

International Standard



105/A

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Textiles — Tests for colour fastness — Part A : General principles

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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. Every 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 105/A was prepared by Technical Committee ISO/TC 38, *Textiles*.

ISO 105/A was first published in 1978 and was updated and reprinted on 1982-09-01. This second edition cancels and replaces the first edition, which has been technically revised.

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A01 General principles of testing

1 INTRODUCTION

1.1 This section 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 agencies to which textiles may be exposed during manufacture and the subsequent use. The change of colour and staining of undyed adjacent fabrics are assessed as fastness ratings. Other visible changes of 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 textile is then tested in the usual way.

1.4 For the most part, individual methods are concerned with colour fastness to a single agency, as the agencies 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 agencies 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 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 agency 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.

3 OUTLINE OF FORM OF THE METHODS

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

"Introduction"

"Scope and field of application"

"Principle"

"References"

"Apparatus and reagents" (or "Standards and apparatus")

"Test specimen"

"Procedure"

"Test report"

"Note(s)"

4 "SCOPE AND FIELD OF APPLICATION"

4.1 Under this heading in each method are given intended use of the method, its limitations and the the definitions of any terms that may be used.

4.2 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 cloth 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 fibre 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.

5 "PRINCIPLE" (OF METHOD)

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.

6 "REFERENCES"

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

7 "APPARATUS AND REAGENTS" (OR "STANDARDS AND APPARATUS")

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

7.2 **Test solutions** should be prepared using distilled water. 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.

7.3 By **adjacent fabric** is meant 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.

7.3.1 **Single-fibre adjacent fabrics**, if not otherwise specified, should be of plain weave, medium mass per unit area and free from chemically damaged fibres, finishes, residual chemicals, dyes or fluorescent whitening agents. The fluidity value of cotton adjacent fabric may not exceed 5 rhes when measured by the Cu En method.

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

7.3.3 **Multi-fibre adjacent fabrics** are made of yarns of various generic kinds of fibres each of which forms a stripe of at least 1,5 cm width providing even thickness of the fabric. The staining properties of generic fibres used in single-fibre and multi-fibre adjacent fabrics must be identical.

7.4 By **standard of fading** is meant a dyed fabric of similar appearance as the test control (see 8.4), 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.

7.5 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.

7.5.1 Types of adjacent fabrics

Either of the following procedures may be used.

- a) Two single-fibre adjacent fabrics. The first adjacent fabric should 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 should be that indicated in the individual test or as otherwise specified.
- b) One multi-fibre adjacent fabric. In this case no other adjacent fabric may be present as this can affect the degree of staining of the multi-fibre fabric.

7.5.2 Dimensions and use of adjacent fabrics

7.5.2.1 When single-fibre adjacent fabrics are used, these shall be of the same dimensions as the specimen under test (normally 10 cm × 4 cm). As a general principle, each surface of the specimen is completely covered by each of the adjacent fabrics. Special requirements are outlined in 8.6.

7.5.2.2 When a multi-fibre adjacent fabric is used, this shall be of the same dimensions as the specimen under test (normally 10 cm × 4 cm). As a general principle, it shall cover the face side only of the specimen.

8 "TEST SPECIMEN"

8.1 Under this heading in each method are given the particular requirements for the specimen to be used in the test.

Definitions of the following terms are given below :

- "specimen";
- "composite specimen";
- "test-control specimen".

General directions for their preparation are also given below.

8.2 By **specimen** is meant a small piece of material that is to be submitted to the test; it is usually taken from a larger sample representing a lot of the dyed or printed textile material.