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

GB/T 46639.5-2025

**Foundry machinery - Vocabulary - Part 5: Cupola furnaces and
pouring devices and ladles**

铸造机械 术语 第5部分：冲天炉、浇注设备和浇包

(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 Part 5 of GB/T 46639, "Terminology for Foundry Machinery". GB/T 46639 has already published the following parts.

---Part 1: Basics;

---Part 2: Molding, Core-Making Machines and Other Non-Permanent Casting Equipment;

---Part 3: Die Casting Machines and Other Permanent Casting Equipment;

---Part 4: Shot blasting machines and other casting cleaning equipment;

---Part 5: Cupola, casting equipment and ladle.

This document is modified to adopt ISO 23472-5:2022 "Foundry machinery - terminology - part 5.cupolas, casting equipment and ladles".

The technical differences between this document and ISO 23472-5:2022, and the reasons therefor, are as follows.

---Permitted terms have been added to some terminology entries to meet industry-standard usage requirements;

---Some terminology entries have added specialized fields to ensure the accuracy of the definitions and avoid ambiguity.

The following editorial changes have been made to this document.

---Notes have been added or changed to some terminology entries.

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 by the China Machinery Industry Federation.

This document is under the jurisdiction of the National Technical Committee on Standardization of Foundry Machinery (SAC/TC186).

Introduction

GB/T 46639 covers casting machinery used in casting production.

Casting, as a metal heat treatment process that involves filling a mold with molten metal and allowing it to solidify to obtain parts or part blanks, has a long history.

History, and its technology is constantly developing and changing. Depending on the mold used, or the method of filling or solidification of the molten metal, it varies.

Depending on the method, there are many different casting processes, such as sand casting, investment casting, lost foam casting, die casting, low-pressure casting, and metal mold casting.

Force casting and centrifugal casting, etc.

GB/T 46639, as the fundamental standard for casting machinery, defines each concept applicable to the general application of casting machinery.

The scope covers various casting equipment for different casting methods and different production process stages.

The GB/T 46639 series of standards are proposed to be divided into the following 6 parts.

---Part 1: Fundamentals. The purpose is to define the basic terminology and definitions of casting machinery.

---Part 2: Molding, Core-Making Machines and Other Non-Permanent Casting Equipment. The purpose is to define molding machines, core-making machines, and other non-permanent casting equipment.

Terminology and definitions for long-form casting equipment.

---Part 3: Die Casting Machines and Other Permanent Casting Equipment. The purpose is to define the technical specifications of die casting machines and other permanent casting equipment.

Language and definition.

---Part 4: Shot blasting machines and other casting cleaning equipment. The purpose is to

define shot blasting machines and other casting cleaning equipment.

Equipment terminology and definitions.

---Part 5: Cupola, Casting Equipment and Ladles. The purpose is to define the terminology and definitions for cupola, casting equipment and ladles.

---Part 6: Other. The purpose is to define the casting machinery-related terms and definitions not covered in Parts 1 through 5.

This document is Part 5 of GB/T 46639, and only covers the terms and definitions related to cupolas, casting equipment, and ladles, including cupolas and...

Its smelting auxiliary equipment, batching and feeding equipment, casting machines, ladles, melt handling and transfer equipment, and other related equipment have structural characteristics and Basic concepts of functions, important mechanisms and components, main processes and parameters.

The formulation of GB/T 46639 provides a foundation for the development and revision of standards in the field of casting machinery, as well as for technical documents and related scientific and technological publications.

It provides a unified basis for terminology.

Casting machinery terminology Part 5: Cupola, Casting Equipment and Ladle

1 Scope

This document defines the terms and definitions for cupola furnaces, casting equipment, and ladles used in foundry machinery.

This document applies to the formulation and revision of standards in the field of casting machinery, as well as technical documents and related scientific and technological publications.

This document does not apply to the smelting and casting processes and equipment for non-ferrous metals.

2 Normative references

This document has no normative references.

3 Terms and Definitions

The following terms and definitions apply to this document.

Alloy loss rate

The percentage of the alloy that is oxidized during the smelting process relative to the total

amount added.

The entire unit consists of sending a ladle containing molten metal to the ladle-changing position and removing the empty ladle.

A casting device that automatically and orderly completes the casting process according to a set program.

Molten metal is automatically transferred between various workstations via ladles, and travels from the molten metal receiving point to the molten metal processing area along a preset route.

The system, which involves standing at the slag removal point and finally injecting molten metal into the casting machine, then...

Note 1: According to process requirements, the system can also complete the incubation and/or spheroidization processes during operation.

Note 2: This system typically includes a ladle transfer cart in front of the furnace, a transfer ladle, a transfer track, a ladle transfer cart with functions such as rotation, lifting and/or tilting, and a spheroidizing agent.

Stations, slag removal platforms, and transfer safety alarm facilities, etc.

blast intensity

Air volume per unit cross-sectional area of the cupola furnace (melting zone).

Note 1: The cross-sectional area of the furnace is usually calculated based on the area of the cross-section of the furnace where the center of the tuyeres is located.

Note 2: The unit is cubic meters per square meter [$\text{m}^3/(\text{m}^2 \cdot \text{min})$].

blast volume

The amount of air fed into the cupola per unit time.

Note: The unit is cubic meters per minute (m^3/min).