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उत्पाद मैनुअल

व्यक्तिगत फॉल एरेस्ट प्रणाली— विशिष्टि भाग 1 पुरे शरीर का कवच
IS 3521 (Part 1): 2021 के अनुसार

**PRODUCT MANUAL FOR
PERSONAL FALL ARREST SYSTEMS — SPECIFICATION
PART 1 FULL BODY HARNESS
ACCORDING TO IS 3521 (Part 1): 2021**

विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम, 2018 की योजना -I के तहत प्रमाणन के संचालन में एकरूपता और पारदर्शिता के लिए इस उत्पाद मैनुअल का उपयोग सभी क्षेत्रीय / शाखा कार्यालयों और लाइसेंसधारियों द्वारा संदर्भ सामग्री के रूप में किया जाएगा। दस्तावेज़ का उपयोग बीआईएस प्रमाणन प्राप्त करने के इच्छुक संभावित आवेदकों द्वारा भी किया जा सकता है।

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure uniformity of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification.

1.	मानक संख्या IS No.	:	IS 3521 (Part 1) : 2021
	शीर्षक Title	:	PERSONAL FALL ARREST SYSTEMS –SPECIFICATION HARNESSES PART 1 FULL BODY HARNESS
	संशोधनों की संख्या No. of amendments	:	01
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	Webbing, yarns, threads for sewing, fittings and attachment elements shall be as per requirements given in the IS 3521 (Part 1): 2021. Note: This section indicates the requirements for raw material(if specified in the IS)for which compliance is to be established during Grant of Licence/Change in Scope of Licence/Factory Surveillance.
b)	समूहीकरण दिशानिर्देश Grouping Guidelines	:	Sample of each class as per Cl. 4.2 of IS 3521(Part 1) and each Category of Burning Behavior shall be tested to be covered in the scope However, FBH may be in more than one class and if harness having many classes have been tested than different combinations of these classes of harnesses can be covered in the scope of licence.

c)	नमूने का परिमाण Sample Quantity	: 8 Nos for one attachment element, if more types of attachments in the FBH, accordingly additional samples would be required. Note: This section indicates the quantity of the sample of the product and/or the raw material (if applicable), required to be sent to the laboratory for testing, for the purpose of Grant of Licence/Change in Scope of Licence/ Factory Surveillance (in case of market surveillance, effort may be made to procure the required quantity of product sample, as far as possible since raw material sample may not be available in market)
d)	परीक्षण अनुरोध में घोषित किए जाने वाले पैरामीटर Parameters to be Declared in Test Request	: Class Categories of Burning Behavior Note: Apart from the above, any other requirements/parameters may also be declared as per the standard, as applicable.
3.	परीक्षण उपकरणों की सूची List of Test Equipment	: Please refer to Annex - A
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	: Please refer to Annex - B
5.	एक दिन में संभावित परीक्षण Possible tests in a day	
	1. Design & construction a) General Requirements 2. Textile Requirements a) Materials of webbing and yarns, (breaking/Tensile Strength and width) b) Width of Primary and secondary strap c) Sewing Threads d) Flammability test for Webbing and rope (on conditioned samples) 3. Requirements for Fittings 4. Additional Requirements for attachment Elements 5. Buckle Uncoupling and slippage 6. Static Strength 7. Dynamic Performance 8. Static Suspension test 9. Static Suspension Angle test for Class AE FBH Note: This section is for the guidance of BIS Certification Officers/Technical Auditors of BIS Authorized Outside Surveillance Agencies(OSAs) during factory inspection to provide ready reference regarding the tests which can be witnessed during the inspection in the factory by the officer/auditor.	
6.	लाइसेंस का दायरा/Scope of the Licence:	
	IS 3521 (Part-1) : 2021 के अनुसार मानक मुहर का उपयोग करने के लिए लाइसेंस निम्नलिखित कार्यक्षेत्र के लिए प्रदान किया जाता है “Licence is granted to use Standard Mark as per IS 3521 (Part -1): 2021 with the following scope:	
	उत्पाद का नाम Name of the product	Personal Fall Arrest Systems Part 1 Full Body Harness

	Class	As applicable
	Any other aspect required as per the standard	Categories of Burning Behavior , FV-0/FV-1/FV-2

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9, BAHADURSHAH ZAFAR MARG,
NEW DELHI-110002

