STANDARDS AUSTRALIA

RECONFIRMATION

OF
AS 2001.2.25.1—2006
Methods of test for textiles
Method 2.25.1: Physical tests—Determination of the abrasion resistance of fabrics by the Martindale method—Martindale abrasion testing apparatus

RECONFIRMATION NOTICE

Technical Committee TX-020 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

Certain documents referenced in the publication may have been superseded since the original date of publication. Users are advised to ensure that they are using the latest versions of such documents as appropriate, unless advised otherwise in this Reconfirmation Notice.

Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 6 July 2016.

The following are represented on Technical Committee TX-020:

Ag Research
Australian Wool Processors Council
AWTA Textile Testing
Council of Textile and Fashion Industries of Australia
Drycleaning Institute of Australia
National Association of Testing Authorities Australia
RMIT University
The Textile Institute

NOTES

AS 2001.2.25.1—2006
ISO 12947-1:1998 and
ISO 12947-1:1998/Cor. 1:2002
Reconfirmed 2016

Australian Standard™

Methods of test for textiles

Method 2.25.1: Physical tests—Determination of the abrasion resistance of fabrics by the Martindale method—Martindale abrasion testing apparatus

PREFACE

This Standard was prepared by the Standards Australian Committee TX-020, Testing of Textiles to supersede, in part, AS 2001.2.25—1990, *Methods of test for textiles*, Method 2.25, *Physical tests—Determination of flat abrasion resistance of textile fabrics (Martindale abrasion method).*

The objective of this Standard is to provide manufacturers and testing bodies with a Standard for specifying the testing apparatus required for the determination of the abrasion resistance of fabrics.

This Standard is identical with and has been reproduced from ISO 12947-1:1998, *Textiles — Determination of the abrasion resistance of fabrics by the Martindale method*—Part 1: *Martindale abrasion testing apparatus* and its Corrigendum 1:2002, which has been added after the main source text.

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 12947' should read 'this Australian Standard'.

(c) A full point should be substituted by a comma when referring to a decimal marker.

The reference to International Standard should be replaced by references to the following Australian Standards:

References to International Standards		Australian Standards	
ISO		AS	
137	Wool—Determination of fibre diameter—Projection microscope method	2001 2001.2.1	Methods of test for textiles Method 2.1: Physical tests—Determination of mean fibre diameter of textile fibres by measurement of projected images
286 286-2	ISO system of limits and fits Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts	1654 1654.2	ISO system of limits and fits Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts
845	Cellular plastics and rubbers–Determination of apparent (bulk) density	2282 2282.3	Methods for testing flexible cellular polyurethane Method 3: Determination of apparent density

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ISO		AS	
2060	Textiles—Yarn from packages—Determination of linear density (mass per unit length)—Skein method	2001 2001.2.23	Methods of test for textiles Method 2.23: Physical tests—Determination of linear density of textile yarn from packages
2061	Textiles—Determination of twist in yarns—Direct counting method	2001.2.14	Method 2.14: Physical test—Determination of twist in yarns
2286 2286-3:	Rubber-or plastics-coated fabrics—Determination of roll characteristics Part 3: Method for the determination of thickness	—	—
3074	Wool—Determination of dichloromethane—Soluble matter in combed sliver	2001.3.4	Method 3.4: Chemical tests—Determination of solvent extractable matter
3801	Textiles—Woven fabrics—Determination of mass per unit length and mass per unit area	2001.2.13	Method 2.13: Physical tests—Determination of mass per unit area and mass per unit length of fabrics
5084	Textiles—Determination of thickness of textiles and textile products	2001.2.15	Method 2.15: Physical tests—Determination of thickness of textile fabrics
7211 7211-2	Textiles—Woven fabrics—Construction—Method of analysis Part 2: Determination of number of threads per unit length	2001.2.5	Method 2.5: Physical tests—Determination of the number of threads per unit length in woven fabric
12947	Textiles—Determination of the abrasion resistance of fabrics by the Martindale method	2001.2.25	Determination of the abrasion resistance of fabrics by the Martindale method
12947-2	Part 2: Determination of specimen breakdown	2001.2.25.2	Method 2.25.2: Physical tests—Determination of the abrasion resistance of fabrics by the Martindale method—Determination of specimen breakdown
12947-3	Part 3: Determination of mass loss	2001.2.25.3	Method 2.25.3: Physical tests—Determination of the abrasion resistance of fabrics by the Martindale method—Determination of mass loss

