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BUREAU OF INDIAN STANDARDS
(Metallurgical Engineering Department)

Draft Minutes

No. of meeting	Name of the Committee	Day	Date	Time	Venue
45th	Wrought Steel Products Sectional committee MTD 4	Friday	15 Dec 2023	1000h onwards	Lal C Verma Hall Manak Bhawan, BIS, New Delhi-110002

Chairman: Shri Nirvik Banerjee

Member Secretary: Mr Arun Pucchakayala

Members and Invitees Present: Details given at **Annex – I (Pg 5)**

Item 0 GENERAL

0.1 Members were warmly welcomed for the meeting by Shri Sanjiv Maini, Scientist- F/Senior Director & Head MTD. In addition, Head MTD informed the members on laying emphasis on following R&D approach in the field of Standard Formulation.

0.2 Objectives by the Chairman

Shri Nirvik Banerjee commended the recent reforms of BIS and encouraged members to come up with proposals on new subjects to be taken up to address the gap areas and emerging trends in the field of steels from the perspective of standards. Also, he had expressed his desire to relinquish from the post of chairman MTD 4 before his superannuation in March 2024 and suggested the members to choose a new Chairman for ensuring seamless transition of the responsibilities.

Further, he had commended the efforts of members, on result of whose contribution, Chair and Member Secretary collected the best committee of the year 2022-23 award, on behalf of the Committee, from the Hon'ble Minister CA, F&PD during the World Standards Day celebrations held on 13 Oct 2023 at Bharat Mandapam, New Delhi.

Also, the Chair and Head MTD shared the honours of distributing letter(s) of appreciation to panel convenors namely Shri Deepak Gupta, Shri Saikat Kumar De, Shri Devasish Mishra, Shri Avtar Singh Saini and Shri Kapil Kapoor, commending their efforts of coordination all through the years and relentless contribution towards the activity of standards formulation.

Item 1 CONFIRMATION OF MINUTES OF LAST MEETING

1.1 As no comments were received, the committee formally approved the minutes of last meeting held on 22 Sep 2023.

Item 2 ACTION TAKEN REPORT

2.1 The committee reviewed the status of decisions taken during last meeting as given in Annex I of the Agenda and decided during the meeting to take actions as mentioned at Annex II (Pg 6 to 61).

Item 3 COMPOSITION OF SECTIONAL COMMITTEE

3.1 The Committee noted the information given at **3.1 to 3.4** of the agenda.

3.4.1 The committee recommended to forward the request for re-induction received from AIIFA to MTDC for its consideration.

3.4.2 It agreed to the proposal to do away with subcommittees MTD 4:2 and MTD 4:3, for ensuring smooth functioning of the committee.

Also, it is decided to have Panels /working groups with specific responsibilities for subjects as given below:

SI No	Scope of Panel	Composition
1	Steels for electro-magnetic applications	Existing Panel 2
2	Hot-rolled steels	Existing Panel 7 with addition of ISGEC
3	Cold-rolled/coated steel products	Existing Panel 11 with addition of ISGEC Working Group for revision of IS 7226/IS 4397/IS 2507 Mohammed Basha Tappa(AM/NS)
4	Semis for re-rolling/forging	Existing Panel 4 with addition of Caterpillar
5	Wire rods/wires	Panel 29 B M Hasan (convenor) Siva Kumar Saikat Kumar De Nirmal saraf Shishir Desai Ruchira Gupta
6	Tinplate/ECCS Steels	Panel 30 Dr S J Dey(Convenor) Chanchal K(JSW) Subratha Sadhu(TCIL) Anand Mishra(JSW Vallabh Tinplate Ltd) Working Group for revision of IS 2385 1. Shivesh Kumar Singh (TCIL) 2. Manoj Kumar(TCIL) 3. Chanchal K(JSW) 4. Anand Mishra(JSW Vallabh Tinplate Ltd)

Also, it allowed to continue Shri Sushil Kumar (in-personal capacity) in the mailing list for assessing his contribution for taking a decision on his interest at a later stage accordingly.

Further, it decided to do away with other panels.

Member Secretary was requested to take up needful updating in the portal to reflect the above decisions of the Committee.

Item 4 REVIEW OF INDIAN STANDARDS

4.1 The committee noted the information given at item 4.1 and 4.2 of the agenda and decided on the standards due for review as given at **Annex III(Pg 62-63)**.

4.2 Committee noted that for the pending tasks or tasks on which work is in progress, documents could be viewed/accessed by following the URL:

<https://docs.google.com/document/d/1uH-fiPjiQUx2VikLrUKS127lh8z6WkbJ2WkcNGCEZeU/edit>

4.3 The committee noted the list of standards assigned to consultant, as given at **Annex IV, Pg 64**.

Item 5 NEW PROPOSALS FOR STANDARDIZATION

5.1 The Committee noted the information given at item 5.1, 5.2 of the agenda.

5.2 The Committee decided on the new subjects as given below:

SL No	Subject	Task entrusted with
1	Carbon and Low Alloy Steels for Submerged Arc and Gas Shielded Arc Welding Electrodes	Panel 29
2	Zn-Al Coated Steel Wires	
3	New Standards on the lines of ISO 6819 <i>Steel wire rod for bridge cable wire</i>	
4	Hot-rolled medium and high carbon steel sheets, plates and strip	R&D, ToR prepared during Spl meeting of TC held on 10 Nov 2023 and submitted to screening committee. See Annex V, Pg 65-68
5	Electroplated Zn-Ni Steels	Member Secretary
6	Al- Si Coated	Panel 11 Working Group: Shri Mohammed Basha AM/NS
7	Pre painted EG base	
8	Pre Painted ZAM base	

Item 6 Comments on Indian Standards

6.1 Comments decided to rectify the anomaly in Table-2 for deleting the grade IGH590FB through an amendment to IS 18385:2023.

6.2 Committed noted that R&D proposal for adding new grades to IS 513 Pt .2 :2016 is awaited from JSW.

Item 7 IMPLEMENTATION OF INDIAN STANDARDS

7.1 The subcommittee noted the information given at item 7.1 of the agenda.

Item 8 INTERNATIONAL ACTIVITY

8.1 The committee noted the information given item 8.1 and 8.2 of the agenda.

8.2 The committee noted that documents pertinent to A-1 to ISO 404:2013 and revision of IS/ISO 14284 were being sent for WC for 30 days.

8.3 SARSO Standards: The Committee noted the information given at 8.4 of the agenda. Further, on the Comments received from Srilanka on SARS 0028-1, SARS 0028-2 and SARS 0028-3 , Member Secretary was given time till 31 March 2024 to complete the associated task.



Item 9 DATE AND PLACE FOR THE NEXT MEETING

The committee decided to hold its next meeting at BIS, Mumbai on 19 April 2024.

Item 10 ANY OTHER BUSINESS

The Committee showered words of praise on Shri Nirvik Banerjee, reminiscing his able guidance during the challenging days of pandemic.

The Committee proposed to have Shri Sandeep Kar, SAIL-RDCIS as its next Chairman and requested the Member Secretary to take it up with SAIL in this pursuit.

The meeting ended with hearty vote of thanks to the Chair.

45TH MEETING ATTENDANCE MTD 4

Member Secretary- Mr Arun Pucchakayala

Chairperson:Shri Nirvik Banerjee

Organization	Name	Email
AM/NS India, Hazira	Mr. Deepak Gupta	Deepak.Gupta@amns.in
Bharat Heavy Electrical Limited, New Delhi	Mr. Arun Khare	a_khare@bhel.in
Cold Rolled Steel Manufacturers Association of India, New Delhi	Mr. N.K Sood	steelcorsma@gmail.com
Directorate General of Quality Assurance, Ministry of Defence, Ichapur	Mr. Jana Bhattacharaya Roy	drjana.bhattacharya@gov.in
Indian Steel Association, Delhi	Mr. Ravinder Kumar Bhan	ravinderkbhan@gmail.com
JSW Selam, Tamil Nadu	Mr. B M Hasan	Bm.hasan@jsw.in
JSW Steel Limited, Bellary	Mr. G V Ramana	gv.ramana@jsw.in
JSW Steel Limited, Raigad	Mr. Amit kundu	amit.kundu@jsw.in
Jindal Steel and Power Limited, New Delhi	Mr. Moreshwar Borkar	moreshwar.borkar@jindalsteel.com
Ministry of Ports, Shipping and Waterways, New Delhi	Mr. Ramji Singh	ramji.shing@nic.in
Ministry of Steel, New Delhi	Mr. Parmjeet Singh	parmjeet.singh@gov.in
Rashtriya Ispat Nigam Limited, Visakhapatnam	Ms. Ruchira Gupta	ruchira_gupta@vizagsteel.com
Research Designs and Standards Organization (RDSO), Lucknow	Mr. Shailesh Oraon	saileshrdso@gmail.com
Society of Indian Automobile Manufacturers (SIAM), Delhi	Ms. Kanishka Chana	kanishka@siam.in
Steel Authority Of India Limited (SAIL), Research & Development Centre for Iron & Steel, Ranchi	Mr. P. Pathak	ppathak@sail.in
Steel Authority Of India Limited, IISCO Steel Plant, Bardhaman	Mr. Saikat De	saikat6028@gmail.com
Steel Authority of India Limited (SAIL) Rourkela Steel Plant,Rourkela	Mr. Kuntal Patwari	kuntal.patwari@sail.in
Steel Authority of India Limited, Bhilai Steel Plant, Bhilai	Mr. shrirang khankhoje	skhankhoje@sail.in
Steel Authority of India Limited, Bokaro Steel Plant, Bokaro Steel	Ms. Biswasi Sunita Minz	b.sunitaminz@sail.in
Tata BlueScope Steel Private Limited, Bengaluru	Mr. Ved Prakash	ved.prakash@tatabluescopesteel.com
Tata Motors Limited, Pune	Mr. Lokesh Paliwal	lokesh.paliwal@tatamotors.com
Tata Steel Limited, Jamshedpur	Mr. Avtar Singh Saini	avtar@tatasteel.com
The Tinsplate Company of India Limited, Jamshedpur	Mr. Subrata Sadhu	subrata.sadhu@tatatinplate.com
Thyssenkrupp Electrical Steel India Private Limited, Nashik	Mr. Kapil Kapoor	kapil.kapoor@thyssenkrupp.com
AIIFA, Invitee	Mr Prabhakar Mishra	

Sl. No	Subject	Decision taken in past meetings	Action taken on the decision of the committee/ subcommittee during last meeting	Decision taken by the committee during the meeting
(1)	(2)	(3)	(4)	(5)
1	<p>Comments received on IS 18316:2023</p> <p><i>Hot Rolled And Cold Rolled Steel Strips Intended For Processing Of Semi/fully Processed Non-Grain Oriented Electrical Steel Or Fully Processed Grain Oriented Electrical Steel</i></p>	<p>Comments received from JFE, post WC period were shared with Panel 2 for examining and obtaining views.</p> <p>Comments received from JFE, post WC period were shared with Panel 2 for examining and obtaining views.</p> <p>Subcommittee during its meeting held on 28 July 2023, requested the panel convenor Sh Kapil Kapoor to expedite action and submit their recommendation within a month from the date of finalization of the minutes.</p> <p>In addition, we were in receipt of comments from Convenor of Panel, given at Appendix-1(Pg 34-36) to the agenda.</p> <p>On the contents of the standard, the following were informed to the Committee by the panel convenor Shri Kapil Kapoor:</p> <p>i) expressed concerns that it may not cater to the user desirous of producing the CRGO steel using the input material conforming to this standard.</p> <p>ii) User may end up getting inefficient material.</p> <p>As a result, it was put forward by Shri Kapil Kapoor that the scope of present standard may be restricted to CRNO steels and if desired by the Committee a new standard may be formulated for unprocessed electrical steels which could be used for producing CRGO steels.</p> <p>In this regard, the following were observed by the</p>	<p>During the subcommittee meeting held on 08 Dec 2023, the subcommittee noted the status and requested the Panel convenor to address the comments from JFE, CMD-2(Appendix-1, Pg 42-43) and his own concerns raised during last TC meeting, within one month.</p>	<p>Committee noted the status and requested the panel convenor Shri Kapil Kapoor to submit the report within one month from the date of finalization of the minutes.</p>

		<p>Committee vis-à-vis contents of the standard and concerns expressed by Shri Kapil Kapoor:</p> <p>i) standard in its present content was generic without specifying electrical/magnetic properties as the material is un-processed and it was difficult to mention the same given that the manufacture of electrical steels varies from manufacturer to manufacturer</p> <p>ii) Manufacturers of electrical steels would be well aware of the requirements desired from input unprocessed electrical steel capable of suiting their manufacturing practice given that such practices were still classified involving diversity.</p> <p>Thereafter, Member secretary reiterated the purpose of having the standard on the request from Ministry of Steel, which may not be for benefitting the users producing electrical steels from the unprocessed electrical steel but to keep a track on unprocessed electrical steels which was imported without any warranty for chemical composition or electrical/magnetic properties and could be construed used as a leeway for unscrupulous importers. However, having a standard would facilitate tracking the production of electrical steels through effective implementation of QCO as electrical steels were regulated both through QCO under scheme-IV for IS 3024/ IS 648 and under Scheme-V for Laminations for transformer cores, thereby ensuring suitable steel was used for electrical applications which could be constructive in measures for meeting energy related challenges.</p> <p>iv) A need was felt to regulate such an instance and as a result it culminated in the publication of this generic standard involving specifying chemical composition as per definition of silicon steels given in relevant part of IEC 60404 and dimensional tolerances.</p>		
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iv) Standard during its document stage was shared with licences under FMCS and no objections with regard to scope of standard except for silicon range from M/s JFE, Japan.

iv) Nevertheless, now it was felt that for enhancing the quality of the standard, we may provide additional information on unprocessed electrical steel which could cater to electrical steels classified on basis of technology used for obtaining superior magnetic properties.

On account of the above, the Committee suggested the following to the Panel:

a) to obviate any difficulty on account of restricted chemical composition, which could possibly be inhibiting scope of the standard and as such changes may be recommended for chemical composition.

b) any additional information on unprocessed electrical steels correlating it to the various types of electrical steels may be suggested for the guidance of users.

