

**PRODUCT MANUAL FOR
Cold Rolled Steel Strips (Box Strappings)
according to IS 5872:1990**

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 5872:1990
	Title	: Cold Rolled Steel Strips (Box Strappings)
	No. of amendments	: 0
2.	Sampling Guidelines	
a)	Raw material	: No specific requirement
b)	Grouping Guidelines	: Please refer Annex – A
c)	Sample Size	: For physical tests: 1.5 m length For chemical tests : 50 gm drillings or 5 pcs of 5 cm X 5 cm for OES (ref:CL/OES, 15/7/19)
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 Physical & Chemical tests excluding Corrosion Resistance
6.	Scope of the Licence :	
	Licence is granted to use Standard Mark as per IS 5872:1990 with the following scope:	
	Name of the product	Cold Rolled Steel Strips (Box Strappings)
	Shape((Dimensions))	Width from ...mm upto and including ...mm, Thickness from ...mm upto and including ...mm
	Grade	1,..
	With or Without	Micro-alloying elements
	Surface Finish	Painted with stoving quality, ..

ANNEXURE A
TO PRODUCT MANUAL FOR
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GROUPING GUIDELINES

Grouping of different steel grades has been done on the basis of chemical composition and surface finish. Guidelines for drawing of samples from each group are as under:

Group	Grade	Remarks
1	1	One each from the group of a given finish and of any size may be tested to cover steel strappings of all sizes and of particular finish within the group.
2	2	One each from the group of a given finish and of any size may be tested to cover steel strappings of all sizes and of particular finish within the group.
3	3	One each from the group of a given finish and of any size may be tested to cover all steel strappings of all sizes and of particular finish within the group.

1. 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 /surface finishes of Steel strappings to be included in the licence.

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

ANNEXURE B
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LIST OF TEST EQUIPMENTS

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Major test equipment essentially 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.	Rough Polishing Machine, Cutting Machine, Fine Polishing Machine, Grinder Machine	Preparation of specimen
2.	Vernier Callipers Micrometer, Steel tape, Steel Scale, Flat surface,	10 (Dimensions& Tolerances)
3.	UTM (0-600 kN) class 1 accuracy or better	6 (Tensile Test)
4.	Testing Machine with cylindrical support and bending arm	7 (Reverse Bend Test)
5.	Analytical balance (0-200g, LC:0.1mg)	5 (Chemical Composition)
6.	Instrumental methods Spectrometer: atomic-absorption spectrometry, inductively coupled plasma atomic emission, inductively coupled plasma mass spectrometry techniques, spark source optical emission spectrometry. Spectrophotometer	6.1,6.2 (C,S,P,Mn, B, Microalloying elements content) Mn,S,P
7.	Strohlein or Leco apparatus with all attachments Barometer with chart, Hot plate, Muffle furnace, Complete range of glass wares, measuring cylinders, Desiccator, porcelain boats or ceramic crucibles, Thermometer, Electronic Balance, Distilled Water,Hot air oven, Oxygen - 99.5 percent minimum purity,ether or acetoneStandard Reference Material (NML) with certificate Reagents for C: tin granules or pure iron fillings, acidulated water/brine water, methyl red,caustic potash Reagents for S: Ceramic boats/crucibles – desiccators, Fluxes -Low sulphur copper, tin or iron, Dilute hydrochloric acid, Starch Iodide solution, Potassium iodate	6.1, 6.2 (C& S, chemical method, alternative to instrumental method)
8.	Weighing balance, Heater/ Heating element along with energy regulator, Ice water bath, Vol Flask Cap – 1 litre, (Whatman) filter paper No. 040,Suction Filtration Facility, Filter paper pulp pad, Standard Reference Material (NML) with certificate Potassium Permanganate (KMnO ₄), Sodium Nitrite (Na ₂ NO ₃), Sulphurous Acid,	6.1, 6.2 (Phosphorus content, chemical method, alternative to instrumental method)

