भारतीय मानक ब्यूरो

DRAFT FOR WIDE CIRCULATION

भारतीय मानक मसौदा

वेल्डिंग उपभोग्य — ठोस तार इलेक्ट्रोड, ट्यूबलर कोर्ड इलेक्ट्रोड और गैर मिश्र धातु और ठीक अनाज स्टील्स के निमग्न आर्क वेल्डिंग के लिए इलेक्ट्रोड/फ्लक्स संयोजन — वर्गीकरण

Draft Indian Standard

Welding Consumables — Solid Wire Electrodes, Tubular Cored Electrodes and Electrode/Flux Combinations for Submerged Arc Welding of Non Alloy and Fine Grain Steels — Classification

ICS 25.160.20

Welding General and its Applications Sectional Committee, MTD 11	Last date of comment: 05/01/2024

NATIONAL FOREWORD

This draft standard is identical to ISO 14171 : 2016 ‘Welding consumables — Solid wire electrodes, tubular cored electrodes and electrode/flux combinations for submerged arc welding of non alloy and fine grain steels — Classification’ 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 Welding General and its Applications Sectional Committee and approval of the Metallurgical Engineering Division Council.

The committee decided to adopt ISO 14171 : 2016 standard under dual numbering system.

The text of ISO standard has been approved as suitable for publication as an 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 544 : 2017 Welding consumables — Technical delivery conditions for filler materials and fluxes — Type of product, dimensions, tolerances and markings	Doc : MTD/11/22952 Welding consumables — Technical delivery conditions for filler materials and fluxes — Type of product, dimensions, tolerances and markings	Identical
ISO 3690 : 2018 Welding and allied processes — Determination of hydrogen content in arc weld metal	Doc : MTD/11/23214 Welding and allied processes — Determination of hydrogen content in arc weld metal (First Revision)	Identical
ISO 6847 : 2020 Welding consumables — Deposition of a weld metal pad for chemical analysis	Doc : MTD/11/22954 Welding consumables — Deposition of a weld metal pad for chemical analysis	Identical
ISO 14344 : 2010 Welding consumables — Procurement of filler materials and fluxes	Doc : MTD/11/22964 Welding consumables — Procurement of filler materials and fluxes	Identical
ISO 15792-1 : 2020 Welding consumables — Test methods — Part 1: Preparation of all-weld metal test pieces and specimens in steel, nickel and nickel alloys	Doc : MTD/11/22966 Welding consumables — Test methods — Part 1: Preparation of all-weld metal test pieces and specimens in steel, nickel and nickel alloys	Identical
ISO 15792-2 : 2020 Welding consumables — Test methods — Part 2: Preparation of single-run and two-run technique test pieces and specimens in steel	Doc : MTD/11/22968 Welding consumables — Test methods — Part 2: Preparation of single-run and two-run technique test pieces and specimens in steel	Identical
ISO 80000 - 1 : 2022 Quantities and units — Part 1 : General	IS / ISO 80000 - 1 : 2022 Quantities and Units Part 1 General (First Revision)	Identical

The technical committee responsible for the preparation of this standard has reviewed the provisions of following International Standards referred in these adopted standards and decided their acceptability for use in conjunction with this standard.

International Standard	*Title*
ISO 13916 : 2017	Welding — Measurement of preheating temperature, interpass temperature and preheat maintenance temperature
ISO 14174 : 2019	Welding consumables — Fluxes for submerged arc welding and electroslag welding — Classification

This standard also makes a reference to the BIS Certification Marking of the product, details of which are given in National Annex A.

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

The scope of the standard is as follows:

SCOPE

This International Standard specifies the requirements for the classification of electrode/flux combinations and weld metal in the as-welded condition and in the post-weld heat-treated condition for submerged arc welding of non-alloy and fine grain steels with minimum yield strength of up to 500 MPa or a minimum tensile strength of up to 570 MPa. One flux can be classified with different solid wire electrodes and tubular cored electrodes. The solid wire electrode is also classified separately based on chemical composition.

This International Standard is a combined specification providing for classification utilizing a system based upon the yield strength and the average impact energy for weld metal of 47 J, or utilizing a system based upon the tensile strength and the average impact energy for weld metal of 27 J.

a) Paragraphs and tables which carry the suffix letter "A" are applicable only to electrode/flux combinations and wire electrodes classified using the system based upon the yield strength and the average impact energy for weld metal of 47 J, in accordance with this International Standard

b) Clauses and tables which carry the suffix letter "B" are applicable only to electrode/flux combinations and wire electrodes classified using the system based upon the tensile strength and the average impact energy for weld metal of 27 J, in accordance with this International Standard.

c) Clauses and tables which do not have either the suffix letter "A" or the suffix letter "B" are applicable to all electrode/flux combinations and wire electrodes classified in accordance with this International Standard.

Fluxes for the single-run and two-run techniques are classified on the basis of the two-run technique.

The complete document/text of ISO 14171 : 2016 'Welding consumables — Solid wire electrodes, tubular cored electrodes and electrode/flux combinations for submerged arc welding of non alloy and fine grain steels — Classification' may be made available, on request to:

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National Annex A
(*National Foreword*)

A-1 BIS CERTIFICATION MARKING

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the standard mark