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# GB

**National Standard of the People's Republic of China**

**GB 12021.9 — 200X**

Replaces GB 12021.9-1989

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**Minimum allowable values of energy efficiency and energy  
efficiency grades of AC electric fans**

(Draft for Approval)

Issue Date: 200X-XX-XX

Implementation Date: 200X-XX-XX

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Issued  
by

**General Administration of Quality Supervision, Inspection  
and Quarantine, of the People's Republic of China  
(AQSIQ)**

**Standardisation Administration of the People's Republic of  
China (SAC)**

# Foreword

**Subsection 4.3 of this Standard is mandatory, whilst the rest of the clauses are recommended.**

This Standard replaces GB 12021.9-1989 “Limited value of energy consumption of electric fans and its measuring method.”

The major changes to this Standard when compared with GB 12021.9-1989 are as follows:

—the name of this Standard has been modified to “Minimum allowable values of energy efficiency and energy efficiency grades of AC electric fans”;

—energy efficiency grades and evaluating values of energy conservation in the Standard have been increased, as have rotary fans in the products;

— corresponding changes have been implemented with regard to the cited standards, terms and definitions;

—the limited value of energy consumption in the original Standard has been amended to be the minimum allowable values of energy efficiency;

— all the contents of limited value of import power and speed ratio have been deleted;

—the content of the testing methods section has been deleted, its name modified to be test methods, and the test methods of GB/T 13380 have been adopted;

— further amendments have been made to the contents of delivery inspection and type inspection;

— the entire content of Section 6 of the original Standard has been deleted;

This Standard is under the jurisdiction of the Reasonable Power Use Sub-Committee, Technical Committee of National Energy Foundation and Administration Standardisation.

The main drafting units of this Standard are: China National Institute of Standardization, Midea Group Co., Ltd., Shenzhen Lianchuang Industries Co., Ltd., Ghangzhou Vkan Certification and Testing Institute, Gree Electric Appliances, Inc. of Zhuhai, Singfun Electric Group Co., Ltd., Airmate Electrical (Shenzhen) Co., Ltd., Shanghai Wahson Electric Appliance Co., Ltd., and Jiangmen Jinling Fan Manufacturing Co., Ltd.

The main drafters of this Standard are: Wei Liu, Xuejun Chi, Jianhong Cheng, Wu Chen, Pan Wang, Tao Zhang, Guoning Yao, Zhijun Wang, Caifu Wang, Jianjiang Zhao, and Ruohong Wang.

This Standard was issued for the first time in 1989. This is the first revision of this Standard.

# **Minimum allowable values of energy efficiency and energy efficiency grades of AC electric fans**

## **1 Scope**

This Standard sets the energy efficiency grades, minimum allowable values of energy efficiency, evaluation values of energy conservation, test methods and inspection rules for alternating current (AC) electric fans.

This Standard applies to table fans, rotary fans, wall fans, box fans, stand fans and ceiling fans driven by AC electric motors with single-phase rated voltage not exceeding 250V and other rated voltages not exceeding 480V.

## **2 Normative references**

The provisions of the following documents become provisions of this Standard after being referenced. For dated reference documents, all later amendments (excluding corrigenda) and revised versions do not apply to this Standard. However, the parties to the agreement are encouraged to study whether the latest version of these documents applies. For undated reference documents, the latest versions apply. GB/T 2828.1 Sampling procedures for inspection by attributes--Part 1: Sampling schemes indexed by acceptance quality limit(AQL) for lot-by-lot inspection (GB/T 2828.1-2003, ISO 2859-1: 1999, IDT)

GB/T 2829 Sampling procedures and tables for periodic inspection by attributes (Apply to inspection of process stability)

GB/T 13380 AC electric fans and regulators

## **3 Terms and definitions**

The terms and definitions set out in GB/T 13380 apply to this Standard, as well as the following:

### **3.1**

#### **Minimum allowable values of energy efficiency for AC electric fans**

The minimum allowable values of energy efficiency for AC electric fans under the test conditions set out in this Standard, with the unit of cubic metre/minute. watt ( $\text{m}^3/\text{min}.\text{W}$ ).