Accordingly, Panel Convenor was requested to submit the report.

2	<p>New Standard on thin magnetic steel strip for use at medium frequencies - Both for CRNO and CRGO</p> <p>MTD 04 23958</p>	<p>It was suggested by Mr Kapil Kapoor to adopt IEC standard 60404-8-8 , standard for thin magnetic steel strip for use at medium frequencies - Both for CRNO and CRGO</p> <p>The committee after deliberation agreed that new standard on thin magnetic steel strip for use at medium frequencies needs to be formulated. Mr Kapil Kapoor of Thyssen Krupp was requested to fill the form provided at Annex IV of agenda for proposing new subjects.</p> <p>During the last meeting committee after discussion requested Mr Kapil Kapoor to forward Annex IV for proposing new subject. Since Tata Cogent representatives were also present in the meeting, they were requested to assist Mr Kapil Kapoor with details required for filling up Annex IV.</p> <p>After receipt of this, the same was to be forwarded to committee members, and if agreed by committee members and approved by Chairman, the recommendation for formulating new standard on thin magnetic steel strip for use at medium frequencies , was to be forwarded to MTDC for approval of new subject.</p> <p>The committee was informed that Annex IV was still awaited.</p> <p>The committee noted the information. Shri Kapil Kapoor informed the committee that he will submit the requisite document by 15 January 2019.</p> <p>The duly filled template proposing new standard for use at medium frequencies was received on 12th June 2019 from Sh. Kapil Kapoor.</p> <p>Convener of Panel-18, Sh Kapil Kapoor emphasized on the need to have standard on thin magnetic steel strip for use at medium frequencies - both for CRNO and CRGO and imparted the features of the new work item proposal (Appendix-2) to the members and vouched for adoption o</p>	<p>The document MTD 04 23958 was sent for WC inviting comments till 05 Feb 2024.</p>	<p>Committee noted the status that the document MTD 04 23958 was in WC till 05 Feb 2024.</p>
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The Committee agreed to the proposal in-principle and advised the sub-committee to take further actions for adoption of the IEC standard expeditiously. Also, the Sub-Committee was advised to ensure that the draft document would be circulated among ITMA and IEEMA during wide circulation.

Also, the Committee advised the Sub-Committee to examine the adequacy of test methods covered in IS 649 for product covered under IEC 60404-8-8:2017 and decide on the matter.

The Subcommittee during its meeting held on 18 April 2022 requested Panel 2 to submit report by 30 June 2022 on adequacy of IS 649 for the proposed adoption of the product standard.

Panel 2 held its meeting on 24 May 2022. Report is awaited.

The Committee was informed by the Panel Convenor Sh Kapil Kapoor that IS 649 in its present was inadequate to test the products covered under IEC 60404-8-8:2017, proposed to be adopted as an Indian Standard.

The Committee requested the panel convenor either to modify IS 649 suitably for making it amenable for testing of the product as per IEC 60404-8-8:2017. Also, the Committee requested the panel convenor to provide WC draft as this would be an adoption of modified version of IEC 60404-8-8:2017.

The Panel Convenor Sh Kapil Kapoor was requested to submit the desired draft amendment to IS 649 and the modified version of IEC standard within 15 days from the date of finalization of the minutes.

Also, it requested Member Secretary to circulate the draft amendment on receipt of it

from Panel Convenor, to members of both MTD 4 and MTD 4:3, giving a time period of 21 days for inviting comments.

The member secretary was also requested to send the modified version of IEC on receipt from from Panel Convenor Sh Kapil Kapoor for WC for a period of 1 month.

Report is awaited from convenor of Panel 2.

Panel Convenor Sh Kapil Kapoor briefed the status to the subcommittee.

Accordingly, Subcommittee requested Panel Convenor to submit the report within 15 days from the date of finalization of the minutes.

Committee noted the status and requested the Panel Convenor Sh Kapil Kapoor to submit the report by 31 Dec 2022.

Panel 2 held its meeting on 02 Jan 2023 and agreed to consider an amendment to IS 649 to suit the needs for adoption of IEC 60404-8-8.

Draft amendment is awaited.

Draft amendment No.6 to IS 649 was awaited from the panel 2, for ensuring adequacy of IS 649 for adoption of IEC 60404-8-8.

During the meeting of subcommittee held on 11 April 2023, Convenor of Panel 2, ShriKapil Kapoor was requested to submit the draft amendment within 14 days.

Committee was briefed by the member secretary that adequacy of IS 649, with or without awaited modification, only helps manufacturers and testing labs in complying with the standard but it does not obstruct adoption of the IEC 60404-8-8 as an Indian Standard, as the comparison of other referred standards in IEC were only captured in national foreword, which would be

comprising IS 649 as not identical with various IEC test method standards. On the above grounds, Member secretary requested the committee to agree with the proposal for sending the document for wide circulation.

Consequently, the Committee advised the Member Secretary to obtain consent from the subcommittee MTD 4:3 on the above proposal for wide circulation and apprise the same with them in due course for further action.

Subcommittee noted the information that an amendment to IS 649 was in process for enhancing the test frequency beyond 400 Hz, for making the standard amenable to cover test methods for thin magnetic steel strip for use at medium frequencies.

In this regard, panel convenor Sh Kapil Kapoor was requested to expedite action and submit their recommendation along with draft amendment within a month from the date of finalization of the minutes.

Further, the members of subcommittee were informed by the member secretary that the desired amendment would only facilitate giving an added advantage for testing as per IS 649 but do not substitute the referred IEC standards in the product Standard. In other words, the foreword of the product standard would be providing a degree of comparison between IEC standards on test methods and IS 649, which would be mentioned as not equivalent against the corresponding IEC standard. Accordingly, it was put forward that the desired amendment should not be construed as deterrent for going ahead with the adoption of IEC 60404-8-8:2017 and suitable changes to the foreword could be considered at a later stage after publishing the desired amendment for IS 649. Also, it was appraised that the product standard needs to be

expedited on account of ensuring the quality of imports , which was substantiated through data received from Ministry of Steel and shared with Members during April/May 2023.

As a result, the subcommittee during its meeting held on 28 July 2023 recommended to send the document intended for adoption of IEC 60404-8-8:2017 for wide circulation for 30 days with prior approval of TC.

Document to be sent for wide circulation for 60 days, as decided during 44th meeting held on 22 Sep 2023.

3	<p>New standard on Wear & Abrasion resistant steel plates</p> <p>MTD 4 13289</p>	<p>During the last meeting comments received from Volvo steel were discussed and after deliberation the committee did not agree to the comments. The committee after deliberation decided to send the document for wide circulation for two month. The document placed at Appendix 16 is being prepared for wide circulation.</p> <p>Before sending the draft for wide circulation, the draft was examined and observations were shared with the panel by MTD. Also, MTD had informed the panel convener that the composition of the panel was not balanced as there was no representation from User Industry. Subsequently, Panel meeting was held on 30 June 2020 to discuss on comments of MTD. Modified draft was received by MTD from the panel convener on 07 July 2020.</p> <p>During the meeting, Member Secretary had informed the committee that the comments of MTD on the draft document were not addressed by the panel even in the modified draft submitted on 07 July 2020.</p> <p>The Committee noted the information and requested the Panel Convener to submit the modified working draft along with work plan for validation of the grades to the sub-committee within 2 months.</p> <p>Also, the Committee took note of the concerns raised by the Member Secretary on composition of the panel and advised sub-committee to reconstitute the panel by also having representation from the organizations JCB, Volvo, Caterpillar, Tata Hitachi and BEML. Further, the Committee requested, Addl Industrial Advisor to Ministry of Steel to arrange for requisite samples in due course in consultation with importers, necessitated for validation of properties in the draft standard.</p>	<p>The document MTD 04 13289 was sent for WC inviting comments till 05 Feb 2024.</p>	<p>Committee noted the status that the document MTD 04 13289 was in WC till 05 Feb 2024.</p>
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Subcommittee during its meeting held on 18 April 2022, requested the convenor to P-Draft by 30th June 2022.

The Committee noted the status shared by Panel convenor Sh Deepak Gupta.

Also, the Committee discussed on possibilities of some of the varieties to be tested for validation of steel grades using steel produced domestically. It requested AM/NS to provide samples to panel for grades of lower hardness and requested Sh Parmjeet Singh (M/o Steel) to help the panel for getting grades of higher hardness from importers.

Further, Head MTD clarified to the Panel convenor that the panel report should be inclusive of grades of steel along with corresponding properties and acceptance criteria for validation of grades i.e number of samples to be tested and also to specify coordination required both for collection of samples and getting them tested. Also, it was suggested by the committee that the samples for validation be got tested in any NABL/BIS approved Lab for steels.

The Panel Convenor was requested to submit the panel report within 15 days from the date of finalization of the minutes.

The report of the panel would be presented during the meeting by convenor of Panel 27 Sh Deepak Gupta, AM/NS.

Draft Standard is placed at Appendix-1(Pg 50-56).

Panel convenor, Sh Deepak Gupta, apprised the members of the contents of the report.

Subsequently, Head MTD raised concerns on chemical composition, as there was no difference amongst the grades except for maximum allowable limit of carbon.

Accordingly, Panel Convenor informed the Subcommittee that the panel would revisit the TCs and share the report by 30 Nov 2022. Panel Convenor Sh Deepak Gupta, briefed the committee about the contents of the report and draft standard.

The Committee agreed to start the proceedings by initiating the process of testing and validation for grades covered in draft standard as mentioned below:

- 1) As-prepared samples for grades 400,450 to be send to MTD, BIS by AMNS.
- 2) Cut -pieces of other grades from importers to be arranged by Ministry of Steel and to send the same to MTD, BIS.
- 3) Testing of samples at CL, BIS subsequent to receipt of as-prepared samples from AMNS for all the grades.

Further, the Committee agreed to send the draft standard, Appendix-2(Pg 102-109), among members for P-circulation giving time for a period of 21 days from the date of finalization of the minutes.

No comments received during P- circulation.

Samples of grades ISAR 400,450 and 500 were sent for testing at BIS lab for alltests barring impact test at -40Deg C.

Testing would be carried out for free of cost at CL, Sahibabad (BIS, lab) with exception of impact test at -40 Deg C which would be carried out M/s Spectro analytical lab for which AMNS agreed to bear the costs.

Committee noted the status and requested the Panel Convenor to examine the test reports and share their recommendation so that further action could be taken in due course.

Also, the Committee agreed to send the document for wide circulation, which was previously P-circulated among committee members, in case the desired panel recommendation states that the results of test report were substantiating the requirements as indicated in the P-circulated draft.

During the subcommittee held on 28 July 2023, the summary of the test results were apprised to the members by the Panel Convenor Shri Deepak Gupta (AM/NS).

Further, the modified draft on account of the satisfactory results validating the survey of MTCs of importers, involving stipulation of limits for tensile strength instead of a range in the earlier draft, is given at **Appendix-2(Pg 37-42)**.

The Subcommittee recommended to send the document for wide circulation for 30 days with prior approval of TC.

The Committee noted the changes considered to the draft involving stipulation of limits for tensile strength instead of a range and agreed with the recommendation of the subcommittee to send the document given **at Appendix-1 for wide circulation for 60 days with prior approval of TC.**

Document to be sent for wide circulation for 60 days, as decided during 44th meeting held on 22 Sep 2023.

4	<p>Revision of IS 11587:1986 <i>Structural weather resistant steels</i></p>	<p>A Panel 19 consisting of following members was formed for revision of IS 11587:1986 Structural weather resistant steels</p> <ol style="list-style-type: none"> 1. Mr Jayanta K Saha - INSDAG – Convenor 2. Mr Deepak Gupta – Essar Steel 3. Mr A Dagupta – SAIL, RSP 4. Mr Avtar Singh – Tata Steel 5. Mr Devasish Mishra, JSW, Bellary 6. Mr M Borkar – JSPL 7. Representative from RDSO <p>During the last meeting committee requested the panel to provide the revised draft based on comments received and agreed by committee by incorporating above proposed changes to BIS. The revised draft was then to be sent for wide circulation for one month.</p> <p>The draft placed at Appendix 12 is being prepared for wide circulation.</p> <p>Comments on the working draft was shared with panel convener on 25th June 2021 and placed at Appendix-9. Revised draft was awaited.</p> <p>Convener of Panel-19, Dr Jayanta Saha, briefed the committee about the status of the revision (Appendix-9).</p> <p>The Committee noted the status and requested Panel Convener to submit the modified draft to the Sub Committee within One Month.</p> <p>Subcommittee requested the Panel Convenor to submit the P-Draft by 20th June 2022.</p> <p>The committee noted the status briefed by Sh G V Ramana (representing Panel Convenor Sh Devashish Mishra, JSW) and informed that comments of MTD were duly addressed in the final draft, which were observed to be in review</p>	<p>Document is being sent for WC for 30 days.</p>	<p>Committee noted the status that the document is being sent for wide circulation for 30 days within a month from the date of finalization of the minutes.</p>
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mode capturing the comments of MTD and reply of panel convenor. However, the draft was devoid of desired panel draft and consolidated comments from panel members which were duly addressed in shaping the final draft for revision.

Head MTD clarified to the Panel convenor that it was desirous of having a report from panel convenor incorporating references of national/ international standards for the changes suggested for revision of the standard and should also be including the decision of the panel along with the changes therein against all the comments received from members of panel.

The committee requested the convenor of panel 7 to submit the report within **07 days** from the date of finalization of the minutes.

Also, it requested Member Secretary to circulate the P-draft on receipt of it from Panel Convenor, to members of both MTD 4 and MTD 4:3, giving a time period of 21 days for inviting comments.

Amendment No. 1 to IS 11587:1986 was issued in August 2022, on account of 41st meeting of MTD 4 held on 28 July 2022, for catering the need of container manufacturers. The grade SPA-H and SPA-C(JIS G 3125) were incorporated in the standard through the amendment.

Subcommittee requested the Panel Convenor to submit its report by 30 Nov 2022.

Committee noted the status and requested the Panel Convenor Sh Devasish Mishra to submit the report within 30 days from the date of finalization of the minutes.

Report is awaited from Panel 7. Also, nominations to be obtained from IR class and RDSO.

