



उत्पाद मैनुअल
पाइपलाइन परिवहन तंत्र में युक्त वेल्डेड इस्पात पाइप के लिए तप्त- वेल्लित
इस्पात की पत्ती, चद्वर और प्लेटें - विशिष्टि
IS 18384:2023 के अनुसार

**Product Manual for
Hot-Rolled Steel Strip, Sheet and Plates for Welded Steel Pipe for Pipeline Transportation
Systems- Specification
According to IS 18384: 2023**

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.	भारतीय मानक संख्या IS No.	:	IS 18384: 2023
	शीर्षक Title	:	Hot-Rolled Steel Strip, Sheet and Plates for Welded Steel Pipe for Pipeline Transportation Systems- Specification
	संशोधनों की संख्या No. of amendments	:	01
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	Steel used for manufacturing the product shall conform to IS 14650 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	:	Please refer Annex-A

Grouping Guidelines		
c)	नमूने का परिमाण Sample Quantity	For Tensile Test, Bend Test, Hardness and CVN Impact Test: 2 pcs of 1 m length For DWT Test: As per IS 10623 For Chemical Composition Test: 5 pieces of 5cm X 5cm The requirements of Laminar Imperfections (in Hot Rolled Plates), if agreed between manufacturer and purchaser, shall be carried out in the factory on full size of Plates as per Cl.16.2 of IS 18384:2023. The requirements of Dimensions(Cl.17) and Tolerances(Cl.18) shall be tested in the factory on full sizes of Strip/Sheet/Plate offered during inspection. 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	Steel grade, PSL, Delivery condition, Dimensions 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- 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 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 18384: 2023 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 18384: 2023 with the following scope:	

7.	उत्पाद का नाम Name of the product	Hot-Rolled Steel Strip, Sheet and Plates for Welded Steel Pipe for Pipeline Transportation Systems
	Product Specification Level (PSL)	PSL 1/ PSL 2/PSL 2 for Sour Service/PSL2 for Offshore Service
	Delivery Condition	As-rolled/Normalized/Normalizing Rolled/Normalized and Tempered/Quenched and Tempered/Thermo-Mechanical Controlled Processing(TMCP)
	Steel Grade	PSL1: ISL 175, IS 210, ISL 245, ISL 290..... PSL2: ISL245R, ISL290R, ISL 245N, ISL 290Q, ISL 245M.... PSL2 for Sour Service: ISL245NS, ISL245QS..... PSL2 for Offshore Service: ISL245NO, ISL 245MO.... *For intermediate grades, nomenclature of the Grade as per cl.5.2 shall be followed
	Product Dimensions	Plate/Sheet/Strip Thickness from mm to up to and including ... mm Width from ...mm to up to and including mm Length frommm to upto and includingmm

BUREAU OF INDIAN STANDARDS
Manak Bhawan, 9, Bahadur Shah Zafar Marg,
New Delhi – 110002

Annex-A
To Product Manual for
Hot-Rolled Steel Strip, Sheet and Plates for Welded Steel Pipe for Pipeline
Transportation Systems
According to IS 18384:2023

GROUPING GUIDELINES

1. For the purpose of Grant of Licence/Change in Scope of Licence, the following grouping guidelines shall apply:

A. Grouping Guidelines for PSL 1 Steel (Thickness $\leq$ 25 mm)

Group	Delivery Condition	Steel Grade	Sample Guideline
1	As-rolled, normalizing rolled and normalized	ISL 175, ISL 210 and intermediate grades (having minimum YS between 175 and 210 MPa) designated as per cl.5.2.	One sample of any size (thickness/width/length) of plate/sheet/strip of Steel Grade having the highest minimum specified YS (Yield Strength) shall be drawn and tested to cover all Steel Grades having lower minimum specified YS in the Scope of Licence. For example: If sample of Steel Grade ISL 210 is drawn and tested, Grade 175 and all other intermediate grades (having minimum YS between 175 and 210 MPa), can be covered in the scope of the licence. The sample drawn above may be of any Delivery Condition (As-rolled/Normalizing Rolled /Normalized). However, Scope with regards to Delivery Conditions shall be restricted based upon manufacturing capability.
2	As-rolled, normalizing rolled, thermo-mechanical controlled processing (TMCP), normalized, normalized and tempered; or, if agreed, quenched and tempered	ISL 245, ISL 290, ISL 320 , ISL 360, ISL 390 ,ISL 415, ISL 450 , ISL 485 and intermediate grades (having minimum YS between 245 and 290 MPa/... and /450 and 485 MPa) designated as per cl.5.2.	One sample of any size (thickness/width/length) of plate/sheet/strip of Steel Grade having the highest minimum specified YS (Yield Strength) shall be drawn and tested to cover all Steel Grades having lower minimum specified YS in the Scope of Licence. For example: If sample of Steel Grade ISL 485 is drawn and tested, Steel Grades ISL245, ISL290 ISL320, ISL360, ISL390, ISL415, ISL450 and all other intermediate grades (having minimum YS between 245

