
**Textiles — Tests for colour fastness —
Part A01:
General principles of testing**

Textiles — Essais de solidité des coloris —

Partie A01: Principes généraux pour effectuer les essais

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

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

This sixth edition cancels and replaces the fifth edition (ISO 105-A01:1994), which has been revised to list the current ISO 105 standards, Clause 2 has been editorially revised, and other editorial revisions have been made to update the fifth edition.

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*
- *Part A05: Instrumental assessment of change in colour for determination of grey scale rating*
- *Part A06: Instrumental determination of 1/1 standard depth of colour*
- *Part A08: Vocabulary used in colour measurement*
- *Part A11: Determination of colour fastness grades by digital imaging techniques (under development)*

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 and ageing to artificial light at high temperatures: Xenon arc fading lamp test
- Part B07: Colour fastness to light of textiles wetted with artificial perspiration
- Part B08: Quality control of blue wool reference materials 1 to 7
- Part B10: Artificial weathering — Exposure to filtered xenon-arc radiation (under development)

Colour fastness to washing and laundering:

- Part C06: Colour fastness to domestic and commercial laundering
- Part C07: Colour fastness to wet scrubbing of pigment printed textiles
- Part C08: Colour fastness to domestic and commercial laundering using a non-phosphate reference detergent incorporating a low temperature bleach activator
- Part C09: Colour fastness to domestic and commercial laundering — Oxidative bleach response using a non-phosphate reference detergent incorporating a low temperature bleach activator
- Part C10: Colour fastness to washing with soap or soap and soda
- Part C12: Colour fastness to industrial laundering

Colour fastness to dry cleaning: (standards.iteh.ai)

- Part D01: Colour fastness to dry cleaning using perchloroethylene solvent
- 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

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- Part E13: Colour fastness to acid-felting: Severe
- Part E14: Colour fastness to acid-felting: Mild
- Part E16: Colour fastness to water spotting on upholstery fabrics

Standard adjacent fabrics:

- Part F01: Specification for wool adjacent fabric
- Part F02: Specification for cotton and viscose adjacent fabrics
- Part F03: Specification for polyamide adjacent fabric
- Part F04: Specification for polyester adjacent fabric
- Part F05: Specification for acrylic adjacent fabric
- Part F06: Specification for silk adjacent fabric
- Part F07: Specification for secondary acetate adjacent fabric
- Part F09: Specification for cotton rubbing cloth
- Part F10: Specification for adjacent fabric: Multifibre

Colour fastness to atmospheric contaminants:

- Part G01: Colour fastness to nitrogen oxides [ISO 105-A01:2010](https://standards.iteh.ai/catalog/standards/sist/57752fdd-5c57-4017-bdde-a8726071bd8e/iso-105-a01-2010)
- Part G02: Colour fastness to burnt-gas fumes <https://standards.iteh.ai/catalog/standards/sist/57752fdd-5c57-4017-bdde-a8726071bd8e/iso-105-a01-2010>
- 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: General principles for measurement of surface colour
- Part J02: Instrumental assessment of relative whiteness
- Part J03: Calculation of colour differences
- Part J05: Method for the instrumental assessment of the colour inconstancy of a specimen with change in illuminant (CMCCON02)

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 X16: Colour fastness to rubbing—Small areas*

— *Part X18: Assessment of the potential to phenolic yellowing of materials*

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: Intercompatibility of basic dyes for acrylic fibres*

- *Part Z04: Dispersibility of disperse dyes*
- *Part Z05: Determination of the dusting behaviour of dyes*
- *Part Z06: Evaluation of dye and pigment migration*
- *Part Z07: Determination of application solubility and solution stability of water-soluble dyes*
- *Part Z08: Determination of solubility and solution stability of reactive dyes in the presence of electrolytes*
- *Part Z09: Determination of cold water solubility of water-soluble dyes*
- *Part Z10: Determination of relative colour strength of dyes in solution*
- *Part Z11: Evaluation of speckiness of colorant dispersions*

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Textiles — Tests for colour fastness —

Part A01: General principles of testing

1 Scope

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 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.

Colour fastness means 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, are considered as separate properties and reported as such.

The methods can 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.

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 can justify procedures in which two or more agents are combined.

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 are 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 referenced documents are indispensable for the application 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-A02, *Textiles — Tests for colour fastness — Part A02: Grey scale for assessing change in colour*

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-A05, *Textiles — Tests for colour fastness — Part A05: Instrumental assessment of change in colour for determination of grey scale rating*

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

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

CIE¹⁾ Publication 51, *A method for assessing the quality of daylight simulators for colorimetry*

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”

“Terms and definitions”

“Principle”

“Apparatus”, “Reagents” or “Reference materials”

“Test specimen”

“Procedure”

“Test report”

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5 The “Scope” clause

Under this heading, in each method, are given the intended use of the method and the aspects covered, thereby indicating the limits of applicability.

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 the 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.

1) Commission internationale de l'éclairage, Central Bureau, Kegelgasse 27, A-1030, Vienna, Austria.

7 The “Terms and definitions” clause

Under this heading are definitions of any terms that may not be clear.

8 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 they are seeking.

9 The “Apparatus”, “Reagents” or “Reference materials” clause(s)

9.1 General

Under these headings, either individually or combined, in each method, the equipment and supplies required for the test are described.

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

British Standards Institution
389 Chiswick High Road
London W4 4AL
United Kingdom
Email: info@bsi.org.uk
Website: www.bsi-global.com

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Website: www.aatcc.org

9.2 Test solutions

9.2.1 Test solutions shall be prepared using Grade 3 water complying with ISO 3696.

9.2.2 The concentrations of baths are given in millilitres per litre (ml/l) or grams per litre (g/l).

9.2.3 The qualities of chemicals to be used are given in each method.

9.2.4 For crystalline substances, the amount of water of crystallization is given and, for liquids, the relative density at 20 °C.

9.3 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.