During the meeting of subcommittee held on 11

April 2023, on behalf on Panel convenor of Panel 7, Shri G V Ramana Sought 45 days time to submit the report.

Committee noted the status that convenor of Panel 7 Sought 45 days time from 30 April 2023 to submit the report.

Further, the Committee advised the Panel Convenor to hold a physical meeting in the Month of May 2023 and finalize the pending action(s) on priority.

As desired by the committee, Panel held its meeting on 09 June 2023.

The report received from the panel on account of its meeting held on 09 June 2023, is given at **Appendix-3(Pg 43-55)**.

Subcommittee during the meeting held on 28 July 2023, requested the Convenor of Panel 7 to expedite action and submit the desired draft , as mentioned in the report, within 45 days from the date of finalization of the minutes.

The Committee examined the desired draft for revision of IS 11587:1986, which was circulated as addendum to the agenda and agreed with the changes as suggested by the panel.

Document to be sent for wide circulation for 30 days, as decided during 44th meeting held on 22 Sep 2023.

5	<p>Revision of IS 2507:1975 <i>Cold-rolled steel strips for springs</i></p>	<p>Comments received from Bhushan Steel Ltd, Maharashtra</p> <p>During the previous meetings the committee discussed the draft revision and after deliberation some of the committee members requested for some more time to go through the revised standard and give comments on same. The committee agreed to give 21 days to the committee members to give their comments on the draft. In case no comments are received in this period, the draft shall be sent for wide circulation for one month after taking approval of Chairman MTD 4.</p> <p>Vide email dated 3/4/2018 following clarification has been sought from Mr Murlidhar of Bhushan Steel for which reply is awaited.</p> <p>“In the covering letter attached you have informed that for revising this standard you have taken help of ISO 4960. You are requested to kindly inform whether the ISO 4960 can be adopted in total replacing the current standard or only a few clauses need to be taken from ISO 4960.</p> <p>Also as understood the changes made by you are highlighted by red colour. You are requested to inform whether the changes made are as mentioned in ISO standard particularly for chemical composition, physical properties, heat treatment temperature .</p> <p>During the last meeting Committee decided that the Bhushan Steel should send their comments with justification in the comment format. Mr Murlidhar agreed that he shall send the same to BIS in one week’s time.</p> <p>The same shall then be forwarded to committee member for 21 days for comments and in case no comments are received the revised document may be sent for wide circulation for one month.</p> <p>The committee noted the information and after deliberation decided that as no reply has been received from Bhushan Steel the draft document</p>	<p>Subcommittee , during its meeting held on 08 Dec 2023, noted the status and requested Shri Mohammed Basha (AMNS) to expedite action.</p>	<p>Committee noted the status and requested from Shri Mohammed Basha (AMNS) to submit the report within 30 days from the date of finalization of the minutes.</p>
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placed at Appendix 14 may be sent for wide circulation for one month.

Observations made by Member Secretary, while preparing the draft for wide circulation, were shared with Panel for disposal (see Appendix-11 pg 147-156). Reply is awaited from the Panel Convener.

The Committee took note of the comments of MTD (Appendix-11) and advised the Sub-Committee to take decision on the matter.

Subcommittee referred the matter to panel 11 to examine the working draft received from Tata-BSL Ltd earlier and submit the P-Draft by 20th June 2022.

The committee requested the convener of panel 11 to submit the report within 15 days from the date of finalization of the minutes.

Report is awaited from Panel 11.

Subcommittee requested the Panel Convener to submit its report by 30 Nov 2022.

Committee noted the status and requested the Panel Convener Sh Avtar Singh Saini to submit the report within 30 days from the date of finalization of the minutes.

Report is awaited from Panel 11.

Subcommittee during its meeting held on 11 April 2023 had advised the panel to expedite action. Also, panel was also advised for considering adoption of ISO 4960.

Committee noted the status and requested Panel 11 to hold a physical meeting in the Month of May 2023 and finalize the pending actions on priority.

As desired by the committee, Panel held its meeting on 08 June 2023.

Report is awaited from Shri Ravindra Gujar (M/s Tata Steel Ltd) and requested Member Secretary

to ensure follow up action and obtain the report within 45 days.

For focusing more on the matters related to exigency cited by Ministry of Steel for formulation of standards on electrical steels for medium and high frequency, abrasion resistant steels, Zn-Ni coated steels, medium carbon cold-rolled steels etc for ensuring quality of imports, **the committee decided to merge IS 7226 and IS 2507.**

Accordingly, it requested Sh Mohammed Basha(AM/NS) to formulate a draft merging both IS 7226, IS 2507 , further deriving assistance from other national/international standards on the subject and on account of import related data from Ministry of Steel. Sh Basha was also requested to submit the draft within 30 days from the date of finalization of the minutes.

Members including subcommittee were requested to examine the resultant draft and share their views within 07 days from the date of its circulation and it also decided that in case of no comments the document would be sent for wide circulation for 30 days.

Drafts for revision of IS 2507/7226/4397 was entrusted to Shri Mohammed Basha(AM/NS).

6	<p>IS 2062:2011 <i>Hot Rolled Medium and High Tensile Structural Steel</i></p>	<p>In the 32nd meeting, comments received from Mr P.K.Patra, JSW Steel limited were considered and after deliberation the committee decided that some more study is required before permitting higher level of nitrogen in IS 2062:2011. The committee requested Mr P.K.Patra to undertake the study and get the high nitrogen level steel samples tested in WRI,BHEL, Trichy and welding laboratory of Tata Steel and present the findings in the next meeting. Comments received from JSW and TATA Steel were discussed and after deliberation the committee decided not to increase the permissible nitrogen content without testing as decided in last meeting. The comments of JSW were agreed. The amendment was discussed and after deliberation and as pointed by Power Grid, the committee did not find any justification for increasing the chemical composition limits and decreasing the elongation values of existing grades. The committee thus decided to remove this from the proposed amendment. JSW informed that they shall provide justification for the same.</p> <p>During the last meeting justification received from JSW for amendment was discussed and after deliberation the committee agreed to the justification provided. The committee also discussed the comments received from DSP and the following decision was taken for the comments made</p> <p>Point 1 & 2 was not agreed by the committee since there is no change in carbon equivalent.</p> <p>Point 3 was agreed by the committee and it was decided that in the amendment it will be mentioned that the elongation was for transverse/longitudinal direction.</p> <p>It was decided to circulate the revised amendment among the committee members for 21 days and in case no comments are received the same was to be sent for wide circulation for one month.</p> <p>The draft amendment was revised as per the comments received and agreed to by the committee</p>	<p>Documents were being sent for wide circulation.</p>	<p>Committee noted the status that the documents would be sent for wide circulation for 30 days within a month from the date of finalization of the minutes.</p>
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and sent for circulation among the members of the committee on 14/10/2018. Following comments were received from Tata steel:



Draft Amendment to
IS 2062 tata steel.do

The comment received was discussed and committee after deliberation and reviewing the draft amendment decided to modify the amendment. The committee requested the member secretary to circulate the modified amendment placed at **Appendix 8** among members for 14 days. In case no comments are received the modified amendment will be sent for wide circulation for one month.

The committee also deliberated and decided to include Quenched and Tempered grades for higher strength material for structural use. It requested the panel revising IS 2062 to consider incorporating quenched and tempered grades in the existing standard or consider a new standard on the same.

The committee noted the information and after deliberation decided to refer the matter again to the panel and requested them to submit the draft revision of document within the period of two months. The Draft revision then received will be send in wide circulation for the period of one month in consultation with the Chairman.

The comments of MTD for want of justification for the proposed changes seeking details of reference in national/International standards was awaited from the Panel (Appendix-17).

The Committee took a note of the comments of MTD (Appendix-17) and requested convener of Panel-17 to submit the modified draft to the sub-committee within three weeks.

Subcommittee reconstituted panel 7 and requested them to submit the P- Draft by 30th June 2022.

The committee noted the status briefed by Sh G V Ramana on behalf of convenor Sh Devashish Mishra.

The committee requested the I convenor of panel 7 to submit the report, indicating references of national/ international standards for the changes suggested for revision of the standard and also including the decision of the panel along with the changes therein against all the comments received from panel members, within 15 days from the date of finalization of the minutes.

Also, it requested Member Secretary to circulate the P-draft on receipt of it from Panel Convenor, to members of both MTD 4 and MTD 4:3, giving a time period of 21 days for inviting comments

Meeting of panel 7 was held on 26 July 2022.

Minutes of the meeting , Annex-1 to the minutes and draft standard for revision of IS 2062:2011 is placed at **Appendices- 3,4 & 5**(Pg 79, 80-84, 85-100).

Member Secretary was advised to circulate the working draft along with the minutes inviting comments from members of both MTD 4:3 and MTD 4, giving them a time period of 15 days.

The Committee was informed by the member secretary that no comments were received from subcommittee on the draft document during P-circulation culminated on 09 Dec 2022.

Accordingly, the Committee agreed to send the draft standard, placed at Appendix-10(Pg 102-109), for wide circulation for a period of 30 days.

Draft for revision of IS 2062 is being sent for wide circulation.

Further, during subcommittee meeting held on 11 April 2023, Shri G V Ramana was requested to submit proposal for coming up with Q&T structural steel, which is intended to be covered under a new standard IS 2062 Part 2.

Committee noted the status and requested the Member Secretary to send the document for WC for 30 days within 15 days from the date of finalization of the minutes.

Further, the Committee advised the Convenor of Panel 7 to hold a physical meeting in the Month of May 2023 and finalize the pending action(s) on priority.


Subcommittee noted that the report was provided by the panel on account of its meeting held on 09 June 2023 and was given at Appendix-2.

Further, the Subcommittee during its meeting held on 28 July 2023 requested the Convenor of Panel 7 to expedite action and submit the desired draft, as mentioned in the report, within 30 days from the date of finalization of the minutes.

Draft standard for Q&T structural received from the panel convenor is given at **Appendix-4 (Pg 56-74)**.

As the desired draft for formulation of Q&T structural steel was circulated as addendum to the agenda, making it now feasible to revise IS 2062:2011 as IS 2062 Part 1 for non-alloy structural steels and IS 2062 Part 2 for Q&T structural steels.

Committee decided to send the draft finalized earlier during Dec 2022 for wide circulation for 30 days for revising IS 2062:2011 as IS 2062 Part 1 and to send the draft for wide circulation for a period of 60 days for the purpose of formulation of IS 2062 Part 2.

7	IS 10748: 2004- Hot Rolled Steel Strip For Welded Tubes And Pipes	<p>During the last meeting comments received from JSW on the proposal for amendment in IS 10748 received from Mr B B Prasad of Tata steel were discussed and after deliberation the committee agreed to the comments made. It was decided that Mr B B Prasad shall draft an amendment to IS 10748 based on the agreed comments. The draft amendment shall then be circulated within MTD4 and MTD 19 committee member for 21 days and in case no comments are received, the same shall be sent for wide circulation for one month.</p> <p>Draft amendment received from Mr B B Prasad is given below</p>  <p>Amendment to IS10748.2017-R2.docx</p> <p>The committee discussed the draft amendment and after deliberation decided to circulate the amendment among committee members of MTD 4 and MTD 19 for 21 days and if no comments are received send the draft amendment for wide circulation for one month.</p> <p>The committee took note of the status and requested Member Secretary to take action.</p> <p>Subcommittee examined the matter and requested Panel 7 to submit their report by 20 June 2022</p> <p>The Committee noted the status and requested Convenor of Panel 7 to submit their report within 15 days from the date of finalization of the minutes.</p> <p>Comments were received from AM/NS.</p> <p>Panel 11 is requested to dispose them off and submit the modified amendment.</p> <p>Panel Convenor was requested to submit the report by 30 Nov 2022.</p> <p>Report is awaited from Panel 7.</p>	Requested the panel convenor to submit the draft standard for revision of IS 10748.	<p>The draft received from the panel Convener and circulated as addendum to the agenda is given at Appendix-1(Pg 42-54).</p> <p>Members were requested to examine the draft and share their comments by 29 Feb 2024.</p>
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Panel Convenor was requested to submit the report within 15 days from the date of finalization of the minutes.

Committee noted the status and requested the panel convenor to expedite action on submitting the report.

Report is awaited from Panel 7.

Committee noted the status that convenor of Panel 7 Sought 45 days time from 30 April 2023 to submit the report.

Further, the Committee advised the Panel Convenor to hold a physical meeting in the Month of May 2023 and finalize the pending action(s) on priority.

Report provided by the panel on account of its meeting held on 09 June 2023 is given at **Appendix-3**.

During the meeting held on 28 July 2023, Subcommittee requested the Convenor of Panel 7 to expedite action and submit the desired draft standard, as mentioned in the report, within 60 days from the date of finalization of the minutes.

The Committee requested the panel convenor Sh Devasish Mishra(JSW) to submit the desired draft within 30 days from the date of finalization of the minutes.

