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

GB/T 42627-2023

**Safety of machinery - Perimeter fence guarding system - Safety
requirements**

机械安全 围栏防护系统 安全要求

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Foreword

This document was issued on 23 May 2023 by the State Administration for Market Regulation; Standardization Administration of the PRC and takes effect on 1 December 2023.

It is a GB/T standard: recommended rather than compulsory, but it is the text a Chinese reviewer applies when assessing a submission.

1 Scope

GB/T 42627-2023 covers the perimeter fence guarding system that keeps people out of the

space an industrial machine sweeps: the fence itself, the doors through it and the interlocks on those doors. Conditions of use come first, since everything else depends on them - the working environment must stay within the corrosive conditions stated in the product manual, and the ground the system is fixed to has to be smooth and even. The safety requirements cover dimensions, with the height of the fence decided from the severity and the probability of the injury being guarded against, following GB/T 15706-2012, rather than from one figure applied everywhere; then strength, the fence itself, the safety door, and the interlocking devices. Instructions for use are treated as part of the guard rather than as paperwork: their general content follows GB/T 42598, and they state the residual risk that remains once the fence is in place, how it is installed, how it is operated, how it is inspected and maintained, and how it is taken down again. Appendix A gives a pendulum impact test method for the impact resistance of the fence, because what a fence really meets is a part thrown by the machine or a vehicle reversing into it. For machine builders, cell integrators, fence manufacturers and plant safety engineers.

This document specifies the conditions of use, safety requirements, and instructions for use of perimeter fence guarding systems.

This document applies to perimeter fence guarding systems used in industrial areas.

2 Normative references

The following documents contain the provisions which, through normative reference in this document, constitute the essential provisions of this document. For the dated referenced documents, only the versions with the indicated dates are applicable to this document; for the undated referenced documents, only the latest version (including all the amendments) is applicable to this document.

GB/T 15706-2012 Safety of machinery - General principles for design - Risk assessment and risk reduction

GB/T 18831-2017 Safety of machinery - Interlocking devices associated with guards - Principles for design and selection

GB/T 23821-2022 Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs

GB/T 42598 Safety of machinery - Instruction handbook - General drafting principles

3 Terms and definitions

The terms and definitions defined in GB/T 15706-2012 and the following apply to this document.

3.1 perimeter fence guarding system

Integration of perimeter fences, security doors, and interlocking devices.

NOTE: The perimeter fence guarding system is used to physically isolate a certain area or restrict people

from entering the danger zone. The schematic diagram is shown in Figure 1.

3.4 interlocking device

interlock

Mechanical, electrical, or other types of devices used to prevent hazardous machine functions from operating under specified conditions (usually as long as the guarding device is not closed).

[Source: GB/T 15706-2012, 3.28.1]

3.5 safety distance

safe separation distance

S_r

The minimum distance between the protective structure and the danger zone.

[Source: GB/T 23821-2022, 3.2]

3.6 tool

Implements designed for tightening operations.

NOTE: Temporary implements such as special keys or wrenches, coins, or nail files cannot be considered

tools.

[Source: GB/T 8196-2018, 3.7, with modification]

4 Conditions of use

The working environment of the perimeter fence guarding system shall not exceed the corrosive working environment requirements specified in the product manual.

The ground on which the perimeter fence guarding system is fixed shall be smooth and hardened.

5 Safety requirements

5.1 Dimensions

5.1.1 Before the height of the perimeter fence is determined, the severity and probability of occurrence of the injury shall be determined in accordance with 5.5 of GB/T 15706-2012, and the height of the danger zone (hh) shall be measured. If the danger protected by the perimeter fence will only cause minor injuries and the probability of occurrence is low, the height of the perimeter fence (that is, the height of the protective structure hps) shall be selected in accordance with Table 1 of GB/T 23821-2022, otherwise the height of the perimeter fence shall be selected in accordance with Table 2 of GB/T 23821-2022.

Without additional protection measures, the lower the height of the perimeter fence, the greater the distance between the perimeter fence and the danger zone. Generally, the height of the perimeter fence shall be 1600 mm, 1800 mm, 2000 mm, or 2200 mm.

NOTE: GB/T 16856-2015 5.4 provides guidelines for estimating the severity and probability of injury.

When the height of the perimeter fence is less than 1400 mm, additional protective measures shall be taken.

5.1.2 Unless the risk assessment results show that it is feasible, the height of the lower edge of the perimeter fence from the ground shall not exceed 180 mm to prevent people from entering the danger zone through the lower edge opening.

5.1.3 The grid size of the wire mesh panel of the perimeter fence and the openings of other panels shall comply with the provisions of 4.2.4 in GB/T 23821-2022.

5.2 Strength

5.2.1 The perimeter fence guarding system shall have sufficient overall structural strength and maintain impact resistance during the foreseeable life cycle. The pendulum test method described in Appendix A can be used for testing.