

**Finalized
Tanzania Standard**

**Textiles – Tests for colour fastness – Part XII – Colour
fastness to hot pressing**



TANZANIA BUREAU OF STANDARDS

0 Foreword

0.1 This Finalized Tanzania Standard has been prepared to provide practical assistance and guidance for assessing colour fastness to hot pressing.

0.2 In the preparation of this Finalized Tanzania Standard, reference was made from ISO 105- X11: 1994, Textiles- Tests for colour fastness- Part X11: Colour fastness to hot pressing; published by the International Organization for Standardization.

1. Scope

1.1 This Finalized Tanzania Standard specifies a method for determining the resistance of the colour of textile of all kinds and in all forms to ironing and to processing on hot cylinders

1.2 Tests are given for hot pressing when the textile is dry, when it is wet and when it is damp. The end use of the textile usually determines which test should be made

2. Normative references

TZS 533: Textiles – Tests for colour fastness -General principles of testing

TZS 41: Textiles – Tests for colour fastness-Assessing method for assessing change in colour.

TZS 42: Textiles – Tests for colour fastness-Method for assessing staining.

TZS 534: Textiles – Standard atmospheres for conditioning and testing.

3. Principles

3.1 Dry pressing – A dry specimen is pressed with a heating device at a specified temperature and pressure for a specified time.

3.2 Damp pressing – A dry specimen is covered with a wet cotton adjacent fabric and pressed with a heating device at a specified temperature and pressure for a specified time.

- 3.3 Wet pressing** – The upper surface of a wet specimen is covered with wet cotton adjacent fabric and pressed with a heating device at a specified temperature and pressure for a specified time.
- 3.4** The change in colour of the specimen and the staining of the adjacent fabric are assessed with the grey scales immediately and again after a period of exposure to air.

4. Apparatus

- 4.1** Heating devices – consisting of a pair of smooth and parallel plates, equipped with an accurately controllable electrical heating system and giving a pressure on the specimen of 4 ± 1 kPa (see 8.4). Heat should be transferred to the specimen from the upper side only, if the lower plate is equipped with a heating system which cannot be turned off, the heat resistant sheet (4.2) with which the device shall in any case be fitted (see and 8.3) acts as a heat shield.
- 4.2** Smooth heat resistant sheet – of thickness of 3 to 6 mm (see 8.2 and 8.3)
- 4.3** Wool flannel of mass per unit area approximately 260 g/m^2
Two layers of this material are used to make a pad of thickness approximately 3 mm. Similar smooth wool fabrics or felt can be used to give a pad of thickness approximately 3 mm.
- 4.4** Undyed, bleached and unmercerized cotton cloth of mass per unit area 100 to 130 g/m^2 and with a smooth surface
- 4.5** Cotton adjacent fabric – measuring 10 cm x 4 cm
- 4.6** Grey scales for assessing change in colour and staining (see clause 2)

5. Test specimen

- 5.1** If the textile to be tested is fabric, use a specimen 10 cm x 4 cm
- 5.2** If the textile to be tested is yarn, knit it into fabric and use a piece 10 cm x 4 cm or wind it closely round a piece of thin inert material measuring 10 cm x 4 cm to form a layer having only the thickness of the yarn.
- 5.3** If the textile to be tested is loose fibre, comb and compress enough of it to form a sheet 10 cm x 4 cm and sew the sheet on to a piece of cotton adjacent fabric to support the fibre.

6. Procedure

6.1 The following temperatures are used (see 8.1)

110 ± 2°C

150 ± 2°C

200 ± 2°C

When necessary other temperatures may be used, provided that they are specially noted in the test report.

6.2 Specimens of materials that have been subjected to any heat or drying treatment must be allowed to condition in the standard temperate atmosphere for testing textiles (See clause 2) i.e. 65 ± 2% relative humidity and temperature of 27 ± 2°C before they are tested.

6.3 The bottom plate of the heating device is covered with the heat resistant sheet (4.2) wool flannel (4.3) and dry, undyed cotton cloth (4.4), whether it is heated or not (see also 8.3 and 8.4).

