भारतीय मानक ब्यूरो
(उपभोक्ता मामले, खाद्य एवं सार्वजनिक वितरण मंत्रालय, भारत सरकार)
BUREAU OF INDIAN STANDARDS
(Ministry of Consumer Affairs, Food & Public Distribution, Govt. of India)

मानक भवन, 9, बहादुर शाह ज़फर मार्ग, नई दिल्ली – 110002
Manak Bhawan, 9, Bahadur Shah Zafar Marg, New Delhi – 110002
Phones: 23230131 / 2323375 / 23239402
Website: www.bis.gov.in, www.manakonline.in

व्यापक परिचालन मसौदा

हमारा संदर्भ : सीईडी 36/टी-09 **27 फरवरी 2024**

तकनीकी समिति: अग्नि सुरक्षा विषय समिति, सीईडी 36

प्राप्तकर्ता :

1. **सिविल अभियांत्रिकी विभाग परिषद, सीईडीसी के सभी सदस्य**
2. **अग्नि सुरक्षा विषय समिति, सीईडी 36 के सभी सदस्य**
3. **रुचि रखने वाले अन्य निकाय।**

महोदय/ महोदया,

निम्नलिखित मानक का मसौदा संलग्न हैं:

प्रलेख संख्या	शीर्षक
सीईडी 36(24967)WC	**औद्योगिक इमारतों की अग्नि सुरक्षा — सूती वस्त्रादी मिलें — रीति संहिता** *(आई एस 3079 का दूसरा पुनरीक्षण) (ICS: 13.220.01, 59.060.01)*

कृपया इस मसौदे का अवलोकन करें और अपनी सम्मतियाँ यह बताते हुए भेजे कि यह मसौदा प्रकाशित हो तो इन पर अमल करने में आपको व्यवसाय अथवा कारोबार में क्या कठिनाइयां आ सकती हैं।

सम्मतियाँ भेजने की अंतिम तिथि: 31 मार्च 2024

सम्मति यदि कोई हो तो कृपया अधोहस्ताक्षरी को ई-मेल द्वारा **ced36@bis.gov.in** पर या उपरलिखित पते पर, संलग्न फोर्मेट में भेजें। सम्मतियाँ बीआईएस ई-गवर्नेंस पोर्टल, **www.manakonline.in** के माध्यम से ऑनलाइन भी भेजी जा सकती हैं।

यदि कोई सम्मति प्राप्त नहीं होती है अथवा सम्मति में केवल भाषा संबंधी त्रुटि हुई तो उपरोक्त प्रालेख को यथावत अंतिम रूप दे दिया जाएगा। यदि सम्मति तकनीकी प्रकृति की हुई तो विषय समिति के अध्यक्ष के परामर्श से अथवा उनकी इच्छा पर आगे की कार्यवाही के लिए विषय समिति को भेजे जाने के बाद प्रालेख को अंतिम रूप दे दिया जाएगा।

यह प्रालेख भारतीय मानक ब्यूरो की वैबसाइट **www.bis.gov.in** पर भी उपलब्ध हैं।

धन्यवाद।

भवदीय
ह/-

द्वैपायन भद्र
वैज्ञानिक ई एवं प्रमुख
सिविल अभियांत्रिकी विभाग
ई-मेल: ced36@bis.gov.in
फोन: +91-11 2323 5529

संलग्न: उपरलिखित

भारतीय मानक ब्यूरो
(उपभोक्ता मामले, खाद्य एवं सार्वजनिक वितरण मंत्रालय, भारत सरकार)
BUREAU OF INDIAN STANDARDS
(Ministry of Consumer Affairs, Food & Public Distribution, Govt. of India)

मानक भवन, 9, बहादुर शाह ज़फर मार्ग, नई दिल्ली – 110002
Manak Bhawan, 9, Bahadur Shah Zafar Marg, New Delhi – 110002
Phones: 23230131 / 2323375 / 23239402
Website: www.bis.gov.in, www.manakonline.in

WIDE CIRCULATION DRAFT

Our Reference: CED 36/T-09 **27 February 2024**

TECHNICAL COMMITTEE: FIRE SAFETY SECTIONAL COMMITTEE, CED 36

ADDRESSED TO:

1. All Members of Civil Engineering Division Council, CEDC
2. All Members of Fire Safety Sectional Committee, CED 36
3. All others interested.

