



SLOVENSKI STANDARD
SIST HD 598 S1:2003

01-julij-2003

Test methods for direct arc furnaces

Test methods for direct arc furnaces

Prüfverfahren für Lichtbogen-Schmelzöfen

Méthodes d'essai des fours à arc direct

Ta slovenski standard je istoveten z: HD 598 S1:1992

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ICS:

25.180.10 Ò| \ d ä } ^ Á ^ ã Electric furnaces

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HARMONIZATION DOCUMENT

HD 598 S1

DOCUMENT D'HARMONISATION

HARMONISIERUNGSDOKUMENT

January 1992

UDC 621.783.2:620.1

Descriptors: Test, electric arc furnace, direct arc

ENGLISH VERSION

TEST METHODS FOR DIRECT ARC FURNACES
(IEC 676:1980)Méthodes d'essai des fours
à arc direct
(CEI 676:1980)Prüfverfahren für
Lichtbogen-Schmelzöfen
(IEC 676:1980)**iTeh STANDARD PREVIEW**
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This Harmonization Document was approved by CENELEC on 1991-12-10.
 CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for implementation of this Harmonization Document on a national level.

Up-to-date lists and bibliographical references concerning national implementation may be obtained on application to the Central Secretariat or to any CENELEC member.

This Harmonization Document exists in three official versions (English, French, German).

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B-1050 Brussels

FOREWORD

The CENELEC questionnaire procedure, performed for finding out whether or not the International Standard IEC 676:1980 could be accepted without textual changes, has shown that no CENELEC common modifications were necessary for the acceptance as Harmonization Document.

The reference document was submitted to the CENELEC members for formal vote and was approved by CENELEC as HD 598 S1 on 10 December 1991.

The following dates were fixed:

- latest date of announcement
of the HD at national level (doa) 1992-06-01
- latest date of publication of
a harmonized national standard (dop) 1992-12-01
- latest date of withdrawal of
conflicting national standards (dow) 1992-12-01

For products which have complied with the relevant national standard before 1992-12-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 1997-12-01.

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Annexes designated "normative" are part of the body of the standard. In this standard, annex ZA is normative.

ENDORSEMENT NOTICE

The text of the International Standard IEC 676:1980 was approved by CENELEC as a Harmonization Document without any modification.

ANNEX ZA (normative)

OTHER INTERNATIONAL PUBLICATIONS QUOTED IN THIS STANDARD
WITH THE REFERENCES OF THE RELEVANT EUROPEAN PUBLICATIONS

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

<u>IEC</u> <u>Publication</u>	<u>Date</u>	<u>Title</u>	<u>EN/HD</u>	<u>Date</u>
50	-	International Electrotechnical Vocabulary (I.E.V.)	-	-
398	1972	General test conditions for industrial electroheating equipment	HD 353 S1	1977

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NORME DE LA CEI

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC STANDARD

Publication 676
Première édition - First edition
1980

Méthodes d'essai des fours à arc direct

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Mots clés: chaleur par l'arc direct à usages industriels;
exigences; essais; définitions.

Key words: heat by direct arcs for industrial use;
requirements; testing; definitions.



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CONTENTS

	Page
FOREWORD	5
PREFACE	5
Clause	
1. Scope	7
2. Object	7
3. Definitions	7
4. Type of tests and general conditions of their performance	15
5. Principal recommendations on technical tests	17

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

TEST METHODS FOR DIRECT ARC FURNACES

FOREWORD

- 1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.
- 3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

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PREFACE

This standard has been prepared by IEC Technical Committee No. 27: Industrial Electroheating Equipment.

A first draft was discussed at the meeting held in Toronto in 1974. As a result of this meeting, a draft, Document 27(Central Office)26, was submitted to the National Committees for approval under the Six Months' Rule in June 1975.

Amendments, Document 27(Central Office)38, were submitted to the National Committees for approval under the Two Months' Procedure in December 1976.