6.4 **Dry pressing:** Place the dry specimen on top of the cotton cloth covering the wool flannel padding (see 6.3). Lower the top plate of the heating device and leave the specimen for 15s at the specified pressing temperature.

6.5 **Damp pressing:** Place the dry specimen on top of the cotton cloth covering the wool flannel padding (see 6.3). Soak a piece of cotton adjacent fabric measuring 10 cm x 4 cm in distilled water and squeeze or extract it to contain its own mass of water. Place the wet fabric on top of the dry specimen. Lower the top plate of the heating device and leave the specimen for 15 s at the specified pressing temperature.

6.6 **Wet pressing:** Soak the specimen and a piece of cotton adjacent fabric 10 cm x 4 cm (4.5) in distilled water and squeeze or extract them to contain their own mass of water. Place the wet specimen on top of the dry cotton cloth covering the wool flannel pad (see 6.3) and place the wet adjacent fabric on the specimen. Lower the top plate of the heating device and leave the specimen for 15 s at the specified pressing temperature.

6.7 Assess the change in colour of the specimen with the appropriate grey scale immediately and after again after the specimen has been allowed to condition for 4h in the standard atmosphere for testing textiles.(see clause 2)

6.8 Assess the staining of the cotton adjacent fabric with the appropriate grey scale. Use the more heavily stained side of the cotton fabric for the assessment.

7. Test report

The test report shall include the following information:

- a) The number and year of publication of this Finalized Tanzania Standard, TZS 770
- b) All details necessary for the identification of the sample tested;
- c) The test procedure (dry, damp or wet), the heating device used and the temperature of the heating device,
- d) The numerical grey scale ratings for change in colour immediately after testing and after conditioning for 4 h in the standard atmosphere for testing textiles;
- e) The numerical grey scale ratings for staining of the adjacent fabric.

8. Notes

8.1 The choice of pressing temperature used depends to a large extent on the type of fibre and on the construction of the fabric or garment. In case of blends it is further suggested to use the temperature appropriate to the fibre with the lowest heat resistance. The indicated temperatures cover three commonly used pressing conditions.

8.2 The heating device may be the same as that used in the test for colour fastness to dry heat (excluding pressing), see clause 8 of ISO 105, Textiles – Test for colour fastness – Part PO1: Colour fastness to dry heat (excluding pressing) – and a suitable insulating material shall be used, whether the bottom plate is heated or not to minimize heat transfer to or from the bottom of the test assembly (see 4.2 and 8.3).

8.3 The heat resistant sheet used for insulation should be smooth and not warped. It is best to complete the specimen assembly on the heat resistant sheet before placing it in the heating device. The heat resistant sheet should be cooled and the wet wool dried between tests.

8.4 In order to obtain the required pressure (4 + 1 kPa) the total area of the wool flannel padding should bear a suitable relationship to the mass of the plate pressing down on the padding. If the fabric to be tested has an appreciable thickness, it will be necessary either to increase the area of the test specimen or to augment the pressure bearing surface using a suitable template made from the same material as the test specimen. If the plates of the heating device are smaller than the specimen, the pressure (ratio of weight of top plate to its area) will depend on the design of the apparatus.

8.5 If a heating device is not available, a household iron may be used, but its temperature should be measured with a surface pyrometer or with temperature sensitive papers. The iron should be weighed so that its area and total weight are

in the appropriate ratio to exert a pressure of 4 ± 1 kPa. However, due to temperature differences between different points on the surface of the iron, accuracy and reproducibility are limited. When a hand iron is used, this fact shall be stated in the test report.

8.6 Under normal gravitational conditions, the area over which the weight of the heating plate should be distributed can be calculated in square centimetres by multiplying the mass in kilograms of the heating-plate by the factor 24.525. If the area of the heating-plate is less than that of the specimen, the required mass is calculated in kilograms by dividing the plate area (expressed in square centimetre) by the same factor. For composite specimens 10 cm x 4 cm, the mass of the heating-plate assembly should be between 1.25 and 2.00 kg.