भारतीय मानक ब्यूरो
(उपभोक्ता मामले, खाद्य एवं सार्वजनिक वितरण मंत्रालय, भारत सरकार)
BUREAU OF INDIAN STANDARDS
(Ministry of Consumer Affairs, Food & Public Distribution, Govt. of India)

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व्यापक परिचालन मसौदा

हमारा संदर्भ : सीईडी 54/टी-20 **07 अप्रैल 2025**

तकनीकी समिति: कंक्रीट प्रबलन विषय समिति, सीईडी 54

प्राप्तकर्ता :

1. **सिविल अभियांत्रिकी विभाग परिषद, सीईडीसी के सभी सदस्य**
2. **कंक्रीट प्रबलन विषय समिति, सीईडी 54 और इसकी उपसमितियों के सभी सदस्य**
3. **रुचि रखने वाले अन्य निकाय।**

महोदय/महोदया,

निम्नलिखित मानक का मसौदा संलग्न हैं:

प्रलेख संख्या	शीर्षक
सीईडी 54 (27102) WC	**माइल्ड स्टील और मध्यम तन्यता वाले स्टील बार और कंक्रीट प्रबलन के लिए हार्ड-ड्रॉन स्टील वायर की विशिष्टि का भारतीय मानक मसौदा** भाग 1 माइल्ड स्टील और मध्यम तन्यता स्टील बार्स (चौथा पुनरीक्षण) **(ICS: 91.100: 77.140.15)**

कृपया इस मसौदे का अवलोकन करें और अपनी सम्मतियाँ यह बताते हुए भेजे कि यह मसौदा प्रकाशित हो तो इन पर अमल करने में आपको व्यवसाय अथवा कारोबार में क्या कठिनाइयां आ सकती हैं।

सम्मतियाँ भेजने की अंतिम तिथि: 07 मई 2025

सम्मति यदि कोई हो तो कृपया अधोहस्ताक्षरी को ई-मेल द्वा **ced54@bis.gov.in** पर या उपरलिखित पते पर, संलग्न फोर्मेट में भेजें। सम्मतियाँ बीआईएस ई-गवर्नेंस पोर्टल, **www.manakonline.in** के माध्यम से ऑनलाइन भी भेजी जा सकती हैं।

यदि कोई सम्मति प्राप्त नहीं होती है अथवा सम्मति में केवल भाषा संबंधी त्रुटि हुई तो उपरोक्त प्रालेख को यथावत अंतिम रूप दे दिया जाएगा। यदि सम्मति तकनीकी प्रकृति की हुई तो विषय समिति के अध्यक्ष के परामर्श से अथवा उनकी इच्छा पर आगे की कार्यवाही के लिए विषय समिति को भेजे जाने के बाद प्रालेख को अंतिम रूप दे दिया जाएगा।

यह प्रालेख भारतीय मानक ब्यूरो की वेबसाइट **www.bis.gov.in** पर भी उपलब्ध हैं।

धन्यवाद।

भवदीय
ह/-
द्वैपायन भद्र
वैज्ञानिक ई एवं प्रमुख
सिविल अभियांत्रिकी विभाग
ई-मेल: ced54@bis.gov.in

संलग्न: उपरलिखित

भारतीय मानक ब्यूरो
(उपभोक्ता मामले, खाद्य एवं सार्वजनिक वितरण मंत्रालय, भारत सरकार)
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WIDE CIRCULATION DRAFT

Our Reference: CED 54/T-20 **07 April 2025**

TECHNICAL COMMITTEE: CONCRETE REINFORCEMENT SECTIONAL COMMITTEE, CED 54

ADDRESSED TO:

1. All Members of Civil Engineering Division Council, CEDC
2. All Members of Concrete Reinforcement Sectional Committee, CED 54 and its Subcommittees
3. All others interested.

Dear Sir/Madam,

Please find enclosed the following draft:

Doc No.	Title
CED 50 (27102) WC	**Draft Indian Standard Specification for Mild Steel And Medium Tensile Steel Bars and Hard-Drawn Steel Wire for Concrete Reinforcement** Part 1 Mild Steel and Medium Tensile Steel Bars (*Fourth Revision*) **(ICS 91.100: 77.140.15)**

Kindly examine the attached draft and forward your views stating any difficulties which you are likely to experience in your business or profession, if this is finally adopted as National Standard.