Dear Sir/ Madam,

Please find enclosed the following draft:

Doc No.	Title
CED 36(24967)WC	Fire Safety of Industrial Buildings — Cotton Textile Mills — Code of Practice (*Second Revision of IS 3079*) *(ICS: 13.220.01, 59.060.01)*

Kindly examine the attached draft and forward your views stating any difficulties which you are likely to experience in your business or profession if this is finally adopted as National Standard.

Last Date for Comments: 31 March 2024

Comments if any, may please be made in the enclosed format and emailed at **ced36@bis.gov.in** or sent at the above address. Additionally, comments may be sent online through the BIS e-governance portal, **www.manakonline.in**.

In case no comments are received or comments received are of editorial nature, kindly permit us to presume your approval for the above document as finalized. However, in case comments, technical in nature are received, then it may be finalized either in consultation with the Chairman, Sectional Committee or referred to the Sectional Committee for further necessary action if so desired by the Chairman, Sectional Committee.

The document is also hosted on BIS website **www.bis.giv.in**.

Thanking you,

Yours faithfully,

Sd/-

Dwaipayan Bhadra
Scientist 'E' & Head
Civil Engineering Department
Email: ced36@bis.gov.in
Phone: +91-11 2323 5529

Encl: As above

FORMAT FOR SENDING COMMENTS ON THE DOCUMENT

[Please use A4 size sheet of paper only and type within fields indicated. Comments on each clause/sub-clause/ table/figure, etc, be stated on a fresh row. Information/comments should include reasons for comments, technical references, and suggestions for modified wordings of the clause. **Comments through e-mail to ced36@bis.gov.in shall be appreciated**.]

Doc. No.: CED 36(24967)WC **BIS Letter Ref**: CED 36/T-09

Title: Fire Safety of Industrial Buildings: Cotton Textile Mills — Code of Practice (*Second Revision of IS 3079*) (ICS: 13.220.01, 59.060.01)

Last date of comments: **31 March 2024**

Name of the Commentator/ Organization: _____

Clause/ Para/ Table/ Figure No. commented	Type of Comment (Technical/ Editorial/ General)	Comments/Modified Wordings	Justification of Proposed Change

NOTE- Kindly insert more rows as necessary for each clause/table, etc.

BUREAU OF INDIAN STANDARDS

DRAFT STANDARD FOR COMMENTS ONLY

(*Not to be reproduced without the permission of BIS or used as a Standard*)

Draft Indian Standard

FIRE SAFETY OF INDUSTRIAL BUILDINGS — COTTON TEXTILE MILLS — CODE OF PRACTICE

(*Second Revision of IS 3079*)

(*ICS: 13.220.01, 59.060.01*)

Fire Safety Sectional Committee, CED 36	**Last Date for Comments: 31 March 2024**

FOREWORD

(Formal clauses shall be added later)

Fire is fairly frequent in textile mills because textiles fibres are highly combustible. Processes preparatory to spinning have a particularly high fire frequency on account of the presence of fibres in loose form and probability of ignition by rapidly moving machinery. The main causes of fire in textile mills can be attributed to failure of electrical equipment, sparks from foreign matter in cotton stock, friction, faulty bearings, presence of excessive quantity of fly in the departments, use of flammable liquids and presence of high temperatures in the processing sections. This standard has therefore been formulated with a view to providing reliable and adequate guidance regarding fire safety of cotton textile mills. This standard was first published in 1965 and subsequently revised in 1990. In this second revision the provision for fire fighting arrangements have updated as per the latest practices.

