

Indian Standard

COLD ROLLED STEEL STRIPS
(BOX STRAPPINGS) — SPECIFICATION

(Second Revision)

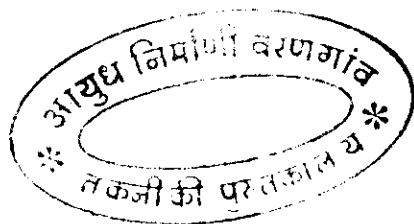
भारतीय मानक

अतप्त वेल्लित इस्पात पत्तियां (बक्सा बांधने वाली) — विशिष्ट
(दूसरा पुनरीक्षण)

UDC 621.798.24 : 669.14.418.122.2

AUTHENTICATED COPY

(H. C. Narang)
H. C. NARANG
Section Officer (Sales)
Indian Standards
Delhi-110002



© BIS 1990

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 SAHIBZAD SAHAB ZAFAR MARG
NEW DELHI, INDIA

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards on 20 March 1990, after the draft finalized by the Wrought Steel Products Sectional Committee had been approved by the Metallurgical Engineering Division Council.

This standard was first published in 1970. As a result of experience gained during the years, this was first revised in 1973. The present revision has been necessitated to include extra high tensile box strappings.

This standard is based on the manufacturing and trade practices followed in the country in this field.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2:1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

COLD ROLLED STEEL STRIPS (BOX STRAPPINGS) — SPECIFICATION

(Second Revision)

1 SCOPE

1.1 This standard covers the requirements for three grades of cold rolled steel strips (tensional steel strappings) for general packaging purposes. These strips are known as box strappings.

2 REFERENCES

2.1 The following Indian Standards are necessary adjuncts to this standard:

IS No.	Title
IS 228	Methods for chemical analysis of steels
IS 1403 : 1981	Methods for reverse bend testing of metals (<i>first revision</i>)
IS 1663 : 1972	Method for tensile testing of steel sheet and strip of thickness 0.5 mm to 3 mm (<i>first revision</i>)
IS 8910 : 1978	General technical delivery requirements for steel and steel products
IS 9844 : 1981	Method of testing corrosion resistance of electroplated and anodized aluminium coatings by neutral salt spray test

3 SUPPLY OF MATERIAL

3.1 General requirements relating to the supply of cold rolled steel strips shall conform to IS 8910 : 1978.

4 MANUFACTURE

4.1 The strips shall be manufactured from steel made by any process except the Bessemer process. It may be followed by secondary refining or secondary vacuum melting.

5 CHEMICAL COMPOSITION

5.1 Ladle Analysis

The ladle analysis of steel, when carried out either by the method specified in relevant part of IS 228 or by any other method approved by the concerned authority, shall conform to the following limits:

In case of dispute, the procedure given in relevant parts of IS : 228 shall be the referee methods.

Table 1 Chemical Composition

Grade	Constituent, Percent			
	Carbon	Manganese	Sulphur <i>Max</i>	Phosphorous <i>Max</i>
1	0.25-0.35	1.10-1.60	0.050	0.050
2 & 3	0.20 <i>Max</i>	0.90 <i>Max</i>	0.050	0.050

NOTE — The steel may be made with micro-alloying elements like niobium, vanadium, titanium and boron either individually or in combination, on mutual agreement, in which case total micro-alloying elements should not exceed 0.2 percent in ladle analysis. However, in case of boron, the limit shall be 0.1 percent.

5.2 Product Analysis

Permissible variation in the case of product analysis from the limits specified in 5.1 shall be as given in Table 2.

Table 2 Product Analysis

Constituent	Variation Over the Specified Limits, Percent, <i>Max</i>
Carbon	± 0.02
Manganese	± 0.03
Sulphur	+ 0.005
Phosphorous	+ 0.005

NOTE — Variation shall not be applicable to both over and under the specified limits in several determinations in a heat.

6 TENSILE TEST

6.1 Number of Tensile Tests

One tensile test shall be taken from each lot of 25 tonnes of material or part thereof from each cast.

6.1.1 Where strips of more than one thickness are rolled from the same heat, the tensile test shall be taken from each thickness.

6.1.2 Test samples shall be taken from either end of the strips and shall be at least 1.5 metres in length.

6.2 Tensile Test Piece

Tensile test may be carried out on full width of the strip in accordance with IS 1663 : 1972.

6.3 When tested, the tensile strength and percentage elongation shall conform to the requirements given in Table 3.

Table 3 Tensile Properties

Grade	Tensile Strength MPa	Percentage Elongation, Min Gauge Length 50 mm
1	900 Min	5
2	590-900	7
3	290 Min	12

7 REVERSE BEND TEST

7.1 Number of Reverse Bend Tests

One reverse bend test shall be taken from each lot of 10 tonnes of material or part thereof from each cast.

