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**भारतीय मानक ब्यूरो**

**BUREAU OF INDIAN STANDARDS**

###### **AGENDA**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name of the Committee** | **No. of Meeting** | **Date & Day** | **Time** | **Venue** |
| **Mechanical Testing of Metals Sectional Committee, MTD 03** | **27th** | **20th December 2024**  **(Friday)** | **2 : 00 PM** | **Virtual Meeting**  **Meeting link:** <https://bismanak.webex.com/bismanak/j.php?MTID=md3896d9bd18a58e97cbeb7128d3ed34f>  Password: **MTD03** |

**Chairman:** Dr Vikas Kumar  **Member Secretary:** Shri Dushyant Hawelikar

# Item 0 WELCOME AND OPENING REMARKS

# Item 1 CONFIRMATION OF MINUTES OF THE LAST MEETING

The minutes of 25th meeting of Mechanical Testing of Metals Sectional Committee held on 10th May 2024 (Friday)through virtual mode, were circulated to the members vide our letter No. MTD 03/A-2.25 dated 17/05/2024.

The minutes of 26th meeting of Mechanical Testing of Metals Sectional Committee held on 29th August 2024 (Thursday)through virtual mode, were circulated to the members vide our letter No. MTD 03/A-2.26 dated 10/09/2024.

**No comments have been received.**

**The committee may consider and approve the minutes of the previous meetings.**

# Item 2 SCOPE AND COMPOSITION OF COMMITTEE

2.1 Review of the membership in the Committee - In accordance with the guidelines, the composition should be compact and the membership of the committee shall be reviewed after 3 years and the organizations representing for reasonable long time without participation/contribution may be substituted by new organization that are capable of contributing in the new technologies/area of work.

2.2 Balancing of all interested groups in the Committee - It has been decided that the composition of the technical committee should be reviewed to have at least two third of the committee members representing Consumers/ Technical Bodies/ R&D/ Testing Laboratories/ educational institutions/ Govt. Departments etc, and the representation of the manufacturing industries/Associations of Industries should be not more than one third of the committee members. NGO’s and Consumer Organizations may be co-opted in Technical Committees where there is no adequate representation. In order to keep committee to a workable size, the strength of Sectional Committee is generally **30.**

**2.3** The present composition of sectional committee is given at **[ANNEXURE-1](#ANNEXURE1)**[.](#ANNEXURE1)

**The committee may note and review the composition of the committee in accordance with the guidelines mentioned in 2.1 and 2.2**

**Committee may please note.**

**2.4** The following members have informed that due to some necessary commitments, they were not able to participate in the 26th TC meeting:

1. Shri K Venkatesan – In Personal Capacity
2. Shri Raju Tambad – FIE
3. Shri Shivakumar V – Zwickroll
4. Smt. Sunita Minz – SAIL
5. Ramachandran – Personal Capacity

**2.5** Following experts are proposed to be included in respective Panels and WGs for their expertise in the mentioned subject areas.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***Sl no.*** | ***Designated Expert*** | ***Organization*** | ***Subject*** | ***Add to Panel/Working Group*** |
|  | **Dr S S K Titus** | Force and Hardness Division, NPL , New Delhi (Retired) | 1. ISO/DIS 6506-1 2. ISO/DIS 6506-2 3. ISO/DIS 6506-3 4. ISO/DIS 14577-1 5. ISO/DIS 14577-2 6. ISO/DIS 14577-3 7. ISO/CD 14577-6 8. ISO 6506-4:2014 (Ed 2, vers 2) 9. ISO 18265:2013 (Ed 2, vers 2) | Panel 3 on "Hardness Testing” (MTD 03: P03) |
|  | **Prof. A. Basu** | NIT Rourkela |
|  | **Dr. Naga Sruthi Neelam** | NIT Raipur | 1. ISO/WD TS 4596 2. ISO/AWI TR 15264 | Panel 1 on "Uniaxial Testing" (MTD 03: P01) |
|  | **Dr. Sudip K. Sinha** | NIT Raipur | ISO/CD 148-1 | Working Group on Charpy pendulum impact test (New WG) |

**2.6** Committee is requested to designate the mentioned experts to ISO projects. The proposed list is attached as **[Annexure 5](#Annexure5).** It is proposed that 1 to 2 expertsfor each subject are to be designated.

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**Committee may designate the experts.**

**2.7 One to one demo of IR Portal:**

As the committee is already aware about the BIS International Relations portal (BIS IR portal), to facilitate the members various trainings were organised. However, there were still some queries from the members about the portal. Hence, one to one demonstration of BIS portal was conducted for the committee members on request. Such training was attended by the following members:

* 1. Shri Anand Sankar – ABS Instrument
  2. Dr S K Jain – Personal Capacity
  3. Shri K Venkatesan - Personal Capacity
  4. Shri Alok Kumar – Shriram Institute for Industrial Research
  5. Shri Aneesh Kumar - Shriram Institute for Industrial Research
  6. Shri Lokesh Paliwal – Tata Motors
  7. Dr M Saravanan – VAMAS India Chapter
  8. Shri Shiva Kumar V – ZwickRoell Private Limited Chennai
  9. Shri T K Prusty – DGQA
  10. Shri Ramakrishan Hebbar- Intron India Limited
  11. Shri Sivakumar – JSW Steel Ltd
  12. Smt. M Deepa - SAIL Salem

Committee may please note.

**2.8** **Workshop-Cum-Brainstorming Sessions for TC Members**

Workshop-Cum-Brainstorming Sessions for TC Members are designed to bring an array of developments being made in standardization process as well as related portals for bringing out effective standards in a timely manner, and to strengthen India’s position at international level. Members were also made aware of India’s leading steps towards SMART standards and Online and Collaborative Authoring of Standards. Hands-on demonstrations of the essential online tools that are vital for success, were provided during the programme. The program was conducted in several dates. Brochure is placed below:



The aforesaid workshop was attended by following experts at NITS, Noida:

1. Shri Varun Panwar – BHEL, Haridwar
2. Shri Ramesh Koraddi - BISS Bangalore
3. Shri Vishwas C - BISS Bangalore
4. Dr A. Ramachandra Murthy - CSIR - Structural Engineering Research Centre, Chennai
5. Shri S. Vishnuvardhan - CSIR - Structural Engineering Research Centre, Chennai
6. Shri Amar Ghatak - Hindalco Industries Limited, Mumbai
7. Dr S. K. Jain - In Personal Capacity
8. Shri K. Venkatesan - In Personal Capacity
9. Smt. Deepa M - Steel Authority of India Limited (SAIL) - Salem Steel Plant, Salem
10. Shri Shiva Kumar V - ZwickRoell Private Limited, Chennai

**2.9 BIS Awards**

To recognize the contribution of the committee members for their outstanding work, BIS has issued revised guidelines for various awards like ‘**BIS Committee of The Year Award**’, ‘**Certificate of Excellence**’ and ‘**Letter of Appreciation**’

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# Item 3 ACTION TAKEN REPORT

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| --- | --- | --- | --- |
| **SI no** | **Subject** | **Decision of the committee in last meeting** | **Action Taken** |
|  | **[IS 17418 : 2020 ISO 16842 : 2014](#serial001)** Metallic Materials - Sheet and Strip - Biaxial Tensile Testing Method Using a Cruciform Test Piece | The committee requested Dr S K Jain to study the modifications in revised version of ISO 16842 : 2021 and recommend for the adoption. If recommended, the document shall be sent for wide circulation one month.  Dr S. K. Jain studied the modifications in the revised version of ISO 16842 : 2021 and comments were received via email dated 16/04/2024. The comments are attached herewith:    The committee requested **Dr V. David Vijayanand from IGCAR** to review the comments of Dr S. K. Jain on ISO 16842 : 2021 specifically related to Finite element analysis (Clause 5) . He was also requested to give his recommendation to adopt the ISO standard in toto or with modification within two weeks. | Email was sent on 08/07/2023 and Reminder was sent on 01/11/2023.  Recommendation is awaited. |
|  | **MTD/03/20807**  **IS 10167: 1982**  Method for upsetting test on metallic materials | In its 23rd TC meeting, the committee decided to send the document for wide circulation for a one month.  Accordingly, the document was sent for wide circulation on (08/12/2023).  No comments were received during wide circulation period.  Subsequently, comment was received from **Dr Anup Chandra** through email dated 30 Dec 2023 which is placed below:  “proposed revision is good however few suggestions can be incorporated:  ***Cl 2***  For guidance test equipment selection as given in is 14858 : 2000 may be referred  ***Cl 3.3.1***  For tubular or profile section can also be tested in longitudinal or cross section direction for cold upsetting.  The above parameter is required for many applications”  M. Deepa – SAIL,Salem – Draft standard accepted  Dr Nagesha- IGCAR- Kindly note that I have no comments to make on the other two standards.  The comments provided by **Shri Anup Chandra** are agreed by the committee and decided to be incorporated in the draft. Committee advised member secretary to contact **M/s Sundaram fasteners**, **Chennai** and seek their comments on the draft.  Comments awaited.  The committee advised the member secretary to once again contact M/s Sundaram Fasteners Pvt. Ltd. and seek their comments on the draft. | Email was sent on 05/07/2023 and reminder was sent on 01/11/2023.  Comments from Sundaram fasteners are awaited.  **The document was wide circulated on 08/12/2023. No comments have been received till date.**  **Committee may decide to send the document for publication.** |

# Item 4 DRAFT STANDARDS/AMENDMENTS FOR FINALIZATION

**4.1** The committee in its last meeting decided to send the following documents for Publication. Accordingly, the following documents were sent for publication.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sl. No.** | **IS/ISO/Doc No.** | **Type** | **Title** | **Remark** |
|  | **MTD/03/23767 IS 17416 : 2020** | Revision | Metallic Materials Charpy V-notch Pendulum Impact Test Instrumented Test Method | **Published as IS 17416 : 2024 / ISO 14556 : 2023** |
|  | **MTD/03/24371  ISO 11531 : 2022** | New | Metallic Materials Sheet and Strip Earing Test | **Published as IS 18733 : 2024 / ISO 11531 : 2022** |
|  | **IS 3394 : 1985** | Revision | Method for accelerated life test of electrical resistance alloys for heating elements | **Published as IS 3394 : 2024** |
|  | **MTD/03/24421 ISO 12106 : 2017** | New | Metallic Materials ― Fatigue Testing ― Axial-Strain-Controlled Method | **Published as IS 18795 : 2024/ ISO 12106 : 2017** (Modified) |
|  | **MTD/03/20806** **IS 1598 : 1977** | Revision | Method for izod impact test of metals | **Under Publication** |
|  | **MTD/03/20809**  **IS 6886 : 1973** | Revision | Method of dynamic force calibration of axial load fatigue testing machines by means of a strain gauge technique | **Under Publication** |

**The committee may note.**

**4.2** The committee in its last meeting decided to send the following documents for wide circulation. Accordingly, the **following documents were sent for wide circulation for one month** and have completed the said period. **BIS has not received any comments till date.** The committee decide to send the following documents for publication. The status is as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sl no.** | **Doc No / IS no./ ISO no** | **Title** | **Decision of the last committee meeting** | **Date of WC & WC Draft** |
|  | **[IS 17419 : 2020 ISO 17340 : 2020](#item4)** | Metallic Materials - Ductility Testing - High Speed Compression Test for Porous and Cellular Metals | The document is being modified according to the changes suggested by the committee, and the committee has decided to send the modified document for wide circulation for one month.    **The committee decided to send the document for WC of one month.** | <https://www.services.bis.gov.in/tmp/WCMTD2625830_26062024_1.pdf>  Date of WC - 26-07-2024 |
|  | **IS 17795 : 2022**  **ISO 204 : 2018**  (Amalgamation of IS 3407 Part 1 : 1983 & IS 3407 Part 2 : 1983) | Metallic materials — Uniaxial creep testing in tension — Method of test | The document was modified according to the changes suggested by the committee, and the **committee has decided to send the modified** **document for wide circulation for one month.** | <https://www.services.bis.gov.in/tmp/WCMTD2625831_08072024_2.pdf>  Date of WC - 07-08-2024 |
|  | [**IS 6885 (Part 1) : 2020 ISO 4545-1 : 2017**](#serial4) | Metallic Materials — Knoop Hardness Test Part 1 Test Method | The committee decided to adopt the latest version of ISO 4545-1:2023 in toto. Also, send the comments of Dr S K Jain to ISO for their consideration which was shared through agenda item no 10.3.2  **The committee decided to Send the document for WC of one month.** | <https://www.services.bis.gov.in/tmp/WCMTD2625832_26062024_1.pdf>  Date of WC - 26-07-2024 |
|  | **IS 1586 (Part 1) : 2018**  **ISO 6508-1 : 2016** | Metallic materials - Rockwell hardness test: Part 1 test method | The committee decided to adopt the latest version of ISO 6508-1:2023 in toto. Also, send the comments of Dr S K Jain to ISO for their consideration which was shared through agenda item no 10.3.2  **The committee decided to Send the document for WC of one month.** | <https://www.services.bis.gov.in/tmp/WCMTD2625816_11062024_1.pdf>  Date of WC - 12-07-2024 |
|  | **IS 1586 (Part 2) : 2018**  **ISO 6508-2 : 2015** | Metallic materials - Rockwell hardness test: Part 2 verification and calibration of testing machines and indenters | The committee decided to adopt the latest version of ISO 6508-2:2023 in toto. Also, send the comments of Dr S K Jain to ISO for their consideration which was shared through agenda item no 10.3.2  **The committee decided to Send the document for WC of one month.** | <https://www.services.bis.gov.in/tmp/WCMTD2625817_10062024_1.pdf>  Date of WC - 10-07-2024 |
|  | **IS 1586 (Part 3/Sub- Sec 2012) : 2018**  **ISO 6508-3 : 2015** | Metallic Materials - Rockwell Hardness Test Part 3 Calibration of Reference Blocks | The committee decided to adopt the latest version of ISO 6508-3:2023 in toto. Also, send the comments of Dr S K Jain to ISO for their consideration which was shared through agenda item no 10.3.2  **The committee decided to Send the document for WC of one month.** | <https://www.services.bis.gov.in/tmp/WCMTD2625818_11062024_1.pdf>  Date of WC - 11-07-2024 |
|  | **[IS 1501 (Part 1) : 2020 ISO 6507-1 : 2018](#serial7)** | Metallic Materials — Vickers Hardness Test Part 1 Test Method | The committee decided to adopt the latest version of ISO 6507-1:2023 in toto. Also, send the comments of Dr S K Jain to ISO for their consideration which was shared through agenda item no 10.3.2  **The committee decided to Send the document for WC of one month**. | <https://www.services.bis.gov.in/tmp/WCMTD2625819_11062024_1.pdf>  Date of WC - 12-07-2024 |

**Committee may decide to send the documents for publication.**

# Item 5 DRAFT STANDARD/ AMENDMENTS FOR APPROVAL FOR WIDE CIRCULATION

There is no standard approval for wide circulation.

**The committee may please note.**

# Item 6 DRAFTS UNDER PREPARATION

There is no standard draft under preparation.

**The committee may please note.**

# Item 7 COMMENTS ON PUBLISHED STANDARDS

No comments were received on the printed standards since the previous meeting.

**The committee may please note**.

# Item 8 NEW SUBJECTS

**8.1** Following is the list of new proposals for proposing new subjects for national standardization which were received since last meeting.

