

ICS 19.040



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

GB/T 2423.21-2025

**Environmental testing - Part 2: Test methods - Test M: Low air
pressure**

(English Translation)

Issued on: August 1, 2025

Implemented on: February 1, 2026

Issued by: State Administration for Market Regulation

Table of Contents

Foreword...	3
Introduction...	5
1 Scope...	6
2 Normative references...	6
3 Terms and definitions...	6
4 Test description...	7
4.1 General...	7
4.2 Description of test equipment...	7
5 Test procedures...	7
5.1 Severity level...	7
5.2 Preprocessing...	8
5.3 Initial inspection...	8
5.4 Conditional test...	9
5.5 Recovery...	9
5.6 Final testing...	9
6 Information provided by relevant standards...	9
7 Information provided in the test report...	10
Annex A (informative) Guidelines for selecting test duration...	12
Annex NA (informative) Parts of GB/T 2423...	13
Bibliography...	17

1 Scope

This document describes the test methods for subjecting test specimens to low-pressure conditions during storage, transportation, or use.

The purpose of the low-pressure test is to determine the suitability of components, subassemblies, or equipment for storage, transportation, or operation under low- pressure conditions.

For components, subassemblies, or equipment that are subjected to a combined environment of high/low temperatures and low air pressure during storage, transportation, or operation, testing shall be conducted in accordance with IEC 60068-

2-39 when the combined environmental effects significantly influence the stresses applied

to the product or its failure mechanisms.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC60068-1, Environmental testing -- Part1.General and guidance

NOTE: GB/T 2421-2020, Environmental testing -- General and guidance (IEC 60068-1:2013, IDT)

3 Terms and definitions

This document contains no terms or definitions requiring definition.

The URLs for the terminology databases for standardization maintained by ISO and IEC are as follows.

4.1 General

Place the test specimen into the test chamber. Reduce the internal air pressure to the value specified in the relevant standard.

The air pressure conditions remain unchanged for the specified duration.

4.2 Description of test equipment

The test chamber shall be capable of maintaining the atmospheric pressure conditions specified in Chapter 5.

When restoring air pressure to normal levels, care shall be taken to avoid contamination inside the enclosure caused by auxiliary equipment, devices, and the inflation process.

When testing heat-dissipating test specimens, relevant specifications may stipulate appropriate requirements for the test chamber based on Test Bd or Test Be of IEC 60068-2-2.

5.1.1 General

Relevant specifications shall specify the severity levels for air pressure and test duration.

The values shall preferably be selected from the provisions of 5.1.2 and 5.1.3.

5.1.2 Air pressure

Relevant specifications shall specify the test pressure, which shall preferably be selected from Table 1. Based on standard atmospheric pressure, additional pressure values can be found in ISO 2533.

5.4 Conditional test

The test chamber shall be capable of maintaining the air pressure specified in Table 1 or relevant standards. The tolerance shall be $\pm 5\%$ or ± 0.1 kPa, whichever is greater. For a severity level of 84 kPa, the tolerance shall be ± 2 kPa.

At the start of the test and throughout the entire test process, the temperature inside the test chamber shall be within the range required by the standard atmospheric conditions for testing specified in IEC 60068-1.

The test specimens shall be placed in the test chamber in accordance with the orientation, configuration, and operating conditions specified in the relevant standards.

The air pressure within the test chamber shall be reduced to a value consistent with the severity level. Where necessary, relevant specifications may stipulate that the rate of pressure change shall not exceed 15 kPa/min.

If required by the relevant specifications, test specimens shall be operated and/or run in accordance with the procedures prescribed therein. For heat-dissipating test specimens, the relevant specifications may require that they attain thermal stability prior to the performance of any functional checks and/or measurements.

If required by relevant standards, intermediate inspections shall be conducted.

The air pressure shall be maintained stable throughout the specified test duration.

Upon completion of the test duration, the air pressure shall be restored to normal. If required by relevant specifications, the rate of pressure change shall not exceed 15 kPa/min.

5.5 Recovery

Unless otherwise specified in the relevant standards, test specimens shall be conditioned under standard atmospheric conditions for a period of not less than 1 h but not more than 2 h prior to final testing.

5.6 Final testing

In accordance with the requirements of relevant standards, the test specimens shall undergo visual inspection, as well as electrical and mechanical testing.

6 Information provided by relevant standards

When relevant standards include this test, the following details shall be provided, where applicable.

- a) Test type;
- b) Preprocessing;
- c) Initial inspection;
- d) Condition of the test specimen during the conditioning test;
- e) Orientation of the test specimen;
- f) Severity level. test air pressure and duration;
- g) Specification of the rate of change of air pressure;
- h) Inspections and/or loads during the conditioning test;
- i) Recovery;
- j) Final inspection.

7 Information provided in the test report

The test report shall include at least the following information.

- a) Client (name and address);
- b) Laboratory (name and address; if applicable, including accreditation details);
- c) Date of test;
- d) Test type (M);
- e) Purpose of test (development, qualification, etc.);
- f) Test standard number and version (GB/T 2423.21-2025);
- g) Relevant laboratory test procedures (number and version number);
- h) Description of test specimens (unique identification, drawings, photographs, quantity, structural condition, etc.);
- i) Identification of the test chamber (manufacturer, model, unique identification, etc.);
- j) Performance of test equipment (set temperature control, airflow, etc.);
- k) Uncertainty of the measurement system;

.....