

# **STANDARDS REQUIRED ON TECHNICAL TEXTILES FOR WORKPLACE SAFETY IN INDIA**

**PRESENTED ON 2<sup>ND</sup> NOVEMBER 2017 AT FICCI, NEW DELHI**

# TECHNICAL TEXTILES

Textile materials and products manufactured primarily for their technical and performance properties rather than their aesthetic or decorative characteristics.

Terms such as industrial textiles, performance textiles, functional textiles, engineered textiles and high-tech textiles are also all used in various contexts instead of technical textiles

# TECHNICAL TEXTILES SEGMENTS

**Agrotech**  
(Agricultural)

**Buildtech**  
(Building and  
Construction)

**Clothtech**  
(Clothing and footwear  
components)

**Geotech**  
(Geo-textiles & Civil  
Engineering)

**Hometech**  
(Household Textile and  
Floor Covering)

**Indutech**  
(Industrial Textiles for  
Filtration, conveying and  
cleaning)

**Mobiltech**  
(Transport; automotive  
and aerospace)

**Oekotech or Ecotech**  
(Environmental  
Protection)

**Medtech**  
(Hygiene and Medical)

**Packtech**  
(Packaging)

**Protech**  
(Protective)

**Sportech**  
(Sports)

# PROTECH



FR Coverall



High- Vis  
Vest Jacket



Balaclava



Safety  
Gloves



Hard Hat



Earplugs and  
Muffs



Safety Shoes



Face mask



Bullet Proof  
Jacket

# HAZARDOUS INDUSTRIES WHERE PROTECTIVE CLOTHING MUST BE USED



Oil and gas  
industries



Metallurgical  
Industries



Chemical  
Industries



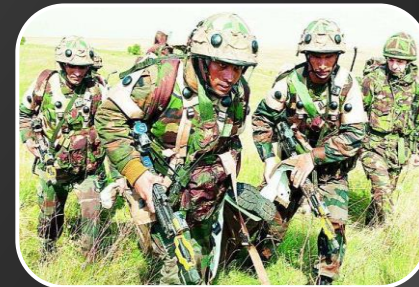
Electric  
Installation



Welding  
Industries



Fire fighters



Defence

## POTENTIAL OF THE INDIAN INDUSTRY

PPE business in India expected to reach  
a level of 10 Billion USD by 2022.



## NEED FOR STANDARDS AS PER THE INDUSTRY REQUIREMENTS

- ❑ Domestic industry requirements are mostly based on testings as per European and American norms
- ❑ BIS standards published on Protective Clothing – 13
- ❑ Need of the Hour - Industry Awareness & implementation

- ❑ Indian PPE Directive – Guideline
  
- ❑ Protech must be made mandatory in the high risk industries where non-standard products are still being used
  - Electrical Utility workers are faced with the risk of Electric Arc and need appropriate Arc rated clothing.
  
- ❑ Legislations to make employer more accountable :
  - Identify risk and protect the employees from Workplace hazards



# STANDARDS ALREADY PUBLISHED FOR PROTECTIVE CLOTHING (TX 32)



S.N O	IS STANDARD #	TITLE	CATEGORY	REAFFIRM ED	SIMILAR TO INTERNATIONAL STD
1	IS 11871:1986	Methods For Determination Of Flammability And Flame Resistance Of Textile Fabrics	Methods of tests	2013	ASTMD6413/ ASTM D 1230:1972/ BS 3119:1959
2	IS 15589:2005	Textiles Fabrics - Burning Behaviors - Determination Of Ease Of Ignition Of Vertically Oriented Specimens	Methods of tests	2013	ISO 6940
3	IS 15590:2005	Textiles Fabrics - Burning Behaviors - Measurement Of Flame Spread Properties Of Vertically Oriented Specimens	Methods of tests	2013	ISO 6941
4	IS 15742:2007	Textiles - Requirements For Clothing Made Of Limited Flame Spread Materials And Material Assemblies Affording Protection Against Heat And Flame	Product Specification	2013	ISO 14116
5	IS 15748:2007	Textiles - Protective Clothing For Industrial Workers Exposed To Heat (excluding Firefighters' And Welders' Clothing)	Product Specification	2013	ISO 11612
6	IS 15758 : Part 1:2007	Textiles - Protective Clothing : Part 1 Method Of Determining Of Heat Transmission On Exposure To Flame	Methods of tests	2013	ISO 11612; CLAUSE B - TESTED AS PER ISO 9151