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| --- | --- | --- | --- |
| **SI no** | **Subject** | **Decision during the last meeting** | **Current status** |
| 1 | Miniature testing of metals | BIS has received a proposal from Prof Raghu Prakash, IIT Madras, through standards portal which is placed below. However, working draft is awaited from the proposer.    Dr V Karthikinformed the committee that expression of interest may be sought from the industries and labs. A workshop or series of lectures may be conducted in this regard in the first week of July.  Based on the response of the program, detailed plan will be submitted by Dr Karthik.  Committee noted the suggestion of Dr Karthik and requested him to proceed as proposed and **submit a working draft.** The committee also requested Dr Karthik to identify estimated funding required and the potential users who can contribute in funding for this project. Subsequently, prepare a proposal, that can be sent to identified funding sources and funding can be requested.  A detailed plan of action for this project should be prepared.  Experts in this field need to be identified and a panel to be created.  There is a need for discussion on the subject like:   1. Which test method is proposed to be formulated 2. Stakeholders in this activity 3. Labs for ILC 4. Funding requirement (expected expenditure) 5. Participants in funding   It is informed that following subjects are currently under consideration by ISO :  Committee felt that more focused approach should be adopted to develop the standard on miniature specimen testing. Committee then discussed the method of tests that can be developed and came to a decision that efforts should be started to develop standards on “**Tensile testing of Miniatured samples**” under lead role of Dr Karthik from IGCAR and “**Fatigue Crack Growth Method - fatigue testing of Miniatured samples**” under lead role of Dr Jalaj from DMRL(DRDO) . Committee also requested BISS to take active role in developing both the standards since they are also working in the same areas.  Two dedicated working groups may be created to develop these standards. Leaders as mentioned were requested to build a team of experts to form a working group to develop the standard.  To start the work, it is very important to have a working draft hence efforts should be made to make a working draft.  Prof Raghu Prakash of IIT Madras was requested to take active role in both the groups and prepare Research Project Funding requirements which can be useful for fund raising from BIS and other institutions.  A panel meeting was scheduled on 18/12/2023.  Meeting was attended by - Dr Karthik- IGCAR, Dr Raghu Prakash- IIT Madras, Dr Jalaj Kumar- DMRL and Shri Ramakrishna Hebbar – BISS.  Following is the summary of the discussion:  It was recommended that working group is to be reconstituted with the experts given below:   1. IGCAR- Dr V Karthik (Convener) 2. IIT Madras -Prof Raghu Prakash 3. NML- Dr Sivaprasad 4. BARC - Dr Kundan Kumar 5. DMRL - Dr Jalaj 6. IISc- Dr Praveen Kumar 7. BISS- Shri Ramakrishna Hebbar   The draft standard of ISO 6892-5 was discussed, and participants were requested to share their comments in the ISO commenting template. It was noted that the voting date for the NWIP ballot on ISO 6892-5 had ended, but there were still some comments and queries that needed to be addressed. Participants were requested to share their comments on Form 4 and the draft standard on ISO 6892-5, which could be sent to BIS for further submission to ISO for consideration. Comments were to be shared within one week since the deadline is already over."  Subsequently, Dr Karthik communicated that he has no specific comments on draft standard ISO 6892-5. Dr Jalaj has indicated the following comment: The use of non contact extensometer needs to be deliberated.  2nd Panel meeting was held on 16/01/2024.    Panel convener – Dr Karthik briefed the committee about the recommendations of the panel. Committee has noted the minutes of 1st panel meeting and decided to participate in ongoing project of ISO i.e. ISO 6892-5 instead of developing the draft standard indigenously. However, if in case the views of India are not considered adequately, the modified draft may be prepared based on the ISO document. A separate study shall also be conducted if found necessary as per the recommendation of the panel. Committee also decided to modify the panel composition as follows:   1. IGCAR- Dr V Karthik (Convener) 2. IIT Madras -Prof Raghu Prakash 3. NML- Dr Sivaprasad 4. BARC - Dr Kundan Kumar 5. DMRL - Dr Jalaj 6. IISc- Dr Praveen Kumar 7. BISS- Shri Ramakrishna Hebbar   Committee also decided to nominate Prof Raghu Prakash, Dr Kundan Kumar and Dr Sivaprasad in addition to Dr Karthik to project ISO 6892-5 and requested BIS to register them in ISO global directory as well as experts in ISO TC 164 SC1 WG 4 allowing them to attend the meetings organized by the WG 4. Committee also directed the aforesaid experts to participate in all the works related to the ISO project and requested BIS to do the needful.  Committee requested the WG members to prepare a consolidated comment as soon as possible which needs to be sent to ISO for their consideration.  Committee advised member secretary to write to the project leader of ISO 6892-5 requesting the documents referred in the draft document (bibliography). If not received from ISO, the same should be procured through BIS. Committee also advised member secretary to share all the referred documents with the panel for their study.  WG meeting was held on 17/02/2024, following are the comments finalised by the WG to be sent to ISO for further consideration.    Accordingly, the comments were sent to ISO with the approval of Chairperson vide email dated 06/03/2024.  Following reply was received from the ISO WG Convener Mr Johannes Aegerter :  --  Regarding ISO/TS 6892-5 I would like to describe the situation as follows:  The issue was presented and discussed the first time in the meetings in Mokpo 2017 (in the 16th meeting of ISO/C 164/SC 1/WG 4 resp. the 44th meeting of ISO/C 164/SC 1) and it was decided to register the proposal as an ISO/TR. Since that time the document was discussed in ISO/C 164/SC 1/WG 4, the progress was always presented to ISO/TC 164/SC 1.  Since many years India is member in ISO/TC 164/SC 1, since September 2023 India has nominated an expert in ISO/TC 164/SC 1/WG 4. Two meetings of ISO/TC 164/SC 1/WG 4 (24th meeting on 12th Dec. 2023, 25th meeting on 25th Jan. 2024) have been hold since that time. The unanimous recommendation of WG 4 to SC 1:  WG4 recommends to start the DTS ballot in SC1.  Because of the intensive work on this document and the high grade of consensus the document should be published in near future.  It may be that it is not an absolute perfect document, but the users are waiting for it!  Your comments can be discussed in the next meeting of WG 4. But for that it is essential that you give input in the column “**proposed change**” in the template for comments.  The documents requested by Working group in its 2nd meeting ( [13],[14] of bibliography ) are being procured by BIS. Conference transcript was available for sale hence the same is being procured.  It will be made available to WG members once it is procured.  As per the decision of the committee - Prof Raghu Prakash, Dr Kundan Kumar and Dr Sivaprasad are registered in ISO global directory and ISO TC 164 SC1 WG 4 as experts.  WG meeting was scheduled on 4th May (Saturday) at 1600h to discuss and finalize the contents for “ proposed changes” .  Accordingly, final comments submitted by the panel convenor are placed below :    Committee decided to send the comments recommended by working group to ISO/TC 164/SC 1/WG 4. | The ISO/TC 164/SC 1/WG 4 meeting on the "Conventional Quasi-Static Tensile Test Procedure" was held on 18/09/2024 in hybrid mode.  The following members attended the meeting:   1. Dr Sivaprasad – NML   I attended the meeting yesterday. Following are the salient points wrt our comments.  1. Our comment on removal of Note 2 (on high temperature part) was partially accepted. In the sense  that  there would be no "note" but suggestion to perform high temperature test will be part of running text with specific caution to take care of environmental interaction (eg., oxidation). Committee wanted to keep it since there were specific requests on this aspect from organisations like NASA.  2. Our comment to increase the acceptable variation in mechanical properties from 5% to 10% was not accepted, since many members (particularly from US, Germany and France) told there are strong literature support to prove that the variations can be kept within 5% if the test technique is perfected.  3.Our comment to include the grain size in the report, was accepted with a rider "if known"  I also raised the point on use of non-contact extensometer (though it was not communicated), the opinion of the committee was as long as it meets the accuracy and precision of contact type extensometer there are no issues.  The committee, in general, was not in mood to take up any technical comments from any country as they were apparently discussed many time. We had to force it.  Meeting minutes are attached herewith: |
| 2 | **Test Procedure to Characterize Intrinsic Threshold Stress Intensity Range** | BIS has received the working draft from Dr Sunder, BISS vide email dated 04th Aug 2022 which is placed below:    Dr Vishwas C of BISS proposed a new subject for standards formulation on ‘Standard test method to characterization intrinsic threshold stress intensity range’. The proposal was received through BIS standards portal on 12/01/2023 as suggested during the 21st committee meeting of MTD3.  The committee in its 21st committee meeting has agreed to take up the subject for national standardization and decided to formulate a panel with following composition:  1. Dr Vikas Kumar, DMRL (Convener)  2. Prof. Raghu V. Prakash (Sr. VP, InSIS)  3. Prof. Praveen Kumar, IISc  4. Dr Kartik Prasad, DMRL  5. Dr Sunder, BISS  6. Shri Ramesh Koraddi, BISS  7. Shri Vishwas Chandra, BISS Labs  Expert Invitation :  Dr Andrew Rosenberger and Dr Santosh Narasimhachary.  The committee also requested Dr Sunder to provide a one page write up on the subject. This write up can be sent to institutions seeking their interest to be a part of the panel that is to be formed for formulation of this standard.  One page writeup on the subject was received which is placed below:    A panel meeting was held on 9th March 2023 to discuss and layout the plan for formulation of standard on the proposed subject.  The committee decided to include Dr Vikram Jayaram of IISc Bengaluru to the panel and requested him to submit a detailed proposal for funding from BIS and other bodies who are willing to take part in this activity. A detailed plan is requested to be prepared by panel.  Reminder mail was sent on 09/08/2023.  Recommendation is awaited.  Committee advised the panel to lay out a plan of action along with timeline. Prepare a detailed Term of Reference so that other organizations can also be approached with the proposal of formulating this standard and can be asked for the necessary help.  Committee requested InSIS to work on the subject more proactively and arrange more experts’ discussions.  The panel was again requested to deliberate on the draft provided by Dr Sunder and prepare a plan of action.  Reminder mail was sent on 19/04/2024.  **Recommendation is still awaited.**  Shri Vishwas Chandra, BISS Labs has informed the committee that the document is being discussed internally with the InSIS community and it will be submitted in due course | **Inputs awaited.** |
| 3. | **Anisotropic yielding performance** | Proposal received by Additive Manufacturing Research Laboratory IITJ which was circulated to committee through standards portal on 02/01/2024.  No comments were received on the proposal.    A proposer may be requested to deliver a presentation on the proposed subject.  The committee constituted a working group to discuss the new work item proposed as follows:   1. Dr Jalaj Kumar - DMRL 2. Dr Niranjani - DMRL 3. Dr Nagesh - IGCAR   Working group is requested to provide a recommendation whether a standard should be formulated on the subject or not.  If required by the WG, the proposer may also be involved in the discussions. | A Working Group meeting was held on 22/05/2024.  Summary of WG meeting:  It has been observed that the proposal does not introduce a novel testing methodology but rather suggests an additional procedure to the existing Knoop hardness test. The primary focus is on utilizing Knoop hardness values to determine the anisotropy present in materials. While this approach leverages established testing protocols, it does not constitute a significant advancement in testing methods that would warrant the establishment of a separate standard.    Furthermore, the proposal lacks substantial material justification to support its recognition as an independent standard. The scope presented is considered to be quite limited, which raises concerns regarding the practical applicability and the breadth of impact such a standard would have within the industry. It is essential for a new standard to demonstrate a clear advantage or improvement over current practices, which, in this case, seems to be insufficiently substantiated.    Additionally, a critical aspect of any standardization process is the quantification of results. The proposal, as it stands, does not provide a method for quantifying the anisotropic yielding performance. This omission is a significant drawback, as quantifiable results are crucial for the validation, comparison, and implementation of standards in practical scenarios.    Enhancements in the areas of testing innovation, material justification, and result quantification would greatly improve the potential for this proposal to contribute meaningfully to the field of material science and engineering.    In light of these findings, it is**recommended that the proposal be rejected for national standardization.**  Based on the WG's recommendations and subsequent approval of chairperson of MTD 3, the proposed NWIP has not been approved and has therefore been rejected.  **Committee may note.** |

**The committee may deliberate and decide.**

**8.2** To propose a new work item for national standardization please do the following:

Go to manakonline.in > standardization> Propose new work item

**The committee may please note**.

# Item 9 TECHNICAL ISSUES

There is no technical issues.

**The committee may please note.**

# Item 10 INTERNATIONAL ACTIVITIES

10.1.1 The National Standards Bodies who are members of ISO have the right to participate in the work of its technical committees and subcommittees and working groups as participating (P members) or observer (O member) with the following responsibilities:

a) ‘P’ members have to participate actively in the work, with an obligation to vote on all questions formally submitted for voting within the technical committee or subcommittee and on draft documents at different stages or processing and, whenever possible, to participate in meeting (s).

b) `O’ members have to follow the work as an observer, and therefore, receive committee documents and have the right to submit comments and to attend meetings

c) National Bodies irrespective of their status as ‘P’ or ‘O’ member within a technical committee or subcommittee have the right to vote on draft International Standards.

10.1.2 India is ‘P’ member on

**ISO TC-164** **(P):** Mechanical Testing of Metals

**ISO TC-164 SC-1 (P)**: Uniaxial Testing

**ISO TC-164 SC-2 (P**): Ductility Testing

**ISO TC-164 SC-3 (P)**: Hardness Testing

**ISO TC-164 SC-4 (P)**: Fatigue Fracture and Toughness Testing

10.1.3 The details of the standards formulated by this ISO Technical Committee are enclosed at [**ANNEXURE-**](file:///F:\My%20Drive\bis%20work_Dushyant\MTD3\MTD%203%20meetings\22nd%20meeting\Agenda%2022%20meeting.docx#bookmark=id.1ksv4uv)**III**

**The committee may note.**

## 10.2 India’s participation in ISO meetings

10.2.1 Information about the upcoming meetings of ISO can accessed through BIS IR Portal.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ISO TC SC** | **Name** | **Meeting Date** | **Registration Deadline** | **Mode** |
| 45th meeting of ISO/TC 164/SC 2 | Ductility Testing | 16 January 2025 | 09 January 2025 | Virtual |

**The committee may note.**

**10.2.2** List of ISO/TC committee registered members**:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sl No.** | **ISO TC/SC** | **Role** | **Name** |
|  | **ISO/TC 164**  “Mechanical testing of metals” | Member | Dr S K Jain |
| Member | Dr Jalaj Kumar |
|  | **ISO/TC 164/SC 1**  "Uniaxial testing" | Member | Dr V Karthik |
|  | **ISO/TC 164/SC 1/SG 1**  “Continuous force calibration” | Member | Dr S K Jain |
|  | **ISO/TC 164 SC1 WG2**  “Creep and stress relaxation testing” | Member | Dr V.D. Vijayanand |
| Member | Dr A. Nagesha |
|  | **ISO TC 164 SC1 WG4**  “Conventional quasi static tensile test” | Member | Dr V Karthik  Dr Raghu Prakash  Dr S Sivaprasad  Dr Kundan Kumar |
|  | **ISO/ TC 164/ SC4**  “Fatigue, fracture and toughness testing” | Member | Dr Vikas Kumar  Shri Anand Sankar |
|  | **ISO/ TC 164/ SC4/ WG 2**  “Pendulum impact toughness” | Member | Dr V Karthik |
|  | **ISO/ TC 164/ SC4/ WG 3**  **“**Fracture toughness” | Member | Dr Vikas Kumar |
|  | **ISO/ TC 164/ SC4/ WG 5**  **“**Fatigue testing: general conditions” | Member | Dr Vikas Kumar |
|  | **ISO/ TC 164/ SC4/ WG 6**  **“**Fatigue testing: elasto-plastic strain and crack growth conditions” | Member | Dr Vikas Kumar |

* + 1. Following is the details of participation of nominated members in ISO meetings :

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sl no.** | **ISO/TC/SC Meeting Name and Number** | **Date** | **Attended by** | **Brief Report** |
|  | 44th meeting of ISO/TC 164/SC 2 "Ductlity Testing" | 19/09/2024 | Kaushik Bandyopadhyay (Panel 2 Member) MTD 3 | Report awaited |
|  | 26th Meeting of ISO/TC 164/SC 1/WG 4 "Conventional quasi-static tensile test procedures" | 16/09/2024 | Dr Sivaprasad - CSIR - National Metallurgical Laboratory, Jamshedpur" | Following are the salient points wrt our comments. 1. Our comment on removal of Note 2 (on high temperature part) was partially accepted. In the sense that there would be no "note" but suggestion to perform high temperature test will be part of running text with specific caution to take care of environmental interaction (eg., oxidation). Committee wanted to keep it since there were specific requests on this aspect from organisations like NASA. 2. Our comment to increase the acceptable variation in mechanical properties from 5% to 10% was not accepted, since many members (particularly from US, Germany and France) told there are strong literature support to prove that the variations can be kept within 5% if the test technique is perfected. 3.Our comment to include the grain size in the report, was accepted with a rider "if known"  I also raised the point on use of non-contact extensometer (though it was not communicated), the opinion of the committee was as long as it meets the accuracy and precision of contact type extensometer there are no issues. The committee, in general, was not in mood to take up any technical comments from any country as they were apparently discussed many time. We had to force it. |
|  | Meeting of ISO/TC 164/SC 4 "Fatigue, Fracture and toughness testing" | 18/10/2024 | Mr Anand Sankar (Director, Technical Operations) - ABS Instruments Private Limited, Chennai | Report received via email on 16/12/2024.  Report attached herewith. |

**Committee may note**.

* + 1. ISO Ballot ‘Call for the Secretariat of ISO/TC 164/SC 3’ issued by ISO TC 164.

