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SPECIFICATION FOR HOT ROLLED STEEL STRIPS (BALING)

(First Revision)

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

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March 1971

Indian Standard

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Indian Standard

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0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 30 November 1970, after the draft finalized by the Wrought Steel Products Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 This standard was first issued in 1956. As a result of experience gained during these years, it has been decided to cover the requirements for hot rolled strips of nominal thickness less than 3 mm and width less than 75 mm, known as baling hoop. The tolerance requirements for hot rolled strips have also been modified as per the manufacturing practice in the country.

0.3 This standard contains clauses which call for agreement between the purchaser and the manufacturer. Such clauses are **3.1**, **8.1**, **8.3** and **9.1** .

0.4 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*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers the requirements for hot rolled steel strips of three grades, soft, medium and hard, of a nominal thickness of less than 3 mm and width less than 75 mm, known as baling hoop.

2. SUPPLY OF MATERIAL

2.1 General requirements relating to the supply of hot rolled steel strips shall conform to IS : 1387-1967†.

*Rules for rounding off numerical values (*revised*).

†General requirements for the supply of metallurgical materials (*first revision*).

3. MANUFACTURE

3.1 The strips shall be manufactured from steel made by the open-hearth, electric, duplex, basic oxygen or a combination of these processes. In case, any other process is employed by the manufacturer, prior approval of the purchaser should be obtained.

4. CHEMICAL COMPOSITION

4.1 The ladle analysis of steel when made in accordance with IS : 228-1959* shall be as given below:

Grade	*Sulphur Percent Max*	*Phosphorus Percent Max*
Soft	0·060	0·060
Medium	0·060	0·060
Hard	0·050	0·050

4.2 Product Analysis — The product analysis shall be carried out on the finished product from the standard position. Permissible variation in case of such product analysis from the limits specified in **4.1** shall be as follows:

Constituent	*Variation Over the Specified Maximum Limits, Max*
	Percent
Sulphur	0·005
Phosphorus	0·005

5. MECHANICAL PROPERTIES

5.1 Sampling — One tensile test and two bend tests shall be conducted for every 10 tonnes or part thereof of the material of the same thickness and width. Test samples may be taken from either end of the strips and shall be at least 1·5 metres in length.

5.2 Tensile Test — The tensile properties obtained from test pieces, when tested in accordance with IS : 1663 (Part I)-1960†, shall be as specified in Table 1.

*Methods of chemical analysis of pig iron, cast iron and plain carbon and low-alloy steels (*revised*).

†Tensile testing of steel sheet and strip : Part I Steel sheet and strip of thickness 0·5 mm to 3 mm. (Since revised).

TABLE 1 TENSILE PROPERTIES

(*Clauses* 5.2 *and* 5.3.2)

GRADE	TENSILE STRENGTH kgf/mm²	ELONGATION, *Min*, FOR GAUGE LENGTH		BEND TEST (180°) INTERNAL DIAMETER OF THE BEND
		$5{\cdot}65\sqrt{S_o}$ Percent	200 mm percent	
Soft	47 to 55	25	18	$2t$*
Medium	Over 55 to 63	22	15	$4t$
Hard	Over 63 to 70·9	15	12	$4t$

*t thickness of the strip.

5.3 Bend Test — Bend test shall be carried out in accordance with IS : 1692-1960*.

5.3.1 The bend test piece shall be cut so that the longer axis of the test piece is parallel to the direction of rolling.

5.3.2 The test piece shall be bent cold through 180°. The internal diameter of the bend for different grades of material shall be as given in Table 1. The test piece shall be deemed to have passed the test if the outer convex surface is free from cracks.

5.3.2.1 It is sometimes difficult to ensure that the material is accurately following the radius. In case of dispute, the test piece may be pushed into a block of lead by a former of appropriate diameter.

6. RETEST

6.1 Should any one 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 requirement 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.

7. FREEDOM FROM DEFECTS

7.1 The material shall be free from harmful defects.

*Methods for simple bend testing of steel sheet and strip less than 3 mm thick.

8. DIMENSIONS AND TOLERANCES

8.1 Unless otherwise specified, the hot rolled steel strips shall be supplied in dimensions as per agreement between the purchaser and the manufacturer.

8.2 Tolerance on thickness and width of the hot rolled steel strip shall not exceed the following limit:

	Tolerance
	mm
Thickness	± 0·16
Width	± 2

8.3 Unless otherwise specified, the hot rolled strips shall be supplied in lengths which shall be at the manufacturer's option subject to tolerances mutually agreed to between the purchaser and the manufacturer.

9. FINISHING AND PACKING

9.1 The requirements in regard to finishing and packing shall be subject to agreement between the purchaser and the manufacturer, but in the case of strips required for baling jute, they shall be lacquered.

10. MARKING

10.1 Each length of strip shall be marked indicating the size and grade of the material.

10.1. The product may also be marked with Standard mark.

10.2 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.

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(*Page* 3, *clause* **0.3**) — Insert the following new clause after **0.3** and renumber the subsequent clause :

'**0.4** 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.'

(MTD 4)

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