			and 290 MPa/...../450 and 485 MPa), can be covered in the scope of the licence. The sample drawn above may be of any Delivery Condition (As-rolled/normalizing rolled/ thermo-mechanical controlled processing (TMCP)/ normalized/ normalized and tempered/ quenched and tempered). However, Scope with regards to Delivery Conditions shall be restricted based upon manufacturing capability
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A.1 Manufacturer shall declare all Steel Grades (including intermediate grades) intended to be covered in the licence along with Chemical Composition of intermediate grades.

A.2 For thickness > 25.0 mm, manufacturer shall declare the Chemical Composition as per cl.8.1. In case the manufacturer applies the same chemical composition specified in Table 2, then no separate samples are required to be drawn. **However, if chemical composition is different from that specified in Table 2 (as agreed between manufacturer and purchaser), separate samples from each Group, for thickness > 25.0 mm, shall be drawn and tested.**

B. Grouping Guidelines for PSL 2 Steel (Thickness ≤ 25 mm)

Group	Delivery Condition	Steel Grades	Sample Guideline
1	As-rolled	ISL 245R, ISL 290R and intermediate grades (having minimum YS between 245 and 290 MPa) designated as per cl.5.2.	One sample of any size (thickness/width/length) of plate/sheet/strip of Steel Grade having the highest minimum specified YS (Yield Strength) shall be drawn and tested to cover all Steel Grades having lower minimum specified YS in the Scope of Licence. For example: If sample of Steel Grade ISL 290R is drawn and tested, Steel Grade 245 and all other intermediate grades (having minimum YS between 245 and 290 MPa), can be covered in the scope of the licence.
2	Normalizing rolled, normalized, normalized and tempered	ISL 245N, ISL 290N, ISL 320N, ISL 360N, ISL 390N, ISL 415N and intermediate grades (having minimum YS between 245 and 290 MPa/...../390 and 415 MPa) designated as per cl.5.2.	One sample of any size (thickness/width/length) of plate/sheet/strip of Steel Grade having the highest minimum specified YS (Yield Strength) shall be drawn and tested to cover all Steel Grades having lower minimum specified YS in the Scope of Licence. For example: If sample of Steel Grade ISL 415N is drawn and tested, Steel Grades ISL245N, ISL290N, ISL320N, ISL360N,

			ISL390N and all other intermediate grades (having minimum YS between 245 and 290 MPa/...../390 and 415 MPa), can be covered in the scope of the licence.
3	Quenched and tempered	ISL 245Q, ISL 290Q, ISL 320Q, ISL 360Q, ISL 390Q, ISL 415Q, ISL 450Q, ISL 485Q, ISL 555Q, ISL 625Q, ISL 690Q, ISL 830Q, and intermediate grades (having minimum YS between 245 and 290 MPa/...../690 and 830 MPa) designated as per cl.5.2.	One sample of any size (thickness/width/length) of plate/sheet/strip of Steel Grade having the highest minimum specified YS (Yield Strength) shall be drawn and tested to cover all Steel Grades having lower minimum specified YS in the Scope of Licence. For example: If sample of Steel Grade ISL 830Q is drawn and tested, Steel Grades ISL 245Q, ISL 290Q, ISL 320Q, ISL 360Q, ISL 390Q, ISL 415Q, ISL 450Q, ISL 485Q, ISL 555Q, ISL 625Q, ISL 690Q and all intermediate grades (having minimum YS between 245 and 290 MPa/...../690 and 830 MPa), can be covered in the scope of the licence.
4	Thermo-mechanical controlled processing (TMCP)	ISL 245M, ISL 290M, ISL 320M, ISL 360M, ISL 390M, ISL 415M, ISL 450M, ISL 485M, ISL 555M, ISL 625M, ISL 690M, ISL 830M and all intermediate grades (having minimum YS between 245 and 290 MPa/...../690 and 830 MPa) designated as per cl.5.2.	One sample of any size (thickness/width/length) of plate/sheet/strip of Steel Grade having the highest minimum specified YS (Yield Strength) shall be drawn and tested to cover all Steel Grades having lower minimum specified YS in the Scope of Licence. For example: If sample of Steel Grade ISL 830M is drawn and tested, Steel Grades ISL 245M, ISL 290M, ISL 320M, ISL 360M, ISL 390M, ISL 415M, ISL 450M, ISL 485M, ISL 555M, ISL 625M, ISL 690M and all intermediate grades (having minimum YS between 245 and 290 MPa/...../690 and 830 MPa), can be covered in the scope of the licence.