Provisions of this code are supplementary to the relevant Statutory requirements as laid down in Indian Factory Act, Petroleum Rules, Gas Cylinder Rules, etc.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value observed of calculated, expressing the result of the test, shall be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Draft Indian Standard

FIRE SAFETY OF INDUSTRIAL BUILDINGS: COTTON TEXTILE MILLS – CODE OF PRACTICE

(*Second Revision of IS 3079*)

1 SCOPE

This standard covers the essential requirements for the fire safety of textile mills using cotton, cotton waste, regenerated cellulose, synthetic fibres, or any grouping of these as raw materials.

2 REFERENCES

The standards listed in Annex A contain provisions which through reference in this standard, 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 indicated in Annex A.

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 8757, SP 45 and the following shall apply:

3.1 Cotton Textile Mills – Any of the following types of textile mills manufacturing and processing yarn and/or cloth from cotton or from a mixture of cotton and other natural or synthetic fibres.

3.1.1 *Spinning Mill* — A separate unit manufacturing only yarn.

3.1.2 *Weaving Mill* — A separate unit manufacturing cloth from yarn obtained from outside.

3.1.3 *Processing Mill* — A separate unit (commonly termed as ‘Dye and Bleach House’) for processing of manufactured cloth (or yarn).

3.1.4 *Spinning and Weaving Mill* — A unit manufacturing yarn as well as cloth.

3.1.5 *Weaving and Processing Mill* — A unit manufacturing cloth from yarn obtained from outside and processing it before marketing.

3.1.6 *Spinning, Weaving and Processing Mills* — A composite unit manufacturing yarn, cloth, and processed cloth.

3.2 Cotton Waste Textile Mill or Waste Plant – A unit manufacturing certain types of coarse fabrics from soft cotton (or cotton mixed with other natural or synthetic fibres) wastes produced during carding and spinning processes.

3.3 Manufacturing – Physical operations and plant for manufacturing yarn and or cloth covering the processes commonly termed as carding, spinning, weaving, etc.

3.4 Processing – Physical and/or chemical operations for imparting finish to cloth (or yarn) covering the processes commonly termed as bleaching, singeing, mercerizing, dyeing, printing, raising, finishing, etc, and the bleaching and dyeing of cotton.

3.5 Working Blocks – Blocks where either manufacturing or processing is carried on.

3.6 Transformer Room – Building or enclosure housing power transformers.

3.7 Static Tank – A *pucca* lined reservoir containing water for firefighting purposes.

4 LOCATION

4.1 Textile mills shall be located preferably within 20 km of the nearest town's fire brigade. Access to the mills shall be by way of well-paved roads at least 6 m in width.

4.2 When a textile mill is located near a railway line, the working blocks and storage areas of all combustible, flammable liquids the gases including packing and disposal materials shall be more than 30 m away from the railway line to eliminate the possibility of sparks from passing steam engines falling thereon.

5 COMPONENTS

5.1 The compound shall be of sufficient area to house the manufacturing, processing, storage, and utility buildings at distance not less than those specified hereunder.

5.2 Paved or *pucca* roads not less than 6 m wide shall be constructed all round and to different buildings within the compound to facilitate the passage of fire engines and particularly to give easy access to the static tank.

5.3 The main gate for entry or to exit from the mill's compound shall he such that clear width of 6 m and head room of 5 m is available.

5.4 At least one additional gate of similar dimensions and at suitable locations shall also be provided for use in the event of the main gate getting blocked during an emergency. Also turning circle of not less than 9 m shall be provided in front of the main gate for easy withdrawal of fire appliances.

6 BUILDING CONSTRUCTION

6.1 The constructional features of all the buildings within the compound shall comply with the requirements of IS 1642.

6.2 Buildings, housing spinning and processes preparatory thereto, raising and singeing shall have fire resistance of not less than that of Type 1 specified in IS 1642.

