ICS 13.110
CCS C68

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB 5083-2023

Replacing GB 5083-1999

General rules for designing the production facilities in accordance with safety and health requirements

生产设备安全卫生设计总则

Issued on: December 28, 2023 **Implemented on: January 1, 2025**

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

Table of Contents

Foreword

This document is drafted in accordance with the provisions of GB/T 1.1-2020 Directives for standardization - Part

1.Rules for the structure and drafting of standardizing documents. This document replaces GB 5083-1999 General rules for designing the production facilities in accordance with safety and health requirements. Compared with GB 5083- 1999, in addition to structural adjustments and editorial changes, the main technical changes are as follows: -- The term and definition of "production facilities" are changed (see 3.1; see

3.1 of the 1999 edition); -- The requirements for full life cycle safety risks are added (see

4.1 and 4.2); -- The requirements for starting and stopping are added (see 5.6.3, 5.6.5); -- Control system operational risks and switch operation requirements are added (see 5.6.2.1, 5.6.2.9); -- The requirements for installation, hoisting and transportation are changed (see 5.9.1, 5.9.3; see

5.9.2 of the 1999 edition); -- The requirements for fire protection and explosion protection are changed (see 6.4.1, 6.4.2, 6.4.3; see 6.4.1, 6.4.2,

6.4.3 of the 1999 edition); -- The requirements for anti-static and electric shock protection are added (see 6.10.2, 6.10.3); -- The requirements for the equipment manual are changed (see 7.2; see

7.2 of the 1999 edition); -- The relevant contents of environmental protection facilities are added (see 6.7.1, 6.7.2); -- The relevant contents of intelligentizing and remote control are added (see 5.6.2.3, 5.6.2.11, 5.6.2.12, 6.4.5); -- The content of failure mode and failure analysis of production facilities based on risk assessment is added [see

4.7 a)]. Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents. This document is proposed by and under the jurisdiction of the Ministry of Emergency Management of the People's Republic of China. The previous versions of this document and the documents it replaces are as follows: -- First issued in 1985 as GB 5083-1985 and first revised in 1999; -- This is the second revision. General rules for designing the production facilities in accordance with safety and health requirements

1 Scope

GB 5083-2023 is the Chinese national standard on general rules for designing the production facilities in accordance with safety and health requirements, in the field of environment and health protection, safety. 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 28 December

2023 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 January 2025. Classification: ICS 13.110, CCS C68. 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 overall requirements, general requirements and special requirements for the safety and health design of various types of production facilities. This document applies to all types of production facilities except air and water vehicles, water facilities, electrical equipment and nuclear power equipment.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this text. Among them, for referenced documents with dates, only the versions corresponding to the dates are applicable to this document; for referenced documents without dates, the latest versions (including all amendments) are applicable to this document. GB 2893 Safety colours

GB 2894 Safety signs and guideline for the use

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

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 production facilities Various machines, facilities (including environmental protection facilities), devices and appliances used in the production process for the production, processing, manufacturing, inspection, transportation, loading and unloading, installation, storage and maintenance of products.

4 Overall requirements

4.1 The designing of production facilities shall identify the safety risks throughout facilities' life cycles, such as various working conditions and environments, especially the safety risks under abnormal working conditions and adverse environments, and take corresponding safety and health protection measures.

4.4 The design of production facilities shall comply with ergonomic principles to protect the physiological and mental health of operators.

4.5 The designing of production facilities shall identify the risk of accidental release of hazardous energy, and measures shall be taken to control hazardous energy or energy carriers to ensure that the production facilities meet safety and health requirements.

4.6 The designing of production facilities shall ensure safety and health requirements are met through the following means.

4.7 The designing of production facilities shall select safety and health technical measures in the following order of priority.

4.8 Within the specified design service life, production facilities shall meet safety and health requirements. For parts and devices that affect safe operation and control, reliability indicators that meet product standards shall be specified.

5 General requirements

5.1 Adaptability Within the specified design service life, production facilities shall meet the requirements of the use environment, especially the requirements of corrosion resistance, wear resistance, fatigue resistance, aging resistance, deformation resistance and other failure resistance.

5.2 Materials

5.2.1 The materials used for manufacturing production facilities shall be able to withstand the physical, chemical and biological effects occurring under the specified conditions of use within the specified design service life.

5.2.6 The foundation and body of production facilities whose internal medium has fire or explosion risks shall be made of non-combustible materials.

5.3 Stability

5.3.1 Production facilities shall not overturn or occur movement or displacement outside the allowable range under the action of vibration, wind load or other external loads.

5.4 Surfaces, edges and corners Without affecting the use function, the parts and components of production facilities that may be touched by people shall not be designed with sharp angles, edges, rough surfaces and protruding parts that may cause personal injury.

5.5 Manipulators The design, selection and configuration of manipulators shall comply with ergonomic requirements, be compatible with the characteristics of the operating parts of the human body (especially the functional characteristics) and the control tasks, and meet the following requirements.

5.6 Signal and display systems, control systems

5.6.1 Signal and display systems The design, selection and configuration of signal and display systems shall adapt to human perception characteristics and meet the following requirements.