

**BUREAU OF INDIAN STANDARDS**

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*Draft Indian Standard*

**GUIDE FOR SELECTION OF OCCUPATIONAL PROTECTIVE CLOTHING — BODY PROTECTION  
(SELECTION, CARE, AND MAINTENANCE)**

*(First Revision)*

(ICS 13.340.10)

Occupational Safety and Health Sectional  
Committee, CHD 08

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FOREWORD

*(Formal clause shall be added later)*

This Indian standard provides requirements and guidance for the selection, use, and care of Body protective clothing designed to shield or isolate individuals from chemical, physical or biological hazards likely to be present in the workplace.

This standard is intended to guide workers and those in charge of their safety in industrial operations in selecting such protective equipment for the body as will give the required protection against hazards likely to be encountered. Selection of appropriate protective clothing should be based on Hazard assessment in which the user organization identifies the hazards, determines the potential for contact with individual workers, the consequences of exposure, and the type of practices or controls needed to eliminate or minimize exposure. When it is determined that Body protective clothing is needed, the risk assessment should identify the type of protective clothing needed in terms of its overall type and performance.

This standard was originally published in 1977. In this first revision, the following modifications have been incorporated.

- a) The title of standard has been modified in order to reflect a precise and accurate message about the Standards' application
- b) Classification of hazards and selection of equipment for different hazards have been updated.
- c) Clauses on the following topics have been added:
  - i) Chemical protective clothing;
  - ii) Types of body protection;
  - iii) Training, procedures, and written program; and
  - iv) Proper use.
- d) References have been updated and other editorial changes have been done to bring the standard in latest style and format of Indian Standards.

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**GUIDE FOR SELECTION OF OCCUPATIONAL PROTECTIVE CLOTHING —BODY PROTECTION (SELECTION, CARE, AND MAINTENANCE)**

*(First Revision)*

**1 SCOPE**

This standard describes selection, storage and care of protective clothing for the body against specific hazards likely to be encountered on the job for workers, supervisors, Safety and Health professionals, Industrial Hygienist, Spill responders and others workers.

**2 REFERENCES**

The Indian standards listed 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 Indian standard are encouraged to investigate the possibility of applying the most recent editions of the standards.

**3 TYPES OF PROTECTIVE CLOTHING FOR BODY PROTECTION USED IN VARIOUS OCCUPATIONS**

The types of protective clothing for body protection used in various occupations are given below:

**3.1 Apron** — Clothing worn to protect against Physical, chemical, biological hazards that covers the partial, or greater part of the body.

**3.1.1 Bib Type** — Covering chest, waist and legs down to the knees or sometimes to ankles.

**3.1.2 Waist Type** — Covering waist and legs down to the knees or below.

**3.1.3 Split Type** — Divided at the crotch and fastened around each leg.

**3.2 Cape Sleeve** — Back, shoulder and arm covering which extends over the upper chest. They can also be worn over aprons.

**3.3 Cover All** — One piece apparel combining pull-on pants with upper portion covering body and the hands partly or wholly.

**3.4 Jacket** — Covering upper body from shoulders to hips.

**3.5 Coat** — Extending either to knee or ankle to give body and leg protection.

**3.6 Suit** — Clothing covering from head to foot, for complete protection, and normally used with respiratory provision.

**4 CLASSIFICATION OF HAZARDS RELATED TO BODY PROTECTION EQUIPMENT**

Hazards against which body protection equipment should be used are given in below Table 1.

**Table 1 Hazards Related To Body Protection Equipment**

(Clauses 4, and 5.1)

<b>Code No. of Hazard</b>	<b>Protection Against Hazard</b>	<b>Typical Operations</b>	<b>Typical Material of Constructions</b>	<b>Typical Body Protection</b>	<b>Relevant Indian Standard</b>
H-1	Sustained radiant heat	Glass furnaces, forgings, hearths, pit and salt bath furnace, etc., Fire fighters, Oil and natural gas drilling, Chemical industry, Electrical Installations	Glass fiber insulated fabric, Fire resistant Textiles, cooling vest	Overall, suit, Coats, Jackets, Trousers, Bib-trousers	Test Method: IS 15758 (Part 2 )  Product specifications:  IS 15748  IS 16655
H-2	Flame (Heat Transmission due to exposure to flame)	Flame proximity and flame entry 3;  Oil & Natural gas drilling, Metallurgical, Welding, chemical industry	Aluminized fabric, Glass fiber insulated fabric, Fire-resistant duck, Fire resistant Textiles, multi-layer barrier film laminated flame proof textile	Overall, suit, Coats, Jackets, Trousers, Shirts, Bib-trousers	Test methods: IS 11871 IS 15758 (Part 1) IS 15758 (Part 4)  Product specifications:  IS 15742 IS 15748 IS 16655
H-3	Hot metal splash and sparks	Foundry, forging and welding, heat treatment and die casting	Leather, Aluminized fabric, Fire resistant duck	Overall, suit , Coats  Jackets, Trousers, Shirts, Bib-trousers	Test methods: IS 15758 (Part 5)  Product specifications:  IS 15748 IS 16655
H-4	Electric current	Work on live conductors	Rubber, multi-layer barrier film laminated electric resistant textile fabric	Suit, electric arc resistant suits	
H-5	Water splashes	Dairies and laundries, fisheries, catering industries, Automotive industries, Agriculture	Rubber, coated fabric, HDPE Plastic, plastic coated fabric, water resistant non-woven breathable fabric resistant to abrasion and bacterial penetration.	Aprons, Overall, suit , Coats, jackets	IS 17423
H-6	Mild acids and alkalis	Pickling and degreasing	Rubber, Plastic, plastic coated fabric, synthetic rubber, water resistant non-woven breathable fabric	Aprons, Overall, suit , Coats, jackets	IS 15071

<b>Code No. of Hazard</b>	<b>Protection Against Hazard</b>	<b>Typical Operations</b>	<b>Typical Material of Constructions</b>	<b>Typical Body Protection</b>	<b>Relevant Indian Standard</b>
			resistant to abrasion and bacterial penetration.  Fabric suited for chemical and biological hazards		
H-7	Strong acids and alkalis	Handling and manufacturing chemicals	Rubber, Plastic, plastic coated fabric, synthetic rubber; Chemical resistant textiles, multi-layer barrier film laminated textile fabric, Spun bonded polypropylene fabric	Aprons, Overall, suit, Coats, jackets  Trousers, Shirts, Bib-trousers	IS 15071
H-8	Organic solvents, oils	Handling petroleum products	Synthetic rubber,	Aprons, Overall, suit , Coats,	IS 1001
H-9	Flying chips, rough objects, mild impacts	Grinding, woodworking and shot-blasting, machining of metals	Leather, Linen, Para aramid fabric	Aprons, Overall, suit , Coats,	IS 6153
H-10	Severe blows and sharp tools	Saw operations, grinders and butchers	Wire mesh, Reinforced leather, Para aramid Fabric	Overall, suit , Coats,	
H-11	X-rays and gamma rays ,Ionizing radiations	X-ray technicians and laboratory workers	Lead plastics or lead rubber or lead leather	Aprons, Overall, suit , Coats	
H-12	Low temperature	Industrial operations, cold storage, Laboratories	Leather, wool	Aprons, Overall, suit, Coats	
H-13	Cryogenic	Industrial operations , space application	Leather, wool	suits	
H-14	Fire	Fire fighting	Fire resistant textiles	Suits	IS 16874 : 2018 IS 16890 : 2018
H-15	High visibility	Traffic operations, construction, Aviation, Oil & Natural gas drilling, Areas of low visibility in different industries prone to accidents	Luminescence material  High visibility textiles and retro-reflective material	Aprons, Overall, suit, Coats, jackets, <i>Cape Sleeve</i>  Jackets, Trousers, Shirts, Bib-trousers	IS 15809

<b>Code No. of Hazard</b>	<b>Protection Against Hazard</b>	<b>Typical Operations</b>	<b>Typical Material of Constructions</b>	<b>Typical Body Protection</b>	<b>Relevant Indian Standard</b>
H-16	Microbial penetrations  Biological exposure	Hotels, slaughter house, leather industries, Pathology labs, Healthcare, Pharmaceuticals, Medical diagnostic lab, clean rooms etc.	Melt blown fabric, Non-woven fabric, Spun bonded polypropylene fabric	Aprons, Overall, suit, Coats, jackets, sleeves, shoe covers	IS 17423
H-17	Static charge	Areas in the industry where electrostatic charges can develop due to environment or work practice; electronic industry, computer manufacturing and assembling	Textile  Fabric coated / treated for Antistatic protection  ESD Shoes	Overall, suits, Shirt, Jackets, Trousers	
H-18	Electric Arc	Electrical Depots, Power generation companies, metallurgical industry, any industry equipped with heavy electrical equipment	Textiles, polymer coated or multi-layer barrier film laminated for Electric arc or arc flash protection.	Overall, suits, Coats, jackets, Jackets, Trousers, Shirts, Bib-trousers	