1. Mechanical Testing of Metals Sectional Committee (MTD 3) is National Mirror Committee for ISO TC 164 ‘Mechanical Testing of Metals’ and ISO TC 164 SC 3 ‘Hardness Testing’ where India is a ‘P’ Member.
2. The ISO ballot ‘Call for the Secretariat of ISO/TC 164/SC 3’ was open for vote from 26/04/2024 to 19/07/2024. The questions asked and documents received along with the ballot.
3. The secretariat is relinquished by DIN – Materials Standards Testing Committee, Sebastian Lubbert (Committee Manager).
4. Details of ballot along with documents was circulated to the NMC members through email on 15/05/2023 and comments were invited till 03/07/2023.
5. The information was also shared with NMC members through whatsapp group.
6. Many members agreed that BIS should take responsibility of ISO TC 164 SC 3 secretariat.
7. Accordingly, the approval of the Chairman of MTD 3 to vote "Yes" on the ballot was furnished via email dated 19/07/2023 and vote was casted.
8. Subsequently, an email was received from committee manager of ISO TC 164, Mr. Hitoshi Yoshida regarding the reallocation of the secretariat of ISO/TC 164/SC 3 "Hardness Testing," where he has sought certain inputs from India which is placed below.
9. As a result of the ballot, the four P-members have offered to take over the Secretariat of ISO/TC 164/SC 3. Therefore, in accordance with 1.9.4 in "ISO/IEC Directives, Part 1, 2024", the final decision will be made by the technical management board in the ISO Central Secretariat.
10. The matter was taken with panel on Hardness Testing (MTD03:P03).
11. Accordingly, panel meetings were conducted to discuss the inputs sought by Mr Hitoshi.
12. After deliberation, answers were finalised which are placed below. These answers were discussed with HMTD and conveyed to committee manager vide email dated 30 Sept 2024.  
13. As per the recommendation of the panel Dr S S K Titus was recommended for the panel convenorship.
14. Subsequently, acknowledgement was received from Mr Hitoshi.



1. Decision will be taken by Technical Management board of ISO which is awaited. Committee will be appraised later on any updates in this regard.

**Committee may please note.**

**10.2.5** List of ISO ballots that are currently open for comments is as given below. Email for seeking the comments from respective committee have already been sent. If any members are interested to share any comments on the following subjects, please share your comment before end date.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Sl no.*** | ***Reference & Title*** | ***Reference test blocks, question(s) being asked, and voting options are as follows:*** | ***ISO/TC*** | ***Last date of comments*** | ***Last date of ballot*** |
|  | **CIB on the reappointment of TC 164/WG 2 Convenor (2025-2027)** | | [**No.**](javascript:) | [**Questions**](javascript:) | [**Possible Answers**](javascript:) | | --- | --- | --- | | 1 | Do you approve the draft Resolution 112 ? | Yes No  \* Abstention | | **ISO/TC 164** | **15 Dec 2024** | **23 Dec 2024** |
|  | **ISO/DTS 6892-5.2**  Metallic materials — Tensile testing — Part 5: Specification for testing miniaturised test pieces | | [**No.**](javascript:) | [**Questions**](javascript:) | [**Possible Answers**](javascript:) | | --- | --- | --- | | 1 | Do you approve the technical content of the final draft? | Approval  Approval with comments\*  Disapproval Abstention | | **ISO/TC 164/SC 1** | **20 Dec 2024** | **31 Dec 2024** |
|  | **ISO/NP 26203-3**  Metallic materials — Tensile testing at high strain rates — Part 3: Test method at elevated temperature | | **No.** | **Questions** | **Possible Answers** | | --- | --- | --- | | 1 | 1a. Do you approve, disapprove or abstain on this NWIP? | Approve Disapprove  \* Abstain due to lack of consensus Abstain due to lack of national expert input | | 2 | Please also select from one of the following options (note that if no option is selected, the default will be the first option): | Draft document can be registered as a Working Draft (WD - stage 20.00) Draft document can be registered as a Committee Draft (CD - stage 30.00) Draft document can be registered as a Draft International Standard (DIS - stage 40.00) | | 3 | In case of disapproval, do you believe that further study and consultations are needed first among committee members on this proposal as a preliminary work item before this proposal can be formally accepted? | Yes No | | 4 | 1b. Did you consult with the range of relevant stakeholders identified in the proposal in the development of this voting position and related comments? | Yes No | | 5 | 2. Standard(s), regulation(s), and other relevant documentation existing in our country, with any remarks concerning their application if necessary and consequences for global relevance, as well as copyright information on these documents, are attached: | Yes (references provided below)  \* No | | 6 | 3. Do you wish to add any additional comments? | Yes  \* No | | 7 | 4. We are committed to participating actively in the development of the project, at least by commenting on working drafts (P-members voting "Disapprove" in Qu. 1a may nevertheless nominate experts): | Yes (and we nominate an expert below)  \* No | | **ISO/TC 164/SC 1** | **13th Jan 2025** | **23rd Jan 2025** |
|  | **ISO/NP 25586**  "Metallic materials — Sheet and strip — Biaxial bulge test method for sheet metals" | **ISO/TC 164/SC 2** | **20th Jan 2025** | **29th Jan 2024** |
|  | **ISO/DIS 23296 (Ed 2)**  Metallic materials – Fatigue testing – Force controlled thermo-mechanical fatigue testing method | | **No.** | **Question** | **Possible options** | | --- | --- | --- | | 1 | Do you approve the technical content of the draft? | Approval Approval with comments  \* Disapproval  \* Abstention | | **ISO/TC 164/SC 4** | **14th Feb 2025** | **25th Feb 2025** |
|  | **CIB for approval of the updated “ISO/TC 164 Business Plan** | | **No.** | **Question** | **Possible options** | | --- | --- | --- | | 1 | Do you approve the draft of updated “ISO/TC 164 Business Plan”? | Yes  No\* Abstention | | 2 | Do you have any comments? | Yes\*  No | | **ISO/TC 164** | **13th Jan 2025** | **25th Jan 2025** |

**The committee may please note and take a decision to vote the ballot with voting options available.**

**10.2.6 Visit of Japanese delegates to BIS HQ**

Following members attended the meeting physically:

1. Prof. Toshihiko KUWABARA (Tokyo University of Agriculture and Technology) : Proposer of the standard
2. Mr. Yukihiro JINNO (Osaka Science and Technology Center) : Co-proposer of the standard
3. Ms. Makiko SODEOKA (Osaka Science and Technology Center) : Colleague of Mr. JINNO
4. Project Prof. Susumu TAKAHASHI (Nihon university) : Head of Japanese delegate of ISO/TC164/SC2
5. Dr S K Jain, Member MTD 3

Following members have participated through virtual mode:

1. Dr Vikas Kumar - Chairperson MTD 3,
2. Dr Kaushik Bandyopadhyay - IIT Bhilai
3. Dr Sushil Kumar - IIT Bombay

Prof Kuwabara has made a presentation on the proposed new standard about the biaxial bulge test method under ISO/TC164/SC2. Following is the material presented during the visit:

Proposer sought India’s support in the formulation of new standard.

Ballot : **ISO/NP 25586** "Metallic materials — Sheet and strip — Biaxial bulge test method for sheet metals" (Sl no 4 of 10.2.5)

**10.2.7** List of ISO ballots have been voted on the recommendation of this committee has been placed **[ANNEXURE 4](#Annex4).**

## 10.3 Harmonizing of Indian standards with ISO standards

10.3.1 Members are requested to examine ISO standards vis-à-vis Indian standards and send their comments to BIS secretariat, if any so that Indian standards could be revised /harmonized on the basis of ISO standard. Comments, if any, will be tabled during the meeting for consideration of the committee.

**The committee may please note.**

10.3.2The ISO standards which are adopted as Indian Standard have been either revised and the latest version are given below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sl No** | **IS/ISO** | **Latest version** | **Decision during the last meeting** | **Remarks** |
|  | **[IS 12261 : 1987](#serial01)**  Method for reverse torsion test for metallic wire | ISO 9649:2023Metallic materialsWireReverse torsion test | IS 12661:1987 and ISO 9649:2023 are based on the same subject. Hence standards may be studied and compared.  The mail sent on 16/04/2024 to MTD 16 for revision of IS 12261 : 1987. IS 4454 (Part 4) is under Quality Control Order (QCO) which refers to IS 12661 for reverse torsion test. Hence relevant sectional committee (MTD 16) was contacted for any comments. Possibility of adoption of **'ISO 9649:2023 Metallic materials - Wire - Reverse torsion test'** was also conveyed.  The member secretary of MTD 16 sent comments via email dated 23/04/2024. The recommendation is as follows:  “As a member secretary, I have gone through the standards IS 4454 (Part 4), IS 12261 : 1987, and ISO 9649 : 2023.  It is to inform that; reverse bend test is not a mandatory test as per IS 4454 (part 4). Further, it is observed that, adoption of ISO 9649 : 2023, may not create much obstacle or impact to IS 4454 (Part 4).”  The committee requested to Dr S. K. Jain to study the IS 12261 : 1987 vis a vis ISO 9649 : 2023, and give their recommendation to adopt ISO standard for revision of Indian Standard. | Inputs received from Dr S K Jain vide email dated 22 May 2024 are as follows :  My recommendation is that the latest standard ISO 9649-2023 may be adopted to replace the earlier standard IS12661 : 1987 for Metallic Wire - Reverse Torsion Test'  My comments as per attached file may be considered for incorporation in the adopted version of ISO 9649-2023.    **Committee may deliberate and decide.** |
|  | **IS 8632 : 2023**  **ISO 3785 : 2006**  Metallic materials - Designation of test specimen axes in relation to product texture | ISO 3785:2023Metallic materialsDesignation of test specimen axes in relation to product texture | ISO 3785 : 2006 has been revised to latest version ISO 3785 : 2023.  **Committee may decide to adopt the latest version.**  **Committee members were requested to identify related experts and inform the member secretary.** |  |

# Item 11 PROGRAMME OF WORK

11.1 The updated list of Indian Standards formulated by MTD-03 is given at [ANNEXURE II.](file:///F:\My%20Drive\bis%20work_Dushyant\MTD3\MTD%203%20meetings\22nd%20meeting\Agenda%2022%20meeting.docx#_heading=h.1fob9te)

## 11.2 Review of Indian Standards

11.2.1 The review of each and every existing Indian standard shall follow the Action Research based approach. This implies that preparation of a Review Document to be put up to the committee for consideration must be preceded by the following activities:

1. Study and analysis of relevant international standards.
2. Literature survey on the subject.
3. Interaction with the industry on the changes in the technologies, manufacturing processes or test methods.
4. Visit to leading manufacturing units for the first-hand information on the manufacturing processes.
5. Interaction with BIS officers and labs for feedback on certification and test method related issues.

11.2.3 Review of standards shall be taken up through the Review Module of the Standardization Portal.

11.2.4 The present directives indicate that the standards fall under the above category shall be reviewed thoroughly and while reviewing following points should be considered.

i) Does the Standard meet the present demand of the industry and the consumers?

