International Standard 105/F

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Textiles — Tests for colour fastness — Part F : Standard adjacent fabrics

Textiles — Essais de solidité des teintures — Partie F : Tissus témoins

Second edition — 1982-09-01

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Descriptors : textiles, dyes, tests, colour fastness, visual inspection, staining of colour, reference sample.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

International Standard ISO 105/F was developed by Technical Committee ISO/TC 38, *Textiles.*

NOTE — International Standard ISO 105 is presented in the form of parts. Each of these parts corresponds to a group and is split up into its different component sections. This form facilitates the replacement of existing sections by successive editions as necessary.

Sections F02, F03, F04, F05 and F06, contained in this second edition of part F of ISO 105, were circulated to the member bodies in December 1979 and complete section F01-1978.

This part of ISO 105 cancels and replaces group F of ISO 105-1978.

Contents of ISO 105

ISO 105/J **Textiles — Tests for colour fastness —**
Part J : Measurement of colour and colour differences

- **J01** Method for the measurement of colour and colour differences

ISO 105/N **Textiles — Tests for colour fastness —**
Part N : Colour fastness to bleaching agencies

- **N01** Colour fastness to bleaching : Hypochlorite
- **N02** Colour fastness to bleaching : Peroxide
- **N03** Colour fastness to bleaching : Sodium chlorite : Mild
- **N04** Colour fastness to bleaching : Sodium chlorite : Severe
- **N05** Colour fastness to stoving

ISO 105/P **Textiles — Tests for colour fastness —**
Part P : Colour fastness to heat treatments

- **P01** Colour fastness to dry heat (excluding pressing)
- **P02** Colour fastness to pleating : Steam pleating

ISO 105/S **Textiles — Tests for colour fastness —**
Part S : Colour fastness to vulcanizing

- **S01** Colour fastness to vulcanizing : Hot air
- **S02** Colour fastness to vulcanizing : Sulphur monochloride
- **S03** Colour fastness to vulcanizing : Open steam

ISO 105/X **Textiles — Tests for colour fastness —**
Part X : Tests not included in parts A to S or part Z

- **X01** Colour fastness to carbonizing : Aluminium chloride
- **X02** Colour fastness to carbonizing : Sulphuric acid
- **X03** Colour fastness to chlorination
- **X04** Colour fastness to mercerizing
- **X05** Colour fastness to organic solvents
- **X06** Colour fastness to soda boiling
- **X07** Colour fastness to cross-dyeing : Wool
- **X08** Colour fastness to degumming
- **X09** Colour fastness to formaldehyde
- **X10** Assessment of migration of textile colours into polyvinyl chloride coatings
- **X11** Colour fastness to hot pressing
- **X12** Colour fastness to rubbing
- **X13** Colour fastness of wool dyes to processes using chemical means for creasing, pleating and setting

ISO 105/Z **Textiles — Tests for colour fastness —**
Part Z : Colorant characteristics

- **Z01** Colour fastness to metals in the dye-bath : Chromium salts
- **Z02** Colour fastness to metals in the dye-bath : Iron and copper

Textiles — Tests for colour fastness — F01 Specification for standard adjacent fabric : Wool

1 Scope and field of application

This specification is intended to establish an undyed pure wool adjacent fabric which may be used for the assessment of staining in colour fastness test procedures. The standard wool adjacent fabric exhibits standardized staining properties.

2 Principle

For testing the standardized staining properties, two water fastness tests and also a wash test carried out at 50 °C are conducted on two composite specimens made from a dyed master fabric and a cotton adjacent fabric with

a) the wool fabric under test, and

b) a sample of the master standard wool adjacent fabric.

Staining is then assessed using the grey scale for assessing staining.

3 References

ISO 105 :

Section A01, *General principles of testing.*

Section A03, *Grey scale for assessing staining.*

Section C02, *Colour fastness to washing : Test 2.*

Section E01, *Colour fastness to water.*

ISO 3072, *Wool — Determination of solubility in alkali.*

4 Apparatus and reagents

4.1 Apparatus and reagent, as specified in section E01.

4.2 Apparatus and reagents, as specified in section C02.

4.3 Grey scale for assessing staining (see clause 3).

4.4 For first dyed master fabric — **1,5 % CI Direct Red 16** (Colour Index, 3rd Edition).

For second dyed master fabric — **3 % CI Acid Red 42** (Colour Index, 3rd Edition).

