



**उत्पाद मैनुअल
हल्की रेल के लिए
आई एस 3964:1980 के अनुसार**

**PRODUCT MANUAL
LIGHT RAILS
ACCORDING TO IS 3964:1980**

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 3964 : 1980
	शीर्षक Title	:	Light Rails
	संशोधनों की संख्या No. of amendments	:	1
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	Nil 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	:	Please refer to Annex-A
c)	नमूने का परिमाण Sample Quantity	:	1 m x 2 nos + 5 pcs of 5x5cm 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 (incase of market surveillance,

			effort may be made to procure therequired 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	-	Same as the scope of licence
3.	परीक्षण उपकरणों की सूची List of Test Equipment	:	Please refer to Annex-B
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	:	Please refer to Annex-C
5.	एक दिन में संभावित परीक्षण Possible tests in a day		
	All tests 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 readyreference 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:		
	“Licence is granted to use Standard Mark as per IS 3964: 1980 with the following scope:		
	Name of the product	Light Rails	
	Designation	ISLR 10 / ISLR 12 / ISLR 15 / ISLR 25	

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ANNEX A

Grouping Guidelines

1. Light Rails as per IS 3964:1980 is classified as below:

Designation (based on mass per meter of rail section)	ISLR 10, ISLR 12, ISLR 15, ISLR 25
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2. Considering the above, the following grouping guidelines for GoL/ CSoL shall be followed:

Each Designation of light rail shall be tested to cover that particular Designation of light rail in the scope of licence.

3. The Firm shall declare the varieties (Designations) of light rails 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 Equipment

(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sl. No.	Tests used in with Clause Reference	Test Equipment
1	Chemical Composition (Clause 4)	
	Instrumental methods Spectrometer: atomic-absorption spectrometry, inductively coupled plasma atomic emission, inductively coupled plasma mass spectrometry techniques, spark source optical emission spectrometry. Spectrophotometer	C,S,P,Mn,Si,
	Carbon & Sulphur content	- Analytical balance of L.C 0.1 gm - Strohlein or Leco apparatus with all attachments, - Barometer with chart, - Hot plate, - Muffle furnace, - Complete range of glass wares, measuring cylinder - Desiccator, - Porcelain boats or ceramic crucibles, - Thermometer - Electronic Balance, - Distilled Water, - Hot air oven, - Oxygen - 99.5 percent minimum purity, - Ether or acetone, - Standard Reference Material (NML) with certificate Reagents for C: - Tin granules or pure iron fillings, - Acidulated water/brine water, - Methyl red - Caustic potash Reagents for S: - Ceramic boats/crucibles - Desiccators, - Fluxes -Low sulphur copper, tin or iron, - Dilute hydrochloric acid, - Starch Iodide solution, - Potassium iodate

	Phosphorus content	- Weighing balance, - Heater/ Heating element along with energy regulator, - Ice water bath, - Vol Flask Cap – 1 litre, - (Whatman) filter paper No. 040, - Suction Filtration Facility, - Filter paper pulp pad, - Standard Reference Material (NML) with certificate, - Potassium Permanganate, - Sodium Nitrite, - Ammonium Molybdate, - Ammonium Phosphate, - Potassium Nitrate, - Phenolphthalein Solution, - Rectified spirit or methyl alcohol, - Sodium Hydroxide, - Hydrofluoric Acid - Perchloric Acid, - Sulphurous Acid - Hydrobromic Acid - other chemicals and reagent as applicable
	Manganese content	- Hot plate, - Conical flask Reagents: - Silver nitrate, - Ammonium Persulphate, - Sodium Arsenite solution, - Dilute Nitric Acid, - Phosphoric Acid, - Dilute Sulphuric Acid, - Concentrated Nitric Acid, - NaCl Solution, - Permanganic acid
	Silicon content	- Medium textured filter paper, - Porcelain casserole, - Platinum crucible, - filter paper pulp, - hot plate, - hot air oven, - muffle furnace. Reagents: - Silver Nitrate solution, - Concentrated Nitric Acid,

		- Concentrated Sulphuric Acid, - Dilute Hydrochloric Acid, - Dilute Sulphuric Acid, - Perchloric Acid, - Tartaric acid and - Hydrofluoric Acid
2	Dimension and tolerances , Cl. 6	- Vernier calliper - Angle protractor - Steel scale - Steel tape - Radius gauge - Weighing balance
3	Freedom from defects, Cl. 7	- Vernier caliper - Steel tape - Strand
4	Tensile properties, Cl. 5	- UTM Machine - V-Block, punch, hammer. - Vernier caliper

ANNEX C

SCHEME OF INSPECTION AND TESTING

1. QUALITY ASSURANCE PLAN

1.1 It is expected that during operation of BIS licence, manufacturers will implement a Quality Assurance Plan (QAP) 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 (QAP) defining the control unit (i.e. lot/batch etc.), the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and declare the arrangement for testing i.e. whether in-house or subcontracting/sharing for each applicable test and submit the same to BIS Branch Office for information. The manufacturer shall comply with the QAP and maintain test records in accordance with para 2.1.

1.3 RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT:

1.3.1 For the guidance of manufacturers, the recommended definition of control unit is : All light rails of same Designation manufactured from same cast/lot of raw material in a day 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**. Manufacturer has the discretion of declaring their own levels of control or accept the levels of control given in this document.

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.

2. ENSURING COMPLIANCE THROUGH TESTING- manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard for which they may have in-house test facilities. However, there is no obligation to maintain in-house laboratory. Licensee may use alternative arrangements for tests of the production as per the declared QAP. Various alternatives are available for operation of BIS certification as given below and the relevant guidelines for availing such relaxations by the manufacturers, as amended from time to time, are to be referred :

- i) Shared testing resources like common facility,
- ii) Cluster based testing facility,
- iii) Sub-contracting to outside laboratories which may either be:
 - a) BIS recognised/empanelled laboratories, or
 - b) Any accredited laboratory as per ISO/IEC 17025

2.1 TEST RECORDS- The manufacturers shall maintain test records for the tests carried out

(either in-house or at a sub-contracted or at shared test facility) to establish conformity of the product to the Standard for operation of licence. For the tests being subcontracted or conducted at a shared test facility, test results issued by the laboratories or test facilities, shall be made 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 rails provided always that the material so marked conforms to each requirement of the specification.

3.1 Marking shall be done as per Clause No 8 of IS 3964:1980.

3.2 **Additional Marking requirements:** Additionally, the following shall also be marked on product or package :

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

4. REJECTION - 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*(Recommended Levels of Control by BIS- for Guidance Only)*

(1)				(2)		
Test Details				Levels of Control		
Cl.	Requirement	Test Method		No. of Sample	Frequency	Remarks
		Clause	Reference			
4	Chemical Composition [C, Mn, Si, S, P]	4.1, Table 1, Fig 1	IS 3964 IS 228 (Relevant part)	One	Each control unit	-
5	Tensile Properties	5.1, Fig 1	IS 3964 IS 1608 (Part 1)	One	Each control unit	-
6	Dimensions and tolerances	6.1, 6.2, Table 1, & 2	IS 3964	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity.		
7	Freedom from defects (Twist, camber and harmful defects)	7.1	IS 3964			