### **3.2**

#### **Evaluating values of energy conservation for AC electric fans**

The minimum allowable values for AC electric fans to reach the certification

requirements of energy conservation products under the test conditions set out in this Standard, in the unit of cubic meter / minute.watt (m<sup>3</sup>/min.W).

#### 4 Technical requirements

##### 4.1 Basic requirements

The performance of AC electric fans to which this Standard applies should meet the requirements of GB/T 13380.

##### 4.2 Energy efficiency grades

The energy efficiency of AC electric fans is divided into 3 grades (please refer to Table 1), with Grade 1 having the highest energy efficiency. The energy efficiency of different grades of products should not be lower than the requirements set out in Table 1.

**Table 1 Energy efficiency grades of AC electric fans**

Type		Specifications (mm)	Energy efficiency value		
			Energy efficiency grade		
			1	2	3
Table fans, rotary fans, wall fans, box fans, stand fans	Capacitive	200	0.71	0.60	0.54
	Shaded pole		0.63	0.51	0.45
	Capacitive	230	0.84	0.70	0.64
	Shaded pole		0.65	0.57	0.50
	Capacitive	250	0.91	0.79	0.74
	Shaded pole		0.72	0.61	0.54
	Capacitive	300	0.98	0.86	0.80
		350	1.08	0.95	0.90
		400	1.25	1.06	1.00
		450	1.42	1.19	1.10
		500	1.45	1.25	1.13
Ceiling fan	Capacitive	600	1.65	1.43	1.30
		900	2.95	2.87	2.75
		1050	3.10	2.93	2.79
		1200	3.22	3.08	2.93
		1400	3.45	3.32	3.15
		1500	3.68	3.52	3.33
		1800	3.81	3.67	3.47

##### 4.3 Allowable values of energy efficiency

The allowable values of energy efficiency for AC electric fans are of Grade 3 of the energy efficiency grades set out in Table 1.

##### 4.4 Evaluating energy conservation values

The evaluating energy conservation values for AC electric fans are of Grade 2 of the energy efficiency grades set out in Table 1.

## **5 Test methods**

The input power of AC electric fans is tested according to the related requirements of GB/T 13380. The airflow of AC electric fans with fan leaf at a diameter above 400mm is measured according to the methods set out in GB/T 13380. AC electric fans with fan leaf at a diameter below 400mm (inclusive of 400mm) should undergo testing by using an automatic airflow measurement device.

Note: Input power refers to the actually measured power of the fan-driven electric motor. The measured airflow result takes the data of measured result at stable state as the standard.

## **6 Inspection rules**

### **6.1 Delivery inspection**

**6.1.1** The inspection project can take reference from GB/T 2828.1 and GB/T 2829, which shall be decided by the quality inspection department of the producer.

**6.1.2** Products whose asserted value of energy efficiency fails to comply with the requirements set out in Subsection 4.3 are not permitted for delivery from the factory.

### **6.2 Type inspection**

**6.2.1** Should one of the following circumstances occur, an inspection of the minimum allowable value of energy efficiency should be carried out:

- a) Trial manufacturing of new product;
- b) Any change to product design, technology or material used has an obvious influence on the performance of the product;
- c) Production of an old product that has not been produced for over one year;
- d) The result of the delivery inspection has a significant difference from the result of the previous type inspection;
- e) A quality technical supervision department requests a type inspection.

**6.2.2** With regard to sampling during the type inspection, three products should be randomly selected. Among the three products, two should be tested and one reserved. If the test result indicates that the two tested products meet the requirements of this Standard, the batch qualifies. If the two tested products do not meet the requirements set out in this Standard, the batch fails to qualify. If the allowable value of energy efficiency of one product does not meet the requirements set out in this Standard, a test should be performed on the reserved sample. If the test result meets the requirements of this Standard, the batch qualifies. If the test result fails to meet the requirements set out in this Standard, the batch fails to qualify.