



**SLOVENSKI STANDARD**  
**SIST EN 60676:2012**

**01-maj-2012**

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**Oprema za industrijsko električno ogrevanje - Preskusne metode za peči z odkritim oblokom**

Industrial electroheating equipment - Test methods for direct arc furnaces

Industrielle Elektrowärmeanlagen - Prüfverfahren für Lichtbogen-Schmelzöfen

Chauffage électrique industriel - Méthodes d'essai des fours à arc direct

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**Ta slovenski standard je istoveten z: EN 60676:2012**

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**ICS:**

25.180.10      Električne peči      Electric furnaces

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 60676**

February 2012

ICS 25.180.10

Supersedes EN 60676:2002

English version

**Industrial electroheating equipment -  
Test methods for direct arc furnaces  
(IEC 60676:2011)**

Chauffage électrique industriel -  
Méthodes d'essai des fours à arc direct  
(CEI 60676:2011)

Industrielle Elektrowärmeanlagen -  
Prüfverfahren für Lichtbogen-Schmelzöfen  
(IEC 60676:2011)

This European Standard was approved by CENELEC on 2011-12-13. 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**

## Foreword

The text of document 27/816/FDIS, future edition 3 of IEC 60676, prepared by IEC/TC 27 "Industrial electroheating" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60676:2012.

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) 2012-09-13
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2014-12-13

This document supersedes EN 60676:2002.

EN 60676:2012 includes the following significant technical changes with respect to EN 60676:2002:

- Clause 1 (*Scope and object*) – types of furnaces are more clearly defined.
- Clause 2 (*Normative references*) and Clause 3 (*Terms and definitions*) have been updated and completed.
- New Clause 4 (*Features of the EAFsystem*) has been added; it mainly concentrates on the tests necessary for high-voltage / high-current electrical equipment in the installation.
- Clause 5 (*Type of tests and general conditions of their performance*) and Clause 6 (*Technical tests*) have been modified according to today's requirements for safe operation of an EAF.

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 60676:2011 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

- [2] IEC 60146-1-1:2009 NOTE Harmonized as EN 60146-1-1:2010 (not modified).
- [3] IEC 60683:2011 NOTE Harmonized as EN 60683:2012 (not modified).

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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	1999	Industrial electroheating installations - General test methods	EN 60398	1999
IEC 60519-1	-	Safety in electroheating installations - Part 1: General requirements	EN 60519-1	-
IEC 60519-4	-	Safety in electroheat installations - Part 4: Particular requirements for arc furnace installations	EN 60519-4	-

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IEC 60676

Edition 3.0 2011-11

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

**Industrial electroheating equipment – Test methods for direct arc furnaces**

**Chauffage électrique industriel – Méthodes d'essai des fours à arc direct**

[SIST EN 60676:2012](https://standards.iteh.ai/catalog/standards/sist/7b9fd14b-043d-4f9b-9841-ec24e9dca58e/sist-en-60676-2012)

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## INDUSTRIAL ELECTROHEATING EQUIPMENT – TEST METHODS FOR DIRECT ARC FURNACES

### FOREWORD

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International Standard IEC 60676 has been prepared by IEC technical committee 27: Industrial electroheating.

This third edition cancels and replaces the previous edition published in 2002 and constitutes a technical revision.

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

- Clause 1 (*Scope and object*) – types of furnaces are more clearly defined.
- Clause 2 (*Normative references*) and Clause 3 (*Terms and definitions*) have been updated and completed.
- New Clause 4 (*Features of the EAFsystem*) has been added; it mainly concentrates on the tests necessary for high-voltage / high-current electrical equipment in the installation.
- Clause 5 (*Type of tests and general conditions of their performance*) and Clause 6 (*Technical tests*) have been modified according to today's requirements for safe operation of an EAF.

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

FDIS	Report on voting
27/816/FDIS	27/837/RVD

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.

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[SIST EN 60676:2012](https://standards.iteh.ai/catalog/standards/sist/7b9fd14b-043d-4f9b-9841-ec24e9dca58e/sist-en-60676-2012)

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## INDUSTRIAL ELECTROHEATING EQUIPMENT – TEST METHODS FOR DIRECT ARC FURNACES

### 1 Scope and object

This International Standard specifies test procedures, conditions and methods according to which the main parameters and the main operational characteristics of electric arc furnaces (EAF) operated either with alternating current (EAFac) or with direct current (EAFdc) with a capacity above 500 kg/heat are established.

The EAF technology is also applicable to furnaces, in which liquid metal is kept at high temperature or superheated to casting temperature (e.g. in a ladle furnace (LF), operated with alternating current).

Test methods for some special equipment, e.g. controlled rectifiers for EAFdc, are covered by IEC 60146-1-1.

Test methods for submerged arc furnaces (SAF) are covered by IEC 60683.

### 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.

<https://standards.iteh.ai/catalog/standards/sist/7b9fd14b-043d-4f9b-9841-11d913111111/iec-60398-1999>, *Industrial electroheating installations – General test methods*

IEC 60519-1, *Safety in electroheating installations – Part 1: General requirements*

IEC 60519-4, *Safety in electroheat installations – Part 4: Particular requirements for arc furnace installations*

### 3 Terms and definitions

For the purposes of this document the terms and definitions given in IEC 60519-1:2010 and the following apply.

NOTE Refer to International Electrotechnical Vocabulary, IEC 600500, for general definitions. Terms relating to industrial electroheat are defined in IEC 60050-841.

#### 3.1

##### active power

$P$

mean value of the instantaneous power  $p$  (in kW) taken under periodic conditions over one period of time  $T$  (in h):

$$P = \frac{1}{T} \int_0^T p \, dt$$

NOTE Active power instantaneous value (r.m.s.) measured at any time, including all phases.

[IEC 60050-131:2002, 131-11-42, modified]