Last Date for comments: 07 May 2025

Comments if any, may please be made in the enclosed format and emailed at ced54@bis.gov.in or sent at the above address. Additionally, comments may be sent online through the BIS e-governance portal, www.manakonline.in.

In case no comments are received or comments received are of editorial nature, kindly permit us to presume your approval for the above document as finalized. However, in case comments, technical in nature are received, then it may be finalized either in consultation with the Chairman, Sectional Committee or referred to the Sectional Committee for further necessary action if so desired by the Chairman, Sectional Committee.

The document is also hosted on BIS website www.bis.gov.in.

Thanking you,

Yours faithfully,
Sd/-
Dwaipayan Bhadra
Scientist 'E' & Head
Civil Engineering Department
Email: ced54@bis.gov.in

Encl: As above

FORMAT FOR SENDING COMMENTS ON THE DOCUMENT

[Please use A4 size sheet of paper only and type within fields indicated. Comments on each clause/sub-clause/ table/figure, etc, be stated on a fresh row. Information/comments should include reasons for comments, technical references and suggestions for modified wordings of the clause. **Comments through e-mail to ced54@bis.gov.in shall be appreciated**.]

Doc. No.: CED 54 (27102) WC **BIS Letter Ref**: CED 54/T-20

Title: Draft Indian Standard Specification for Mild Steel and Medium Tensile Steel Bars and Hard-Drawn Steel Wire for Concrete Reinforcement
Part 1 Mild Steel and Medium Tensile Steel Bars
(ICS 91.100: 77.140.15)

Last date of comments: 07 May 2025

Name of the Commentator/ Organization: _____

Sl No.	Clause/ Para/ Table/ Figure No. commented	Type of Comment (General/ Technical/ Editorial)	Comments/ Modified Wordings	Justification of Proposed Change

NOTE- Kindly insert more rows as necessary for each clause/table, etc

BUREAU OF INDIAN STANDARDS

DRAFT FOR COMMENTS ONLY

Draft Indian Standard

SPECIFICATION FOR MILD STEEL AND MEDIUM TENSILE STEEL BARS AND HARD-DRAWN STEEL WIRE FOR CONCRETE REINFORCEMENT

PART 1 MILD STEEL AND MEDIUM TENSILE STEEL BARS

(*Fourth Revision*)

Concrete Reinforcement Sectional Committee, CED 54	Last date of Comments: **07 May 2025**

FOREWORD

This Indian Standard (Fourth Revision) was adopted by the Bureau Of Indian Standards, after the draft finalized by the Concrete reinforcement Sectional Committee had been approved by the Civil Engineering Division Council.

This standard was first published in 1953 and subsequently revised in 1960, 1966 and 1982. The present, revision has been taken up with a view to modifying the earlier provisions in the light of the experience gained during the use of this standard by both manufacturers and users.

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 2:2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

BUREAU OF INDIAN STANDARDS

DRAFT FOR COMMENTS ONLY

Draft Indian Standard

SPECIFICATION FOR MILD STEEL AND MEDIUM TENSILE STEEL BARS AND HARD-DRAWN STEEL WIRE FOR CONCRETE REINFORCEMENT

PART 1 MILD STEEL AND MEDIUM TENSILE STEEL BARS

(*Fourth Revision*)

Concrete Reinforcement Sectional Committee, CED 54	Last date of Comments: **07 May 2025**

1 SCOPE

1.1 This standard (Part 1) covers the requirements of mild steel and medium tensile steel plain bars in round and square sections for use as reinforcement in concrete.