B.1 Manufacturer shall declare all Steel Grades (including intermediate grades) intended to be covered in the licence along with Chemical Composition of intermediate grades.

B.2 For thickness > 25.0 mm, manufacturer shall declare the Chemical Composition as per cl.8.2. In case the manufacturer applies the same chemical composition specified in Table 2, then no separate samples are required to be drawn. **However, if chemical composition is different from that specified in Table 2 (as agreed between manufacturer and purchaser), separate samples from each Group, for thickness > 25.0 mm, shall be drawn and tested.**

C. Grouping Guidelines for PSL 2 Steel for Sour Service (Thickness $\leq$ 25 mm) (Annex B of IS 18384:2023)

Group	Delivery Condition	Steel Grades	Sample Guideline
1	Normalized Rolled or Normalized	ISL245NS, ISL290NS, ISL320NS, ISL360NS, and intermediate grades designated as per cl.5.2.	One sample of any size (thickness/width/length) of plate/sheet/strip of Steel Grade having the highest specified YS (Yield Strength) shall be drawn and tested to cover all Steel Grades having lower specified YS in the Scope of Licence. For example: If sample of Steel Grade ISL360NS is drawn and tested, Steel Grade ISL245NS, ISL290NS, ISL320NS and all intermediate grades, can be covered in the scope of the licence.
2	Quenched and Tempered	ISL245QS, ISL290QS, ISL320QS, ISL360QS, ISL390QS, ISL415QS, ISL450QS, ISL485QS and intermediate grades (having minimum YS between 245 and 290 MPa/... and /450 and 485 MPa) designated as per cl.5.2.	One sample of any size (thickness/width/length) of plate/sheet/strip of Steel Grade having the highest specified YS (Yield Strength) shall be drawn and tested to cover all Steel Grades having lower specified YS in the Scope of Licence. For example: If sample of Steel Grade ISL 485QS is drawn and tested, Steel Grades ISL245QS, ISL290QS, ISL320QS, ISL360QS, ISL390QS, ISL415QS, ISL450QS and all intermediate grades, can be covered in the scope of the licence.
3	Thermo-mechanical controlled processing (TMCP)	ISL245MS, ISL290MS, ISL320MS, ISL360MS, ISL390MS, ISL415MS, ISL450MS, ISL485MS and all intermediate grades designated as per cl.5.2.	One sample of any size (thickness/width/length) of plate/sheet/strip of Steel Grade having the highest specified YS (Yield Strength) shall be drawn and tested to cover all Steel Grades having lower specified YS in the Scope of Licence. For example: If sample of Steel Grade ISL 485MS is drawn and tested, Steel Grades ISL 245MS, ISL 290MS, ISL 320MS, ISL 360MS, ISL 390MS, ISL 415MS, ISL 450MS and all intermediate, can be covered in the scope of the licence.

C.1 Manufacturer shall declare all Steel Grades (including intermediate grades) intended to be covered in the licence along with Chemical Composition and range of Yield Strength for intermediate grades.

C.2 For thickness > 25.0 mm, manufacturer shall declare the Chemical Composition as per cl.8.2 and separate samples from each Group, for thickness > 25.0 mm, shall be drawn and tested.

