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

GB 21341-2022

Replacing GB 21341-2017

**The norm of energy consumption per unit production of
ferroalloy**

铁合金单位产品能源消耗限额

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1 Scope

GB 21341-2022 is the Chinese national standard on the norm of energy consumption per unit production of ferroalloy, 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 December 2022 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 January 2024. 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 levels, technical requirements, statistical scopes and calculation methods for the norm of energy consumption per unit product of ferroalloy (hereinafter referred to as energy consumption). This document is applicable to the calculation and assessment of energy consumption per unit product of 9 varieties: ferrosilicon produced by ferroalloy submerged arc furnaces, high carbon ferromanganese produced by electric furnaces (limited to high carbon ferromanganese produced through the flux-free smelting process), manganese-silicon alloy, low carbon ferromanganese-silicon, high carbon ferrochromium and charge ferrochromium, and micro-carbon ferromanganese and medium (low) carbon ferrochromium produced by electric ferroalloy refining furnaces, and blast furnace ferromanganese produced by ferroalloy blast furnace, as well as the energy consumption control of new construction, renovation and extension projects.

2 Normative References

The contents of the following documents constitute indispensable clauses of this document through the normative references in the text. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document. GB/T 2272 Ferrosilicon

GB/T 2589 General Rules for Calculation of the Comprehensive Energy Consumption GB/T 3795 Ferromanganese

GB/T 4008 Ferromanganese-silicon GB/T 5683 Ferrochromium

GB/T 12723 General Principles of Stipulation of Energy Consumption Norm for Unit Product

GB/T 14984.1 Ferroalloys - Vocabulary - Part 1: Materials

3 Terms and Definitions

The terms and definitions defined in GB/T 12723, and the following terms and definitions are applicable to this document.

3.1 comprehensive energy consumption per unit product of ferroalloy Comprehensive energy consumption per unit product of ferroalloy refers to the amount of various energy sources consumed by ferroalloy enterprises to produce 1 benchmark ton (converted in accordance with the benchmark composition of the main elements) of qualified ferroalloy products during the reporting period.

3.2 smelting electricity consumption per unit product of ferroalloy Smelting electricity consumption per unit product of ferroalloy refers to the electricity consumption in the smelting process by ferroalloy enterprises to produce 1 benchmark ton (converted in accordance with the benchmark composition of the main elements) of qualified ferroalloy products during the reporting period.

3.3 coke consumption per unit product of ferroalloy Coke consumption per unit product of ferroalloy refers to the amount of coke (dry tons) consumed by ferroalloy blast furnace production enterprises to produce 1 benchmark ton (converted in accordance with the benchmark composition of the main elements) of qualified ferroalloy products during the reporting period.

3.4 low carbon ferromanganese-silicon Low carbon ferromanganese-silicon refers to ferromanganese-silicon whose carbon content is not greater than 0.3%.

3.5 charge ferrochromium Charge ferrochromium refers to ferrochromium whose chromium content is 45% ~ 52% and carbon content is below 10%.

4 Levels of the Norm of Energy Consumption

The indicators of the norm of energy consumption per unit product of ferroalloy production enterprises include smelting electricity consumption per unit product of ferroalloy, coke consumption per unit product of ferroalloy and comprehensive energy consumption per unit product of ferroalloy. The levels of the norm of energy consumption are shown in Table 1 and Table 2, in which, Level-1 represents the lowest energy consumption.

5 Technical Requirements

5.1 Limit Values of Energy Consumption per Unit Product of Existing Ferroalloy Production Enterprises The indicators of the limit values of energy consumption per unit product of existing ferroalloy production enterprises include smelting electricity consumption per unit product, coke consumption per unit product and comprehensive energy consumption per unit product. The limit values shall be not greater than the Level-3 energy consumption indicators in Table 1 and Table 2.

5.2 Access Values of Energy Consumption per Unit Product of Newly Constructed, Reconstructed and Extended Ferroalloy Production Enterprises The indicators of the access values of energy consumption per unit product of newly constructed, reconstructed and extended ferroalloy production enterprises include smelting electricity consumption per unit product, coke consumption per unit product and comprehensive energy consumption per unit product. The limit values shall be not greater than the Level-2 energy consumption indicators in Table 1 and Table 2.

6.1.1 Statistical scope

6.1.1.1 Statistical scope of comprehensive energy consumption per unit product of ferroalloy The comprehensive energy consumption of electric furnace ferroalloy production enterprises shall include the smelting electrical energy consumption for heating the charge and maintaining normal furnace conditions; power energy consumption in the production and processing process (including raw material preparation, transportation, alloy pouring, finishing, material and alloy transportation, dynamic electricity for auxiliary facilities, and lighting electricity, etc.); carbonaceous reducing agents (coke, under-sieve coke of ironmaking blast furnace, small particle coke for submerged arc furnace, and small particle semi-coke, etc.) consumption required for reducing ore, deducting the amount of secondary energy (such as: recovered gas and waste heat, etc.) that is recovered and externally supplied.