ii) Is it compatible with the available international standards,

iii) Whether these standards are required to be continued or not,

iv) Prospective implementation of the standard,

11.3 Periodical Review of Standards *-*Each published Indian standard is required to be reviewed by the concerned sectional committee after every five years of its publication/Reaffirmation. Following standards are due for review this year. Decision needs to be taken to reaffirm/revise/amend the existing standard.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sl No** | **IS Number** | **IS Title** | **Due Date** | **Decision of the last meeting** | **Remarks** |
|  | IS 1501 (Part 1) : 2020  ISO 6507-1 : 2018 | Metallic Materials — Vickers Hardness Test Part 1 Test Method ( *Fifth Revision* ) | March, 2025 | The committee advised the member secretary to circulate the list of standards due for review in 2024-2025 to the committee members via email for the comments. | [See item no 4.2 sl no 7](#serial11) |
|  | IS 12261 : 1987 | Method for reverse torsion test for metallic wire | February, 2025 |  | [See item no 10.3.2 sl no. 1](#serial10) |
|  | IS 1598 : 1977 | Method for izod impact test of metals (*First Revision*) | February, 2025 |  | [See item no 4.1 sl no 4](#item4one4) |
|  | IS 6885 (Part 1) : 2020  ISO 4545-1 : 2017 | Metallic Materials — Knoop Hardness Test Part 1 Test Method ( *Second Revision* ) | March, 2025 |  | [See Item no. 4.2 sl no 3](#serial11) |
|  | IS 17418 : 2020  ISO 16842 : 2014 | Metallic Materials - Sheet and Strip - Biaxial Tensile Testing Method Using a Cruciform Test Piece | March, 2025 |  | [See item no 3 sl no 1](#item3) |
|  | IS 17419 : 2020  ISO 17340 : 2014 | Metallic Materials - Ductility Testing - High Speed Compression Test for Porous and Cellular Metals | March, 2025 |  | [See item no 4.2 sl no. 1](#item4two) |
|  | IS 3410 : 1993 | Metallic materials - Determination of linear thermal expansion (*First Revision*) | February, 2025 |  | [See item no 11.4.2 sl no 1](#eleven) |
|  | IS 17416 : 2020  ISO 14556 : 2015 | Metallic Materials - Charpy V-notch Pendulum Impact Test - Instrumented Test Method | March, 2025 |  | **Published as IS 17416 : 2024/**  **ISO 14556 : 2023** |
|  | IS 1501 (Part 4) : 2020  ISO 6507-4 : 2018 | Metallic Materials — Vickers Hardness Test Part 4 Tables of Hardness Values ( *Fifth Revision* ) | March, 2025 |  | The mail sent to Panel 3 (Hardness Testing) dated 14/11/2024.  Dr S K Jain sent the comment received via email on 22/11/2024.  “The standards may be reaffirmed with simultaneously taking up the revision.”  **Committee may decide to reaffirm these standards in its present form.** |
|  | IS 1501 (Part 2) : 2020  ISO 6507-2 : 2018 | Metallic Materials — Vickers Hardness Test Part 2 Verification and Calibration of Testing Machines ( *Fifth Revision* ) | March, 2025 |  |  |
|  | IS 1501 (Part 3) : 2020  ISO 6507-3 : 2018 | Metallic Materials — Vickers Hardness Test Part 3 Calibration of Reference Blocks ( *Fifth Revision* ) | March, 2025 |  |  |
|  | IS 6885 (Part 4) : 2020  ISO 4545-4 : 2017 | Metallic Materials — Knoop Hardness Test Part 4 Tables of Hardness Values ( Second Revision ) | March, 2025 |  |  |
|  | IS 6885 (Part 2) : 2020  ISO 4545-2 : 2017 | Metallic Materials — Knoop Hardness Test Part 2 Verification and Calibration of Testing Machines ( *Second Revision* ) | March, 2025 |  |  |
|  | IS 6885 (Part 3) : 2020  ISO 4545-3 : 2017 | Metallic Materials — Knoop Hardness Test Part 3 Calibration of Reference Blocks ( *Second Revision* ) | March, 2025 |  |  |
|  | IS 17413 (Part 2) : 2020 ISO 26203-2 : 2011 | Metallic Materials - Tensile Testing at High Strain Rates Part 2 Servo-Hydraulic and Other Systems | March, 2025 |  |  |
|  | IS 17417 (Part 2) : 2020  ISO 4965-2 : 2012 | Metallic Materials - Dynamic Force Calibration for Uniaxial Fatigue Testing Part 2 Dynamic Calibration Device ( DCD ) Instrumentation | March, 2025 |  |  |
|  | IS 1403 (Part 1) : 1993  ISO 7799 : 1985 | Metallic materials — Sheet and strip 3 mm thick or less — Reverse bend test | February, 2025 |  | The mail sent to Panel 7 (Ductility Testing) dated 14/11/2024.  **Shri Madhusudan** sent the comment received via email on 22/11/2024.  “We regularly conduct the tests according to ISO: 16630-2017 for automotive customers.  Presently we have not come across requirement of any kind of changes in the standard.  I propose that the standard may please be reaffirmed in its present form.”  **Dr Kaushik Bandyopadhyay** sent the comments received via email on 22/11/2024.  “1. Metallic Materials — Sheet and Strip — Hole Expanding Test: the standard is **re-affirmed in its present form**.  2. Metallic materials — Sheet and strip 3 mm thick or less — Reverse bend test: although the year of publication is before 2000, can we maintain the same standard if no complaint/dissatisfaction is raised. Also considering no change in ISO standard.”  **Shri Anand Sankar** – ABS Instruments sent the comment received via email on 22/11/2024.  “I have no changes to suggest for IS 17414 : 2020 (ISO 16630 : 2017) or for IS 1403 (Part 1) : 1993 (ISO 7799 : 1985).”  **Smt. M Deepa** – SAIL Salem sent the comment received via email on 22/11/2024.  “No changes to suggest for IS 17414 : 2020 (ISO 16630 : 2017) or for IS 1403 (Part 1) : 1993 (ISO 7799 : 1985).” |
|  | IS 17414 : 2020  ISO 16630 : 2017 | Metallic Materials — Sheet and Strip — Hole Expanding Test | March, 2025 |  |  |
|  | IS 13237 : 1991 | Metallic foil - Tension testing | February, 2025 |  | The mail sent to Panel 1 (Uniaxial Testing) dated 14/11/2024 and 22/11/2024.  **Recommendation is still awaited.** |
|  | IS 4169 : 2014  ISO 376 : 2011 | Metallic materials - Calibration of force proving instruments used for the verification of uniaxial testing machines (*Second Revision*) | February, 2025 |  |  |
|  | IS 1828 (Part 2) : 2015  ISO 7500-2 : 2006 | Metallic materials - Verification of static uniaxial testing machines: Part 2 tension creep testing machines - Verification of the applied force (*First Revision*) | February, 2025 |  |  |
|  | IS 1608 (Part 2) : 2020  ISO 6892-2 : 2018 | Metallic Materials - Tensile Testing Part 2 Method of Test at Elevated Temperature ( *Fourth Revision* ) | March, 2025 |  |  |
|  | IS 1757 (Part 1) : 2020  ISO 148-1 : 2016 | Metallic Materials — Charpy Pendulum Impact Test Part 1 Test Method ( *Fourth Revision* ) | March, 2025 |  | The mail sent to Panel 4 (Impact Testing) dated 14/11/2024 and 22/11/2024.  **Recommendation is still awaited.** |
|  | IS 1757 (Part 2) : 2020  ISO 148-2 : 2016 | Metallic Materials - Charpy Pendulum Impact Test Part 2 Verification of Testing Machines ( *Fourth Revision* ) | March, 2025 |  |  |
|  | IS 1757 (Part 3) : 2020  ISO 148-3 : 2016 | Metallic Materials - Charpy Pendulum Impact Test Part 3 Preparation and Characterization of Charpy V-notch Test Pieces for Indirect Verification of Pendulum Impact Machines ( *Fourth Revision* ) | March, 2025 |  |  |
|  | IS 17417 (Part 1) : 2020  ISO 4965-1 : 2012 | Metallic Materials - Dynamic Force Calibration for Uniaxial Fatigue Testing Part 1 Testing Systems | March, 2025 |  | The mail sent to Panel 4 (Fatigue and Fracture Testing) dated 14/11/2024 and 22/11/2024.  **Recommendation is still awaited.** |
|  | IS 2855 : 1991 | Thermostat metals - Determinantion of flexivity (*First Revision*) | February, 2025 |  |  |
|  | IS 3711 : 2020  ISO 377 : 2017 | Steel and Steel Products — Location and Preparation of Samples and Test Pieces for Mechanical Testing ( *Third Revision* ) | March, 2025 |  |  |
|  | IS 17413 (Part 1) : 2020  ISO 26203-1 : 2018 | Metallic Materials - Tensile Testing at High Strain Rates Part 1 Elastic-Bar-Type Systems | March, 2025 |  |  |

11.4 Pre-2000 Standards

11.4.1 *A5 Size standards*

The A5 size Indian Standards published under this committee that have been identified for review are given below:

11.4.2 In the previous committee meeting, the committee has taken the following pre-2000 standards for review and allotted the work to members for the review. Details and action taken thereof has been mentioned below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SI no** | **IS no.** | **IS Title** | **Decision of the committee during previous meeting** | **Action taken to the committee** |
|  | [IS 3410 : 1993](#seven) | Metallic materials - Determination of linear thermal expansion (First Revision) | Comment from Dr Swaminathan is as follows:  The relevant ASTM standard is E228-22 (released in Jan 2023). The Indian standard can be updated as per the ASTM standard. I have attached the 2017 version in pdf format.  ASTM **E228-17** [Standard Test Method for Linear Thermal Expansion of Solid Materials With a Push-Rod Dilatometer](https://www.astm.org/e0228-22.html)  The committee requested Dr Karthik to study IS 3410 and provide comments for its revision.  Response of Dr Karthik is placed below:    The committee decided to constitute a working group and discuss the comments in the working group.  Committee may deliberate and discuss.  The following members are as follows in the working group:   1. CGCRI - Dr Suman Mishra 2. NML Jamshedpur- Dr Sivaprasad   Expert from IGCAR (seek recommendation from Dr Karthik).  Relevant experts are to be identified and a working group is to be set up for discussion.  Committee advised member secretary to coordinate with Dr Sudha of IGCAR, Dr Sivaprasad of NML and Dr S R Dhakate of VAMAS.  Reminder mail was sent on 19/04/2024 to Dr Sudha of IGCAR, Dr Sivaprasad of NML and Dr S R Dhakate of VAMAS.  Dr. Sudha commented send via email dated 29/04/2024, that there are same comments in IS 3410 as those sent by Dr. Karthik. | Dr S K Jain comment received via email dated on 09/07/2024. The comment is attached herewith:    ARP given to HIMANSHU KUMAR, SCIENTIST-C, PATNA BRANCH OFFICE. |
|  | IS 11240 : 1985 | Method for falling weight test on metallic materials | The committee again requested **M/s FIE – Shri R V Tambad** to review the standard and give recommendation within 1 month.  Committee also suggested that this standard should be compared with IS 10623 Drop weight tear test on ferritic steels and line pipe.  Last reminder mail was sent on 09/01/2023.  Recommendation is still awaited.  The committee again requested Shri R V Tambad to study the standard IS 11240 vis a vis IS 10623.  Reminder mail was sent to Shri R V Tambad on 19/04/2024 and 29/04/2024. | Email was sent on 05/07/2023 and reminder was sent on 01/11/2023.  Recommendation is awaited. |

**The committee may deliberate and decide further course of action.**

# Item 13. R&D PROJECTS FOR ESTABLISHMENT/REVISION OF INDIAN STANDARDS

13.1 The current guidelines for R&D projects for establishments /revision of Indian Standards under XII plan funds are given:

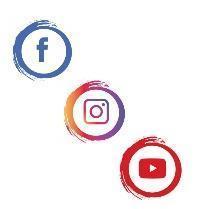
****

**The Committee may please note and identify the projects to be taken up for inclusion of empirical data and insights or testing and validation of new methods.**

# Item 14. LATEST INITIATIVES TAKEN BY BIS:

## 14.1 Pro-Active Actions Taken for Dissemination of Information through Social Media*:*

14.1.1 Since last meeting of the Council, a series of important Indian Standards have been published and number of workshops/seminars have been conducted by BIS for dissemination of information about these. In order to reach large number of stakeholders and communicate effectively with them, social media tools like Facebook, Instagram, WhatsApp, Twitter, LinkedIn, YouTube, etc are being utilized by BIS and the same may be followed at below mentioned links for information on BIS activities:

Facebook: <https://www.facebook.com/IndianStandards/> 

Instagram: <https://www.instagram.com/indianstandards/>

YouTube: <http://bit.ly/BISYouTubeOfficial>

LinkedIn: <http://bit.ly/BISLinkedInOfficial> 

Twitter: [http://bit.ly/BISTwitterOfficial](http://bit.ly/BISTwitterOfficial%20) (@IndianStandards)

**The Committee may please note**

14.2 The Rolling Annual Action Plan for the year 2024-2025.



14.3 Tentative Annual Calendar of Technical Committee Meetings

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Quarterly Meeting Schedule 2024-25** | | | | | | | | | | | | |  |
| **TC** | **March 2024** | **April 2024** | **May 2024** | **June 2024** | **July 2024** | **August 2024** | **September 2024** | **October 2024** | **November 2024** | **December 2024** | **January 2025** | **February 2025** | **March 2025** |
| **MTD 3** |  |  | **10/05/2024**  **(Fri)**  **Virtual** |  |  | **29/08/2024 (Thu)**  **Virtual** |  | **18-10-2024**  **(Fri)** |  | **20/12/2024**  **(Fri)**  **Virtual** |  |  | **03/03/2025**  **(Mon)** |

# Item 15 DATE AND PLACE OF NEXT MEETING

# Item 16 ANY OTHER BUSINESS

# [ANNEXURE-1](#_Item_2_Scope)

# COMPOSITION OF MECHANICAL TESTING OF METALS SECTIONAL COMMITTEE, MTD 03

|  |  |  |
| --- | --- | --- |
| **Meeting** | **Date** | **Place** |
| Twenty Four (24th) | 19th January 2024 | Hybrid (Chennai) |
| Twenty Five (25th) | 10th May 2024 | Virtual |
| Twenty Six (26th) | 29th August 2024 | Virtual |

**Scope:** Standardization in the field of mechanical testing of metals

**CHAIRMAN: Dr Vikas Kumar**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Sl No.** | **Organization** | **Representative(s)** | **24th** | **25th** | **26th** | **Total** |
|  | ABS Instruments Pvt. Ltd., Chennai | Shri Anand Sankar (Principal)  Shri Bhagirath Sai Sankar (Alternate) | Y | Y | Y | 2/3 |
|  | Bharat Heavy Electricals Ltd, Haridwar | Shri Gopal Singh (Principal)  Shri Varun Panwar (Alternate) | Y | Y | Y | 2/3 |
|  | BISS, Bangalore | Shri Ramesh Koraddi (Alternate)  Shri Vishwas C (Alternate) | A | Y | Y | 2/3 |
|  | CSIR - Structural Engineering Research Centre, Chennai | Dr A Ramachandra Murthy  Dr S Vishnuvardhan | Y | Y | Y | 3/3 |
|  | CSIR - National Aerospace Lab, Bangalore | Dr C.M. Manjunatha (Principal)  Dr N Jagannathan (Alternate) | Y | A | A | 1SS/3 |
|  | CSIR - National Metallurgical Laboratory, Jamshedpur | Dr S Sivaprasad (Alternate) | Y | A | Y | 2/3 |
|  | Defence Metallurgical Reasearch Laboratory, Hyderabad | Dr Jalaj Kumar(Principal)  Smt V.L. Niranjani (Alternate) | Y | Y | Y | 3/3 |
|  | DGQA, (M & E) (Ichapur, WB-743144) | Shri K. Saha (Principal)  Shri T K Prusty (Alternate) | Y | A | A | 1/3 |
|  | Fuel Instrument & Engineer Pvt Ltd, Ichalkaranji | Shri Raju V. Tambad (Principal)  Shri Ajit kumar Jaipal Koik (Alternate) | A | A | A | **0/3** |
|  | Hindalco Industries limited, Mumbai | Shri Amar Ghatak (Principal)  Shri Atul Gupta (Alternate)  Shri Sumit Gahlyan (Young Professional) | Y | Y | A | 2/3 |
|  | Indian Institute of Technology, New Delhi**(Newly co-opted)** | Prof. D. Ravi Kumar (Principal)  Prof. Sujeet K Sinha (Alternate) | - | Y | A | 1/2 |
|  | Indian Institute of Technology Ropar **(Newly co-opted)** | Dr Abhishek Tiwari (Principal)  Dr Hariprasad Gopalan (Alternate) | - | Y | Y | 2/2 |
|  | Indira Gandhi Centre for Atomic Research, Kalpakkam | Dr V. Karthik (Principal)  Dr A. Nagesha (Alternate)  Dr V. David Vijayanand (Alternate) | Y | Y | Y | 3/3 |
|  | Instron India Ltd, New Delhi/Chennai | Shri Ramakrishna Hebbar (Principal)  Shri Rohit Dash (Alternate) | A | Y | A | 1/3 |
|  | In Personal Capacity, Chennai | Shri N. Ramachandran | Y | Y | A | 2/3 |
|  | In personal Capacity, Gurugram | Dr S K Jain | Y | Y | Y | 3/3 |
|  | In personal Capacity, Chennai | Shri K Venkatesan | Y | A | Y | 2/2 |
|  | JSW Steel Ltd., Bellary | Dr S. Manjini (Principal)  Shri R. Madhusudan (Alternate) | Y | A | Y | 2/3 |
|  | National Accreditation Board for Testing and Calibration Laboratories, New Delhi | Shri N Venkateswaran (Principal)  Shri Siribabu (Young Professional)  Shri Naveen Jangra (Alternate) | A | A | Y | 1/3 |
|  | National Test House, Kolkata | Rakesh Saini  Shri A. Verma | A | A | Y | 1/3 |
|  | Research & Development Centre for Iron and Steel, (SAIL), Ranchi | Dr P P Sarkar (Principal)  Shri Kartik Nageswaran (Alternate) | Y | Y | Y | 2/3 |
|  | Steel Authority of India Limited (SAIL) - Salem Steel Plant, Salem | Smt. Deepa M (Principal)  Shri Selwyn Nathaniel PR (Alternate) | Y | Y | Y | 3/3 |
|  | Shriram Institute for Industrial Research | Shri Alok Kumar (Principal)  Shri Aneesh Kumar (Alternate)  Shri Abhinav Kumar (Young Professional) | Y | Y | Y | 3/3 |
|  | Tata Motors Ltd, Pune/Jamshedpur | Shri Lokesh Paliwal (Principal)  Shri Anoop Toby (Alternate) | Y | Y | Y | 2/3 |
|  | VAMAS Indian Chapter | Dr Sanjay R. Dhakate Principal)  Dr M. Saravanan (Alternate) | Y | Y | Y | 3/3 |
|  | ZwickRoell Private Limited, Chennai | Shri Shiva Kumar V (Principal) | Y | Y | A | 2/3 |

