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उत्पाद मैन्युअल
बर्तनों के लिए स्टेनलेस इस्पात प्लेट, चद्दरें और पत्ती
IS 5522: 2014 के अनुसार

Product Manual for
Stainless Steel Plate, Sheet and Strip for Utensils
According to IS 5522: 2014

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 5522:2014
	शीर्षक **Title**	:	Stainless Steel Plate, Sheet and Strip for Utensils
	संशोधनों की संख्या **No. of amendments**	:	03
2.	**नमूना दिशानिर्देश** **Sampling Guidelines**		
a)	**कच्चा माल** **Raw material**	:	Steels used for manufacturing the product covered in the standard shall conform to the requirements of 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** **Grouping Guidelines**	:	**Please refer Annex-A**

c)	**नमूने का परिमाण** **Sample Quantity**	:	Mechanical: 2 pcs of 0.5m, Chemical: 5 pcs of 5cm x 5cm (for OES/instrumental method) or 100 g drilling (for chemical method) Dimensions and Tolerances (Cl.9 & Cl. 10) shall be tested in the factory (during Factory Testing) on the full width/length of coil/strip/plate etc. from which samples are drawn for Independent Testing. **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**	:	Grade Designation, Rolling Condition, Form, Size, Finish. 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 can be carried out in a day **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 5522:2014 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 5522:2014 with the following scope:		
7.	**उत्पाद का नाम** **Name of the product**		Stainless Steel Plate, Sheet and Strip for Utensils
	Grade Designation (Numerical Symbol)		304, 302 and 430
	Rolling Condition		Hot Rolled/Cold Rolled

	Size	Thickness from …xx… mm to up to and including ...xx… mm Width from …xx… mm to up to and including ...xx… mm Length from …xx… mm to up to and including ...xx…
	Surface Finish	No.0, No.1, 2D, 2B, BA, No. 3, No. 4 etc.

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

ANNEX-A
TO PRODUCT MANUAL FOR
Stainless Steel Plate, Sheet and Strip for Utensils
According to IS 5522:2014

GROUPING GUIDELINES

A. **Grouping based upon Grade Designations:**

Group	**Grade Designation**	**Grouping**
Group 1	Austenitic - 304 and 302	One sample of each Grade Designation shall be drawn and tested.
Group 2	Ferritic -430	One sample of the Grade Designation shall be drawn and tested.

B. **Grouping based upon Rolling Condition:**

Rolling Condition	**Grouping**
Hot Rolled	Separate Samples in addition to A above shall be drawn for each Rolling Condition
Cold Rolled	

C. **Grouping based upon Surface Finish:**

Surface Finishes	**Grouping**
Hot Rolled (No.0, No.1)	Samples drawn at A & B may be of any Surface Finish. Separate Samples for each Surface Finish are not required to be drawn. However, scope of licence with regards to Surface Finish shall be restricted based upon manufacturing capability.
Cold Rolled (2D,2B, BA, No.3, No.4)	Samples drawn at A & B above may be of any Surface Finish. Separate Samples for each Surface Finish are not required to be drawn. However, scope of licence with regards to Surface Finish shall be restricted based upon manufacturing capability.

Evidence of Manufacturing Capability of all Surface Finishes in the form of Mill Test Certificates (of earlier consignments), intended to be covered in the Scope of the Licence shall be submitted by the manufacturer. BOs shall ensure the submission of MTCs of all Surface Finishes before endorsing all Surface Finishes in Scope of Licence.

D. **Grouping based upon Form of Steel and Size:**

Form	**Grouping**
Plate/Strip (Coil)/ Sheet	Samples drawn at A & B above may be from either Plate/ Strip/Sheet and can be of any size (Thickness/Width/Length). Separate Samples for Plate, Sheet & Strip and each Size are not required to be drawn. However, scope of licence with regards to Sizes and Plate/Sheet/Strip shall be restricted based upon manufacturing capability.

