

ICS 27.010
CCS F 01



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

GB 20053-2015

**Minimum allowable values of energy efficiency and energy
efficiency grades for ballasts of metal-halide lamps**

(English Translation)

Issued on: December 10, 2015

Implemented on: January 1, 2017

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine**

Table of Contents

Foreword...	3
1 Scope...	5
2 Normative References...	5
3 Terms and Definitions...	6
4 Technical Requirements...	6
5 Testing Methods...	7
6 Inspection Rules...	12

Foreword

In this Standard, 4.3 is mandatory; the remaining clauses are recommended.

This Standard was drafted in accordance with the rules in GB/T 1.1-2009.

This Standard serves as a replacement of GB 20053-2006 The Minimum Allowable Values of Energy Efficiency and the Energy Efficiency Grades for Ballast of Metal-halide Lamps. In comparison with GB 20053-2006, apart from editorial modifications, there are several main technical changes as follows:

---The scope of application adds: 20 W ~ 150 W ballasts of metal-halide lamps (see Chapter 2);

---Energy efficiency evaluation index is modified from the previous "ballast energy efficiency factor" into "ballast efficiency", which is stipulated by the existing international standards (see 4.2);

---The valuing method of energy efficiency grades of nominal power lamps that are not listed in the table is stipulated (see 4.2);

---In terms of ballasts equipped with automatic control, the evaluation index of standby power consumption is added (see 4.5);

---The testing method and energy efficiency calculation method of electronic ballasts are added (see 5.3).

This Standard was proposed by Department of Resource Conservation and

Environmental Protection of National Development and Reform Commission;
Department of Energy Conservation and Comprehensive Utilization of Ministry of
Industry and Information Technology.

This Standard shall be under the jurisdiction of National Technical Committee 20 on
Energy Fundamentals and Management of Standardization Administration of China
(SAC/TC 20).

The drafting organizations of this Standard: China National Institute of Standardization;
OSRAM Opto Semiconductors; National Electric Light Source Quality Supervision and
Inspection Center (Shanghai); Philips (China) Investment Co., Ltd.; Foshan Huaquan
Electrical Lighting Co., Ltd.; Jiangsu Yaships Lighting Group; Wuhu Fuda Technology
Limited Company; Shanghai Yaming Lighting Co., Ltd.; National Center for Quality
Inspection & Supervision of LED Product (Jiangsu); Shanghai SHIDAIZHIGUANG
Lighting Appliance Testing Co., Ltd.

1 Scope

This Standard specifies the energy efficiency grades, minimum allowable values of
energy efficiency, evaluating values of energy conservation, testing methods and
inspection rules for ballasts of metal-halide lamps (hereinafter referred to as: ballasts).

This Standard is applicable to freestanding, built-in inductors and electronic ballasts
under the rated voltage: 220 V, frequency: 50 Hz AC power, nominal power: 20 W ~
1,500 W.

2 Normative References

The following documents are indispensable to the application of this document. In
terms of references with a specified date, only versions with a specified date are
applicable to this document. In terms of references without a specified date, the latest
version (including all the modifications) is applicable to this document.

GB/T 2829 Sampling Procedures and Tables for Periodic Inspection by Attributes
(apply to inspection of process stability)

GB/T 15042 Auxiliaries for Lamps - Ballasts for Discharge Lamps (excluding tubular

fluorescent lamps) - Performance Requirements

GB 17625.1 Electromagnetic Compatibility - Limits - Limits for Harmonic Current

Emissions (equipment input current ≤ 16 A)

GB 17743 Limits and Methods of Measurement of Radio Disturbance Characteristics of Electrical Lighting and Similar Equipment

GB 19510.10 Lamp Control Gear - Part 10: Particular Requirements for Ballasts for Discharge Lamps (excluding fluorescent lamps) (GB 19510.10-2009, IEC 61347-2-9:2003, IDT)

GB 19510.13 Lamp Control Gear - Part 13: Particular Requirements for DC or AC Supplied Electronic Ballasts for Discharge Lamps (excluding fluorescent lamps) (GB 19510.13-2007, IEC 61347-2-12:2005, IDT)

GB/T 26697 Low-frequency Square Wave Electronic Ballasts for Metal Halide Lamps

QB/T 2511 Single-ended Metal Halide Lamps (Sc13-NaI series) with LC Peak Lead Ballasts - Performance Requirements

QB/T 2878 Auxiliaries for Lamps - DC or AC Supplied Electronic Ballasts for Discharge Lamps (excluding fluorescent lamps) - Performance Requirements

3 Terms and Definitions

The following terms and definitions are applicable to this document.

3.1 Minimum Allowable Values of Energy Efficiency for Ballasts

Minimum allowable values of energy efficiency for ballasts refers to the lowest allowable value that the efficiency of ballasts shall reach under the test conditions stipulated in the Standard.

3.2 Evaluating Values of Energy Conservation for Ballasts

Evaluating values of energy conservation for ballasts refers to the lowest allowable value that the efficiency of energy-conserving ballasts shall reach under the test conditions stipulated in the Standard.

3.3 Standby Power

Standby power refers to the average power consumed by ballasts when lamps and ballasts in the circuit are under the normal state, and lamps are turned off through the control port in terms of electronic ballasts equipped with the control function.

4.1 Basic Requirements

The safety of ballasts, to which, this Standard is applicable, shall respectively comply with the requirements in GB 19510.10 or GB 19510.13. Electromagnetic compatibility and radio disturbance characteristics shall comply with the stipulations in GB 17625.1 and GB 17743. The performance of inductive ballasts shall comply with the requirements in GB/T 15042 or QB/T 2511. The performance of electronic ballasts shall comply with the requirements in GB/T 26697 and QB/T 2878.

4.2 Energy Efficiency Grades

Energy efficiency of ballasts can be divided into 3 grades. Grade-1 signifies the highest energy efficiency. The various grades of energy efficiency shall not be lower than what is stipulated in Table 1. In terms of ballasts whose nominal power is not listed in the Table, the various grades of energy efficiency may be determined through linear interpolation method.

5.4.2 Test requirements

The output circuit of ballast shall connect with lamp.

The power meter shall connect the input end of electronic ballast to measure the standby power consumption of the electric ballast.

If the ballast has other control functions, other extra functions shall be shut down during the test.

When the temperature of the electronic ballast reaches a stable state, the standby power consumption shall be recorded.

If the standby power consumption is not a stable value during the test, weighted average value within an appropriate period shall be adopted in the calculation.