6.3 Buildings used as warehouse/storage shall also be of Type 1 structure as specified in IS 1642.

6.4 Buildings, housing weaving, process preparatory thereto but subsequent to spinning, folding and processing (except raising and singeing) shall of at least Type 2 as specified in IS 1642.

6.5 Utility buildings shall be of Type 2 as specified in IS 1642.

6.6 Buildings housing manufacturing and processing sections shall preferably be single storey structures; but if they are required to be more than single storeyed shall be in any case not more than 15 m measured from the average surrounding ground level to the highest point of the roof. Wooden flooring shall be prohibited except where laid on a concrete or masonry floor without any intervening space. For such multi-storied structures, adequate means of escape from upper floors shall be provided in conforming to IS 1644.

6.7 Storage/warehouse structure shall be essentially single storey structures. OR Storage/warehouse structure shall be complied with IS 3594.

6.8 As smoke logging, which is a common feature with cotton fires, considerably hampers firefighting operations, adequate venting arrangements shall be provided for the working and storage blocks. Such venting arrangements shall comply with the requirements of IS 1642 and SP 7 (Part 4).

6.9 The plinth area of each building (or the plinth area of each compartment where a building is divided into compartments by separating walls) and departments preparatory thereto shall not exceed 2 500 m^2. The spinning department shall be divided into two or more smaller compartments by separating walls.

7 SEPARATING WALLS

7.1 Separating walls shall be constructed in order to segregate the following sections of the mill from one another:

a) Cotton storage area;
b) Rooms housing willowing, waste opening and thread extracting operation;
c) Mixing and blow rooms;
d) Card room;
e) Combing, drawing and fly frames and spinning rooms;
f) Doubling, reeling, bundling, conditioning, winding, wrapping, sizing, weaving and/or other processes subsequent to spinning but excluding the processes referred hereafter;
g) Bleaching, mercerizing, dyeing, finishing, printing, cloth examining, folding, baling and storage preparatory to baling;
h) Raising department;
j) Singeing department;
k) Gas generating room; and
m) Waste plant using waste exclusively from the mill to which it is attached.

7.2 Separating walls shall also be provided between the following:

a) Cotton (in fully pressed bales) storage;

b) Loose cotton or clean waste storage;
c) Oily waste storage;
d) Oil storage (shall not be a part of any building but always as isolated building);
e) Stores for non-hazardous goods; and
f) Stores for hazardous good (including, colours and chemicals other than those specified in **9.4**).

7.3 Separating walls shall also be provided between the following sections:

a) Fire pump house,
b) Boiler house,
c) Transformer house, and
d) Electric generating station.

7.3.1 Fire pump house shall be preferably in isolated building at least 6 m away from any work shed/storage building and over-head water tank to avoid any damage to this building either due to spread of fire or due to falling debris from adjoining tall structures/overhead tanks. However, the fire pump house can form part of a masonry building provided it is separated from such building by a complete party wall as per IS 1642.

7.3.2 The location of the boiler house and its construction shall conform to relevant statutory regulations.

7.3.3 If the transformer house and substation are within the same building, that is, in case of indoor transformers there shall be a 4 h rating wall as per IS 1642, between the transformer rooms and the substation. Any door in between shall also be a fire check door of at least 2 h resistance (*see* IS 3614). Such door shall be of top-hung automatic closing device sliding type with through a fusible element and shall cover the opening fully with at least 150 mm overlap on both sides of opening and top. If the access to the substation is from side opposite to the transformers, no such door is required. Additional requirements as laid down under IS 1642 shall be followed.

8 DISTANCES

8.1 A minimum distance of 30 m shall be maintained between cotton (in fully pressed bales or otherwise) warehouses or cotton waste (oily or clean) warehouses and the manufacturing and processing sections of the mills.

8.2 A minimum distance of 15 m shall be maintained between other storages and manufacturing and processing sections except that such distance may be reduced to 6 m in case of engineering and hardware stores.

8.3 Waste plant shall be spaced not less than 15 m from the mill's working and storage blocks unless separated therefrom by separating wall.