**The panel composition:**

**Panel 1 Uniaxial Testing**

1. Shri Ramakrishna Hebbar – ITW India Pvt Ltd (Panel convener)
2. Shri Shivakumar – Zwick Roell
3. Dr A Nagesha – IGCAR Kalpakkam
4. Dr Jagannathan N – CSIR-National Aerospace Laboratories
5. Shri Alok Kumar – Shriram Institute for industrial research
6. Dr V. Karthik – Indira Gandhi Centre for Atomic Research, Dept of Atomic Energy, Kalpakkam
7. Shri Bhagirath Saisankar – ABS Instruments Pvt Ltd
8. Dr A. Ramachandra Murthy – CSIR-Structural Engineering Research Centre

**Panel 3** **Hardness Testing**

1. Shri R V Tambad – FIE (Panel convener)
2. Dr Siribabu K – National accreditation board for testing and calibration laboratories
3. Shri Alok Kumar – Shriram Institute for industrial research
4. Dr M. Saravanan – CSIR-National Physical Laboratory
5. Dr V. Karthik – Indira Gandhi Centre for Atomic Research, Dept of Atomic Energy, Kalpakkam
6. Shri Bhagirath Saisankar – ABS Instruments Pvt Ltd

**Panel 4 Fatigue and Facture Testing**

1. Dr A Nagesha – IGCAR Kalpakkam (Panel convener)
2. Dr Jalaj Kumar – DMRL (DRDO)
3. Shri Ramakrishna Hebbar – ITW India Pvt Ltd
4. Shri Shivakumar – Zwick Roell
5. Dr Jagannathan N – CSIR-National Aerospace Laboratories
6. Dr Vishwas C – Bangalore Integrated System Solutions
7. Dr. S. Vishnuvardhan – CSIR - Structural Engineering Research Centre
8. Shri Bhagirath Saisankar – ABS Instruments Pvt Ltd
9. Dr A. Ramachandra Murthy – CSIR-Structural Engineering Research Centre

**Panel 5 Impact Testing**

1. Dr Jalaj Kumar – DMRL (DRDO) (Panel convener)
2. Dr Vishwas C – Bangalore Integrated System Solutions
3. Shri Ramakrishna Hebbar – ITW India Pvt Ltd
4. Shri Shivakumar – Zwick Roell
5. Dr Jagannathan N – CSIR-National Aerospace Laboratories
6. Dr. S. Vishnuvardhan – CSIR - Structural Engineering Research Centre
7. Shri Alok Kumar – Shriram Institute for industrial research
8. Dr V. Karthik – Indira Gandhi Centre for Atomic Research, Dept of Atomic Energy, Kalpakkam

**Panel 7** **Ductility Testing**

1. Shri Shivakumar – Zwick Roell (Panel convener)
2. Shri Alok Kumar – Shriram Institute for industrial research
3. Dr Kaushik Bandhopadhyay – IIT Bhilai

**Panel 8 Panel on Intrinsic threshold intensity range**

1. Dr Vikas Kumar, DMRL (Convener)

2. Prof. Raghu V. Prakash (Sr. VP, InSIS)

3. Prof. Praveen Kumar, IISc

4. Dr Kartik Prasad, DMRL

5. Dr Sunder, BISS

6. Shri Ramesh Koraddi, BISS

7. Shri Vishwas Chandra, BISS Labs

# ANNEXURE II

**PROGRAMME OF WORK**

**(LIST OF INDIAN STANDARDS PUBLISHED BY MTD 3)**

MTD 3 Mechanical Testing of Metals Sectional Committee

**SCOPE :** Standardization in the field of mechanical testing of metals

**LIAISON :** **ISO TC-164 SC-1 (P):***UNIAXIAL TESTING*

**ISO TC-164 SC-2 (P):***DUCTILITY TESTING*

**ISO TC-164 SC-3 (P):***HARDNESS TESTING*

**ISO TC-164 SC-4 (P):***FATIGUE, FRACTURE AND TOUGHNESS TESTING*

**ISO TC-164 (P):***MECHANICAL TESTING OF METALS*

|  |  |  |
| --- | --- | --- |
| **Subject Area: Uniaxial Testing** | | |
| **SI. No.** | **IS No.** | **TITLE** |
|  | IS 13237 : 1991 | Metallic foil - Tension testing |
|  | IS 13838 : 2023 | Mechanical Testing of Metals- Determination of Poissons Ratio |
|  | IS 3410 : 1993 | Metallic materials - Determination of linear thermal expansion First Revision |
|  | IS 2854 : 1990 | Determination of young s modulus tangent modulus and chord modulus - Test method |
|  | IS 3407 (Part 1) : 1983 | Method for creep testing of steel at elevated temperatures Part 1 tensile creep testing First Revision |
|  | IS 3407 (Part 2) : 1983 | Method for creep testing of steel at elevated temperatures Part 2 tensile creep stress rupture testing First Revision |
|  | IS 17795 : 2022  ISO 204:2018  ISO 204:2018 | Metallic materials- Uniaxial creep testing in tension - Method of test |
|  | IS 4169 : 2014  ISO 376 : 2011  ISO 376 : 2011 | Metallic materials - Calibration of force proving instruments used for the verification of uniaxial testing machines Second Revision |
|  | IS 1608 (Part 1) : 2022  ISO 6892-1 : 2019  ISO 6892-1 : 2019 | Metallic materials - Tensile testing - Part 1 Method of test at room temperature |
|  | IS 1608 (Part 2) : 2020  ISO 6892-2:2018  ISO 6892-2:2018 | Metallic Materials - Tensile Testing Part 2 Method of Test at Elevated Temperature Fourth Revision |
|  | IS 1608 (Part 3) : 2018  6892-3:2015  6892-3:2015 | Metallic materials - Tensile testing Part 3 method of test at low temperature |
|  | IS 1828 (Part 1) : 2022  ISO 7500-1 : 2018  ISO 7500-1 : 2018 | Metallic Materials - Calibration and Verification of Static Uniaxial Testing Machines - Part 1 Tension Compression Testing Machines - Calibration and Verification of the Force-Measuring System |
|  | IS 1828 (Part 2) : 2015  ISO 7500-2:2006  ISO 7500-2:2006 | Metallic materials - Verification of static uniaxial testing machines Part 2 tension creep testing machines - Verification of the applied force First Revision |
|  | IS 12872 : 2021  ISO 9513 : 2012  ISO 9513 : 2012 | Metallic Materials - Calibration of Extensometer Systems Used in Uniaxial Testing Second Revision |
|  | IS 17413 (Part 1) : 2020  ISO 26203-1:2018  ISO 26203-1:2018 | Metallic Materials - Tensile Testing at High Strain Rates Part 1 Elastic-Bar-Type Systems |
|  | IS 17413 (Part 2) : 2020  26203-2:2011  26203-2:2011 | Metallic Materials - Tensile Testing at High Strain Rates Part 2 Servo-Hydraulic and Other Systems |
| **Subject Area: Ductility Testing** | | |
|  | IS 10167 : 1982 | Method for upsetting test on metallic materials |
|  | IS 5242 : 1979 | Method of test for determining shear strength of metals First Revision |
|  | IS 1599 : 2023  ISO 7438 : 2020  ISO 7438 : 2016 | Metallic materials Bend test |
|  | IS 1403 (Part 1) : 1993  ISO 7799:1985  ISO 7799:1985 | Metallic materials Sheet and strip 3 mm thick or less Reverse bend test |
|  | IS 1717 : 2018  ISO 7800 : 2012  ISO 7800 : 2012 | Metallic materials - Wire - Simple torsion test Fourth Revision |
|  | IS 1716 : 2023  ISO 7801:1984  ISO 7801:1984 | Metallic materials Wire Reverse bend test |
|  | IS 1755 : 2018  ISO 7802:2013  ISO 7802:2013 | Metallic Materials - Wire - Wrapping test Second Revision |
|  | IS 2329 : 2005  ISO 8491:1998  ISO 8491:1998 | Metallic materials - Tube In Full Section - Bend test Second Revision |
|  | IS 2328 : 2018  ISO 8492:2013  ISO 8492:2013 | Metallic materials - Tube - Flattening test Third Revision |
|  | IS 2335 : 2005  ISO 8493:1998  ISO 8493:1998 | Metallic Materials - Tube - Drift expanding test Second Revision |
|  | IS 2330 : 2018  ISO 8494 : 2013  ISO 8494 : 2013 | METALLIC MATERIALS - TUBE - FLANGING TEST |
|  | IS 12260 : 2018  ISO 8495 : 2013  ISO 8495 : 2013 | Metallic Materials - Tube - Ring - Expanding test First Revision |
|  | IS 12278 : 2018  ISO 8496 : 2013  ISO 8496 : 2013 | Metallic Materials - Tube - Ring tensile test Second Revision |
|  | IS 12261 : 1987  ISO 9649 | Method for reverse torsion test for metallic wire |
|  | IS 11999 : 2022  ISO 10113:2020  ISO 10113:2020 | Metallic Materials Sheet And Strip Determination of Plastic Strain Ratio |
|  | IS 15756 : 2022  ISO 10275:2020  ISO 10275:2020 | Metallic materials - Sheet and strip - Determination of tensile strain hardening exponent |
|  | IS 17146 (Part 1) : 2023  ISO 12004-1 : 2020  ISO 12004-1 : 2020 | Metallic materials Determination of forming-limit curves for sheet and strip Part 1: Measurement and application of forming-limit diagrams in the press shop |
|  | IS 17146 (Part 2) : 2023  ISO 12004-2:2021  ISO 12004-2:2021 | Metallic materials Determination of forming-limit curves for sheet and strip Part 2 Determination of forming-limit curves in the laboratory |
|  | IS 17414 : 2020  ISO 16630:2017  ISO 16630:2017 | Metallic Materials Sheet and Strip Hole Expanding Test |
|  | IS 17415 : 2023  ISO 18338:2021  ISO 18338:2021 | Metallic materials Torsion test at room temperature |
|  | IS 17418 : 2020  ISO 16842 : 2014  ISO 16842 : 2014 | Metallic Materials - Sheet and Strip - Biaxial Tensile Testing Method Using a Cruciform Test Piece |
|  | IS 17419 : 2020  ISO 17340:2014  ISO 17340:2014 | Metallic Materials - Ductility Testing - High Speed Compression Test for Porous and Cellular Metals |
|  | IS 10175 : 2018  ISO 20482 : 2013  ISO 20482 : 2013 | Metallic materials - Sheet and strip - Erichsen cupping test Third Revision |
|  | IS 19024 : 2022  ISO 15363 : 2017  ISO 15363 : 2017 | Metallic materials Tube ring hydraulic pressure test |
|  | IS 17937 : 2022  ISO 13314 : 2011  ISO 13314 : 2011 | Mechanical testing of metals Ductility testing Compression test for porous and cellular metals |
|  | IS 17915 : 2022  ISO 20032 : 2013  ISO 20032 : 2013 | Method for evaluation of tensile properties of metallic superplastic materials |
| **Subject Area: Hardness Testing** | | |
|  | IS 7096 : 1981 | Method for scleroscope hardness testing of metallic materials first Revision |
|  | IS 7172 : 1984 | Method for verification of scleroscope hardness testing machines First Revision |
|  | IS 10166 : 1982 | Method for calibration of standardized test block for verification of scleroscope hardness testing equipments |
|  | IS 6885 (Part 1) : 2020  ISO 4545-1:2017  ISO 4545-1:2017 | Metallic Materials Knoop Hardness Test Part 1 Test Method Second Revision |
|  | IS 6885 (Part 2) : 2020  ISO 4545-2:2017  ISO 4545-2:2017 | Metallic Materials Knoop Hardness Test Part 2 Verification and Calibration of Testing Machines Second Revision |
|  | IS 6885 (Part 3) : 2020  ISO 4545-3:2017  ISO 4545-3:2017 | Metallic Materials Knoop Hardness Test Part 3 Calibration of Reference Blocks Second Revision |
|  | IS 6885 (Part 4) : 2020  ISO 4545-4:2017  ISO 4545-4:2017 | Metallic Materials Knoop Hardness Test Part 4 Tables of Hardness Values Second Revision |
|  | IS 1500 (Part 1) : 2019  ISO 6506-1 : 2014  ISO 6506-1 : 2014 | Metallic materials - Brinell hardness test Part 1 test method Fifth Revision |
|  | IS 1500 (Part 2) : 2021  ISO 6506-2 : 2017  ISO 6506-2 : 2017 | Metallic materials -- Brinell hardness test -- Part 2 Verification and calibration of testing machines |
|  | IS 1500 (Part 3) : 2019  ISO 6506-3 : 2014  ISO 6506-3 : 2014 | Metallic materials - Brinell hardness test Part 3 calibration of reference blocks Fifth Revision |
|  | IS 1500 (Part 4) : 2019  ISO 6506-4 : 2014  ISO 6506-4 : 2014 | Metallic materials - Brinell hardness test Part 4 table of hardness values Fifth Revision |
|  | IS 1501 (Part 1) : 2020  ISO 6507-1:2018  ISO 6507-1:2018 | Metallic Materials Vickers Hardness Test Part 1 Test Method Fifth Revision |
|  | IS 1501 (Part 2) : 2020  ISO 6507-2 : 2018  ISO 6507-2 : 2018 | Metallic Materials Vickers Hardness Test Part 2 Verification and Calibration of Testing Machines Fifth Revision |
|  | IS 1501 (Part 3) : 2020  ISO 6507-3 : 2018  ISO 6507-3 : 2018 | Metallic Materials Vickers Hardness Test Part 3 Calibration of Reference Blocks Fifth Revision |
|  | IS 1501 (Part 4) : 2020  ISO 6507-4 : 2018  ISO 6507-4 : 2018 | Metallic Materials Vickers Hardness Test Part 4 Tables of Hardness Values Fifth Revision |
|  | IS 1586 (Part 1) : 2018  ISO 6508-1 : 2016  ISO 6508-1 : 2016 | Metallic materials - Rockwell hardness test Part 1 test method Fifth Revision |
|  | IS 1586 (Part 2) : 2018  ISO 6508-2:2015  ISO 6508-2:2015 | Metallic materials - Rockwell hardness test Part 2 verification and calibration of testing machines and indenters Fifth Revision |
|  | IS 1586 (Part 3/Sub-Sec 2012) : 2018  ISO 6508-3:2015  ISO 6508-3:2015 | Metallic Materials - Rockwell Hardness Test Part 3 Calibration of Reference Blocks |
|  | IS 17144 (Part 1) : 2019  ISO 14577-1 : 2015  ISO 14577-1 : 2015 | Metallic materials - Instrumented indentation test for hardness and materials parameters Part 1 test method |
|  | IS 17144 (Part 2) : 2019  ISO 14577-2 : 2015  ISO 14577-2 : 2015 | Metallic materials - Instrumented indentation test for hardness and materials parameters Part 2 verification and calibration of testing machines |
|  | IS 17144 (Part 3) : 2019  ISO 14577-3 : 2015  ISO 14577-3 : 2015 | Metallic materials - Instrumented indentation test for hardness and materials parameters Part 3 calibration of reference blocks |
|  | IS 17144 (Part 4) : 2019  ISO 14577-4 : 2016  ISO 14577-4 : 2016 | Metallic materials - Instrumented indentation test for hardness and materials parameters Part 4 test method for metallic and Non - Metallic coatings |
|  | IS 17149 (Part 1) : 2019  ISO 16859-1 : 2015  ISO 16859-1 : 2015 | Metallic materials - Leeb hardness test Part 1 test method |
|  | IS 17149 (Part 2) : 2019  ISO 16859-2 : 2015  ISO 16859-2 : 2015 | Metallic materials - Leeb hardness test Part 2 verification and calibration of the testing devices |
|  | IS 17149 (Part 3) : 2019  ISO 16859-3 : 2015  ISO 16859-3 : 2015 | Metallic materials - Leeb hardness test Part 3 calibration of reference test blocks |
|  | IS 4258 : 2018  ISO 18265 : 2013  ISO 18265 : 2013 | Metallic materials - Conversion of hardness values Third Revision |
| **Subject Area: Fatigue and Fracture Testing** | | |
|  | IS 6886 : 1973 | Method of dynamic force calibration of axial load fatigue testing machines by means of a strain gauge technique |
|  | IS 8632 : 2023  ISO 3785:2006  ISO 3785:2006 | Metallic materials Designation of test specimen axes in relation to product texture |
|  | IS 5075 : 2023  ISO 1143 : 2021  ISO 1143 : 2021 | Metallic Materials - Rotating Bar Bending Fatigue Testing |
|  | IS 17143 : 2023  ISO 1352 : 2021  ISO 1352 : 2021 | Metallic materials Torque-controlled fatigue testing |
|  | IS 17417 (Part 1) : 2020  ISO 4965-1:2012  ISO 4965-1:2012 | Metallic Materials - Dynamic Force Calibration for Uniaxial Fatigue Testing Part 1 Testing Systems |
|  | IS 17417 (Part 2) : 2020  ISO 4965-2:2012  ISO 4965-2:2012 | Metallic Materials - Dynamic Force Calibration for Uniaxial Fatigue Testing Part 2 Dynamic Calibration Device DCD Instrumentation |
|  | IS 17145 (Part 1) : 2019  ISO 12110-1 : 2013  ISO 12110-1 : 2013 | Metallic materials - Fatigue testing - Variable amplitude fatigue testing Part 1 general principles test method and reporting requirements |
|  | IS 17145 (Part 2) : 2019  ISO 12110-2 : 2013  ISO 12110-2 : 2013 | Metallic materials - Fatigue testing - Variable amplitude fatigue testing Part 2 cycle counting and related data reduction methods |
|  | IS 16842 : 2022  ISO 12108 : 2018  ISO 12108 : 2018 | Metallic materials - Fatigue testing - Fatigue crack growth method |
|  | IS 16843 : 2018  ISO 12111:2011  ISO 12111:2011 | Metallic materials - Fatigue testing - Strain - Controlled thermomechanical fatigue testing method |
|  | IS 5074 : 2023  ISO 1099 : 2017  ISO 1099 : 2017 | Metallic materials -- Fatigue testing -- Axial force-controlled method |
|  | IS 17147 : 2019  ISO 12107 : 2012  ISO 12107 : 2012 | Metallic materials - Fatigue testing - Statistical planning and analysis of data |
| **Subject Area : Toughness taesting** | | |
|  | IS 1598 : 1977 | Method for izod impact test of metals First Revision |
|  | IS 5070 : 1985 | Method for beam unnotched impact test for grey cast iron First Revision |
|  | IS 10180 : 1982 | Method for plane strain fracture toughness testing of metals |
|  | IS 11240 : 1985 | Method for falling weight test on metallic materials |
|  | IS 10623 : 2023 | Drop Weight Tear Test on Ferritic Steels and Line Pipe ― Method of Test |
|  | IS 15420 : 2003 | Metallic materials ― Charpy pendulum impact test - Preparation and characterization of charpy V reference test pieces for verification of test machines |
|  | IS 1757 (Part 1) : 2020  ISO 148-1:2016  ISO 148-1:2016 | Metallic Materials Charpy Pendulum Impact Test Part 1 Test Method Fourth Revision |
|  | IS 1757 (Part 2) : 2020  ISO 148-2 : 2016  ISO 148-2 : 2016 | Metallic Materials - Charpy Pendulum Impact Test Part 2 Verification of Testing Machines Fourth Revision |
|  | IS 1757 (Part 3) : 2020  ISO 148-3:2016  ISO 148-3:2016 | Metallic Materials - Charpy Pendulum Impact Test Part 3 Preparation and Characterization of Charpy V-notch Test Pieces for Indirect Verification of Pendulum Impact Machines Fourth Revision |
|  | IS 17416 : 2020  ISO 14556 : 2015  ISO 14556 : 2015 | Metallic Materials - Charpy V-notch Pendulum Impact Test - Instrumented Test Method |
|  | IS 17151 : 2023  ISO 12135 : 2021  ISO 12135 : 2021 | Metallic materials Unified method of test for the determination of quasistatic fracture toughness |
|  | IS 17679 : 2021  ISO 15653:2018  ISO 15653:2018 | Metallic materials - Method of test for the determination of quasistatic fracture toughness of welds |
| **Subject Area : General** | | |
|  | IS 2855 : 1991 | Thermostat metals - Determinantion of flexivity First Revision |
|  | IS 3394 : 1985 | Method for accelerated life test of electrical resistance alloys for heating elements First Revision |
|  | IS 6243 : 1985 | Method of hydrogen embrittlement test for copper First Revision |
|  | IS 10181 : 1982 | Method for determination of magnetic permeability of iron and steel |
|  | IS 3803 (Part 1) : 2023  ISO 2566-1 : 2021  ISO 2566-1 : 2021 | Steel - Conversion of elongation values Part 1 carbon and low alloy steels |
|  | IS 3803 (Part 2) : 2022  ISO 2566-2:2021  ISO 2566-2:2021 | Steel Conversion of elongation values Part 2 Austenitic steels |
|  | IS 5069 : 2018  ISO 23718  ISO 23718 | Metallic Materials - Mechanical Testing - Vocabulary Second Revision |
|  | IS 3711 : 2020  ISO 377:2017  ISO 377:2017 | Steel and Steel Products Location and Preparation of Samples and Test Pieces for Mechanical Testing (Third Revision) |
| **Subject Area : Abrasive and wear properties** | | |
|  | IS 10636 (Part 1) : 1983 | Methods for measurement of abrasive wear properties of metallic material Part 1 test method for gouging abrasion resistance Jaw Crusher Test |
|  | IS 10636 (Part 2) : 1983 | Method for measurement of abrasive wear properties of metallic material Part 2 test method for high stress abrasion |
|  | IS 10636 (Part 3) : 1983 | Methods for measurement of abrasive wear properties of metallic material Part 3 test methods for low stress abrasion |
|  | IS 11083 : 1984 | Method for evaluation of friction and wear properties of materials against steel surface |

