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भारतीय मानक ब्यूरो

DRAFT FOR WIDE CIRCULATION

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भारतीय मानक मसौदा

स्टील — उच्च शक्ति वाले स्टील्स की हाइड्रोजन एम्ब्रिटलमेंट प्रतिरोध का मूल्यांकन करने की मापन विधि
भाग 2: धीमी स्ट्रेन दर परीक्षण

(*IS 17175 का पहला पुनरीक्षण*)

Draft Indian Standard

Steel — Measurement Method for The Evaluation of Hydrogen Embrittlement Resistance of High Strength Steels

Part 2: Slow Strain Rate Test

(First Revision of IS 17175)

ICS 77.040.99

Corrosion Protection and Finishes Sectional Committee, MTD 24	Last date of comment: 03/10/2025

NATIONAL FOREWORD

This draft standard is identical ISO 16573 – 2 : 2022 ‘Steel — Measurement method for the evaluation of hydrogen embrittlement resistance of high strength steels Part 2: Slow strain rate test’ issued by the International Organization for Standardization (ISO), and subject to its finalization, is to be adopted by the Bureau of Indian Standards on the recommendation of the Corrosion Protection and Finishes Sectional Committee and approval of the Metallurgical Engineering Division Council.

This standard was originally published in 2020 as IS 17175 : 2020/ISO 16573 : 2015 ‘Steel – Measurement Method for the Evaluation of Hydrogen Embrittlement Resistance of High Strength Steels’. Later, ISO 16573 was published into two parts. This revision has been undertaken to align with latest parts of ISO standard.

In this revision, the standard is aligned with ISO 16573-2 : 2020 ‘Steel — Measurement method for the evaluation of hydrogen embrittlement resistance of high-strength steels — Part 2: Slow strain rate test’.

This Indian Standard is published in two parts. Other part in this series is:

Part 1: Constant Load Test

The text of ISO standard has been approved as suitable for publication as in Indian Standard without deviations. Certain terminologies and conventions are, however, not identical with those used in Indian Standard. Attention is especially drawn to the following:

a) Wherever the words `International Standard' appear referring to this standard, it should be read as `Indian Standard'

b) Comma (,) has been used as a decimal marker while in Indian Standards the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exists. The corresponding Indian Standards which are to be substituted in their place are listed below along with their degree of equivalence for the edition indicated:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 6892-1, Metallic materials — Tensile testing — Part 1: Method of test at room temperature	IS 1608 (Part 1) : 2022 / ISO 6892-1 : 2019 Metallic materials — Tensile testing — Part 1 : Method of test at room temperature (*Fifth Revision*)	Identical
ISO 6892-2, Metallic materials — Tensile testing — Part 2: Method of test at elevated temperature	IS 1608 (Part 2) : 2020 / ISO 6892-2 : 2018 Metallic Materials — Tensile Testing — Part 2 Method of Test at Elevated Temperature (*Fourth Revision*)	Identical
ISO 7500-1, 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 1) : 2022 / 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	Identical

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis shall he rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (second revision)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

The scope of the standard is as follows:

SCOPE

This document provides an evaluation method of the resistance of high-strength steels to hydrogen embrittlement (i.e. hydrogen delayed fracture) using slow strain rate test with hydrogen pre-charged specimens. The amount of hydrogen absorbed in the specimens is analysed quantitatively by thermal desorption analysis such as gas

chromatography, mass spectrometry and so on. This document includes testing methods for either smooth or notched specimens.

It is applicable to ferritic base steels.

The complete document/text of ISO 16573-2 : 2022 'Steel — Measurement method for the evaluation of hydrogen embrittlement resistance of high strength steels — Part 2: Slow strain rate test' may be made available, on request to:

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