7.1.2 Where strips of more than one thickness are rolled from the same cast, one additional bend test shall be made for each thickness of strip.

7.2 The reverse bend test shall be carried out in accordance with IS 1403 : 1981.

7.2.1 When tested, on a block of 2.5 mm, should give minimum of 2 bends without showing any sign of cracks.

8 RETEST

8.1 Should any of the test pieces first selected fail to pass any of the tests specified in this standard, two further samples shall be selected from the same lot for testing in respect of each failure. Should the test pieces from both these additional samples pass, the material represented by the test samples shall be deemed to comply with the requirements of that particular test. Should the test pieces from either of these additional samples fail, the material represented by the test samples shall be deemed as not complying with this standard.

9 FREEDOM FROM DEFECTS

9.1 The strips shall be free from harmful defects such as scales, rust, blisters, laminations,

pittings, porosity and other harmful defects such as sharp, cracked or torn edges, or any other defects which may impair the serviceability of the strips.

9.2 The degree or amount of surface defects in a coil may be expected to be more than in cut lengths because of the impossibility of rejecting portions of coil. This shall be taken into account by the purchaser in his assessment of the material. An excessive amount of defects may be the cause for rejection.

10 DIMENSIONS AND TOLERANCES

10.1 Unless otherwise specified, cold rolled steel strips shall be supplied in dimensions as agreed to between the purchaser and the manufacturer.

10.2 Tolerances on thickness of cold rolled steel strips shall not exceed the following limits:

Size mm	Permissible Deviation mm
0.30 up to and including 0.80	± 0.04
Over 0.80 up to and including 1.20	± 0.05

10.3 Tolerance on width of cold rolled steel strips shall not exceed ± 0.15 mm.

10.4 For guidance, the combination of width and thickness, which is generally supplied are given in Annex A.

11 SURFACE FINISH

11.1 Steel strips may be supplied, as agreed to between the manufacturer and purchaser, in any one of the following surface finishes. Bright and bluish grey strips shall be adequately coated with rust preventive.

- Bright* — The natural surface finish of uncoated steel in a cold rolled condition.
- Blue/Bluish Grey* — The blue/bluish grey finish is imparted by heat which also cleans the surface.
- Painted* — Various paints are used to provide a degree of resistance to corrosion or to check chemical reaction between the strapping and the surface of the goods being strapped.
- Electro Zinc Galvanized* — A zinc coating is applied by an electrolytic deposition process to provide a degree of resistance to corrosion.
- Hot Dipped Galvanized* — A corrosion resistance coating is applied by immersion in a bath of molten zinc.

f) *Copper Coated* — A copper coating is applied by electrolytic deposition.

g) *Epoxy Coating* — The epoxy/epoxy polyester powder coating is applied on to the degreased, pickled and phosphated steel strip by electrostatic process followed by fusion and curing at elevated temperature.

c) Copper coated — 144 hours, and

d) Epoxy coating — 500 hours.

13 PACKING

13.1 Strips shall be supplied in coils securely packed in polyethylene bitumen impregnated hessian. Other types of packagings may be used if agreed to between the manufacturer and supplier.

12 CORROSION RESISTANCE

12.1 The finished strip shall be subjected to salt spray test in accordance with IS 9844 : 1981 for the time given below:

a) Painted (one coat) — 72 hours for air drying quality and 96 hours for stoving quality,

b) Electro zinc galvanized and hot dip galvanized — 144 hours,

14 MARKING

14.1 Each coil of strip shall be marked with the following:

a) Grade of the material,

b) Size, and

c) Indication of the source of manufacture.

14.2 **Standard Marking** — Details available with the Bureau of Indian Standards.

ANNEX A

(Clause 10.4)