D. Grouping Guidelines for PSL 2 Steel for Offshore Service (Thickness ≤ 25 mm) (Annex C of IS 18384:2023)

Group	Delivery Condition	Steel Grades	Sample Guideline
1	Normalized Rolled or Normalized	ISL245NO, ISL290NO, ISL320NO, ISL360NO and intermediate grades, designated as per cl.5.2.	One sample of any size (thickness/width/length) of plate/sheet/strip of Steel Grade having the highest specified YS (Yield Strength) shall be drawn and tested to cover all Steel Grades having lower specified YS in the Scope of Licence. For example: If sample of Steel Grade ISL360NO is drawn and tested, Steel Grade ISL245NO, ISL290NO, ISL320NO and all intermediate grades, can be covered in the scope of the licence.
2	Quenched and Tempered	ISL245QO, ISL290QO, ISL320QO, ISL360QO, ISL390QO, ISL415QO, ISL450QO, ISL485QO, ISL555QO, ISL625QO, ISL690QO and intermediate grades (having minimum YS between 245 and 290 MPa/... and /625 and 690 MPa) designated as per cl.5.2.	One sample of any size (thickness/width/length) of plate/sheet/strip of Steel Grade having the highest specified YS (Yield Strength) shall be drawn and tested to cover all Steel Grades having lower specified YS in the Scope of Licence. For example: If sample of Steel Grade ISL690QO is drawn and tested, Steel Grades ISL245QO, ISL290QO, ISL320QO, ISL360QO, ISL390QO, ISL415QO, ISL450QO, ISL485QO, ISL555QO, ISL625QO and all intermediate grades, can be covered in the scope of the licence.
3	Thermo-mechanical controlled processing (TMCP)	ISL245MO, ISL290MO, ISL320MO, ISL360MO, ISL390MO, ISL415MO, ISL450MO, ISL485MO, ISL555MO and all intermediate grades, designated as per cl.5.2.	One sample of any size (thickness/width/length) of plate/sheet/strip of Steel Grade having the highest specified YS (Yield Strength) shall be drawn and tested to cover all Steel Grades having lower minimum specified YS in the Scope of Licence.

			For example: If sample of Steel Grade ISL555MO is drawn and tested, Steel Grades ISL 245MO, ISL 290MO, ISL 320MO, ISL 360MO, ISL 390MO, ISL 415MO, ISL 450MO, ISL 485MO and all intermediate grades all intermediate grades, can be covered in the scope of the licence.
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D.1 Manufacturer shall declare all Steel Grades (including intermediate grades) intended to be covered in the licence along with Chemical Composition and range of Yield Strength for intermediate grades.

D.2 For thickness > 25.0 mm, manufacturer shall declare the Chemical Composition as per cl.8.2 and separate samples from each Group, for thickness > 25.0 mm, shall be drawn and tested.

2. Scope licence shall be restricted based on the manufacturing and testing facilities available.
3. During operation of licence, samples of each variety covered in the scope of licence, shall be tested in rotation, to the extent possible.

ANNEX – B

LIST OF TEST EQUIPMENTS
(INDICATIVE LIST, FOR GUIDANCE ONLY)

Major test equipment required to test as per requirements of Indian Standard.