For third dyed master fabric — **2 % CI Acid Red 42** (Colour Index, 3rd Edition).

4.5 Samples of master standard wool adjacent fabric (see 6.3).

5 Characteristics of the fabric

Choose a fabric having technical characteristics as similar as possible to those of the master standard adjacent fabric.

5.1 Composition and construction

The standard wool adjacent fabric is a wool cloth of mass per unit area 125 $^{+5}_{0}$ g/m^2. It consists of a plain weave cloth with an even and smooth surface made of pure wool fibres. After wetting and tensionless drying, a sample shall remain flat. It shall be free from finishes, residual chemicals, and chemically damaged fibres.

5.2 Staining properties

As adjacent fabrics shall yield exact and reproducible assessments, their most important property is standardized staining characteristics during colour fastness tests. Dyed master fabrics are set up, whose staining properties in specified fastness tests are defined. Staining characteristics of the wool adjacent fabrics shall conform to those of the dyed master fabric.

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5.2.1 Dyed master fabrics to be subjected to the colour fastness tests

a) First dyed master fabric : 1,5 % CI Direct Red 16 (Colour Index, 3rd Edition) dyed on a specified cotton adjacent fabric (see 6.2.1). This dyeing is intended for the water fastness test method [see 5.2.2 a)].

b) Second dyed master fabric : 3 % CI Acid Red 42 (Colour Index, 3rd Edition) dyed on a specified wool adjacent fabric (see 6.2.2). This dyeing is intended for the water fastness test method [see 5.2.2 a)].

c) Third dyed master fabric : 2 % CI Acid Red 42 (Colour Index, 3rd Edition) dyed on a specified wool adjacent fabric (see 6.2.3). This dyeing is intended for the washing test 2 (50 °C) [see 5.2.2 b)].

5.2.2 Colour fastness test methods employed for assessing the staining properties

The staining properties of the standard wool adjacent fabric are determined by the following test methods :

a) water fastness test according to section E01;

b) washing test 2 (50 °C) according to section C02.

5.2.3 Test specimens

In order to test the wool fabric, which is prepared as described in 6.1 and which is intended to be used as a specified wool adjacent fabric, a dyed master fabric (see 5.2.1) is placed between the wool fabric to be tested and a cotton adjacent fabric. For comparison, another composite specimen is made by using a sample of the master wool adjacent fabric. Both composite specimens are tested according to 5.2.2.

5.2.4 Results of the staining during the tests

The staining of the wool adjacent fabrics shall yield the following assessment, measured by the grey scale for assessing staining (see 6.3) :

a) water fastness test with the first dyed master fabric : 3;

b) water fastness test with the second dyed master fabric : 2-3;

c) washing test 2 (50 °C) with the third dyed master fabric : 3-4.

Test assessment of the staining shall not differ by more than half a step from those specified.

The change of colour of the dyed master fabric and the staining of the cotton adjacent fabric are neglected.

6 Notes

6.1 Production of the standard wool adjacent fabric

6.1.1 Raw material for warp and weft

Australian Merino wool — Mean fibre diameter in the range 18,5 to 19,7 µm = 74 s British fineness washed in weak alkali.

Staple length 50 to 70 mm.

6.1.2 Yarn, warp and weft identical

15,6 tex × 2 worsted.

Spin twist : 620 t/m.

Yarn twist : 600 t/m.

Fat content of the yarn : 0,6 ± 0,2 % (emulsified groundnut oiling agent).

Steam treatments of single yarn and after twisting : mild and uniform in respect of the charge and the duration of steam treatment and conditions for the whole batch.

Production samples of the yarn shall be tested to determine compliance with the following requirements :

pH value of the aqueous extract at 20 °C : 9,5 ± 0,2;

fat content : 0,6 ± 0,2 %.

Staining in the water fastness test according to 5.2.2 a) should be 3 or 3-4, i.e. similar or somewhat less than master standard adjacent fabric.

Alkali solubility shall not exceed 18 % (determined by the method in ISO 3072).

