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“जानने का अधिकार, जीने का अधिकार”
Mazdoor Kisan Shakti Sangathan
“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”
Jawaharlal Nehru
“Step Out From the Old to the New”

Indian Standard

TEXTILES — RESISTANCE TO IGNITION OF CURTAINS AND DRAPES — SPECIFICATION

ICS 13.220.40; 59.080.30
FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Chemical Methods of Test Sectional Committee had been approved by the Textile Division Council.

There have been many fire incidents in recent years in public buildings/places, the origin of which could be many such as electric short circuiting, ignition, etc. The origin of fire may not be that much dangerous and hazardous as the ease of ignition and spreading of fire due to combustible materials such as curtains and drapes and other textiles, plastics, upholstered furniture, etc. Depending upon the type of materials encountered in burning, its ease of ignition and its fire spread properties, the extent of damage to the life and property could be enormous. In order to prevent or minimize the damage to life and property due to such fire risks, formulation of standard for resistance to ignition of curtains and drapes in public places/buildings needs no emphasis.

It needs to be borne in mind that measures to reduce the ignitability of a textile or textile assembly may adversely affect other fire properties such as smoke and toxic gas evolution and this aspect may require consideration when materials and construction techniques are being evaluated. Therefore, it is desirable that the finishing materials used for various surfaces and decorations including textiles should be such that it does not generate toxic smoke and/or fumes.

Specification for resistance to ignition of textile materials and assemblies for use in the public buildings/places exist in various developed countries as a fall out of various legislation, rules or acts, etc, or directions of local bodies. The trend is increasing in other countries also and India should be no exception to this. This standard lays emphasis on matching the magnitude of threat posed in various places/buildings with commensurate performance levels of fire resistant textile materials for curtains and drapes so as to ensure safety of the life and property. The list of buildings/places under different fire hazards categories has been included as per SP 7:2005 ‘National Building Code of India 2005’.

The composition of the Committee responsible for the formulation of this standard is given in Annex C.

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 ‘Rules for rounding off numerical values (revised)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.
Indian Standard

TEXTILES — RESISTANCE TO IGNITION OF CURTAINS AND DRAPES — SPECIFICATION

1 SCOPE

1.1 This standard specifies requirements for the resistance to ignition of curtains and drapes used for public places/buildings.

NOTE — The levels of ignition resistance have been set after careful consideration of the fire risk of the particular end-use environment involved. These levels do not necessarily reflect the behaviour of curtains and drapes in a fully developed fire.

1.2 Curtains and drapes for domestic use and transport are not covered in this standard.

NOTE — Guidance on the applicability of hazard categories to particular premises is given in the notes in Table 1.

2 REFERENCES

The standards given in Annex A contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards.

3 TERMINOLOGY

For the purposes of this standard the definitions given in SP 45 and the following shall apply.

3.1 Fire Hazard — Potential for loss of life (or injury) and/or damage to property, by fire.

3.2 Fire Risk — Probability of fire causing loss of life (or injury) and/or damage to property.

3.3 Ignition Risk — The probability that ignition will result if a source of heat is allowed into close proximity or contact with a combustible material.

4 PERFORMANCE REQUIREMENTS FOR RESISTANCE TO IGNITION

4.1 Ignitability

The curtains or drapes shall meet the levels of ignition resistance given in Table 1 when tested in accordance with the test methods specified in Table 1 for the various categories of hazardous places/buildings as specified in Annex B.

NOTE — The ignitability performance specified for curtains and drapes for different end-uses varies according to the level of risk associated with a particular environment as shown in Table 1.

4.2 Durability of Treatment

Carry out the water soaking treatment by subjecting the curtains and drapes to the water soaking procedure described in IS 12467 (Part 1) or IS 12467 (Part 2) except that the test specimen shall be dried by any method suitable for the fabric type before it is conditioned prior to testing in accordance with IS 6359.

5 SAMPLING

5.1 Lot

The quantity of identical type of curtains and drapes manufactured under similar conditions and supplied to a buyer against one dispatch note shall constitute a lot.

NOTE — ‘Identical type’ means that there has been no major basic alteration to the material specification, that is, the fibre content, weave and mass per unit area of fabric. Changes in the colour of a product or minor changes in the pattern or weave, for example, of the order of 2 picks/cm may be disregarded.