8.4 Warehouses for storage of extra hazardous chemicals shall be located at a

minimum distance of 15 m from all surrounding structures.

8.5 Fire pump house, boiler house, transformer house and electric generating station shall be spaced not less than 15 m from the manufacturing processing and storage sections.

9 MACHINERY

9.1 The speed of horizontal and vertical openers shall under no circumstances exceed as designed.

9.2 Cotton shall not be fed directly into a vertical opener but shall be first broken in a bale breaker or blender.

9.3 The amount of cotton handled per opener line shall not exceed that specified by the manufacturers and under normal circumstances shall be limited to 500 kg/h.

9.4 Magnetic separators which may be either electromagnets or permanent magnet units shall be provided in the bale break and blow room lines.

9.5 A clear distance of at least 2 m shall be provided between any two blow room lines.

9.6 The cards front, and back alleys shall be of 1.5 m clear width. After every four cards a side alley of 1 m clear width shall be provided. A clear space of 1.5 m shall also be kept between the cards and department walls.

9.7 It is advisable to install continuous stripping arrangement on cards so as to minimize the frequency of hand stripping operation which produces a large amount of cotton fly and dust.

9.8 The spacing of fly frames and ring frames shall be such as to provide a clear distance of at least 2 m between the rows of frames (that is, between the ends of any two frames) and also between the frames and the walls. The working space between two frames shall be not less than 750 mm and after every sixteen frames an alley of 2 m width shall be provided.

9.9 The spacing of other machinery shall be as given in the provisions of the Factories Act, 1948 and the rules and regulations made thereunder.

9.10 Broken end collection systems of the pneumafil or equivalent type shall be provided on ring frames.

9.11 Dust extraction systems make possible better cleanliness and greatly improve housekeeping. Hence blow lines, barber Colman spoolers, raising, shearing, and cropping machines shall be provided with such systems.

9.12 Cotton yarn drying chambers shall be constructed in incombustible materials and shall be fitted with thermostatic controls in order to cut off the supply at predetermined temperature.

10 ELECTRICAL INSTALLATION

10.1 The electrical installations shall be in accordance with IS 1646.

10.2 All motors shall be of the totally enclosed type.

10.3 All equipment shall be of metal clad construction throughout, dust tight and of adequate capacity.

10.4 Fitting for lamps in places where considerable dust of fluff is present, such as willowing, lap breaking, waste opening, mixing, blow and raising rooms or in wet area shall be of dust-tight type.

10.5 In case of warehouse and other storage areas the lighting fittings shall be industrial dust-proof type Fittings for lamps shall be fixed at sufficient height above the highest level of goods stored. A cut-out shall be placed outside the warehouse or storage area in a convenient position.

10.6 In case of tube lights with/without plastic diffusers, wire netting shall be placed at both ends of the tube light immediately below the chokes, so that burning chokes may not fall down to start a fire involving cotton fluffs/loose cotton, etc.

10.7 Machines having excessive vibration shall not have the electrical and switchgear mounted thereon.

10.8 All electrical equipment in gas singeing rooms shall be of the flame proof type.

10.9 In case of machines for singeing of yarn by electricity, interlocking arrangement to ensure that heating elements cannot be switched on while yarn is stationary in machines shall be provided.

10.10 Similarly for infrared or similar heating devices inter-locking arrangements shall be provided to ensure that the heating elements cannot be switched on while the machine is stationary but separate arrangement may be made for preheating at the start of the day.

NOTE — Electrical circuits for devices shall be taken from a separate distribution board and the wiring to these devices shall of a permanent nature.

10.11 Drawing frame transformers shall comply with IS 1646.

10.12 Stop-motion devices on frames shall be totally dust light.

10.13 The cooling air for variable speed motors of the ring frames shall not be taken from inside the department but from the outside of the building.

10.13 Maintenance of Equipment

10.13.1 All motors shall be completely hauled every 2 years.

10.13.2 Line shaft bearings shall be checked and overhauled every year.

10.13.3 All switchgear contacts shall be thoroughly checked every six months.

10.13.4 The electric wiring shall be inspected regularly.

10.13.5 Heavy cables shall be protected in accordance with the provisions of IS 12459.

11 FIRE FIGHTING ARRANGEMENTS

11.1 Fire and Gas detection system

Hydrocarbon, toxic gas detectors, fire and smoke detectors shall be installed as per IS 2189 in all process and non-process areas based on the identified risks.

11.2 Fire Water Storage and Pumping

11.2.1 Reservoir capacity shall be sufficient for minimum 2 h aggregate pumping capacity of main pumps (excluding standby pumps). Storage reservoir shall be in two equal interconnected compartments to facilitate cleaning and repairs. In case of aboveground steel tanks there shall be minimum two tanks each having 50 percent of required capacity.

11.2.2 The capacity of fire-water pumps shall be in accordance with IS 13039.

11.2.3 The fire water pumps shall be centrifugal type or vertical turbine submersible type. Fire-water pumps shall be of such a capacity that it will continue to supply water for fire fighting at the rated capacity without any interruption at a minimum pressure of 5.25 kg/cm^2 even to the farthest point,

11.2.4 All pumps shall be identical with respect to capacity and head characteristics.

11.2.5 Each pump shall be capable of discharging 150 percent of its rated capacity at a minimum of 65 percent of the rated head.

11.2.6 Storage reservoir shall be in two equal interconnected compartments to facilitate cleaning and repairs. In case of aboveground steel tanks there shall be minimum two tanks each having 50 percent of required capacity.

11.2.7 The minimum number of standby fire water pumps shall be as follows:

a) In case total number working pumps are up to 2, standby pumps shall be at least one.
b) In case number of working pumps are between 3 to 4 , the number of standby pumps shall be at least 2.
c) For more than 4 working pumps, number of standby pumps shall be suitably added based on reliability study.

Minimum 50 percent pumps shall be diesel engine pumps.

11.2.8 *Jockey Pumps*

The fire water network shall be kept pressurized at minimum 7.0 kg/cm^2 at hydraulically remotest point by jockey pumps. Two jockey pumps (one working plus

one standby) shall be provided. The capacity of the pump shall be sufficient to maintain system pressure in the event of leakages from network.

11.2.9 Fire-water mains shall be designed of sufficient size not less than 120 percent of fire water demand with velocity not exceeding 5 m/s. Mains shall be designed to deliver rated fire water pumping capacity to the main process area at a residual pressure of 5.25 kg/cm^2. Fire mains shall be a minimum of 150 mm in diameter.

11.2.10 All fire mains within the plant battery limit shall be underground. However, in exceptional cases it would be permissible to lay such portions of the main above ground which are at least 15 m away from plant battery limit or hazardous equipment.

11.3 The selection installation and maintenance of fire extinguishers shall be in accordance with IS 2190.

11.4 The internal and external hydrant shall be accordingly to IS 3844 and IS 13039.

11.4.1 The requirement of monitors shall be established based on hazard involved and layout considerations. Especially elevated structures shall be protected by monitors where it is difficult to reach by handlines. Monitors shall be located to direct water on the object as well as to provide water shield to firefighters approaching a fire. The monitors shall not be installed less than 15 m from hazardous equipment. Also, the location of water monitors shall not exceed 30 m from the hazard to be protected.

11.5 It is desirable to have as much area possible protected by automatic sprinklers. In any case, sprinklers shall be installed in bale breakers, hopper feeders, blenders and similar machines having spiked lattices or rollers, in blow room tellers, cotton warehouses and dust collectors. Design and installation of fixed automatic sprinkler fire extinguishing systems shall be done in accordance with IS 15105.

11.6 Automatic high velocity water spray system shall be provided for transformers and oil warehouses with aggregate oil capacity exceeding 2 000 litres.