ANNEX– A

LIST OF TEST EQUIPMENTS

(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sl. No.	Tests used in with Clause Reference	Test Equipment
1	Flammability Resistance Test, 4.3.2.4, Cl.5.10,	Flammability Fume Hood (cup board), vertical burning behavior test apparatus
		Laboratory Burner
		Technical Grade Methane Gas
		Ring Stand with clamps
		Conditioning Room or chamber capable of maintaining temperature of $27 \pm 2^\circ\text{C}$ and $65 \pm 5\% \text{ RH}$
		Stop watch, Accurate to 1 s
		Full Draught air circulating oven
		Desiccator
		Measuring Scale
		Dry absorbent Surgical Cotton
		Supply of technical grade methane gas
		Arrangement for standard laboratory atmosphere of $27 \pm 2^\circ\text{C}$
2	Width of the strap, Cl 4.3.2.1 Width of webbings, Cl 4.3.2.2	Vernier Calipers
3	Breaking strength of Synthetic Fibre/Tensile load of webbing,	Tensile testing Machine
4	Corrosion Resistance, Cl. 5.2	Salt Spray Chamber as per ISO 9227, Ph Meter, Sodium Chloride Distilled or deionized water Stop Watch Weighing Scale,
5.	Buckle uncoupling and slippage, Cl 4.5, Cl. 5.3	As per Cl 5.3, scale
6.	Static Strength, Cl 4.6, Static Suspension Test Cl 4.8, Static Suspension Angle Test for Class AE FBH, Cl 4.9	Torso test mass as per Cl. 5.1.1 Static Strength test machine along with rigid test frame and a winch as per Cl 5.1.5, Test structure, scale, Force-measuring Instrumentation, Test Yoke
7.	Dynamic Performance test, Cl 4.7	Torso test mass as per Cl. 5.1.2 Test structure as per Cl 5.1.4 Quick release device Test lanyard as per Cl 5.1.3 Stop watch, scale Connector complying with IS 3521 (Part 5) Arrangement for measuring angle

ANNEX B

SCHEME OF INSPECTION AND TESTING

1. QUALITY ASSURANCE PLAN

1.1 It is expected that manufacturers (licensees/applicants) will implement a Quality Assurance Plan i.e. a plan of regular testing and in-process controls, designed to ensure that the product bearing the Standard Mark conforms to all requirements of the Indian Standard.

1.2 The manufacturers shall define a Quality Assurance Plan defining the control unit (i.e. lot/batch etc.) and the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and submit the same to BIS Branch Office for information. The manufacturer shall comply with the same and maintain test records in accordance with para 2.4.

1.3 RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT:

For the guidance of manufacturers, the recommended definition of control unit is: Full Body Harness of the same Class and Category of Burning Behaviour, manufactured from the same consignment of raw materials in a day.

1.3.1 For the guidance of manufacturers in preparing the Quality Assurance Plan, recommended levels of control are given in **Table 1**.

1.3.2 The manufacturer shall ensure inspection and testing as per the Quality Assurance Plan submitted by them on the whole production of the factory which is covered by this plan. Alternatively, the manufacturer has the option of adherence to the quality plan as per levels of control recommended in column 3 of Table 1.

1.4 However, all manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard.

2. ENSURING COMPLIANCE THROUGH TESTING- It is expected that manufacturers (licensees/applicants) will establish a suitably equipped and staffed in house laboratory (In house testing facility) for testing at least those parameters of the Indian Standard which require routine testing for ensuring quality of the product. This includes in-process controls as may be defined and put in place by the manufacturer and testing parameters/requirements which can only be performed in the factory.

2.1 For the guidance of manufacturers, Table 1 giving the recommended levels of control is given below. Column 2 of Table 1 indicates routine tests where test equipment is required in house as “R” or other tests which can be subcontracted as “S”. Subcontracting is permitted to BIS recognized/empaneled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.2 For MSME manufacturers, the requirement of maintaining a laboratory/in-house testing facility for routine tests (indicated as “R” in Column 2 of Table 1) is also optional.

2.2.1 MSME manufacturers may utilize common cluster based facilities as per guidelines for the utilization of cluster based test facilities by MSMEs or the provisions of Sharing of testing facilities or get testing done from BIS recognized/empaneled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.3 Large Scale manufacturers shall maintain an in-house laboratory equipped at least with test facilities for routine tests (indicated as “R” in Column 2 of Table 1), where different tests given in the specification shall be carried out in accordance with the method given in the specification. They shall also implement a calibration plan for the in-house test equipment.

