



PRODUCT MANUAL FOR
Stainless Steel Blooms, Billets and Slabs for Forgings
ACCORDING TO IS6529:1996

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence 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 licence/certificate.

1.	Product	:	IS 6529:1996
	Title	:	Stainless Steel Blooms, Billets and Slabs for Forgings
	No. of Amendments	:	2
2.	Sampling Guidelines:		
a)	Raw material	:	No specific requirement for raw material
b)	Grouping guidelines	:	Please refer ANNEX - A
c)	Sample Size	:	For Chemical Test: i) For instrumental chemical analysis- 5 pieces of 5 cm ii) For Wet Chemical analysis- 50 gm drillings For Mechanical tests- 1no x 1.5m
3.	List of Test Equipment	:	Please refer ANNEX –B
4.	Scheme of Inspection and Testing	:	Please refer ANNEX –C
5.	Possible tests in a day:		All tests except Corrosion Resistance Test (Huey test takes more than 10 days&Money penny Strauss method takes more than a day)
6.	Scope of the Licence:		
	“Licence is granted to use Standard Mark as per IS 6529:1996 with the following scope:		
	Name of the product		Stainless Steel Blooms, Billets and Slabs for Forgings
	Steel Designation		Austenitic Steels (X02Cr19Ni10, X04Cr19Ni9...), Ferritic Steels (X04Cr12, X07Cr17), Martensitic Steels (X12Cr12, X20Cr13...)
	Condition		Rolled, Forged, Annealed,..
	Variety(Size)		Billets:..mmx...mm, .. Blooms: :..mmx...mm, .. Slabs: :..mmx...mm, ..
	Optional Requirement		With or Without Corrosion resistance

ANNEX- A

Grouping of different steel designations has been done on the basis of phase of iron and chemical composition/alloying elements and condition of supply. Guidelines for drawing of samples from each group are as under:

Group	Steel Designation	Remarks
1	Austenitic Steels X02Cr19Ni10, X04Cr19Ni9, X07Cr18Ni9, X04Cr18Ni10Ti, X04Cr18Ni10Nb, X04Cr17Ni12Mo2, X02Cr17Ni12Mo2, X04Cr17Ni12Mo2Ti, X10Cr17Mn6Ni4N	One sample of any steel designation within the group of any form (billet, bloom and slab) and any size , may be drawn and tested for a given condition (softened/as-rolled/as-forged) for all requirements of the specification, as applicable. If sample tested is of softened condition then recommendation may also include as-rolled/as-forged condition.
2	Martensitic Steels X12C12, X20Cr13, X30Cr13, X40Cr13, X15Cr16Ni2, X108Cr17Mo	One sample of any steel designation within the group of any form (billet, bloom and slab)and any size, may be drawn and tested for a given condition (annealed/as-rolled/as-forged) for all requirements of the specification, as applicable. If sample tested is of annealed condition then recommendation may also include as-rolled/as-forged condition.
3	FerriticSteels X04Cr12 X07Cr17	One sample of any steel designation within the group of any form (billet, bloom and slab) and any size, may be drawn and tested for a given condition (annealed/as-rolled/as-forged) for all requirements of the specification, as applicable. If sample tested is of annealed condition then recommendation may also include as-rolled/as-forged condition.

1. It shall be ensured that the firm is having all the necessary manufacturing and testing facilities for the manufacture and testing of the sizes/grade designations to be included in the licence.
2. During the operation of licence, BO shall ensure that all the grade designations/ varieties covered in the license are drawn for independent testing on rotation over a period of time.

ANNEX B**List of Test Equipment***Major test equipment required to test as per the Indian Standard*

Sl. No.	Test Equipment	Tests used in with Clause Reference
1	Rough Polishing Machine, Abrasive Cutting Machine, Fine Polishing Machine, Grinding Machine, Moldingmachine, Longitudinal cutting machine	Preparation of specimen
2	Vision-based inspection system	Freedom from Defects (6)
3	Instrumental methods Spectrometer: atomic-absorptionspectrometry, inductively coupled plasma atomic emission, inductively coupled plasma mass spectrometry techniques, spark source optical emission spectrometry. Standard Reference Material with certificate	Chemical Composition (7) C, Si, Mn, Ni, Cr, Mo, Ti, Nb, S, P, Se, Ta
4	Chemical methods Laboratory Reagents and chemicals, Glass ware, Apparatus as per relevant parts of IS 228	Chemical Composition (7) C, Si, Mn, Ni, Cr, Mo, Ti, Nb, S, P
5	Inert gas fusion followed by determination using thermal conductivity detector	Nitrogen Content (7)
6	BrinellHardness Tester (capable of applying a predetermined test force or test forces within the range of 9,807 N to 29,42kN) with indentation measuring system, Indenter- tungsten carbide composite ball.	Hardness Test (9)
7	Vernier Calipers, Scale, Measuring Tape, Weighing scale for mass per meter.	Dimensional Tolerance (10)
8	Apparatus for corrosion resistance test BY HUEY TEST (IS 10461 (Part1):1994) Oven (0-700 ⁰ C), Stop Watch Corrosive Solution (Aqueous solution of 65+/-2% (m/m) reagent grade HNO ₃ , weigh balance, Hot Plate, Conical Flask (1 litre) fitted with <i>cold finger immersion</i> condenser or other type of condenser such as Allihn condenser with at least 4 bulbs,paper	Corrosion Resistance (13)