11.7 While in rest of areas single headed hydrant and landing valve conforming to IS 908 and IS 5290 shall be provided, double headed hydrants shall be provided near blow and mixing rooms, singeing, and raising rooms and warehouses for storage of cotton or cloth bales, oil, or other hazardous goods.

11.8 Fire fighting operations in textile mills assume a peculiar importance because of presence of dense smoke, the naturally high temperature of the room, slippery floor surfaces, inadequate accessibility between machines. All of which create a need for specialized knowledge and training. For these a trained firefighting squad shall be maintained round the clock within the mill premises and regular practice drills be conducted with mills firefighting system.

11.9 Adequate smoke extraction system shall be provided to extract the smoke from building.

11.10 On account of the excessive noise set up the machinery in the fly frames and

weaving compartments, clearly audible fire alarms and warning lights visible throughout the compartments are essential.

11.11 The procedure to be followed by the operators working in the plant and those comprising the fire fighting squad in the event of a fire shall be strictly laid down and observed

12 ILLUMINATI0N

12.1 For effective firefighting purpose the minimum illumination required for the various sections of the mills shall be as follows:

a) Working blocks — 150 LUX
b) Warehouses — 50 LUX
c) Open compound — 20 LUX

12.2 Emergency lighting system shall be provided. [*see* Part 4 of SP 7 (Part 4)]

13 GENERAL SAFETY PROVISIONS

13.1 Compounds

13.1.1 All roads within the compound shall be kept clear and in good motorable condition. Further, a clear head room in each room if at least 6 m shall be available on the roads for passage of fire engines.

13.1.2 Stacking of materials in the open shall be15 m clear from all process blocks and *warehouses*.

13.1.3 All internal and external firefighting equipment/hydrants, hose boxes, etc, shall be always kept easily accessible.

13.1.4 Car and truck parking shall be confined to parking lots only.

13.1.5 Steam locomotives without spark arrestors shall be prohibited within the compound.

13.2 Warehouses

13.2.1 Storage of materials/chemicals, etc, in warehouses shall comply with the provisions of IS 3594/Statutory Rules, etc, as applicable. Where no such standard or code is laid down (in case of new chemicals) manufacturer's instructions/safety guidelines shall be followed.

13.2.2 The floor levels of the warehouses shall be at least 750 mm above the surrounding ground level and the floor shall be made sloping towards the door sills, a slope of 1 in 100 being considered adequate.

13.2.3 The maximum height of storage of cotton *BORAS* or cotton or cloth bales shall not exceed 6 m or up to a level which is 1 m below the roof, whichever is less.

13.2.4 Cotton or cloth bales shall preferably be stacked or wooden sleepers instead

of directly on the floor, and in no case shall combustible dunnage, such as rice husk, be used in the warehouses.

13.2.5 Passageways shall be provided between stacks of bales or goods. These passageways shall not be less than 2 m wide and not more than 10 m apart. The passages shall be always kept clear of bales by night fall.

13.2.6 A minimum clear distance of 1 m shall be maintained between stacks of fully pressed bales and the warehouses walls.

13.2.7 The roofs of cotton warehouses shall be made thoroughly watertight to prevent leakage of rainwater.

13.3 Working Blocks

13.3.1 Smoking shall be prohibited. However, where so desired, smoking may be permitted in a specified area, provided such areas are separately enclosed and made dust proof. Smoking shall be prohibited in locker rooms.

13.3.2 Loose rivets and short ends of bale iron of each bale shall be carefully collected and accounted for before the next bale is opened as otherwise, they are likely to find their way into the blow lines.

13.3.3 Bales shall not be opened in a cotton warehouse.

13.3.4 Cotton bales storage in mixing and blow room shall be restricted to the requirement of one shift only and the bales shall be stored at a distance of not less than 3 m from the blow lines.

13.3.5 A minimum distance of 6 m shall be maintained between the drying chamber and cotton storage. In case of yarn drying this distance may be reduced to 3 m.

