

ICS 27.010
CCS F01



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

GB/T 2589-2020

Replacing GB/T 2589-2008

**General rules for calculation of the comprehensive energy
consumption**

综合能耗计算通则

Issued on: September 29, 2020

Implemented on: April 1, 2021

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

Table of Contents

Foreword...	3
1 Scope...	4
2 Normative References...	4
3 Terms and Definitions...	4
4 Calculation Principles...	6
5 Boundary Division...	7
6 Calculation Range...	8
7 Calculation Methods...	8
11 Appendix B (Informative) Standard Coal Coefficient of Main Energy-Consumed Medium (by Energy Source Equivalent Value) (Reference Value).....	13

Foreword

This Standard was drafted as per the rules specified in GB/T 1.1-2009. This Standard replaced GB/T 2589-2008 General Principles for Calculation of the Comprehensive Energy Consumption. Compared with GB/T 2589-2008, the major technical changes of this Standard are as follows:

--- Modify the definitions such as "energy calorific value", "energy source equivalent value", "comprehensive energy consumption", "comprehensive energy consumption for unit output value" and "comprehensive energy consumption for unit output of product" (see 3.2, 3.3, 3.5~

3.8 of this Edition; 3.2, 3.3, 3.5~

3.8 of 2008 Edition); and add the definition of "standard coal coefficient" (see 3.9);

--- Add "boundary division" (see Clause 5 of this Edition);

--- Modify "energy source type and scope for calculation of comprehensive energy consumption", they are respectively included in "calculation principles" and "calculation range" (see Clauses 4 and 6 of this Edition; Clause 4 of 2008 Edition);

--- Modify "principles of conversion of standard coal for various energy sources" into "requirements for conversion to standard coal" (see Clause 8 of this Edition; Clause 6 of 2008 Edition);

--- Modify Appendixes A and B (see Appendixes A and B of this Edition; Appendixes A and B of 2008 Edition). This Standard was proposed by and under the jurisdiction of National

Technical Committee for Standardization of Energy Fundamentals and Management (SAC/TC 20). Drafting organizations of this Standard. China National Institute of Standardization; Fangyuan Sign Certification Group Co., Ltd.; Guangzhou Institute of Energy Testing; Beijing Zhicheng Hongye Intelligent Control Technology Co., Ltd.; Xinte Energy Co., Ltd.; National Institute of Metrology, China; Z-Park Modern Energy and Environmental Service Industry Alliance; Beijing Sanzen Energy Technology Co., Ltd.; Beijing Avater Technology Corp.; Beijing Institute of Technology; and Foshan Green Development and Innovation Research Institute. Chief drafting staffs of this Standard. Chen Haihong, Li Pengcheng, Lin Ling; Sun Zhihui, Feng Chao, Zhang Wei, Liu Meng, Cheng Zhigang, Jiang Yun, Li Qingju, Zhang Shinan, Li Hongxia, Gao Weijia, Wei Yiming, and Liang Xiuying. The historical editions replaced by this Standard are as follows:

--- GB/T 2589-1981, GB/T 2589-1990, GB/T 2589-2008. General Rules for Calculation of the Comprehensive Energy Consumption

1 Scope

GB/T 2589-2020 is the Chinese national standard on general rules for calculation of the comprehensive energy consumption, in the field of energy and heat transfer engineering. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 29 September 2020 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 April 2021. 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 Standard specifies the calculation principles, boundary division, calculation range, calculation method, and requirements for conversion to standard coal of the comprehensive energy consumption. This Standard is applicable to the calculation of energy consumption indicators for energy consumption unit (including secondary energy consumption unit or their components).

2 Normative References

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) is applicable to this document.

GB/T 3102.4 Quantities and Units - Heat

GB/T 3484 The General Principles for Energy Balance of Industrial Enterprise

GB 17167 General Principle for Equipping and Managing of the Measuring Instrument of Energy in Organization of Energy Using

GB/T 28749 The Method of Drawing Energy Balance Network Diagram for Enterprises

3 Terms and Definitions

For the purpose of this document, the following terms and definitions apply.

3.1 Energy-consumed medium The working substance that is consumed in the production process, but not used as a raw material; nor it enters the product; it needs to directly consume energy during production or preparation.

3.2 Energy calorific value The equivalent amount when different forms of energy are converted to each other. According to the legal measurement unit of energy in Joule, the conversion coefficients of different forms of energy such as thermal energy, electrical energy, and mechanical energy are all 1.

3.4 Energy consumption unit The energy consumption unit that has definite boundary.

3.5 Comprehensive energy consumption During the statistical reporting period, the actual amounts of various energies that are consumed in the production of a certain product or the provision of a certain service; it is the sum of the converted amounts according to the prescribed calculation methods and units.

3.6 Comprehensive energy consumption for unit output value During the statistical reporting period, the ratio of comprehensive energy consumption to the total output value or added value (comparable price) of energy consumption unit. NOTE. The unit of comprehensive energy consumption for unit output value is usually, in kgce/ ten thousand yuan, and tce/ ten thousand yuan, etc.

3.7 Comprehensive energy consumption for unit output of product During the statistical reporting period, the ratio of comprehensive energy consumption to the output of qualified product (operation capacity, workload, service capacity).

4 Calculation Principles

4.1 Compliance. The types of energy included in the calculation of comprehensive energy consumption shall meet the requirements of national energy statistics.

4.2 Completeness. The calculation of comprehensive energy consumption shall include all energy and energy-consuming medium actually consumed in the production process; and shall not be omitted or recalculated.

5 Boundary Division

5.1 Appropriate calculation boundaries shall be delineated in accordance with relevant laws, regulations and standards. For the purpose and actual situation for the calculation of comprehensive energy consumption, the boundary may be the whole of the energy consumption unit, or the secondary energy consumption unit, or it may be a component of it.

5.2 Boundary division may take different forms, choose one of them to determine the boundary of the calculation of comprehensive energy consumption. Once the boundary is determined, it shall not be changed in the process of calculation of comprehensive energy consumption.

5.4 If the energy-consuming units are located in two or more secondary energy consumption units or their components in different geographical locations, then multiple boundaries may be delineated as needed to facilitate the calculation of comprehensive energy consumption by energy consumption units.

6 Calculation Range

6.1 The calculation range of comprehensive energy consumption includes the actual consumption of various energy such as primary energy and secondary energy; includes the energy used as raw materials. The actual consumption of various energy may be calculated in accordance with GB/T 3484, GB/T 28749, GB/T 28751, etc.

6.2 The energy consumed by the energy-consumed medium shall be included in the calculation of comprehensive energy consumption. Energy-consumed medium mainly include fresh water, softened water, compressed air, oxygen, and nitrogen, etc.

6.4 The raw data that can be used to calculate the comprehensive energy consumption include the reading records of energy measuring instruments, the data records of the online energy consumption monitoring system, the energy statistics reports, the invoices, and the energy bills, etc. The equipment of energy measuring instruments shall meet the requirements of GB 17167.

7 Calculation Methods

7.1 The comprehensive energy consumption is calculated according to Formula (1).

7.3 The comprehensive energy consumption for unit output of product is calculated according to Formula (3).

7.4 Comparable comprehensive energy consumption for unit output of product is suitable for comparison of product energy consumption within the same industry. The calculation method may refer to relevant standard specifications and technical documents.