# STANDARDS ALREADY PUBLISHED FOR PROTECTIVE CLOTHING (TX 32)



S.N	IS STANDARD #	TITLE	CATEGORY	REAFFIRMED	SIMILAR TO INTERNATIONAL STD
7	IS 15758 : Part 2:2007	Textiles - Protective Clothing : Part 2 Assessment Of Material Assemblies When Exposed To Source Of Radiant Heat	Methods of tests	2013	ISO 11612; CLAUSE C - TESTED AS PER ISO 6942
8	IS 15758 : Part 3:2007	Textiles - Protective Clothing : Part 3 Test Methods For Resistance Of Materials To Penetration By Liquids	Methods of tests	2013	EN 13034 - AS PER ISO 6530
9	IS 15758 : Part 4:2007	Textiles - Protective Clothing : Part 4 Test Method For Limited Flame Spread	Methods of tests	2013	ISO 11612 – Clause A1& A2 as per ISO 15025
10	IS 15758 : Part 5:2007	Textiles - Protective Clothing : Part 5 Assessment Of Resistance Of Materials To Molten Metal Splash	Methods of tests	2013	ISO 9185: CLAUSE D & E
11	IS 16655 :2017	Textiles- Protective Clothing For Use In Welding And Allied Processes		0	SHOULD BE SIMILAR TO EN ISO 11611:2015
12	IS 15370:2005	Textiles- Domestic washing & drying procedure for Textile testing		0	ISO 6330
13	IS 15809:2008	High visibility warning clothing	Product Specification	2013	EN 471

# OTHER STANDARDS PUBLISHED FOR FR TEXTILES- OTHER THAN CLOTHING USE (TX 32)



S.N	IS STANDARD #	TITLE	CATEGORY	REAFFIRMED
1	IS 12467 : Part 1:2006	Textiles - Assessment Of The Ignitability Of Upholstered Furniture : Part 1 Ignition Source : Smouldering Cigarette	Methods of tests	2013
2	IS 12467 : Part 2:2006	Textiles - Assessment Of The Ignitability Of Upholstered Furniture : Part 2 Ignition Source : Match Flame Equivalent	Methods of tests	2013
3	IS 12722:1989	Textile Floor Coverings - Determination Of Flame Resistance By Tablet Test	Methods of tests	2013
4	IS 13501:1992	Textiles - Determination Of Flammability By Oxygen Index	Methods of tests	2013
5	IS 15612 : Part 1:2005	Textiles - Burning Behaviour Of Curtains And Drapes : Part 1 Classification Scheme	Others	2013
6	IS 15612 : Part 2:2006	Textiles - Burning Behavior Of Curtains And Drapes : Part 2 Measurement Of Flame Spread Of Vertically Oriented Specimens With Large Ignition Source	Methods of tests	2013

# OTHER STANDARDS PUBLISHED FOR FR TEXTILES- OTHER THAN CLOTHING USE (TX 32)



S.NO	IS STANDARD #	TITLE	CATEGORY	REAFFIRMED
7	IS 15612 : Part 3:2005	Textiles - Burning Behaviors Of Curtains And Drapes : Part 3 Method For Determining The Ignitability Of Vertically Oriented Specimens (small Flame)	Methods of tests	2013
8	IS 15612 : Part 4:2005	Textiles - Burning Behaviors Of Curtains And Drapes : Part 4 Method For Determining The Flame Spread Of Vertically Oriented Specimens	Methods of tests	2013
9	IS 15727 : Part 1:2007	Textiles - Burning Behaviour Of Bedding Items : Part 1 General Test Methods For The Ignitability By A Shouldering Cigarette	Methods of tests	2013
10	IS 15727 : Part 2:2007	Textiles - Burning Behaviour Of Bedding Items : Part 2 Specific Test Methods For The Ignitability By A Shouldering Cigarette	Methods of tests	2013
11	IS 15727 : Part 3:2007	Textiles - Burning Behaviour Of Bedding Items : Part 3 General Test Methods For The Ignitability By A Small Open Flame	Methods of tests	2013
12	IS 15727 : Part 4:2007	Textiles - Burning Behaviour Of Bedding Items : Part 4 Specific Test Methods For The Ignitability By Small Open Flame	Methods of tests	2013

