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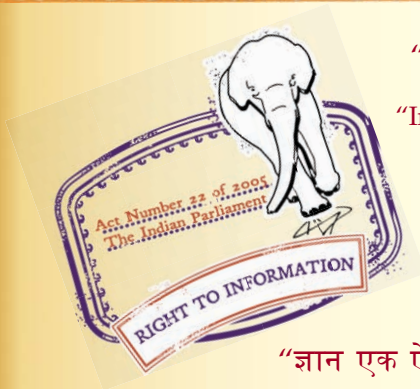
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IS 1812 (1982): Carbon Steel Wire for the Manufacture of Wood Screws [MTD 4: Wrought Steel Products]



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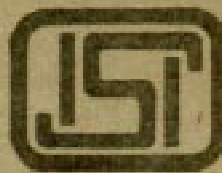
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IS : 1812 - 1982

Indian Standard
SPECIFICATION FOR
CARBON STEEL WIRE FOR THE
MANUFACTURE OF WOOD SCREWS
(*Second Revision*)

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

Indian Standard

SPECIFICATION FOR CARBON STEEL WIRE FOR THE MANUFACTURE OF WOOD SCREWS

(Second Revision)

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Indian Standard
SPECIFICATION FOR
CARBON STEEL WIRE FOR THE
MANUFACTURE OF WOOD SCREWS
(*Second Revision*)

0. FOREWORD

0.1 This Indian Standard (Second Revision) was adopted by the Indian Standards Institution on 25 November 1982, 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 published in 1961 and was revised in 1973. While reviewing the standard, in the light of the experience gained during subsequent years, the Committee has decided to revise the standard making following main modifications:

- a) Amendment No. 1 has been deleted in view of the publication of IS : 8053-1976*;
- b) Amendment No. 2 has been incorporated;
- c) Strength has been specified in MPa, in alignment with the adoption of SI units both nationally and internationally; and
- d) Appendix A has been modified in line with the existing Indian Standards on the subject.

0.3 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, 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.

*Steel ingots and billets for the production of steel wire for the manufacture of wood screws.

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

1. SCOPE

1.1 This standard covers the requirements for cold drawn carbon steel wire up to 12.5 mm diameter, suitable for the manufacture of wood screws by cold heading process.

2. SUPPLY OF MATERIAL

2.1 The general requirements relating to the supply of carbon steel wire shall be as laid down in IS : 8910-1978*.

3. TERMINOLOGY

3.1 For the purpose of this standard, the definitions given in IS : 1956 (Part V)-1976† shall apply.

4. MANUFACTURE

4.1 The wire shall be drawn from steel manufactured by 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.

4.2 Sufficient discard shall be taken to ensure freedom from injurious pipe and segregation.

5. CHEMICAL COMPOSITION

5.1 The analysis of wire, when carried out either by the method specified in the relevant parts of IS : 228‡ or any other established instrumental/chemical method, shall be as given in Table 1. In case of dispute the procedure given in the relevant part of IS : 228‡ shall be the referee method.

6. MECHANICAL TESTS

6.1 Tensile Test — The steel when tested in accordance with IS : 1521-1972§ shall have a minimum tensile strength of 460 MPa.

6.2 Bend Test — Wire of 5 mm diameter and above shall be subjected to bend test. The wire when bent through an angle of 90° round a radius

*General technical delivery requirements for steel and steel products.

†Glossary of terms relating to iron and steel : Part V Bright steel bar and steel wire (first revision).

‡Methods of chemical analysis of steels (issued in several parts) (second revision).

§Tensile testing of steel wire (first revision).

equal to its own diameter shall withstand the test without breaking or splitting.

TABLE 1 CHEMICAL COMPOSITION

(Clause 5.1)

GRADE	GRADE DESIGNATION [see IS : 1762 (PART I) - 1974*]	CONSTITUENT, PERCENT			
		Carbon <i>Max</i>	Manganese	Sulphur	Phosphorus <i>Max</i>
(1)	(2)	(3)	(4)	(5)	(6)
1	12C 5	0.17	0.30-0.65	0.055 <i>Max</i>	0.055
2	17C 5	0.22	0.30-0.65	0.055 <i>Max</i>	0.055
3	12C 8 S12	0.17	0.60-0.95	0.08-0.15	0.065

NOTE — When the steel is silicon-killed, the product analysis shall show a minimum of 0.10 percent silicon. When the steel is aluminium-killed or killed with a combination of aluminium and silicon, the requirements regarding minimum silicon content do not apply.

*Code for designation of steel : Part I Based on letter symbols (*first revision*).

