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IS 6803 (1972): Special Proofed Canvas and Duck [PCD 13: Rubber and Rubber Products]



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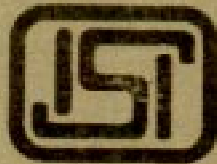
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**SPECIFICATION FOR  
SPECIAL PROOFED CANVAS AND DUCK**

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**INDIAN STANDARDS INSTITUTION**

MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG

NEW DELHI-110002

# *Indian Standard*

## SPECIFICATION FOR SPECIAL PROOFED CANVAS AND DUCK

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# *Indian Standard*

## SPECIFICATION FOR SPECIAL PROOFED CANVAS AND DUCK

### 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 18 September 1972, after the draft finalized by the Treated Fabrics Sectional Committee had been approved by the Chemical Division Council, Mechanical Engineering Division Council and Textile Division Council.

**0.2** Special proofed canvas and duck are used for manufacture of tarpaulins and other special coverings mostly needed for defence use. In this standard, requirements for base material, special proofing and other performance tests have been specified leaving composition of proofing material to the choice of the manufacturer.

**0.3** This standard contains clauses **3.1, 3.2.7.1, 3.2.9, 5.1** and **5.2** which call for agreement between the purchaser and the supplier.

**0.4** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS:2-1960\*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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### 1. SCOPE

**1.1** This standard prescribes the requirements and methods of sampling and tests for special proofed canvas and duck.

### 2. TERMINOLOGY

**2.1** For the purpose of this standard, definitions given in IS:2244-1965† shall apply.

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\*Rules for rounding of numerical values (*revised*)

†Glossary of terms related to treated fabrics.

### 3. REQUIREMENTS

**3.1 Base Fabric**—Special proofed duck and canvas shall be made from scoured and/or dyed cotton duck and cotton canvas conforming to IS:1422-1970\* and IS:1424-1970† respectively, as agreed to between the purchaser and the supplier.

#### 3.2 Special Proofed Canvas and Duck

**3.2.1** The special proofing shall be imported by treating the fabric with a suitable composition, the proofing content not exceeding 15 percent by mass when tested by method as prescribed in **A-1**.

NOTE—The proofing mixture shall not contain any ingredient which is liable to damage the proofed canvas or duck.

**3.2.2 Resistance to Microbial Attack**—The material shall be rendered resistant to microbial attack by treating with suitable rot-proofing agent.

**3.2.2.1** The proofed material when tested by the pure culture, mixed culture, asperigillus niger and soil burial method prescribed in IS:1389-1959‡ shall conform to requirements stipulated against each method.

NOTE—If it is known that copper or zinc naphthenate has been used as a rot-proofing agent, biological appreciation by the method prescribed in this clause need not be made. The purpose of this clause will be adequately served if copper or zinc content is determined by the method prescribed in **A-2** and the copper content is found to be between 0.5 to 0.8 percent and zinc content between 0.8 to 1.0 percent, when calculated on the mass of the proofed fabric.

**3.2.3 pH Value**—The pH value of the aqueous extract of the proofed canvas or duck, when determined according to the method prescribed in IS:1390-1961§, shall be between 6.0 and 8.5.

**3.2.4 Pliability**—Special proofed canvas on duck shall be pliable when the sample is kept for 2 hours at 0°C and examined immediately thereafter. The proofing shall show no tendency to crack when folded double and pressed by hand on a flat surface.

**3.2.5 Breaking Strength**—The special proofed canvas and duck shall have an average breaking strength not less than 90 percent of the specified value prescribed for the base fabric (see IS:1422-1970\* and IS:1424-1970†) when tested according to IS:1969-1968||.

\*Specification for cotton duck (first revision).

†Specification for cotton canvas (first revision).

‡Methods for testing cotton fabrics for resistance to attack by micro-organisms.

§Methods for determination of pH value of aqueous extracts of textile materials.

||Method for determination of breaking load and elongation at break of woven textile fabrics (first revision).



### 3.2.6 Waterproofness

**3.2.6.1 Pressure head test for special proofed canvas**— A circular piece of special proofed canvas, 200 mm in diameter, when subjected to a constant head of water prescribed in Table 1 for one hour according to the method prescribed in Appendix E of IS: 1389-1959\* shall not show any leakage.

NOTE— In case small water drops (maximum 10) are found but these leakages stop during the test period, such defects should not be considered for rejection.

**TABLE 1 HEIGHT OF WATER COLUMN FOR PRESSURE HEAD TEST**

MATERIAL FOR BASIC FABRIC CONFORMING TO IS: 1424-1970*, VARIETY No.	WATER COLUMN HEIGHT mm
(1)	(2)
1	300
2	230
3	150
4	150

\*Specification for cotton canvas (first revision).

