

ICS 77.180
CCS H93



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

GB 43049-2023

Safety technical conditions for continuous casting machines

连铸机安全技术条件

Issued on: September 8, 2023

Implemented on: October 1, 2024

**Issued by: State Administration for Market Regulation;
Standardization Administration of China**

Table of Contents

1	Scope
2	Normative references
3	Terms and definitions
4	Classification of continuous casting equipment and major
4.1	Classification of continuous casting equipment
5	Safety requirements and safety measures
5.1	Overview
5.1.1	General requirements
5.1.10	Right of access
5.1.14	Surface temperature and heat dissipation
5.1.17	Continuous casting machine operating position
5.4	Noise requirements
6	Verification requirements for safety requirements and
7	Usage information
7.2	Documents delivered with the continuous casting machine
7.2.5	Equipment operation manual
68	References...

1 Scope

GB 43049-2023 is the Chinese national standard on safety technical conditions for continuous casting machines, in the field of metallurgy. It carries no /T suffix, which in the Chinese system means compliance is mandatory: a product or a practice within its scope has to meet it to be lawfully made, sold or carried out in China. It was issued on 8 September 2023 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 October 2024. Classification: ICS 77.180, CCS H93. 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 safety requirements, safety measures, verification requirements for continuous casting equipment, during design, manufacturing, assembly, transportation, installation, adjustment, commissioning, operation, maintenance, shutdown. It also specifies the key use information of signs, alarms, delivery and other steps of

continuous casting equipment, during transportation, assembly, operation, maintenance. This document is applicable to continuous casting machines such as slab billets, square billets, rectangular billets, special-shaped billets, round billets, and other similar equipment (such as horizontal continuous casting machines, continuous casting machines for headless rolling production lines, etc.).

2 Normative references

The contents of the following documents constitute the essential terms of this document through normative references in the text. Among them, for dated references, only the version corresponding to that date applies to this standard; for undated references, the latest version (including all amendments) applies to this document. GB 2893 Safety colors

GB 2894 Safety signs and guideline for the use

GB 3096 Environmental quality standard for noise

GB 4053.1 Safety requirements for fixed steel ladders and platform - Part

3 Terms and definitions

The terms and definitions defined in GB/T 32818-2016 and JB/T 12938.1-2016, as well as the following terms and definitions, apply to this document.

3.1 Casting platform The working area for molten steel pouring, continuous casting production operations and equipment installation, maintenance and spot inspection, which is composed of steel structure or reinforced concrete.

3.2 Cutting system A mechatronic system that cuts the billet to the required length.

3.3 Run-out-area Cooling bed and product collecting system A place for transporting, cooling, finishing, cleaning, grinding, collecting, storing billets.

3.4 Dummy bar system A special equipment integration that guides the billet along the casting stream guide device when continuous casting starts, blocks the lower opening of the crystallizer before pouring, guides the casting stream to achieve continuous casting after pouring.

4.1 Classification of continuous casting equipment

4.1.1 Casting platform equipment The casting platform equipment consists of the following main single equipment.

4.1.2 Main equipment of continuous casting machine The main equipment of the continuous casting machine consists of the following main single equipment.

4.1.3 Cutting area equipment The cutting area equipment consists of the following main

single equipment.

4.1.4 Equipment in the run-out-area The equipment in the run-out-area consists of the following main single equipment.

4.1.5 General equipment General equipment consists of the following main equipment and systems.

4.2 Major hazards This article includes all major hazards, dangerous conditions and events, as long as they are involved in this document, which shall be determined as major hazards through risk assessment; measures shall be taken to eliminate their hazards or reduce their risks.

5.1.1 General requirements

5.1.1.1 Basic conditions The basic conditions for safety requirements are as follows:

5.1.1.2 Summary of this document The continuous casting machine that complies with this document shall comply with the safety requirements and safety measures specified in this document.

5.1.2 Layout and on-site inspection of continuous casting machine The supplier shall conduct a full inspection on site, to ensure the following items of continuous casting machine are well arranged and operate safely.

5.1.3 Safety layout The supplier shall prepare the safety layout document of the continuous casting machine. The purpose of safety layout is usually to provide spatial location information of equipment in the continuous casting machine related to safety, through one or more drawings, including the following items.

5.1.4 Safety devices Safety devices shall be easy to inspect and maintain. Safety devices shall be protected to prevent predictable damage. Safety devices shall be set up in accordance with the requirements set forth in GB/T 15706, GB/T 16855.1-2018, GB/T 16855.2, GB/T 16856; they shall be strong and reliable enough to ensure stable operation.

5.1.5 Hydraulic, lubricating, pneumatic, gas and cooling water systems The requirements for hydraulic, lubricating, pneumatic, gas and cooling water systems are as follows:

5.1.7 Fluids discharged into special tanks The supplier shall clearly indicate the fluids discharged into special tanks; the equipment manual shall include discharge information.

5.1.8 Personal protective equipment Personal protective equipment requirements are as follows:

5.1.9 Alarm devices and safety signs The requirements for alarm devices and safety signs are as follows:

5.1.10 Right of access

5.1.11 Escape route The escape route shall meet the following requirements at a minimum.

5.1.12 Automation equipment Automation equipment shall comply with the provisions of GB 7247.1 and GB 28526. It shall be designed with reference to GB/T 5226.1-2019, GB/T 15706, GB/T 16855.1, GB/T 16856, GB/T 18209.1, GB/T 18209.2, GB/T 18209.3, GB/T 34136.

5.1.13 Safety control system Select safety control equipment according to the requirements described in A.2 and with reference to GB/T 16855.1-2018 and GB/T 16855.2. The function of each safety control device shall be considered in combination with each element in the safety control system; the safety level of each element of the system shall not be reduced.

5.1.14 Surface temperature and heat dissipation

5.1.15 Ergonomic principles When designing a continuous casting machine, the following principles shall also be taken into account.

5.1.17 Continuous casting machine operating position

5.1.18 Local rotatable control box Various operating instructions issued by the local rotatable control box next to the continuous casting machine crystallizer shall take precedence over the operating signals issued by other consoles or pulpits. The start and stop instructions on the rotatable control box shall be operated by buttons or switches; the operation process and status can be clearly seen on the pulpit display.

5.1.19 Power failure The power failure safety requirements are as follows:

5.1.20 Hazardous areas Hazardous areas and their requirements are as follows:

5.3.2 Manipulation of operation control devices If it does not endanger the safety of the operator, the operator shall have a good field of vision beyond the dangerous area, such as setting up an industrial TV. If the operation control device stops being operated, the operation shall stop immediately.

5.3.3 Mechanical restraints The requirements for mechanical restraints are as follows:

5.3.4 Accessible rotating and moving parts The safety requirements for accessible rotating and moving parts are as follows:

6 Verification requirements for safety requirements and

safety measures The verification requirements for safety requirements and safety measures are as follows: