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

GB/T 12085.22-2022

Replaces GB/T 12085.10-2010, GB/T 12085.13-2010, GB/T 12085.15-2010, GB/T 12085.16-2010, GB/T 12085.19-2011

**Optics and photonics - Environmental test methods - Part 22:
Combined cold, dry heat or temperature change with bump or
random vibration**

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foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for Standardization Work Part 1. Structure and Drafting Rules of Standardization Documents" drafted.

This document is part 22 of GB/T 12085 "Environmental test methods for optics and photonics". GB/T 12085 has been released to the next part.

- Part 1. Terminology, test scope;
- Part 2. Low temperature, high temperature, damp heat;
- Part 3. Mechanical forces;
- Part 4. Salt spray;
- Part 6. Sand and dust;
- Part 7. Dripping water and rain;
- Part 8. High internal pressure, low internal pressure, immersion;
- Part 9. Solar radiation and weathering;
- Part 11. Mildew;
- Part 12. Pollution;
- Part 14. Dew, frost, ice;
- Part 17. Comprehensive test of pollution and solar radiation;
- Part 20. Moist air containing sulfur dioxide and hydrogen sulfide;

--- Part 22.Comprehensive test of low temperature, high temperature or temperature change and impact or random vibration;

--- Part 23.Comprehensive test of low pressure and low temperature, atmospheric temperature, high temperature or damp heat.

This document replaces GB/T 12085.10-2010 "Environmental test methods for optical and optical instruments - Part 10.Vibration (sinusoidal) and

High temperature and low temperature comprehensive test", GB/T 12085.13-2010 "Environmental test methods for optical and optical instruments - Part 13.Impact, touch

Impact or free fall and high temperature and low temperature comprehensive test", GB/T 12085.15-2010 "Environmental test methods for optics and optical instruments No. 15

Part. Broadband Random Vibration (Digital Control) and High Temperature and Low Temperature Comprehensive Test, GB/T 12085.16-2010 "Optics and Optical Instrument Rings"

Environmental test method Part 16.Bounce or constant acceleration and high temperature, low temperature comprehensive test, GB/T 12085.19-2011 "Optics and Optical

Instrument Environmental Test Methods Part 19.Temperature Periodic and Sinusoidal Vibration, Random Vibration Comprehensive Test. and GB/T 12085.10-

2010, GB/T 12085.13-2010, GB/T 12085.15-2010, GB/T 12085.16-2010 and GB/T 12085.19-2011

In contrast, except for structural adjustments and editorial changes, the main technical changes are as follows.

--- Change "optical instruments" in the full text to "optical and photonics instruments";

--- Changed the applicable limits of "scope" (see Chapter 1, GB/T 12085.10-2010, GB/T 12085.13-2010,

Chapter 1 of GB/T 12085.15-2010, GB/T 12085.16-2010, GB/T 12085.19-2011);

--- Increased test conditions (see Chapter 4);

--- Added conditional test method 22 (see 5.2);

--- Changed the content of the environmental test mark (see Chapter 7, GB/T 12085.10-2010, GB/T 12085.13-2010,

Chapter 6 of GB/T 12085.15-2010, GB/T 12085.16-2010, GB/T 12085.19-2011).

---The GB/T 12085.10-2010, GB/T 12085.13-2010, GB/T 12085.15-2010, GB/T 12085.16-

In.2010, the relevant content of the table in GB/T 12085.19-2011 was integrated into Table 1, and the content of Table 1 was rewritten

(See 5.2, Table 1~ Table 4 of GB/T 12085.10-2010, Table 1~ Table 6 of GB/T 12085.13-2010,

Table 1~Table 6 of GB/T 12085.15-2010, Table 1~Table 4 of GB/T 12085.16-2010, GB/T 12085.19-

Table 1~Table 7 of.2011);

--- Deleted Condition Test Methods 53~55, Condition Test Methods 57~60, Condition Test Methods 61~62, Condition Test Methods

64~69, Conditional test method 70~71 (see GB/T 12085.19-2011 edition, GB/T 12085.16-2010 edition,

GB/T 12085.10-2010 edition, GB/T 12085.13-2010 edition, Chapter 4 of GB/T 12085.15-2010 edition);

--- Added test items and expressions related to temperature changes (see Chapter 5).

This document is modified using ISO 9022-22.2012 "Environmental test methods for optics and photonics - Part 22.Low temperature, high temperature or temperature

Variation and Crash or Random Vibration Comprehensive Tests.

Compared with ISO 9022-22.2012, this document has the following structural adjustments.

--- In order to avoid overhanging segments, A.1 has been added, and the number of subsequent articles is extended.

The technical differences between this document and ISO 9022-22.2012 and their reasons are as follows.

--- Change "optical instrument" in the full text to "optical and photonics instrument" to meet the requirements of the application field of the optical industry;

--- Replaced ISO 9022-1 (see Chapter 3, Chapter 7) with the normative reference GB/T 12085.1, GB/T 12085.2 replaced

ISO 9022-2 (see Chapter 4, 5.2, 6.3), GB/T 12085.3 replaces ISO 9022-3 (see Chapter 4, 5.2),

GB/T 2423.43 replaces IEC 60068-2-47 (see Chapter 4), GB/T 2423.56 replaces IEC 60068-2-64 (see Chapter 4)

5.1), in order to adapt to the technical conditions of our country and improve the operability;

--- Changed "gn" to "g" (see Chapter 4, 5.2) to conform to the geographical latitude of our country;

--- Changed "The value of g is rounded to the next highest number, such as 10m/s²." to "In this document, the value of acceleration g is rounded to an integer of 10m/s²."

(see Chapter 4), in line with the geographical location of our country.

The following editorial changes have been made to this document.

--- In Chapter 7, ISO 9022 is replaced by GB/T 12085 (all parts) cited for information.

Please note that some content of this document may be patented. The issuing agency of this document assumes no responsibility for identifying patents.

Introduction

Optical and photonic instruments are widely used in various fields of national economy and international science and technology, due to the very complex environmental conditions of their use and transportation.

There are various environmental conditions, such as physical, chemical, biological, climatic and electrical, which will make optical and photonic instruments

The performance of the device has changed and it cannot function properly.

In view of the above reasons, in order to ensure the quality of optical and photonics instrument products, it is necessary to simulate a variety of complex changes in environmental conditions.

It is necessary to conduct tests on optical and photonics instrument products to assess their ability to withstand harsh environmental conditions, so GB/T 12085 includes test conditions,

Conditional tests, test procedures, environmental test markings, etc. At the same time, since there are many environmental conditions and they belong to different types, in order to facilitate the

For the implementation of the standard, GB/T 12085 is to be divided into 15 parts according to the type of environmental conditions.

--- Part 1. Terminology, test scope. The purpose is to unify the terms and definitions of environmental test methods, test procedures and environmental tests mark.

--- Part 2. Low temperature, high temperature, damp heat. The purpose is to study the optical, climatic, mechanical, chemical and electrical (including electrostatic) of the sample

The degree to which properties such as these are affected by temperature and humidity.

--- Part 3. Mechanical forces. The purpose is to study the optical, climatic, mechanical, chemical and electrical (including electrostatic) properties of the sample.

The degree to which sexuality is affected by mechanical forces.