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

GB/T 10588-2006

Replacing GB/T 10588-1989

Specifications for mould growth testing chambers

长霉试验箱技术条件

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Foreword

This standard is one of the series of specifications for environmental testing equipment. The series is made up of GB/T 10586-2006 damp heat test chambers, GB/T 10587-2006 salt mist test chambers, GB/T 10588-2006 mould growth test chambers, GB/T 10589-1989 low temperature chambers, GB/T 10590-2006 high and low temperature / low air pressure test chambers, GB/T 10591-1989 high temperature / low air pressure test chambers, GB/T 10592-1989 high and low temperature test chambers and GB/T 11158-2006 high temperature test chambers.

From the date of its implementation this standard replaces GB/T 10588-1989 Specifications for mould growth testing chambers.

The main changes with respect to GB/T 10588-1989 are the following: a) a clause on terms and definitions has been added, taking its content from the relevant parts of IEC 60068-3-5 and IEC 60068-3-6; b) the concept of temperature fluctuation has been brought into line with IEC 60068-3-5 and the requirement changed to 1 degree C (see 5.1.3); c) the recording of temperature data has been brought into line with IEC 60068-3-5 and changed to one reading per minute (see 6.3); d) the range of ambient atmospheric pressure among the conditions of use has been widened (4.1); e) requirements have been placed on the quality of the cooling water (4.3 a)); f) phase-failure protection of the supply has been changed to over-current protection (see 5.3.3); g) a requirement for electrical insulation strength has been added (see 5.3.1); h) the testing of temperature and humidity performance is now carried out under no-load conditions (see 6.2.2); i) information on the method of evaluating the uncertainty of measurement of temperature deviation and on its application has been added (see Annex B).

Annex A and Annex B of this standard are informative.

This standard was proposed by the China Machinery Industry Federation and is under the jurisdiction of the Institute of Comprehensive Technical and Economic Research on Instruments of the Machinery Industry.

The standard was issued on 3 April 2006 and has been in force since 1 October 2006.

1 Scope

China's national specification for the mould growth testing chambers used to run fungus tests on electrical and electronic products, on components and on materials. Mould is one of the quiet destroyers of equipment sent into a warm and humid climate: the fungi feed on the organic constituents of coatings, insulation, adhesives and plastics, they creep across insulating surfaces and open leakage paths, and they hold moisture against metal long after the air has dried, so a cabinet that was never wetted comes back corroded and electrically unsound. Testing for it means holding a chamber at 29 degrees C and above 90 per cent relative humidity for weeks on end, which is a harder thing to build than it sounds, because the organisms will only grow inside a narrow band of conditions and a single night of drift spoils a month of work. The standard therefore fixes what the chamber must achieve - the test temperature and its tolerance, the temperature gradient and fluctuation, the humidity floor and the air speed over the specimens - and then the construction that makes those figures repeatable: corrosion-resistant internal walls that can be cleaned, condensate drained away rather than left to drip on the samples and never reused for humidification, heaters whose radiant heat does not fall on the specimen, an observation window with lighting, and reliable sealing of door, ducts and refrigeration circuit. Safety gets its own clause, since the machine combines mains voltage with saturated air: insulation resistance hot and cold, a proper protective earth, over-temperature and over-current protection with alarms, and a noise limit. The test methods that follow say how each figure is verified, down

to the position and the number of the measuring points inside the working space and the instruments allowed to read them, so that two laboratories testing the same chamber reach the same verdict. It replaces GB/T 10588-1989 and belongs to the series of specifications for environmental test equipment that also covers damp heat, salt mist, high and low temperature and low air pressure chambers.

This standard specifies the terms and definitions, the conditions of use, the technical requirements, the test methods, the inspection rules and the marking, packaging and storage of mould growth testing chambers (hereinafter referred to as test chambers).

This standard applies to test chambers used to carry out mould growth tests on electrical and electronic products, on other products, on parts and components and on materials.

2 Normative references

The provisions of the following documents become provisions of this standard through reference in it. For dated references, subsequent amendments (excluding corrections) or revisions do not apply to this standard; however, the parties to agreements based on this standard are encouraged to investigate whether the most recent editions may be applied. For undated references, the latest edition applies.

GB/T 191-2000 Packaging - Pictorial marking for handling of goods (eqv ISO 780:1997)

GB/T 6999-1986 Relative humidity conversion tables for environmental testing

GB/T 14048.1-2000 Low-voltage switchgear and controlgear - General rules (eqv IEC 60947-1:1999)

JB/T 9512-1999 Climatic environmental testing equipment and test chambers - Determination of the noise sound power level

JJF 1059-1999 Evaluation and expression of uncertainty in measurement

3 Terms and definitions

The following terms and definitions apply to this standard.

3.1 test chamber - an enclosed cabinet or space, some part of which is able to satisfy the specified test conditions.

3.2 temperature setpoint - the desired temperature set by means of the control device of the test chamber.

3.3 achieved temperature - after stabilization, the temperature at any point within the working space of the test chamber.

3.4 temperature stabilization - the condition in which the temperature at every point in the working space has reached the temperature setpoint and is held within the given tolerance.

3.5 temperature fluctuation - after stabilization, the difference between the highest and the lowest temperature reached at any one point of the working space within a given time interval.

3.6 working space - the part of the test chamber within which the specified conditions can be maintained inside the specified tolerances.

3.7 temperature gradient - after stabilization, the greatest of the differences between the mean temperatures of any two points of the working space over any time interval.

3.8 temperature rate of change - the rate of transition between two given temperatures, measured at the centre of the working space and expressed in degrees C per minute.

3.9 temperature variation in space - after stabilization, the difference, over any time interval, between the mean temperature at the centre of the working space and the mean temperature at each of the other points of the working space.

3.10 temperature extremes - after stabilization, the highest and the lowest temperatures measured within the working space.

3.11 saturation vapour pressure - at constant temperature, the water vapour pressure at which the moisture content of a given volume of air can no longer be increased.

3.12 partial vapour pressure - at constant temperature, that part of the atmospheric pressure of a given volume of air which is due to water vapour.

3.13 relative humidity (RH) - at constant temperature, the ratio of the partial vapour pressure to the saturation vapour pressure in a given volume of air, expressed as a percentage. NOTE: relative humidity is the most usual way of expressing the water vapour content of air.

3.14 humidity stabilization - the condition in which the humidity at every point of the working space has reached the humidity setpoint and is held within the given tolerance.

3.15 achieved humidity - after stabilization, the humidity at any point within the working space of the test chamber.

4.1 Ambient conditions

a) temperature: 15 degrees C to 35 degrees C; b) relative humidity: not greater than 85 per cent; c) atmospheric pressure: 80 kPa to 106 kPa; d) no severe vibration in the surroundings; e) no direct sunlight and no direct radiation from other heat sources; f) no strong air currents in the surroundings - where the surrounding air has to be moved by forced circulation, the air stream shall not blow directly onto the chamber body; g) no influence from strong electromagnetic fields; h) no high concentration of dust and no corrosive substances in the surroundings.