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“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 3502 (2009): Steel Chequered Plates [MTD 4: Wrought Steel Products]



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Satyanarayan Gangaram Pitroda

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“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक
इस्पात की चारखानेदार प्लेटें
(तीसरा पुनरीक्षण)

Indian Standard
STEEL CHEQUERED PLATES
(*Third Revision*)

ICS 77.140.01

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

FOREWORD

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

This standard was first published in 1966 and subsequently revised in 1981 and 1994. While reviewing the standard in the light of merger IS 1977 and IS 8500 in the sixth revision of IS 2062, the Committee decided to revise it to bring the grades of this standard in line with latest IS 2062.

Steel chequered plates are extensively used as floor coverings in marine, stairways, transportation equipment and for general structural purposes.

In the revision, the following changes have been made:

- a) Amendment Nos. 1 and 2 have been incorporated.
- b) A new clause 2 on references has been incorporated.
- c) Yield stress based grades have been adopted.
- d) Clause on retest has been modified.
- e) Requirements of IS/ISO 7452 : 2002 'Hot rolled structural steel plates tolerance on dimensions and shapes' have been incorporated.

For all the tests specified in this standard (chemical/physical/others), the method as specified in relevant ISO Standard may also be followed as an alternate method.

The composition of the Committee responsible for the formulation of this standard is given in Annex A.

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

STEEL CHEQUERED PLATES

(*Third Revision*)

1 SCOPE

This standard covers the requirements for steel chequered plates, having raised figures at regular intervals on one surface of the plate.

2 REFERENCES

The standards listed below contain provisions, which through reference in this text constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreement based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

<i>IS No.</i>	<i>Title</i>
1599 : 1985	Method for bend test for steel products other than sheet, strip wire and tube (<i>second revision</i>)
1608 : 2005	Metallic Materials — Tensile testing at ambient temperature (<i>third revision</i>)
IS/ISO 7452 : 2002	Hot rolled structural steel plates tolerance on dimensions and shapes
2062 : 2006	Hot rolled low, medium and high tensile structural steel (<i>sixth revision</i>)
8910 : 1978	General technical delivery requirements for steel and steel products

3 SUPPLY OF MATERIAL

General requirements relating to the supply of chequered plates shall conform to IS 8910.

4 MATERIAL

4.1 Unless specified otherwise the steel (base material) for chequered plates shall conform to the requirements of Grade E 250A of IS 2062.

4.2 The base material other than that specified in **4.1** may be supplied, if agreed to between the purchaser and the manufacturer at the time of enquiry and order.

5 FREEDOM FROM DEFECTS

Plates shall be cleanly rolled to the dimensions specified. Finished material shall be free from

harmful surface defects, such as cracks, surface flaws, imperfect edges, etc.

6 PATTERN

Chequered plates may be supplied to any pattern. However, for guidance, some patterns are given in Fig. 1.

NOTE — Pattern can not be fabricated by welding.

7 SELECTION AND PREPARATION OF TEST SAMPLES

7.1 The recommended location for taking test samples is indicated in Fig. 2. The test piece shall be cut length-wise or cross-wise.

7.2 Before the test samples are taken, full particulars regarding cast number, size and mass of the material from each cast shall be furnished by the supplier to the purchaser.

7.3 Test samples shall be cut in such a manner that deformation is avoided as far as possible. If guillotining or, flame-cutting is employed, an adequate allowance shall be left for removal by machining.

7.4 Test samples taken from rolled steel which have undergone deformation through bending or twisting shall in all cases be straightened cold. While straightening test samples, care shall be taken to avoid any cold working or temperature rise which may alter the properties of the samples as compared with the finished product which they represent.

8 TENSILE TEST

8.1 Tensile test shall be conducted in accordance with IS 1608 on a test piece either machined to obtain a flat surface or without machining the chequered surface in which case the thickness of the base plate shall be taken for the calculation or cross-sectional area.

