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

GB/T 46074-2025

**Safety of thermal cutting machines
(English Translation)**

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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 modified to adopt ISO 17916:2016 "Safety of thermal cutting equipment".

Compared with ISO 17916:2016, this document has undergone many structural adjustments. A comparison table of the structural numbering changes between the two documents is provided.

See Appendix A.

This document differs significantly from ISO 17916:2016 in several technical aspects. The relevant clauses are indicated in vertical margins.

Straight lines (|) are marked. A summary of these technical differences and their reasons is provided in Appendix B.

The following editorial changes have been made to this document.

---Table 1 in ISO 17916:2016 has been deleted, and the technical content in Table 1 has been adjusted to the corresponding clauses 5.2 to 5.9;

---The term "vibration" has been removed from item 5 of Table 1 in ISO 17916:2016;

---Added "Verification methods for the corresponding clauses of safety requirements in Table 1";

---Added "Appendix A. Structural Changes of This Document Compared to ISO 17916:2016";

---Added "Appendix B. Technical Differences Between This Document and ISO 17916:2016 and Their Reasons";

---Appendices A through G will be numbered in the order they were removed from this document.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed and is under the jurisdiction of the National Technical Committee on Standardization of Welding and Related Processes (SAC/TC55).

1 Scope

This document specifies the safety requirements and inspection methods for thermal cutting equipment, including design, manufacturing, production, transportation, installation, maintenance, and after-sales service.

All aspects of service.

This document applies to thermal cutting, marking, and scribing equipment that utilizes concentrated thermal energy to melt or burn materials, such as flame cutting and plasma arc cutting.

Cutting, laser cutting, etc.; suitable for open gantry structure, cantilever structure equipment, or cutting table structure equipment with rails.

This document does not include design standards for specific equipment, such as oxygen and gas hose standards, or electrical requirements for plasma power supplies. In thermal cutting equipment...

Most of the equipment used in thermal cutting has specific design and usage standards, and the risks associated with thermal cutting equipment are governed by these standards.

Regulation.

This document does not apply to handheld cutting equipment, or trolley-type and contour-type cutting equipment that are mounted on the workpiece and whose trajectory is constrained, relying on manual operation.

Small semi-automatic cutting equipment.

Except for location-indicating lasers, the risks posed by laser radiation are specified in GB/T 18490.1 and are not covered in this document.

This document applies only to equipment that combines thermal cutting with other processing techniques (such as grinding, drilling, milling, etc.).

Other processing techniques and their associated risks are governed by their respective standards.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

GB/T 3768 Acoustic sound pressure method for determining the sound power level and sound energy level of a noise source using a simplified measurement method with an envelope above the reflecting surface.

Law (GB/T 3768-2017, ISO 3746:2010, IDT) GB/T 5226.1 Electrical Safety of Machinery - Electrical Equipment of Machinery - Part 1: General Technical Conditions (GB/T 5226.1-2019) IEC 60204-1:2016, IDT GB 9448 Safety of Welding and Cutting GB/T 12265 Minimum spacing for preventing crushing of human body parts in mechanical safety (GB/T 12265-2021, ISO 13854.

2017, IDT)

GB/T 15579.1 Arc welding equipment - Part 1: Welding power sources (GB/T 15579.1-2024, IEC 60974-1:2021, IDT) GB/T 15706 General Principles for Safety Design of Machinery. Risk Assessment and Risk Reduction (GB/T 15706-2012, ISO 12100.

2010, IDT)

GB/T 16754 Design principles for emergency stop functions of machinery (GB/T 16754-2021, ISO 13850:2015, IDT) GB/T 16855.1 Safety-related components of mechanical safety control systems - Part 1: General design principles (GB/T 16855.1-2018, ISO 13849-1:2015, IDT) GB/T 17248.3 Noise emitted by acoustic machines and equipment shall be determined using approximate environmental correction at the working position and other specified locations.

The emitted sound pressure level (GB/T 17248.3-2018, ISO 11202:2010, IDT) GB/T 17454.3 Mechanical safety varistor protection devices - Part 3: Varistors, varistor plates, varistor wires and similar devices General guidelines for design and testing (GB/T 17454.3-2017, ISO 13856-3:2013, IDT) GB/T 19436.2 Electrical Safety Equipment for Machinery - Part 2: Equipment Using Active Photoelectric Protective Devices (AOPDs) Special requirements (GB/T 19436.2-2013, IEC 61496-2:2006, IDT)