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

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**The norm of energy consumption per unit products of tungsten
concentrates**

钨精矿单位产品能源消耗限额

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1 Scope

This standard lays down the technical requirements, the statistical scope, the calculation method, the calculation range and the energy-saving management and measures for the statistics of the norm of energy consumption per unit product of tungsten concentrates (called energy consumption below).

This standard applies to the calculation and assessment of the energy consumption per

unit product of wolframite concentrate and scheelite concentrate and to the control of energy consumption of newly built projects.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition, including all amendments, applies.

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

GB 17167 General principles for equipping and managing of the measuring instruments of energy in organizations using energy

3 Terms and definitions

The terms and definitions given in GB/T 2589 and the following apply to this document.

3.1 unit energy consumption in working procedure: the quantity of energy consumed to produce a unit of qualified product in the production process of the working procedure.

3.2 unit object consumption in working procedure: the physical quantity of a given form of energy consumed to produce a unit of qualified product in the production process of the working procedure.

3.3 unit energy consumption of technology: within the statistical reporting period, the ratio of the quantity of energy consumed by the working procedures of the production system that produces a given product to the quantity of qualified product output in the same period.

3.4 assistant energy consumption: within the statistical reporting period, the ratio of the quantity of energy consumed by the auxiliary production system to the quantity of qualified product output in the same period.

3.5 enterprise integrate energy consumption: the sum of the process energy consumption, the auxiliary energy consumption and the apportioned losses.

3.6 ratio of concentration: the weight of run-of-mine ore needed to obtain 1 t of concentrate, usually expressed as a multiple.

4 Technical requirements

4.1 The limiting values of the energy consumption per unit product of existing tungsten concentrate producers shall meet the requirements of Table 1.

Table 1 has three columns: the production process, the wolframite mine and the scheelite mine; each row of the first column also carries the words not greater than. The limiting values it fixes are: mining process unit consumption 3.20 kgce/t for the wolframite mine and

1.85 kgce/t for the scheelite mine; dressing process unit consumption 650.00 kgce/t and 1 790.00 kgce/t; comprehensive energy consumption per unit of standard tungsten concentrate 1 470.00 kgce/t and 2 100.00 kgce/t.

4.2 The access values of the energy consumption per unit product of newly built tungsten concentrate producers shall meet the requirements of Table 2.

Table 2 is laid out like Table 1. The access values it fixes are: mining process unit consumption 2.42 kgce/t for the wolframite mine and 1.04 kgce/t for the scheelite mine; dressing process unit consumption 326.00 kgce/t and 1 538.00 kgce/t; comprehensive energy consumption per unit of standard tungsten concentrate 1 174.00 kgce/t and 1 788.00 kgce/t.

4.3 The advanced values of the energy consumption per unit product of tungsten concentrate producers shall reach the requirements of Table 3.

Table 3 is laid out like Table 1. The advanced values it fixes are: mining process unit consumption 1.13 kgce/t for the wolframite mine and 0.41 kgce/t for the scheelite mine; dressing process unit consumption 166.00 kgce/t and 763.00 kgce/t; comprehensive energy consumption per unit of standard tungsten concentrate 561.00 kgce/t and 1 658.00 kgce/t.

5 Statistical scope, calculation method and calculation range

5.1.1 The various forms of energy actually consumed are the primary energy, the secondary energy and the energy consumed by the energy-carrying working media used in production. The various forms of energy actually consumed by the undertaking are those used for production activities; they include the energy used by the main production system, the auxiliary production system and the ancillary production system, and they exclude the energy used for living purposes and the energy used by capital construction projects. Energy used for living purposes means the energy consumed directly for living purposes by the dormitories, schools, cultural and recreational facilities, medical care and commercial services inside the system of the undertaking.

5.1.2 The physical quantity of a given form of energy consumed by the undertaking within the planned statistical period is calculated by formula (1). In the formula, $e_{\text{sub } h}$ is the physical quantity of energy consumed by the undertaking; $e_{\text{sub } 1}$ is the physical quantity of energy purchased by the undertaking; $e_{\text{sub } 2}$ is the physical quantity of energy in stock at the beginning of the period; $e_{\text{sub } 3}$ is the physical quantity of energy in stock at the end of the period; $e_{\text{sub } 4}$ is the physical quantity of energy sold outside; $e_{\text{sub } 5}$ is the physical quantity of energy used for living purposes; $e_{\text{sub } 6}$ is the quantity of energy used by the undertaking for engineering construction.

The energy consumption of the undertaking within the planned statistical period is calculated by formula (2). In the formula, E is the energy consumption of the undertaking within the planned statistical period; $E_{\text{sub } 1}$ is the energy purchased; $E_{\text{sub } 2}$ is the

increase or decrease in stock of energy; E sub 3 is the energy sold outside; E sub 4 is the energy used for living purposes; E sub 5 is the energy used by the undertaking for engineering construction; E sub ZG is the process energy consumption of the several products; E sub ZF is the energy used and the losses of the indirect auxiliary production departments; E sub ZZ is the comprehensive energy consumption of the several products.

The various forms of energy consumed shall be neither counted twice nor omitted. Where a supply relationship exists, the quantities used by the input side and the output side shall agree in the calculation. The energy consumed by the major overhaul of equipment shall also be counted, and shall be apportioned month by month over the operating cycle of the equipment after overhaul. The comprehensive energy consumption of the undertaking is calculated as laid down in GB/T 2589. NOTE: the energy consumption of the undertaking within the planned statistical period means the energy consumed directly for production within that planned statistical period; whether it counts as directly used for production shall be decided according to 5.1.1.

5.1.3 The metering of the physical quantities of energy shall comply with the Metrology Law of the People's Republic of China and with GB 17167.

5.1.4 The units of measurement of the various forms of energy are: a) the energy consumption of production of the undertaking, the process energy consumption of the product (also called the direct comprehensive energy consumption of the product) and the comprehensive energy consumption of the product, in kgce and tce (kilograms of standard coal and tonnes of standard coal); b) coal and coke, in tonnes and ten thousand tonnes; c) petrol, diesel oil and kerosene, in kilograms and tonnes; d) electricity, in kilowatt hours and ten thousand kilowatt hours; e) steam, in kilograms and tonnes or in kilojoules and gigajoules; f) gas, compressed air and oxygen, in cubic metres and ten thousand cubic metres; g) water, in tonnes and ten thousand tonnes.

5.1.5 Energy whose low (net) calorific value on an as-received basis equals 29.307 6 megajoules (MJ) is called 1 kilogram of standard coal (kgce). For purchased energy the measured low calorific value, or the measured value provided by the supplying unit, may be taken as the basis of the calculation, or the conversion coefficients of the national statistical department may be used, which are given for reference in Annex A. Secondary energy and energy-carrying working media are converted at the equivalent value of the corresponding energy: where the undertaking converts energy for its own production, the conversion into standard coal is made from the physical quantity of energy actually put in; where the energy is supplied for outside sale by a centralised production unit, its energy equivalent value shall be laid down by the competent department; where the energy is purchased and sold outside, its energy equivalent value shall be the same; where no energy equivalent value is provided, the conversion coefficients of the national statistical department may be used, which are given for reference in Annex B.

5.1.6 When the energy consumption per unit product is calculated, the total quantity of