

STANDARDS AUSTRALIA

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RECONFIRMATION

OF

AS 2001.4.15—2006

Methods of test for textiles

**Method 4.15: Colourfastness tests—Determination of colourfastness to washing**

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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 amended 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

## Australian Standard™

AS 2001.4.15—2006

**Methods of test for textiles****Method 4.15: Colourfastness tests—  
Determination of colourfastness to washing**

## PREFACE

This Standard was prepared by the Standards Australia Committee on Testing of Textiles to supersede AS 2001.4.15—1994. It is one of a series for determining the colourfastness of textiles to various agents. Changes in this edition include the requirements for the capacity of test canisters.

This series of methods is largely based on the work of a technical committee of the International Organization for Standardization (ISO/TC 38/SC 1) and has been adapted to suit Australian conditions.

Twenty-four test procedures are described in this Standard. Test procedures A, B, C, F and G are parallel to procedures described in the following parts of ISO 105, *Textiles—Tests for colourfastness*:

- Part C01: Colourfastness to washing—Test 1
- Part C02: Colourfastness to washing—Test 2
- Part C03: Colourfastness to washing—Test 3
- Part C04: Colourfastness to washing—Test 4
- Part C05: Colourfastness to washing—Test 5

The term ‘normative’ has been used in this Standard to define the application of the appendix to which it applies. A ‘normative’ appendix is an integral part of a Standard.

## METHOD

**1 SCOPE**

This Standard sets out methods for determining the colourfastness of textiles to washing.

Twenty-four test methods, listed in Table 1, are specified.

This Standard is applicable to all textiles in all forms, provided that the textile is capable of withstanding the test conditions.

**2 REFERENCED DOCUMENTS**

The following documents are referred to in this Standard:

AS

2001 Methods of test for textiles

2001.1 Method 1: Conditioning procedures

2001.4.A01 Method 4.A01: Colourfastness tests—General principles of testing (ISO 105-A01:1994, MOD)

### 3 PRINCIPLE

A test specimen in contact with undyed cloths is agitated in a test solution. The test specimen and undyed cloths are rinsed and dried, and the change in colour of the test specimen and the degree of staining of the undyed cloths are assessed.

### 4 REAGENTS AND TEST SOLUTIONS

#### 4.1 Reagents

##### 4.1.1 General

Unless otherwise specified all reagents shall be of at least technical grade where applicable, and only distilled or deionized water shall be used. The reagents listed below are required, depending on the test method selected.

##### 4.1.2 Standard soap

Soap shall comply with the following requirements based, where appropriate, upon dry mass:

- (a) Maximum moisture content..... 50 g/kg
- (b) Maximum free alkali, calculated as  $\text{Na}_2\text{CO}_3$  ..... 3 g/kg
- (c) Maximum free alkali, calculated as  $\text{NaOH}$ ..... 1 g/kg
- (d) Maximum total fatty matter..... 850 g/kg
- (e) Maximum titre of mixed fatty acids prepared from soap..... 30°C
- (f) Maximum iodine value ..... 50

The soap shall be free from fluorescent brighteners.

##### 4.1.3 Sodium carbonate

Anhydrous.

##### 4.1.4 Sodium hypochlorite solution

Commercial sodium hypochlorite solution containing approximately 125 g/L of available chlorine; freshly standardized before use, utilizing the method set out in Appendix A. This solution shall be used to prepare a dilute solution of sodium hypochlorite containing 5.0 g/L of available chlorine, which in turn is to be used within 4 h to prepare test solutions 3 and 7 as specified in Clauses 4.2.4 and 4.2.8, respectively.

##### 4.1.5 Sodium silicate solution

Containing approximately 290 g/L  $\text{SiO}_2$  and 90 g/L  $\text{Na}_2\text{O}$ , and having a total solids content of approximately 380 g/L.

NOTE: Grade N40 sodium silicate solutions conforms to requirements.