8	Harmonization of Indian Standard with ISO standards	<p>The Committee noted the status and advised Sub-Committee reconstitute the Panel -17 by substituting the retired or moved away personnel by the existing personnel representing the same organization in MTD 4.</p> <p>Further, the Sub-Committee to submit its recommendation to the Committee in due course. The matter has been referred to panel 7 with a request submit report to the subcommittee by 30th June 2022.</p> <p>The Committee noted the status and requested Convenor of Panel 7 to submit their report within 15 days from the date of finalization of the minutes.</p> <p>Report is awaited.</p> <p>Panel Convenor was requested to submit the report by 30 Nov 2022.</p> <p>Committee noted the status and requested the panel convenor to expedite action on submitting the report.</p> <p>Report is awaited from Panel 7.</p> <p>Report provided by the panel on account of its meeting held on 09 June 2023 is given at Appendix-3 to the agenda.</p> <p>Committee examined the report and requested member secretary to take it up with SARSO accordingly during its next meeting.</p> <p>Requested Member Secretary to prepare a report to be shared with SARSO Secretariat.</p>	Report is being prepared.	Committee considered the request of Member Secretary for sending the report to SARSO within 90 days from the date of finalization of the minutes.
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9	Documents sent for wide circulation	<p><u>New:</u> MTD 4 23033 <i>Hot-Dip Zinc- Aluminium-Magnesium Alloy Coated Steel Sheets Plates and Strips</i></p> <p><u>Revisions:</u> MTD 4 23040 <i>Steel Plates And Strips For Pressure Vessels Used At Moderate And Low Temperature</i> MTD 4 22804 <i>Hot Dip Aluminium-Zinc Alloy Metallic Coated Steel Strip And Sheet</i> MTD 4 23086 <i>Steel Plate For Pressure Vessel For Intermediate And High Temperature Service Including Boilers</i> MTD 4 22863 <i>Continuously Prepainted Galvanized Steel Sheets& Strips</i></p> <p>MTD 4 22826 <i>Pre-Painted Aluminium Zinc Alloy Metallic Coated Steel Strip And Sheet</i> Comments were received from for all the above documents.</p> <p>Report is awaited for all the documents with exception for MTD 4 23086, MTD 4 23040.</p>	<p>Sent the following documents for print:</p> <p>MTD 4 23033 MTD 4 23040 MTD 4 23086 MTD 4 22863 MTD 4 11513 MTD 4 13189</p> <p>Report was awaited from panel convenor on documents MTD 4 22826 and MTD 4 22804.</p>	<p>Committee noted that the following documents were sent for printing:</p> <p>MTD 4 23033 MTD 4 23040 MTD 4 23086 MTD 4 22863 MTD 4 11513 MTD 4 13189</p> <p>Committee requested the panel convenor to submit report on comments received on WC drafts of MTD 4 22826 and MTD 4 22804 within 60 days from the date of finalization of the minutes.</p>
10	Comments on IS 1993	<p>subcommittee noted that comments in IS 1993 were collated and shared with ISO TC 17 SC 9 for further action.</p> <p>Committee noted that comments in IS 1993 were collated and shared with ISO TC 17 SC 9 for further action.</p> <p>Comments were taken up with ISO TC 17 SC 9 during its 28th meeting held on 06-07 Sep 2023.</p> <p>Report was shared with members through email on 11 Sep 2023.</p> <p>Committee decided to review IS 1993 parallely with ISO 11949.</p>	<p>CIB ballot due on 11 Dec 2023 on draft Annex of 3 kinds of chromate-free passivation was shared with members.</p> <p>Comments from TCIL were given below: <i>For fixing the values in the international standard for each process need to have a knowledge sufficiency / sufficient data banking / DOE . Suggest recommender of each type of passivation to circulate the DOE / literature so that recommendations can be made / validated.</i></p> <p>Abstained from casting vote for the ballot due on 11 Dec 2023.</p>	<p>Committee noted that for CIB ballot, it had abstained from casting vote for the ballot due on 11 Dec 2023.</p>

11	Comments on IS 648:2022	<p>M/s Posco Maharashtra Ltd was requested to submit draft amendment for IS 648:20222 for inclusion of the grade 35PN440.</p> <p>Committee noted the status during its meeting held On 28.04.2023.</p> <p>Draft amendment received from Panel 2 is being examined.</p> <p>Committee noted the information and requested the panel convenor to expedite the matter.</p>	Draft amendment No.1 was circulated along with the agenda, as recommended by subcommittee during its meeting held on 08 Dec 2023.	Committee agreed with the recommendation of the Subcommittee recommended to send the draft document for WC for 30 days. See, Appendix-2, Pg 55.
12	Comments on IS 3024	<p>Request was received from ITMA for inclusion of 0.20mm thickness. Matter was referred to Panel 2.</p> <p>Draft amendment received from Panel 2 is being examined.</p>	Report was requested from the Panel Convener.	Committee requested the panel convenor to submit the report within 30 days from the date of finalization of the minutes.
13	Comments on IS 277	<p>The subcommittee deliberated on the comments from M/s Posco Ltd on IS 277:2018 and agreed to issue an amendment so that irrelevant content on publishing of new standard on galvanized steels for automobiles could be deleted from IS 277:2018.</p> <p>Contents of the Draft amendment were finalized.</p>	Draft Amendment No.2 was prepared and circulated along with the agenda as recommended by the subcommittee during its meeting held on 08 Dec 2023. needs to be prepared and circulated.	Committee agreed with the recommendation of the Subcommittee recommended to send the draft document for WC for 30 days. See, Appendix-3, Pg 56.
14	New Standard Hot-rolled medium and high carbon steel sheets, plates and strip	<p>Report received from intern was shared with members.</p> <p>Committee agreed to formulate standards on the new subject.</p>	During special TC meeting held on 10 Nov 2023, committee agree to commission a R&D project proposal and finalized terms of reference for the same.	Committee noted that the ToR was submitted to screening committee of BIS.

Sl. No	Subject	Decision taken in past meetings	Decision of the Committee during the current meeting	Action taken on the decision of the subcommittee/ committee during last meeting
(1)	(2)	(3)	(5)	(5)
15	Revision of IS 1875:1992 <i>Carbon Steel Billets, Blooms, Slabs and Bars for Forgings</i>	<p>The following panel was formed for revision of IS 1875</p> <ol style="list-style-type: none"> 1. Mr D. Karmarkar SAIL – Convenor 2. Mr Sanjay Roy, RINL - Member 3. Mr Devashish Mishra, JSW – Member 4. Mr P.K. Biswal, Kalyani Carpenter Special Steel Ltd, Pune – Member 5. Mr Dinesh Singh, Vardhman Steel – Member 6. Dr M Krishnamurthy, CQA(metals) –Member 7. Member from DSP <p>During the last meeting the comments received from Vardhman steel were discussed and agreed. Based on the comments and the discussion held in the meeting, it was decided to revise draft of IS 1875 and Mr Karmarkar was requested to send the revised draft to BIS. The revised draft thus received was to be sent for wide circulation for one month. The committee noted the information and requested the panel again to send the revised draft to BIS by 30 April 2019 and the document thus received shall be sent for wide circulation for one month. Comments on the draft were circulated to Panel Convener on 25 June 2021. Modified draft was awaited. Member Secretary informed the committee about co - existence of the grades of IS 1875 in IS 13352, an Indian Standard covering steel produced through continuous</p>	As, desired by the TC, consent was obtained from MTD 16 during its 26 th meeting held on 12 Oct 2023.	Committee noted the status that the document is being sent for wide circulation for 30 days.

casting route. The Committee noted the observations and advised Panel -4 to submit the modified draft to the Sub -Committee within one month. Also, the Sub - Committee was advised by the Committee to reconstitute the panel by getting revised nominations from SAIL - RDCIS and by also inducting SAIL –ISP (Sh SK De). The subcommittee during its meeting held on 28 June 2022 deliberated on the need for having IS 1875 and agreed that the standard should continue to serve steel stock for forging quality produced through ingot route.

Accordingly, it reconstituted the panel 4 and requested them to share P-draft within **three months** for reviewing both IS 1875 and IS 13352. Composition of reconstituted panel 4 was mentioned below:

1. SAIL RDCIS, Sh S K Jha, convenor
2. Saarloha Steels Ltd,
3. JSW, Salem
4. Tata Steel Long products,
DrT Bhaskar
5. Bharat forge
6. CHW forge
7. Forging Manufacturers association
8. L&T
9. Mukand Sumi Steels Ltd

The Committee noted the status and recommended to have Sh S K De (SAIL-ISP) as convenor of Panel 4 replacing Sh S K Jha SAIL-RDCIS.

Also, it requested the panel on reviewing the proposal of having individual standards on Steels for forging stock both for continuous

	<p>casting and ingot route respectively.</p> <p>Report awaited from Panel 4. Convenor of Panel 4 was requested to expedite action and share the report within 45 days from the date of finalization of the minutes.</p> <p>Nominations were obtained from AIFI. Nominations were still awaited from saarloha, CHW forge and L&T.</p> <p>Further, meeting of Panel 4 was held on 02 March 2023. On the basis of panel report (Appendix-1, pg 48) and the draft (Appendix-2, pg 49-66), subcommittee recommended for sending the draft document for wide circulation.</p> <p>Committee agreed to send the document for wide circulation. However, it advised Member Secretary to obtain consent from members of MTD 16 on the proposal for wide circulation.</p> <p>The draft was shared with members of MTD 16 during its 25th meeting held on 11 May 2023.</p> <p>It is informed that no comments were received from members.</p> <p>However, Panel Convenor Sh Saikat De, who was also a member of MTD 16, informed the members that the draft presently was devoid of the grades mentioned in the standards IS 5517(Q&T), IS 4432 (case hardening) and IS3930(Flame and Induction hardening). Accordingly, the Subcommittee agreed to incorporate them and requested Sh Saikat De to provide the draft within two days so that the same could be</p>		
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		<p>circulated as Addendum to the minutes. Draft received from Sh Saikat De was examined and shared with the members.</p> <p>The draft was also discussed with the members of MTD 4 during its 44th meeting held on 22 Sep 2023.</p> <p>Committee agreed to send the draft given at Appendix-6 (Pg 142-158) for wide circulation for a period of 30 days.</p> <p>However, it advised member Secretary to seek prior consent from MTD 16 for WC.</p>		
16	<p>Amendment No.2 to IS 280:2006</p> <p><i>Mild SteelWire for General Engineering Purposes</i></p> <p>MTD 4 24300</p>	<p>The committee after deliberation decided that MTD 24 may be requested to consider revision of IS 4826 based on ISO 7989 on priority, since IS 280 is proposed to come under Mandatory certification. The committee also decided the following two members may also be allowed to participate in MTD 24 meeting when revision of IS 4826 is discussed.</p> <p>Mr Nirmal Saraf - SWMAI Mr Shishir Desai – Tata steel Wires division.</p> <p>The committee noted the information. Revised draft for revision of IS 280 was tabled by Shri Shishir Desai and is placed at Appendix 15. The committee deliberated over the document and decided to send the document for wide circulation for one month.</p> <p>This issue was discussed in the meeting of MTD 24 and the committee after deliberation decided that since IS 4826 is cross referred in 18 Indian Standards it would not be appropriate to make any changes in the same. The committee suggested that the changes may be</p>	Document was sent to for WC inviting comments till 04 Jan 2024.	Committee noted that document was sent to for WC inviting comments till 04 Jan 2024.

		<p>incorporated in the product standard i.e, IS 280 if agreed by MTD 4 committee.</p> <p>The committee noted the status and requested membersecretary to circulate the P-draft to its members as well alongside members of MTD 4:2.</p> <p>As only one clause was being modified through the proposed revision, it was put forward by Shri Shishir Desai to consider amendment instead of revision. Draft amendment has been prepared considering the above and comments received from CMD-II raising concern on coating requirements for galvanized wire of sizes under 0.2 mm and over 10mm.</p> <p>Draft amendment received from Shri Shishir Desai on 3rd April 2020 is placed at Appendix-12(Pg 157158).</p> <p>Further, the Committee advised Sub-Committee to decide on the matter.</p> <p>The subcommittee examined the comments of MTD and agreed that there was need to specify coating requirements for electrogalvanized wires as well.</p> <p>Further, the members were informed about technological developments in production of EG wires upto 300gsm, at par with HDG wires.</p> <p>Accordingly, the members agreed to modify cl 11 of draft amendment so that requirements reproduced from IS 4826 holds applicable to zinc coating wires regardless of them being HDG or EG.</p> <p>Member secretary was requested to modify the amendment and do P-circulation among member within 21 days from the date of finalization of the</p>		
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	<p>minutes.</p> <p>Draft amendment was shared as addendum to the agenda.</p> <p>During the meeting, Sh Shishir Desai expressed that the draft amendment circulated as an addendum to the agenda comprised of requirements as per IS 4826, which were obsolete, instead of the desired requirements prevalent in the industry, which were as per ISO 7989-2. Also, it was informed to the members that the draft amendment circulated during Dec 2020 was comprising of requirements as per ISO 7989-2.</p> <p>The subcommittee examined the requirements and recommended to send the modified draft amendment for wide circulation with prior approval of MTD4.</p> <p>Subcommittee was informed that the Draft amendment was being sent for wide circulation.</p> <p>Committee noted the status and requested the member secretary to send the document for wide circulation for 30 days within 30 days from the date of finalization of the minutes.</p> <p>The Committee requested the Member secretary to send the document for WC for 30 days within 15 days from the date of finalization of the minutes.</p>		
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17	Revision of IS 9550 :2001 <i>Bright Bars</i> MTD 4 24046	<p>The subcommittee examined the comments received on IS 9550 from various organizations. It decided to refer the matter to panel constituted at Item 4.3 above with a request to dispose of the comments within 3 months.</p> <p>Report awaited.</p> <p>Subcommittee noted the status and requested the panel convenor to submit the report within 45 days from the date of finalization of the minutes.</p> <p>Committee noted the status and requested the panel convenor to expedite action.</p> <p>Panel 28 held its meeting on 07 July 2023.</p> <p>Report of the panel was shared with subcommittee during its meeting held on 14 July 2023.</p> <p>Subcommittee deliberated on the draft standard. The resultant draft incorporating the change is given at Appendix-6(Pg 77-90).</p> <p>Committee agreed to send the draft given at Appendix-7(Pg 159-172), for wide circulation for a period of 30 days.</p>	Document was sent for WC inviting comments till 11 Dec 2023.	Committee agreed with the recommendation of the subcommittee for having a working group comprising Sivakumar (JSW) Member Secretary, Saikat De (Sail-ISP), Sunita Minz(Sail-Bokaro) and B M Hasan to dispose off the comments received during WC and submit the revised draft within 15 days from the date of finalization of the minutes.
18	Comments received on IS 4824:2022	<p>Subcommittee noted the status and requested the Panel comprising of Shri Nirmal Saraf(convenor), Shri Shishir Desai and others on wires to examine the comments and share their report at the earliest.</p> <p>Committee noted the status and requested panel convenor to expedite action.</p>	Requested the Panel convenor to expedite action as report was awaited.	Committee noted the status that the report is still awaited from the panel convenor.