1. Scope of licence shall be restricted based on the manufacturing and testing facilities available.

2. 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.	**Tests Used in with Clause Reference**	**Test Equipment/Chemicals and Identification Numbers (Where applicable)**
1.	Freedom from Defects (Cl.6)	Visual Examination
2.	Chemical Composition (Cl.7)	**i. Analytical method** **(1)Carbon & Sulphur**: IS 228(P-I) Carbon – Sulphur (Strohlein's type) apparatus- complete set (consisting of glass parts assembled on wooden stand, combustion furnace, thyrister based electronic control panel, Oxygen cylinder, Sulphur cup, combustion boats Barometer, Room temperature thermometer etc. Standard steel of appropriate values of carbon & Sulphur. **(2)Silicon**: IS 228 (Part 8) Hydrochloric acid, Sulphuric acid, Nitric acid ,Silver Nitrate, Perchloric acid, Hydrofluoric acid, Weighing balance 200g, LC 0.1 mg, Muffle furnace up to 1100°C, Platinum Crucibles, Hot Plate, Porcelain dish 300ml, Filter paper pulp. Filter papers General lab glassware. **(3)Manganese** IS 228 (Part 2): Sulphuric Acid, Concentrated .Nitric Acid - Relative density 1.42, Phosphoric Acid, Ammonium persulphate, Silver Ntrate,Sodium Chloride, Sodium carbonate, Sodium arsenite, Steel sample of known Manganese Content. (**4) Nickel**:Cl 6,2 of 228(P-5): Hydrochloric Acid, Nitric Acid-, Perchloric Acid -, Tartaric Acid, Ammonium hydroxide, Dimethylglyoxime, Methyl Red , Ammonium Nitrate, Hydrofluoric Acid – Sintered glass crucible No. 3, (**5) Chromium** IS 228 (Part 6): Wide mouth conical Flask, glass beads, Phosphoric Acid, Sulphuric Acid, Concentrated Nitric Acid, Hydrochloric Acid - , Silver Nitrate,

		Ammonium Persulphate Solution, Ferrous Ammonium Sulphate, Ammonium persulphate, Potasium Permangnate(AR) Sodium Oxalate(GR) (**6) Phosphorus**: IS 228 (Part 3). Nitric Acid conc., Potassium Permanganate, ted Ammonium Hydroxide, Sodium Nitrite, ammonium molybdate , Phenolphthalein Solution (1%), Sodium Hydroxide, Potassium hydroxide, Potassium Nitrate, sodium carbonate, Hydrochloric Acid- , Hydrofluoric Acid, Perchloric Acid ferrous sulphate crystals (FeSO4, 7H,O), Sulphurous Acid, Hydrobromic Acid - filter paper pulp pad. (**7) Nitrogen**: IS 228 (Part 19) APPARATUS FOR DETERMINATION OF NITROGEN B STEAM DISTILLATION(as per Fig 1 of IS 228 (Part 19) Nessler's Reagent(potassium iodide, mercuric chloride, potassium hydroxide) Potassium Sulphate, Crystals, Copper Sulphate Crystals, Sulphuric Acid rd=1.84, Barium Chloride, Mixed Indicator Solution (Bromocresol green, Methyl Red) Devarda's Alloy, (50 Cu, 5 Al, 5 Zn.), Boric Acid, Sodium Hydroxide-Tartaric Acid, Potassium acid phthalate Note: Availability of General lab equipment Balance 200g (LC =0.1 mg), Hot plates, Fuming chambers & Glass ware i.e beakers, flasks, burette, pipettes, volumetric flask round bottom flask, funnels, Filter paper shall be insured during the visit.
	-do-	**ii. Instrumental Method** - Optical Emission Spectrometer (OES) with requisite channels and certified reference material
3.	Tensile & Elongation (Cl. 8.2)	Universal Tensile testing machine(0-100KN), Vernier Clippers 150mm LC 0.2 mm)
4.	Hardness Test (Cl.8.3)	Hardness tester (Brinell /Rockwell/Vickers)
5.	Bend Test (Cl. 8.4)	Universal Tensile testing machine with mandrel of suitable sizes
6.	Erichsen Cupping Test Cl 8.5 (Optional Test)	Cupping test Equipment