6.1.3 Grey goods

Weave 1/1 plain.

Number of threads

warp 210 ± 5 per 10 cm

weft 180 ± 5 per 10 cm

weaving without sizing.

Staining after washing according to 6.1.4 in water fastness test [see 5.2.2 a)] should be 3-4.

Fat content : 0,5 ± 0,2 %.

6.1.4 Finishing

No singeing.

Continuous washing, for example with the Vibrotex (Kuesters, Krefeld) using non-ionic detergent, pH 8,5 to 8, temperature 45 °C, time in the washing liquor about 2 min.

Continuous rinsing until pH 6,5 to 7,5 is reached.

Continuous hot water fixation, for example with the "Conticrab" machine (Monforts, Moenchengladbach), the goods being passed through a hot water tank at 80 °C and then passed over a heated drum at 90 °C below a rubber cloth. Time on the heated drum about 100 s; pH of the water at 80 °C, 6,5 to 7,5.

Mild drying, with 6 % over feed at 80 °C, for example with a Famatex jet dryer, speed 20 m/min.

Shearing on both sides, for example with a hollow bed shearing machine (Ateliers Raxhon, Belgium).

Stain removal with perchloroethylene.

Straightening on a stenter frame with gentle steaming.

Degree of whiteness according to Stephanson :

$$W = 2B - A = 2R_z - R_x$$

Standard source D_{65}. CIE 1931 standard observer. White Standard : absolute White. Thickness of material : ∞. The value should be 43 ± 1.

For visual assessment the specimen should be compared with the master standard.

The pH value of the aqueous extract should be 8,0 ± 0,5. The residual fat content : 0,4 ± 0,1 % (determined by IWTO-method 10—62 edition 1966).

The alkali solubility shall not exceed 18 % (determined by the method in ISO 3072).

6.2 Production of the dyed master samples
(see 5.2.1)

6.2.1 1,5 % CI Direct Red 16 (Colour Index, 3rd Edition) dyed on a specified cotton adjacent fabric [see 5.2.1 a)]

A wetted-out pattern of the cotton fabric is entered at 30 °C into a dye-bath containing 1,5 % CI Direct Red 16 (Colour Index, 3rd Edition) and 20 % sodium sulphate decahydrate ($Na_2SO_4.10H_2O$), all percentages being calculated on the mass of the cotton fabric, at a liquor ratio of 20 : 1.

Within 20 min the dye-bath is raised to 60 °C and the fabric is dyed for 60 min at this temperature. The dye-bath is discharged and the dyeing rinsed with cold running tap-water until the water is completely colourless. The dyed fabric is then dried.

6.2.2 3 % CI Acid Red 42 (Colour Index, 3rd Edition) dyed on a specified wool adjacent fabric [see 5.2.1 b)]

A wetted-out pattern of the wool fabric is entered at 40 °C into a dye-bath containing 3 % CI Acid Red 42 (Colour Index, 3rd Edition), 10 % sodium sulphate decahydrate ($Na_2SO_4.10H_2O$), and 4 % sulphuric acid (96 %), all percentages being calculated on the mass of the wool pattern at a liquor ratio of 40 : 1.

The dye-bath is raised to the boil within 30 min, and boiled for a further 60 min. The dye-bath is then cooled down by addition of cold water. The pattern is removed, rinsed in cold running tap-water and dried.

6.2.3 2 % CI Acid Red 42 (Colour Index, 3rd Edition) dyed on a specified wool adjacent fabric [see 5.2.1 c)]

This master sample is dyed in the same manner as given in 6.2.2 but using 2 % Acid Red 42 (Colour Index, 3rd Edition) instead of 3 %.

6.3 Master standard and dyed master standard

Samples of the master standard wool adjacent fabric and the dyed master standards are available from

Beuth-Vertrieb GmbH
Burggrafenstrasse 4-7
D-1000 Berlin 30
Germany.

The master standard wool adjacent fabric may also be obtained from

Society of Dyers and Colourists
P.O. Box 244, Perkin House
82 Gratton Road
Bradford BD1 2JB
West Yorks
United Kingdom.

