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

GB/T 5959.1-2019

**Safety in installations for electroheating and electromagnetic
processing -- Part 1: General requirements**

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1.1 Scope

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Foreword

GB/T 5959 has the following 14 parts.

--- GB/T 5959.1 Safety of electrothermal and electromagnetic treatment devices - Part 1.

General requirements;

--- GB 5959.2 Safety of electric heating devices - Part 2. Particular requirements for electric arc furnace installations;

--- GB 5959.3 Safety of electroheating devices - Part 3. Particular to induction and conductive heating devices and induction melting devices

Claim;

--- GB 5959.4 Safety of electric heating devices - Part 4. Particular requirements for electric resistance heating devices;

--- GB/T 5959.41 Safety of electric heating devices - Part 41. Particular requirements for resistance heating devices Glass heating and melting

Chemical device

--- GB 5959.5 Safety of electroheat installations - Part 5. Particular requirements for plasma installations;

--- GB 5959.6 Safety of electric heating devices - Part 6. Safety specification for industrial microwave heating equipment;

--- GB 5959.7 Safety of electroheating devices - Part 7. Particular requirements for devices with electron guns;

--- GB 5959.8 Safety of electric heating devices - Part 8. Particular requirements for electroslag remelting furnaces;

--- GB 5959.9 Safety of electric heating devices - Part 9. Particular requirements for high-frequency medium heating devices;

--- GB/T 5959.10 Safety of electroheat installations - Part 10. Particular requirements for resistance and heat tracing systems for industrial and commercial use;

--- GB/T 5959.11 Safety of electric heating devices - Part 11. Particular requirements for liquid metal electromagnetic force devices;

--- GB 5959.13 Safety of electric heating devices - Part 13. Particular requirements for electric heating devices with an explosive atmosphere.

This part is the first part of GB/T 5959.

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

This part replaces GB 5959.1-2005 "Safety of electric heating devices Part 1. General requirements", compared with GB 5959.1-2005

The main technical changes are as follows.

--- The standard structure has been changed, and the tests related to safety requirements have been placed in this section.

---Applicable to industrial equipment or equipment for material electromagnetic processing (EPM), no longer suitable for explosive atmosphere, medical, laboratory

Equipment used (original standards are not clearly stated).

--- Referenced the latest documents and added or deleted normative references.

--- Terms and definitions according to the general concept (11), the state of equipment and equipment (7), parts and accessories (10), safety-related

Concept (10) division, no longer in general terms (see.2005 edition 3.1) and electrical quantities and electrical terms (see.2005 edition 3.2)

Division. Most of the terms in the.2005 edition have been added, deleted, and modified.

--- Classification of electric heating devices/equipment, except for classification by voltage and frequency, adding devices or equipment subdivided into multiple parts, dangerous and

Classification of risks and limit requirements for major hazards.

---The equipment or device classified by voltage is no longer called the first, second and third voltage sections, and is called ultra low voltage (ELV) and low voltage.

(LV) and high voltage (HV), the division range remains unchanged, that is, ELV is equivalent to the first voltage section, and LV is equivalent to the second voltage zone.

The segment, and HV are equivalent to the third voltage segment.

--- The boundary between the intermediate frequency and the high frequency is changed from 10 kHz to 100 kHz. Infrared, visible, ultraviolet and laser are added to the frequency

classification

Category 4 increases the safety frequency range, the frequency range and frequency range associated with electromagnetic compatibility.

--- Added a chapter on "risk assessment".

--- New requirements for design and construction. risk reduction measures, design should prevent misuse and failure, should not produce immediate or not

Can detect the risk.

--- Increased physical environment and operating conditions, power, proximity, ergonomic factors, transportation and storage, handling of equipment

Requirements for requirements, consumables and spare parts.

--- "Electrical protection" chapter made a lot of supplements to the.2005 edition, stipulated the basic rules of protection, general terms, basic protection, single

A fault protection regulation, protective equipotential bonding (see Chapter 11 of the.2005 edition), fault protection for frequencies above.200 Hz

Additional terms, protective conductor current, contact current and contact voltage, conductor and insulation at high temperatures, non-electrical fault bars, and

Detailed regulations were made.

---Including the.2005 version of "6.3 static charge --- stray field --- electric field and/or magnetic field" "6.4 the impact of electromagnetic effects"

Into the new standard Chapter 8, and supplement the general requirements, magnetic field, local electric field, barrier and shielding requirements, and personnel wear and carry

Or hold detailed requirements related to the object.

--- The.2005 edition only specifies that equipment and components for monitoring ionizing radiation and charge should comply with statutory protective regulations. new standard

Separate the "radiation hazard protection" into a chapter that adds general requirements to the ionizing radiation, ultraviolet radiation, and visible emissions from devices or equipment.

And infrared radiation, as well as laser source radiation and detailed requirements.

--- "heat impact hazard protection" to increase the surface temperature limit to prevent burns, the danger caused by working conditions, the heat resistance of parts, cold

However, over-temperature protection.

--- "Liquid hazard protection" chapter added "general requirements" "toxic and harmful gases and substances" "explosion and implosion of the pressure part".

--- Added the chapter "Special requirements for components and components", set 10, in order. general requirements, electrical equipment and conductors, and the grid

Connections and internal connections (Chapter 8 of.2005 edition), isolation and opening and closing (Chapter 7 of.2005 edition), safety protection of moving parts

Sensors and actuators, motors, non-electrical heating methods, lighting, structural parts and stability, as well as doors, windows and other openings, gauges

Set the corresponding requirements.

--- Added the.2005 edition of Chapter 12 "Control Circuits and Control Functions", except for grounding the control and control circuits.

In addition to the requirements, the operator control unit, emergency stop, control system and its functions, control equipment, protective devices, and over-temperature protection are added.

Requirements for devices and overpressure safety devices.

--- Added the chapter "Mechanical Hazard Protection".

--- Increase the protection requirements for hazards caused by the use of equipment, involving food processing, feed, cosmetics and for human or animal consumption

Special hazards in similar items, special hazards in radio frequency interference, electrical heating and electromagnetic treatment, used in combination with equipment

Danger.

--- Add the "Other Hazard Protection" chapter, which specifies the requirements for risk assessment and the protection of acoustic, infrared and ultrasonic pressure.

--- Added verification and testing to meet various safety requirements, stipulated five verification methods, detailing the requirements

The verification method used. Provides verification of the performance of tests and tests, electric field or magnetic field limit compliance verification, drawings or calculations,

Requirements for visual inspection, measurement, functional testing, and numerical simulation.

--- A lot of supplements to the requirements of brand names, tags and technical documents.

--- Added Appendix E for electromagnetic compatibility regulations, Appendix F markings and warnings.

This section uses the translation method equivalent to IEC 60519-1.2015 "Safety of electrothermal and electromagnetic treatment devices - Part 1. General

Claim".