# OTHER STANDARDS PUBLISHED FOR FR TEXTILES- OTHER THAN CLOTHING USE (TX 32)

S.N O	IS STANDARD #	TITLE	CATEGORY	REAFFIRMED
13	IS 15741:2007	Textiles - Resistance To Ignition Of Curtains And Drapes	Product Specification	2013
14	IS 15764:2008	Textiles - Determination Of Burning Behaviour Of Textile Floor Coverings	Methods of tests	2013
15	IS 15768:2008	Textiles - Resistance To Ignition Of Upholstered Composites Used For Non-domestic Furniture	Product Specification	2013
16	IS 15781:2008	Textiles - Method For Determination Of Flammability Of Blankets	Methods of tests	2013
17	IS 15782:2008	Textiles - Method For Determining Deterioration Of Visibility Due To Smoke Released On Combustion Of Materials	Methods of tests	2013

# STANDARDS ALREADY DRAFT AND UNDER WIDE CIRCULATION- PROTECTIVE CLOTHING – (TX32)

S.NO	IS STANDARD #	TITLE	CATEGORY
1	TX 32 (1226)	Textiles-Protective Clothing For Use In Welding And Allied Processes-TX 32 (1226)	27-9-2015
2	TX 32 (1223)	Protective Clothing For Firefighters - Laboratory Test Methods And Performance Requirements [DOC : TX 32 (1223)]	27-9-2015
3	TX 32 (1198)	Draft amendment No. 1 to IS 15748:2007 Textiles – Protective clothing for industrial workers exposed to heat (excluding firefighters’ and welders’ clothing) [Doc :TX 32(1198 )]	31-8-2013



# STANDARDS ALREADY DRAFT AND UNDER WIDE CIRCULATION- OTHER THAN CLOTHING USE – TX32

S.N	IS STANDARD #	TITLE	CATEGORY
1	TX 32 (1222)	Textiles Protective Clothing Sectional Committee, TX 32	27-9-2015
2	TX 32 (1199)	Draft amendment No. 1 to IS 15768:2008 Textiles – Resistance to ignition of upholstered composites used for non-domestic furniture – Specification [Doc :TX 32(1199)]	31-8-2013
3	TX 32 (1228)	Textiles - Pouch For Ammunition And Grenades Made Of Disruptive Pattern Nylon 6.6 - Specification	8-9-2015
4	TX 32 (1229)	Textiles - Tactical 3 Points Sling Universal- Specification	8-9-2015
5	TX 32 (1199)	Draft amendment No. 1 to IS 15768:2008 Textiles – Resistance to ignition of upholstered composites used for non-domestic furniture – Specification [Doc :TX 32(1199)]	31-8-2013

# CHD 8- OCCUPATIONAL SAFETY, HEALTH AND CHEMICAL HAZARDS



## Face Protection

S.N O	IS STANDARD #	TITLE	CATEGORY	REAFFIRMED /PRESENT STATUS
1	IS 5983:1980	Specifications for Eye-protectors	Product Specification	Final draft
2	IS 7524 : Part 1:1980	Methods Of Test For Eye Protectors: Part 1 Non-optical Tests	Methods of tests	Final draft
3	IS 7524 : Part 2:1979	Methods Of Test For Eye-protectors - Part II : Optical Tests	Methods of tests	Final draft
4	IS 8520:1977	Guide For Selection Of Industrial Safety Equipment For Eye, Face And Ear Protection	Other	Draft
5	IS 8521 : Part 1:1977	Industrial Safety Face Shields Part 1 With Plastic Visor	Product Specification	2013
6	IS 8521 : Part 2:1994	Industrial Safety Face-shields : Part 2 With Wire Mesh Visor	Product Specification	2014
7	IS 8940:1978	Code of Practice For Maintenance And Care Of Industrial Safety Equipment For Eyes And Face Protection	Code of practice	Draft
8	IS 10592:1982	Industrial Emergency Showers, Eye And Face Fountains And Combination Units	Product Specification	2013
9	IS 14744:1999	Flame Retardant Protective Hoods	Product Specification	2014
10	IS 15321:2003	Molten Metal Splash Protective Hoods	Product Specification	2014

