



NSAI
Standards

Irish Standard
I.S. EN 60683:2012

Industrial electroheating equipment - Test methods for submerged-arc furnaces (IEC 60683:2011 (EQV))

I.S. EN 60683:2012

Incorporating amendments/corrigenda 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.

<i>This document replaces:</i> HD 599 S1:1992	<i>This document is based on:</i> EN 60683:2012 HD 599 S1:1992	<i>Published:</i> 6 January, 2012 16 January, 1992
This document was published under the authority of the NSAI and comes into effect on: 24 January, 2012		ICS number: 25.180.10
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		

English version

**Industrial electroheating equipment -
Test methods for submerged-arc furnaces
(IEC 60683:2011)**

Chauffage électrique industriel -
Méthodes d'essai des fours à arc
submergé
(CEI 60683:2011)

Industrielle Elektrowärmeanlagen -
Prüfverfahren für Lichtbogen-
Reduktionsöfen
(IEC 60683:2011)

This European Standard was approved by CENELEC on 2011-11-23. CENELEC 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 CENELEC 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 CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Management Centre: Avenue Marnix 17, B - 1000 Brussels

I.S. EN 60683:2012

EN 60683:2012

- 2 -

Foreword

The text of document 27/780/CDV, future edition 2 of IEC 60683, prepared by IEC/TC 27 "Industrial electroheating" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60683:2012.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2012-08-23
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2014-11-23

This document supersedes HD 599 S1:1992.

EN 60683:2011 includes the following significant technical changes with respect to HD 599 S1:1992:

- Clause 1 (Scope and object) – the types of furnaces covered by this standard are more clearly defined.
- Clause 2 (Normative references) and Clause 3 (Terms and definitions) have been updated and completed.
- A new Clause 4 (Features of the SAF system) has been added; it mainly concentrates on the tests necessary for high voltage/high current electrical equipment in the installation.
- Clause 5 (Tests and general conditions) and Clause 6 (Technical tests) have been modified according to today's requirements for safe operation of a SAF.

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

Endorsement notice

The text of the International Standard IEC 60683:2011 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 60146-1-1:2009 NOTE Harmonized as EN 60146-1-1:2010 (not modified).

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60398	-	Industrial electroheating installations - General test methods	EN 60398	-
IEC 60519-1	2010	Safety in electroheating installations - Part 1: General requirements	EN 60519-1	2011
IEC 60519-4	-	Safety in electroheat installations - Part 4: Particular requirements for arc furnace installations	EN 60519-4	-

This page is intentionally left BLANK.

CONTENTS

FOREWORD.....	3
1 Scope and object.....	5
2 Normative references	5
3 Terms and definitions	5
4 Features of the SAF system	8
4.1 Electrical assembly of SAF	8
4.2 Star-delta switch	9
4.3 Types of SAF	9
4.4 SAF process principles.....	9
4.5 Types of electrodes.....	9
4.6 Electrode system.....	10
4.7 Water cooling	10
4.8 Electrical connection	10
5 Tests and general conditions	10
5.1 General.....	10
5.2 List of tests during cold state.....	11
5.3 List of tests during hot commissioning and hot state.....	11
6 Technical tests	11
6.1 Electrical insulation resistance	11
6.1.1 General	11
6.1.2 Electrical insulation during erection	11
6.1.3 Electrical insulation during cold test.....	11
6.1.4 Electrical insulation during hot state	12
6.2 Cooling water system	12
6.3 Characteristics of electrode regulation.....	12
6.3.1 Speed of electrode motion.....	12
6.3.2 Electrode regulator dead band.....	12
6.3.3 Electrode motion response time.....	12
6.3.4 Current control of semiconductor converter (if applicable)	13
6.4 Determination of electrical characteristics during operation	13
6.5 Determination of secondary voltage.....	13
6.6 Operational parameters	13
Bibliography.....	14

INTERNATIONAL ELECTROTECHNICAL COMMISSION

INDUSTRIAL ELECTROHEATING EQUIPMENT – TEST METHODS FOR SUBMERGED-ARC FURNACES

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60683 has been prepared by IEC technical committee 27: Industrial electroheating.

This second edition cancels and replaces the previous edition published in 1980 and constitutes a technical revision.

Significant technical changes with respect to the previous edition are as follows:

- Clause 1 (*Scope and object*) – the types of furnaces covered by this standard are more clearly defined.
- Clause 2 (*Normative references*) and Clause 3 (*Terms and definitions*) have been updated and completed.
- A new Clause 4 (*Features of the SAF system*) has been added; it mainly concentrates on the tests necessary for high voltage/high current electrical equipment in the installation.
- Clause 5 (*Tests and general conditions*) and Clause 6 (*Technical tests*) have been modified according to today's requirements for safe operation of a SAF.

The text of this standard is based on the following documents:

CDV	Report on voting
27/780/CDV	27/797/RVC

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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](#)
-