## **5 WHEN TO USE BODY PROTECTIVE CLOTHING**

Protective clothing should be used in the following situations:

**5.1** To prevent potential exposure to Physical, chemical and Biological hazards. Examples of Industrial Hazards which present potential health hazards are mentioned in Table 1.

**5.2** To augment engineering and administrative controls (for example, protection from splashes, leaks, contaminated equipment, & hazardous waste handling)

**5.3** For extra safety with chemicals that are hazardous on contact (for example, agents that are corrosive or toxic to the skin or eyes)

**5.4** To prevent contamination of other areas on-site and off-site from contaminants resulting from job tasks (for example, Hazardous waste or municipal waste management).

**5.5** For emergency response and spill cleanup.

## **6 CHEMICAL PROTECTIVE CLOTHING**

**6.1** A chemical protective suit can consist of garments combined together to provide protection to the body. A suit can also have various types of additional protection such as hood or helmet, boots and gloves joined with it. These garments are full-body protective clothing, for example, covering trunk, arms and legs, such as one-piece coveralls or two-piece suits, with or without hood or visors, with or without foot protection. Application of full-body disposable protective clothing could be intended for protecting against Chemicals hazards in Industrial activities or hazardous dust exposure for personnel or environment in Pharmaceuticals clean room operation.

**6.2** Chemical permeation of protective clothing leading to breakthrough is dependent on the clothing material, the chemical and its physical properties, and environmental factors (for example, humidity, temperature, and pressure). Some chemicals break through some materials almost instantaneously. The protective characteristics of any Protective Clothing must be matched to the hazard.

**6.2.1** *Factors to Consider When Selecting Chemical Protective Clothing*

- a) Not all single material of construction offers adequate protection against all chemical, Physical and Biological hazards; therefore, Protective clothing shall be selected from material that offers sufficient Hazard resistance for each situation.
- b) For Chemicals the proper selection of materials involves considering how the chemical might permeate, penetrate, and degrade the PPE. (*see* IS 15071).

**6.2.2** *Breakthrough, Permeation, and Penetration Resistance to the Chemical(s).*

**6.2.2.1** Characteristics are measured by breakthrough times and permeation rates of chemicals. Table 2 shows a number of common body protection material types and protection recommendations.

**6.2.2.2** The only way to be sure about the performance of a material is to avail test claims or technical data of the protective clothing fabric against the Physical, chemical or biological hazards shall be obtained from the manufacturer before selection of the fabric.

**6.2.2.3** Environmental temperature and pressure effects may enhance permeation and reduce the breakthrough time for chemical protective clothing. Chemical mixtures can also complicate the selection process; and so the most hazardous component of the mixture should be determined. Permeation can occur without any visible changes in the protective materials.

**6.3 Type and Duration of Exposure**

Typical categories of exposure are immersion, splash, spray, mist, vapor, and surface contact. When a task includes immersion in a chemical, a more-protective item of clothing should be used than for a task where contact is limited to an accidental splash. Wear time shall not exceed breakthrough time unless the permeation rate or type of exposure is insignificant.

**6.4 Proper Fit, Sizing and Wearer Comfort**

Proper sizing is important for optimum use and protection. Protective clothing that are too large may interfere with delicate work, and improperly sized suits may rip at the seams or hinder mobility. SCBA must fit under fully encapsulating suits. A variety of sizes should be available from which wearers can select. The best approach to wearer comfort is to have personnel try several different sizes, materials, and products to determine their acceptability to the wearer and the adequacy of their protection.

**6.5 Other Considerations are as Follows:**

- a) Respiratory protection and the availability of breathing air.
- b) Visibility
- c) The ability of the clothing to withstand repetitive exposure & address multiple hazards.
- d) Shelf life and special storage conditions (for example, avoiding sunlight, ozone, or moisture). A long shelf life is not the same as a high chemical resistance. Different components of a protective garment may have different shelf lives. The manufacturer should be consulted for details.
- e) The ability of a garment to be cleaned and decontaminated, if it is to be reused.
- f) The ability to use additional PPE such as safety harnesses, ropes, and related equipment without compromising protection.