	<p>indicator to check acid fumes, test piece support Mechanical/chemical preparation and degreasing apparatus and reagents including Grade 120 Abrasive Paper or cloth, Hydrochloric Acid, Nitric Acid, soap, acetone, Water Apparatus for test specimen preparation</p> <p>By Money Penny Strauss Test (IS 10461 (Part 2): 1994) copper sulphate pentahydrate, distilled water, sulphuric acid, Conical flask of one litre fitted with four ball rising condenser, weigh balance, Hot Plate, test piece support, copper filings Mechanical/chemical preparation and degreasing apparatus, Grade 120 Abrasive Paper or cloth, Hydrochloric Acid, Nitric Acid, Trichloroethylene or any other suitable solvent. Apparatus for bend test, magnifying glass ($\leq 10X$)</p>	
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The above list is indicative only and may not be treated as exhaustive.

ANNEX C

Scheme of Inspection and Testing

1. LABORATORY - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

1.1 The manufacturer shall prepare a calibration plan for the test equipments.

2. TEST RECORDS – The manufacturer shall maintain test records for the tests carried out to establish conformity.

3. MARKING – The Standard Mark as given in the Schedule of the license and Licence Number (i.e. CM/L.....) shall be incorporated, and marking shall be done as per the provisions of the Indian Standard, provided always that the product thus marked conforms to all the requirements of the specification.

4. CONTROL UNIT – For the purpose of this Scheme, a control unit is defined as material of same cast, condition and form, processed to same dimensions under uniform conditions of production.

5. LEVELS OF CONTROL - The tests as indicated in column 1 of Table 1 and the levels of control in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.

5.1 Steels covered by this standard shall be manufactured in accordance with Cl 5 of IS 6529:1996. The material may be subjected to heat treatment as mentioned in Cl 8 of IS 6529:1996.

5.2 The material may also be suitably colour coded in accordance with IS 2049.

5.3 General requirements relating to supply of material shall conform to IS 8910.

6. TEST CERTIFICATE- For each consignment of BIS Certified material conforming to IS 6529:1996 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)

7. REJECTIONS – 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. Any rejected material which is potentially re-salable be sheared or cut or deformed in such a manner that it cannot be used for any other purpose except re-melting. A separate record shall be maintained giving information on quantity and cast number/coil number/control unit number, as applicable, relating to all such rejections/defective/sub-standard material of the production not conforming to the requirements of the Specification and the method of its disposal. Such material shall in no case be stored together with that conforming to the Specification. The Standard Mark (if already applied) on rejected material should be defaced.

TABLE 1

(1) Test Details			(2) Test equipment requirement R: required (or) S: Sub-contracting permitted	(3) Levels of Control			
Cl.	Requirement	Test Method		R	No. of Sample	Frequency	Remarks
		Clause	Reference				
6	Freedom from Defects	6	IS 6529:1996	R	Each Item	Each Item	
7	Chemical Composition	Any established instrumental/chemical method. However, records of referee method as agreed to between manufacturer and purchaser shall be maintained.					
	Ladle Analysis	7.1, 7.3 Table 1	IS 6529:1996 IS 228 (Various Parts)	R	One	Each Heat	
	Product Analysis	7.2, 7.3 Table 1 & 2	IS 6529:1996 IS 228 (Various Parts)	R	One	Each Heat	
9	Hardness Test	9	IS 6529:1996 IS 1500 Pt.1	R	One	Each Control Unit	
10	Dimensional Tolerance	10	IS 6529:1996 IS 3739	R	Adequate inspection to ensure each item to be within the limits of specification.		
13	Corrosion Resistance Test	13	IS 6529:1996 IS 10461(Pt.1) IS 10461(Pt.2)	S	To be agreed between manufacturer and purchaser		

Note 1: Whether test equipment is required or sub-contracting is permitted in column 2 shall be decided by the Bureau and shall be mandatory. Subcontracting is permitted to a laboratory recognized by the Bureau or Government laboratories empaneled by the Bureau

Note-2: The control unit and levels of control as decided by the Bureau are obligatory to which the licensee shall comply with



Annexure-I
 (Para 6 of the Scheme of Inspection and Testing)
XYZ IRON AND STEEL COMPANY
 (Registered office Address and works address)
TEST CERTIFICATE FOR SPECIFICATION FOR Stainless Steel Blooms, Billets and Slabs for Forgings

TEST CERTIFICATE No. _____
 To M/s _____

DATE _____

We certified that the material described below fully conforms to IS 6529:1996 Chemical composition and Physical properties of the product, as tested in accordance with the Scheme of Inspection and Testing contained in the BIS Certification Marks LicenceNo.CM/L_____ are as indicated below against each order No.

(PLEASE REFER TO IS 6529:1996 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

Test Results

Order No and Date	Size/Form	Steel Designation	Cast	Quantity	Chemical Composition													Mechanical Properties	Corrosion Test [#]	Remarks							
					C	Si	Mn	Ni	Cr	Mo	Ti	Nb	S	P	Se [#]	Ta [#]	N				Hardness						

[#]if required by purchaser

REMARKS
 WAGON NO
 TRUCK NO

FOR XYZ STEEL COMPANY

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