8.1.1 The tensile properties of chequered plate shall conform to the tensile properties of the grade of base material.

8.1.2 Number of samples for tensile test shall be in accordance with IS 2062.

9 BEND TEST

9.1 Bend test shall be conducted in accordance with IS 1599.

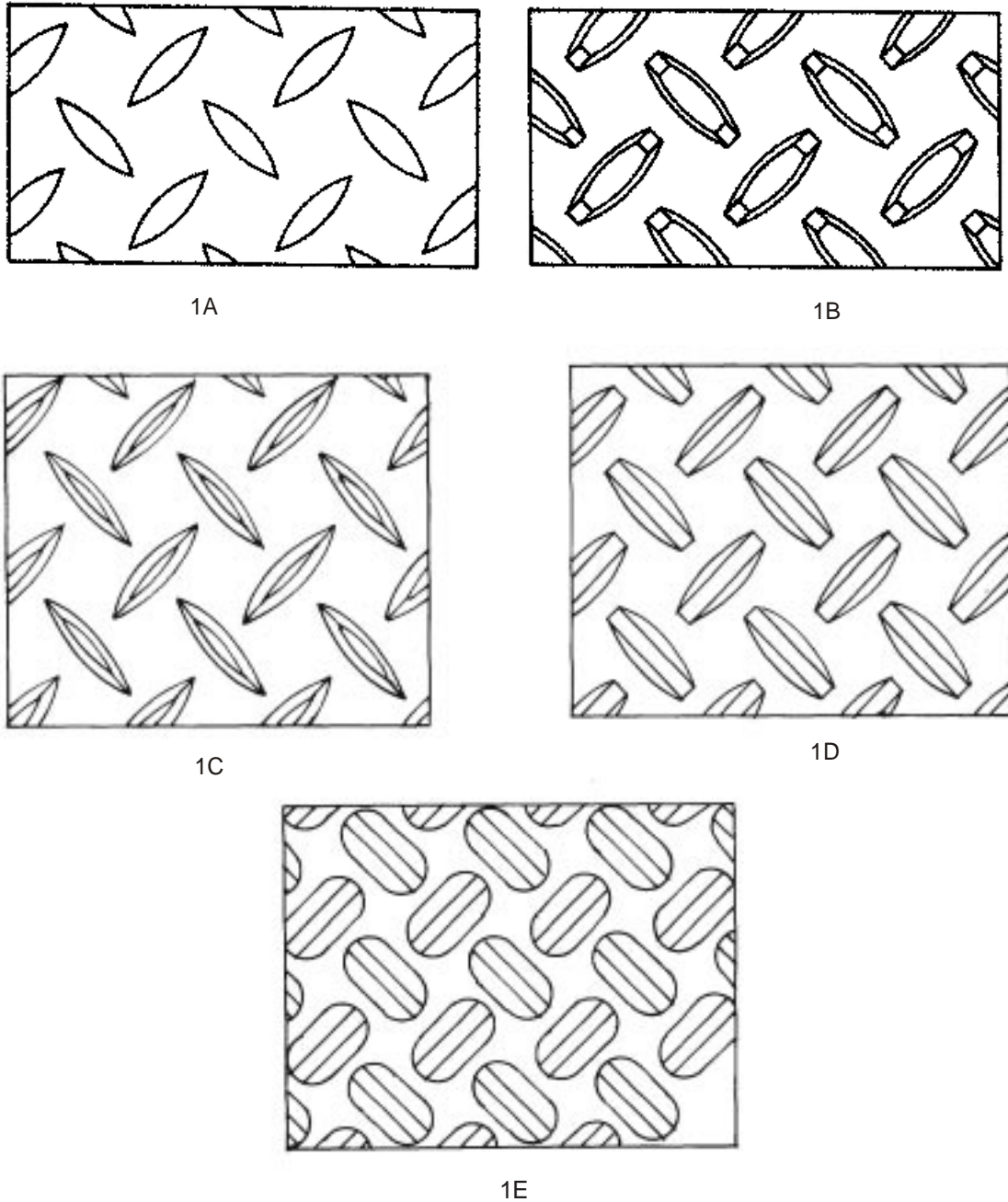


FIG. 1 TYPICAL ILLUSTRATIONS OF THE PATTERNS OF CHEQUERED PLATES



FIG. 2 RECOMMENDED LOCATION FOR TAKING TEST SAMPLES

9.2 The test piece when cold shall without fracture be doubled over, either by pressure or blows from a hammer until the internal diameter is not greater than three times the thickness excluding raised

portion of the test piece and the sides are parallel. While conducting the test, the face of the test piece containing chequered shall be in compression.

9.3 Number of samples for bend test shall be in accordance with IS 2062.

10 DIMENSIONS AND ROLLING TOLERANCES

10.1 Chequered plates shall normally be supplied in sheared edges and the dimensions and rolling tolerances shall be as specified in **10.2**.

10.1.1 Chequered plates may also be supplied in mill edges in which case the dimensions and rolling tolerances shall be subject to mutual agreement between the supplier and the purchaser.

10.2 Unless otherwise agreed the normal dimensions of chequered plates (excluding raised portion), the rolling and cutting tolerances on width, length and thickness (excluding raised portion) shall be as given in IS/ISO 7452.

10.3 Chequered Height

Unless specified otherwise, the minimum bead height of chequered plates shall be 0.8 mm.

11 CALCULATION OF MASS

The mass of steel plates shall be calculated on the basis that steel weighs 7.85 g/cm².

12 RETESTS

If a test does not give the specified results, two additional tests shall be carried out at random on the

same lot. Both retests shall conform to the requirements of this standard, otherwise, the lot shall be rejected.

13 MARKING

13.1 The top plate of each pile of chequered plates shall be legibly marked with the following details:

- Manufacture's name or trade-mark,
- Cast number or identification mark by which the steel can be traced to the cast from which it has been made, and
- Steel designation.

