

ICS 27.010
CCS F01



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

GB 21345-2024

Replacing GB 21345-2015

**Norm of energy consumption per unit production of yellow
phosphorus**

黄磷单位产品能源消耗限额

Issued on: April 29, 2024

Implemented on: May 1, 2025

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

Table of Contents

- 1 Scope
- 2 Normative references
- 3 Terms and definitions
- 4 Energy consumption norm grade
- 5 Technical requirements
- 6 Statistical scope and calculation method
 - 6.1 Statistical scope
 - 6.2 Method of calculation
 - 6.2.2 Calculation of comprehensive energy consumption

1 Scope

GB 21345-2024 is the Chinese national standard on norm of energy consumption per unit production of yellow phosphorus, in the field of energy and heat transfer engineering. 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 29 April 2024 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 May 2025.

Classification: ICS 27.010, CCS F01. 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 limit levels, technical requirements, statistical scope and calculation methods for norm of energy consumption per unit production of yellow phosphorus (hereinafter referred to as energy consumption). This document is applicable to the calculation and assessment of energy consumption per unit production of yellow phosphorus production enterprises using the electric furnace process, as well as the energy consumption control for new construction, renovation and expansion projects.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 2589, General principles for calculation of the comprehensive energy consumption

GB/T 7816, Yellow phosphorus for industrial use

GB/T 12723, General principles for establishing allowance of energy consumption per unit throughput

GB/T 29116, General principles for calculation of raw material consumption in industrial enterprises

3 Terms and definitions

For the purposes of this document, the following terms and definitions, as well as those given in GB/T 12723, apply.

3.1 comprehensive energy consumption of yellow phosphorus Total energy consumption in the entire production process of yellow phosphorus products during the reporting period.

3.2 comprehensive energy consumption per unit production of yellow phosphorus Comprehensive energy consumption of yellow phosphorus expressed by unit output of yellow phosphorus.

3.3 the electric consumption of electric furnace for yellow phosphorus The comprehensive energy consumption of direct heating by electric furnaces expressed by the output of yellow phosphorus during the reporting period.

3.4 comprehensive energy consumption of carbon as the reducing agent in the yellow phosphorus electric furnace The carbonaceous reducing agent (coke, anthracite, etc.) used in the electric furnace reduction reaction is converted into the total energy contained in the coke with 84% fixed carbon in the entire production process of yellow phosphorus during the reporting period according to its carbon content.

4 Energy consumption norm grade

The norm grade of energy consumption per unit production of yellow phosphorus shall be in accordance with the provisions of Table 1, among which Grade 1 is of the lowest energy consumption.

5 Technical requirements

5.1 Energy consumption limit per unit production of yellow phosphorus The energy consumption limit per unit production of existing yellow phosphorus production equipment shall comply with the requirements for Grade 3 in Table 1.

5.2 Energy consumption access value per unit production of yellow phosphorus The energy consumption access value per unit production of newly constructed and renovated and expanded yellow phosphorus production facilities shall comply with the requirements for

Grade 2 in Table 1.

6.1 Statistical scope

6.1.1 Comprehensive energy consumption of yellow phosphorus The statistical scope of comprehensive energy consumption of yellow phosphorus includes various primary energy, secondary energy (electricity, heat, petroleum products, coke, gas, etc.) consumed by production systems, auxiliary production systems, and ancillary production systems, as well as energy-consumed medium used in production (energy consumed by water, oxygen, nitrogen, compressed air, etc.). The energy consumption and loss of the auxiliary production systems and ancillary production systems of enterprises within the production boundary are apportioned to the products according to the consumption ratio method, excluding energy used in the construction and renovation process and living energy (referring to energy used in dormitories, schools, cultural entertainment, medical care, commercial services, childcare and early childhood education within the enterprise system).

6.1.2 Energy consumption of production system The electric furnace production system shall include the energy consumption of the process including raw material crushing, drying, screening, batching unit, phosphate rock reduction unit, crude phosphorus preparation unit (including dust removal/washing and condensation of phosphorus-containing furnace gas), finished product refining and packaging unit, phosphorus sludge recovery, sewage treatment, and tail gas purification. For independent phosphate rock powder pelletizing equipment, its energy consumption is not included in the statistical scope of comprehensive energy consumption of yellow phosphorus. The consumption of coke (or anthracite) shall be calculated based on the actual amount put into the furnace plus the loss. The coke (coal) powder transferred out shall not be included in the total energy consumption. The energy generated in the production boundary area, such as exhaust heat, residual capacity and chemical reaction heat, which is recovered within the boundary area and used in the device and not exported outside the boundary area, shall not be included in the energy consumption or energy deduction, except for the electricity generated by utilizing the waste heat in the boundary area. The part of the recycled energy supplied to the devices outside the boundary area shall be deducted from the energy consumption of this boundary area according to its actual measured energy value. All input and output energy are divided according to the meter of the boundary area.

6.1.3 Energy consumption of auxiliary production systems It shall include the energy consumption of process, equipment and facilities configured to meet production needs, including power supply, machine repair, water supply, gas supply, heating, refrigeration, warehouse and raw material site within the factory, as well as safety, environmental protection, energy-saving and other devices and facilities. Coke (coal) powder supplied to auxiliary production systems shall be included in the total energy consumption of the product by the proportional allocation method.

6.1.4 Energy consumption of ancillary production systems The management and service departments and units configured for the production system shall include offices, production management departments, dispatching rooms, operation rooms, lounges, changing rooms, bathrooms, central control analysis, finished product inspection, plant area monitoring, maintenance sections, three waste treatment, electrical maintenance, instrument maintenance, mechanical processing, and energy consumption of workshop lighting, ventilation, cooling and other facilities. Coke (coal) powder supplied to ancillary production systems shall be included in the total energy consumption of the product by the proportional allocation method.

6.2 Method of calculation

6.2.1 General provisions The calculation of comprehensive energy consumption shall comply with the provisions of GB/T 2589 and GB/T 29116. The calorific value of various energy sources shall be converted into a unified unit of measurement. The primary energy consumed by enterprises during the reporting period shall be measured and converted into standard coal based on the low calorific value. In the absence of actual measurement conditions, reference coefficients for various energy sources converted into standard coal are given in Appendix A.