After evaluating all of the factors above, the type of material best suited for the intended use and the proper apparel ensemble can be determined.

**Table 2 Common Protective Materials and Protection Recommendations**

(*Clause 6.2.2.1*)

Sl. No.	Protective material	Generally recommended for	Not recommended for
(1)	(2)	(3)	(4)
i)	Natural rubber	Alcohols, caustics, ketones, many acids	Aromatics, hydrocarbons, many solvents (especially chlorinated or aromatic)
ii)	Nitrile-butadiene rubber	Many acids, alcohols, caustics, hydrocarbons	Ketones, chlorinated hydrocarbons, strong acids
iii)	Neoprene	Organic acids, caustics, alcohols, petroleum solvents, ketones	Aromatic and chlorinated solvents
iv)	PVC	Alcohols, caustics, hydrocarbons	Aromatic and chlorinated solvents, aldehydes
v)	Butyl rubber	Acids, ketones, esters, bases, alcohols, aldehydes	Hydrocarbons and halogenated or aromatic hydrocarbons
vi)	Non-woven breathable fabric resistant to abrasion and bacterial penetration.	Antistatic, Microbial / Biological, Hazardous particulate dust, (asbestos, lead, paint, & aerosols)	Alcohol, Acids, flammable solvents.
vii)	PVA	Most solvents, including aromatic, chlorinated, and petroleum	Inorganic acids, alcohols, caustics, water-based materials

NOTE — This table is a reference guideline and should be used only after consultation with Qualified Safety Professionals or Industrial hygienist.

**Table 3 Physical Characteristics of Chemical Protective Materials**

*(Informative)*

Material (designation in matrices)	Abrasion resistance	Cut resistance	Flexibility	Heat resistance	Ozone resistance	Puncture resistance	Tear resistance
Butyl rubber	F	G	G	E	E	G	G
Chlorinated polyethylene	E	G	G	G	E	G	G
Natural rubber	E	E	E	F	P	E	E
Neoprene	E	E	G	G	E	G	G
Nitrile-butadiene rubber	E	E	E	G	F	E	G
Nitrile rubber	E	E	E	G	F	E	G
Nitrile rubber + PVC	G	G	G	F	E	G	G
Polyethylene	F	F	G	F	F	P	F
Polyurethane	E	G	E	G	G	G	G
PVA	F	F	P	G	E	F	G
PVC	G	P	F	P	E	G	G
Styrene-butadiene rubber	E	G	G	G	F	F	F

Non-woven breathable fabric resistant to abrasion and bacterial penetration.	P	P	E	P	G	G	E
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NOTE — Ratings are subject to variation depending on formulation, thickness, and whether the material is supported by fabric.

E—excellent; G—good; F—fair; P—poor

## 7 TYPES OF BODY PROTECTION

The following garments are used to protect the body:

**7.1 Aprons** protect the front of the torso and upper legs against chemical contact.

**7.2 Disposable Coveralls** protect the torso, arms, and legs. One or two-piece garments are generally made of a lightweight fiber made with Spun bonded polypropylene. Different coatings may be applied. These garments are lighter than acid suits and afford the wearer better mobility and more comfort. Disposable coveralls may be more resistant to permeation by certain chemicals. These garments do not have the physical strength of most acid suits and thus are not as practical when the potential for exposure to chemicals under pressure exists (for example, during line breaks).

**7.3 Limited-Use Garments** protect the torso, arms, and legs. Limited-use garments are usually made from a nonwoven fabric or a nonwoven fabric with a laminated film coating. Additional chemical barriers can be obtained from polymer coatings. Limited-use chemical protective clothing fabrics provide broader chemical-barrier protection, and involve less storage, inspection, and maintenance compared to reusable garments.

**7.4 Reusable Garments** protect the torso, arms, and legs by providing a good barrier to specific chemicals. Reusable garments are usually made from polymer-coated fabrics. They are a good choice for frequent, short-term entries into environments with the same or similar contaminants.

**7.5 Splash (Acid) Suits** protect the entire body. Splash suits are one-piece or multiple-piece suits generally consisting of a coat, pants (for example, bib-front overall style), hood, gloves, and boots. Gloves and boots may be an integral part of the coat and pants, respectively.

**7.6 Totally Encapsulating Chemical Protective (TECP) suits** protect the entire body. TECP suits are one-piece garments designed to completely isolate the wearer from the outside environment. These suits use either an air-line or a self-contained breathing apparatus (SCBA) for an air supply.

## 8 TRAINING, PROCEDURES, AND WRITTEN PROGRAM

**8.1** Training must be provided to help ensure that all employees who use Protective clothing have a full understanding of the specific Protective clothing items required when performing specific tasks; the limitations of each item of Protective clothing and of the ensemble; and the proper use, maintenance, and storage. Training shall be done prior to the first use of Chemical protective clothing. Periodic refresher training should be done annually or as a result of the Management of Change of operations where the Chemical protective clothing is being used.

**8.2** The following topics should be included in wearer training:

- a) Workplace hazards and locations where Chemical protective clothing is used
- b) Type of Chemical protective clothing specified (for example, garment and material of construction)
- c) Pre-use inspection of the Chemical protective clothing for defects
- d) How to properly don, adjust, wear, and remove the Chemical protective clothing
- e) Limitations of Chemical protective clothing
- f) How to recognize and manage Chemical protective clothing failure
- g) Proper Chemical protective clothing care, including decontamination, cleaning, storage, maintenance, and disposal.

## 9 PROPER USE



Protective Clothing must be worn for each required task and must be worn properly. Protective Clothing must not be tampered with or modified in any manner that adversely affects the proper functioning of the clothing. It shall be used and maintained in sanitary and reliable condition. Protective Clothing that is damaged or defective shall not be used.

### **9.1 Donning and Removing**

- a) The user shall inspect Chemical protective clothing immediately before donning. (*See 9.7* for additional information on inspection.) Chemical protective clothing should be donned according to the manufacturer's instructions.
- b) A suit should be free of hazardous chemicals before it is removed. (*See 9.3* and *9.4* for decontamination and cleaning information.) After decontaminating, Chemical protective clothing must be removed carefully. External areas must not be touched with unprotected body parts. The wearer can reach inside the glove cuff or garment to avoid touching contaminated areas. When full-body protection is worn, the standby person should assist with the suit removal by helping with the surface decontamination and keeping the outside of the garment away from the person who is removing the suit. Hands and other exposed body parts must be washed after removing Chemical protective clothing.

### **9.2 Decontaminating, Cleaning, Inspecting, Repairing, and Storing Chemical Protective Clothing**

Chemical protective clothing must be decontaminated, cleaned, inspected, repaired (or discarded, as appropriate), and properly stored between uses. It shall be used and maintained in sanitary and reliable condition. Chemical protective clothing that is damaged or defective shall be repaired before use or discarded. Personnel who use Chemical protective clothing and their supervisors should help ensure that it is maintained and used properly. (*See IS 8990*)

### **9.3 Decontamination**

- a) Protective clothing must be thoroughly decontaminated or discarded after it is used. The toxicity of the chemical against which the Protective clothing was used may influence the decision to decontaminate or discard. If it is difficult to remove the material and trace quantities can cause health problems, gross contamination should be removed from the Protective clothing and it should be discarded. The effectiveness of decontamination is also affected by the nature of the Protective clothing's material of construction.
- b) Initial decontamination of a chemical protective suit usually consists of a wash down under a safety shower. The safety shower must flow to a wastewater treatment system. If the suit has a significant amount of contamination, a backup person may scrub the suit with a soft brush and detergent followed by flushing under a safety shower. Personnel in air-supplied suits must be able to walk from the work area to a safety shower without disconnecting their air hoses.
- c) Soap and water are effective in removing water-soluble contaminants. Water-insoluble organic contaminants may enter the matrix of elastomeric clothing and may not be able to be removed with surface cleaning. Decontamination with solvents may help remove the chemical contaminants, but may adversely affect the clothing's permeation properties.

### **9.4 Cleaning**

- a) Protective clothing that is reused shall be kept clean and rinsed off after use (except for polyvinyl alcohol [PVA], which is damaged by water). Shared Protective clothing must be cleaned between uses by different wearers and sanitized, as appropriate. Manufacturer's cleaning instructions must be followed. The person who cleans the Protective clothing must be made aware of the contamination risk and must be protected.
- b) Employees shall not take PPE that has been used for protection against hazardous materials home for cleaning.