The AS 2001 series on Methods of test for textiles is in the process of revision. Editions listed above are current at the time of publication of this Standard but may be subsequently updated. The most recent edition of referenced documents should be used.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the annex to which they apply. A ‘normative’ annex is an integral part of a Standard, whereas an ‘informative’ annex is only for information and guidance.

FOREWORD

The Martindale abrasion machine was developed primarily to assess abrasion resistance of woven worsted wool fabrics. It was designed to give a controlled amount of multidirectional abrasion, between the fabric surface and a crossbred wool abradant fabric, at comparatively low pressures until thread breakdown, or unacceptable change in colour or appearance occurs.

Abrasion of the fabric surface does not necessarily cover all aspects of strains which are important in determining service life, however there are occasions when an abrasion test gives useful information.

The manner in which textile fabrics abrade is a complex process and is caused primarily by mechanical actions, such as rubbing, shearing, stretching, twisting and flexing, under a wide range of end use conditions. Fabric abrasion resistance can be influenced by such properties as fibre type, yarn properties, fabric construction, finishing and, in the case of fabrics containing hydrophilic fibres, moisture content.

Test result reproducibility can depend on such factors as the condition of the test apparatus, the removal of pills from the test specimen during testing, test specimen and abradant tension, the type of fabric under test and the consistency of abradant quality.

The Martindale abrasion test method is considered suitable for some knitted fabrics, but due to the inability of the test apparatus to maintain constant tension on the test specimen during testing, unstable knit structures can give highly variable test results unless a suitable backing is placed behind the test specimen.

The apparatus is not appropriate for the testing of long pile fabrics because the pile tends to lie in one direction and they are therefore abraded in a manner inconsistent with normal use.

This test should not be used indiscriminately, and particularly not for comparing fabrics of widely different fibre composition or construction, without preliminary test correlation to the service life by the user laboratory.

INTRODUCTION

The choice of method of abrasion testing is established before the start of the testing and recorded in the test report, since the results of the different methods cannot be compared with each other.

The determination of resistance to pilling of fabrics using the Martindale apparatus is given in ISO 12945, *Textiles — Determination of the resistance to pilling and change of appearance of fabrics*, parts 1, 2 and 3[1)].

1) These three parts of International Standard ISO 12945 are yet to be published.

1 Scope

This part of ISO 12947 specifies requirements for the Martindale testing apparatus and auxiliary materials for use in the test methods specified in parts 2 to 4 of ISO 12947 for determination of the abrasion resistance of fabrics.

This part of ISO 12947 is applicable to apparatus for the testing of:

a) woven and knitted fabrics;

b) pile textiles having a pile height of up to 2 mm;

c) nonwovens.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 12947. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 12947 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 137:1975, *Wool — Determination of fibre diameter — Projection microscope method.*

ISO 286-2:1988, *ISO system of limits and fits — Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts.*

ISO 845:1988, *Cellular plastics and rubbers — Determination of apparent (bulk) density.*

ISO 2060:1994, *Textiles — Yarn from packages — Determination of linear density (mass per unit length) — Skein method.*

ISO 2061:1995, *Textiles — Determination of twist in yarns — Direct counting method.*

ISO 2286-3:1998, *Rubber- or plastics-coated fabrics — Determination of roll characteristics — Part 3: Method for the determination of thickness.*

ISO 3074:1975, *Wool — Determination of dichloromethane — Soluble matter in combed sliver.*

ISO 3801:1977, *Textiles — Woven fabrics — Determination of mass per unit length and mass per unit area.*

ISO 5084:1996, *Textiles – Determination of thickness of textiles and textile products.*