Textiles — Tests for colour fastness —

F02 Specification for standard adjacent fabric : Cotton and viscose

1 Scope and field of application

This specification is intended to establish undyed cotton and viscose adjacent fabrics which may be used for the assessment of staining in colour fastness test procedures. The standard cotton and viscose adjacent fabrics exhibit standardized staining properties.

2 Principle

For testing the standardized staining properties, a wash fastness test carried out at 40 °C is conducted on a composite specimen made from a dyed master fabric, a standard adjacent fabric and an adjacent fabric under test. Upon completion of the test the staining of the two adjacent fabrics is evaluated using the grey scale for assessing change in colour.

3 References

ISO 105 :

Section A01, *General principles of testing.*

Section A02, *Grey scale for assessing change in colour.*

Section C01, *Colour fastness to washing : Test 1.*

4 Apparatus and reagents

4.1 Apparatus and reagents, as specified in section C01.

4.2 Reference dye : CI Direct Blue 1, applied to standard cotton adjacent fabric (see 6.2).

4.3 Grey scale for assessing change in colour (see clause 3).

4.4 Samples of master standard cotton and viscose adjacent fabrics (see 6.3).

5 Characteristics of the fabric

Choose a fabric having technical characteristics as similar as possible to those of the master standard adjacent fabric.

5.1 Composition and construction

The standard cotton adjacent fabric is a cotton cloth of mass per unit area 115 ± 5 g/m² and the standard viscose adjacent fabric is a viscose cloth of mass 140 ± 5 g/m². They consist of plain weave cloths with even and smooth surfaces made of pure cotton or viscose fibres. After wetting and tensionless drying, samples shall remain flat. They shall be free from finishes, residual chemicals, and chemically damaged fibres.

5.2 Staining properties

As adjacent fabrics shall yield exact and reproducible assessments, their most important property is standardized staining characteristics during colour fastness tests. Dyed master fabrics are set up, whose staining properties in specified fastness tests are defined. Staining characteristics of the cotton and viscose adjacent fabrics shall conform to those of the dyed master fabrics.

5.2.1 Dyed master fabrics to be subjected to the colour fastness test

Dyed master fabric : CI Direct Blue 1 (Colour Index, 3rd Edition) dyed on a specified cotton adjacent fabric (see 6.2).

5.2.2 Colour fastness test method employed for assessing the staining properties

The staining properties of the standard cotton and viscose adjacent fabrics are determined by washing test 1 (40 °C) according to section C01.

5.2.3 Test specimens

In order to test the cotton and viscose fabrics, which are prepared as described in 6.1 and which are intended to be used as specified cotton and viscose adjacent fabrics, a dyed master

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fabric (see 5.2.1) is placed between the cotton or viscose fabric to be tested and a cotton adjacent fabric. To eliminate possible differences in test conditions, both the standard adjacent fabric and the adjacent fabric under test are used in the same composite specimen.

5.2.4 Results of the staining during the tests

The colour difference between the stain of the standard adjacent fabric and that on the fabric under test is evaluated using the grey scale for assessing change in colour. The fabric under test is acceptable for its staining properties when the colour difference between the staining of the standard and that of the adjacent fabric under test is not greater than 4-5.

6 Notes

6.1 Production of the standard cotton and viscose adjacent fabrics

6.1.1 Yarn

a) Cotton

warp : 16,5 tex 820
weft : 14 tex 900

b) Viscose

warp : 20 tex 740
weft : 33 tex 700

The yarn shall not contain fluorescent brighteners. No warp sizing material shall be present.

6.1.2 Loomstate fabric

a) Cotton

Plain weave 1/1

Number of threads

warp 35 per cm
weft 31 per cm

b) Viscose

Plain weave 1/1

Number of threads

warp 28 per cm
weft 22 per cm

6.1.3 Finished fabric

Degree of whiteness : 70 ± 5, measured on a reflectometer (whiteness formula : $L + 3A - 3B$)

Other cotton and viscose fabrics having the same staining characteristics may be used.

Standard source D_{65}

CIE 1931 standard observer

White Standard: absolute White

6.2 Production of the dyed master fabric

The fabric is desized, scoured and bleached in such a manner as to obtain the characteristics given in 6.1. It shall have a wetting time of less than 3 s and a pH of 7,0 ± 0,5.