6.3 Wrapping Test — Wire below 5 mm diameter shall be subjected to wrapping test in accordance with IS : 1755-1961*. The wire shall withstand, without breaking or splitting, being wrapped eight times round its own diameter and subsequently straightened.

7. SIZE TOLERANCE

7.1 The wire shall be supplied to the sizes specified by the purchaser subject to the tolerance given in Table 2.

8. FREEDOM FROM DEFECTS

8.1 Steel wire shall be well and cleanly drawn to the dimensions specified. It shall be sound and free from splits; surface flaws; rough, jagged and imperfect edges; and other harmful surface defects.

9. FINISH

9.1 If required by the purchaser, the wire shall be suitably coated for use in high speed, automatic, close-die and cold-forming machines.

*Method for wrapping test of wire.

TABLE 2 TOLERANCE ON DIAMETER OF WIRE

(Clause 7.1)

DIAMETER mm	PERMISSIBLE DEVIATION mm	PERMISSIBLE OUT OF ROUND mm
(1)	(2)	(3)
1.00 to 1.60	$\begin{cases} - 0.050 \\ + 0 \end{cases}$	0.025
Above 1.60 to 3.00	$\begin{cases} - 0.060 \\ + 0 \end{cases}$	0.03
Above 3.00 to 6.00	$\begin{cases} - 0.08 \\ + 0 \end{cases}$	0.04
Above 6.00 to 10.00	$\begin{cases} - 0.090 \\ + 0 \end{cases}$	0.045
Above 10.00 to 12.50	$\begin{cases} - 0.110 \\ + 0 \end{cases}$	0.055

10. PACKING

10.1 Each coil of wire shall be bound and fastened compactly.

11. SAMPLING AND CRITERIA FOR CONFORMITY

11.1 Sampling of carbon steel wire for the manufacture of wood screws and criteria for conformity shall be as given in Appendix A.

12. MARKING

12.1 Each coil of wire shall be legibly marked with the grade, size, date of manufacture and trade-mark or the name of the manufacturer.

12.1.1 The material may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI 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 ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

APPENDIX A

(Clause 11.1)

SAMPLING AND CRITERIA FOR CONFORMITY

A-1. LOT

A-1.1 In any consignment, all the coils of wire of the same grade and diameter, manufactured under essentially similar conditions of manufacture, shall be grouped together to constitute a lot.

A-1.1.1 Samples shall be taken from each lot and tested for conformity to the standard.

A-2. SAMPLING

A-2.1 The number of coils to be taken from a lot shall be in accordance with col 1 and 2 of Table 3. These samples shall be taken at random by using number tables (see IS : 4905-1968*).

**TABLE 3 SCALE OF SAMPLING AND PERMISSIBLE
NUMBER OF DEFECTIVES**

(Clauses A-2.1, A-3.1 and A-3.2)

NO. OF COILS IN A LOT	NO. OF COILS FOR PHYSICAL REQUIREMENTS	PERMISSIBLE NO. OF DEFECTIVE COILS	NO. OF TESTS FOR CHEMICAL REQUIREMENTS
(1)	(2)	(3)	(4)
Up to 25	2	0	1
26 to 50	3	0	1
51 to 150	5	0	2
151 to 300	8	1	2
301 and above	13	1	2

A-3. PREPARATION OF SAMPLES AND NUMBER OF TESTS

A-3.1 Tests for Physical Requirements — From the coils selected from col 1 and 2 of Table 3, adequate length of test piece shall be cut from each end and subjected to physical tests, namely, size, surface

*Methods for random sampling.

condition, tensile, bend, wrapping and coating tests. A test piece failing to meet any one of the requirements, shall be called a defective. If the number of defectives found is less than or equal to the permissible number of defectives specified in col 3 of Table 3, the lot shall be considered to have conformed to physical requirements.

A-3.2 Tests for Chemical Requirements — Unless otherwise agreed, the following procedure shall be followed for chemical requirements:

From those test pieces which have conformed to physical requirements, further test pieces shall be selected at random according to col 4 of Table 3. These samples shall be tested for all the chemical requirements. If a test piece fails to meet the respective chemical requirement, it shall be called a defective. The lot shall be considered to have conformed to the chemical requirements if all the individual test pieces tested for chemical requirements pass the test.

A-4. CRITERIA FOR CONFORMITY

A-4.1 A lot shall be considered to have conformed to the requirements of the specification if **A-3.1** and **A-3.2** are satisfied.

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	1 N = 1 kg.m/s ²
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m ²
Frequency	hertz	Hz	1 Hz = 1 c/s (s ⁻¹)
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m ²

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