19	Revision of pre-2000 standards for which ARP was received	<p>Some of the old standards falling in this category were allocated to officers in branch offices and other activities of BIS, preferably, metallurgists, for 'Action Research' for review and preparation of working draft(s). Also, for one among the three standards allotted to the officer as action research, he/she will be executing the role as Member Secretary for the standard allotted during first tranche. For action research reports received so far, the subcommittee constituted three panels one each for Semis, Bars & Rods and Wires with Sh S K Jha(SAIL-RDCIS), Sh B M Hasan(JSW, Salem) and Sh Nirmal Saraf as the panel convenor respectively. Further, the panel convenors were requested to choose appropriate members for having on board of the panel, ensuring balanced composition, and submit their recommendations to the subcommittee within three months' time. Reminders were sent to Panel Convenors.</p> <p>Subcommittee requested the convenor of the Panel for reviewing IS 2100 Sh S K Jha(SAIL-RDCIS) submit their recommendations within 15 days from the date of finalization of the minutes.</p> <p>Shri Nirmal Saraf , Panel Convenor for dealing with standards on wires, expressed that old standards on wires for various applications should be allowed to continue instead of merging them with IS 280 or any other standard, as they provide necessary guidance to the user industry, which predominantly comprises MSME. Further, subcommittee requested the convenor of the Panel for reviewing 10 old standards on wires for various applications Sh Nirmal Saraf(SWMAI) to submit their recommendations within 15 days from the date of finalization of the minutes. Committee noted the status and requested panel convenor to expedite action.</p>	<p>Subcommittee recommended to entrust the task of reviewing IS 2100 to a consultant.</p> <p>Shri Nirmal Saraf was requested to provide the final drafts for 10 ISS by 11 Dec 2023, which were still awaited.</p>	<p>Committee agreed with the ToR, which was prepared for revision of IS 2100 and submitted to screening committee of BIS. See Appendix-4, Pg 57-61.</p> <p>Also, it requested the panel convenor Shri Nirmal Saraf to provide the 10 drafts within 15 days of the finalization of the minutes.</p>
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		<p>Draft of 10 ISS were shared with Shri Nirmal Saraf on 28 Feb 2023.</p> <p>Committee noted that the report was still awaited.</p> <p>Also, report was still awaited from Shri S K Jha for IS 2100.</p>		
20	<p>Comments received against IS 4454 Pt.1</p>	<p>The subcommittee examined the comments received on IS 4454 Pt.1 and decided to refer the matter to panel 28 with a request to review the standard and submit their recommendation within three months' time.</p> <p>Report awaited.</p> <p>Subcommittee noted the status and requested the panel convenor to submit the report within 45 days from the date of finalization of the Minutes.</p>	<p>Requested the Panel convenor to expedite action as Report was awaited.</p>	<p>Committee noted the status that the report is still awaited from the panel Convenor.</p>

Indian Standard
HOT-ROLLED STEEL STRIP FOR WELDED TUBES AND PIPES —
SPECIFICATION
(Third Revision)

ICS 77.140.01

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

Dec 2023

Wrought Steel Products Sectional Committee, MTD 4

FOREWORD

This Indian Standard (Third Revision) was adopted by the Bureau of Indian Standards, 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 1984 subsequently revised in 1995 and 2004. While reviewing the standard in the light of experience gained during these years, the Committee decided to revise it to bring it in line with the present practices followed by the Indian industry.

In the present version following modifications are made:

- 1) Amendment No. 1 has been incorporated.
- 2) Chemistry has been modified in Grade 2, Grade 3 and Grade 5.
- 3) New grades Grade 6, Grade 7 and Grade 8 are added in the existing grades table. New grades for fine grain steel and new grades based on chemical compositions are added in separate tables.
- 4) Clauses 1, 2, 3, 3.2, 4.2, 5, 7.1, 7.2, 8.1, 9.1, 13.2, 14, 15.2, 15.3 and 16.2.1 have been modified. Some clauses and tables are re designated as 8.2.1 in place of 8.2, 8.2.2 in place of 8.3, Table 4 in place of Table 2 and Table 5 in place of Table 3.
- 5) New clauses 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 6.3, 6.3.1, 6.4, 6.5, 7.3, 7.4 and 8.3 are added; Table 2, Table 3 and Table 6 are also added.

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.

While revising the standard, assistance has been derived from the following international specifications:

- EN 10025-3:2019: Hot Rolled products of structural steels - Technical delivery conditions for normalized/normalized rolled weldable fine grain structural steels;
- EN 10025-4:2019: Hot Rolled products of structural steels - Technical delivery conditions for thermomechanical rolled weldable fine grain structural steels;
- SAE J403:2014: Chemical Compositions of SAE Carbon Steels;
- EN 10083-3:2006: Steels for quenching and tempering - Technical delivery conditions for alloy steels.

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 : 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.

Indian Standard
**HOT-ROLLED STEEL STRIP FOR WELDED TUBES AND PIPES —
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1 SCOPE

This standard covers requirement for weldable quality hot-rolled carbon steel strip in coils intended for the manufacture of welded steel tubes and pipes including hollow sections for various applications.

The grades mentioned in this standard are specified with chemical composition alone and chemical composition along with mechanical properties. The grades mentioned in Table 2 (chemical composition) and Table 6 (mechanical properties) are hot rolled weldable fine grain structural steels. The grades mentioned in Table 3 are chemical composition based carbon steels.

Note: A range of steel grades are specified in this standard and the user should select the grade appropriate to the intended use and service conditions.

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 agreements 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>
228 (in various parts)	Methods of chemical analysis of steels
1599: 2019/ ISO 7438: 2016	Metallic materials – Bend test (<i>fourth revision</i>)
1608 (Part 1): 2022/ ISO 6892-1: 2019	Metallic materials – Tensile testing - Part 1 Method of test at room temperature (<i>fifth revision</i>)
1730: 1989	Steel plates, sheets, strips and flats for structural and general engineering purposes – Dimensions (<i>second revision</i>)
1852: 1985	Specification for rolling and cutting tolerances for hot rolled steel products (<i>fourth revision</i>)
1956 (in various parts)	Glossary of terms relating to iron and steel (<i>second revision</i>)
3803 (Part 1): 1989	Steel – Conversion of elongation values: Part 1 Carbon and low alloy steels (<i>second revision</i>)
8910: 2022/ ISO 404: 2013	General technical delivery requirements for steel and steel products (<i>second revision</i>)

3 TERMINOLOGY

For the purpose of this standard the definitions given in IS 1956 and the following definitions shall apply.

3.1 Micro-Alloying Elements – Elements, such as niobium, vanadium and titanium added singly or in

combination to obtain higher strength levels combined with better toughness, formability and weldability as compared to unalloyed steel of similar strength level.

3.2 Coil – A rolled flat strip product which is wound into regularly superimposed laps so as to form a coil with almost flat side.

3.3 Hot-Rolled Steel Strip in Coils – A product obtained by rolling heated steel through a semi continuous/continuous-type or reversing strip mill to the required sheet thickness. The product has a surface covered with oxide or scale resulting from the hot rolling operation.

3.4 Weldability – A metallic substance is considered to be weldable by a given process and for the given purpose, when metallic continuity to a stated degree can be obtained by welding using a suitable procedure, so that the joints comply with the requirements specified in regard to both their local properties and their influence on the construction of which they form a part.

3.5 Fine-grain steel: Steel with fine-grain structure with an equivalent index of grain size ≥ 6 determined in accordance with IS 4748/ ISO 643.

3.6 As-rolled - Delivery condition without any special rolling i.e. Conventional hot rolling without any normalized rolling or thermo-mechanical rolling and/or heat treatment like normalizing or quenching.

3.7 Normalizing Rolling – A hot rolling process in which the final deformation is carried out within a certain temperature range equivalent to normalizing temperature, leading to a material condition equivalent to that obtained after normalizing, such that the specified mechanical properties would still be met in the event of any subsequent normalizing.

NOTE In international publications for both the normalizing rolling, as well as the thermo-mechanical rolling, the expression "controlled rolling" may be found. However, in view of the different applicability of the products a distinction of the terms is necessary.

3.8 Normalized– Produced by heating to a suitable temperature above the transformation range (austenitizing) followed by air cooling.

3.9 Thermo-Mechanical Rolling (TM) –A hot rolling process in which the final deformation is carried out in a certain temperature range leading to a material condition with certain properties that cannot be achieved or repeated by heat treatment alone.

Note: The term “Thermo-Mechanical Control Process (TMCP)” can also be used.

NOTE 1 Subsequent heating above 580 °C may lower the strength values.

NOTE 2 Thermo-mechanical rolling can include processes with an increasing cooling rate with or without tempering including self-tempering but excluding direct quenching and quenching and tempering.

4 SUPPLY OF MATERIALS

4.1 General requirements relating to the supply of hot-rolled steel strip shall conform to IS 8910.

4.2 The material may be ordered on any of the following basis as agreed to between the manufacturer and the purchaser:

- a) Chemical composition, or
- b) Chemical composition and physical properties.

Impact test requirements can be mutually agreed between the purchaser and supplier for fine grain steel.

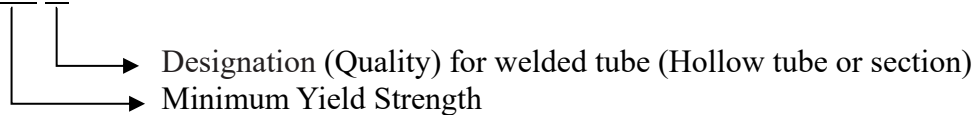
5 GRADES

There shall be 40 grades of hot-rolled carbon steel strip.

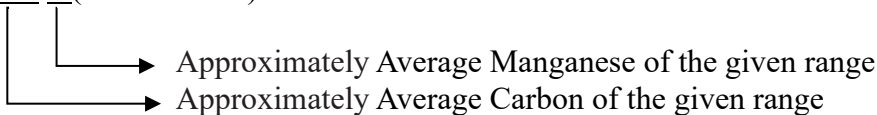
- a) Chemical composition and physical properties (Table 1/ Table 5 contains 8 grades from Grade 1 to Grade 8 and Table 2/ Table 6 contains 4 grades E 275H, E 355H, E 420H & E 460H).
- b) Chemical composition (Table 3 contains 18 grades – 8C3, 10C4, 20C4, 21C3, 26C8, 30C8, 35C8, 40C8, 20C12, 26C13, 30C13, 36C14, 41C15, 20C12B, 22C12B, 26C13B, 30C13B, 34C13B)

Nomenclature for new grades mentioned in Table 2/ Table 6 and Table 3

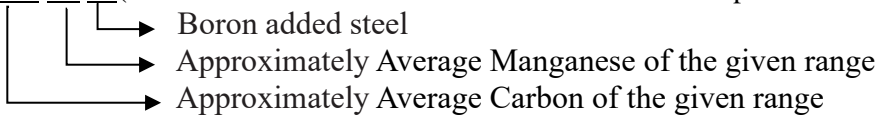
E275 H



10C 4 (Carbon Steel)



34C 13 B (Boron added Carbon Steel - boron addition to improve hardenability)



6 MANUFACTURE

6.1 The processes used in making steel and in manufacturing hot-rolled steel strip shall be left to the discretion of the manufacturer.

6.2 Steel shall be supplied in the killed, semi-killed or rimming condition subject to agreement between the manufacturer and the purchaser.

6.3 Fine grain steel grades shall be supplied in fully killed condition. The steels shall contain sufficient amount of nitrogen-binding elements and have a fine-grain structure. Fully killed steel containing nitrogen binding elements in amounts sufficient to bind the available nitrogen (for example, minimum 0.020% total aluminium). The usual guideline is minimum aluminium to nitrogen ratio of 2:1, when no other nitrogen binding elements are present.

6.3.1 Verification of the grain size is not required, when aluminium is used as the grain refining element and the grain size requirement shall be deemed to be fulfilled if the cast/ ladle analysis shows the total aluminium content $\geq 0.020\%$ or alternatively soluble aluminium $\geq 0.015\%$.

6.4 The hot rolled strip may be rolled and supplied in as-rolled or normalized or normalizing rolling or controlled rolling or thermo-mechanical rolling as per the agreement between the purchaser and the

manufacturer. For fine grain steel grades, the material shall be supplied in normalized or normalized rolling or thermomechanical rolling condition.

6.5 Hot rolled strips may be supplied in descaling condition along with oiled condition as per the agreement between the purchaser and the manufacturer/supplier. Descaling shall be either acid pickling or shot blasting.

7 CHEMICAL COMPOSITION

7.1 Ladle Analysis

Ladle analysis of the material 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, Table 2 and Table 3. In case of dispute, the procedure given in IS 228 and its relevant parts shall be referee method. However, where the method is not given in IS 228 or its relevant parts, the referee method shall be as agreed to between the purchaser and the manufacturer.

The ladle analysis shall be determined once per cast.

7.2 Product Analysis

Permissible variations in the case of product analysis from the limits specified in Table 1, Table 2 and Table 3 shall be as given in Table 4.

If a product analysis has been agreed upon at the time of enquiry and order, the purchaser shall specify the frequency if not once per cast. The product analysis shall be carried out on the finished product.

7.3 Carbon equivalent value

The maximum carbon equivalent value (CEV) requirements are given in the Table 1 and Table 2.

Carbon equivalent value (CEV) would be calculated based on ladle analysis, only.

$$\text{CEV} = \text{C} + \frac{\text{Mn}}{6} + \frac{(\text{Cr} + \text{Mo} + \text{V})}{5} + \frac{(\text{Ni} + \text{Cu})}{15}$$

7.4 When products are supplied with a control on Si e.g. for hot-dip zinc-coating so that there could be a need to increase the content of other elements like C and Mn to achieve the required tensile properties, the maximum carbon equivalent values of Table 1 and Table 2 shall be increased as follows:

- for Si ≤ 0.04 %, increase the value of the CEV by 0.02;
- for Si ≤ 0.25 %, increase the value of the CEV by 0.01.

Cold forming leads to reduction in the ductility. Furthermore, it is necessary to draw the attention to the risk of brittle fracture in connection with hot-dip zinc-coating.