### **9.5 Inspection**

Protective clothing shall be inspected visually for cuts, tears, contamination, and evidence of degradation (for example, stiffness, softness, swelling, or discoloration). Manufacturer or vendor information and directions relative to testing and inspection should be reviewed and followed as appropriate. Inspections and tests of emergency-response clothing and fully encapsulating suits shall be recorded and maintained.

### **9.6 Prior to Use**

All Protective clothing shall be visually inspected prior to use. Protective clothing shall not be used if evidence of chemical or physical damage or contamination is found. Contaminated Protective clothing should be cleaned (*see 9.8*) or properly discarded.

### **9.7 Periodic Inspection and Testing**

Full-body Protective clothing shall be inspected and tested periodically. If service is severe, then inspection and testing after every use may be appropriate. Totally enclosed suits can be inflated with air and checked by observing the leakage rate with a manometer or pressure gauge or by soap-solution application. Full-body protective suits can also be checked by examining the article in a darkened area with a strong light source inside the suit or by using a lighted mannequin. In addition to these

procedures and depending on the hazard of the chemical, wipe testing or destruction testing may be appropriate. Reference shall be as per manufacturer's guideline.

### **9.8 Storage, Use and Disposal**

- a) Protective clothing shall be stored separately from other work clothes and personal clothes. All Protective clothing shall be stored properly to prevent damage from dust, moisture, sunlight, chemical exposure, temperature extremes, impact, and friction. Protective clothing shall not be stored with tools. Clean Protective clothing should be segregated from dirty Protective clothing. Individual Protective clothing should be stored in lockers assigned to individuals. Shared Protective clothing should be stored in a designated, clean place that is accessible to personnel who use it—closed, vented lockers or cabinets are preferred. All jackets, pants, hoods, and full-body suits should be hung up individually (for example, not inside each other) after they are used. Folding stored items should be avoided since creases can weaken protective material over time.
- b) Protective clothing must not be tampered with or modified in any manner that adversely affects the proper functioning of the clothing. It shall be used and maintained in sanitary and reliable condition. Protective clothing that is damaged or defective shall not be used.
- c) Contaminated Protective clothing that cannot be decontaminated (for example, disposable or single use Protective clothing) must be discarded appropriately. Disposable of Protective clothing shall be properly discarded with adherence to local state specific PCB (Pollution control board) norms.

**ANNEX A**

(Clause 2)

**LIST OF REFERRED INDIAN STANDARDS**

<i>IS No.</i>	<i>Title</i>
IS 1001 : 1991	Synthetic rubber proofed/coated fuel pump diaphragm fabric specification (First Revision)
IS 6153 : 1971	Specification for protective leather clothing
IS 8990 : 1978	Code of practice for maintenance and care of industrial safety clothing
IS 11871 : 1986	Methods for determination of flammability and flame resistance of textile fabrics
IS 15071 : 2002	Chemical protective clothing — Specification
IS 15742 : 2007	Textiles — Requirements for clothing made of limited flame spread materials and material assemblies affording protection against heat and flame — Specification
IS 15748 : 2022 ISO 11612:2015	Protective clothing — Clothing to protect against heat and flame — Minimum performance requirements ( <i>first revision</i> )
IS 15758 (Part 1) : 2020 ISO 9151 : 2016	Textiles — Protective clothing Part 1 Determination of heat transmission on exposure to flame ( <i>first revision</i> )
IS 15758 (Part 2) : 2007 ISO 6942	Textiles — Protective clothing Part 2 Assessment of material assemblies when exposed to source of radiant heat
IS 15758 (Part 4) : 2020 ISO 15025 : 2016	Textiles — Protective clothing Part 4 Method of test for limited flame spread ( <i>first revision</i> )
IS 15758 (Part 5) : 2020 ISO 9185 : 2007	Textiles — Protective clothing Part 5 Assessment of resistance of materials to molten metal splash ( <i>first revision</i> )
IS 15809 : 2017	High visibility warning clothes — Specification ( <i>first revision</i> )
IS 16655 : 2017 ISO 11611 : 2015	Textiles — Protective clothing for use in welding and allied processes
IS 16874 : 2018	Textiles - Protective gloves for firefighters — Specification
IS 16890 : 2018	Textiles - Protective clothing for firefighters — Specification
IS 17423 : 2021	Medical Textiles — Bio-Protective Coveralls — Specification ( <i>First Revision</i> )