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IS : 3456 - 1966  
( Reaffirmed 1993 )

*Indian Standard*  
METHOD FOR  
DETERMINATION OF WATER SOLUBLE  
MATTER OF TEXTILE MATERIALS  
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**BUREAU OF INDIAN STANDARDS**  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

*Indian Standard*

METHOD FOR  
DETERMINATION OF WATER SOLUBLE  
MATTER OF TEXTILE MATERIALS

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*Indian Standard*  
METHOD FOR  
DETERMINATION OF WATER SOLUBLE  
MATTER OF TEXTILE MATERIALS

**0. FOREWORD**

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 11 May 1966, after the draft finalized by the Textile Chemistry Sectional Committee had been approved by the Textile Division Council.

**0.2** In textile industry textile materials undergo various treatments, in the course of which extraneous matter of various types, such as sizing or finishing material, water soluble matter is gathered by or added to the original textile material. An Indian Standard for determining size or finish, ash and fatty matter in cotton textile materials has already been published. The water soluble matter if present beyond certain limits in the textile materials adversely affects its quality.

**0.3** In reporting the result of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS : 2-1960\*.

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**1. SCOPE**

**1.1** This standard prescribes a method for determination of water soluble matter of textile materials.

**2. SAMPLING**

**2.1 Sampling for Fibre and Yarn**

**2.1.1** *Lot (Fibre or Yarn)* — The quantity of fibre or yarn from the same source shall constitute a lot. If the lot contains more than 200 kg of fibre or yarn, it shall be divided in sub-lots each weighing 200 kg or less.

**2.1.2** From a sub-lot 15 increments each approximately weighing 10 g shall be taken from different parts so that a representative sample is obtained. All the increments thus collected shall be thoroughly mixed. This shall constitute the test sample.

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\*Rules for rounding off numerical values (*revised*).

## 2.2 Sampling for Fabrics

**2.2.1 Lot (Fabric)** — The quantity of fabrics manufactured under relatively uniform conditions shall constitute a lot.

**2.2.2** The number of pieces to be selected from a lot shall be in accordance with Table 1. The pieces thus selected shall constitute the gross sample.

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**TABLE 1 SAMPLE SIZE**

LOT SIZE (1)	SAMPLE SIZE (2)
Up to 100	3
101 „ 300	4
301 „ 500	5
501 and above	7

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**2.2.3** From each piece in the gross sample about 25 g of fabric shall be taken out from at least two different parts. The parts shall then be cut into further smaller pieces and thoroughly mixed. The pieces thus collected shall constitute the test sample.

## 3. TEST SPECIMENS

**3.1** From the test sample, cut out at least two test specimens each weighing about 10 g. Cut the test specimens into small pieces.

NOTE — If the sample under analysis is loose fibre, take about 5 g of the test specimen.

## 4. CONDITIONING OF TEST SPECIMENS

**4.1** Prior to test, the test specimens shall be conditioned for 24 hours to moisture equilibrium in a standard atmosphere at  $65 \pm 2$  percent relative humidity and  $27 \pm 2^\circ\text{C}$  temperature (see IS: 196-1966\*). However, in case of fabrics which weigh more than  $270 \text{ g/m}^2$ , the test specimens shall be conditioned for 48 hours.

## 5. APPARATUS

**5.1 Flat-Bottom Flasks** — of suitable capacity with a glass stopper incorporating a stop-cock.

NOTE — The flasks that are used for the preparation of the extract should not be used for any other purpose.

## 5.2 Water Cooled Condensers

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\*Atmospheric conditions for testing (revised).



## 6. REAGENT

**6.1 Distilled Water** — conforming to IS : 1070-1960\*.

## 7. PROCEDURE

**7.1** Condition the test specimens to moisture equilibrium in the standard atmosphere ( *see* 4 ) and weigh accurately each test specimen.

**7.2** Put a test specimen in the flask and add sufficient amount of water to it to make a liquor to material ratio of 20 : 1 ( *see* Note 1 ). Connect the flask to the condenser and bring rapidly to the boil and continue to boil the liquor gently for 60 minutes. Disconnect and remove the flask while the liquor is still boiling and close it immediately with the glass stopper fitted with stop-cock.

Rapidly cool the flask to room temperature (  $27^{\circ} \pm 2^{\circ}\text{C}$  ). Do not remove or open the tap until ready for filtration. Reject any extract where the flask is not under vacuum at the time of opening. Filter the extract and wash the residue with small amount of water. Take the filtrate and washings in a tared vessel and evaporate the extract to dryness ( *see* Note 2 ). Dry the residue to constant weight at  $105^{\circ}$  to  $110^{\circ}\text{C}$ .

NOTE 1 — If the test specimen is wool, the liquor to material ratio should be 50 : 1.

NOTE 2 — The filtrate and washings may be diluted to a suitable volume and a measured amount of the solution may be evaporated for estimation.

**7.3** Calculate the water soluble matter as a percentage of the conditioned weight of the specimen by the following formula:

$$P = \frac{W_2}{W_1} \times 100$$

where

$P$  = percentage of water soluble matter;

$W_2$  = weight, in g, of the residue ( *see* 7.2 ); and

$W_1$  = weight, in g, of the conditioned test specimen ( *see* 7.1 ).

**7.4** Repeat the test as given in 7.2 with the remaining test specimen(s) and calculate the percentage of water soluble matter in each test specimen.

## 8. REPORT

**8.1** Calculate the average of the values obtained as in 7.3 and 7.4, and report it as the percentage of water soluble matter of the textiles.

\*Specification for water, distilled quality ( *revised* ).

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