#### 4.1.6 ECE reference detergent

Detergent without fluorescent brighteners, having the composition set out below.

| Component                                                                          | Composition<br>% (m/m)<br>(±0.02%) |
|------------------------------------------------------------------------------------|------------------------------------|
| Linear sodium alkyl benzene sulfonate<br>(Mean length of alkane chain C11.5) ..... | 8.0                                |
| Ethoxylated tallow alcohol (14 EO) .....                                           | 2.9                                |
| Sodium soap (chain length):                                                        |                                    |
| C <sub>12</sub> to C <sub>16</sub> . . . 13% to 26% } .....                        | 3.5                                |
| C <sub>18</sub> to C <sub>22</sub> . . . 74% to 87% }                              |                                    |
| Sodium tripolyphosphate .....                                                      | 43.7                               |
| Sodium silicate (SiO <sub>2</sub> /Na <sub>2</sub> O = 3.3/1) .....                | 7.5                                |
| Magnesium silicate .....                                                           | 1.9                                |
| Sodium carboxymethylcellulose (SCMC) .....                                         | 1.2                                |
| EDTA sodium salt .....                                                             | 0.2                                |
| Sodium sulfate (anhydrous) .....                                                   | 21.2                               |
| Water .....                                                                        | 9.9                                |
|                                                                                    | <hr/> 100.0                        |

#### 4.1.7 Sodium perborate tetrahydrate

#### 4.1.8 Neutral detergent

A neutral detergent approved for these tests.

#### 4.1.9 Commercial hydrogen peroxide solution

Commercial grade, preferably containing either 350 g/L or 500 g/L hydrogen peroxide; freshly standardized before use, utilizing the method set out in Appendix B. This solution shall be used to prepare a dilute solution containing 50 g/L of hydrogen peroxide, which in turn is to be used to prepare test solutions 9 and 10 as specified in Clauses 4.2.10 and 4.2.11, respectively.

NOTE: Other concentrations of commercial grade hydrogen peroxide may be used provided that the test solution requirements (see Clauses 4.2.10 and 4.2.11) are achieved.

### 4.2 Test solutions

#### 4.2.1 General

Where test solutions contain sodium hypochlorite, sodium perborate tetrahydrate or hydrogen peroxide, additions to the pre-heated test solutions, as described in Clause 7(e), shall be made immediately prior to commencement of the test, since in solution these reagents decompose rapidly.

#### 4.2.2 Test solution 1

Make up a solution of distilled or deionized water containing 5 g/L standard soap.

**4.2.3 Test solution 2**

Make up a solution of distilled or deionized water containing—

- (a) 5 g/L standard soap; and
- (b) 2 g/L sodium carbonate.

**4.2.4 Test solution 3**

Make up a solution of distilled or deionized water containing—

- (a) 2 g/L standard soap;
- (b) 2 g/L sodium carbonate;
- (c) 2 g/L sodium silicate solution; and
- (d) sodium hypochlorite to give 0.10 g/L of available chlorine.

**4.2.5 Test solution 4**

Make up a solution of distilled or deionized water containing 4 g/L ECE reference detergent. Adjust to pH  $10.5 \pm 0.2$  using sodium carbonate.

**4.2.6 Test solution 5**

Make up a solution of distilled or deionized water containing—

- (a) 4 g/L ECE reference detergent; and
- (b) 1 g/L sodium perborate tetrahydrate.

**4.2.7 Test solution 6**

Make up a solution of distilled or deionized water containing 4 g/L ECE reference detergent.

**4.2.8 Test solution 7**

Make up a solution of distilled or deionized water containing—

- (a) 4 g/L ECE reference detergent; and
- (b) sodium hypochlorite to give 0.10 g/L of available chlorine.

**4.2.9 Test solution 8**

Make up a solution of distilled or deionized water containing 2 g/L neutral detergent.

**4.2.10 Test solution 9**

Make up a solution of distilled or deionized water containing—

- (a) 5 g/L standard soap; and
- (b) a concentration of 2.5 g/L hydrogen peroxide.

**4.2.11 Test solution 10**

Make up a solution of distilled or deionized water containing—

- (a) 4 g/L ECE reference detergent; and
- (b) a concentration of 2.5 g/L hydrogen peroxide.

**5 APPARATUS****5.1 Conditioning facility**

The apparatus specified in AS 2001.1, to provide and maintain a standard atmosphere, where conditioning is required.