[**ANNEXURE-3**](#_10.1__)

**LIST OF ISO STANDARDS UNDER DIFFERENT COMMITTEES**

*(Clause 9.1.3)*

|  |  |  |  |
| --- | --- | --- | --- |
| Sl. NO. | **ISO Number** | **Title** | **Remarks** |
| **ISO/TC/164 MECHANICAL TESTING** | | | |
|  | ISO 23718:2007  **(Under development)**  **ISO/WD TS 23718** | Metallic materials — Mechanical testing — Vocabulary | Adopted as IS 5069 : 2018  ISO 23718 : 2007 |
| **ISO/TC/164/SC1-Uniaxial testing** | | | |
|  | ISO/TTA 5:2007 | Code of practice for creep/fatigue testing of cracked components |  |
|  | ISO 204:2023 | Metallic materials — Uniaxial creep testing in tension — Method of test | **Under process of adoption of modified ISO 204 : 2023** |
|  | ISO 376:2011 | Metallic materials — Calibration of force-proving instruments used for the verification of uniaxial testing machines | Adopted as IS 4169 : 2014  ISO 376 : 2011 |
|  | ISO 6892-1:2019 | Metallic materials — Tensile testing — Part 1: Method of test at room temperature | Adopted as IS 1608 (Part 1) :2022  ISO 6892-1 : 2019 |
|  | ISO 6892-2:2018  **(Under development)**  [**ISO/CD 6892-2**](https://www.iso.org/standard/87885.html?browse=tc) | Metallic materials — Tensile testing — Part 2: Method of test at elevated temperature | Adopted as IS 1608 (Part 2) :2020  ISO 6892-2:2018 |
|  | ISO 6892-3:2015 | Metallic materials — Tensile testing — Part 3: Method of test at low temperature | Adopted as IS 1608 (Part 3) :2018  6892-3:2015 |
|  | ISO 6892-4:2015 | Metallic materials — Tensile testing — Part 4: Method of test in liquid helium |  |
|  | ISO 7500-1:2018 | Metallic materials — Calibration and verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Calibration and verification of the force-measuring system | Adopted as IS 1828 (Part 1) : 2022  ISO 7500-1 : 2018 |
|  | ISO 7500-2:2006 | Metallic materials — Verification of static uniaxial testing machines — Part 2: Tension creep testing machines — Verification of the applied force | Adopted as IS 1828 (Part 2) :2015  ISO 7500-2:2006 |
|  | ISO 9513:2012 | Metallic materials — Calibration of extensometer systems used in uniaxial testing | Adopted as 12872 : 2021  ISO 9513 : 2012 |
|  | ISO 9513:2012/COR 1:2013 | Metallic materials — Calibration of extensometer systems used in uniaxial testing — Technical Corrigendum 1 | Adopted as 12872 : 2021 |
|  | ISO 26203-1:2018  **(Under Development)**  [**ISO/CD 26203-1**](https://www.iso.org/standard/87888.html?browse=tc) | Metallic materials — Tensile testing at high strain rates — Part 1: Elastic-bar-type systems | Adopted as IS 17413 (Part 1) :2020  ISO 26203-1:2018 |
|  | ISO 26203-2:2011 | Metallic materials — Tensile testing at high strain rates — Part 2: Servo-hydraulic and other test systems | Adopted as IS 17413 (Part 2) :2020/ ISO  26203-2:2011 |
| **ISO/TC/164/SC2-Ductility testing** | | | |
|  | ISO 7438:2020 | Metallic materials — Bend test | Adopted as IS 1599 : 2023  ISO 7438 : 2020 |
|  | ISO 7799:1985 | Metallic materials — Sheet and strip 3 mm thick or less — Reverse bend test | Adopted as IS 1403 (Part 1) :1993  ISO 7799:1985 |
|  | ISO 7800:2012 | Metallic materials — Wire — Simple torsion test | Adopted as IS 1717 : 2018  ISO 7800 : 2012 |
|  | ISO 7801:1984  **(Under Development)**  [**ISO/DIS 7801**](https://www.iso.org/standard/83866.html?browse=tc) | Metallic materials — Wire — Reverse bend test | Adopted as IS 1716 : 2023 /  ISO 7801 : 1984 |
|  | ISO 7802:2013 | Metallic materials — Wire — Wrapping test | Adopted as IS 1755 : 2018 /  ISO 7802:2013 |
|  | ISO 8491:1998 | Metallic materials — Tube (in full section) — Bend test | Adopted as IS 2329 : 2005  ISO 8491:1998 |
|  | ISO 8492:2013 | Metallic materials — Tube — Flattening test | Adopted as IS 2328 : 2018  ISO 8492:2013 |
|  | ISO 8493:1998 | Metallic materials — Tube — Drift-expanding test | Adopted as IS 2335 : 2005  ISO 8493:1998 |
|  | ISO 8494:2013 | Metallic materials — Tube — Flanging test | Adopted as IS 2330 : 2018  ISO 8494 : 2013 |
|  | ISO 8495:2013 | Metallic materials — Tube — Ring-expanding test | Adopted as IS 12260 : 2018  ISO 8495 : 2013 |
|  | ISO 8496:2013 | Metallic materials — Tube — Ring tensile test | Adopted as IS 12278 : 2018  ISO 8496 : 2013 |
|  | ISO 9649:2023 | Metallic materials — Wire — Reverse torsion test | Not Equivalent IS 12261 : 1987  ISO 9649 |
|  | ISO 10113:2020 | Metallic materials — Sheet and strip — Determination of plastic strain ratio | Adopted as IS 11999 : 2022  ISO 10113:2020 |
|  | ISO 10275:2020 | Metallic materials — Sheet and strip — Determination of tensile strain hardening exponent | Adopted as IS 15756 : 2022  ISO 10275:2020 |
|  | ISO 11531:2022 | Metallic materials — Sheet and strip — Earing test | **Adopted as IS 18733 : 2024**  **ISO 11531 : 2022** |
|  | ISO 12004-1:2020 | Metallic materials — Determination of forming-limit curves for sheet and strip — Part 1: Measurement and application of forming-limit diagrams in the press shop | Adopted as IS 17146 (Part 1) : 2023  ISO 12004-1 : 2020 |
|  | ISO 12004-2:2021 | Metallic materials — Determination of forming-limit curves for sheet and strip — Part 2: Determination of forming-limit curves in the laboratory | Adopted as IS 17146 (Part 2) : 2023  ISO 12004-2 : 2021 |
|  | ISO 13314:2011 | Mechanical testing of metals — Ductility testing — Compression test for porous and cellular metals | Adopted as IS 17937 : 2022  ISO 13314 : 2011 |
|  | ISO 15363:2017 | Metallic materials — Tube ring hydraulic pressure test | Adopted as IS 19024 : 2022 ISO 15363 : 2017 |
|  | ISO 16630:2017  **(Under development)**  [**ISO/CD 16630**](https://www.iso.org/standard/87912.html?browse=tc) | Metallic materials — Sheet and strip — Hole expanding test | Adopted as IS 17414 : 2020  ISO 16630:2017 |
|  | ISO 16808:2022 | Metallic materials — Sheet and strip — Determination of biaxial stress-strain curve by means of bulge test with optical measuring systems |  |
|  | ISO 16842:2021 | Metallic materials — Sheet and strip — Biaxial tensile testing method using a cruciform test piece | Adopted as IS 17418 : 2020  ISO 16842 : 2014 |
|  | ISO 17340:2020 | Metallic materials — Ductility testing — High speed compression test for porous and cellular metals | **Under process of adoption of modified** ISO 17340 : 2020 |
|  | ISO 18338:2021 | Metallic materials — Torsion test at room temperature | Adopted as IS 17415 : 2023  ISO 18338:2021 |
|  | ISO 20032:2013 | Method for evaluation of tensile properties of metallic superplastic materials |  |
|  | ISO 20482:2013 | Metallic materials — Sheet and strip — Erichsen cupping test | Adopted as IS 10175 : 2018  ISO 20482 : 2013 |
|  | ISO 23838:2022 | Metallic Materials — High Strain Rate Torsion Test at Room Temperature |  |
|  | ISO 24213:2017 | Metallic materials — Sheet and strip — Method for springback evaluation in stretch bending |  |
| **ISO/TC 164/SC 3-Hardness testing** | | | |
|  | ISO 4516:2002  **Replaced by**  **ISO 4545-1 : 2023**  **ISO 6507-1 :2023** | Metallic and other inorganic coatings — Vickers and Knoop microhardness tests | The standard is under consideration of MTD 24 corresion protection and finishes sectional committee |
|  | **ISO 4545-1:2023** | Metallic materials — Knoop hardness test — Part 1: Test method | **Under process of adoption of ISO 4545-1 : 2023** |
|  | ISO 4545-2:2017 | Metallic materials — Knoop hardness test — Part 2: Verification and calibration of testing machines | Adopted as IS 6885 (Part 2) : 2020  ISO 4545-2:2017 |
|  | ISO 4545-3:2017 | Metallic materials — Knoop hardness test — Part 3: Calibration of reference blocks | Adopted as IS 6885 (Part 3) : 2020  ISO 4545-3:2017 |
|  | ISO 4545-4:2017 | Metallic materials — Knoop hardness test — Part 4: Table of hardness values | Adopted as S 6885 (Part 4) :2020  ISO 4545-4:2017 |
|  | ISO 6506-1:2014  **Under development**  **ISO/DIS 6506-1** | Metallic materials — Brinell hardness test — Part 1: Test method | Adopted as IS 1500 (Part 1) : 2019  ISO 6506-1 : 2014 |
|  | ISO 6506-2:2017  **Under development**  **ISO/DIS 6506-2** | Metallic materials — Brinell hardness test — Part 2: Verification and calibration of testing machines | Adopted as IS 1500 (Part 2) : 2021  ISO 6506-2 : 2017 |
|  | ISO 6506-3:2014  **Under development**  **ISO/DIS 6506-3** | Metallic materials — Brinell hardness test — Part 3: Calibration of reference blocks | Adopted as IS 1500 (Part 3) : 2019  ISO 6506-3 : 2014 |
|  | ISO 6506-4:2014 | Metallic materials — Brinell hardness test — Part 4: Table of hardness values | Adopted as IS 1500 (Part 4) : 2019  ISO 6506-4 : 2014 |
|  | **ISO 6507-1:2023** | Metallic materials — Vickers hardness test — Part 1: Test method | **Under process of adoption of ISO 6507-1 : 2023** |
|  | ISO 6507-2:2018 | Metallic materials — Vickers hardness test — Part 2: Verification and calibration of testing machines | Adopted as IS 1501 (Part 2) : 2020  ISO 6507-2 : 2018 |
|  | ISO 6507-3:2018 | Metallic materials — Vickers hardness test — Part 3: Calibration of reference blocks | Adopted as IS 1501 (Part 3) : 2020  ISO 6507-3 : 2018 |
|  | ISO 6507-4:2018 | Metallic materials — Vickers hardness test — Part 4: Tables of hardness values | Adopted as IS 1501 (Part 4) : 2020  ISO 6507-4 : 2018 |
|  | **ISO 6508-1:2023** | Metallic materials — Rockwell hardness test — Part 1: Test method | **Under process of adoption of ISO 6508-1 : 2023** |
|  | **ISO 6508-2:2023** | Metallic materials — Rockwell hardness test — Part 2: Verification and calibration of testing machines and indenters | **Under process of adoption of ISO 6508-2 : 2023** |
|  | **ISO 6508-3:2023** | Metallic materials — Rockwell hardness test — Part 3: Calibration of reference blocks | **Under process of adoption of ISO 6508-3 : 2023** |
|  | ISO 14577-1:2015  **Under development**  **ISO/CD 14577-1** | Metallic materials — Instrumented indentation test for hardness and materials parameters — Part 1: Test method | Adopted as IS 17144 (Part 1) : 2019  ISO 14577-1 : 2015 |
|  | ISO 14577-2:2015  **Under development**  **ISO/CD 14577-2** | Metallic materials — Instrumented indentation test for hardness and materials parameters — Part 2: Verification and calibration of testing machines | Adopted as IS 17144 (Part 2) : 2019  ISO 14577-2 : 2015 |
|  | ISO 14577-3:2015  **Under development**  **ISO/CD 14577-3** | Metallic materials — Instrumented indentation test for hardness and materials parameters — Part 3: Calibration of reference blocks | Adopted as IS 17144 (Part 3) : 2019  ISO 14577-3 : 2015 |
|  | ISO 14577-4:2016 | Metallic materials — Instrumented indentation test for hardness and materials parameters — Part 4: Test method for metallic and non-metallic coatings | Adopted as IS 17144 (Part 4) : 2019  ISO 14577-4 : 2016 |
|  | ISO 16859-1:2015 | Metallic materials — Leeb hardness test — Part 1: Test method | Adopted as IS 17149 (Part 1) : 2019  ISO 16859-1 : 2015 |
|  | ISO 16859-2:2015 | Metallic materials — Leeb hardness test — Part 2: Verification and calibration of the testing devices | Adopted as IS 17149 (Part 2) : 2019  ISO 16859-2 : 2015 |