6.3 Standard cotton and viscose adjacent fabrics and dyed master fabric

These are available from

Centre de Recherches Textiles de Mulhouse
185, rue de l'Illberg
F-68093 Mulhouse Cedex
France

and

Association pour la détermination de la solidité des teintures
12, rue d'Anjou
F-75008 Paris
France.

Textiles — Tests for colour fastness —

F03 Specification for standard adjacent fabric : Polyamide

1 Scope and field of application

This specification is intended to establish an undyed polyamide adjacent fabric which may be used for the assessment of staining in colour fastness test procedures. The standard polyamide adjacent fabric exhibits standardized staining properties.

2 Principle

For testing the standardized staining properties, a wash fastness test carried out at 50 °C is conducted with a composite specimen made from a dyed master fabric, a standard adjacent fabric and an adjacent fabric under test. Upon completion of the test the colour difference between the two adjacent fabrics is evaluated using the grey scale for assessing change in colour.

3 References

ISO 105 :

Section A01, *General principles of testing.*

Section A02, *Grey scale for assessing change in colour.*

Section C02, *Colour fastness to washing : Test 2.*

4 Apparatus and reagents

4.1 Apparatus and reagents, as specified in section C02.

4.2 Grey scale for assessing change in colour (see clause 3).

4.3 Reference dye, CI Acid Red 151, applied to standard adjacent fabric (see 6.2).

4.4 Samples of master standard polyamide adjacent fabric (see 6.3).

5 Characteristics of the fabric

Choose a fabric having technical characteristics as similar as possible to those of the master standard adjacent fabric.

5.1 Composition and construction

The standard polyamide adjacent fabric is a polyamide cloth of mass per unit area 130 ± 5 g/m^2. It consists of a plain weave cloth with an even and smooth surface made of 100 % polyamide fibres. After wetting and tensionless drying, a sample shall remain flat. It shall be free from finishes, residual chemicals, and chemically damaged fibres.

5.2 Staining properties

As adjacent fabrics shall yield exact and reproducible assessments, their most important property is standardized staining characteristics during colour fastness tests. Dyed master fabrics are set up, whose staining properties in specified fastness tests are defined. Staining characteristics of the polyamide adjacent fabric shall conform to those of the dyed master fabric.

5.2.1 Dyed master fabric to be subjected to the colour fastness test

Dyed master fabric : CI Acid Red 151 (Colour Index, 3rd Edition) dyed on a specified polyamide adjacent fabric (See 6.2).

5.2.2 Colour fastness test method employed for assessing the staining properties

The staining properties of the standard polyamide adjacent fabric are determined by washing test 2 (50 °C) according to section C02.

5.2.3 Test specimens

In order to test the polyamide fabric, which is prepared as described in 6.1 and which is intended to be used as a specified polyamide adjacent fabric, a dyed master fabric (see 5.2.1) is placed between the polyamide fabric to be tested and a stan-

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dard adjacent fabric. To eliminate possible differences in test conditions, both the standard adjacent fabric and the adjacent fabric under test are used in the same composite specimen.

5.2.4 Results of the staining during the tests

The colour difference between the stain on the standard adjacent fabric and that on the fabric under test is evaluated with the grey scale for assessing change in colour. The fabric under test is acceptable for its staining properties when the colour difference between the staining of the standard and that of the adjacent fabric under test is not greater than 4-5.

6 Notes

6.1 Production of the standard polyamide adjacent fabric

6.1.1 Raw material for warp and weft

Staple fibre (nylon 6.6)

a) 0,333 tex per filament;

b) 38 mm length;

c) semi-dull lustre, round cross-section;

d) acid and disperse dyeable, normal tenacity.

6.1.2 Yarn for warp and weft

Warp : 10 tex Z 700 × 2 S 600; R 20 tex

Weft : 20 tex Z 700

The yarn shall not contain fluorescent brighteners. No warp sizing material shall be present.

