

**PRODUCT MANUAL FOR
Low Nickel Austenitic Stainless Steel Sheet and Strip
for Utensils and Kitchen Appliances
According to IS 15997:2012**

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 15997:2012
	Title	:	Low Nickel Austenitic Stainless Steel Sheet and Strip for Utensils and Kitchen Appliances
	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	:	All tests
6.	Scope of the Licence :		
	Licence is granted to use Standard Mark as per IS 15997:2012with the following scope:		
	Name of the product	Low Nickel Austenitic Stainless Steel Sheet and Strip for Utensils and Kitchen Appliances	
	Grade	Grade with Letter symbol and Grade designation (N1, N2, N3)	
	Size	Thickness and Width(with trimmed edge)	
	Finish	Surface Finish	
	Edge condition	Mill/Trimmed	

**ANNEXURE A
TO PRODUCT MANUAL FOR
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GROUPING GUIDELINES

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

1. For any grade designation (N1/N2/N3) of Low Nickel Austenitic Stainless Steel Sheet and Strip intended to be covered in the scope of licence, one sample of any size, any surface finish and any edge condition may be drawn and tested. However, separate samples to be drawn for hot rolled and cold rolled product, as applicable.
2. If sample is tested for higher Grade Designation the recommendation may include lower Grade Designations also. (If sample of grade designation N3 is tested then N2 and N1 may also be covered. Similarly, if sample of grade designation N2 is tested then N1 may also be covered)
3. However, 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/finish/edge condition of Low Nickel Austenitic Stainless Steel Sheet and Strip for Utensils and Kitchen Appliances to be included in the licence.
4. During inspection for consideration of grant of licence, before drawing samples for independent testing, it shall be ensured by IO that samples of all edge conditions including the samples to be drawn for independent testing have to be tested at factory for Dimensional Tolerances as per cl.12, 13 &14 of IS 15997:2012.
5. In case of inclusion (change in scope), factory test report for Dimensional Tolerances as per cl.12, 13 &14 of IS 15997:2012 may be accepted and conformity to the same of the grades included has to be verified during next surveillance visit
6. 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.

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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><u>(i) Analytical method</u></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, thyrister 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 Ntrate,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, Potasium Permangnate(AR) Sodium Oxalate(GR)</p>	CHEMICAL COMPOSITION Cl. 8

	<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 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</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> <p>(8) Copper: Plate, Muffle Furnace, porcelain or silica crucible, Reagents: HotWash Solution(dilute sulphuric acid solution 1 : 99 v/v with hydrogen sulphide), dilute sulphuric acid, hydrogen sulphide, Dilute Nitric Acid, Sodium Fluoride, solid, Dilute Ammonium Hydroxide, Acetic Acid, Potassium Iodide, Starch Solution, Sodium Thiosulphate Solution, Ammonium Bifluoride Solution</p>	
	<p>ii) Instrumental Method - Optical Emission Spectrometer (OES) with requisite channels and certified reference materials</p>	<p>-do-</p>
<p>3.</p>	<p>Universal Tensile testing machine(0-100KN), Vernier Clippers 150mm LC 0.2 mm)</p>	<p>Tensile & Elongation Cl. 9.2</p>
<p>4.</p>	<p>Cupping test Equipment</p>	<p>Erichsen Cupping Test Cl 9.4 (Optional Test)</p>
<p>5.</p>	<p>Steel Scale 1000 mm LC 0.5mm Vernier Clipper 600mm LC 0.02mm Measuring Tape 400cm LC 1mm</p>	<p>DIMENSIONS Cl 14</p>



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8.	Surface plate size 2000mm X1000 mmx 5mm, Feeler Gauge, Vernier clippers	-do-
9	Surface plate size 2000mm X1000mmx5mm, Feeler Gauge, Vernier calipers	-do-
10	Visual	Surface Finish (CI 11)

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.



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ANNEXURE C
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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 15997. 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 per heat-treatment batch of the same thickness and subjected to same surface finish 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.

5.2 In case the samples selected do not meet the requirements of the standard, re-tests may be done as per Clause 10 of IS 15997.

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



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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 OFCONTROL
(Clause 5ofSIT)

(1)				(2)	(3)		
TEST DETAILS				Test Equipment R: required S: Sub Contracting	LEVELS OFCONTROL		
Cl.	Requirement	TestMethods			No. of samples	Frequency	Remarks
		Clause	Reference				
6	Freedom from defects	6	IS 15997	R	Each sheet/strip/coil	Each sheet/strip/coil	The inspection shall be done over the entire cross-section on both sides.
8	Chemical Composition						
	a) Ladle Analysis	8.1, 10.1	-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
9	Mechanical tests						
9.2	Tensile test		IS 1608 (Pt. 1)	R	One	Each control unit	Sample plan as per Cl .9.1 of IS 15997 to be followed

9.4	Erichsen Cupping test*		IS 10175 (Pt. 1)	S	One	Each control unit	*Subject to agreement between purchaser and manufacturer and applicable only for thickness from 0.20 mm to 1.25 mm
12, 14	Dimensional tolerances	12, 14	IS 15997	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	Each sheet/strip/coil	Each sheet/strip/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.



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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

Low Nickel Austenitic Stainless Steel Sheet and Strip for Utensils and Kitchen Appliances According to IS 15997:2012

TEST CERTIFICATE No. _____

DATE _____

To M/s _____

We certified that the material described below fully conforms to IS 15997:2012. 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

Licence No. CM/L _____ are as indicated below against each order No.

(PLEASE REFER TO IS 15997:2012 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 %	Cu %	N %	0.2% proof stress	Tensile Strength (N/mm ²)	%age elongation	Erichsen cupping test#		

If agreed between purchaser and manufacturer

REMARKS
WAGON NO.
TRUCK NO.
COMPANY

FOR XYZ IRON AND STEEL

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

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