Table 1 Chemical Composition for steel grades other than fine grain steel
(Clauses 5, 7.1, 7.2, 7.3 and 7.4)

Grade	Constituent , Percent, Max				Carbon Equivalent Value (CEV) max
	Carbon	Manganese	Sulphur	Phosphorus	
(1)	(2)	(3)	(4)	(5)	(6)
1	0.10	0.50	0.04	0.04	-
2	0.12	0.80	0.04	0.04	-
3	0.20	1.20	0.04	0.04	-
4	0.20	1.30	0.04	0.04	0.45
5	0.25	1.40	0.04	0.04	0.45
6	0.25	1.50	0.04	0.04	0.45
7	0.25	1.60	0.04	0.04	0.50
8	0.25	1.65	0.04	0.04	0.52

NOTES:

1. For semi-killed quality. Silicon content shall be 0.08 percent, maximum.
2. When the steel is killed by aluminium alone, the total aluminium content shall not be less than 0.02 percent. When the steel is killed by silicon alone, the silicon content shall not be less than 0.10 percent. When the steel is silicon-aluminium killed, the silicon content shall not be less than 0.03 percent and total aluminium content shall not be less than 0.01 percent.
3. Micro-alloying may be allowed subject to mutual agreement between the purchaser and the supplier. Micro-alloying elements like Nb, V or Ti, when used individually or in combination, the total content shall not exceed 0.20 percent.
4. Nitrogen content of steel shall not exceed 0.012 percent, which shall be ensured by the manufacturer by occasional check analysis.
5. Closer limits of composition may be agreed to between the supplier and the purchaser.
6. Max. CEV can be increased for steels with control on Si (e.g. for hot-dip zinc-coating), see 7.4.

Table 2 Chemical Composition for fine grain steel grades
(Clauses 5, 7.1, 7.2, 7.3 and 7.4)

Grade	% C max _f	%Si max	%Mn max	%P max	%S max	%Nb max	%V max _f	%Al (total) min	%Ti max	%Cr max	%Ni max	%Mo max _f	%Cu max	%N max	CEV max _f
E 275H	0.18	0.40	1.50	0.03	0.025	0.05	0.05	0.02	0.05	0.30	0.30	0.10	0.55	0.015	0.40
E 355H	0.20	0.50	1.65	0.03	0.025	0.05	0.10	0.02	0.05	0.30	0.50	0.10	0.55	0.015	0.43
E 420H	0.20	0.60	1.70	0.03	0.025	0.05	0.20	0.02	0.05	0.30	0.80	0.10	0.55	0.025	0.48
E 460H_c	0.20	0.60	1.70	0.03	0.025	0.05	0.20	0.02	0.05	0.30	0.80	0.10	0.55	0.025	0.53

Notes:

- a) For some applications, e.g. for railways, a maximum S content of 0.010 % may be agreed upon at the time of the order
- b) If sufficient other N-binding elements are present the minimum total Al content does not apply. The other elements for N-binding: Nb \geq 0.015 %, V \geq 0.020 %, Ti: \geq 0.020 %. If these elements are used in combination, at least one of them shall be present with the minimum content indicated (see Clause 6.3). The N binding elements shall be mentioned in the inspection document.
- c) V + Nb + Ti \leq 0.22 % and Mo + Cr \leq 0.30 %.
- d) Closer limits of composition may be agreed to between the supplier and the purchaser.
- e) Maximum CEV can be increased for steels with control on Si (e.g. for hot-dip zinc-coating), see 7.4.
- f) For thermomechanical (TM) rolling condition
 - C 0.13 max, CEV 0.34 max for grade E 275H,
 - C 0.14 max, CEV 0.39 max for grade E 355H,
 - C 0.16 max, V 0.12 max, Mo 0.20 max and CEV 0.43 max for grade E 420H and
 - C 0.16 max, V 0.12 max, Mo 0.20 max and CEV 0.46 max for grade E 460H.

Table 3 Chemical Composition of the Ladle analysis
(Clauses 5, 7.1, and 7.2)

Grade	% C max	% Mn max	% Si max	% S max	% P max	% Cr max	% Ti max	% B max
8C3	0.10 max	0.50 max	0.40	0.035	0.030	-	-	-
10C4	0.08-0.13	0.30-0.60	0.40	0.035	0.030	-	-	-
20C4	0.18-0.23	0.30-0.60	0.40	0.035	0.030	-	-	-
21C3	0.18-0.24	0.10-0.60	-	0.035	0.030	-	-	-
26C8	0.22-0.28	0.60-0.90	0.40	0.035	0.030	-	-	-
30C8	0.28-0.34	0.60-0.90	0.40	0.035	0.030	-	-	-
35C8	0.32-0.38	0.60-0.90	0.40	0.035	0.030	-	-	-
40C8	0.37-0.44	0.60-0.90	0.40	0.035	0.030	-	-	-
20C12	0.16-0.23	1.10-1.40	0.40	0.035	0.030	-	-	-
26C13	0.22-0.28	1.10-1.50	0.40	0.035	0.030	-	-	-
30C13	0.26-0.34	1.10-1.50	0.40	0.035	0.030	-	-	-
36C14	0.30-0.38	1.20-1.50	0.40	0.035	0.030	-	-	-
41C15	0.36-0.44	1.35-1.65	0.40	0.035	0.030	-	-	-
20C12B	0.17-0.23	1.10-1.40	0.40	0.035	0.030	0.40	0.060	0.0008-0.005
22C12B	0.19-0.25	1.10-1.40	0.40	0.035	0.030	0.40	0.060	0.0008-0.005
26C13B	0.22-0.28	1.15-1.45	0.40	0.035	0.030	0.40	0.060	0.0008-0.005
30C13B	0.27-0.33	1.15-1.45	0.40	0.035	0.030	0.40	0.060	0.0008-0.005
34C13B	0.32-0.38	1.15-1.45	0.40	0.035	0.030	0.40	0.060	0.0008-0.005

- No requirement but can be mutually agreed based on the application requirement.

NOTES:

1. Unless otherwise agreed the grades mentioned in above table shall be supplied in full killed condition. For semi-killed quality, Silicon content shall be 0.08 percent, maximum.
2. When the steel is killed by aluminium alone, the total aluminium content shall not be less than 0.02 percent. When the steel is killed by silicon alone, the silicon content shall not be less than 0.10 percent. When the steel is silicon-aluminium killed, the silicon content shall not be less than 0.03 percent and total aluminium content shall not be less than 0.01 percent.
3. Micro-alloying may be allowed subject to mutual agreement between the purchaser and the supplier. Micro-alloying elements like Nb, V or Ti, when used individually or in combination, the total content shall not exceed 0.20 percent.
4. Nitrogen content of steel shall not exceed 0.012 percent, which shall be ensured by the manufacturer by occasional check analysis.
5. Closer limits of composition may be agreed to between the supplier and the purchaser.
6. Residual elements like Cu, Cr, Ni, Mo for specific applications shall be agreed upon between purchaser and supplier. As a guide, $Cu \leq 0.35\%$, $Ni \leq 0.25\%$, $Cr \leq 0.20\%$, $Mo \leq 0.06\%$ can be considered for residual element limits.
7. Elements not quoted in this table shall not be intentionally added to the steel without the agreement of the purchaser, other than for the purpose of finishing the heat. All reasonable precautions shall be taken to prevent the addition of such elements from scrap or other material used in the manufacture which affect the hardenability.
8. The grades in this table shall be chemical composition based supplies as Hot Rolled Coil. However, mechanical properties can be mutually agreed between Supplier and purchaser based on end application, but it's not a mandatory requirement.
9. Grades with chemical composition not mentioned in above table can be agreed with the philosophy of new grade designation nomenclature as given in clause 5 based on the application requirements and corresponding agreements shall be mutually agreed between the supplier and purchaser within the scope of this standard for carbon up to 0.50% and Mn up to 1.70%.

Table 4 Permissible Variation for Product Analysis
(Clauses 7.2)

S. No. (1)	Constituent (2)	Percentage Limit of Constituent (3)	Permissible Variation Over/Under the Specified Limit, Percent, Max (4)
i)	Carbon	<0.20 ≥0.20	0.02 0.03
ii)	Manganese	-	0.05
iii)	Sulphur	-	0.005
iv)	Phosphorus	-	0.005
v)	Silicon	-	0.05
vi)	Copper	-	0.03
vii)	Nickel	-	0.03
viii)	Chromium	-	0.04
ix)	Vanadium	-	0.01
x)	Niobium	-	0.01
xi)	Titanium	-	0.01
xii)	Molybdenum	-	0.01
xiii)	Aluminium	-	0.005
xiv)	Nitrogen	-	0.002
xv)	Boron	-	0.0003

NOTE — Product analysis shall not be applicable to rimming steel.

8 TENSILE TEST

8.1 Number of Tensile Tests

Number of test samples shall be 2 from each cast/heat and same grade, quality and delivery condition irrespective of cast/heat size.

8.2 Tensile Test Pieces

8.2.1 Tensile test samples shall be taken transverse to the direction of rolling, but for strips below 600 mm width, longitudinal test pieces may be taken. The sample for tensile test shall be from the end of the coil after coiling. Tensile test in other rolling direction can be mutually agreed between manufacturer and purchaser.

8.2.2 The tensile test shall be carried out in accordance with IS 1608 (part1) as applicable, generally using a proportion gauge length $L_0 = 5.65\sqrt{S_0}$ where S_0 is the cross sectional area of the test piece. Test pieces with a non-proportional gauge length may be used, in this case the elongation values shall be converted in accordance with IS 3803 (Part 1). Elongation in other gauge lengths may be mutually agreed to between the purchaser and the manufacturer/supplier.

8.3 Tensile Test

Yield strength, tensile strength and percentage elongation, when determined in accordance with IS 1608 (Part 1), shall conform to the requirements as given in Table 5 and Table 6.

For the specified yield strength, the upper yield strength (*ReH*) shall be determined.
If a yield phenomenon is not present, the 0.2% proof strength (*Rp 0.2*) shall be determined.

8.3.1 Should a tensile test piece break outside the middle half of its gauge length (*see* IS 1608 part 1) and the percentage elongation obtained is less than the specified, the test may be discarded at the option of the manufacturer and another test made from the sample selected representing the same cast and batch.

8.3.2 Stress relieving at more than 580 °C or for over 1 hour can lead to a deterioration of the mechanical properties of the fine grain steel grades. The maximum stress relief temperature should be 560 °C. If the purchaser intends to stress relief the products at higher temperatures or for longer times than mentioned above the minimum values of the mechanical properties after such a treatment should be agreed upon at the time of the order.

Table 5 Mechanical Properties for steel grades other than fine grain steel
(*Clause 8.3 and 9.2.4*)

Grade	Tensile Strength, MPa Min	Yield Strength, MPa Min	Elongation at Gauge Length, $L_0=5.65\sqrt{S_0}$, % Min	Internal Diameter of Bend
1	290	170	30	t
2	330	210	28	2t
3	410	240	23	2t
4	430	275	22	3t
5	450	310	21	3t
6	490	355	20	3t
7	540	410	18	3t
8	570	450	17	3t

NOTES:

1. t = Nominal thickness of the test piece.
2. 1MPa = 1N/mm² = 1MN/m² = 0.102 kgf/mm² = 144.4 psi.
3. Mechanical properties other than those specified in this table may be as per agreement between the purchaser and the manufacturer for specific applications.

Table 6 Mechanical Properties for fine grain steel grades
(*Clause 8.3 and 9.2.4*)

Grade	Yield Strength, MPa Min	Tensile Strength, MPa	Elongation at Gauge Length, $L_0=5.65\sqrt{S_0}$, % Min	Internal Diameter of Bend
ISH S275H	275	370-510	24	2t
ISH S355H	355	470-630	22	2t
ISH S420H	420	520-680	19	4t
ISH S460H	460	540-720	17	4t

NOTES:

1. t = Nominal thickness of the test piece.
2. 1MPa = 1N/mm² = 1MN/m² = 0.102 kgf/mm² = 144.4 psi.
3. Mechanical properties other than those specified in this table may be as per agreement between the purchaser and the manufacturer for specific applications.

9 BEND TEST

9.1 Number of Bend Tests

Number of test samples shall be 2 from each cast/heat and same grade, quality and delivery condition irrespective of cast/heat size.

9.2 Bend test shall be carried out in accordance with IS 1599.

9.2.1 Bend test sample shall be taken transverse to the direction of rolling.

9.2.2 The test piece shall be 75 mm long and 25 mm wide for thickness less than 3 mm and not less than 40 mm wide for 3 mm and other. For small sizes the maximum width available shall be used.

9.2.3 The edge of the bend test piece shall be free from burrs. Filing or machining to remove burrs is permissible.

9.2.4 The test piece shall be bend cold through 180°. The internal diameter of the bend for the different grades of material shall be as given in Table 5 and Table 6. The test piece shall be deemed to have passed the test, if the outer convex surface is free from cracks.

10 RE-TESTS

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 test samples fail, the material represented by the test samples shall be deemed as not conforming to the standard.

11 FREEDOM FROM DEFECTS

The steel shall be free from such segregation, lamination, surface flaws and other defects, which are detrimental to subsequent processing and ultimate use.

NOTE — As internal surface of coils is not amenable to inspection. Some surface defects may be expected to be found during slitting. The purchaser in his assessment of the material shall take this into account. The amount of defects liable for rejection shall be mutually agreed between the purchaser and the supplier.

12 DIMENSIONS

Nominal dimensions and thickness of hot-rolled steel strip may be as specified in IS 1730. Sizes other than those specified in IS 1730 may also be supplied by mutual agreement between the purchaser and the manufacturer.

13 TOLERANCES

13.1 Tolerances on thickness and width shall conform to IS 1852.

13.2 Tolerance on edge camber shall be as specified as below.

The edge camber that is, lateral departure of the edge of the material from a straight line forming a chord (*see* Fig. 1) of hot rolled steel sheets, including descaled sheets, in cut lengths and coil shall not exceed the tolerances given below

Form	Camber tolerance (Max)
Cut length	0.5 percent x length
Coil	25mm in any 5000mm length

Note: Camber is the greatest deviation of a side edge from a straight line, the measurement being taken on the concave side with a straight edge.