2 REFERENCES

The following standards contain provisions, which through reference in this text, constitute provisions of this standard. At the time of publication the editions indicated are 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:

IS No.	*Title*
IS 1387 : 1993	General requirements for the supply of metallurgical materials (*second revision*)
IS 1599 : 2023/ ISO 7438 : 2020	Metallic materials — Bend test (*fifth revision*)
IS 1608 (Part 1) : 2022/ ISO 6892-1 : 2019	Metallic materials - Tensile testing - Part 1 : Method of test at room temperature
IS 1732 : 1989	Steel bars, round and square for structural and general engineering purposes — Dimensions (*second revision*)

IS 1852 : 1985	Specification for rolling and cutting tolerances for hot-rolled steel products (*fourth revision*)
IS 2062 : 2011	Hot rolled medium and high tensile structural steel — Specification (*seventh revision*)

3 TERMINOLOGY

For the purpose of this standard, the following definitions shall apply.

3.1 Bar — A hot-rolled bar of steel of circular or square cross-section.

3.2 Bundle — Two or more 'coils' or a number of lengths properly bound together.

3.3 Coil — One continuous bar as rolled in the form of a coil.

3.4 Elongation — Increase in length of a tensile test piece under stress. The elongation at fracture is conventionally expressed as a percentage of the original gauge length of a standard test piece.

3.5 Nominal Size — The nominal size of a bar shall be the dimension of the diameter of round bars and side of square bars.

3.6 Parcel — Any quantity of bars whether in coils or bundles, presented for examination and test at anyone time.

3.7 Ultimate Tensile Stress — The maximum load reached in a tensile test divided by the original cross-sectional area of the gauge length portion of the test piece.

3.8 Yield Stress — Stress (that is, load per unit cross-sectional area) at which elongation first occurs in the test piece without increasing the load during tensile test. In the case of steels with no such definite yield point, the yield stress is the stress under the prescribed testing conditions at which the: observed increase in the gauge length is 1/200 of the gauge length when the rate at which the load applied is not more than 5 $N/mm^2/s$ when approaching the yield stress.

4 TYPES AND GRADES

4.1 Reinforcement supplied in accordance with this standard shall be classified into the following types:

a) Mild steel bars; and
b) Medium tensile steel bars.

4.1.1 Mild steel bars shall be supplied in the following two grades:

a) Mild steel bars, Grade I; and
b) Mild steel bars, Grade II.

5 MANUFACTURE AND CHEMICAL COMPOSITION

5.1 Steel for mild steel reinforcement bars, Grade I shall be manufactured and have the chemical composition in accordance with the requirements of Steel Designation E 250 of IS 2062.

5.2 Steel for mild steel reinforcement bars, Grade II shall be manufactured and have the chemical composition in accordance with the requirements of Steel Designation E 250 of IS 2062.

5.3 Medium tensile steel bars shall be manufactured and have the chemical composition in accordance with the requirements of Steel Designation E 410 of IS 2062.

6 FREEDOM FROM DEFECTS

6.1 All finished bars shall be well and cleanly rolled to the dimensions and weights specified. They shall be free from cracks, surface flaws, laminations and rough, jagged and imperfect edges and all other harmful defects.

7 NOMINAL SIZES AND MASS

7.1 Sizes — Mild steel and medium tensile steel bars shall be supplied in the following nominal sizes:

Diameter of round bars or side of square bars	5, 6, 8, 10, 12, 16, 20, 22, 25, 28, 32, 36, 40, 45 and 50 mm

7.2 Mass — The mass of bars shall be in accordance with IS 1732.

8 TOLERANCES

8.1 The rolling and cutting tolerances shall be in accordance with IS 1852.

9 PHYSICAL REQUIREMENTS

9.1 The ultimate tensile stress, yield stress and percentage elongation when determined in accordance with **10.2** shall be as given in Table 1.

9.2 The bars shall also withstand the bend test specified in **10.3**.

10 TESTS

10.1 Selection and Preparation of Test Samples — Unless otherwise specified in this standard, the requirements of IS 2062 shall apply.

10.1.1 All test pieces of bars shall be selected by the purchaser or his authorized representative, either:

a) from the cutting of bars; or
b) if he so desires, from any bar or the coil, after it has been cut to the required or
specified length and the test piece taken from any part of it.

10.1.1.1 In neither case, the test piece shall be detached from the bar or the coil, except in the presence of the purchaser or his authorized representative.