6.1.3 Loomstate fabric

Width in the loom at the reed : 127 cm

Weave 1/1 plain

Number of threads

warp : 17,5 per cm
weft : 20 per cm

6.1.4 Finishing

6.1.4.1 Jig scour

a) Set bath at 60 °C.

b) Use a non-ionic detergent (ethylene oxide condensate) and tetrasodium pyrophosphate.

c) Run one end at 60 °C.

d) Raise to 95 °C, run one end, drop bath.

e) Rinse twice, one end each at 95 °C.

f) Rinse, cold running water, three ends.

6.1.4.2 Neutralization

a) Set bath at 60 °C.

b) Use a buffer solution containing, per litre, 0,5 g monosodium phosphate and 1,5 g disodium phosphate.

c) Run for 30 min at 60 °C.

Dry at 95 °C in gas-fired tenter frame. Frame to 110 to 112 cm.

6.1.5 Requirements of finished fabric

pH of finished fabric : 7 ± 0,5

Residual oil content : less than 1,0 %

Degree of whiteness : 70 ± 5, measured on a reflectometer (whiteness formula : $L + 3A - 3B$)

Standard source D_{65}

CIE 1931 standard observer

White Standard : absolute White

Any other polyamide fabric having the same staining properties may be used.

6.2 Production of the dyed master fabric

The dyed master fabric is produced with CI Acid Red 151 applied to standard adjacent fabric (see 6.1) with 4 % ammonium sulphate and a levelling agent, such as 0,75 % sodium salt of dodecyl diphenyl ether disulphonate at a liquor ratio of approximately 30 : 1 for 1 h near the boil.

6.3 Standard polyamide adjacent fabric and dyed master polyamide fabric

These are availalble from

AATCC
P.O. Box 12215
Research Triangle Park
North Carolina, 27709
USA.

Textiles — Tests for colour fastness —

F04 Specification for standard adjacent fabric : Polyester

1 Scope and field of application

This specification is intended to establish an undyed polyester adjacent fabric which may be used for the assessment of staining in colour fastness test procedures. The standard polyester adjacent fabric exhibits standardized staining properties.

2 Principle

For testing the standardized staining properties, a fastness to dry heat test carried out at 170 °C* is conducted with a composite specimen made from a dyed master fabric, a standard adjacent fabric and an adjacent fabric under test. Upon completion of the test the colour difference between the two adjacent fabrics is evaluated using the grey scale for assessing change in colour.

3 References

ISO 105 :

Section A01, *General principles of testing.*

Section A02, *Grey scale for assessing change in colour.*

Section P01, *Colour fastness to dry heat (excluding pressing).*

4 Apparatus and reagent

4.1 Apparatus, as specified in section P01.

4.2 Grey scale for assessing change in colour (see clause 3).

4.3 Reference dye, CI Disperse Red 4, applied to standard adjacent fabric (see 6.2).

4.4 Samples of master standard polyester adjacent fabric (see 6.3).

5 Characteristics of the fabric

Choose a fabric having technical characteristics as similar as possible to those of the master standard adjacent fabric.

5.1 Composition and construction

The standard polyester adjacent fabric is a polyester cloth of mass per unit area 130 ± 5 g/m^2. It consists of a plain weave cloth with an even and smooth surface made of 100 % polyester fibres. After wetting and tensionless drying, a sample shall remain flat. It shall be free from finishes, residual chemicals, and chemically damaged fibres.

5.2 Staining properties

As adjacent fabrics shall yield exact and reproducible assessments, their most important property is standardized staining characteristics during colour fastness tests. Dyed master fabrics are set up, whose staining properties in specified fastness tests are defined. Staining characteristics of the polyester adjacent fabric shall conform to those of the dyed master fabric.

5.2.1 Dyed master fabric to be subjected to the colour fastness test

Dyed master fabric : CI Disperse Red 4 (Colour Index, 3rd Edition) dyed on a specified polyester adjacent fabric (see 6.2).

* The temperature of 170 °C has been chosen to give the desired depth of stain, although it differs from the temperature specified in section P01.

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5.2.2 Colour fastness test method employed for assessing the staining properties

The staining properties of the standard polyester adjacent fabric are determined by the method for fastness to dry heat in section P01.

5.2.3 Test specimens

In order to test the polyester fabric, which is prepared as described in 6.1 and which is intended to be used as a specified polyester adjacent fabric, a dyed master fabric (see 5.2.1) is placed between the polyamide fabric to be tested and a standard adjacent fabric. To eliminate possible differences in test conditions, both the standard adjacent fabric and the adjacent fabric under test are used in the same composite specimen.