|  | ISO 16859-3:2015 | Metallic materials — Leeb hardness test — Part 3: Calibration of reference test blocks | Adopted as IS 17149 (Part 3) : 2019  ISO 16859-3 : 2015 |
|  | ISO 18265:2013 | Metallic materials — Conversion of hardness values | Adopted as IS 4258 : 2018  ISO 18265 : 2013 |
|  | ISO/TR 29381:2008 | Metallic materials — Measurement of mechanical properties by an instrumented indentation test — Indentation tensile properties |  |
| **ISO/TC 164/SC 4 -Fatigue, fracture and toughness testing** | | | |
|  | ISO/148-1:2016  **Under development**  **ISO/CD 148-1** | Metallic materials — Charpy pendulum impact test — Part 1: Test method | Adopted as IS 1757 (Part 1) : 2020  ISO 148-1:2016 |
|  | ISO 148-2:2016  **Under development**  **ISO/CD 148-2** | Metallic materials — Charpy pendulum impact test — Part 2: Verification of testing machines | Adopted as IS 1757 (Part 2) : 2020  ISO 148-2 : 2016 |
|  | ISO 148-3:2016  **Under development**  **ISO/CD 148-3** | Metallic materials — Charpy pendulum impact test — Part 3: Preparation and characterization of Charpy V-notch test pieces for indirect verification of pendulum impact machines | Adopted as IS 1757 (Part 3) :2020  ISO 148-3:2016 |
|  | ISO 1099:2017  **Under development**  **ISO/CD 1099** | Metallic materials — Fatigue testing — Axial force-controlled method | Adopted as IS 5074 : 2023  ISO 1099 : 2017 |
|  | ISO 1143:2021 | Metallic materials — Rotating bar bending fatigue testing | Adopted as IS 5075 : 2023  ISO 1143 : 2021 |
|  | ISO 1352:2021 | Metallic materials — Torque-controlled fatigue testing | Adopted as IS 17143 : 2023  ISO 1352 : 2021 |
|  | **ISO 3785:2023** | Metallic materials — Designation of test specimen axes in relation to product texture | Adopted as IS 8632:2023  **ISO 3785 : 2006** |
|  | ISO 4965-1:2012 | Metallic materials — Dynamic force calibration for uniaxial fatigue testing — Part 1: Testing systems | Adopted as IS 17417 (Part 1) :2020  ISO 4965-1:2012 |
|  | ISO 4965-2:2012 | Metallic materials — Dynamic force calibration for uniaxial fatigue testing — Part 2: Dynamic calibration device (DCD) instrumentation | Adopted as IS 17417 (Part 2) :2020  ISO 4965-2:2012 |
|  | ISO 12106:2017  **Under development**  [**ISO/CD 12106**](https://www.iso.org/standard/87897.html?browse=tc) | Metallic materials — Fatigue testing — Axial-strain-controlled method | Under process of adoption of ISO 12106 : 2017 |
|  | ISO 12107:2012  **Under development**  **ISO/AWI 12107** | Metallic materials — Fatigue testing — Statistical planning and analysis of data | Adopted as IS 17147 : 2019  ISO 12107 : 2012 |
|  | ISO 12108:2018 | Metallic materials — Fatigue testing — Fatigue crack growth method | Adopted as IS 16842 : 2022  ISO 12108 : 2018 |
|  | ISO 12110-1:2013 | Metallic materials — Fatigue testing — Variable amplitude fatigue testing — Part 1: General principles, test method and reporting requirements | Adopted as IS 17145 (Part 1) : 2019  ISO 12110-1 : 2013 |
|  | ISO 12110-2:2013 | Metallic materials — Fatigue testing — Variable amplitude fatigue testing — Part 2: Cycle counting and related data reduction methods | Adopted as IS 17145 (Part 2) : 2019  ISO 12110-2 : 2013 |
|  | ISO 12111:2011 | Metallic materials — Fatigue testing — Strain-controlled thermomechanical fatigue testing method | Adopted as IS 16843 : 2018  ISO 12111:2011 |
|  | ISO/TR 12112:2018 | Metallic materials — Principles and designs for multiaxial fatigue testing |  |
|  | ISO 12135:2021 | Metallic materials — Unified method of test for the determination of quasistatic fracture toughness | Adopted as IS 17151 : 2023  ISO 12135:2021 |
|  | ISO 14556:2023 | Metallic materials — Charpy V-notch pendulum impact test — Instrumented test method | **Adopted as IS 17416 : 2024**  **ISO 14556 : 2023** |
|  | ISO 15653:2018  **Under development**  [**ISO/CD 15653**](https://www.iso.org/standard/87896.html?browse=tc) | Metallic materials — Method of test for the determination of quasistatic fracture toughness of welds | Adopted as IS 17679 : 2021  ISO 15653 : 2018 |
|  | ISO 20064:2019 | Metallic materials — Steel — Method of test for the determination of brittle crack arrest toughness, Kca |  |
|  | ISO/TS 21913:2022 | Temperature verification method applied to dynamic fatigue testing |  |
|  | ISO 22407:2021 | Metallic materials — Fatigue testing — Axial plane bending method |  |
|  | ISO 22889:2013 | Metallic materials — Method of test for the determination of resistance to stable crack extension using specimens of low constraint |  |
|  | ISO 23296:2022  **Under development**  **ISO/CD 23296** | Metallic materials – Fatigue testing – Force controlled thermo-mechanical fatigue testing method |  |
|  | ISO 23788:2012 | Metallic materials — Verification of the alignment of fatigue testing machines |  |
|  | ISO 26843:2015  **Under development**  **ISO/AWI 26843** | Metallic materials — Measurement of fracture toughness at impact loading rates using precracked Charpy-type test pieces |  |
|  | ISO 27306:2016 | Metallic materials — Method of constraint loss correction of CTOD fracture toughness for fracture assessment of steel components |  |

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| **ISO/TC 17/SC 20** | | | |
| **Sl. NO.** | **ISO Number** | **Title** | **Remarks** |
| 1 | ISO 2566-1:2021 | Steel - Conversion of elongation values: Part 1 carbon and low alloy steels (Second Revision) | Adopted as IS 3803 (Part 1) : 2023  ISO 2566-1 : 2021 |
| 2 | ISO 2566-2:2021 | Steel - Conversion of elongation values: Part 2 austenitic steels (Second Revision) | Adopted as IS 3803 (Part 2) : 2022  ISO 2566-2 : 2021 |

**LIST OF ISO STANDARDS UNDER DEVELOPMENT AT ISO SECRETARIAT**

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| **ISO/TC/164/SC 1-Uniaxial testing** | | |
|  | [ISO/WD TS 4596](https://www.iso.org/standard/80131.html?browse=tc) | Metallic materials — High temperature creep/fatigue crack growth testing method |
|  | [ISO/CD 6892-2](https://www.iso.org/standard/87885.html?browse=tc) | Metallic materials — Tensile testing — Part 2: Method of test at elevated temperature |
|  | [ISO/DTS 6892-5](https://www.iso.org/standard/88005.html?browse=tc) | Metallic materials — Tensile testing — Part 5: Specification for testing miniaturised test pieces |
|  | [ISO/AWI 6892-6](https://www.iso.org/standard/86844.html?browse=tc) | Metallic materials — Tensile testing — Part 6: Tensile test on foils and strips of metals with a nominal thickness less than 0,200 mm by using computer-controlled testing machines |
|  | [ISO/FDIS 7039](https://www.iso.org/standard/82610.html?browse=tc) | Metallic materials — Tensile testing — Method for evaluating the susceptibility of materials to the effects of high-pressure gas within hollow test pieces |
|  | [ISO/AWI TR 15264](https://www.iso.org/standard/82163.html?browse=tc) | Mechanical tests on metallic materials - Evaluation of uncertainties in creep testing |
|  | [ISO/CD 26203-1](https://www.iso.org/standard/87888.html?browse=tc) | Metallic materials — Tensile testing at high strain rates — Part 1: Elastic-bar-type systems |
| ISO/TC/164/SC 2-Ductility testing | | |
|  | [ISO/DIS 7801](https://www.iso.org/standard/83866.html?browse=tc) | Metallic materials — Wire — Reverse bend test |
|  | [ISO/CD 16630](https://www.iso.org/standard/87912.html?browse=tc) | Metallic materials — Sheet and strip — Hole expanding test |
| [ISO/TC 164/SC 3](https://www.iso.org/committee/53558.html) Hardness testing | | |
|  | [ISO/DIS 6506-1](https://www.iso.org/standard/83894.html?browse=tc) | Metallic materials — Brinell hardness test — Part 1: Test method |
|  | [ISO/DIS 6506-2](https://www.iso.org/standard/83895.html?browse=tc) | Metallic materials — Brinell hardness test — Part 2: Verification and calibration of testing machines |
|  | [ISO/DIS 6506-3](https://www.iso.org/standard/83896.html?browse=tc) | Metallic materials — Brinell hardness test — Part 3: Calibration of reference blocks |
|  | [ISO/CD 14577-1](https://www.iso.org/standard/85223.html?browse=tc) | Metallic materials — Instrumented indentation test for hardness and materials parameters — Part 1: Test method |
|  | [ISO/CD 14577-2](https://www.iso.org/standard/85224.html?browse=tc) | Metallic materials — Instrumented indentation test for hardness and materials parameters — Part 2: Verification and calibration of testing machines |
|  | [ISO/CD 14577-3](https://www.iso.org/standard/85225.html?browse=tc) | Metallic materials — Instrumented indentation test for hardness and materials parameters — Part 3: Calibration of reference blocks |
|  | [ISO/AWI 14577-6](https://www.iso.org/standard/83988.html?browse=tc) | Metallic materials — Instrumented indentation test for hardness and materials parameters — Part 6: Instrumented indentation test at elevated temperature |
| ISO/TC 164/SC 4 Fatigue, fracture and toughness testing | | |
|  | [ISO/CD 148-1](https://www.iso.org/standard/87893.html?browse=tc) | Metallic materials — Charpy pendulum impact test — Part 1: Test method |
|  | [ISO/CD 148-2](https://www.iso.org/standard/87894.html?browse=tc) | Metallic materials — Charpy pendulum impact test — Part 2: Verification of testing machines |
|  | [ISO/CD 148-3](https://www.iso.org/standard/87895.html?browse=tc) | Metallic materials — Charpy pendulum impact test — Part 3: Preparation and characterization of Charpy V-notch test pieces for indirect verification of pendulum impact machines |
|  | [ISO/CD 148-4](https://www.iso.org/standard/86135.html?browse=tc) | Metallic materials — Charpy pendulum impact test — Part 4: Part 4: Testing of miniature Charpy V-notch test pieces |
|  | [ISO/CD 1099](https://www.iso.org/standard/85731.html?browse=tc) | Metallic materials — Fatigue testing — Axial force-controlled method |
|  | [ISO/CD TR 12105](https://www.iso.org/standard/81890.html?browse=tc) | Metallic materials — Fatigue testing — General principles |
|  | [ISO/CD 12106](https://www.iso.org/standard/87897.html?browse=tc) | Metallic materials — Fatigue testing — Axial-strain-controlled method |
|  | [ISO/AWI 12107](https://www.iso.org/standard/85730.html?browse=tc) | Metallic materials — Fatigue testing — Statistical planning and analysis of data |
|  | [ISO/CD TR 15262](https://www.iso.org/standard/73394.html?browse=tc) | Mechanical tests on metallic materials — Uncertainty in low-cycle fatigue |
|  | [ISO/CD 15653](https://www.iso.org/standard/87896.html?browse=tc) | Metallic materials — Method of test for the determination of quasistatic fracture toughness of welds |
|  | [ISO/CD 20198](https://www.iso.org/standard/86134.html?browse=tc) | Metallic materials — Steel — Method of test for the determination of brittle crack arrest temperature (CAT) |
|  | [ISO/CD 23296](https://www.iso.org/standard/85732.html?browse=tc) | Metallic materials – Fatigue testing – Force controlled thermo-mechanical fatigue testing method |
|  | [ISO/AWI 26843](https://www.iso.org/standard/85729.html?browse=tc) | Metallic materials — Measurement of fracture toughness at impact loading rates using precracked Charpy-type test pieces |