5.2 Random sample from the lot shall be drawn as per relevant Indian Standard or as agreed to between the buyer and the seller.

5.3 The sampling of the material shall be done as specified in the relevant material specification or as agreed to between the buyer and the seller. In the absence of relevant standard on material specification or agreement between the buyer and the seller, the curtains and drapes shall be tested after every 2,500 units produced or once per month, whichever is the more practicable, in accordance with IS 15612 (Parts 2 to 4). Re-testing shall be carried out where there is any major basic alteration to a material specification (for example of fibre content, weave or mass per unit area of fabric). Changes in the colour of a product or minor changes in the pattern or weave, for example of the order of 2 picks/cm, shall not be deemed sufficient reasons to necessitate re-testing.

6 MARKING

6.1 Each piece of curtain and drapery material shall carry a permanently stitched and clearly readable label with the following information:
Table 1 Performance Requirements on Application of Hazard Categories  
(*Clauses 1.2 and 4.1*)

<table>
<thead>
<tr>
<th>SI No.</th>
<th>Hazard Category</th>
<th>Low Hazard Occupancies</th>
<th>Moderate Hazard Occupancies</th>
<th>High Hazard Occupancies</th>
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<tr>
<td></td>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>1)</td>
<td>Requirements(^1)</td>
<td>Class 2 ignitability as per IS 15612 (Part 1)</td>
<td>Class 1 ignitability as per IS 15612 (Part 1)</td>
<td>Class 1 ignitability as per IS 15612 (Part 1)</td>
</tr>
<tr>
<td>ii)</td>
<td>Typical examples of places/buildings</td>
<td>As per Annex B</td>
<td>As per Annex B</td>
<td>As per Annex B</td>
</tr>
</tbody>
</table>

**NOTES**

1. It is important to realize that the listing of types of premises under different hazard categories in Table 1 is given for guidance only and that the classification of a particular premises into one of the hazard categories is a decision for staff responsible for fire safety.

2. The examples cited in Table 1 for each hazard category cannot be exhaustive and do not cover all types of possible premises in a hazard category. It will be noted that some of the examples appear in more than one hazard category. This reflects the range of hazards possible under different circumstances for particular types of premises. Other examples, whether or not listed in Table 1, could also fall into more than one hazard category. However; when all the relevant factors have been considered, a particular premises can then be assigned to one hazard category.

3. The classification of a particular premises into one of the hazard categories in Table 1 is a decision for staff responsible for fire safety, for example, building control, fire brigade, licensing authorities, or environmental health authorities. Their classifications may be different from the examples given in Table 1. Attention is drawn to the following when classifying a hazard area:
   a) Statutory requirements and other recommendations;
   b) Building regulations and local authority bye-laws;
   c) Regulations;
   d) Consumer protection acts and safety;
   e) Fire precautions in existing places of work that require clearance by fire authorities;
   f) Fire precautions in existing residential care premises;
   g) Fire precautions in existing places of entertainment and like premises;
   h) Fire precautions in premises used as hotels and boarding houses which require a fire certificate;
   j) Fire safety management in hotels and boarding houses;
   k) Whether or not people sleep at premises;
   m) Level of occupancy;
   n) Whether, in the case of fire, occupants could be expected on their own or whether they would need assistance, for example, babies, children, old and infirm, the invalid, the sick, and those retained by locked doors;
   P) Presence or absence of an automatic fire detection and alarm system, or an automatic fire extinguishing system;
   q) Any special hazards, such as cooking, heating, live flame effects, smoke effects, low lighting levels, strobe lighting, loud music, drinking, use after dark;
   r) Whether or not the premises are, during times of use, under the control of staff trained in appropriate evacuation procedures; and
   s) Location of the hazard area, namely, of floors, whether or not high rise and/or below ground and/or windowless.

4. Flame retardant treatments are sometimes applied to curtains and drapes to improve resistance to ignition. Those responsible for controlling these textile materials need to be satisfied that such treatment will continue to be effective and will not deteriorate in use. The tests described in 4.2 are designed to show whether such an added flame retardant is likely to be affected by contact with water and/or by any drying cleaning process, and can be taken as a general guide to the overall permanence of a flame retardant treatment.