The National Committees of the following countries voted explicitly in favour of publication:

Canada	Netherlands
Czechoslovakia	Poland
Denmark	Romania
Egypt	South Africa (Republic of)
France	Turkey
Germany	Union of Soviet
Hungary	Socialist Republics
Italy	United Kingdom
Japan	United States of America
Korea (Republic of)	Yugoslavia

Other IEC publications quoted in this publication:

- Publications Nos. 50: International Electrotechnical Vocabulary (I.E.V.).
398: General Test Conditions for Industrial Electroheating Equipment.

TEST METHODS FOR DIRECT ARC FURNACES

1. Scope

This standard applies to industrial three-phase direct arc furnaces, the rated capacity of which is equal to or greater than 0.5 tonne. The furnaces are suitable both for solid and liquid charges at or near internal atmospheric pressure.

This standard is also applicable to furnaces having one or more electrodes, other than three-phase furnaces, in so far as it applies.

These furnaces are intended for melting of ferrous metals (steel, cast iron) and non-ferrous metals (copper); they may also be used as holding furnaces for a liquid charge to superheat and maintain the temperature before tapping.

Note. — All the electrical tests exclude the influence of equipment for reactive power compensation and/or voltage stabilization.

Should it not be feasible to switch off such apparatus during testing, the terms stated in this standard are applicable in respect of the main electrical circuit (see Sub-clause 3.1.6) only with due indication of simultaneous operation of the apparatus. Figures resulting from the influence of such apparatus and valid for the supply network may be additionally shown.

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2. Object

The object of this publication is the standardization of arc furnace test conditions and of methods to determine the main parameters and technical operating characteristics.

The scope of this standard does not cover all possible test methods which may be carried out for the technical and economical assessment of arc furnaces.

3. Definitions

For definitions of fundamental and general terms in the electroheating field, the reader should refer to Chapter 841: Industrial Electroheating, of IEC Publication 50: International Electro-technical Vocabulary (I.E.V.).

The following definitions apply for the purpose of this standard.

3.1 *Arc furnace*

Furnace in which the electric arc is the main source of heat.

3.2 *Direct arc furnace*

Arc furnace in which the arc is maintained between the charge and one or more electrodes.

3.3 *Arc furnace installation*

Furnace assembly with complete set of electrical equipment comprising:

- high-voltage equipment (with reactor, if applicable);
- furnace transformer;
- secondary voltage busbar system;
- equipment for reactive power compensation and/or voltage stabilization (if supplied);
- equipment for automatic regulation;
- boards, panels, desks with protection, control, measuring and signalling devices.

Note. — The arc furnace installation does not include electrodes, arc and charge which are included in the main electrical circuit of the arc furnace installation (see Sub-clause 3.16).

3.4 *Arc furnace shell*

A steel constructed vessel with refractory lined bottom and side walls into which the charge is placed.

3.5 *Rated volume of the furnace*

Total internal volume of the furnace body as defined by the inner surface of the specified shell lining. (The volume between the upper level of the shell and the underside of the roof is not included in the rated volume.)

3.6 *Rated capacity of furnace*

Calculated capacity in tonnes of liquid metal for which the furnace has been designed, built and marked; this capacity is defined with the specified shell lining, manufactured in accordance with the design, with allowance for the maximum expected slag volume over the liquid metal surface without exceeding the normal sill level. The specific density of the liquid metal used by the manufacturer for the calculations shall be clearly defined.

3.7 *Minimum bulk density of scrap for the single complete maximum charge of the furnace (t/m^3)*

Ratio of the furnace rated capacity to its rated volume.

3.8 *Furnace high-voltage switch*

High-voltage switch which serves for switching on and off, under load, the furnace transformer, in accordance with operating requirements.

3.9 *Arc furnace transformer*

The transformer feeding the arc furnace from the high-voltage network and providing a voltage range suitable for furnace operation.

3.10 *Power rating of an arc furnace transformer*

The maximum admissible continuous power of the arc furnace transformer primary.