5.2.4 Results of the staining during the tests

The colour difference between the stain on the standard adjacent fabric and that on the fabric under test is evaluated with the grey scale for assessing change in colour. The fabric under test is acceptable for its staining properties when the colour difference between the staining of the standard and that of the adjacent fabric under test is not greater than 4-5.

6 Notes

6.1 Production of the standard polyester adjacent fabric

6.1.1 Raw material for warp and weft

Staple fibre

a) 0,17 tex per filament;

b) 38 mm length;

c) semi-dull lustre, round cross-section;

d) disperse dyeable.

6.1.2 Yarn for warp and weft

Warp : 7,5 tex Z 1000 × 2 S 800; R 15 tex

Weft : 20 tex S 800

The yarn shall not contain fluorescent brighteners. No warp sizing material shall be present.

6.1.3 Loomstate fabric

Width in the loom at the reed : 127 cm

Weave 1/1 plain

Number of threads

warp : 23,5 per cm
weft : 20,5 per cm

6.1.4 Finishing

6.1.4.1 Jig scour

a) Set bath at 60 °C.

b) Use a non-ionic detergent (ethylene oxide condensate) and tetrasodium pyrophosphate.

c) Run one end at 60 °C.

d) Raise to 95 °C, run one end, drop bath.

e) Rinse twice, one end each at 95 °C.

f) Rinse, cold running water, three ends.

6.1.4.2 Neutralization

a) Set bath at 60 °C.

b) Use a buffer solution containing, per litre, 0,5 g monosodium phosphate and 1,5 g disodium phosphate.

c) Run for 30 min at 60 °C.

Dry at 95 °C in gas-fired tenter frame. Frame to 110 to 112 cm.

6.1.5 Requirements of finished fabric

pH of finished fabric : 7 ± 0,5

Residual oil content : less than 0,5 %

Degree of whiteness : 75 ± 5, measured on a reflectometer (whiteness formula : $L + 3A - 3B$)

Standard source D_{65}

CIE 1931 standard observer

White Standard : absolute White

Any other polyester fabric having the same staining properties may be used.

6.2 Production of the dyed master fabric

The dyed master fabric is produced with CI Disperse Red 4, applied to standard adjacent fabric (see 6.1). The dye is applied at a liquor ratio of 20 : 1 with an appropriate amount of a suitable carrier, e.g. 6 % methyl biphenyl emulsion, 0,5 % sodium salt of EDTA, 2 g ammonium sulphate per litre of liquor and formic acid to attain a pH of 5,5 and held at the boil for 60 min.

The dyeing process is followed by a reductive scour with 1 g sodium carbonate per litre and 1 g sodium hydrosulphite per litre at 60 °C for 20 min, and by subsequent rinsing.

6.3 Standard polyester adjacent fabric and dyed master polyester fabric

These are available from

AATCC
P.O. Box 12215
Research Triangle Park
North Carolina, 27709
USA.

Textiles — Tests for colour fastness — F05 Specification for standard adjacent fabric : Acrylic

1 Scope and field of application

This specification is intended to establish an undyed acrylic adjacent fabric which may be used for the assessment of staining in colour fastness test procedures. The standard acrylic adjacent fabric exhibits standardized staining properties.

2 Principle

For testing the standardized staining properties, a fastness to steam pleating test carried out at 115 °C (intermediate temperature specified in section P02) is conducted with a composite specimen made from a dyed master fabric, a standard adjacent fabric and an adjacent fabric under test. Upon completion of the test the colour difference between the two adjacent fabrics is evaluated using the grey scale for assessing change in colour.

3 References

ISO 105 :

Section A01, *General principles of testing.*

Section A02, *Grey scale for assessing change in colour.*

Section P02, *Colour fastness to pleating : Steam pleating.*

4 Apparatus and reagent

4.1 Apparatus, as specified in section P02.

4.2 Grey scale for assessing change in colour (see clause 3).

4.3 Reference dye, CI Basic Green 4, applied to standard adjacent fabric (see 6.2).

4.4 Samples of master standard acrylic adjacent fabric (see 6.3).

5 Characteristics of the fabric

Choose a fabric having technical characteristics as similar as possible to those of the master standard adjacent fabric.