Sl. No.	Test Equipment/Chemicals and Identification Numbers (Where applicable)	Tests Used in with Clause Reference
1	Equipment and reagents for wet analysis as per method specified in the relevant parts of IS 228 or IS 8811 or appropriate spectrometer for instrumental analysis (ICP-OES, Spark emission spectrometer etc.)	Chemical Composition, Cl. 8, B 4.1, C 4.1
2	Universal testing machine with extensometer as per IS 1608 (Part 1) Vernier Caliper	Tensile Test, Cl. 9, B 4.2, C 4.2
3	Testing machines or presses equipped with the following devices as per IS 1599: a) bending device with two supports and a former as shown in Figure 1 of IS 1599; b) bending device with a V-block and a former as shown in Figure 2 of IS 1599; c) bending device with a clamp as shown in Figure 3 of IS 1599 d) Angle Protector.	Bend Test, Cl. 10
4	Vicker hardness tester as per IS 1501(Part 1) or Brinell hardness tester as per IS 1500 (Part 1) or Rockwell hardness tester as per IS 1586 (Part 1)	Hardness Test, Cl. 11, B 4.4, C4.3
5	Pendulum Type Charpy Impact Tester, V Notch Cutter, Specimen Inspection (Profile Projector), Deep Freezer	CVN IMPACT TEST (for PSL 2 Steel grade) Cl. 12
6	Drop Weight Tear tester as per IS 10623	Drop Weight Tear (DWT) Test (for PSL 2 Steel grade) Cl.13
7	Ultrasonic Tester (as per IS 4225)	Surface conditions, Imperfections and Defects Cl.16
8	Vernier Caliper, Measuring Table, Micrometer, Steel Scale, Steel Tape	Dimension Cl.17, Tolerances Cl.18
9	NACE TM0284 Test Solution A, NACE TM0284 Test Solution C, pH adjusted to required value using HCl or NaOH, HIC Testing Apparatus, H ₂ S	HIC Test, B4.3, B4.6.1
10	Low Power Microscope (10X Magnification), NACE TM 0177 Solution, SSC Test Apparatus, Alternative Environment- H ₂ S	SSC Test, B 4.5, B4.6.2

11	Laboratory Furnace, Metallographic Sample Preparation Equipment, Etching Reagent(either natal or picral), Metallurgical Microscope (x500)	Grain Size, B4.7, C4.4
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Note: The above is an indicative list for the purpose of guidance only

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: For the purpose of this scheme, a control unit is defined as the entire quantity of Steel sheet, Plate and Strip of the same cast/heat, same Steel Grade, Delivery Condition and manufactured under similar conditions on the same line in one go.

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 license and Licence Number (i.e. CM/L...) shall be incorporated legibly and indelibly on each metal tag or adhesive label/sticker attached to each coil/bundle and/or on the test certificate, provided always that the product thus marked and packed conforms to all the requirement of the specification.

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

3.2 Additional Marking requirements: Additionally, the following shall also be marked on each package of the material or the test certificate:

- a) “For BIS certification details please visit www.bis.gov.in”
- b) Any other requirement not specified in the Indian Standard

4. TEST CERTIFICATE – For each consignment of BIS Certified material conforming to IS 18384:2023 there shall be a test certificate which shall contain the Standard Mark, the cast/Control Unit number and the corresponding test results (as given in Annexure-I enclosed).

5. 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)				(3)		(4)
TEST DETAILS				LEVELS OF CONTROL		REMARKS
Clause	Requirements	Test Method		No. of Samples	Frequency	
		Clause	Reference			
7, B-3, C-3	Manufacture	7.1 to 7.5, B-3.1 to B-3.1.3, C-3.1 to C-3.1.3	IS 18384	Manufacturer shall maintain adequate in-process controls to ensure that the material is manufactured as per requirements of specification. Steel used for manufacturing the product shall conform to IS 14650		
8	Chemical Composition	8, Table 2, Table 3, B4.1 Table 8, C4.1, Table 11,14.2.1	IS 228 or IS 8811 or any other national/international standard for instrumental/chemical method	One	Each Heat	No further testing if the raw material slabs procured are ISI marked as per IS 14650 and are received with Test Certificate.
	Ladle Analysis	Table 2, Table 3, Table 8, Table 11	IS 228 or IS 8811 or any other national/international standard for instrumental/chemical method	One	Each Heat	Applicable for primary producers only
	Product Analysis	Table 2, Table 3, Table 8, Table 11	IS 228 or IS 8811 or any other national/international standard for instrumental/chemical method	i) Nil ii) One	i) Nil ii) Each Cast	i) Applicable for primary producers ii) Applicable for manufacturers not having steel making facilities. No