10.1.1.2 Before test pieces are selected, the manufacturer or supplier shall furnish the purchaser or his authorized representative with copies of the mill records giving the number of bars in each cast with sizes as well as the identification marks whereby the bars from their cast or each coil can be identified.

Table 1 Mechanical Properties of Bars
(*Clause* 9.1)

Sl No.	**Type and Nominal Size of Bar**	**Ultimate Tensile Stress,** *Min*	**Yield Stress** *Min*	**Elongation* Percent,** *Min*
(1)	(2)	(3)	(4)	(5)
i)	*Mild Steel Grade I*			
	For bars up to and including 20 mm	410	250	23
	For bars over 20 mm, upto and including 50 mm	410	240	23
ii)	*Mild Steel Grade II*			
	For bars up to and including 20 mm	370	225	23
	For bars over 20 mm, upto and including 50 mm	370	215	23
iii)	*Medium Tensile Steel*			
	For bars up to and including 16 mm	540	350	20

For bars over 16 mm, upto and including 32 mm	540	340	20
For bars over 32 mm, upto and including 50 mm	510	330	20

* Elongation on a gauge length 5.65 $\sqrt{So}$ where S_o is the cross-sectional area of the test piece.

10.2 Tensile Test — The ultimate tensile stress, yield stress and elongation of bars shall be determined in accordance with the requirements of IS 1608/ISO 6892 : 1998 read in conjunction with IS 2062. The test pieces shall be cut from the finished material and straightened where necessary. They shall not be annealed or otherwise subjected to heat treatment. Any slight straightening which may be required shall be done cold.

10.2.1 In case of bars, the size of which is not uniform throughout the length of test piece, limits shall be applied according to the actual maximum thickness of the piece selected for testing.

10.2.2 Should a tensile test piece break outside the middle half of its gauge length and the percentage elongation obtained is less than that specified, the test may be discarded at the manufacturer's option, and another test made from the same bar.

10.3 Bend Test — The bend test shall be performed in accordance with the requirements of IS 1599/ISO 7438 : 2020 read in conjunction with IS 2062.

10.4 Retest — Should anyone of the test pieces first selected fail to pass any of the tests specified in this standard, two further samples shall be selected 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 piece from either of these additional samples fail, the material represented by the test samples shall be considered as not having complied with this standard.

10.5 Sampling — Sampling for tensile and bend tests shall be in accordance with IS 2062.

11 DELIVERY, INSPECTION AND TESTING FACILITIES

11.1 Unless otherwise specified general requirements relating to the supply of material, inspection and testing shall conform to IS 1387.

11.2 No material shall be despatched from the manufacturer's or suppliers' premises prior to its being certified by the purchaser or his authorized representative as having fulfilled the tests and requirements laid down in this standard except where the bundle or coil containing the bars is marked with the ISI Certification Mark.

11.3 The purchaser or his authorized representative shall be at liberty to inspect and verify the steel maker's certificate of cast analysis at the premises of the manufacturer or supplier when the purchaser requires an actual analysis of finished material, this shall be made at a place agreed to between the purchaser and the manufacturer or supplier.

11.4 Manufacturer's Certificate — In the case of bars which have not been inspected at the manufacturer's works, the manufacturer or supplier, as the case may be, shall supply the purchaser or his authorized representative with the certificate stating the process of manufacture and also the test sheet signed by the manufacturer giving the result of each mechanical test applicable to the material purchased, and the chemical composition, if required. Each test sheet shall indicate the number or identification mark of the cast to which it applies, corresponding to the number or identification mark to be found on the material.

12 IDENTIFICATION AND MARKING

12.1 The manufacturer or supplier shall have ingots, billets and bars or bundles of bars marked in such a way that all finished bars can be traced to the cast from which they were made. Every facility shall be given to the purchaser or his authorized representative for tracing the bars to the cast from which they were made.

12.2 The medium tensile steel bars shall be suitably marked to identify them from mild steel bars. Mild steel bars Grade I and II shall have distinctive identification tags.

12.3 Each bundle or coil containing the bars may also be suitably marked with the Standard Mark, in which case the concerned test certificate shall also bear the Standard Mark.

NOTE — The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act*, 2016 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.