



उत्पाद मैनुअल
शॉट फ़ायरिंग केबल्स (शाफ़्ट के अलावा अन्य उपयोग के लिए)
आईएस 5950: 2024 के अनुसार

PRODUCT MANUAL FOR
Shot Firing Cables (For Use Other Than in Shafts)
as per IS 5950: 2024

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 5950: 2024
	शीर्षक Title	: Shot Firing Cables (For use other than in shafts)
	संशोधनों की संख्या No. of amendments	: None
2.	नमूना दिशानिर्देश Sampling Guidelines	
a)	कच्चा माल Raw material	: Plain Annealed Copper Wire – IS 8130
b)	समूहीकरण दिशानिर्देश Grouping Guidelines	: Please refer ANNEX – A
c)	नमूने का परिमाण Sample Quantity	: Copper wire – 5 m (Before Stranding) – For Annealing Copper Wire – 100 gm – For Cu purity Shot Firing Cables – 25 m
d)	परीक्षण अनुरोध में घोषित किए जाने वाले पैरामीटर Parameters to be Declared in Test Request	: Type of Shot Firing Cables (i.e. Type I / Type 2)
3.	परीक्षण उपकरणों की सूची	: Please refer ANNEX – B

	List of Test Equipment		
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	:	Please refer ANNEX – C
5.	एक दिन में संभावित परीक्षण Possible tests in a day	:	i. Annealing Test – Cl. 7.1.2 of IS 8130 ii. Conductor Resistance – Cl. 7.3 of IS 8130 iii. Tensile Test and Elongation (before ageing) on Insulation and Sheath – Cl. 4 of IS 5831 iv. Shrinkage Test - Cl. 4 of IS 5831 v. Hot Deformation - Cl. 4 of IS 5831 vi. Heat Shock Test - Cl. 4 of IS 5831 vii. Insulation Resistance Test - Cl. 4 of IS 5831 viii. Spark test – Cl. 10.3 of IS 5950 ix. Flammability Test – Cl. 10.4 of IS 5950
6.	लाइसेंस का दायरा /Scope of the Licence:		
“License is granted to use Standard Mark as per IS 5950: 2024 with the following scope:			
Name of the product		Shot Firing Cables (For use other than in shafts)	
Type of Shot Firing Cables		Type I and / or Type – II (Type – I - Twin cable (parallel twin) for single-shot and multi-shot Firing / Type – II - Single-core cable for multi-shot firing)	

ANNEX -A
Grouping Guidelines

1. Shot Firing Cables (for use other than in shafts) as per IS 5950 covers two types of Cables:

Type	
Type - I	Twin cable (parallel twin) for single-shot and multi-shot Firing
Type - II	Single-core cable for multi-shot firing

2. For considering GoL/CSoL, each type of Shot Firing Cables (for use other than in shafts) shall be tested to cover both the variety of cable in the scope of licence.
3. Firm shall declare the varieties they intend to cover in the Licence. The Scope of Licence may be restricted based on the manufacturing and testing capabilities of the manufacturer.
4. During the operation of the Licence, BO shall ensure that all the varieties covered in the Licence are tested in rotation to the extent possible.

