



NSAI
Standards

Irish Standard
I.S. EN ISO 3580:2017

Welding consumables - Covered electrodes for manual metal arc welding of creep- resisting steels - Classification (ISO 3580:2017)

I.S. EN ISO 3580:2017

Incorporating amendments/corrigenda/National Annexes issued since publication:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):

NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.

This document is based on:

EN ISO 3580:2017

Published:

2017-05-10

This document was published under the authority of the NSAI and comes into effect on:

2017-05-28

ICS number:

25.160.20

NOTE: If blank see CEN/CENELEC cover page

NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

National Foreword

I.S. EN ISO 3580:2017 is the adopted Irish version of the European Document EN ISO 3580:2017, Welding consumables - Covered electrodes for manual metal arc welding of creep-resisting steels - Classification (ISO 3580:2017)

This document does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

For relationships with other publications refer to the NSAI web store.

Compliance with this document does not of itself confer immunity from legal obligations.

In line with international standards practice the decimal point is shown as a comma (,) throughout this document.

This page is intentionally left blank

EUROPEAN STANDARD

EN ISO 3580

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2017

ICS 25.160.20

Supersedes EN ISO 3580:2011

English Version

Welding consumables - Covered electrodes for manual metal arc welding of creep-resisting steels - Classification (ISO 3580:2017)

Produits consommables pour le soudage - Électrodes enrobées pour le soudage manuel à l'arc des aciers résistant au fluage - Classification (ISO 3580:2017)

Schweißzusätze - Umhüllte Stabelektroden zum Lichtbogenhandschweißen von warmfesten Stählen - Einteilung (ISO 3580:2017)

This European Standard was approved by CEN on 3 May 2017.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, 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: Avenue Marnix 17, B-1000 Brussels

EN ISO 3580:2017 (E)

Contents	Page
European foreword.....	3

European foreword

This document (EN ISO 3580:2017) 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 November 2017, and conflicting national standards shall be withdrawn at the latest by November 2017.

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

This document supersedes EN ISO 3580:2011.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 3580:2017 has been approved by CEN as EN ISO 3580:2017 without any modification.

This page is intentionally left blank

INTERNATIONAL STANDARD

**ISO
3580**

Fourth edition
2017-04

Welding consumables — Covered electrodes for manual metal arc welding of creep-resisting steels — Classification

*Produits consommables pour le soudage — Électrodes enrobées
pour le soudage manuel à l'arc des aciers résistant au fluage —
Classification*



Reference number
ISO 3580:2017(E)

© ISO 2017

ISO 3580:2017(E)



COPYRIGHT PROTECTED DOCUMENT

© ISO 2017, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Classification	2
5 Symbols and requirements	3
5.1 Symbol for the product/process	3
5.2 Symbol for the chemical composition of all-weld metal	3
5.3 Symbol for the mechanical properties of all-weld metal	3
5.4 Symbol for type of electrode covering	9
5.5 Symbol for nominal electrode efficiency and type of current	10
5.6 Symbol for welding position	10
5.7 Symbol for hydrogen content of deposited metal	11
5.8 Rounding procedure	11
6 Mechanical tests	11
6.1 General	11
6.2 Preheating and interpass temperature	11
6.3 Pass sequence	12
7 Chemical analysis	12
8 Fillet weld test	12
9 Retesting	13
10 Technical delivery conditions	14
11 Examples of designation	14
Annex A (informative) Classification systems	16
Annex B (informative) Description of chemical composition designators (classification by chemical composition)	18
Annex C (informative) Description of chemical composition designators (classification by tensile strength and chemical composition)	19
Annex D (informative) Description of types of electrode covering (classification by chemical composition)	20
Annex E (informative) Description of types of electrode covering (classification by tensile strength and chemical composition)	21
Annex F (informative) Notes on diffusible hydrogen	23
Bibliography	24

ISO 3580:2017(E)

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 on 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 the following URL: 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*.

This fourth edition cancels and replaces the third edition (ISO 3580:2010), which has been technically revised with the following changes:

- the normative references have been updated;
- new classifications from the USA and Japan have been added in system B;
- revisions/corrections of chemical compositions and other values have been made in the tables;
- Footnote d) to [Table 1](#) has been revised to clarify that elements intentionally added that do not have values listed (including Co and B) are to be reported;
- the descriptions in [Table 3](#) have been revised;
- the range for nominal electrode efficiency for symbol 4 in [Table 4](#) has been corrected.

Requests for official interpretations of any aspect of this document should be directed to the Secretariat of ISO/TC 44/SC 3 via your national standards body. A complete listing of these bodies can be found at www.iso.org.

Introduction

This document proposes a method for classification of covered electrodes, in terms of chemical composition of the all-weld metal (system A) and in terms of tensile strength and chemical composition (system B).

The mechanical properties of all-weld metal test specimens used to classify the electrodes vary from those obtained in production joints because of differences in welding procedure such as electrode diameter, width of weave, welding position and material composition.

The classification according to system A is mainly based on EN 1599^[1]. The classification according to system B is mainly based upon standards used around the Pacific Rim.

Welding consumables — Covered electrodes for manual metal arc welding of creep-resisting steels — Classification

1 Scope

This document specifies requirements for classification of covered electrodes, based on the all-weld metal in the heat-treated condition, for manual metal arc welding of ferritic and martensitic creep-resisting and low alloy elevated temperature steels.

This document is a combined specification for classification utilizing a system based upon the chemical composition of the all-weld metal, with requirements for the yield strength and impact energy of the all-weld metal, or utilizing a system based upon the tensile strength and the chemical composition of the all-weld metal.

- a) Paragraphs and tables which carry the suffix letter “A” are applicable only to electrodes classified to the system based upon chemical composition, with requirements for the yield strength and impact energy of the all-weld metal under this document.
- b) Paragraphs and tables which carry the suffix letter “B” are applicable only to electrodes classified to the system based upon the tensile strength and the chemical composition of all-weld metal under this document.
- c) Paragraphs and tables which do not have either the suffix letter “A” or the suffix letter “B” are applicable to all covered electrodes classified under this document.

For comparison purposes, some tables include requirements for electrodes classified according to both systems, placing individual electrodes from the two systems, which are similar in composition and properties, on adjacent lines in the particular table. In a particular line of the table that is mandatory in one system, the symbol for the similar electrode from the other system is indicated in parentheses. By appropriate restriction of the formulation of a particular electrode, it is often, but not always, possible to produce an electrode that can be classified in both systems, in which case the electrode, and/or its packaging, can be marked with the classification in either or both systems.

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 2401, *Covered electrodes — Determination of the efficiency, metal recovery and deposition coefficient*

ISO 3690, *Welding and allied processes — Determination of hydrogen content in arc weld metal*

ISO 6847, *Welding consumables — Deposition of a weld metal pad for chemical analysis*

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

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

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

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

-
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
 - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-