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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 10066.2-2019

**Test methods for electroheating and electromagnetic
processing installations -- Part 2: Direct arc furnaces**

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Foreword

There are 12 parts in GB/T 10066.

--- GB/T 10066.1 Test methods for electrothermal and electromagnetic treatment systems - Part 1. General part;

GB/T 10066.2 Test methods for electrothermal and electromagnetic treatment systems - Part 2. Direct electric arc furnace;

--- GB/T 10066.3 Test methods for electroheating devices - Part 3. s.

--- GB/T 10066.31 Test methods for electrothermal and electromagnetic treatment devices - Part 31

--- GB/T 10066.4 Test methods for electroheating equipment - Part 4. Indirect resistance furnaces;

GB -T 10066.5 Test methods for electroheating devices - Part 5. Electrophysical and electro
Test methods of electroheat and electromagnetic treatment systems - Part 6. Output power
of industrial microwave heating devices

test methods;

GB/T 10066.7 Test methods for electroheating devices - Part 7. Electrothermal devices with
electron guns;

GB/T 10066.8 Test methods for electroheating devices - Part 8. Electroslag remelting
furnaces;

GB/T 10066.9 Test methods for electroheating devices - Part 9. Determination of output
power of high-frequency medium heating devices;

GB/T 10066.11 Test methods for electric heating devices - Part 11. Submerged arc
furnaces;

--- GB/T 10066.12 Test methods for electric heating devices - Part 12. Infrared heating

devices.

This part is the second part of GB/T 10066.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This part replaces GB/T 10066.10-2005 "Test methods for electric heating devices - Part 10. Direct electric arc furnace", and

The main technical changes compared with GB/T 10066.10-2005 are as follows.

- The definition of the furnace type is more clear;
 - Updated and supplemented with normative references and terminology;
 - Added Chapter 4 "Characteristics of Electric Arc Furnace System", including general terms, electrical assembly of electric arc furnace, furnace structure, water cooling
- 4;
- Added consideration of safety standards in the "General Requirements" of Chapter 5, "General Test Conditions for Types of Tests and Their Performance",
- SVC, power fluctuations, measurement points, measurement equipment requirements;
- Modified the contents of the "Technical Test" (see Chapter 6, Chapter 5 of the 2005 edition);
 - Simplify the wiring diagram of resistance and reactance measurement (see Figure 1, 2005, Figure 1, Figure 2 and Figure 3).

This section uses the translation method equivalent to IEC 60676.2011 "Test methods for direct electric arc furnaces for industrial electric heating equipment".

The documents of our country that have a consistent correspondence with the international documents referenced in this part are as follows.

- GB/T 5959.1-2019 Safety of electrothermal and electromagnetic treatment systems - Part 1. General requirements (IEC 60519-1:2015,

IDT)

Safety of electric heating installations - Part 2. Particular requirements for electric arc furnace installations (IEC 60519-4.

2006, IDT)

GB/T 10066.1-2019 Test methods for electrothermal and electromagnetic treatment systems - Part 1. General part (IEC 60398.

2015, MOD)

This section has made the following editorial changes.

- The standard name was changed to "Test method for electrothermal and electromagnetic treatment devices - Part 2. Direct electric arc furnace";
- Delete the 3.6 (electric arc furnace) capacity in the unit description of the note "is metric units or British tons according to the pre-agreed";
- 3.21 units were changed to "MVA";
- 6.2 units are modified to "Pa".

This part was proposed by China Electrical Equipment Industry Association.

This part is under the jurisdiction of the National Technical Committee for Standardization of Industrial Electric Heating Equipment (SAC/TC121).

This section drafted by. Xi'an Electric Furnace Research Institute Co., Ltd., Suzhou Zhenwu Electric Furnace Co., Ltd., Shaanxi Hongxinyuan Metallurgical Equipment Industry

Limited company, Xi'an Zhongye New Materials Co., Ltd., National Electric Furnace Quality Supervision and Inspection Center.

1 Scope

This part of GB/T 10066 specifies the test procedures, conditions and methods for electric arc furnace (EAF), based on which the capacity is determined.

Main parameters and main operating characteristics of AC electric arc furnace (EAFac) or DC electric arc furnace (EAFdc) above 500kg/furnace.

The electric arc furnace technology is also suitable for this type of furnace, ie the liquid metal in the furnace is kept at a high temperature or superheated to the pouring temperature [eg a steel ladle using AC)

Furnace (LF)].

Test methods for certain special equipment, such as DC arc furnace controlled rectifiers, are specified in IEC 60146-1-1.

The test method for the submerged arc furnace (SAF) is specified in IEC 60683.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article.

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

IEC 60398.1999 General test methods for industrial electrothermal installations (Industrial electroheatinginstalations-General

Test methods)

Safety of electroheat installations - Part 1. General requirements
(Safety in electroheating installations -

Part 1. General requirements)

Safety of electroheat installations - Part 4. Particular requirements for electric arc furnace
installations (Safety in electroheat installations - Part 4. Particular requirements for arc furnace installations)

3 Terms and definitions

The following terms and definitions as defined in IEC 60519-1:2010 apply to this document.

Note. The general definition refers to IEC 60050 International Electrotechnical Vocabulary.
Terms related to industrial heating are specified in IEC 60050-841.

3.1

Active power P

The average value of the instantaneous power p (kW) in the cycle time T (h) in the periodic state.

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

Note. The active power instantaneous value (root mean square value) can be measured at any time, including all phases.

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

3.2

Apparent power S

The rated power (MVA) of the transformer that supplies the electric arc furnace.

$$S = 3UI$$