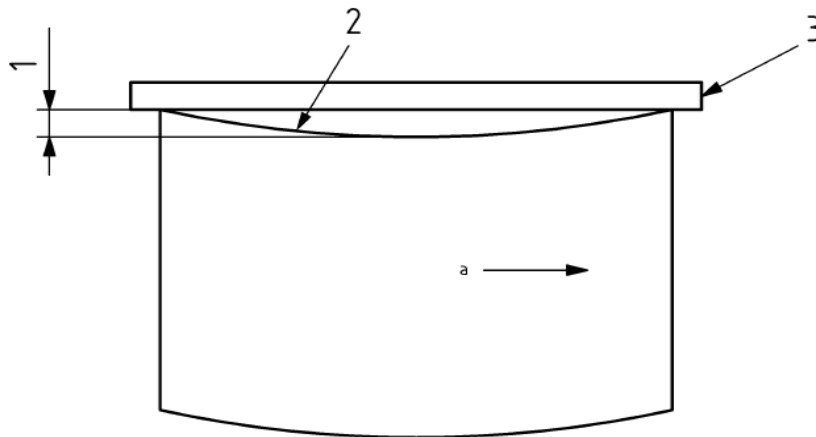


Figure 1 — Measurement of edge camber

Key

- 1 Edge Camber
- 2 Side edge (concave side)
- 3 Straight edge
- a Rolling direction

The specified value for tolerance shall not apply to the uncropped ends of the coil for a total length *l*, which is calculated using the formula.

$$l \text{ (m)} = \frac{90}{\text{Nominal thickness (mm)}}, \text{ provided that the result does not exceed 20 m.}$$

13.3 Tolerances closer than those specified in 13.1 and 13.2 on the dimensions of hot-rolled steel strip may also be agreed between the purchaser and the supplier.

14 COIL MASS AND DIAMETERS

The limits of mass outside diameter and internal diameter of the coils shall be agreed to between the manufacturer and the purchaser. The mass of the steel shall be calculated on the basis that steel weighs 7.85 g/cm³.

15 CONDITION OF COILS

15.1 The edges may be mill edges or slit edges as agreed between the supplier and the purchaser. When

mill edges are specified the depth of defects shall be within 5 mm from the edges on either side of the coil.

15.2 The material shall be in as-rolled or normalized or normalized rolling or thermomechanical rolling condition without any skin passing, pickling, oiling, and blast cleaning, annealing and normalizing unless otherwise specified by the purchaser.

15.3 Outer end of the coil may be cropped, if agreed by the manufacturer and the purchaser. There should be no folding of ends in the packed coils. In case the material is supplied without cropping, fish tail length should not be more than 0.5 m unless agreed for thickness ≥ 5 mm.

15.4 The coils shall be suitably packed, so that they do not get damaged during transit.

15.5 Telescopicity in the coils should not be more than 100 mm.

16 MARKING

16.1 Every coil shall be legibly marked outside or inside with the following:

- a) Name or trade-mark of the manufacturer,
- b) Grade of steel,
- c) Cast or identification mark,
- d) Size, and
- e) Mass of coils.

NOTE — For strip below 600 mm width, marking of mass may not be necessary.

16.2 BIS Certification Marking

The material may also be marked with the Standard Mark.

16.2.1 The use of Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations made thereunder. The details of conditions under which the license for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

AMENDMENT NO.1
TO
IS 648 : 2022 Cold Rolled Non-Oriented Electrical Steel Sheet and Strip -
Fully Processed Type - Specification.
(Sixth Revision)

(Page 3, clause 4, Table 1) - Insert '35C440', after '35C360' in table 1 Designation of Electrical Steel Grades

Substitute the following for the existing:

Table 1 Designation of Electrical Steel Grades
(Clauses 4, 6.1.3, 7.1.1.2, 7.1.2.1, 7.1.2.4 and 9.2)

Designation	Nominal Thickness mm	Maximum Specific Total Loss W/Kg			Minimum a.c. Magnetisation in T			Maximum anisotropy of loss percent at 1.5 T	Minimum stacking factor	Minimum Numbers of Bends	Conventional Density Kg/dm ³
		1.0 T	1.5 T		2500 A/m	5000 A/m	10000 A/m				
		50Hz	50Hz	60 Hz							
35C230	0.35	0.95	2.30	2.90	1.49	1.60	1.70	±17	0.95	2	7.60
35C235		0.95	2.35	2.97	1.49	1.60	1.70	±17		2	7.60
35C250		1.00	2.50	3.14	1.49	1.60	1.70	±17		2	7.60
35C270		1.10	2.70	3.36	1.49	1.60	1.70	±17		2	7.65
35C300		1.20	3.00	3.74	1.49	1.60	1.70	±17		3	7.65
35C330		1.30	3.30	4.12	1.49	1.60	1.70	±17		3	7.65
35C360		1.45	3.60	4.55	1.49	1.60	1.70	±17		3	7.65
35C440		1.80	4.40	5.35	1.49	1.64	1.70	±17		3	7.70
50C250	0.50	1.05	2.50	3.21	1.49	1.60	1.70	±17	0.97	2	7.60
50C270		1.10	2.70	3.47	1.49	1.60	1.70	±17		2	7.60
50C290		1.15	2.90	3.71	1.49	1.60	1.70	±17		2	7.60
50C310		1.25	3.10	3.95	1.49	1.60	1.70	±14		3	7.65
50C330		1.35	3.30	4.20	1.49	1.60	1.70	±14		3	7.65
50C350		1.50	3.50	4.45	1.50	1.60	1.70	±12		5	7.65
50C400		1.70	4.00	5.10	1.53	1.63	1.73	±12		5	7.70
50C470		2.00	4.70	5.90	1.54	1.64	1.74	±10		10	7.70
50C530		2.30	5.30	6.66	1.56	1.65	1.75	±10		10	7.70
50C600		2.60	6.00	7.53	1.57	1.66	1.76	±10		10	7.75
50C630		2.80	6.30	7.90	1.58	1.68	1.76	±10		10	7.75
50C700		3.00	7.00	8.79	1.60	1.69	1.77	±10		10	7.80
50C800		3.60	8.00	10.06	1.60	1.70	1.78	±10		10	7.80
50C900		3.80	9.00	11.31	1.61	1.70	1.78	±10		10	7.80
50C940		4.20	9.40	11.84	1.62	1.72	1.81	±8		10	7.85
50C1000		4.40	10.0	11.90	1.62	1.72	1.81	±10		10	7.85
65C310	0.65	1.25	3.10	4.08	1.49	1.60	1.70	±15	0.97	2	7.60
65C330		1.35	3.30	4.30	1.49	1.60	1.70	±15		2	7.60
65C350		1.50	3.50	4.57	1.49	1.60	1.70	±14		2	7.60
65C400		1.70	4.00	5.20	1.52	1.62	1.72	±14		2	7.65
65C470		2.00	4.70	6.13	1.53	1.63	1.73	±12		5	7.65
65C530		2.30	5.30	6.84	1.54	1.64	1.74	±12		5	7.70
65C600		2.60	6.00	7.71	1.56	1.66	1.76	±10		10	7.75
65C700		3.00	7.00	8.98	1.57	1.67	1.76	±10		10	7.75
65C800		3.60	8.00	10.26	1.60	1.70	1.78	±10		10	7.80
65C1000		4.40	10.0	12.77	1.61	1.71	1.80	±10		10	7.85
100C600	1.00	2.60	6.00	8.14	1.53	1.63	1.72	±10	0.98	2	7.60
100C700		3.00	7.00	9.38	1.54	1.64	1.73	±8		3	7.65
100C800		3.60	8.00	10.70	1.56	1.66	1.75	±6		5	7.70
100C1000		4.40	10.00	13.39	1.58	1.68	1.76	±6		10	7.80
100C1300		5.80	13.00	17.34	1.60	1.70	1.78	±6		10	7.80

Draft AMENDMENT NO. 2 TO
IS 277 : 2018
Galvanized Steel Strips and Sheets (Plain and Corrugated)- Specification.
(Seventh Revision)

(Page 1, clause 1.2) - Substitute the following for the existing:

‘1.2 Galvanized steel sheets covered by this standard are intended to be used for purposes such as paneling, roofing, applications requiring lock forming, engineering applications etc. ‘

(Page 1, clause 1.4) - Substitute the following for the existing:

‘1.4 The requirements of Zinc and Zinc alloy coated steel sheets for automotive applications are covered in IS 18385.’

(Page 4, clause 8.1.2) - Substitute the following for the existing:

‘8.1.2 Tensile test shall be carried out in accordance with IS 1608 as applicable, and the values of tensile strength, yield stress and percentage elongation shall conform to the requirements specified in Table 2.’

TERMS OF REFERENCE FOR R&D PROJECT

Title of the Project: Study of quality requirements of grades of steel billets, bars and sections for boilers.

1. Background

1.1 With the service of large-scale power stations, a large number of subcritical, supercritical and even ultra-supercritical boilers have been put into industrial applications, and steels for boilers have also been greatly developed as basic materials.

The production process of the steels should have accurate composition control, low impurity elements, pure steel smelting technology and precise temperature control and good dimensional accuracy and shape, which is required by the production process of boilers.

1.2 According to different working conditions, boiler grade steels can be divided into two categories: steels for room temperature and medium temperature pressure parts and steel for high temperature pressure parts.

1.3 Indian Standard 'IS 2100:1970 Specification for Steel Billets, Bars and Sections for Boilers' is available for semis for forgings and sections for boilers. This specification presently specifies requirements of two grades. This standard is more than 50 years old and presently does not capture most of the grades mentioned in Indian Boiler Regulations (IBR) -1950. Also, with advancement in steel making and thermo-mechanical processing of steels, more grades of steels are produced, imported and used for boilers.

1.4 With an aim to cover all such relevant grades of steels used in boiler construction, this R&D project is devised for collection of data on grades, their properties (chemical, mechanical, physical and metallurgical) and verification of specific requirements therein, which would be helpful in revision of Indian standard on 'Specification for Steel Billets, Bars and Sections for Boilers'.

1.5 Indian standards can be accessed following the link <https://standardsbis.bsbedge.com/>.

2. Objective

To collect data and information, from primary and secondary sources, of the quality requirements (chemical, physical, metallurgical and mechanical properties) and their verification for steel billets, bars and sections used for boilers.

3. Scope

3.1 Study the available literature, national and international standards/ sector specific standards such as ASTM, JIS, EN, GB/T, ISO, ASME and SAE available on the subject, research papers, any study conducted by other organizations and companies' brochure. Identify the grades of steel billets, bars and sections for boilers, their chemical, physical, metallurgical and mechanical properties and any other requirements which can be included in the standard.

3.2 Identification of manufacturers of the product.

3.3 Visit manufacturers of the product and get the following information:

- a. Raw material used,
- b. Grades of steels manufactured,
- c. Form (billets, bars & sections),
- d. Condition of supply(with guaranteed properties),
- e. Quality parameters (chemical, physical, metallurgical and mechanical properties) of different grades in various forms,
- f. Manufacturing process,
- g. Recommended heat treatment,
- h. In-process quality checks,
- i. Test facilities and test methods,
- j. Tests undertaken,
- k. Routine tests for accepting lots,
- l. Mill test certificates issued,
- m. Delivery conditions,
- n. Surface protection,
- o. Weldability requirements,
- p. Sampling plan for accepting a lot,
- q. Marking, labelling and Packaging requirement &
- r. Steps taken for addressing sustainability.

3.4 Identification and visit to the laboratories for collection of relevant data and witnessing the testing of the samples drawn, if required, for verification of quality requirements.

- 3.5 Check the quantity of the product imported and exported and countries with which the trade for this product is occurring. Also check if any technical regulations exist for this product in these countries. Take data of the specification as per which the product is being traded.
- 3.6 Identification of users of the product and take data of quantity being used by them, specification used, check for the test certificates received by them and study the chemical and physical properties chemical, physical, metallurgical and mechanical properties mentioned in the TC. Also understand from the user the optional properties required by them for the product.
- 3.7 Preparation of comprehensive project report incorporating the points mentioned above.

4. Methodology:

- 4.1 Study the literature and analyse the findings.
- 4.2 Visit the manufacturing unit(s) and
 - a. Observe the manufacturing process,
 - b. Examine in-process controls,
 - c. Conduct focussed group discussions with quality/production personnel
 - d. Collect the data as mentioned in the scope through a questionnaire.
 - e. Draw samples of the grades and get it tested in BIS approved laboratories
 - f. Gather information on requirements for Regulatory compliance such as Indian Boiler Regulations 1950.
- 4.3 Visit laboratories and make report on
 - a. Test equipment required,
 - b. Test methods used,
 - c. Testing charges,
 - d. Testing time required,
 - e. Sample size.
 - f. witness testing of samples drawn from mfgs/users/importers (not all tests but to the extent possible shall be witnessed)
- 4.4 Visit importers and exporters and collect data as mentioned in the scope through a questionnaire.
- 4.5 Visit users of the product and collect data as mentioned in the scope through a questionnaire. Also, emphasis should be laid on gathering information pertinent to requirements for Regulatory compliance such as Indian Boiler Regulations-1950.
- 4.6 Relevant Information on such steels to be gathered from at least one Inspecting Authority for Inspection & Certification of Boilers recognized by Central Boilers Board, New Delhi.
- 4.7 Analyse the above data and test reports and include the same in the project report.

5. Sampling plan:

- 5.1 Two manufacturers, each from large, medium and small scale shall be visited.
- 5.2 Samples for testing may be drawn from manufacturer, user, importer or market.
- 5.3 Two heats for each grade shall be drawn for testing of chemical, physical, metallurgical and mechanical properties (room temperature/high temperature) mentioned in the standard and as identified in the literature survey/information gathered from manufacturers or users.
- 5.4 Two users (power generation/other industries) of the product shall be visited.
- 5.5 Two NABL accredited laboratories, preferably one in government sector and one in private sector shall be visited.

6. Deliverables:

- 6.1 Final project report, in hard copy format as well as in editable soft copy, covering all aspects mentioned in the scope.
- 6.2 Questionnaire, visit reports, test reports, mill test certificates to be appended with the final project report.

7. Time lines

The duration of the project is 4 months from the date of award of the project. The proposed indicative timeline stage-wise is given below:

SI No	Stage	Time from date of award of project (cumulative)
1	Literature review and identification of manufacturing base, testing laboratories, user/user industry, inspecting authority and discussion with BIS for finalization of the sampling plan	1 month
2	Visit to manufacturers, testing laboratories, users and importers and exporters and data collection, and verification of quality requirements through testing	3 months
3	Preparation and submission of first draft report to BIS	3.5 months
4	Submission of final project report	4 months

Note: The proposer may submit the draft report to BIS without waiting for test report from independent laboratories if the test is of long duration (> 1 month).

