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

GB 19761-2020

Replacing GB 19761-2009

**Minimum allowable values of energy efficiency and energy
efficiency grades for fan**

通风机能效限定值及能效等级

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Foreword

This Standard was drafted as per the rules specified in GB/T 1.1-2009. This Standard replaced GB 19761-2009 Minimum Allowable Values of Energy Efficiency and Energy Efficiency Grades for Fan. Compared with GB 19761-2009, this Standard has the major technical changes as follows besides the editorial modifications.

--- Adjust the scope, changing "air conditioning centrifugal fan" into "centrifugal fan for HVAC, forward multi-blade centrifugal fan"; clearly point out the type of fan products that are not applicable to this Standard (see Clause 1 of this Edition; Clause 1 of 2009 Edition);

--- Add "GB/T 3235 Basic Types Sizes Parameters and Characteristics of Fans" to the normative references (see Clause 2 of this Edition; Clause 2 of 2009 Edition);

--- Modify the definition of "plant" (see

3.2 of this Edition;

3.3 of 2009 Edition);

--- Delete the definition of "energy-saving evaluation value of fan" and "use area"; delete the energy-saving evaluation value of fan (see 3.2,

4.5 of 2009 Edition);

--- Modify the relevant content of "Basic Requirements" (see

5.1 of this Edition;

4.1 of 2009 Edition);

--- Modify the energy efficiency grades of the double suction centrifugal fan, centrifugal fan for HVAC, axial flow fan and ordinary motor direct drive fan (see Clause 4 and Table 1~Table 4 of this Edition;

4.3 and Table 1~Table 4 of 2009 Edition);

--- Modify the value range of "pressure coefficient ψ " in the related table of fan energy efficiency grade (see Table 1, Table 2, Table 4 of 2009 Edition);

1 Scope

GB 19761-2020 is the Chinese national standard on minimum allowable values of energy efficiency and energy efficiency grades for fan, 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 May 2020 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 June 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 energy efficiency grade, minimum allowable values of energy efficiency, test methods and technical requirements of the fan. This Standard is applicable to general-purpose centrifugal fans, general-purpose axial flow fans, centrifugal induced draft fans for industrial boilers, centrifugal fans for boiler of power station, axial flow fans for power station, centrifugal fans for HVAC, and forward multi-blade centrifugal Fan. This Standard is not applicable to duct fans for air conditioning, box fans, unhooded centrifugal fan, and fans with other uses and special structure.

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) are applicable to this document.

GB/T 1236 Industrial Fan - Performance Testing Using Standardized Airways

GB/T 3235 Basic Types Sizes Parameters and Characteristics of Fans

GB/T 10178 Industrial Fans-Performance Testing in Situ

JB/T 2977 Technical Terms for Industry Fans, Turbo-Blowers and Compressors

JB/T 4357 Centrifugal ID-Fan for Industry Boiler

JB/T 4358 Centrifugal Fan for Boiler of Power Station

JB/T 4362 Power Station Axial Fans

JB/T 7221 Centrifugal Fan for Heating Ventilation and Air Conditioner

JB/T 9068 Forward Curved Centrifugal Fan

JB/T 10562 Technical Specification for General Purposes Axial Fans

JB/T 10563 Technical Specification for General Purposes Centrifugal Fans

3 Terms and Definitions

For the purpose of this document, the terms and definitions given in GB/T 1236, GB/T 3235, JB/T 2977 and the following apply.

3.1 Minimum allowable values of energy efficiency for fan Under the test conditions specified in the standard, the minimum guaranteed value of the fan's efficiency is allowed.

3.2 Plant Device composed of driving machine and fan.

4 Energy Efficiency Grade

The energy efficiency grade of the fan is divided into three grades, of which the energy efficiency of Grade-1 is the highest, and the energy efficiency of Grade-3 is the lowest. The regulations are as follows:

5 Technical Requirements

5.1 Basic requirements The design, manufacture and quality of fan products shall conform to the provisions of JB/T 10562, JB/T 10563, JB/T 4357, JB/T 4358, JB/T 4362, JB/T 7221, JB/T 9068.

5.2 Calculation of fan efficiency, pressure coefficient and specific speed

5.2.1 Calculation of fan efficiency The calculation of fan efficiency can refer to Formula (1).

5.2.2 Calculation of fan plant efficiency The calculation of fan plant efficiency can refer to Formula (3).

5.2.3 Calculation of ordinary motor direct drive fan efficiency The calculation of ordinary motor direct drive fan efficiency can refer to Formula (4).

5.2.4 Calculation of pressure coefficient The calculation of pressure coefficient can refer to Formula (5).

5.2.5 Calculation of specific speed The calculation of specific speed can refer to Formulas (6) and (7).

5.3 Minimum allowable values of energy efficiency for fan Use full-size fans to perform performance tests; and take the highest plant efficiency in the stable working area as the

evaluation value of the energy efficiency grade. The minimum allowable values of energy efficiency fan are as follows:

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