

**PRODUCT MANUAL FOR
Stainless Steel Sheets and Strips for Utensils
According to IS 5522:2014**

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 5522:2014
	Title	:	Stainless Steel Sheets and Strips for Utensils
	No. of amendments	:	NIL
2.	Sampling Guidelines		
a)	Raw material	:	No specific requirement
b)	Grouping Guidelines	:	Please refer Annex - A
c)	Sample Size	:	Mechanical: 2 pcs of 0.5m, Chemical: 5 pcs of 5cm x 5cm (for OES/instrumental method) or 100 g drilling (for chemical method)
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	:	Please refer Annex – D
6.	Scope of the Licence :		
	Licence is granted to use Standard Mark as per IS 5522:2014 with the following scope:		
	Name of the product	Stainless Steel Sheets and Strips for Utensils	
	Grade	Grade with Letter symbol and Numerical symbol	
	Size	Thickness and Width(with trimmed edge)	
	Finish	Surface Finish	

ANNEXURE A
TO PRODUCT MANUAL FOR
Stainless Steel Sheets and Strips for Utensils
According to IS 5522:2014

GROUPING GUIDELINES

In order to align with existing guidelines for steel items and uniform practice is followed, the following procedure to be adopted towards grant of licence and inclusion of additional varieties.

1. Grouping as per different variety of stainless steel on the basis of chemical composition/alloying elements:

	Grade Designation	
Group 1	Austenitic	304 and 302
Group 2	Ferritic	430

2. One sample from each group of any grade designation of Stainless Steel Sheets and Strips for Utensils applied for licence/inclusion may be drawn and has to be tested for all the requirements of the specification and applicable to the variety tested. If the sample passes, then licence may be granted/inclusion be done for the Grade designation of Stainless Steel Sheets and Strips for all sizes for Utensils for the Group, provided that the firm is having all the necessary manufacturing and testing facilities for the manufacture and testing of the sizes/grades designation/varieties of Stainless Steel Sheets and Strips for Utensils to be included in the licence.

3. Surface Finish: Certain surface finishes get converted to superior surface finishes based on further processing. Further, some surface finishes are independent of each other. Hence, surface finish type shall be restricted depending upon the manufacturing facility available with the firm.

4. Manufacturing/Testing facilities & capabilities including online to be verified with respect to sizes/grades designation/varieties and accordingly same may be covered in the scope of license.

5. While considering GOL/Inclusion of additional varieties, it shall be ensured that the applicant/ licensee has got the complete manufacturing and testing facilities for all the sizes/grades/designation/varieties applied.

6. Erichsen Cupping Test (Clause 8.5 of IS 5522 : 2014) is subject to agreement between purchaser and the manufacturer. Exclusion / Inclusion of Erichsen Cupping Test in scope of licence will be based accordingly.

7. During the operation of license, BO shall ensure that all the sizes/grades/designation/varieties covered in the license are drawn for independent testing on rotation over a period of time.

ANNEXURE B
TO PRODUCT MANUAL FOR
Stainless Steel Sheets and Strips for Utensils
According to IS 5522:2014

LIST OF TESTING EQUIPMENT

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

Sr No.	Test Equipment	Tests used in with Clause Reference
1.	Visual Examination	FREEDOM FROM DEFECTS Cl. 6
2.	<p>(i) Analytical method</p> <p>(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, thyristor based electronic control panel, Oxygen cylinder, Sulphur cup, combustion boats Barometer, Room temperature thermometer etc. Standard steel of appropriate values of carbon & Sulphur.</p> <p>(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</p> <p>(3) Manganese IS 228 (Part 2): Sulphuric Acid, Concentrated Nitric Acid - Relative density 1.42, Phosphoric Acid, Ammonium persulphate, Silver Nitrate, Sodium Chloride, Sodium carbonate, Sodium arsenite, Steel sample of known Manganese Content</p> <p>(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,</p> <p>(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, Potassium Permanganate(AR) Sodium Oxalate(GR)</p>	CHEMICAL COMPOSITION Cl. 7

	<p>(6) Phosphorus: IS 228 (Part 3). Nitric Acid conc., Potassium Permanganate, 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, 7H₂O), Sulphurous Acid, Hydrobromic Acid - filter paper pulp pad.</p> <p>(7) Nitrogen: IS 228 (Part 19) APPARATUS FOR DETERMINATION OF NITROGEN BY 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 $\rho=1.84$, 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</p> <p>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.</p>	
	ii) Instrumental Method - Optical Emission Spectrometer (OES) with requisite channels and certified reference materials	-do-
3.	Universal Tensile testing machine(0-100KN), Vernier Clippers 150mm LC 0.2 mm)	Tensile & Elongation Cl. 8.2
4.	Hardness tester (Brinell /Rockwell/Vickers)	Hardness test Cl 8.3
5.	Universal Tensile testing machine with mandrel of suitable sizes	Bend Test Cl. 8.4
6.	Cupping test Equipment	Erichsen Cupping Test Cl 8.5 (Optional Test)
7.	Steel Scale 1000 mm LC 0.5mm Vernier Clipper 600mm LC 0.02mm Measuring Tape 400cm LC 1mm	DIMENSIONS Cl 9 & Cl 10
8.	Surface plate size 2000mm X1000 mmx 5mm, Feeler Gauge, Vernier clippers	Flatness(Cl. 10.4)
9	Surface plate size 2000mm X1000mmx5mm, Feeler Gauge, Vernier calipers	Camber (Cl. 10.5)
10	Visual	Surface Finish (Cl 11)



PM/ IS 5522/ 1
May 2019

Least Count and Range should match the values/parameters/tolerances mentioned in the Indian Standard.