	Ammonium Molybdate [(NH ₄) ₂ Mo ₂ O ₇], Ammonium Phosphate [(NH ₄) ₃ PO ₄], Potassium Nitrate (K ₂ NO ₃), Phenolphthalein Solution, Rectified spirit or methyl alcohol, Sodium Hydroxide (NaOH), Hydrofluoric Acid (HF), Perchloric Acid (HClO ₄), Hydrobromic Acid (HBr) , other chemicals and reagent as applicable	
9.	Hot plate, Conical flask Reagents: silver nitrate, ammonium persulphate sodium arsenite solution, Dilute Nitric Acid, Phosphoric Acid, Dilute Sulphuric Acid, Concentrated Nitric Acid, NaCl Solution, Permanganic acid	6.1,6.2 (Manganese content, chemical method, alternative to instrumental method)
10.	Salt Spray Cabinet- with a volume not less than 0.2m ³ , sufficient big enough to accommodate all samples giving enough exposure, with sample stand to be there having an angle as close as possible to 20°, provision to have angle of exposure within 15° to 30°, with atomizer not placed in direct line with sample, ensuring that test spray which has been sprayed should not be reused, Temperature Controller, Humidity Controller, Equipped with Continuous supply of power NaCl solution of required concentration, pH meter Arrangement for cleaning of samples	12 (Corrosion Resistance)

Note: The above is an indicative list for the purpose of guidance only

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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. LABELLING, MARKING & PACKING – The Standard Mark as given in Column (1) of the First Schedule of the license and Licence Number (i.e. CM/L.....) shall be incorporated, and the marking and packing shall be done as per the provisions of the Indian Standard, provided always that the product thus marked and packed conforms to all the requirement of the specification. In addition, details of BIS website as follows: “For details of BIS certification please visit www.bis.gov.in” shall be marked on metal tag or on top of each bundle or package of sheets, plates and strips.

4. CONTROL UNIT – All steel strappings representing the same cast, rolled to same dimensions, surface finish and manufactured under uniform conditions of production in a day in the same place constitutes 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 General requirements relating to the supply of material shall conform to IS 8910. Material shall be manufactured as per Cl 4 of IS 5872:1990

6. TEST CERTIFICATE-For each consignment of BIS Certified material conforming to IS 5872:1990 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.

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TABLE 1: LEVELS OF CONTROL

(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	Chemical Composition						
	Ladle Analysis	5.1 Table-1	IS 5872 & IS 228 (Various Parts) or any established Chem/Instr method.	R	One	Each Heat	Applicable for manufacturers with steel making facilities
	Product Analysis	5.2 ,8 Table-1 Table-2		i) R ii) S	Nil One	Nil 40 tonnes or part thereof of each Cast	Applicable for manufacturers with steel making facilities. Applicable for manufacturers without steel making facilities. No testing for check analysis is required if starting material being subjected to processing is ISI marked and received with test certificate.
6	Tensile Test	6.1 , 6.1.1, 6.2, 6.3, 11 & Table-3	IS 5872 IS 1608(Pt.1)	R	1	25 tonnes or part thereof from each Control Unit	
7	Reverse Bend Test	7.1 to 7.2.1& 11	IS 1403 Pt.1 IS 5872	R	1	10 tonnes or part thereof from each Control Unit	
9	Freedom from Defects	9.1 9.2	IS 5872	R	Adequate inspection to ensure each item to be within the limits of the specification		
10	Dimensions & Tolerances	10.1 to 10.4	IS 5872	R	Adequate inspection to ensure each item to be within the limits of the specification.		

		Annex -A			Records of dimensions mutually agreed to shall be maintained.		
(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				
11	Surface Finish	11.1	IS 5872	R	As agreed to between manufacturer and purchaser. See Note-3		
12	Corrosion resistance	12.1	IS 5872 IS 9844	R	1	Once in a month	Records of Specimen size mutually agreed to between the interested parties shall be maintained.

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.

Note-3: Test equipments to be possessed by the manufacturer only for the finishes in which they intend to supply the material.

ANNEXURE I

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(Para 6 of the Scheme of Inspection and Testing)

XYZ IRON AND STEEL COMPANY

(Registered office Address and works address)

TEST CERTIFICATE FOR Cold Rolled Steel Strips (Box Strappings)



TEST CERTIFICATE No. _____

DATE _____

TO M/s _____

We certified that the material described below fully conforms to IS 5872:1990 Chemical composition and Mechanical properties of the product, as tested in accordance with the Scheme of Testing and Inspection contained in the BIS Certification Marks Licence No. CM/L _____ are as indicated below against each order No.

(PLEASE REFER TO IS 5872:1990 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Order No. & Date	Dimensions (nom Size)	Control Unit No.	Grade	Quantity in tonnes	CHEMICAL COMPOSITION					MECHANICAL PROPERTIES			Corrosion resistance	Surface finish	Remarks
					C	S	P	Mn	#Microalloying elements	Tensile strength	Elongation	Reverse Bend test			
					%	%	%	%	%						

#Micro-alloying element(s) present should be indicated

REMARKS

WAGON NO.

TRUCK NO.

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

FOR XYZ IRON AND STEEL COMPANY