**3.2.6.2 Bundesmann water repellency test for special proofed duck**— When tested as described in IS: 392-1964†, there shall be no penetration of water through the fabric and its inner side shall not be wetted. The water absorption shall not exceed 60 percent by mass.

**3.2.6.3 Cone test**— There shall be no leakage of water either through the apex of the cone or through the outer surface of the special proofed canvas or duck which is exposed to air in a conditioned room at  $27 \pm 2^\circ\text{C}$  and  $65 \pm 2$  percent relative humidity and outer exposed surface shall not wet when tested as given below:

Form a cone by folding, pressing and creasing a  $300 \times 300$  mm piece of special proofed canvas or duck. Suspend it by means of a metal ring and fill the cone with 400 ml of water and allow it to stand as such in a conditioned room at  $27 \pm 2^\circ\text{C}$  and  $65 \pm 2$  percent relative humidity for 18 hours. Examine for leakage and wetness.

NOTE— Water drops due to condensation inside the fold of the cone or along the contact line with the metal ring should not be considered for rejection.

\*Methods for testing cotton fabrics for resistance to attack by micro-organisms.

†Method for measuring the water absorption and penetration in water-resistant fabrics (permeable to air) by a Bundesmann type apparatus (revised).

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### 3.2.7 Colour Fastness

**3.2.7.1 Colour fastness to daylight**—The material, when tested as prescribed in IS: 2454-1967\*, shall show a fastness rating of not less than 5, unless otherwise agreed to between the purchaser and the supplier.

**3.2.7.2 Colour fastness to washing**—When tested as prescribed in IS: 764-1966†, the change in colour and the degree of staining of the material shall be of rating 3 or better.

**3.2.8 Shrinkage**—The material shall not have more than 3 percent shrinkage in warp or weft direction when determined as prescribed in A-3.

**3.2.9 Dimension**—The size, colour and other dimension of the finished fabric shall be as agreed to between the purchaser and the supplier.

## 4. SAMPLING AND CRITERIA FOR CONFORMITY

**4.1** The scale of sampling and criteria for conformity of special proofed canvas and duck shall be as prescribed in Appendix B.

## 5. PACKING AND MARKING

**5.1 Packing**—Unless otherwise agreed to between the purchaser and the supplier the special proofed canvas or duck shall be packed with hessian. The four corners of the packing shall be tied to leave at least 15 cm ears for easy handling.

**5.2 Marking**—Each special proofed canvas or duck shall be legibly and indelibly marked at one corner on one side with the manufacturer's name, initials or trade-mark, the year of manufacture and the size of the special proofed material. Unless otherwise agreed to between the purchaser and the supplier, the length of the letters used for marking shall be at least 80 mm.

**5.2.1** The special proofed canvas or duck may also be marked with the ISI Certification Mark.

**NOTE**—The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

\*Method for determination of colour fastness of textile materials to artificial light (xenon lamp).

†Method for determination of colour fastness of textile materials to washing: Test 3 (first revision).

## APPENDIX A

(Clauses 3.2.1, 3.2.2.1 and 3.2.8)

### TEST METHODS FOR SPECIAL PROOFED CANVAS AND DUCK

#### A-0. GENERAL

**A-0.1 Quality of Reagents** — Unless otherwise specified, pure chemicals and distilled water (*see* IS: 1070-1960\*) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

**A-0.2 Conditioning for Testing** — All tests shall be made on material which has been conditioned in an atmosphere of  $65 \pm 2$  percent relative humidity and at a temperature of  $27 \pm 2^\circ\text{C}$  for not less than 48 hours.

#### A-1. DETERMINATION OF PROOFING CONTENT

**A-1.1 Procedure** — Cut four pieces of the material  $80 \times 80$  mm accurately from different places in a sample of special proofed canvas or duck and condition them for 24 hours under standard atmospheric conditions. Weigh the conditioned pieces accurately and subject them to successive extractions in a Soxhlet apparatus with (a) carbon tetrachloride (*see* IS: 718-1970†) for 3 hours, (b) rectified spirit (conforming to IS: 323-1969‡) for two hours, and (c) water for 2 hours. After the above treatment, the material may contain pigments in the interstices of the fabric. To remove these, separate individual threads from the pieces, collect together and give light treatment with soap. Wash the threads thoroughly with water to remove last traces of soap. Dry and condition the sample in an atmosphere of  $65 \pm 2$  percent relative humidity and at a temperature of  $27 \pm 2^\circ\text{C}$  and weigh.

NOTE — Other solvents may be used in case the proofing material is not extracted by solvents (carbon tetrachloride and rectified spirit) prescribed in A-1.1.

**A-1.2 Calculation** — Calculate the mass of the proofing from the difference between the initial mass of the test pieces and the mass of the threads after deproofing, and express as a percentage of the deproofed fabric.