**[ANNEXURE 4](#Annexure4)**

**(*Clause* 10.3.4)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***Type*** | ***ISO committee*** | ***ISO Ballot reference*** | ***Title*** | ***Last date of comments*** | ***Closing date*** | ***Voted*** | ***Suggested by*** |
| CD | ISO/TC 164/SC 3 | ISO/CD 14577-6 | Metallic materials — Instrumented indentation test for hardness and materials parameters — Part 6: Instrumented indentation test at elevated temperature | 03rd June 2024 | 22nd June 2024 | Approve with comment | Dr SK Jain Comment & Abhishek tiwari - IIT Ropar |
| FDIS | ISO/TC 164/SC 1 | ISO/FDIS 7039 | Metallic materials — Tensile testing — Method for evaluating the susceptibility of materials to the effects of high-pressure gas within hollow test pieces | 20th June 2024 | 03rd July 2024 | Abstain |  |
| CIB | ISO/TC 164 | Call for the Secretariat of ISO/TC 164/SC 3 | Call for the Secretariat of ISO/TC 164/SC 3 “Hardness testing” | 03rd July 2024 | 19th July 2024 | Yes |  |
| DTS | ISO/TC 164/SC 1 | ISO/DTS 6892-5 | Metallic materials — Tensile testing — Part 5: Specification for testing miniaturised test pieces | 15th July 2024 | 31st July 2024 | Approve with comment | Dr Karthik comment |
| CD | ISO/TC 164/SC 4 | ISO/CD 148-1 | Metallic materials — Charpy pendulum impact test — Part 1: Test method | 10th August 2024 | 25th August 2024 | Yes | Dr S K Jain & Dr Niranjani - DMRL Comment |
| CD | ISO/TC 164/SC 4 | ISO/CD 148-2 | Metallic materials — Charpy pendulum impact test — Part 2: Verification of testing machines | 10th August 2024 | 25th August 2024 | Yes | Dr S K Jain Comment |
| CD | ISO/TC 164/SC 4 | ISO/CD 148-3 | Metallic materials — Charpy pendulum impact test — Part 3: Preparation and characterization of Charpy V-notch test pieces for indirect verification of pendulum impact machines | 10th August 2024 | 25th August 2024 | Yes | Dr S K Jain Comment |
| CD | ISO/TC 164/SC 4 | ISO/CD 148-4 | Metallic materials — Charpy pendulum impact test — Part 4: Part 4: Testing of miniature Charpy V-notch test pieces | 10th August 2024 | 25th August 2024 | No | Dr S K Jain Comment |
| SR | ISO/TC 164/SC 3 | ISO 6506-4:2014 (Ed 2, vers 2) | Metallic materials — Brinell hardness test — Part 4: Table of hardness values | 20th August 2024 | 2nd September 2024 | Abstain |  |
| SR | ISO/TC 164/SC 3 | ISO 18265:2013 (Ed 2, vers 2) | Metallic materials — Conversion of hardness values | 20th August 2024 | 2nd September 2024 | Approve with comment | Dr S K Jain Comment |
| CIB | ISO/TC 164 | Call for comments “ISO/WD TR 8463 | Call for comments “ISO/WD TR 8463" | 8th September 2024 | 12th September 2024 | Abstain |  |
| FDIS | ISO/TC 164/SC 2 | ISO/FDIS 7801 (Ed 2) | Metallic materials — Wire — Reverse bend test | 5th October 2024 | 15th October 2024 | Approve | Dr PP Sarakar and Dr K Nageshrwaran |
| DIS | ISO/TC 164/SC 3 | ISO/DIS 14577-3 (Ed 3) | Metallic materials — Instrumented indentation test for hardness and materials parameters — Part 3: Calibration of reference blocks | 15th October 2024 | 23rd October 2024 | Approve with comment | Dr S K Jain Comment |
| DIS | ISO/TC 164/SC 3 | ISO/DIS 14577-1 (Ed 3) | Metallic materials — Instrumented indentation test for hardness and materials parameters — Part 1: Test method | 15th October 2024 | 24th October 2024 | Approve with comment | Dr S K Jain Comment |
| DIS | ISO/TC 164/SC 3 | ISO/DIS 14577-2 (Ed 3) | Metallic materials — Instrumented indentation test for hardness and materials parameters — Part 2: Verification and calibration of testing machines | 15th October 2024 | 25th October 2024 | Approve with comment | Dr S K Jain Comment |
| DIS | ISO/TC 164/SC 1 | ISO/DIS 26203-1 (Ed 3) | Metallic materials — Tensile testing at high strain rates — Part 1: Elastic-bar-type systems | 30th October 2024 | 12th November 2024 | Approve | Shri Alok |
| SR | ISO/TC 164/SC 4 | ISO 20064:2019 | Metallic materials — Steel — Method of test for the determination of brittle crack arrest toughness, Kca | 25th November 2024 | 2nd December 2024 | Approve | Dr S K Jain Comment |

**[Annexure 5](#Annex5)**

*(Clause 2.6)*

**Proposed Designated Experts**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Mechanical Testing of Metals Sectional Committee, MTD 3** | | | | |
| **ISO/TC 164 "Mechanical Testing of Metals"** | | | | |
| **Type** | **Reference no.** | **Topic** | **Level of Interest** | **Expert Name** |
| WD | ISO/WD TR 8463 | Strategy for a Common Frame Work to Determine Measurement Uncertainty in Mechanical Testing | Medium (M) | Dr S K Jain |
| WD | ISO/WD TS 23718 | Metallic materials — Mechanical testing — Vocabulary | Medium (M) | 1. Dr S K Jain 2. N.Ramachandran |
|  |  |  |  |  |
| **ISO/TC 164/SC 1 "Uniaxial Testing"** | | | | |
| **Type** | **Reference no.** | **Topic** | **Level of Interest** | **Expert Name** |
| WD | ISO/WD TS 4596 | Metallic materials — High temperature creep/fatigue crack growth testing method | Medium (M) | 1. Dr Vijayanand, IGCAR 2. Dr Abhishek Tiwari, IIT Ropar 3. Dr. Naga Sruthi Neelam, NIT Raipur |
| CD | ISO/CD 6892-2 | Metallic materials — Tensile testing — Part 2: Method of test at elevated temperature | Low(L) | 1. Shri Shiva Kumar, Zwick Roell 2. Shri Ramakrishna Hebbar, ITW 3. Dr. Sudip K. Sinha, NIT Raipur |
|  | ISO/TS 6892-5 | Metallic materials — Tensile testing — Part 5: Specification for testing miniaturised test pieces | Medium (M) | 1. Dr Karthik , IGCAR 2. Dr Raghu Prakash 3. Dr Kundan Kumar 4. Dr S. Sivaprasad |
| AWI | ISO/AWI 6892-6 | Metallic materials — Tensile testing — Part 6: Tensile test on foils and strips of metals with a nominal thickness less than 0,200 mm by using computer-controlled testing machines | Low(L) | 1. Shri Shiva Kumar, Zwick Roell 2. Shri Ramakrishna Hebbar, ITW |
| AWI | ISO/AWI TR 15264 | Mechanical tests on metallic materials - Evaluation of uncertainties in creep testing | Low(L) | 1. Dr Vijayanand, IGCAR 2. Dr S K Jain 3. Dr. Naga Sruthi Neelam, NIT Raipur |
| DIS | ISO/DIS 26203-1 | Metallic materials — Tensile testing at high strain rates — Part 1: Elastic-bar-type systems | Low(L) | 1. Shri Shiva Kumar, Zwick Roell 2. Shri Ramakrishna Hebbar, ITW |
| **ISO/TC 164/SC 2 "Ductility Testing"** | | | | |
| **Type** | **Reference no.** | **Topic** | **Level of Interest** | **Expert Name** |
| CD | ISO/CD 7799 | Metallic materials — Sheet and strip 3 mm thick or less — Reverse bend test | High (H) | 1. Dr D. Ravi Kumar, IIT Delhi 2. Dr Kaushik Badyopadhyay, IIT Bhilai |
| FDIS | ISO/FDIS 7801 | Metallic materials — Wire — Reverse bend test | High (H) | 1. Dr D. Ravi Kumar, IIT Delhi |
| CD | ISO/CD 16630 | Metallic materials — Sheet and strip — Hole expanding test | High (H) | 1. Shri Anand Sankar, ABS Instruments 2. Dr D. Ravi Kumar, IIT Delhi 3. Dr Kaushik Badyopadhyay, IIT Bhilai |
| CD | ISO/CD 20482 | Metallic materials — Sheet and strip — Erichsen cupping test | High (H) | 1. Shri Anand Sankar, ABS Instruments 2. Dr D. Ravi Kumar, IIT Delhi 3. Dr Kaushik Badyopadhyay, IIT Bhilai |
| **ISO/TC 164/SC 3 "Hardness Testing"** | | | | |
| **Type** | **Reference no.** | **Topic** | **Level of Interest** | **Expert Name** |
| DIS | ISO/DIS 6506-1 | Metallic materials — Brinell hardness test — Part 1: Test method | High (H) | 1. Dr S K Jain 2. Dr R V Tambad, FIE 3. N.Ramachandran 4. Prof. A. Basu, NIT Rourkela 5. Dr S S K Titus |
| DIS | ISO/DIS 6506-2 | Metallic materials — Brinell hardness test — Part 2: Verification and calibration of testing machines | Medium (M) | 1. Dr S K Jain 2. Dr R V Tambad, FIE 3. N.Ramachandran 4. Prof. A. Basu, NIT Rourkela 5. Dr S S K Titus |
| DIS | ISO/DIS 6506-3 | Metallic materials — Brinell hardness test — Part 3: Calibration of reference blocks | Medium (M) | 1. Dr S K Jain 2. Dr R V Tambad, FIE 3. N.Ramachandran 4. Prof. A. Basu, NIT Rourkela 5. Dr S S K Titus |
| DIS | ISO/DIS 14577-1 | Metallic materials — Instrumented indentation test for hardness and materials parameters — Part 1: Test method | High (H) | 1. Dr S K Jain 2. Dr R V Tambad, FIE 3. N.Ramachandran 4. Prof. A. Basu, NIT Rourkela 5. Dr S S K Titus |
| DIS | ISO/DIS 14577-2 | Metallic materials — Instrumented indentation test for hardness and materials parameters — Part 2: Verification and calibration of testing machines | Medium (M) | 1. Dr S K Jain 2. Dr R V Tambad, FIE 3. N.Ramachandran 4. Prof. A. Basu, NIT Rourkela 5. Dr S S K Titus |
| DIS | ISO/DIS 14577-3 | Metallic materials — Instrumented indentation test for hardness and materials parameters — Part 3: Calibration of reference blocks | Medium (M) | 1. Dr S K Jain 2. Dr R V Tambad, FIE 3. N.Ramachandran 4. Prof. A. Basu, NIT Rourkela 5. Dr S S K Titus |
| CD | ISO/CD 14577-6 | Metallic materials — Instrumented indentation test for hardness and materials parameters — Part 6: Instrumented indentation test at elevated temperature | Low(L) | 1. Dr S K Jain 2. Dr R V Tambad, FIE 3. N. Ramachandran 4. Prof. A. Basu, NIT Rourkela 5. Dr S S K Titus |
| SR | ISO 6506-4:2014 (Ed 2, vers 2) | Metallic materials — Brinell hardness test — Part 4: Table of hardness values | Medium (M) | 1. Dr S K Jain 2. Dr R V Tambad, FIE 3. N. Ramachandran 4. Prof. A. Basu, NIT Rourkela 5. Dr S S K Titus |
| SR | ISO 18265:2013 (Ed 2, vers 2) | Metallic materials — Conversion of hardness values | Medium (M) | 1. Dr S K Jain 2. Dr R V Tambad, FIE 3. N. Ramachandran 4. Prof. A. Basu, NIT Rourkela 5. Dr S S K Titus |
| **ISO/TC 164/SC 4 "Fatigue, Fracture and Toughness Testing"** | | | | |
| **Type** | **Reference no.** | **Topic** | **Level of Interest** | **Expert Name** |
| CD | ISO/CD 148-1 | Metallic materials — Charpy pendulum impact test — Part 1: Test method | High (H) | 1. Dr V L Niranjani, DMRL 2. Dr Sudip K. Sinha, NIT Raipur |
| CD | ISO/CD 148-2 | Metallic materials — Charpy pendulum impact test — Part 2: Verification of testing machines | Medium (M) | 1. Dr V L Niranjani, DMRL 2. N. Ramachandran |
| CD | ISO/CD 148-3 | Metallic materials — Charpy pendulum impact test — Part 3: Preparation and characterization of Charpy V-notch test pieces for indirect verification of pendulum impact machines | Medium (M) | 1. Dr V L Niranjani, DMRL 2. N. Ramachandran |
| CD | ISO/CD 148-4 | Metallic materials — Charpy pendulum impact test — Part 4: Part 4: Testing of miniature Charpy V-notch test pieces | Low(L) | 1. Dr V Karthik, IGCAR 2. Dr V L Niranjani, DMRL |
| CD | ISO/CD 1099 | Metallic materials — Fatigue testing — Axial force-controlled method | Medium (M) | 1. Dr Jagannathan, NAL 2. Dr Jalaj Kumar, DMRL |
| CD | ISO/CD TR 12105 | Metallic materials — Fatigue testing — General principles | Low(L) | 1. Dr Jagannathan, NAL 2. Dr Jalaj Kumar, DMRL |
| CD | ISO/CD 12106 | Metallic materials — Fatigue testing — Axial-strain-controlled method | Medium (M) | 1. Dr Jagannathan, NAL 2. Dr Jalaj Kumar, DMRL |
| CD | ISO/CD TR 15262 | Mechanical tests on metallic materials — Uncertainty in low-cycle fatigue | Low(L) | 1. Dr A Nagesha, IGCAR |
| CD | ISO/CD 15653 | Metallic materials — Method of test for the determination of quasistatic fracture toughness of welds | Medium (M) | 1. Dr A Nagesha, IGCAR |
| CD | ISO/CD 20198 | Metallic materials — Steel — Method of test for the determination of brittle crack arrest temperature (CAT) | Low(L) |  |
| CD | ISO/CD 23296 | Metallic materials – Fatigue testing – Force controlled thermo-mechanical fatigue testing method | Medium (M) | 1. Dr Jagannathan, NAL 2. Dr Jalaj Kumar, DMRL |
| AWI | ISO/AWI 26843 | Metallic materials — Measurement of fracture toughness at impact loading rates using precracked Charpy-type test pieces | Low(L) | 1. Dr Jagannathan, NAL 2. Dr Jalaj Kumar, DMRL 3. Dr V L Niranjani |
| AWI | ISO/AWI 12107 | Metallic materials — Fatigue testing — Statistical planning and analysis of data | Low(L) | 1. Dr Jagannathan, NAL 2. Dr Jalaj Kumar, DMRL |