

## **भारतीय मानक ब्यूरो**

**DRAFT FOR WIDE CIRCULATION**

*(Not to be reproduced without permission of BIS or used as an Indian Standard)*

*भारतीय मानक मसौदा*

### **वेल्डिंग उपभोग्य — ठोस तार इलेक्ट्रोड, ट्यूबलर कोर्ड इलेक्ट्रोड और इलेक्ट्रोड-फ्लक्स विसर्पण-प्रतिरोधी स्टील्स के जलमग्न आर्क वेल्डिंग के लिए संयोजन — वर्गीकरण**

*Draft Indian Standard*

### **Welding Consumables — Solid Wire Electrodes, Tubular Cored Electrodes and Electrode-Flux Combinations for Submerged Arc Welding of Creep-Resisting Steels — Classification**

ICS 25.160.20

Welding General and its Applications  
Sectional Committee, MTD 11

Last date of comment:  
04/12/2023

#### **NATIONAL FOREWORD**

This draft standard is identical to ISO 24598 : 2019 ‘Welding consumables — Solid wire electrodes, tubular cored electrodes and electrode-flux combinations for submerged arc welding of creep-resisting 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 24598 : 2019 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:

- Wherever the words ‘International Standard’ appear referring to this standard, it should be read as ‘Indian Standard’.
- 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:

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
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 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 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.

<i>International Standard</i>	<i>Title</i>
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 document specifies requirements for classification of solid wire electrodes, tubular cored electrodes and electrode/flux combinations (all-weld metal deposits) for submerged arc welding of creep resisting and low-alloy elevated-temperature application steels. One electrode can be tested and classified with different fluxes. The solid wire electrode is also classified separately based on its chemical composition.

This document is a combined specification providing a classification system based on either:

- the chemical composition of the solid wire electrode and all-weld metal deposit; or
  - the tensile strength of the all-weld metal deposit and the chemical composition of the solid wire electrode and all-weld metal deposit obtained with the electrode/flux combination.
- a) Clauses, subclauses and tables which carry the suffix letter “A” are applicable only to solid wire electrodes, tubular cored electrodes and all-weld metal deposits classified in accordance with the system based upon chemical composition.
  - b) Clauses, subclauses and tables which carry the suffix letter “B” are applicable only to solid wire electrodes, tubular cored electrodes and all-weld metal deposits classified in accordance with the system based upon the tensile strength of all-weld metal deposits and the chemical composition of solid wire electrodes and all-weld metal deposits.
  - c) Clauses, subclauses and tables which do not have either the suffix letter “A” or the suffix letter “B” are applicable to all solid wire electrodes, tubular cored electrodes and electrode/flux combinations classified under this document.

**The complete document/text of ISO 24598 : 2019 ‘Welding consumables — Solid wire electrodes, tubular cored electrodes and electrode-flux combinations for submerged arc welding of creep-resisting steels — Classification’ may be made available, on request to:**

संजीव मैनी / **Sanjiv Maini**

वरिष्ठ निदेशक, वैज्ञानिक 'एफ' एवं प्रमुख / **Senior Director, Scientist ‘F’ & Head**

धातुकर्म अभियांत्रिकी विभाग / **Metallurgical Engg. Department**

भारतीय मानक ब्यूरो / **Bureau of Indian Standards,**

मानक भवन, नई दिल्ली / **Manak Bhavan, 9, B.S.Z. Marg,**

**New Delhi-110002**

**E-mail: mtd@bis.gov.in, mtd11@bis.gov.in**

**Tel: + 91 11 23231085**

**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