ANNEX- B
LIST OF TEST EQUIPMENTS
(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sl. No.	Tests used in with Clause Reference	Test Equipment
1.	Measurement of thickness of insulation and sheath - 7.1, 7.2, 8.1, 8.2, 9.1 (c)	Vernier Calipers
2.	Flammability Test, Annealing test and Elongation - 10.4, 9.1 (a)	Steel Scale
3.	Measurement of Wire Diameter - 6.1 and 9.1(a)	Micrometer
4.	Measurement of thickness (insulation & sheath) and hot deformation test - 9.1(d) (iv)	Measuring Microscope or Graduated Magnifying Glass
5.	Annealing Test & Elongation Test Tensile Strength - 9.1 (a), 9.1(d) (i)	Tensile Testing Machine
6.	Heat Shock, Hot Deformation & Shrinkage Test - 9.1 (d) (iv, v and vi)	Hot Air oven with thermostatic Temperature
7.	Tensile Strength & Elongation After ageing, Loss of Mass Test - 9.1 (d) (ii)	Thermal Ageing Oven with Thermostatic Temperature controller, Air flow Meter & Hour
8.	Insulation Resistance Test/Volume Resistivity - 9.1 (f)	Megohm Meter with DC Supply
9.	Heat Shock Test - 9.1 (d) (v)	Heat Shock Mandrels
10.	Hot Deformation Test - 9.1 (d) (iv)	Hot Pressure Test Apparatus with Weights
11.	Loss of Mass Test, Flammability Test - 9.1 (d) (iii), 9.1(g)	Physical Weighing Balance with Weights (LC 0.2mg)
12.	Conductor Resistance Test - 9.1 (b)	Kelvin Double Bridge with galvanometer, D.C.
13.	Loss of Mass Test - 9.1 (d) (iii)	Balance Digital
14.	Voltage Test for Type-II Cables - 9.1 (e), 10.2.2	Water Bath and Hour Meter
15.	Voltage Test - 9.1 (e), 10.2	A C. High Voltage Test set
16.	Spark Testing – 10.3	AC Spark Tester
17.	Conductor Resistance & Insulation Resistance Test - 10	Glass Thermometer
18.	Flammability Test – 9.1 (g), 10.4	Flammability Test apparatus with burner, Gas cylinder, Scale, Stopwatch & 0.71 mm copper

ANNEX C
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:

- 1.3.1 For the guidance of manufacturers, the recommended definition of control unit is: *Shot Firing Cables of same type having continuous length manufactured in a day under similar condition* shall constitute a control unit.
- 1.3.2 For the guidance of manufacturers in preparing the Quality Assurance Plan, recommended levels of control are given in Table 1.
- 1.3.3 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/empanelled 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 the Shot Firing Cables (for use other than in shafts) or stenciled or contained in a label attached to the reel or coils, provided always that the cables so marked conforms to each requirement of the specification.

3.1 Marking on the Shot Firing Cables (for use other than in shafts) shall be done as per Cl. 12 of IS 5950: 2024

3.2 Additional Marking requirements: The packaging of Shot Firing Cables shall also be marked with the following additional requirement:

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

3.3 All the production which conforms to the Indian Standard and covered under the scope of this licence shall be marked with the Standard Mark.

4. HYGIENIC CONDITIONS (if applicable) – NA.

5. REJECTION - 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

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S: Sub- contracting permitted	Levels of Control		
Cl.	Requirement	Test Methods			No. of Sample	Frequency	Remarks
		Cl.	Ref				
	Materials Purity test for Cu		IS 191	S	One	Each consignment	No further testing is required if ISI marked or accompanied with TC.
10.2	Voltage Test	10.2	IS 5950 IS 10810 (Part 45)	R	One	Each Control Unit	
10.3	Spark Test	10.3	IS 5950 IS 10810 (Part 44)	R	One	Each Control Unit	
10.4	Flammability Test	10.4	IS 5950 IS 10810 (Part 53)	R	One	Each Control Unit	
6	Conductor Resistance	6	IS 5950 IS 10810 (Part 5)	R	One	Each Control Unit	
9.1 (f) and IS 5831	Insulation Resistance		IS 10810 (Part 43)	R	One	Each Control Unit	
9.1 (c), 7.1, 7.2, 8.1 & 8.2	Thickness of Insulation & Sheath		IS 10810 (Part 6)	R	Firm to have adequate in-process controls to check compliance for this parameter as specified in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity.		
6.1	Conductor		6.2 and Table -2 IS 8130	R			
6.1 & 9.1(a), 7.1.2 of IS 8130	Annealing Test		IS 10810 (Part 1)	R			
9.1 (d) & IS 5831	Physical Test on Insulation and Sheath						
(i)	Tensile Strength & Elongation at break		IS 10810 (Part 7)	R	One	Each Control Unit	

(iii)	Loss of Mass test		IS 10810 (Part 10)	R	One	Each Control Unit	
(iv)	Hot Deformation		IS 10810 (Part 15)	R	One	Each Control Unit	
(v)	Heat Shock		IS 10810 (Part 14)	R	One	Each Control Unit	
(vi)	Shrinkage		IS 10810 (Part 12)	R	One	Each Control Unit	
7.3, 8.3 and 11	Colour of Insulation, sheath, manufacturer's identification		7.3, 8.3 and 11 of IS 5950	R	Firm to have adequate in-process controls to check compliance for this parameter as specified in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity.		