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

GB/T 10066.11-2016

Replacing GB/T 10066.11-2005

**Test methods for electroheat installations -- Part 11:
Submerged-arc furnaces
(English Translation)**

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Foreword

GB/T 10066 "Standard Test Method for electric apparatus" has 12 sections.

--- Part 1. Common part;

--- Part 3. determined induction furnaces and coreless induction furnace;

- Part 31. Determination of high-frequency induction heating power output of the generator means;
- Part 4. Indirect resistance furnaces;
- Part 5. electrochemical and plasma electric equipment;
- Part 6. Industrial microwave heating apparatus of power output measurement method;
- Part 7. Electric apparatus having an electron gun;
- Part 8. ESR furnaces;
- Part 9. high-frequency dielectric heating apparatus determination of power output;
- Part 10. Direct electric arc furnace;
- Part 11. submerged arc furnace;
- Part 12. infrared heating devices.

This section GB/T Part 1,110,066, and used in conjunction with Part 1.

This section drafted in accordance with GB/T 1.1-2009 given rules.

This section instead of GB/T 10066.11-2005 "electric heat apparatus test methods Part 11. Buried arc furnace", and GB/T 10066.11-2005 compared to the main technical changes are as follows.

a) "3 Terms and definitions", according to IEC 60683:2011, adds the following terms.

- Apparent power (see 3.2);
- Bottom electrode (see 3.3);
- Cold test (see 3.5);
- Dead (see 3.6);
- Furnace power consumption (see 3.9);
- Heat test (see 3.12);
- Reactive power (see 3.16);
- Reactive power compensation (see 3.17);
- Rectifier (see 3.18);
- Semiconductor inverter (see 3.19);
- Smoothing reactors (see 3.20).

Delete the following terms.

- Furnace (see GB/T 10066.11-2005 in 3.3);
- Furnace high voltage switch (see GB/T 10066.11-2005 in 3.4);
- Furnace transformer rated capacity (see GB/T 10066.11-2005 3.6);
- Electrode holders (see GB/T 10066.11-2005 in 3.8);
- Primary asymmetry coefficient (see GB/T 10066.11-2005 in 3.11);
- Cooling water flow (see GB/T 10066.11-2005 in 3.15).

b) increase the Chapter 4. Characteristics of submerged arc furnace system.

This section identical with IEC 60683:2011 "Industrial electric equipment submerged arc furnace test methods" (in English).

Consistency correspondence between this part of international documents and normative references of our files are as follows.

--- GB/T 10066.1 Test Method for electric devices - Part 1. General section (GB/T 10066.1-2004, IEC 60398:1999, MOD)

--- GB 5959.2-2008 Safety of electric devices - Part 2. Particular requirements for arc furnace apparatus (GB 5959.2-2008, IEC 60519-4:2006, IDT) for ease of use, the IEC 60683:2011, this section also made the following editorial changes.

--- Modify the standard name, "Industrial electric equipment submerged arc furnace test methods" to "Test methods for electroheat installations - Part 11. submerged arc furnace", the English name of the corresponding changes.

This part is proposed by the China Electrical Equipment Industrial Association.

This part of the National Electric Equipment Industry Standardization Technical Committee (SAC/TC121) centralized.

This section is drafted. Xi'an Institute Furnace Co., CISDI Engineering Technology Co., Ltd., China Metallurgical Furnace Engineering Technology Center, the State Quality Supervision and Inspection Center Furnace, Shaanxi electric engineering technology research center.

1 Scope

GB/T 10066 in this section according to the rated power level of the main parameters of submerged arc furnace and the main operational characteristics 500kVA or more, and provides test procedures, test conditions and test methods for submerged arc furnaces.

This section applies to a single electrode or multiple electrode submerged arc furnace.

To further determine the technical and economic assessment of submerged arc furnace, additional testing may be necessary.

Some semiconductor inverter control by a special furnace equipment, such as a controlled rectifier or controlled AC converter test by GB/T 3859.1 regulations.

2 Normative references

The following documents for the application of this document is essential. For cited documents with dates, only the dated edition applies to this document. For undated references, the latest edition (including any amendments) applies to this document.

Common test methods IEC 60398 industrial electric equipment IEC 60519-1:2010 electric heat means safety - Part 1. Generic requirements Safety - Part 2 IEC 60519-4 electric equipment. Particular requirements for arc heating device

3 Terms and Definitions

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

NOTE: Common definitions refer to the International Electrotechnical Vocabulary GB/T 2900. On industrial electric entry defined in GB/T 2900.23 in.

Active activepower

The average furnace under conditions of a period of time period of the instantaneous power (kW), see calculation formula (1).

Note: The active power instantaneous value at any time, at any stage of the measurement.

[GB/T 2900.74-2008,131-11-42, modified] 3.2 Apparent power Submerged arc furnace for the power transformer rated power (MVA), are calculated in the formula (2) and (3).

$S = UI = P_2 + Q_2$ (for single-phase submerged arc furnace) ... (2) $S = 3UI$ (for three-phase submerged arc furnace) ... (3)