The above list is meant only for guidance and may not be treated as exhaustive.



PM/ IS 5522/ 1
May 2019

ANNEXURE C
TO PRODUCT MANUAL FOR
Stainless Steel Sheets and Strips for Utensils
According to IS 5522:2014

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. PACKING AND MARKING –The Standard Mark, as given in the Schedule of the license shall be incorporated on each package of sheets, strips and coils provided that the stainless steel contained in the package thus marked conforms to the requirement of the specification.

3.1 Packing and Marking shall be done as per the provisions of IS 5522. In addition, details of BIS Certification i.e. BIS Licence Number CM/L—and BIS website shall be marked on the package as follows “For details of BIS certification please visit www.bis.gov.in”

4. CONTROL UNIT – For the purpose of this scheme the material or part thereof representing the same cast/heat-treatment batch and of the same thickness per shift shall constitute a control unit.

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 All the production which conforms to the Indian Standards and covered by the licence should be marked with Standard Mark.

6. TEST CERTIFICATE-For each consignment of BIS Certified material conforming to this specification there shall be a test certificate which shall contain the Standard Mark, the lot/cast 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 resalable be sheared or cut or deformed in such a manner that it cannot be used for any other purpose. A separate record shall be maintained giving information on quantity and batch number/control unit number, as applicable, relating to all such rejections/defective/substandard 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
LEVELS OF CONTROL
(Clause 5 of SIT)

(1)			(2)	(3)			
TEST DETAILS			Test Equipment R: required S: Sub Contracting	LEVELS OF CONTROL			
Cl.	Requirement	Test Methods			No. of samples	Frequency	Remarks
		Clause	Reference				
6	Freedom from defects	6	IS 5522	R	Each sheet/coil	Each sheet/coil	The inspection shall be done over the entire cross-section on both sides.
7	Chemical Composition						
	a) Ladle Analysis	7	-do-	R	One	Each heat	Applicable for primary stainless steel producers only
	b) Check analysis			S	One	Each heat	Not required if raw material is ISI marked and accompanied by test certificate
8	Mechanical tests						
8.2	Tensile test		IS 1608 (Pt. 1)	R	One	Each coil	In case of material annealed in coil form through continuous annealing line

					One	each 100 or less number of pieces of the same cut and nominal thickness annealed as	In case material annealed in batch process
8.3	Hardness test		IS 1500 or IS 1501 (Part 1) or IS 1586	R	One	Each coil	In case of material annealed in coil form through continuous annealing line
					One	each 100 or less number of pieces of the same cut and nominal thickness annealed as	In case material annealed in batch process
8.4	Bend Test (for grade X07Cr17)	8.4.2	IS 1599 IS 5522	R	One	Each coil	In case of material annealed in coil form through continuous annealing line
					One	each 100 or less number of pieces of the same cut and nominal thickness annealed as	In case material annealed in batch process
8.5	Erichsen Cupping test*		IS 10175	S	One	Each coil	In case of material annealed in coil form through continuous annealing line
	*Subject to agreement between purchaser and manufacturer and applicable only for sheet of drawing, deep drawing and extra deep drawing types having thickness from 0.5 mm to 1.25 mm				One	each 100 or less number of pieces of the same cut and nominal thickness annealed as a batch	In case material annealed in batch process

9, 10	Dimensional tolerances	9, 10	IS 5522	R	One	Each control unit every half hour	Measurement of thickness shall be made at least 10mm away from edge of sheet or coil at least at two places at plate or sheet or strip at every 10 metre in case of coil
11	Surface finish	11	-do-	R	One	Each sheet/coil	The inspection shall be done over the entire cross-section on both sides.

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. Sub-contracting 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
Stainless Steel Sheets and Strips for Utensils According to IS 5522:2014**

TEST CERTIFICATE No. _____
DATE _____

To M/s _____

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	Quantity in tonnes	CHEMICAL COMPOSITION								PHYSICAL PROPERTIES					Remarks		
					C %	S %	P %	Si %	Mn %	Ni %	Cr %	N%	0.2% proof stress	Tensile Strength (N/mm ²)	%age elongation	Hardness	Bend test*		Erichsen cupping test#	

If agreed between purchaser and manufacturer

* If applicable

REMARKS
WAGON NO.
TRUCK NO.
COMPANY

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

FOR XYZ IRON AND STEEL

**ANNEXURE D
TO PRODUCT MANUAL FOR
Stainless Steel Sheets and Strips for Utensils
According to IS 5522:2014**

POSSIBLE TESTS IN A DAY

Test	Clause IS 5522
Freedom from defects	Cl. 6
Chemical composition , possible elements	Cl. 7
Tensile & Elongation	Cl. 8.2
Hardness test	Cl 8.3
Bend Test	Cl. 8.4
Erichsen Cupping Test (Optional Test)	Cl. 8.5
Dimensions	Cl. 9 & Cl. 10
Flatness	Cl. 10.4
Camber	Cl. 10.5
Surface Finish	Cl. 11