

KEEVITUSMATERJALID. TÄISTRAATELEKTROODID,
TÄISTRAADID JA -VARDAD TITAANI JA
TITAANSULAMITE KAARKEEVITAMISEKS. LIIGITUS

Welding consumables - Solid wire electrodes, solid
wires and rods for fusion welding of titanium and
titanium alloys - Classification (ISO 24034:2020)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 24034:2020 sisaldab Euroopa standardi EN ISO 24034:2020 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 24034:2020 consists of the English text of the European standard EN ISO 24034:2020.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 26.08.2020.	Date of Availability of the European standard is 26.08.2020.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 25.160.20

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:

Koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

English Version

**Welding consumables - Solid wire electrodes, solid wires
and rods for fusion welding of titanium and titanium alloys
- Classification (ISO 24034:2020)**

Produits consommables pour le soudage - Fils-
électrodes pleins, fils pleins et baguettes pleines pour
le soudage par fusion du titane et des alliages de titane
- Classification (ISO 24034:2020)

Schweißzusätze - Massivdrahtelektroden,
Massivdrähte und Massivstäbe zum Schmelzschiessen
von Titan und Titanlegierungen - Einteilung (ISO
24034:2020)

This European Standard was approved by CEN on 16 July 2020.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

This document (EN ISO 24034:2020) has been prepared by Technical Committee ISO/TC 44 "Welding and allied processes" in collaboration with Technical Committee CEN/TC 121 "Welding and allied processes" the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2021, and conflicting national standards shall be withdrawn at the latest by February 2021.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 24034:2010.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 24034:2020 has been approved by CEN as EN ISO 24034:2020 without any modification.

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Classification	1
5 Symbols and requirements	1
5.1 Symbol for the product.....	1
5.2 Symbol for the chemical composition.....	2
6 Mechanical properties	2
7 Chemical analysis	2
8 Rounding procedure	2
9 Retests	2
10 Technical delivery conditions	2
11 Designation	6
Annex A (informative) Explanation of classification symbols for chemical composition	7
Annex B (informative) Corresponding national classifications	10
Bibliography	12

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 3, *Welding consumables*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 121, *Welding and allied processes*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Official interpretations of ISO/TC 44 documents, where they exist, are available from this page: <https://committee.iso.org/sites/tc44/home/interpretation.html>.

This third edition cancels and replaces the second edition (ISO 24034:2010), which has been technically revised. The main changes compared to the previous edition are as follows:

- a number of alloys in [Table 1](#) have been updated;
- a number of typographical errors in [Table 1](#) and [Table B.1](#) have been corrected;
- [Clause 8](#) has been updated to reflect the current agreed wording;
- in [Clause 11](#), the words “Solid wire” have been deleted from each example designation;
- the last sentence of the second paragraph of [A.1](#) has been deleted to align with [A.15](#);
- a number of dated references in [Annex B](#) and the bibliography have been updated.

Introduction

This document proposes a classification in order to designate solid wire electrodes, solid wires and rods in terms of their chemical composition.

There is no unique relationship between the product form (solid wire electrodes, solid wires or rods) and the welding process used (gas-shielded metal arc welding, tungsten inert gas arc welding, plasma arc welding or laser beam welding). For this reason, solid wire electrodes, solid wires and rods can be classified in terms of their chemical composition.

In this document, the symbol of the welding process is not used, because:

- a) different joining processes are performed with the same chemical component consumable;
- b) the producer is not able to determine the process symbol before shipping.

Also, it should be noted that the mechanical properties of all-weld metal test specimens or welded joints produced by welding consumables can vary from those obtained in production joints because of differences in welding procedure and the base-metal alloy. For this reason, the mechanical properties of all-weld metal or welded joints for titanium-welding consumables are not specified in this classification.

Welding consumables — Solid wire electrodes, solid wires and rods for fusion welding of titanium and titanium alloys — Classification

1 Scope

This document specifies requirements for the classification of solid wire electrodes, solid wires and rods for fusion welding of titanium and titanium alloys. The classification is based on their chemical composition.

The compositions of solid wire electrodes for metal inert gas (MIG) welding are the same as solid wire electrodes, solid wires and rods for tungsten inert gas (TIG) arc welding, plasma arc welding, laser beam welding, and other fusion welding processes.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 544, *Welding consumables — Technical delivery conditions for filler materials and fluxes — Type of product, dimensions, tolerances and markings*

ISO 14344, *Welding consumables — Procurement of filler materials and fluxes*

ISO 80000-1:2009, *Quantities and units — Part 1: General*. Corrected by ISO 80000-1:2009/Cor 1:2011

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

4 Classification

The classification is divided into two parts:

- a) the first part gives a symbol indicating the product to be identified, see 5.1;
- b) the second part gives a symbol indicating the chemical composition of the solid wire electrodes, solid wires and rods, see Table 1.

5 Symbols and requirements

5.1 Symbol for the product

The symbol for the solid wire electrodes, solid wires and rods shall be S.