COMBINATION OF WIDTH AND THICKNESS IN mm

19.0 × 0.63

19.0 × 0.8

32.0 × 0.8

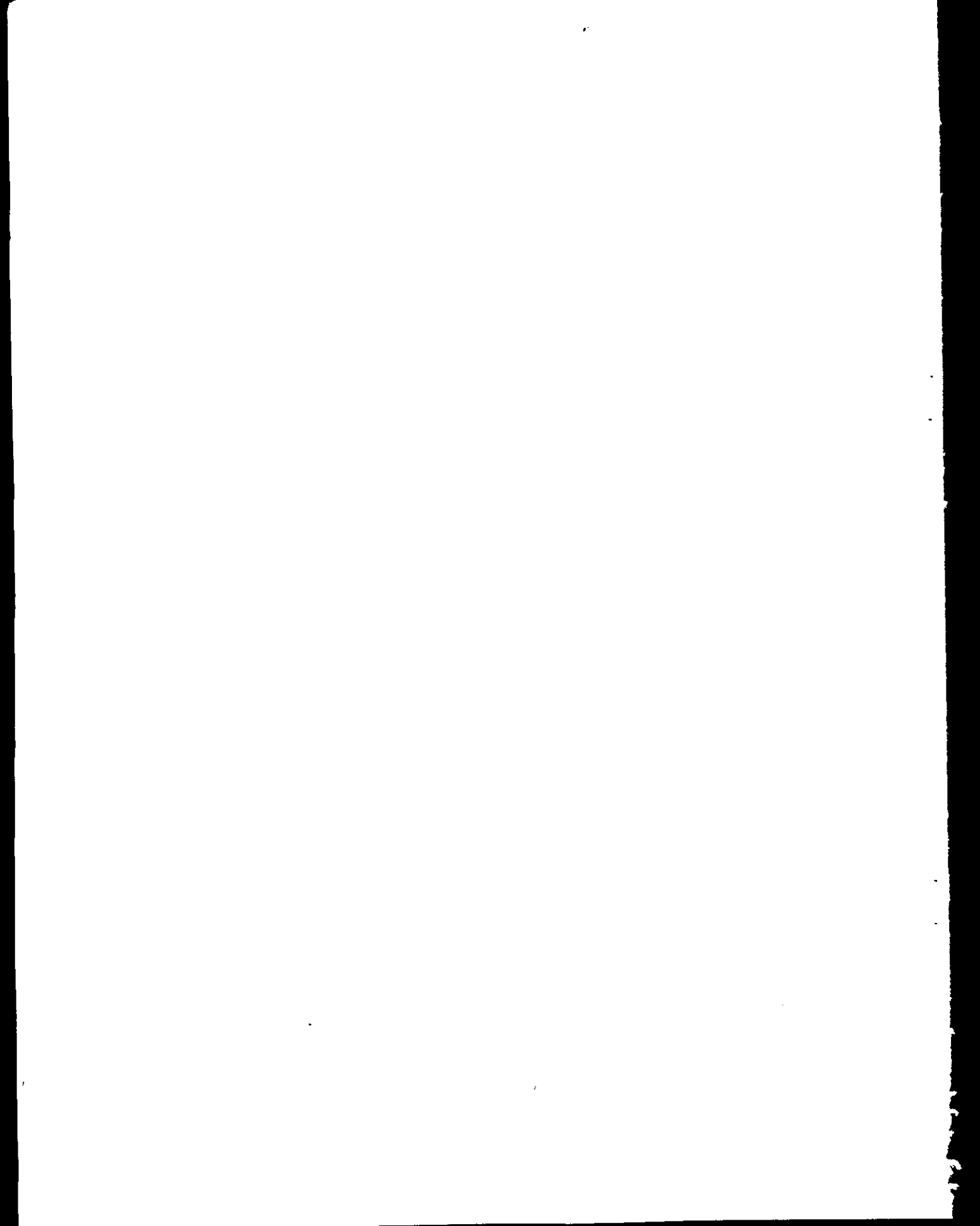
32.0 × 1.0

32.0 × 1.25

50.0 × 1.25

50.0 × 1.30

NOTE — Other size combinations (width and thickness) may also be manufactured subject to agreement between the manufacturer and the purchaser.



Standard Mark

The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act, 1986* to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Director (Publications), BIS.

Revision of Indian Standards

Indian Standards are reviewed periodically and revised, when necessary and amendments, if any, are issued from time to time. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition. Comments on this Indian Standard may be sent to BIS giving the following reference:

Doc : No. MTD 4 (3432)

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones : 331 01 31, 331 13 75

Telegrams : Manakbhasna
(Common to all Offices)

Regional Offices:

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg
NEW DELHI 110002

{ 331 01 31
{ 331 13 75

Eastern : 1/14 C.I.T. Scheme VII M, V.I.P. Road, Maniktola
CALCUTTA 700054

37 86 62

Northern : SCO 445-446, Sector 35-C, CHANDIGARH 160036

2 18 43

Southern : C.I.T. Campus, IV Cross Road, MADRAS 600113

41 29 16

Western : Manakalaya, E9 MIDC, Marol, Andheri (East)
BOMBAY 400093

5 32 92 95

Branches : CHENNAI, COIMBATORE, DELHI, GUWAHATI, HYDRABAD, JALGAON, KANPUR, LUCKNOW, MUMBAI, RAIPUR, SURAT, THIRUVANANTHAPURAM, VISAKHAPATNAM, BANGALORE, CHANDIGARH, COCHIN, DELHI, GUWAHATI, HYDRABAD, JALGAON, KANPUR, LUCKNOW, MUMBAI, RAIPUR, SURAT, THIRUVANANTHAPURAM, VISAKHAPATNAM