# CHD 8- OCCUPATIONAL SAFETY, HEALTH AND CHEMICAL HAZARDS



## Respiratory Protection

S.NO	IS STANDARD #	TITLE	CATEGORY	REAFFIRMED/ PRESENT STATUS
1	IS 9623:2008	Selection, Use And Maintenance Of Respiratory Protective Devices - Code Of Practice	Code of practice	2013
2	IS 10245 : Part 1:1996	Breathing Apparatus Part 1 Closed Circuit Breathing Apparatus (compressed Oxygen Cylinder)	Product Specification	Draft
3	IS 10245 : Part 2:1994	Respiratory Protective Devices - Breathing Apparatus Part 2 Open Circuit Breathing Apparatus	Product Specification	Draft
4	IS 10245 : Part 3:1994	Breathing Apparatus Part 3 Fresh air hose and compressed air line breathing apparatus-Specification	Product Specification	Draft
5	IS 10245 : Part 4:1982	Breathing Apparatus Part 4 Escape Breathing Apparatus (short duration Self-contained Type)	Product Specification	Draft
6	IS 14138 : Part 1:1994	Respiratory Protective Devices: Threads For Face pieces - Part 1 Standard Thread Connection	Product Specification	2014
7	IS 14138 : Part 2:1994	Respiratory Protective Devices: Threads For Face pieces Part 2 Centre Thread Connection	Product Specification	2014
8	IS 14166:1994	Respiratory Protective Devices : Full Face Masks	Product Specification	2014
9	IS 14170:1994	Respiratory Protective Devices : Mouthpiece Assemblies	Product Specification	2014
10	IS 14746:1999	Respiratory Protective Devices - Half Masks And Quarter Masks	Product Specification	Draft

# CHD 8- OCCUPATIONAL SAFETY, HEALTH AND CHEMICAL HAZARDS



## Respiratory Protection

S.NO	IS STANDARD #	TITLE	CATEGORY	REAFFIRMED/ PRESENT STATUS
11	IS 8347:2008	Respiratory Protective - Definitions, Classification And Nomenclature Of Components	Terminology	2013
12	IS 9473:2002	Respiratory Protective Devices - Filtering Half Masks To Protect Against Particles	Product Specification	Draft
12	IS 15322:2003	Particle Filters Used In Respiratory Protective Equipment	Product Specification	2014
13	IS 15323:2003	Gas Filters And Combined Filters Used In Respiratory Protective Equipment	Product Specification	2014
14	IS 15803:2008	Respiratory Protective Devices - Self Contained Closed Circuit Breathing Apparatus Chemical Oxygen (KO <sub>2</sub> ) Type Self Generating, Self Rescuers	Product Specification	2014
15	IS 9563:1980	Specification for Carbon monoxide filters for self rescuers	Product Specification	2012
16	Doc: CHD 08(2176)P	Powered Air Purifying Respirators (PAPR)	Product Specification	Final Draft
17	Doc: CHD 08(2182)P	Air purifying Escape Respirators	Product Specification	Final Draft

## Hand and Arm Protection

S.NO	IS STANDARD #	TITLE	CATEGORY	REAFFIRMED/ PRESENT STATUS
1	IS 6994 : Part 1:1973	Safety Gloves Part 1 Leather And Cotton Gloves	Product Specification	Pre-Draft
2	IS 8807:1978	Guide For Selection Of Industrial Safety Equipment For Protection Of Arms And Hands	Code of practice	2013

## Foot Protection

S.NO	IS STANDARD #	TITLE	CATEGORY	REAFFIRMED/ PRESENT STATUS
1	IS 10667:1983	Guide For Selection For Industrial Safety Equipment For Protection Of Foot And Leg	Code of Practice	2013
2	IS 15298 Part 2:2011	Personal Protective Equipment – Part 2 Safety Footwear	Product	2011



# CHD 8- OCCUPATIONAL SAFETY, HEALTH AND CHEMICAL HAZARDS



## Other Standards

S.NO	IS STANDARD #	TITLE	CATEGORY	REAFFIRMED
1	IS 3521:1999	Industrial Safety Belts And Harnesses - Specification	Product Specification	2014
2	IS 3786:1983	Methods For Computation Of Frequency And Severity Rates For Industrial Injuries And Classification Of Industrial Accidents	Methods of tests	2014
3	IS 8091:2008	Industrial Plant Layout - Code Of Safe Practice	Code of Practice	2013
4	IS 8095:1976	Accident Prevention Tags	Others	2013
5	IS 8218 : Part 1:1976	Safety Code For Plant Railways Part 1 Layout	Others	2013
6	IS 8218 : Part 2:1982	Safety Code For Plant Railways Part 2 Locomotives, Wagons And Their Movements	Others	2013
7	IS 8519:1977	Guide For Selection Of Industrial Safety Equipment For Body Protection	Code of Practice	2013
8	IS 8990:1978	Code Of Practice For Maintenance And Care Of Industrial Safety Clothing	Code of Practice	2013
9	IS 9457:2005	Safety Colors And Safety Signs - Code Of Practice	Code of Practice	2016
10	IS 9563:1980	Carbon Monoxide Filter Self-rescuers	Product Specification	2017

