

Australian Standard™

Methods of test for textiles

Method 4.A03: Colourfastness tests—Grey scale for assessing staining

PREFACE

This Standard was prepared by the Standards Australia Committee TX-020, Testing of Textiles and supersedes part of AS 2001.4.1:1996, *Methods of test for textiles*, Method 4.1: *Colourfastness tests—Definitions and general requirements*.

The objective of this Standard is to provide manufacturers and testing bodies with a basic standard method for determining the resistance of colour of textiles to treatments such as chemical, mechanical or natural and a way of determining the amount of staining of adjacent fabrics using a grey scale rating.

This Standard is identical with and has been reproduced from ISO 105-A03:1993, *Textiles—Tests for colour fastness*, Part A03: *Grey scale for assessing staining*.

As this Standard is reproduced from an International Standard, the following applies:

- (a) Its number appears on the cover and title page while the International Standard number appears only on the cover.
- (b) In the source text ‘this part of ISO 105’ should read ‘this Australian Standard’.
- (c) A full point should be substituted for a comma when referring to a decimal marker.

AS 2001.4.1—1996 was based on ISO 105-A01. Appendix A of AS 2001.4.1 incorporated standard reference materials from ISO 105, Parts A02, A03, B01 and the F series. Appendix B was identical to ISO 105-A04, and Appendix C was identical to ISO 105-A05.

NOTES

1 Scope

This part of ISO 105 describes the grey scale for determining staining of adjacent fabrics 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 or white colour chips (or swatches of grey or white 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 white 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 darker 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 white or 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 D₆₅.

2.3 The *Y* tristimulus value of the first member (white) of each pair shall be not less than 85.

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)	2,2	± 0,3
4	4,3	± 0,3
(3-4)	6,0	± 0,4
3	8,5	± 0,5
(2-3)	12,0	± 0,7
2	16,9	± 1,0
(1-2)	24,0	± 1,5
1	34,1	± 2,0

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

2.5 Use of the scale. Place a piece of the unstained, adjacent fabric (the original piece) and the piece which has been part of a composite specimen in a fastness test (the tested specimen) side by side 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 unstained undyed textile under both original and treated pieces. 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 the original piece and the tested specimen with the differences represented by the grey scale.