13.2 BIS Certification Marking

The material may also be marked with Standard Mark.

13.2.1 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 details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

ANNEX A

(Foreword)

COMMITTEE COMPOSITION

Wrought Steel Products Sectional Committee, MTD 4

<i>Organization</i>	<i>Representative(s)</i>
Tata Steel Limited, Jamshedpur	DR D. BHATTACHARJEE (<i>Chairman</i>) SHRI INDRANIL CHAKRABORTY (<i>Alternate I</i>) DR A. N. BHAGAT (<i>Alternate II</i>)
All India Induction Furnace Association, New Delhi	SHRI R. P. VARSHNEY
Bharat Heavy Electricals Ltd, Tiruchirapalli	SHRI V. RAJASEKHARAN
Central Boilers Board, New Delhi	REPRESENTATIVE
DGS&D, Bhilai Nagar/Delhi	REPRESENTATIVE
Escorts Knowledge Management Centre, Faridabad	SHRI ALOK NAYAR
Essar Steels Ltd, Hazira	DR A. K. DAS SHRI R. K. BALASUBRAMANIAM (<i>Alternate</i>)
Institute of Steel Development and Growth, Kolkata	DR R. K. P. SINGH SHRI JAYANTA KUMAR SAHA (<i>Alternate</i>)
Jindal South West Ltd, Vasind	SHRI M. K. MAHESHWARI
M.N. Dastur & Co. Ltd, Kolkata/Delhi	SHRI SUBHABRATA SENGUPTA SHRI V. K. TYAGI (<i>Alternate</i>)
Ministry of Defence (DGOFB), Kolkata	SHRI P. S. BANDHOPADHYAY SHRI T. BASU (<i>Alternate</i>)
Ministry of Defence (DGQA), Ichapur	SHRI S. K. KHILNANEY SHRI P. MEENA (<i>Alternate</i>)
Ministry of Railways (RDSO), Lucknow	JOINT DIRECTOR (CHEMICAL) JOINT DIRECTOR (I&L) (<i>Alternate</i>)
Ministry of Steel (Government of India), New Delhi	SHRI A. C. R. DAS SHRI B.D. GHOSH (<i>Alternate</i>)
National Physical Laboratory, New Delhi	DR A. K. GUPTA SHRI R. C. ANANADANI

IS 3502 : 2009

<i>Organization</i>	<i>Representative(s)</i>
Power Grid Corporation, Gurgaon	REPRESENTATIVE
Rashtriya Ispat Nigam Ltd (VSP), Vishakhapatnam	SHRI P. K. SEN SHRI P. SRINIVAS (<i>Alternate</i>)
SAIL, Bhilai Steel Plant, Bhilai	SHRI S. BHATTACHARYA SHRI P. K. DATTA (<i>Alternate</i>)
SAIL, Bokaro Steel Plant, Bokaro	DR M. M. S. SODHI SHRI P. S. REDDY (<i>Alternate</i>)
SAIL, Central Marketing Organization, Kolkata	SHRI P. C. JHA SHRI B. V. S. PANDIT (<i>Alternate</i>)
SAIL, Durgapur Steel Plant, Durgapur	REPRESENTATIVE
SAIL, IISCO Steel Plant, Burnpur	SHRI A. K. SINGH
SAIL, Research & Development Center for Iron & Steel, Ranchi	DR RAMEN DATTA DR B. K. JHA (<i>Alternate</i>)
SAIL, Rourkela Steel Plant, Rourkela	SHRI P. K. GUPTA SHRI S. MUKHOPADHYAYA (<i>Alternate</i>)
Steel Furnace Association of India, New Delhi	REPRESENTATIVE
Steel Re-rolling Mills Association of India, Mandi Gobindgarh	SHRI C. S. MATHAROO SHRI J. S. MATHAROO (<i>Alternate</i>)
Tata Consulting Engineers, Jamshedpur	DR M. D. MAHESHWARI
Tata Motors Limited, Pune	SHRI J. D. HARIDAS SHRI B. R. GALGALI (<i>Alternate</i>)
In personal capacity [403, Udaigiri, Kaushambi, Distt Ghaziabad (U.P.)]	SHRI N. MITRA
BIS Directorate General	DR (SHRIMATI) SNEH BHATLA, Scientist 'F' & Head (MTD) [Representing Director General (<i>Ex-officio</i>)]

Member Secretary
SHRI DEEPAK JAIN
Scientist 'E' (MTD) BIS

Flat Steel Products Subcommittee, MTD 4 : 3

TCE Consulting Engineers, Jamshedpur	DR M. D. MAHESHWARI (<i>Convener</i>)
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The Tin Plate Company of India Ltd, Jamshedpur	SHRI T. K. GHOSH SHRI A. K. GHOSH (<i>Alternate</i>)
Thyssenkrupp Electrical Steel India Pvt Ltd, Nasik	SHRI J. SRINIVAS

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Amendments Issued Since Publication

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