2.3.1 Alternatively, in lieu of an in-house laboratory, large scale manufacturers can also utilize the provisions of Sharing of testing facilities as per the Guidelines for Grant of Licence available on BIS website www.bis.gov.in. (Under Conformity Assessment>Product Certification Process). Even for subcontracted tests, provisions for sharing of testing facilities can be utilized.

2.4 TEST RECORDS- The manufacturers maintaining an in-house laboratory or utilizing common cluster based facilities or shared test facilities shall maintain test records for the tests carried out to establish conformity. For the tests being subcontracted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025, test reports issued by the laboratories shall be available for inspection by BIS.

3. PACKING AND MARKING - The Standard Mark as given in the Schedule of the licence shall be incorporated legibly and indelibly on each Full Body Harness. provided always that the material so marked conforms to each requirement of the specification.

3.1 Packing and Marking shall be done as per the Indian Standard.

3.2 **Additional Marking requirements:** The Harness or its packaging shall also be marked with the following additional requirement on:

a) “For BIS certification details please visit www.bis.gov.in”

4. REJECTION - All the production which conforms to the Indian Standard and covered under the scope of this licence shall be marked with the Standard Mark. Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act, 2016.

TABLE 1
(ONLY FOR GUIDANCE PURPOSE)

(1)				(2)	(3)		
Test Details				Test equipment requirement R : required (or) S :Sub contracting permitted	Levels of Control		
Clause	Requirements	Test Method			No. of Samples	Frequency	Remarks
		Clause	Reference				
4.3 Design & construction							
4.3.1	General Requirements	4.3.1	IS 3521 (Part 1)	R	Firm to have adequate in- process controls to check compliance of this parameter given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
4.3.2 Textile Requirements							
4.3.2.1	Materials of webbing and yarns, breaking Strength of synthetic fibre, Webbing width & tensile load of webbing	4.3.2.1	IS 3521 (Part 1)	S	One	Each Consignment	Conformity of materials and components to the requirement of the specification may be established through i) Test report from a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau ii) Material manufacturer’s test certificate iii) In house factory test report (No testing is required if the material is ISI marked)
4.3.2.2	Width of Primary and secondary strap	4.3.2.2	IS 3521 (Part 1)	R	Firm to have adequate in- process controls to check compliance of this parameter given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
4.3.2.3	Sewing Threads	4.3.2.3	IS 3521 (Part 1)	R			
4.3.2.4	Flammability test for Webbing and rope	5.10	-do-	S	One	Each Consignment	Conformity of materials and components to the requirement of the specification may be established through i) Test report from a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau ii) Material manufacturer’s test certificate iii) In

							house factory test report (No testing is required if the material is ISI marked)
4.3.3 Requirements for Fittings							
4.3.3.1	Buckles, attachment elements, collector plates, cleats, comfort pads, back support pads and tool loops – Finish & freedom from defects	4.3.3.1	-do-	R	One	Each Control Unit	
4.3.3.2	Adjustment buckles	4.3.3.2	-do-	R	One	Each Control Unit	
4.3.3.3	Fastening buckles	4.3.3.3	-do-	R	One	Each Control Unit	
4.3.4 Additional Requirements for attachment Elements							
4.3.4.1	Protection against abrasion	4.3.4.1	-do-	R	Firm to have adequate in- process controls to check compliance of this parameter given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
4.3.4.2	Incorporation of attachment elements	4.3.4.2	-do-	R			
4.3.4.3	Fall arrest attachment element	4.3.4.3	-do-	R			
4.4 Corrosion Resistance							
4.4	Corrosion test (Salt spray test)	5.2	IS 3521 (Part 1)	R	Each metallic fittings	Each Consignment	
4.5	Buckle Uncoupling and slippage	5.3	IS 3521 (Part 1)	R	One	Each Control Unit	
4.6	Static Strength	5.4, 5.5, 5.6	IS 3521 (Part 1)	R	One	Each Control Unit	
4.7	Dynamic Performance	5.7	IS 3521 (Part 1)	R	One	Each Control Unit	
4.8	Static Suspension test	5.8	IS 3521 (Part 1)	R	One	Each Control Unit	
4.6	Static Suspension Angle test for Class AE FBH	5.9	IS 3521 (Part 1)	R	One	Each Control Unit	