8. Support BIS will provide:

- National /international standard relevant to the project
- Details of BIS Licensees for similar products.
- Product manuals for similar products
- Details of BIS and BIS recognized laboratories for similar products

9. Relevant sectional committee and Nodal officer from BIS

Sectional committee:

- MTD 4-Wrought Steel products Sectional Committee Sectional Committee

Nodal officer :

- Mr Arun Pucchakayala, Scientist D/ Joint Director – Member Secretary MTD 4,
- Email : mtd4@bis.gov.in Mobile :+ 91 9967448868

S.No.	IS Number(B)	IS Title(C)	Due Date(E)	Status
SI No	IS No	Title	Due	Remarks
1	IS 15103 : 2002	Fire resistant steel - Specification	March, 2024	Reaffirm in its existing form
2	IS 15391 : 2003	Cold rolled non - Oriented electrical steel sheet and strip-semi-processed type - Specification	March, 2024	
3	IS 6240 : 2008	Hot rolled steel plate (Up To 6 Mm) sheet and strip for the manufacture of low pressure liquefiable gas cylinders (Fourth Revision)	March, 2024	
4	IS 13752 : 1993	Guidelines for reporting sequence of elements in steel and pig iron and mechanical properties in steels	March, 2024	Reaffirm in its existing form
5	IS 1762 (Part 1) : 1974	Code for designation of steels: Part 1 based on letter symbols (First Revision)	March, 2024	Reaffirm in its existing form
6	IS 2049 : 1978	Colour code for the identification of wrought steels for general engineering purposes (First Revision)	March, 2024	Archiving
7	IS 649 : 1997	Methods of testing steel sheets for magnetic circuits of power electrical apparatus (Second Revision,)	March, 2024	Decided to revise and assign it to a consultant Reaffirm and revise
8	IS 7598 : 1990	Classification of steels (First Revision)	March, 2024	Reaffirm in its existing form
9	IS 1387 : 1993	General requirements for the supply of metallurgical materials (Second Revision)	March, 2024	Reaffirm in its existing form
10	IS 5478 : 1969	Specification for thermostat metal sheet and strip	March, 2024	Agreed for withdrawal
11	IS 4397 : 1999	Cold - Rolled carbon steel strips for ball and roller bearing cages retainers - Specification (Second Revision)	April, 2024	Report awaited from AM/NS Reaffirm and revise
12	IS 10340 : 1982	Glossary of terms for cold-reduced tinplate and cold-reduced blackplate	March, 2024	Reaffirm and revise Referred to Panel
13	IS 14246 : 2013	Continuously pre-painted galvanized steel sheets and coils (First Revision)	March, 2024	Reaffirm and revise
14	IS 2002 : 2009	Steel plate for pressure vessel for intermediate and high temperature service including boilers (Third Revision)	March, 2024	-do-
15	IS 2041 : 2009	Steel plates for pressure vessels used at moderate and low temperature - Specification (Third Revision)	March, 2024	-do-

16	IS 1956 (Part 3) : 2019	Glossary of terms relating to iron and steel: Part 3 long products (Including Bars, Rods, Sections And Wires) (Second Revision)	March, 2024	Reaffirm in its existing form with an amendment
17	IS 16732 : 2019	Galvanized structural steel - Specification	March, 2024	Reaffirm and revise
18	IS 1029 : 1970	Specification for hot-rolled steel strip (Baling) (First Revision)	March, 2024	Reaffirm and revise
19	IS 1136 : 2008	Preferred sizes for wrought metal products (Third Revision)	March, 2024	Reaffirm in its existing form
20	IS 1956 (Part 4) : 2013	Glossary of terms relating to iron and steel: Part 4 flat products (Second Revision)	March, 2024	Reaffirm in its existing form
21	IS 10206 : 1982	Methods of sampling steel wires	March, 2024	Reaffirmed in existing form
22	IS 2879 : 1998	Mild steel for metal arc welding electrodes - Specification (Third Revision)	March, 2024	Pending with Panel Convened by Shri Nirmal Saraf. Reaffirm and revise
23	IS 4882 : 1979	Specification for low carbon steel wire for rivets for use in bearing industry	March, 2024	Pending with Panel Convened by Shri Nirmal Saraf. Reaffirm and revise
24	IS 7904 : 2018	High carbon steel wire rods - Specification	March, 2024	Referred to panel constituting Bekaert, SAIL-IISCO, JSW, SWMAI and RINL. Reaffirm and revise
25	SP 14 : 1976	Index to steel designations	March, 2024	Reaffirmed in existing form
26	SP 17 : 1979	Glossary of terms relating to iron and steel	March, 2024	Reaffirmed in existing form
27	IS 1956 (Part 3) : 2019	Glossary of terms relating to iron and steel: Part 3 long products (Including Bars, Rods, Sections And Wires) (Second Revision)	March, 2024	Reaffirm and issue an amendment.

IS identified for consultancy

SI No	IS Number	Subject
1	IS 2100 : 1970	Specification for steel billets, bars and sections for boilers (First Revision)
2	IS 1029 : 1970	Specification for hot-rolled steel strip (Baling) (First Revision)
3	IS 2255 : 1977	Specification for mild steel wire rod for the manufacture of machine screws (By Cold Heading Process) (Second Revision)
4	IS 3195 : 1992	Steel for the manufacture of volute and helical springs (For Railway Rolling Stock) - Specification
5	IS 3298 : 1981	Specification for mild steel rivet bars for ship building (First Revision)
6	IS 3885 (Part 1) : 1992	Steel for the manufacture of laminated springs (Railway Rolling Stock): Part 1 flat sections - Specification (Second Revision)
7	IS 649 : 1997	Methods of testing steel sheets for magnetic circuits of power electrical apparatus (Second Revision,)
8	IS 3885 (Part 2) : 1992	Steel for the manufacture of laminated springs (Railway Rollingstock): Part 2 rib and groove sections (Second Revision)
9	IS 3975 : 1999	Low carbon galvanized steel wires, formed wires and tapes for armouring of cables - Specification
10	IS 5872 : 1990	Cold rolled steel strips (Box Strappings) - Specification
11	IS 1387 : 1993	General requirements for the supply of metallurgical materials (Second Revision)
12	IS 1762 (Part 1) : 1974	Code for designation of steels: Part 1 based on letter symbols (First Revision)
13	IS 1852 : 1985	Specification for rolling and cutting tolerances for hot - Rolled steel products (Fourth Revision)
14	IS 2591 : 1982	Dimensions for hot rolled steel bars for threaded components (Second Revision)
15	IS 279 : 1981	Specification for galvanized steel wire for telegraph and telephone purposes (Third Revision)
16	SP 17 : 1979	Glossary of terms relating to iron and steel
17	SP 14 : 1976	Index to steel designations
18	IS 10206 : 1982	Methods of sampling steel wires
19	IS 10340 : 1982	Glossary of terms for cold-reduced tinplate and cold-reduced blackplate
20	IS 12457 : 1988	Code of practice for evaluation, repairs and acceptance limits of surface defects in steel plates and wide flats
21	IS 13566 : 1992	Recommended practice of pickling by H2so4 levelling and oiling of lpg sheets
22	IS 13752 : 1993	Guidelines for reporting sequence of elements in steel and pig iron and mechanical properties in steels
23	IS 7887 : 1992	Mild steel wire rod for general engineering purposes - Specification (First Revision)
24	IS 8917 : 1978	Specification for steel plates for galvanizing pots
25	IS 9442 : 1980	Specification for hot-rolled steel plates, sheets and strips for manufacture of agricultural tillage discs
26	IS 9476 : 1980	Specification for cold-rolled steel strips for carbon steel razor blades
27	IS 9485 : 1980	Specification for cold - Reduced and hot - Rolled carbon steel sheet for porcelain enamelling
28	IS 412 : 1975	Specification for expanded metal steel sheets for general purposes (Second Revision)
29	IS 7557: 1982	Specification for Steel Wire: (Up to 20 mm) for the manufacture of cold-forged rivets.
30	IS 8510 (Part II): 1977	Specification for Tinned Steel Wire for Banding of Armatures and Rotors: Part II Specific Requirements for magnetic banding wires.
31	IS 8510 (Part III): 1977	Specification for Tinned Steel Wire for Banding of Armatures and Rotors: Part III Specific Requirements for non-magnetic banding wires.

TERMS OF REFERENCE FOR R&D PROJECT

Title of the Project: Study of quality requirements of grades of Hot-rolled medium and high carbon steel sheet, plate and strip used for general engineering purposes.

1. Background

- 1.1 Medium and High carbon Steels are a category of steels with carbon more than 0.3%. Presently, the Indian Standards on hot-rolled steels cater only to plain carbon steels (carbon up to 0.3%). In order to satisfy both excellent formability and high hardness after heat treatment, manufacturing industry moved towards medium and high carbon steels. Medium and High Carbon Steel over the years have gained importance on account of safety and reliability coupled economical approach for well-improved performances. As per the information available from diverse sources and as informed by Ministry of Steel, this product is being used widely and also imported in large quantities.
- 1.2 In absence of established data for the quality requirements comprising chemical and mechanical properties of these grades supplied in sheet, plate and strip, there is no Indian standard on the subject as on date.
- 1.3 This R&D project is devised for collection of data on grades, their properties (chemical, mechanical, metallurgical, physical) and verification of grades therein, which would be helpful in formulation of a new Indian standard on Hot-rolled medium and high carbon steels for general engineering purposes.

2. Objective

To collect data and information, from primary and secondary sources, of the quality requirements (chemical, physical, metallurgical and mechanical properties) and their verification for hot-rolled medium and high carbon steel sheet, plate and strip used for general engineering purposes.

3. Scope

- 3.1 Study the available literature, national and international standards/ sector specific standards such as ASTM, JIS, EN, GB/T, ISO and SAE available on the subject, research papers, any study conducted by other organizations and companies' brochure. Identify the grades of Hot-rolled medium and high carbon steels, their chemical, physical, metallurgical and mechanical properties and any other requirements which can be included in the standard.
- 3.2 Identification of manufacturers of the product.

3.3 Visit manufacturers of the product and get the following information:

- a. Raw material used,
- b. Grades of steels manufactured,
- c. Form (sheet, plate & strips),
- d. Condition of supply (Hot-rolled with types of heat treatment),
- e. Quality parameters (chemical, physical, metallurgical and mechanical properties) of different grades in various forms,
- f. Manufacturing process,
- g. Recommended heat treatment,
- h. In-process quality checks,
- i. Test facilities and test methods,
- j. Tests undertaken,
- k. Routine tests for accepting lots,
- l. Mill test certificates issued,
- m. Delivery conditions,
- n. Surface protection,
- o. Weldability requirements,
- p. Sampling plan for accepting a lot,
- q. Marking, labelling and Packaging requirement &
- r. Steps taken for addressing sustainability.

3.4 Identification and visit to the laboratories for collection of relevant data and witnessing the testing of the samples drawn, if required, for verification of quality requirements.

3.5 Check the quantity of the product imported and exported and countries with which the trade for this product is occurring. Also check if any technical regulations exist for this product in these countries. Take data of the specification as per which the product is being traded.

3.6 Identification of users of the product and take data of quantity being used by them, specification used, check for the test certificates received by them and study the chemical and physical properties chemical, physical, metallurgical and mechanical properties mentioned in the TC. Also understand from the user the optional properties required by them for the product.

3.7 Preparation of comprehensive project report incorporating the points mentioned above.

4. Methodology:

4.1 Study the literature and analyse the findings.

4.2 Visit the manufacturing unit(s) and

- a. Observe the manufacturing process,
- b. Examine in-process controls,
- c. Conduct focussed group discussions with quality/production personnel
- d. Collect the data as mentioned in the scope through a questionnaire.
- e. Draw samples of the grades and get it tested in BIS approved laboratories

4.3 Visit laboratories and make report on

- a. Test equipment required,
- b. Test methods used,
- c. Testing charges,
- d. Testing time required,
- e. Sample size.
- f. witness testing of samples drawn from mfgs/users/importers
(not all tests but to the extent possible shall be witnessed)

4.4 Visit importers and exporters and collect data as mentioned in the scope through a questionnaire.

4.5 Visit users of the product and collect data as mentioned in the scope through a questionnaire.

4.6 Analyse the above data and test reports and include the same in the project report.

5. Sampling plan:

5.1 Two manufacturers, each from large, medium and small scale shall be visited.

5.2 Samples for testing may be drawn from manufacturer, user, importer or market.

5.3 Two heats for each grade shall be drawn for testing of chemical, physical, metallurgical and mechanical properties as identified in the literature survey/information gathered from manufacturers or users.

5.4 Two users of the product shall be visited.

5.5 Two NABL accredited laboratories, preferably one in government sector and one in private sector shall be visited.

6. Deliverables:

6.1 Final project report, in hard copy format as well as in editable soft copy, covering all aspects mentioned in the scope.

6.2 Questionnaire, visit reports, test reports, mill test certificates to be appended with the final project report.

7. Time lines

The duration of the project is 4 months from the date of award of the project. The proposed indicative timeline stage-wise is given below:

Sr No	Stage	Time from date of award of project (cumulative)
1	Literature review and identification of manufacturing base, testing laboratories, user/user industry, and discussion with BIS for finalization of the sampling plan	1 month
2	Visit to manufacturers, testing laboratories, users and importers and exporters and data collection, and verification of quality requirements through testing	3 months
3	Preparation and submission of first draft report to BIS	3.5 months
4	Submission of final project report	4 months

Note: The proposer may submit the draft report to BIS without waiting for test report from independent laboratories if the test is of long duration (> 1 month).

8. Support BIS will provide:

- National /international standard relevant to the project
- Details of BIS Licensees for similar products.
- Product manuals for similar products
- Details of BIS and BIS recognized laboratories for similar products

9. Relevant sectional committee and Nodal officer from BIS

Sectional committee:

- MTD 4-Wrought Steel products Sectional Committee Sectional Committee

Nodal officer :

- Mr Arun Pucchakayala, Scientist D/ Joint Director – Member Secretary MTD 4,
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