\(^1\) If a particular premises in a low hazard area is also used for sleeping purposes then that premises shall assigned a higher hazard category.

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a) Nature and composition of the curtain and drape material, for example, Polyester/cotton blended (50:50 percent) curtains for information of the users;

b) Length and width, in mm and mass, in g/m² for information of the users;

c) Class of ignitability;

d) Name and address of the manufacturer or his trademark(s);

e) The words "FIRE RESISTANT"; and

f) Any other information as required by the law in force.

6.2 The minimum size of the graphic part of the label shall be 50 mm \(\times\) 50 mm. The colour of the label shall be white
with a green border and the words 'FIRE RESISTANT' shall be white and of minimum height 5 mm. The class of ignitability shall be black.

6.3 The following wording shall also appear on the label:

a) Complies with this standard; direct test/predictive test for low hazard (not recommended for use in higher hazard areas); or

b) Complies with this standard for medium hazard (not recommended for use in higher hazard areas); or

c) Complies with this standard for high hazard (not recommended for use in higher hazard areas).

6.3.1 The letters of the wording shall be easily legible and of minimum height 2 mm.

7 PACKING

The curtains or drapes shall be packed as per the relevant Indian Standard or as agreed to between the buyer and the seller.

ANNEX A
(Clause 2.1)

LIST OF REFERRED INDIAN STANDARDS

<table>
<thead>
<tr>
<th>IS No.</th>
<th>Title</th>
<th>IS No.</th>
<th>Title</th>
</tr>
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<tr>
<td>12467</td>
<td>Textiles — Assessment of ignitability of upholstered furniture:</td>
<td>(Part 3): 2005</td>
<td>Method for determining the ignitability of vertically oriented specimens (small flame)</td>
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<td>15612</td>
<td>Textiles — Burning behaviour of curtains and drapes:</td>
<td>SP 45:1988</td>
<td>Handbook on glossary of textile terms</td>
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<tr>
<td>(Part 1): 2005</td>
<td>Classification scheme</td>
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</table>

ANNEX B
(Clause 4.1 and Table 1)

BROAD CLASSIFICATION OF INDUSTRIAL AND NON-INDUSTRIAL OCCUPANCIES INTO DIFFERENT DEGREE OF HAZARD

B-1 LOW HAZARD OCCUPANCIES

Analytical and/or Q.C. Laboratories
Assembly buildings small (D-4 and D-5)
Clubs
Day centres
Dwellings, lodges, dormitories, etc
Educational and research institutions
Office premises
Places of worship
Residential buildings (A-1 to A-4) (except hotels A-5)

B-2 MODERATE HAZARD OCCUPANCIES

Airport and other transportation terminal buildings
Assembly buildings (D-1, D-2 and D-3)
Casinos
Computer installations
Hospitals including ‘X’ ray and other diagnostic clinics (Institutional buildings)
Hostels
Mercantile occupancies (departmental stores, shopping complex, etc)
Museums, archives, record rooms
Place of public entertainment (Exhibitions, marriage pandles, etc)
Public buildings
Public halls
### B-3 HIGH HAZARD OCCUPANCIES

Hazardous occupancy buildings (J)

- Offshore installations
- Prison cells
- Sleeping accommodation in certain hospital wards and in certain hostels
- Underground shopping complexes (F-3)

## ANNEX C

(Foreword)

