INTERNATIONAL STANDARD

**ISO 105-C12**

First edition
2004-11-01

# Textiles — Tests for colour fastness —

## Part C12: Colour fastness to industrial laundering

*Textiles — Essais de solidité des teintures —*

*Partie C12: Solidité des teintures au lavage industriel*



Reference number
ISO 105-C12:2004(E)

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Published in Switzerland

 

# Foreword

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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-C12 was prepared by Technical Committee ISO/TC 38, *Textiles*, Subcommittee SC 1, *Tests for coloured textiles and colorants*.

ISO 105 was previously published in thirteen “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 A02”). These sections are being republished as separate documents, themselves designated “parts” but retaining their earlier alphanumeric designations. A complete list of these parts is given in ISO 105-A01.

## Introduction

The test method in this part of ISO 105 is intended to reflect the effect of comprehensive laundering during industrial laundry procedures, as distinct from the domestic washing test methods as given in ISO 105-C05, ISO 105-C06 and ISO 105-C08. Four test conditions are described, one at (92 ± 2)°C intended for the evaluation of workwear and three, as given below, at (75 ± 2) °C, for the evaluation of bed and table linen and corporate wear:

— without the addition of peroxy bleach compounds;

— with the addition of hydrogen peroxide (for the bleaching of white work with coloured trimmings);

— with the addition of sodium perborate tetrahydrate and tetra-acetylethylene diamine (TAED) (for the bleaching of white work with coloured trimmings).

NOTE The addition of TAED/perborate is a conveniently stable way of producing peracetic acid *in situ*.

This method of test does not reflect the effect of optical brightening agents.

This method and the single cycle test methods described in ISO 105-C06 and ISO 105-C08 may not reproduce the effect of coloured fabrics treated with certain dye fixing agents and finishes after multiple (5 to 10) industrial washes.



 

# Textiles — Tests for colour fastness —

## Part C12:
## Colour fastness to industrial laundering

## 1 Scope

This part of ISO 105 specifies methods for determining the resistance of the colour of textiles of all kinds exposed to all forms of industrial laundering procedures.

One cycle approximates to the colour loss and cross staining resulting from chemical and/or mechanical action achieved after multiple (5 to 10) industrial launderings.

## 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-A01:1994, *Textiles — Tests for colour fastness — Part A01: General principles of testing*

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 105-F02, *Textiles — Tests for colour fastness — Part F02: Specification for cotton and viscose adjacent fabrics*

ISO 105-F04, *Textiles — Tests for colour fastness — Part F04: Specification for polyester adjacent fabric*

ISO 105-F10:1989, *Textiles — Tests for colour fastness — Part F10: Specification for reference adjacent fabric: Multifibre*

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

## 3 Principle

A specimen of the textile in contact with specified adjacent fabrics is laundered, rinsed and dried. Specimens are laundered under appropriate conditions of temperature, alkalinity, bleaching and mechanical action such that the result is obtained in a conveniently short time. The mechanical action is accomplished by the use of an appropriate number of steel balls. The change in colour of the specimens and the staining of the adjacent fabrics are assessed using the grey scale.

## 4 Reagents

NOTE All chemicals should be of at least general purpose laboratory grade.

**4.1 Detergent**, as specified in Annex A.

**4.2 Solution**, containing 0,2 g/l of glacial acetic acid, if required for souring treatment.

**4.3 Hydrogen peroxide solution**, 30 %.

**4.4 Sodium hydroxide (NaOH) pellets**.

**4.5 Tetra-acetylethylenediamine (TAED)**.

**4.6 Sodium perborate tetrahydrate**.

**4.7 Distilled water**, grade 3 water (see 8.2 of ISO 105-A01:1994)

## 5 Apparatus

**5.1 Suitable mechanical device**, consisting of a water bath containing a rotatable shaft which supports, radially, stainless steel containers (75 ± 5) mm diameter × (125 ± 10) mm high of capacity (550 ± 50) ml, the bottom of the containers being (45 ± 10) mm from the centre of the shaft. The shaft/container assembly is rotated at a frequency of (40 ± 2) $min^{-1}$. The temperature of the water bath is thermostatically controlled to maintain the test solution at the prescribed temperature (± 2)°C.

NOTE Other mechanical devices may be used for this test, provided that the results are identical with those obtained by the apparatus described.

**5.2 Mechanical stirrer**, minimum (1 100 ± 100) $min^{-1}$ or equivalent, to ensure dispersion and prevent settling.

**5.3 Steel balls**, non-corrodible (stainless), approximately 6,0 mm in diameter.

**5.4 Adjacent fabrics**.

**5.4.1** A multifibre adjacent fabric complying to type (TV) of ISO 105-F10:1989

or

**5.4.2** Two single-fibre adjacent fabrics, one cotton and one polyester, in accordance with ISO 105-F02 and ISO 105-F04 or as otherwise specified between interested parties.

**5.4.3** If required, a non-dyeable fabric (e.g. polypropylene) (e.g. to mechanically stabilize a knitwear specimen).

**5.5 Grey scale,** for assessing change in colour in accordance with ISO 105-A02, or instrumentally ISO 105-A05, and for assessing staining in accordance with ISO 105-A03, or instrumentally ISO 105-A04.

**5.6 Flat-iron**, of mass not exceeding 2,5 kg (± 100 g) and capable of giving the temperature indicated in 7.2.5, if a pressing treatment is required. Condition the sample for 24 h before assessing to allow for temporary colour change caused by heat.



 