IS/ISO 105-A02 : 1993
(Superseding IS 768 : 1982)
(Reaffirmed 2013)
(Reaffirmed 2017)
(Reaffirmed 2021)

भारतीय मानक

वस्त्रादि — रंग के पक्केपन के परीक्षण

भाग ए02 रंग में परिवर्तन के निर्धारण के ग्रे स्केल

Indian Standard

TEXTILES — TESTS FOR COLOUR FASTNESS

PART A02 GREY SCALE FOR ASSESSING CHANGE IN COLOUR

ICS 677.016.47 : 620.191.73.05

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

November 2006

Price Group 2

NATIONAL FOREWORD

This Indian Standard (Part A02) which is identical with ISO 105-A02 : 1993 'Textiles — Tests for colour fastness — Part A02 : Grey scale for assessing change in colour' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendation of the Chemical Methods of Test Sectional Committee and approval of the Textile Division Council.

The text of ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

With the publication of this standard, IS 768 : 1982 'Methods for evaluating change in colour (*first revision*)' stands withdrawn.

The composition of Technical Committee responsible for the preparation of this standard is given in National Annex A.

In reporting the results of a test or analysis made in accordance with this standard, if the final value observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'.

Indian Standard

TEXTILES — TESTS FOR COLOUR FASTNESS

PART A02 GREY SCALE FOR ASSESSING CHANGE IN COLOUR

1 Scope

This part of ISO 105 describes the grey scale for determining changes in colour of textiles in colour fastness tests, and its use. A precise colorimetric specification of the scale is given as a permanent record against which newly prepared working standards and standards that may have changed can be compared.

2 Principle

2.1 The essential, or 5-step, scale consists of five pairs of non-glossy grey colour chips (or swatches of grey cloth), which illustrate the perceived colour differences corresponding to fastness ratings 5, 4, 3, 2 and 1. This essential scale may be augmented by the provision of similar chips or swatches illustrating the perceived colour differences corresponding to the half-step fastness ratings 4-5, 3-4, 2-3 and 1-2, such scales being termed 9-step scales. The first member of each pair is neutral grey in colour and the second member of the pair illustrating fastness rating 5 is identical with the first member. The second members of the remaining pairs are increasingly lighter in colour so that each pair illustrates increasing contrasts or perceived colour differences which are defined colorimetrically. The full colorimetric specification is given below.

2.2 The chips or swatches shall be neutral grey in colour and shall be measured with a spectrophotometer with the specular component included. The colorimetric data shall be calculated using CIE 1964 supplementary standard colorimetric system (10° observer data) for illuminant D_{65}.

2.3 The Y tristimulus value of the first member of each pair shall be 12 ± 1.

2.4 The second member of each pair shall be such that the colour difference between it and the adjacent first member is as follows:

Fastness grade	CIELAB difference	Tolerance
5	0	0,2
(4-5)	0,8	± 0,2
4	1,7	± 0,3
(3-4)	2,5	± 0,35
3	3,4	± 0,4
(2-3)	4,8	± 0,5
2	6,8	± 0,6
(1-2)	9,6	± 0,7
1	13,6	± 1,0

(Bracketed values apply only to the 9-step scale.)

2.5 Use of the scale. Place a piece of the original textile and the tested specimen of it side by side in the same plane and oriented in the same direction. Place the grey scale nearby in the same plane. The surrounding field should be neutral grey colour approximately midway between that illustrating grade 1 and that illustrating grade 2 of the grey scale for assessing change in colour (this is approximately Munsell N5). If necessary to avoid effects of the backing on the appearance of the textiles, use two or more layers of the original textile under both original and tested specimens. Illuminate the surfaces with north sky light in the Northern hemisphere, south sky light in the Southern hemisphere, or an equivalent source with an illumination of 600 lx or more. The light should be incident upon the surfaces at approximately 45°, and the direction of viewing approximately perpendicular to the plane of the surfaces. Compare the visual difference between original and tested material with the differences represented by the grey scale.

If the 5-step scale is used, the fastness rating of the specimen is that number of the grey scale which has a perceived colour difference equal in magnitude to the perceived colour difference between the original and the treated specimens; if the latter is judged to be nearer the imaginary contrast lying midway between two adjacent pairs than it is to either, the tested specimen is given an intermediate assessment, for example 4-5 or 2-3. A rating of 5 is given only when there is no perceived difference between the tested specimen and the original material.

If the 9-step scale is used, the fastness rating of the specimen is that number of the grey scale which has a perceived colour difference nearest in magnitude to the perceived colour difference between the original piece and the tested specimen. A rating of 5 is given only when there is no perceived difference between the tested specimen and the original material.

When a number of assessments have been made, it is very useful to compare all the pairs of original and tested specimens which have been given the same numerical rating. This gives a good indication of the consistency of the assessments, since any errors become prominent. Pairs which do not appear to have the same degree of contrast as the remainder of their groups should be re-checked against the grey scale and, if necessary, the rating should be changed.

3 Describing colour changes in fastness tests

3.1 In using the grey scale, as outlined in 2.5, the character of the change in colour, whether in hue, depth, brightness or any combination of these, is not rated: the overall difference or contrast, between original and tested specimens, is the basis for the assessment.

3.2 If, as in rating dyes on textiles for example, it is desired to record the character of the change in colour of the textile in the test, appropriate qualitative terms may be added to the numerical rating, as illustrated by the examples shown in table 1.

Table 1 — Examples of descriptions of change in character

Rating	Meaning	
	Contrast corresponding to following grades of grey scale	Character of change
3	Grade 3	Loss in depth of colour only
3 redder	Grade 3	No significant loss in depth but colour redder
3 weaker yellower	Grade 3	Loss in depth and change in hue
3 weaker bluer duller	Grade 3	Loss in depth and change in both hue and brightness
4-5 redder	Intermediate between grades 4 and 5	No significant loss in depth but colour slightly redder

3.3 When changes in colour occur in two or three directions, it is considered neither feasible nor necessary to indicate the relative magnitude of each change.

3.4 When the space available for recording qualitative terms is restricted, as on pattern cards, the abbreviations shown in table 2 may be used.

Table 2 — Abbreviations of qualitative terms

Abbreviation	Meaning	French abbreviation
Bl	Bluer	B
G	Greener	V
R	Redder	R
Y	Yellower	J
W	Weaker	C
Str	Stronger	F
D	Duller	T
Br	Brighter	Pu

NATIONAL ANNEX A

(National Foreword)

COMMITTEE COMPOSITION

Chemical Methods of Test Sectional Committee, TX 05

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Joint Director (Textiles), BIS

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

This Indian Standard has been developed from Doc: No. **TXD 05 (0788).**

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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Printed at Simco Printing Press, Delhi