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

GB/T 10067.417-2023

**Basic specifications for electroheating and electromagnetic
processing installations - Part 417: Silicon carbide crystal
growth installations**

电热和电磁处理装置基本技术条件 第417部分：碳化硅单晶生长装置

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Foreword

This document is in accordance with the provisions of GB/T 1:1-2020 "Guidelines for Standardization Work Part 1: Structure and Drafting Rules for Standardization Documents" drafting: This document is part 417 of GB/T 10067 "Basic Technical Conditions for Electrothermal and Electromagnetic Treatment Devices": GB/T 10067 has issued Published the following sections:

- Part 1: General part;
- Part 2: Arc heating device;
- Part 21: Large AC electric arc furnace;
- Part 3: Induction electric heating device;
- Part 31: Intermediate frequency centerless induction furnace;
- Part 32: Complete set of voltage type frequency conversion multiple intermediate frequency centerless induction furnaces;
- Part 33: Power frequency centerless induction copper melting furnace;
- Part 34: Transistor-type high-frequency induction heating device;
- Part 35: Intermediate frequency vacuum induction melting furnace;
- Part 36: Induction diathermy device;
- Part 4: Indirect resistance furnace;
- Part 41: Mesh belt resistance heating unit;

--- Part 42: Push type resistance heating unit;

1 Scope

GB/T 10067.417-2023 is the Chinese national standard on basic specifications for electroheating and electromagnetic processing installations - part 417: silicon carbide crystal growth installations, in the field of manufacturing engineering. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 23 May 2023 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 December 2023. Classification: ICS 25.180.10, CCS K61. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document specifies the product classification, technical requirements, test methods, inspection rules, marks, packaging, transportation and Storage and ordering and delivery: This document is applicable to electrothermal devices for growing silicon carbide single crystals by indirect resistance heating under vacuum or protective atmosphere: high frequency sense The device for growing silicon carbide single crystal that should be heated is used as reference: This document is applicable to the silicon carbide single crystal growth device of physical vapor transport method, and the silicon carbide single crystal growth device of other methods is used as a reference:

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text: Among them, dated references For documents, only the version corresponding to the date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to this document:

GB 150 (all parts) pressure vessels

GB/T 2900:23-2008 Electrotechnical Terminology Industrial Electric Heating Devices

GB 3095-2012 Ambient Air Quality Standard

GB/T 5959:1-2019 Safety of electrothermal and electromagnetic treatment devices Part 1: General requirements

GB 8978-1996 Integrated Wastewater Discharge Standard

GB/T 10066:1-2019 Test methods for electrothermal and electromagnetic treatment devices

Part 1: General part

GB/T 10066:4-2004 Test methods for electric heating equipment Part 4: Indirect resistance furnace

GB/T 10067:1-2019 Basic technical requirements for electrothermal and electromagnetic treatment devices Part 1: General part

GB/T 10067:4-2005 Basic technical conditions for electric heating devices Part 4: Indirect resistance furnace

GB 12348-2008 Environmental Noise Emission Standard for Boundary of Industrial Enterprises

GB 16297-1996 Comprehensive Emission Standard of Air Pollutants

JB/T 9691-1999 Electric heating equipment product model compilation method

3 Terms and Definitions

The following terms and definitions defined in GB/T 2900:23-2008 and GB/T 10067:1-2019 apply to this document: 3:

1 In a high vacuum state or a low positive pressure protective atmosphere, using indirect resistance heating or high frequency induction heating, it is produced by physical vapor transport method: Industrial electrothermal equipment for growing silicon carbide single crystals: 3:2 A method of growing crystals by sublimation and recrystallization of solid phase raw materials under high temperature conditions:

Note: Place the solid-phase raw material on the bottom of the crucible, place the seed crystal on the top of the crucible, heat the raw material and control the temperature of the seed crystal to be lower than the temperature of the raw material by an appropriate