						further testing is required if raw material slabs procured as per IS 14650 are ISI marked and are received with Test Certificate.
9	Tensile Properties	9.1, 9.2, Table 4, Table 5, B4.2, Table 9,C4.2, Table 10,14.2.2	IS 1608 (Part-1) IS 3803 (Part-1)	One	Each heat/cast	—
10	Bend Test	10.1 to 10.2,14.2.5	IS 1599	One	Each heat/cast	—
11.1	Hardness test (PSL 1 Grade)	14.2.6	IS 1501 (Part 1)/ IS 1500(Part 1)/ IS 1586(Part 1)	—	—	Limits for Hardness for PSL1 grades may be mutually agreed to between the manufacturer and purchaser
11.2,B.3,C.3	Hardness Test (PSL2 Steels)	14.2.6	IS 1501 (Part 1)/ IS 1500(Part 1)/ IS 1586(Part 1)	One	Each heat/cast	—
12	CVN Impact Test (for PSL 2 Steel Grade)	12.1, 12.1.1, 12.1.2, 12.1.3, 12.2, 12.2.1, 12.2.2, 12.2.3, 14.2.3	IS 1757 (Part-1)	Three	Each heat/cast	—

13	DWT Test (for PSL2 Steel Grade)	13.1.1, 13.1.2, 14.2.3	IS 18384 IS 10623	Two	Each heat/cast	—
16.1	SURFACECONDITIONS, IMPERFECTIONS AND DEFECTS	16.1	IS 18384	Manufacturer shall exercise adequate in-process controls to ensure that the material is remains be reasonably free from surface flaws, laminations, rough/jagged and imperfect edges and all other harmful defects.		
16.2	Laminar Imperfections in Hot Rolled Steel Plates	16.2	IS 18384 IS 4225 or any other established method to determine the soundness of material	This test is as per mutual agreement between the purchaser and the manufacturer/supplier.		
17, 18	Dimensions, Tolerances	—	IS 1730 IS 1852 IS/ISO 16160	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		
Annex B (Steel for Sour Service)	Additional Requirements for PSL 2 steel that is ordered for sour service					
B-3.1.3	Inclusion Content	—	IS 18384 IS 4163/ISO 4967 (if agreed)	Adequate inspection to ensure that the inclusion content of molten steel conforms to the requirements as agreed between the purchaser.		If agreed at the time of order, inclusion content may be determined by the manufacturer as per IS 4163. For sulfur levels ≤ 0.001 percent, inclusion shape control may be waived by agreement.
B-4.3	HIC Test	B.5	ISO 15156-2	One	One Set of Three Specimens per heat for first 3	—

					heats, thereafter for every 10 heats	
B-4.5	SSC Test	B.3	ISO 15156-2	As per mutual agreement		
B-4.7	Grain Size	—	IS 4748	One	Each heat/cast	—
Annex C (Steel for Offshore Service)	Additional Requirements for PSL2 that is ordered for offshore service					
C-3.1.3	Inclusion Content	—	IS 18384 IS 4163/ISO 4967	Adequate inspection to ensure that the inclusion content of molten steel conforms to the requirements as agreed between the purchaser.		If agreed at the time of order, inclusion content may be determined by the manufacturer as per IS 4163. For sulfur levels ≤ 0.001 percent, inclusion shape control may be waived by agreement.
C-4.4	Grain Size	—	IS 4748	One	Each heat/cast	—

Annexure-I
(Para 4 of the Scheme of Inspection and Testing)
XYZ IRON AND STEEL COMPANY
(Registered office Address and works address)

ISI Mark
With IS No.
and CM/L
no.

Test Certificate for Hot-Rolled Steel Strip, Sheet and Plates for Welded Steel Pipe for Pipeline Transportation Systems
According to IS 18384:2023

TEST CERTIFICATE NO. _____

To M/s _____

Dated _____

We certified that the material described below fully conforms to IS 18384:2023. Chemical, Physical and Mechanical properties of the product as tested in accordance with the Scheme of Inspection and Testing contained in the BIS Certification Marks Licence No. CM/L _____ are as indicated below against each order No.

(PLEASE REFER TO IS 18384:2023 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Order No. & Date	Dimensions and Tolerances	Control Unit	Grade	Qty.	Chemical Composition (%)								Mechanical Properties							Steel for Sour Services*			Steel for Offshore Service*		
					C	Si	Mn	P	S	V	Ti	Nb	Oth ers	TS	YS	El	Bend	Hardness	CVN Test	DWT Test	HIC	SSC	Grain Size	Grain Size	Inclusion

* As agreed

Remarks

Wagon No.

Truck No.

FOR XYZ IRON AND STEEL COMPANY

(It is suggested that size A4 paper be used for this test Certificate)