5.1 Composition and construction

The standard acrylic adjacent fabric is an acrylic cloth of mass per unit area 135 ± 5 g/m^2. It consists of a plain weave cloth with an even and smooth surface made of 100 % acrylic fibres. After wetting and tensionless drying, a sample shall remain flat. It shall be free from finishes, residual chemicals, and chemically damaged fibres.

5.2 Staining properties

As adjacent fabrics shall yield exact and reproducible assessments, their most important property is standardized staining characteristics during colour fastness tests. Dyed master fabrics are set up, whose staining properties in specified fastness tests are defined. Staining characteristics of the acrylic adjacent fabric shall conform to those of the dyed master fabric.

5.2.1 Dyed master fabric to be subjected to the colour fastness test

Dyed master fabric : CI Basic Green 4 (Colour Index, 3rd Edition) dyed on a specified acrylic adjacent fabric (see 6.2).

5.2.2 Colour fastness test method employed for assessing the staining properties

The staining properties of the standard acrylic adjacent fabric are determined by the method for fastness to steam pleating in section P02.

5.2.3 Test specimens

In order to test the acrylic fabric, which is prepared as described in 6.1 and which is intended to be used as a specified acrylic adjacent fabric, a dyed master fabric (see 5.2.1) is placed between the acrylic fabric to be tested and a standard adjacent

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fabric. To eliminate possible differences in test conditions, both the standard adjacent fabric and the adjacent fabric under test are used in the same composite specimen.

5.2.4 Results of the staining during the tests

The colour difference between the stain on the standard adjacent fabric and that on the fabric under test is evaluated with the grey scale for assessing change in colour. The fabric under test is acceptable for its staining properties when the colour difference between the staining of the standard and that of the adjacent fabric under test is not greater than 4.

6 Notes

6.1 Production of the standard acrylic adjacent fabric

6.1.1 Raw material for warp and weft

Staple fibre

a) 0,278 tex per filament;

b) 38 mm length;

c) semi-dull lustre, dogbone cross-section;

d) basic dyeable.

6.1.2 Yarn for warp and weft

Warp and weft : 10 tex Z 790 × 2 S 470; R 20 tex

The yarn shall not contain fluorescent brighteners. No warp sizing material shall be present.

6.1.3 Loomstate fabric

Width in the loom at the reed : 127 cm

Weave 1/1 plain

Number of threads

warp : 17,5 per cm
weft : 16 per cm

6.1.4 Finishing

6.1.4.1 Jig scour

a) Set bath at 60 °C.

b) Use a non-ionic detergent (ethylene oxide condensate) and tetrasodium pyrophosphate.

c) Run one end at 60 °C.

d) Raise to 95 °C, run one end, drop bath.

e) Rinse twice, one end each at 95 °C.

f) Rinse, cold running water, three ends.

6.1.4.2 Neutralization

a) Set bath at 60 °C.

b) Use a buffer solution containing, per litre, 0,5 g monosodium phosphate and 1,5 g disodium phosphate.

c) Run for 30 min at 60 °C.

Dry at 95 °C in gas-fired tenter frame. Frame to 110 to 112 cm.

6.1.5 Requirements of finished fabric

pH of finished fabric : 7 ± 0,5

Residual oil content : less than 1,0 %

Degree of whiteness : 70 ± 5, measured on a reflectometer (whitness formula : $L + 3A - 3B$)

Standard source D_{65}

CIE 1931 standard observer

White Standard : absolute White

Any other acrylic fabric having the same staining properties may be used.

6.2 Production of the dyed master fabric

The dyed master fabric is produced with CI Basic Green 4 applied to standard adjacent fabric (see 6.1) with the 2,0 % acetic acid 56 % (pH 4 to 5) and 10 % anhydrous sodium sulphate at a liquor ratio of approximately 30 : 1 for 1 h at the boil.

6.3 Standard acrylic adjacent fabric and dyed master acrylic fabric

These are available from

AATCC
P.O. Box 12215
Research Triangle Park
North Carolina, 27709
USA.