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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 10067.6-2023

Basic specifications for electroheating and electromagnetic processing installations - Part 6: Industrial microwave heating installations

电热和电磁处理装置基本技术条件 第6部分：工业微波加热装置

Issued on: December 28, 2023 **Implemented on: July 1, 2024**

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Standardization Administration of China

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Foreword

This document complies with the provisions of GB/T 1:1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents" Drafting: This document is Part 6 of GB/T 10067 "Basic Technical Conditions for Electrothermal and Electromagnetic Treatment Devices": GB/T 10067 has been released The following sections are included:

---Part 1: General part;

---Part 101: General requirements for vacuum electrothermal and electromagnetic treatment devices;

---Part 2: Arc heating device;

---Part 21: Large AC electric arc furnace;

---Part 3: Induction electric heating device;

---Part 31: Medium frequency centerless induction furnace;

---Part 32: Voltage-type frequency conversion multiple medium-frequency centerless induction furnace complete sets;

---Part 33: Power frequency centerless induction copper melting furnace;

---Part 34: Transistor-type high-frequency induction heating device;

---Part 35: Medium frequency vacuum induction melting furnace;

---Part 36: Inductive diathermy device;

---Part 4: Indirect resistance furnace;

---Part 41: Mesh belt resistance heating unit;

1 Scope

Part 6 of China's series on electroheating and electromagnetic processing installations, covering industrial microwave heating - the tunnels, ovens and continuous plant used to dry, cure, sterilise, thaw and process materials by heating them from within rather than from the surface. It specifies the product classification, the technical requirements, the inspection rules, the marking, packaging, transport and storage, and the ordering and supply of industrial microwave heating installations, and describes the corresponding test methods. Microwave heating is chosen when conduction from the outside is too slow or would damage the surface before the centre is done: the energy is absorbed throughout the volume, so a thick or poorly conducting material heats in a fraction of the time. The difficulty, and what the standard is largely about, is that the absorption depends on the material and on its moisture, so the field distribution and the uniformity of heating are hard to control and easy to get wrong - a hot spot in a continuous dryer is a fire, and a cold spot in a sterilising tunnel is a product that has not been sterilised. The requirements therefore cover the generators and their power and frequency, the applicator and the field distribution within it, the heating uniformity and how it is demonstrated, the material handling through a continuous installation, and the temperature measurement, which in a microwave field cannot be done with an ordinary thermocouple. Alongside them sit the safety requirements that dominate this type: the microwave leakage limits and how they are measured, the door and access interlocks that must cut the generators before an opening exists, the shielding and the chokes at the entry and exit of a continuous tunnel, and the electromagnetic compatibility with everything else in the plant, since a leaking microwave installation is a powerful transmitter. Issued on 28 December 2023 and in force since 1 July 2024.

This document specifies the product classification, technical requirements, inspection rules, marking, packaging, transportation and storage and ordering of industrial microwave heating devices: Purchase and supply, the corresponding test methods are described: This document is suitable for drying, sterilizing, enzyme sterilizing, curing, extracting, and drying materials at microwave frequency (see 5:5:4) in natural or vacuum atmosphere: Industrial microwave heating device for rubber vulcanization, etc: (hereinafter referred to as "microwave heating device"): This document does not apply to microwave heating appliances for household and similar purposes:

2 Normative reference documents

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

GB 4824-2019 Radio frequency disturbance characteristics limits and measurement methods for industrial, scientific and medical equipment

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

GB 5959:6-2008 Safety of electric heating devices Part 6: Safety specifications for industrial microwave heating equipment

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

GB/T 10066:6-2018 Test methods for electrothermal and electromagnetic processing devices Part 6: Output power of industrial microwave heating devices Determination method

GB/T 10067:1-2019 Basic technical conditions for electrothermal and electromagnetic treatment equipment Part 1: General parts

GB/T 10067:101-2023 Basic technical conditions for electrothermal and electromagnetic treatment equipment Part 101: Vacuum electrothermal and electromagnetic treatment General requirements for installations

JB/T 9691 Method for compiling product models of electric heating equipment

3 Terms and definitions

GB/T 10067:1-2019, GB/T 10067:101-2023 and GB/T 10066:6-2018 as well as the following terms and definitions meaning applies to this document: 3:1 applicator In microwave heating equipment, which is surrounded by metal inner walls, doors or entrances and exits and resonates in the microwave frequency range, microwave energy is used to inject materials inside: Line heating structure:

Note: The microwave heating chamber (applicator) is usually a box structure: 3:2 working zone working zone A rectangular parallelepiped or cylinder set in the microwave heating chamber to hold materials and meet the specified microwave heating temperature and uniformity requirements: