

ICS 13.100
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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB 29742-2026

Replacing GB 29742-2013

**Safety specification for magnesium and magnesium alloy
smelting**

镁及镁合金冶炼安全规范

Issued on: February 27, 2026

Implemented on: September 1, 2026

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

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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 replaces GB 29742-2013 "Safety Production Specifications for Magnesium and Magnesium Alloy Smelting". Compared with GB 29742-2013, the only changes are in the structural design. Aside from integration and editorial changes, the main technical changes are as follows:

---The scope of application has been changed, clarifying that this document does not apply to electrolytic magnesium refining (see Chapter 1, Chapter 1 of the 2013 edition);

---The terms "calcination," "calcined whitening," "pelletized material," "pan kiln," "reduction," and "alloying," along with their definitions, have been removed (see sections 3.2 of the 2013 edition). 3.3, 3.4, 3.5, 3.8);

---Two new terms, "horizontal reduction furnace" and "vertical reduction furnace," and their definitions have been added (see

---Added safety requirements for risk classification, hazard identification and mitigation, and confined space operations (see Chapter 4);

- The requirements for the emergency response plan have been changed (see 4.5, Chapter 6 of the 2013 edition);
- Added safety protection requirements for buildings (including bridges, tunnels, etc.) and pipelines crossing roads (see 5.4);
- Safety requirements for the rotary kiln drive system have been added (see 6.2.1);
- Added the requirement that real-time monitoring and alarms for pipeline pressure, flow rate, and temperature be installed in vertical kiln production (see 6.2.2);
- Added safety requirements for pellet preparation (see 6.3);
- Safety requirements for horizontal and vertical reduction furnaces have been added (see 6.4.1 and 6.4.2);

1 Scope

GB 29742-2026 is the Chinese national standard covering the safety of a magnesium plant - a metal that burns in air and reacts with water, so the protective gas over the melt, the moisture control on everything that enters it, the handling of the flux and the fire fighting that must never use water are the whole of the document. A mandatory standard under the Ministry of Emergency Management. Issued on 27 February 2026, it has been in force since 1 September 2026, replacing GB 29742-2013.

This document specifies the general requirements, plant layout and buildings, equipment and facilities, and production safety in the smelting and production of magnesium and magnesium alloys. Safety technical requirements for electrical safety, gas safety, etc., are described, along with their verification methods. This document applies to the safety management of magnesium and magnesium alloy smelting production processes. This document does not apply to the electrolytic process for magnesium refining.

4 General Requirements

4.1 Processes and equipment facilities that are prohibited or phased out by the state shall not be used.

4.2 Safety facilities for newly built, renovated, or expanded projects should be designed, constructed, and put into production and use simultaneously with the main project; The design of safety facilities for metal smelting construction projects must be reviewed and approved before construction can begin.

4.3 A risk classification and control system and a hazard identification and mitigation system should be established, and safety regulations should be formulated based on the characteristics of the enterprise's production processes, equipment, facilities, and operations. Conduct a full checklist and carry out safety inspections. Any safety hazards

discovered should be rectified and managed in a closed-loop manner.

4.4 Before putting new processes, technologies, materials, or equipment into operation, a safety risk assessment should be conducted, and relevant safety production management systems should be improved. The relevant personnel shall be given safety production education and training, and shall be allowed to work after passing the examination.

4.5 An emergency response plan for production safety accidents should be developed, taking into account the characteristics and hazards of potential production safety accidents within the enterprise. The evaluation of the emergency response plan should be conducted. Review, publish, and file emergency plans; regularly organize emergency drills; evaluate the results of the drills; and continuously improve emergency plans.

4.6 Confined spaces should be identified and a management log should be established. The log should include at least the number of confined spaces, their location, and any hazardous factors. Information, and updates it promptly.

5 Plant layout and buildings/structures

5.1 The selection of the factory site, the overall layout and workshop arrangement, and the layout of densely populated areas shall comply with the provisions of GB 50187, GB 50544, and GB 51270. The lightning protection design of buildings and structures shall comply with the provisions of GB 50057.

5.2 The design of fire compartmentation, fire separation distances, and structural fire resistance rating of buildings shall comply with GB 50016, GB 50630, and GB 55037. According to the regulations.

5.3 Safety evacuation routes within the factory building shall comply with the provisions of GB 50016 and be kept unobstructed. Emergency lighting and other safety measures shall be provided along these routes. Dispersal indicator sign.

5.4 Buildings (including bridges, tunnels, etc.) and pipelines that cross factory roads should be equipped with crash barriers and height restriction signs.

5.5 Fire-fighting water systems should not be installed in magnesium smelting and magnesium reduction workshops. Specialized fire-fighting equipment or facilities for magnesium and magnesium alloys should be used, and must comply with the following standards. The following regulations apply.

a) Emergency dry sand boxes and fire extinguishing solvents should be provided in the workshop;

b) Smelting, refining, crude magnesium storage, refined magnesium storage, and magnesium alloy storage areas should be equipped with Class D fire extinguishers and other fire extinguishing materials (such as... Powdered No. 2 series solvents, production

covering agents, dry sand, sulfur, asbestos boards or asbestos cloth, etc.

5.6 The explosion-proof design and operation of dust explosion hazard locations shall comply with the provisions of GB 15577.

5.7 Meeting rooms, activity rooms, rest rooms, operating rooms, shift change rooms, and changing rooms (including shower rooms) should not be set up in the floor area of the molten metal hoisting area. Places where people gather, such as halls, staff dormitories, and offices.

5.8 Staff dormitories, meeting rooms, offices, rest rooms and other places where people gather should not be set up in dust explosion hazard areas.

5.9 The production workshop should maintain good ventilation, and ventilation equipment should not be located directly above the smelting furnace.

5.10 The primary magnesium refining workshop should adopt a single-story building structure, and measures should be taken to prevent roof leaks and rain from entering through skylights. The floor material should be durable. It is hot and does not absorb water.

5.11 Class A and B workshops with explosion hazards should be independently constructed, and the load-bearing structure should be made of reinforced concrete or steel frame/trellis structure; pressure relief facilities should be provided. The installation of facilities should comply with the provisions of GB 50016.

6.1 General Requirements

6.1.1 The process of transferring liquid from the entire crucible by hoisting it should not be used.

6.1.2 Safety facilities shall be kept in good working order and shall not be dismantled, misappropriated, disabled, or damaged without authorization; if dismantling or disabling is required for inspection or maintenance, it shall be subject to approval. Approval and temporary protective measures should be taken, and the site should be restored immediately after the work is completed.

6.1.3 Newly constructed or overhauled furnaces should pass inspection and undergo a drying process to ensure the furnace interior is completely dry before being put into production. (Furnace drying) During the process, the condition of the furnace wall should be monitored to ensure that there are no cracks or deformations.

6.1.4 Safety warning signs that comply with GB 2894 shall be installed in places, facilities and equipment with significant risk factors.

6.1.5 When vehicles enter the production site, the surrounding equipment, facilities, and personnel situation should be checked. Vehicle speeds within the factory should comply with GB 4387. Regulation.