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

GB/T 43080.3-2023

**Fans - Efficiency classification for fans - Part 3: Fans without
drives at maximum operating speed**

通风机 通风机效率等级 第3部分：不含驱动装置最高转速时的通风机

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1. Structure and Drafting Rules of Standardization Documents" Drafting. This document is Part 3 of GB/T 43080 "Ventilator Ventilator Efficiency Ratings". GB/T 43080 has published the following parts.

3. Does not include the ventilator at the maximum speed of the drive device. This document is modified to adopt ISO 12759-3:2019 "Ventilator Ventilator Efficiency Class Part

3. Maximum Speed Excluding Drive Device" ventilator". Compared with ISO 12759-3:2009, this document has made the following structural adjustments.

---Chapter 3 corresponds to Chapter 3 and Chapter 4 in ISO 12759-3:2009, in which the content of Chapter 4 of ISO 12759-3:2009 Capacity, merged into

3.2 and 3.5. The technical differences between this document and ISO 12759-3:2019 and their reasons are as follows:

---Deleted the content that "the lowest acceptable level is determined by the regulator and the manufacturer's representative or the local legislative body through joint consultation", because It is beyond the scope of this document and has nothing to do with the content of this document (see Chapter 5);

---Change Appendix A to a normative appendix. Appendix A describes the method for calculating the upper limit efficiency value through the fan diameter and optimal efficiency. method, and gives the corresponding efficiency level value. This document incorporates it into normative content to clearly stipulate the method for determining the efficiency level. method (see Appendix A);

---Changed some values in Table A.2 to ensure the consistency of the values in Table A.2 and Figure 3 (see Table A.2);

---The parameters calculated by formula (A.3) have been changed, and the "upper limit efficiency" has been changed to efficiency level NG to ensure that it is consistent with the first paragraph of A.1 Consistency [see formula (A.3)]. The following editorial changes have been made to this document.

---ISO 12759-3:2009 Chapter

4 Two units and symbols are given in

3.2 and 3.5. Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents. This document is proposed by China Machinery Industry Federation. This document is under the jurisdiction of the National Fan Standardization Technical Committee (SAC/TC187). This document was drafted by: Shenyang Blower Research Institute (Co., Ltd.), Zhejiang Jindun Fan Co., Ltd., Shenyang Blower Group Co., Ltd. Co., Ltd., Zhejiang Shuangyang Fan Co., Ltd., National Fan Product Quality Supervision and Inspection Center (Zhejiang), Xi'an Shaangu Power Co., Ltd. Company, Suzhou Dingyu Energy Saving Equipment Co., Ltd., Shandong Linfeng Technology Co., Ltd., Guangdong Fanshida Agricultural and Animal Husbandry Fan Co., Ltd., Beijing Xin Ant Fan Co., Ltd., Weihai Clayfield Fan Co., Ltd., Zhejiang Sanxin Technology Co., Ltd., Zhejiang Mingxin Fan Co., Ltd. Company, Zhejiang Pengxiang HVAC Equipment Co., Ltd., China Power Construction Group Turbine Technology Co., Ltd., Shaoxing Shangyu Ventilation Fan Co., Ltd., Hunan Liancheng Track Equipment Co., Ltd., Shaoxing Shangyu Shangfeng Ventilation Co., Ltd., Shaoxing Standardization Research Institute. The main drafters of this document. Yang Shuhua, Luo Jianping, Zheng Hua, Dong Mingwei, Xu Honghai, Lin Manxiang, Wang Bin, Wang Hai, Gu Zhongli, Liu Tiehong, Wang Xin, Pan Xuguang, Tong Jianfeng, Lu Miaojun, Liu Junwei, Xu Lanhuan, Hou Zhiquan, Zhao Kaixiang, Li Yuhong, Sun Yongdong.

In the past 10 years, we have not only witnessed a "rapid increase" in the price of fossil fuels, but also gained a better understanding of their service life. As we all know, climate change in recent years is caused by the increasing carbon dioxide content in the atmosphere, which has led many countries to start reviewing Depending on the country's energy production and use methods. For sustained economic growth, we need to improve energy efficiency. This requires users Choosing more efficient equipment also requires equipment manufacturers to design better technical solutions. All types of fans are used in ventilation, air conditioning, process (drying, air conveying, combustion blasting) and agriculture. Facts According to recent calculations, the energy consumption of ventilators has reached nearly 20% of the world's total energy consumption. With the increase in exported equipment, the fan industry has acquired global characteristics. To ensure ventilator performance regulations worldwide To achieve consistency, a series of standards have been developed. Currently, the fan-related industries need a recognized minimum

efficiency standard. In order to promote the standard For effective implementation, this document proposes and adopts an efficiency classification system consisting of a series of efficiency range bands. With the advancement of technology and technology, Step by step, the minimum efficiency level can be reviewed and improved in a timely manner. This document gives the method of classifying efficiency levels. For example, the measured efficiency of a ventilator is 68%, and its efficiency level is FEG71, while In other parts of ISO 12759 documents, the efficiency level of ventilators is divided according to the measured efficiency value of the ventilator is greater than or equal to the efficiency, etc. The level value is determined based on the principle. In order to improve the method of classifying ventilators, we research and carry out related work to rename efficiency classes or reduce the efficiency bandwidth. For example, a ventilator with a measured efficiency of 68% has an efficiency grade of FEG68. GB/T 43080 aims to establish relevant regulations for the efficiency level of ventilators and is intended to be composed of 6 parts.

1 Scope

GB/T 43080.3-2023 is Part 3 of the Chinese series on fan efficiency classification, and covers fans supplied without a drive, rated at maximum operating speed. Fans consume a very large share of industrial and building electricity, and the efficiency quoted for one depends entirely on where the boundary is drawn: a fan sold as a bare impeller and housing, to which the buyer fits their own motor and drive, cannot be compared with a packaged unit unless the classification says so explicitly. The standard sets the basic information, the types of test installation used and the tolerances, and the assessment of the efficiency grade, with a normative annex giving the efficiency classes for fans without a drive unit. It took effect on 1 April 2024.

This document establishes a system for classifying the efficiency levels of various ventilators with rated shaft power of 0.125kW and above. This document only applies to the ventilator itself. This document does not apply to systems with drives or fans.

Note. Legislators or regulators may use this document to determine future energy conservation targets.

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, the dated quotations For undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to this document. ardziedairways)

GB/T 1236-2017 Standardized air duct performance test for industrial ventilators (ISO 5801.2007, IDT)

ISO 13348.2007 Tolerances, conversions and technical data representation methods for industrial fans (Industrialfans-Tolerances,

GB/T 19075-2003 Industrial ventilator vocabulary and category definitions (ISO 13349.1999, IDT)

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 ventilator fan A rotating machine that receives and uses mechanical energy to hold air or other gases with the help of one or more impellers equipped with blades. The fluid flows continuously through the ventilator.

Note. Ventilators are defined according to device type, function, flow path and operating status (see ISO 13349), and their unit mass work generally does not exceed 25kJ/kg.

3.2 fan sizefansize The nominal diameter of the fan impeller.

Note. The unit is millimeters (mm).

3.3 drive device drive The mechanical device that powers a ventilator.