#### A-2. DETERMINATION OF COPPER AND ZINC CONTENT

**A-2.1 Procedure** — Weigh accurately about 5 g of the sample and extract thoroughly with benzene in a Soxhlet extraction apparatus. Transfer the extract to a silica dish and evaporate by heating the dish on a water-bath.

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

†Specification for carbon tetrachloride (*first revision*).

‡Specification for rectified spirit (*revised*).

Then estimate copper and zinc content in the extracted residue after removing the solvent ( benzene ) and ashing the residue by applying gentle heat and then following procedure given in IS: 1039-1956\* for determination of copper and zinc.

NOTE — A suitable Soxhlet thimble should be used so that any solid matter detached from the fabric does not enter in extraction flask.

### A-3. DETERMINATION OF SHRINKAGE

**A-3.0 Principle**—Shrinkage, if any, is determined by measuring the diminution in dimension after treatment with water containing wetting agent.

**A-3.1 Procedure**—Prepare a specimen with lines marked parallel and perpendicular to warp direction so as to form a 250 mm square. Condition the specimens in the standard atmosphere (see A-0.2). Place each specimen in turn on the flat surface and measure the distances between the marks accurately to the nearest of 0.5 mm. Immerse the specimen in water containing 0.5 percent of a suitable wetting agent, at a temperature between 25 and 30°C, using suitable means, such as small weights, to keep it submerged. Leave the specimen to soak for 24 hours, then rinse it in water and leave it to dry on a flat surface at a temperature of 30°C. If necessary, remove superfluous water with an absorbent cloth. Condition the specimen in a standard atmosphere and measure its dimensions by the method used before soaking.

#### A-3.2 Calculation

**A-3.2.1** Calculate the percentage of shrinkage between each pair of datum marks as given below:

$$\text{Shrinkage, percent} = \frac{L_1 - L_2}{L_1} \times 100$$

where

$L_1$  = the distance in millimetres before shrinkage treatment, and

$L_2$  = the distance in millimetres after shrinkage treatment.

**A-3.2.2** Report the mean shrinkage for the warp and weft directions to the nearest of 0.1 percent.

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\*Methods for estimation of small quantities of copper, iron, manganese, chromium and zinc in proofed cotton fabrics (tentative).

## APPENDIX B

( Clause 4.1 )

### SCALE OF SAMPLING AND CRITERIA FOR CONFORMITY

#### B-1. SCALE OF SAMPLING

**B-1.1 Lot**—All special proofed canvas or duck in a single consignment and drawn from a single batch of manufacture shall constitute a lot. If the consignment is declared or known to consist of different batches of manufacture, the batches shall be marked separately and the group of special proofed canvas or duck in each batch shall constitute a separate lot.

**B-1.1.1** All pieces of special proofed canvas or duck shall be examined for visual and tactile requirements. Samples shall be tested from each lot for ascertaining the conformity of the special proofed canvas or duck in the lot to the other requirements of the specification. Number of samples to be tested from a lot shall be as given in col 1 and 2 of Table 2. The sample shall be drawn at random (*see* IS: 4905-1968\*) from the lot.

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**TABLE 2 SCALE OF SAMPLING AND PERMISSIBLE NUMBER OF DEFECTIVES**

LOT SIZE	NUMBER OF SAMPLES TO BE SELECTED	PERMISSIBLE NUMBER OF DEFECTIVES
<i>N</i>	<i>n</i>	
(1)	(2)	(3)
5 to 25	5	0
26 ,, 100	15	1
101 ,, 300	30	2
301 ,, 500	40	3
501 ,, 800	55	3
801 ,, 1 300	75	4
1 301 and above	115	6

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#### B-1.2 Number of Tests

**B-1.2.1** All the samples drawn under **B-1.1.1** shall be tested for requirements other than visual dimensional and tactile characteristics as given under **3**. If the number of special proofed canvas or duck failing to

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\*Methods for random sampling.

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satisfy the requirements for these characteristics is not more than the number given in col 3 of Table 2, the lot shall be declared to have satisfied the requirements for these characteristics. If, however, the number of special proofed material not satisfying the requirements is greater than the number given in col 3 of the table, the lot shall be rejected as not conforming to the requirements for these characteristics.

**B-1.2.2** The lot shall be considered to have satisfied the requirements given in the standard, if the test results ( or the average of test results, as the case may be ) of the specimens taken from each of the special proofed canvas or duck in the sample satisfy the specified requirements given in this standard.

**B-1.3 Criteria for Conformity**— A lot shall be declared as conforming to the requirements of the specification, if all the test results for the different characteristics given in **B-1.2.1** to **B-1.2.2** are found satisfactory.

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