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

GB/T 2424.15-2008

Replacing GB/T 2424.15-1992

**Environmental testing -- Guide for combined temperature/low
air pressure tests
(English Translation)**

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GB/T 2424.15-2008/IEC 60068-3-2.

Foreword

GB/T 2424 contains the following sections.

--- GB/T 2424.1 electric and electronic products environmental testing high temperature and low temperature tests

--- GB/T 2424.2 electric and electronic products environmental testing for damp heat tests

--- GB/T 2424.5 electric and electronic products environmental testing to confirm performance of temperature chambers

--- GB/T 2424.6 electric and electronic products environmental testing temperature/humidity chamber performance confirmed

--- GB/T 2424.7 electric and electronic products environmental testing test A and B (with load) measure the temperature of the chamber

--- GB/T 2424.10 electric and electronic products environmental testing procedures for atmospheric corrosion accelerated testing of common guidelines

--- GB/T 2424.13 Environmental testing for electric and electronic products Part 2. Test methods for temperature change Test Guidelines

--- GB/T 2424.14 Environmental testing for electric and electronic products Part II. Test methods for solar radiation testing

--- GB/T 2424.15 Environmental testing for electric and electronic products - Part 3. temperature/low air pressure tests Guide

--- GB/T 2424.17 Environmental testing for electric and electronic products soldering Test Guidelines

--- Environmental Test Guidelines GB/T 2424.19 electric and electronic products

environmental testing simulated the effects of storage

--- GB/T 2424.22 electric and electronic products environmental testing procedures for temperature (cold and heat) and vibration (sinusoidal) test Test guidelines

--- GB/T 2424.25 Environmental testing for electric and electronic products - Part 3. Test methods for seismic test guidelines

--- GB/T 2424.26 Environmental testing for electric and electronic products - Part 3. Supporting documentation and guidance vibration test selection this section GB/T 2424 Part 15. This section identical with IEC 60068-3-2. 1976 "Basic environmental testing procedures Part 3. Background information - Section 2. temperature/low air pressure tests "(in English).

According to GB/T 1.1-2000 "Standardization Guide Part 1. Structure and rules are written standard" requirements for formatting into the following editorial changes.

--- Remove the new international standards and national standards foreword;

--- Increasing the normative references;

--- "Edition" to "this Part";

--- To modify the pressure unit mbar kPa.

This Part replaces GB/T 2424.15-1992 "electric and electronic products environmental testing procedures for temperature/low air pressure tests guide then".

This section compared with the GB/T 2424.15-1992 main changes are as follows.

--- Adjust the structure of the chapters to make it consistent with the IEC in its original structure;

--- Modify the standard conditions 3.1 (35 °C and 101.3kPa) to (25 °C and 101.3kPa);

--- Viscosity into absolute viscosity;

--- Deleted "NOTE. For professional electrician products, especially voltage above 1000V electrical products, the Department amended its environmental conditions Number accordance with relevant standards. "(1992 version 4.1.2).

This part of the National Electrical and Electronic Products Environmental conditions and environmental tests Standards Technical Committee (SAC/TC8) and focal points.

This section is drafted. Guangzhou Electric Apparatus Research Institute, Guangzhou CVC Testing Institute, Chongqing Sida Test Equipment Co., Ltd.

1.1 Scope

Temperature/low air pressure tests of this GB/T 2424 regulations, involving a series of ground or aerial application of air pressure.

This section does not apply to the pressure less than 1kPa tests.

1.2 Normative references

The following documents contain provisions which, through reference to GB/T 2424 to the present, constitute provisions of this section. For dated reference documents Member, subsequent amendments (excluding corrections) or revisions do not apply to this section, however, encouraged to reach an agreement in accordance with this section Whether the parties can study the latest versions of these documents. For undated reference documents, the latest versions apply to this section.

GB/T 2424.1-2005 Environmental testing for electric and electronic products of high temperature and low temperature tests (IEC 60068-3-1. 1974, IDT)

2 General Description

Air density within the range specified in this part, the mean free path of air molecules is always tenths of a millimeter, and thus thermal conductivity and air Absolute viscosity were nothing to do with pressure. Air flow are generally stagnant or turbulent flow pattern type, subject to the various laws atmospheric pressure.

Free air convection and forced air convection heat transfer of these two basic rules of normal atmospheric pressure and at the same. therefore, GB/T 2424.1 requirements for the convection terms also apply to (at least under normal circumstances applicable) low air pressure tests.

Air density ρ decreases greatly reduce air convection heat transfer coefficient α_{phac} , is ρ Like function, whether it is free or forced convection Convection, like 0.5 to 0.7.

Pressure within the scope of this provision, the test under conditions of forced air flow than the surface of the sample temperature under "free air" conditions greatly Decrease in air temperature and cooling conditions remain unchanged, the average surface temperature of the test sample with the air flow rate and pressure changes as a graph 1 shown in FIG.

Therefore, the test method specified cooling test samples using "free air" conditions (no forced air circulation), or a lower air Flow rates to achieve additional cooling air flow could be ignored.

α_{phac} with decreasing air density decreases, the heat radiation will become important, especially at low air pressure.

Under low pressure conditions, we should pay attention to the effects of radiation, should pay attention to controlling the transmission rate and the temperature of the wall box walls of the box.

Due to thermal radiation at low air pressure increases, the same test chamber each other between the thermal radiation heat test samples may be very Great, that affect test reproducibility.

To avoid the reproducibility of the test chamber affect the test only once installed a heat test sample tests.

Test cooling test samples used in "free air" chamber size requirements based on the graph of atmospheric pressure used, because the average molecular Free path with respect to the size of the chamber is a very small value.

GB/T 2424.15-2008/IEC 60068-3-2. 1976