13.3.6 No cotton drying shall be permitted on roofs of working or storage blocks or within 15 m thereof. Drying of cotton shall also be prohibited inside boiler house.

13.3.7 Sliver waste obtained from cards, combers, drawing frames and slubbers shall be opened before reuse.

13.3.8 Separate space shall be provided for storage of laps in carding department.

13.3.9 Dust collectors of the blow lines, barber Colman spooler, raising, shearing, and cropping machines shall be cleaned after every shift.

13.3.10 Blow room cellars and all roof and structural members of manufacturing buildings be cleaned at least twice in a month.

13.3.11 In order to minimize fluff accumulation it is advisable to install dust extraction system in departments housing spinning and processes preparatory to spinning.

13.3.12 Magnetic separator units shall be cleaned after each shift.

13.3.13 Loose cotton from under and around machinery shall be cleaned constantly

and stored in self-closing waste bins provided near machinery which shall be periodically cleaned preferably by vacuum cleaned.

13.3.14 All light fittings and structural members shall be cleaned of fluff once in a fortnight.

13.3.15 Use of polythene canopies over the machines and jute/hessian/curtains on window/ door and north lights shall be prohibited.

13.3.16 In order to keep machinery in good condition, a definite cleaning and maintenance schedule shall be set up and observed.

13.3.17 All fire check doors shall be kept closed during non-working hours and shall be cleaned and oiled regularly.

13.3.18 When lubricating machinery parts and bearings, care shall be taken to see that the bearings or the parts being lubricated are not usually hot.

13.3.19 Lubricating oil in excess of daily requirements shall not be stored in working places.

13.3.20 Storage of colours and chemicals in the processing house shall be restricted to a day's supply only.

13.3.21 The use of welding sets and blow lamps inside working or storage blocks shall be carried out in the presence of the fire or safety officer after all precautions are taken.

13.3.22 Care shall be taken to see that hessian canopies which are normally tied at the time of painting or repairs of the roofs of the working blocks, do not come within 500 mm of a bearing or line shaft.

13.323 Materials handling appliances shall be of battery-operated type.

13.3.24 Fire safety requirements and orders shall be prominently displayed at conspicuous places in the factory.

ANNEX A

(Clause 2.1)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*
908 : 1975	Specification for Fire hydrant, stand post type (*second revision)*
1642 : 2013	Fire safety of buildings (general): Details of construction — Code of practice (*second revision*)
1644 : 2013	Fire safety of buildings (general): Exit requirements and personal hazard — Code of practice (*second revision*)
1646 : 2015	Fire Safety of Buildings (General): Electrical Installations — Code of Practice (*third revision*)
2189	Selection, installation and maintenance of automatic fire detection and alarm system — Code of practice (*fifth revision*) (*under revision*), *Doc: CED 22(14626)*
2190	Selection, installation, and maintenance of first-aid fire extinguishers — Portable and mobile — Code of practice (*fifth revision*) (*under revision*) *Doc: CED 22(21197)*
3594	Fire safety of general storage and warehousing including cold storages — Code of practice (*second revision*) (*under revision*), *Doc: CED 36(23084)*
3614 : 2021	Fire doors and doorsets — Specification (*first revision*)
3844 : 1989	Code of practice for installation and maintenance of internal fire hydrants and hose reels on premises (*first revision*)
5290	Landing valves — Specification (*fourth revision*) (*under revision*), Doc: CED 22(19653)
8757 : 2021	Glossary of terms associated with fire safety (*second revision*)
12459	Fire safety of cable runs — Code of practice (*first revision*) (*under revision*), Doc: CED 36(20349)
13039 : 2014	External hydrant systems — Provision and maintenance — Code of practice (*first revision*)
15105 : 2021	Design, installation and maintenance of fixed automatic sprinkler fire extinguishing systems — Code of practice (*first revision*)
SP 7 : 2016 Part 4	National Building Code of India 2016 Part 4: Fire and Life Safety
SP 45 : 1988	Handbook on glossary of textile terms

****