations and the definitions of any terms that may not be clear.

5.2 Details of the principal natural and man-made fibres which can be submitted to each test are given. These lists are by no means exclusive, and any dyed or printed material not mentioned in the method (whether manufactured wholly from one fibre or from a mixture of fibres) can be submitted to test. In such cases it is necessary to verify and note whether the procedure is likely to cause any alteration in the material under test. This applies particularly to all man-made fibres (acrylic, pure or copolymer; polyvinyl, pure or copolymer; polyester, etc.) currently being developed, of which any list is always likely to be incomplete.

6 The “Normative references” clause

Under this heading in each method is given a complete list of other documents which are indispensable for the application of the method.

7 The “Principle” clause

Under this heading in each method is given a concise statement of the principle of the method to enable the user to decide whether the method is the one that he is seeking.

1) To be published.

2) To be published. (Revision of ISO 105-B01:1989)

3) To be published. (Revision of ISO 105-B02:1988)

4) To be published. (Revision of ISO 105-B03:1988)

5) To be published. (Revision of ISO 105-B04:1988)

8 The "Apparatus and reagents" (or "Reference materials and apparatus") clause

Under this heading in each method the equipment and supplies required for the test are described.

NOTE 1 For information on the sources of apparatus and reference materials for use in the various parts of ISO 105, apply to the following addresses, enclosing a stamped addressed envelope for reply:

British Standards Institution
389 Chiswick High Road
London W4 4AL
United Kingdom

and

AATCC
1 Davis Drive
P.O. Box 12215
Research Triangle Park
North Carolina 27709-2215
USA

8.1 Test solutions

Test solutions shall be prepared using grade 3 water complying with ISO 3696. The concentrations of baths are given in millilitres per litre (ml/l) or grams per litre (g/l). The qualities of chemicals to be used are given in each method. For crystalline substances the amount of water of crystallization is given and, for liquids, the relative density at 20 °C.

8.2 Adjacent fabrics

An adjacent fabric is a small piece of undyed cloth of a single or of several generic kinds of fibres to be used during the test for assessing staining.

8.2.1 Single-fibre adjacent fabrics, if not otherwise specified, should be of plain weave, medium mass per unit area and free from chemically damaged fibres, finished residual chemicals, dyes or fluorescent whitening agents.

8.2.2 Properties and preparation of the single-fibre adjacent fabrics are given under the different adjacent fabric specifications.

8.2.3 Multifibre adjacent fabrics are made of yarns of various generic kinds of fibres, each of which forms a strip of at least 1,5 cm width providing even thickness of the fabric. The staining properties of generic fibres used in single-fibre and multifibre adjacent fab-

rics shall be identical. There are two standardized multifibre adjacent fabrics, whose contents differ:

- a) Type DW: acetate, bleached cotton, polyamide, polyester, acrylic, wool (see ISO 105-F10);
- b) Type TV: triacetate, bleached cotton, polyamide, polyester, acrylic, viscose (see ISO 105-F10).

8.3 Standard of fading

By standard of fading is meant a dyed fabric of appearance similar to the test control (see 9.1.3), showing the colour to which the test control should fade during the test. Test controls are produced by a central organization and are made available through national standards bodies.

8.4 Selection and use of adjacent fabrics

Two alternative procedures for selection of adjacent fabrics are provided, and details of the type of adjacent fabrics used shall be given in the test report, including dimensions, since there may be differences in test results when multifibre adjacent fabrics are used instead of single-fibre adjacent fabrics.

8.4.1 Types of adjacent fabric

Either of the following procedures may be used.

- a) Two single-fibre adjacent fabrics. The first adjacent fabric shall be of the same generic kind of fibre as the material under test or that predominating in the case of blends. The second adjacent fabric shall be that indicated in the individual test or as otherwise specified.
- b) One multifibre adjacent fabric. In this case no other adjacent fabric may be present as this can affect the degree of staining of the multifibre fabric.

8.4.2 Dimensions and use of adjacent fabrics

8.4.2.1 When single-fibre adjacent fabrics are used, these shall be of the same dimensions as the specimen under test (normally 40 mm × 100 mm). As a general principle, each surface of the specimen is completely covered by each of the adjacent fabrics. Special requirements are outlined in 9.3.

8.4.2.2 When a multifibre adjacent fabric is used, this shall be of the same dimensions as the specimen under test (normally 40 mm × 100 mm). As a general principle, it shall cover the face side only of the specimen. Special requirements are given in 9.3.