# CHD 8- OCCUPATIONAL SAFETY, HEALTH AND CHEMICAL HAZARDS



## Other Standards

S.NO	IS STANDARD #	TITLE	CATEGORY	REAFFIRMED
11	IS 9679:1980	Code Of Practice For Work Environmental Monitoring (air Borne Contaminants)	Code of Practice	2014
12	IS 9937:1981	Portable Methanometer (Electrical Type)	Product Specification	2013
13	IS 10224:1982	Ergonomic Principles In The Design Of Work Systems	Code of Practice	2014
14	IS 13293:1992	Gas Detector Tubes - General Requirements And Methods Of Test	Product Specification	2014
15	IS 13366:1992	Resuscitators Intended For Use With Humans	Product Specification	2014
16	IS 14489:1998	Code Of Practice On Occupational Safety And Health Audit	Code of Practice	2014
17	IS 15071:2002	Chemical Protective Clothing Specification	Product Specification	2014
18	IS 15793:2007	Managing Environment, Occupational Health And Safety Legal Compliance - Requirements Of Good Practices	Others	2013
19	IS 16508 :2017	Swimming Pool For Public - Code Of Safety		0
20	IS 18001:2007	Occupational Health And Safety Management Systems - Requirements With Guidance For Use	System Standard	2013

# NEW STANDARD PROPOSED BY NITRA

NITRA HAS SUBMITTED 19 DRAFT STANDARDS TO BIS. THREE STANDARDS HAVE BEEN TAKEN UP BY THE BIS COMMITTEE.



<u>So. No.</u>	<u>NEW STANDARD PROPOSE</u>
1	Textile-Resistance to ignition of mattresses, diwans and bed bases
2	Nylon life jacket with expandable polyethylene foam, buckle and whistle plastic
3	Woven suiting made of cotton, man-made fibers/filaments and their blends-IS 15853 : 2009
4	Disruptive pattern (camouflage pattern) cloth for jungle operations made of nylon and cotton blended(NYCO) material
5	Unarmed combat dress
6	Anti-mosquito veil
7	Water proof multipurpose rain poncho
8	Testing of heat and light cutting ability of curtains
9	Light weight ground sheet
10	HDPE/PP woven sacks for packing food grains
11	Coat Parka
12	PV dope dyed uniform cloth
13	Multipurpose light weight load bearing frame with carrier facilities and convertibility as stretcher (made of aluminum)
14	Tactical Pistol Holster
15	Specification for "Cooling Scarf"
16	Development of Specification "Pouch for ammunition and grenades"

# OTHER PROPOSED STANDARDS – TARASAFE

<u>INTERNATIONAL STANDARD #</u>	<u>STANDARD NAME- NEW STANDARD PROPOSE</u>
EN 1149-5; EN 1149-1; EN 1149-3	Protecting clothing for electrostatic properties
EN 61482-1-2	Thermal hazard of electric Arc (Box test)
EN 61482-1-1 / ASTM F 1959	Thermal hazard of electric Arc (Open Arc test)
ISO 15797	Textiles - Industrial washing and finishing procedures for testing of workwear
EN 469	Protective Clothing for firefighters - Performance requirements for protective clothing for firefighting
EN 343	Protective Clothing - Protection against rain
NFPA 2112	Standard on Flame-Resistant Garments for Protection of Industrial Personnel against Flash Fire

# ISO STANDARDS: ISO-TC/94

## Personal safety -- Protective clothing and equipment



Subcommittee	Subcommittee Title	Published standards	Standards under development
ISO/TC 94/SC 1	Head protection	1	0
ISO/TC 94/SC 3	Foot protection	12	4
ISO/TC 94/SC 4	Personal equipment for protection against falls	12	0
ISO/TC 94/SC 6	Eye and face protection	15	1
ISO/TC 94/SC 13	Protective clothing	61	16
ISO/TC 94/SC 14	Firefighters' personal equipment	13	24
ISO/TC 94/SC 15	Respiratory protective devices	29	13

## ROLE OF CENTER OF EXCELLENCE (COE)

- ❑ COE to work in association with Industry for standardisation
- ❑ COE should put up international standard testing facility in India
- ❑ COE's initiative to Tie-up with a notified body in Europe and America for acceptance of the COE test reports – this will put COE testing at par with the International standards



Thank You