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

GB/T 10587-2006

Replacing GB/T 10587-1989

Specifications for salt mist testing chambers

盐雾试验箱技术条件

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Foreword

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

From the date on which it takes effect this standard replaces GB/T 10587-1989 "Specifications for salt mist testing chambers".

The main changes with respect to GB/T 10587-1989 are: a) a chapter "Terms and definitions" has been added, taking its content from the relevant parts of IEC 60068-3-5 and IEC 60068-3-6; b) following the concept of temperature fluctuation in IEC 60068-3-5, the temperature fluctuation figure has been changed to 1 degree C (see 5.1.2); c) following the temperature data recording requirement of IEC 60068-3-5, the data are now recorded once a minute (see 6.3); d) the range of atmospheric pressure among the conditions of use has been widened (4.1); e) the requirements for the test load conditions have been modified (4.3); f) the structural requirements for the salt mist chamber have been supplemented; g) the number and the position of the test points inside the working chamber have been adjusted in line with GB/T 5170.8; h) a requirement for electrical insulation strength has been added (see 5.3.1); i) the testing of the temperature and of the salt mist deposition rate is now carried out under no-load conditions (see 6.2.2); j) information has been added on the method for evaluating the uncertainty of the temperature deviation measurement and on its application (see Annex B).

Annex A and Annex B of this standard are informative annexes.

This standard was proposed by the China Machinery Industry Federation and is under the administration of the Instrument and Meter Comprehensive Technical and Economic Research Institute of the machinery industry.

1 Scope

China's national specification for the salt mist chambers used to test how well a product resists corrosion. A salt spray cabinet is the workhorse of any corrosion laboratory: it holds a fine, dense mist of salt solution at a controlled temperature so that coatings, platings, connectors, fasteners and whole assemblies can be aged in days instead of years. The catch is that the result of a salt mist test is only worth anything if the chamber itself behaves the same way everywhere inside it and from one laboratory to the next, and that is what this document fixes. It sets the terms and definitions, the conditions under which the chamber may be operated, the performance the chamber must reach, the methods for measuring that performance, the inspection rules and the requirements for marking, packaging and storage. The performance figures it fixes are the ones that decide whether two laboratories will agree: a test temperature of 35 degrees C with a tolerance of 2 degrees C, a temperature fluctuation of no more than 1 degree C, a temperature gradient of no more than 2 degrees C, and a salt mist deposition rate between 1.0 and 2.0 mL per hour per 80 square centimetres. It applies to the chambers used for salt mist testing of electrical and electronic products, other products, components and materials, and it is one of a family of Chinese standards covering environmental test equipment.

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 salt mist testing chambers (hereinafter referred to as "the chamber").

This standard applies to the testing chambers used to carry out salt mist tests on electrical and electronic products and on other products, components and materials.

2 Normative references

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

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

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: a closed cabinet or space, some part of which is able to meet the specified test conditions.

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

3.3 achieved temperature: after stabilisation, the temperature at any one point inside the working space of the chamber.

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

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

3.6 working space: the part of the chamber within which the specified conditions can be held inside the specified tolerances.

3.7 temperature gradient: after stabilisation, the largest of the differences between the mean temperatures of any two points of the working space within any interval of time.

3.8 temperature variation in space: after stabilisation, the difference between the mean temperature at the centre of the working space and the mean temperature at the other

points of the working space, within any interval of time.

3.9 temperature extremes: after stabilisation, the highest and the lowest temperatures measured inside the working space.

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

4.1 Environmental 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 strong vibration in the surroundings; e) no direct sunlight and no direct radiation from other cold or hot sources; f) no strong air currents in the surroundings, and where the surrounding air has to be moved by force the air stream shall not blow directly onto the cabinet; g) no strong electromagnetic fields in the surroundings; h) no high concentration of dust and no corrosive substances in the surroundings.

4.2 Power supply conditions

a) voltage: 220 V with a tolerance of 22 V, or 380 V with a tolerance of 38 V; b) frequency: 50 Hz with a tolerance of 0.5 Hz.

4.3 Test load conditions

The load of the chamber shall meet all of the following conditions at the same time: a) the total mass of the load placed in each cubic metre of the working chamber volume shall not exceed 80 kg; b) the total volume of the load shall not be greater than one fifth of the volume of the working chamber; c) the loads shall not touch one another, and the distance between them shall be such that it does not prevent the salt mist from falling freely onto the test load, nor allow the salt solution to drip from one load onto another.

5.2 Requirements for the structure and the appearance of the product

5.2.1 The materials inside the chamber that are in direct contact with the salt solution and with the salt mist shall not react chemically with them, and the parts that are not in direct contact shall resist salt mist corrosion.

5.2.2 The salt mist shall not be sprayed directly onto the test specimens.

5.2.3 Condensate from the top and the inner walls of the chamber, or from any other part, shall not drip onto the test specimens.

5.2.4 The pressure inside and outside the chamber shall be balanced; a pressure balancing