### COMMITTEE COMPOSITION

Chemical Methods of Test Sectional Committee, TX 05

<table>
<thead>
<tr>
<th>Organization</th>
<th>Representative(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textiles Committee, Mumbai</td>
<td>Dr. G. S. NADIGAR (Chairman)</td>
</tr>
<tr>
<td>Ahmedabad Textile Industry’s Research Association, Ahmedabad</td>
<td>Shri E. Viswambharan (Alternate)</td>
</tr>
<tr>
<td>Bapuji Institute of Engineering &amp; Technology, Davangere</td>
<td>Director</td>
</tr>
<tr>
<td>Central Institute For Research on Cotton Technology, Mumbai</td>
<td>Dr. H. L. Visaykumar</td>
</tr>
<tr>
<td>Central Pollution Control Board, Delhi</td>
<td>Dr. K. Murugesh Babu (Alternate)</td>
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<tr>
<td>Clariant India Ltd, Mumbai</td>
<td>Dr. (Ms) C. R. Raje</td>
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<tr>
<td>Directorate of Standardization (Production &amp; Supplies), New Delhi</td>
<td>Dr. R. H. Balasubramanya (Alternate)</td>
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<tr>
<td>Indian institute of Carpet Technology, Bhadohi</td>
<td>Dr. M. Q. Ansari</td>
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<tr>
<td>Indian Jute Industries’ Research Association, Kolkata</td>
<td>Shri Ajay Aggarwal (Alternate)</td>
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<td>Jaya Shree Textiles, Rishra</td>
<td>Dr. V. G. Nayak</td>
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<tr>
<td>L. N. Chemical Industries, Mumbai</td>
<td>Lt.-Col. (Dr) R. Srivastava</td>
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<td>Maniklal Verma Textile Institute, Bhilwara</td>
<td>Lt.-Cdr. B. Manjunath (Alternate)</td>
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<tr>
<td>Man-Made Textile Research Association, Surat</td>
<td>Prof. (Dr) K. K. Goswami</td>
</tr>
<tr>
<td>Ministry of Defence (DGQA), Kanpur</td>
<td>Shri Shyam Das Gupta (Alternate)</td>
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<td>Office of The Textile Commissioner, Mumbai</td>
<td>Shri Abhay Nair</td>
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<td>Premier Colorscan Instruments Pvt Ltd, Thane</td>
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<td>Shri Ketan L. Gandhi</td>
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<td>Dr. N. K. Mathur</td>
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<td>Lt.-Col. P. P. Naidu</td>
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<td>Shri Rama Yadav (Alternate)</td>
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<td></td>
<td>Ms. Archana Vyas</td>
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<td>Ms. Priyanka Katyar (Alternate)</td>
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<td></td>
<td>Shri R. A. Lal</td>
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<td></td>
<td>Shri Raymond Ramakumar</td>
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<td></td>
<td>Shri D. J. Desai (Alternate)</td>
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</tbody>
</table>
Organisation

Rajasthan Spinning and Weaving Mills Ltd, Noida

Reliance Industries Ltd, New Delhi

SNDT Women’s University, Mumbai

Suditi Industries Ltd, Mumbai

Sunil Industries Ltd, Mumbai

Texan Lab, Mumbai

Textiles & Engineering Institute, Ichalkaranji

The Bombay Millowner’s Association, Mumbai

The Bombay Textile Research Association, Mumbai

The South India Textile Research Association, Coimbatore

The Synthetics & Art Silk Mills’ Research Association, Mumbai

University Department of Chemical Technology, Mumbai

Veermata Jeejabai Technological Institute, Mumbai

Wool Research Association, Thane

In personal capacity (2 Siddhi Vinayak Cooperative Group Housing Society, Swatantra Veer Savarkar Marg, Prabhadevi, Dadar, Mumbai)

BIS Directorate General

Representative(s)

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SHRI VIJAY YADAV (Alternate)

SHRI P. K. BADAMI
SHRI SANJEEV ISRANE (Alternate)

DR (Ms) BHARATI A. PATWARDHAN

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SHRI RAJENDRA GAIKWAD (Alternate)

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SHRI D. L. SHAH (Alternate)

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PROF S. R. SHUKLA (Alternate)

PROF K. D. GAWAND

SHRIMATI G. P. RANE
SHRI V. C. PANSE (Alternate)

SHRI M. D. DIXIT

Director and Head (TXD)
[Representing Director General (Ex-officio)]

Member Secretary
SHRI M. S. VERMA
Director and Head (TXD), BIS
Bureau of Indian Standards

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Amendments Issued Since Publication

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BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110 002
Telephones : 2323 0131, 2323 3375, 2323 9402 Website: www.bis.org.in

Regional Offices:

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg
NEW DELHI 110 002

Eastern : 1/14 C.I.T. Scheme VII M, V.I.P. Road, Kankurgachi
KOLKATA 700 054

Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160 022

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