7.	Dimensions (Cl 9 & Cl 10)	Steel Scale 1000 mm LC 0.5mm Vernier Clipper 600mm LC 0.02mm Measuring Tape 400cm LC 1mm
8.	Flatness (Cl 10.4)	Surface plate size 2000mm X1000 mmx 5mm, Feeler Gauge, Vernier calipers
9.	Camber (Cl 10.5)	Surface plate size 2000mm X1000mmx5mm, Feeler Gauge, Vernier calipers
10.	Surface Finish (Cl 11)	Visual

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 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: For the purpose of this scheme, the hot rolled/cold rolled material representing the same cast, same grade, rolled to the same dimensions 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.**

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/empanelled 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 license and Licence Number (i.e. CM/L) shall be incorporated suitably/legibly on metal tag/label/sticker attached to each coil or package of plates/sheets/ strips, provided that the material so marked conforms to the requirement of the specification.
3.1 Packing and Marking shall be done as per the Indian Standard.

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

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 5522:2014 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 - 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)		(4)
TEST DETAILS					**LEVELS OF CONTROL**		**REMARKS**
Clause	**Requirements**	**Test Method**		**Test equipment requirement R: required (or) S:Sub-contracting permitted**	**No. of Samples**	**Frequency**	
		Clause	**Reference**				
5	Manufacture	5.3	IS 5522	R	Steels used for manufacturing the product covered in the standard shall conform to the requirements of IS 14650.		
6	Freedom from defects	6	IS 5522	R	Manufacturer shall exercise adequate in-process controls to ensure that the material remains free from harmful defects.		
7	Chemical Composition						
	a) Ladle Analysis	7	IS 5522	R	One	Each Heat	Applicable for primary stainless steel producers only
	b) Check Analysis			S	One	Each Heat	Applicable for manufacturers not having steel making facilities and are procuring raw material stainless steel strips/coils for further rolling.

							Each consignment of material to be supported with test certificate. No further testing required if materials are standard marked.
8	Mechanical Tests						
8.2	Tensile Test		IS 1608 (Part-1)	R	One	Each control unit	---
8.3	Hardness Test		IS 1500 or IS 1501 (Part 1)or IS 1586	R	One	Each control unit	
8.4	Bend Test (for gradeX07Cr17)	8.4.2	IS 1599 IS 5522	R	One	Each control unit	
8.5	Erichsen Cupping test*		IS 10175	S	---	---	*Subject to agreement between purchaser and manufacturer and applicable only for sheets of drawing, deep drawing and extra deep drawing types having thickness from 0.5 mm to 1.25 mm
9, 10	Dimensional tolerances	9, 10	IS 5522	R	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.		
11	Surface Finish	11	IS 5522	R	Manufacturer shall ensure that the material is supplied in one of the standard finishes on both		

					surfaces for mill finishes and one or both surfaces for polished / ground finishes.

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

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

Test Certificate for Stainless Steel Plate, Sheet and Strip for Utensils According to IS 5522:2014
TEST CERTIFICATE NO._____

To M/s_____ Dated_____

We certified that the material described below fully conforms to IS 5522:2014 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 5522:2014 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Order No. & Date	Nom Size	Control Unit No./Cast Number	Grade	Qty. (In tonnes)	Chemical Composition (in %)								Physical Properties						Remarks
					C	S	P	Si	Mn	Ni	Cr	N	0.2% Proof Stress	Tensile Strength (N/mm^2)	Elongation %	Hardness	Bend test*	Erichsen cupping test#	

If agreed between purchaser and manufacturer
* If applicable

Remarks
Wagon No.
Truck No.

FOR XYZ IRON AND STEEL COMPANY

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