

**Welding consumables - Tubular cored electrodes and rods for gas shielded and non-gas shielded metal arc welding of stainless and heat-resisting steels -
Classification**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN ISO 17633:2010 sisaldab Euroopa standardi EN ISO 17633:2010 ingliskeelset teksti.

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English Version

Welding consumables - Tubular cored electrodes and rods for
gas shielded and non-gas shielded metal arc welding of
stainless and heat-resisting steels - Classification (ISO
17633:2010)

Produits consommables pour le soudage - Fils et baguettes
fourrés pour le soudage à l'arc avec ou sans protection
gazeuse des aciers inoxydables et des aciers résistant aux
températures élevées - Classification (ISO 17633:2010)

Schweißzusätze - Fülldrahtelektroden und Füllstäbe zum
Metall-Lichtbogenschweißen mit und ohne Gasschutz von
nichtrostenden und hitzebeständigen Stählen - Einteilung
(ISO 17633:2010)

This European Standard was approved by CEN on 30 October 2010.

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COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (EN ISO 17633:2010) has been prepared by Technical Committee ISO/TC 44 "Welding and allied processes" of the International Organization for Standardization (ISO) in collaboration with Technical Committee CEN/TC 121 "Welding" 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of an identical text or by endorsement, at the latest by May 2011, and conflicting national standards shall be withdrawn at the latest by May 2011.

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Endorsement notice

The text of ISO 17633:2010 has been approved by CEN as a EN ISO 17633:2010 without any modification.

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Introduction

This International Standard provides a classification system for tubular cored electrodes and rods for welding stainless steels. It recognizes that there are two somewhat different approaches in the global market to classifying a given tubular stainless steel welding consumable, and allows for either or both to be used, to suit a particular market need. Application of either type of classification designation (or of both, where suitable) identifies a product as classified in accordance with this International Standard.

The classification according to system A is mainly based on EN 12073:1999^[2]. The classification according to system B is mainly based upon standards used around the Pacific Rim.

Welding consumables — Tubular cored electrodes and rods for gas shielded and non-gas shielded metal arc welding of stainless and heat-resisting steels — Classification

1 Scope

This International Standard specifies requirements for classification of tubular flux and metal cored electrodes and rods, based on the all-weld metal chemical composition, the type of electrode core, shielding gas, welding position and the all-weld metal mechanical properties, in the as-welded or heat-treated conditions, for gas shielded and non-gas shielded metal arc welding of stainless and heat-resisting steels.

This International Standard is a combined standard providing for classification utilizing a system based upon nominal composition or utilizing a system based upon alloy type.

- a) Clauses, subclauses, and tables which carry the suffix letter “A” are applicable only to products classified using the system based upon nominal composition.
- b) Clauses, subclauses, and tables which carry the suffix letter “B” are applicable only to products classified using the system based upon alloy type.
- c) Clauses, subclauses, and tables which do not have either the suffix letter “A” or the suffix letter “B” are applicable to all tubular cored electrodes classified in accordance with this International Standard.

It is recognized that the operating characteristics of tubular cored electrodes can be modified by the use of pulsed current. However, this International Standard does not use pulsed current for determining the electrode classification.

2 Normative references

The following referenced documents are indispensable for the application 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 6847, *Welding consumables — Deposition of a weld metal pad for chemical analysis*

ISO 6947:2010, *Welding and allied processes — Welding positions*

ISO 13916, *Welding — Guidance on the measurement of preheating temperature, interpass temperature and preheat maintenance temperature*

ISO 14175, *Welding consumables — Gases and gas mixtures for fusion welding and allied processes*

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

ISO 15792-1:2000, *Welding consumables — Test methods — Part 1: Test methods for all-weld metal test specimens in steel, nickel and nickel alloys*

ISO 15792-3, *Welding consumables — Test methods — Part 3: Classification testing of positional capacity and root penetration of welding consumables in a fillet weld*

ISO 80000-1:2009, *Quantities and units — Part 1: General*

3 Classification

Classification designations are based upon two approaches to indicating the chemical composition of the all-weld metal deposit obtained with a given electrode or rod.

The “nominal composition” approach uses designation components indicating directly the nominal levels of certain alloying elements, given in a particular order, and some symbols for low but significant levels of other elements, whose levels are not conveniently expressed as integers. The “alloy type” approach uses tradition-based three- or four-digit designations for alloy families, and an occasional additional character or characters for compositional modifications of each original alloy within the family.

This clause includes the symbols for the type of product, the chemical composition of all-weld metal, the type of electrode core, the shielding gas and the welding position, in accordance with the symbols defined in Clause 4.

In most cases, a given commercial product can be classified in both systems. Then either or both classification designations can be used for the product.

3A Classification according to nominal composition

The classification is divided into five parts:

- a) the first part gives a symbol indicating the product to be identified (see 4.1A);
- b) the second part gives a symbol indicating the chemical composition of the all-weld metal (see Table 1A);
- c) the third part gives a symbol indicating the type of electrode core (see Table 3A);
- d) the fourth part gives a symbol indicating the shielding gas (see 4.4);
- e) the fifth part gives a symbol indicating the welding position (see Table 4A).

3B Classification according to alloy type

The classification is divided into five parts:

- a) the first part gives a symbol indicating the tubular cored electrode and rod (see 4.1B);
- b) the second part gives a symbol indicating the chemical composition of the all-weld metal (see Tables 1B-1 to -4);
- c) the third part gives a symbol indicating the type of tubular cored electrode or rod (see Table 3B);
- d) the fourth part gives a symbol indicating the shielding gas (see 4.4);
- e) the fifth part gives a symbol indicating the welding position (see Table 4B).

The full identification (see Clause 11) shall be used on packages and in the manufacturer's literature and data sheets.

4 Symbols and requirements

A given tubular cored electrode may be classified with more than one shielding gas. In such cases, each shielding gas results in a separate classification.