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**Performance of Room Heaters for Household and Similar Purposes
- Part 24: Particular Requirements for Liquid-filled Radiators**

家用和类似用途室内加热器的性能

第 24 部分:充液式加热器的特殊要求

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Foreword

QB/T 4096 is the first part of the series of standards for the performance of room heaters for household and similar purposes; and It is the general requirements part. This Part is QB/T 4096.24-2011, *Performance of Room Heaters for Household and Similar Purposes - Part 24: Particular Requirements for Liquid-filled Radiators*.

This Part should be used together with QB/T 4096-2010, *Performance of Room Heaters for Household and Similar Purposes - Part 1: General Requirements*.

This part is formed by modification or addition of QB/T 4096-2010. Where it states "applicable", it means that the corresponding provisions in QB 4096-2010 apply to this part; where it states "replacement", it means that the provisions in this part shall prevail; where it states "modification", it means that the modified content of the related provisions in the corresponding clauses of QB/T 4096-2010 shall prevail, and the rest content of the clause is still applicable; where it states "addition", it means that the additional provisions in this part shall, at the same time, meet the related provisions in QB/T 4096-2010.

The additional provisions to QB/T 4096 are numbered from 101.

This Part was proposed by the China Light Industry Federation.

This Part shall be under the jurisdiction of the National Household Electrical Standardization Technical Committee (SAC/TC46).

The responsible drafting organizations of this Part: Singfun Group Co., Ltd., Ningbo Singfun Electrical Manufacturing Co., Ltd., Guangdong Midea Environmental Electrical Manufacturing Co., Ltd.

The participating drafting organizations of this Part: China Institute of Electrical Appliances, Ningbo Product Quality Supervision and Inspection Institute, China Electrical Science Research Institute, Zhejiang Quality and Technical Supervision and Inspection Institute, Guangzhou Vkan Certification and Testing Co. Ltd., China National Supervision and Test Center for Infrared and Industry Galvanothermy Product Quality.

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Performance of Room Heaters for Household and Similar Purposes

- Part 24: Particular Requirements for Liquid-filled Radiators

1 Scope

This chapter of QB/T 4096-2010 is replaced by the following contents:

This Part specifies the terms and definitions, product classification, requirements, testing methods, inspection rules, and marking, packaging, transportation and storage of liquid-filled radiators for household and similar purposes (hereinafter “radiators”).

This Part applies to radiators – for single-phase appliances, the rated-voltage is not more than 250V; for other appliances, the rated-voltage is not more than 480V. The radiators are used in household or similar sites. The radiators may be of portable type, fixed type, stationary type etc.

This Part does not apply to:

- the radiators installed in the structures of buildings;
- the radiators specially designed for industrial purposes;
- the radiators for the special environment where frequent use of corrosive or explosive gases (such as dust, steam or gas) is intended.

2 Normative References

This chapter of QB/T 4096-2010 applies.

3 Terms and Definitions

This chapter of QB/T 4096-2010 applies, except the following contents:

3.101

liquid-filled radiator

A device which dissipates heat through its radiating fins and/or shell after the electric heating elements heat the liquid in the inner cavity of radiating fins.

3.101.1

oil-filled radiator

A liquid-filled radiator which dissipates heat through its radiating fins and/or shell after the electric heating elements heat the conduction oil in the inner cavity of radiating fins.

NOTE 101 Conduction oil is a category of special oil of good thermostability, which is used for indirect transfer of heat.

3.101.2

water-filled radiator

A liquid-filled radiator which dissipates heat through its radiating fins and/or shell after the electric heating elements heat the water in the inner cavity of radiating fins.

3.102

steady state

The heat balance state held after the radiator has achieved the maximum temperature without changing.

4 Production Classification

This chapter of QB/T 4096-2010 is replaced by the following contents:

4.1 The classification in accordance with the control apparatus:

- uncontrollable radiator;
- power-controllable radiator;
- temperature-controllable radiator.

4.2 The classification in accordance with the installation method:

- portable radiator;
- stationary radiator;
- standing radiator.

4.3 The classification in accordance with the type of liquid filled in the inner cavity of radiating fins:

- electric heating oil-filled radiator;
- electric heating water-filled radiator;

The precision of the instrument for measuring time is not lower than 1% of the time measured.

6.5 Modification:

Keep the freezing chamber at $(15 \pm 2)^{\circ}\text{C}$; set the initial temperature of the laboratory at $(15 \pm 2)^{\circ}\text{C}$; and keep the relative humidity not greater than 85%. Stop the air exchange between the laboratory and the freezing chamber during the test.

NOTE 101 If, within 60 s, the temperature rise is not greater than 2 K, then it is deemed the steady state is achieved.

6.6 Replacement:

The temperature-rise time of the radiators is measured during the test of 6.101. Measure the time required for the radiators to acquire 90% of the surface maximum temperature under the steady state conditions, as shown in Figure 101. For the temperature at the maximum point of the radiators' surface, the temperature acquired in the first steady state shall be used as the reference; and the time of temperature-rise is approximated to minute.

NOTE 101 The measuring methods and measuring points are same as that specified in 6.101.

6.101 Measurement of surface temperature

6.101.1 The radiators shall be placed in a test corner formed by two wallboards at right angle to each other and one baseboard; and the test corner shall be made of plywood, which is coated with matt black paint and of about 20 mm in thickness. The specific layout is as follows:

- for the radiators normally placed on the ground, place them as in normal use, keeping the radiating side surface 300 mm from one wallboard and far from the other wallboard. See Figure 102 for the radiating side surface of the radiators.
- for the radiators normally fixed on the wall, fix them to one wallboard as in normal use, keeping them as close to the other wallboard and baseboard as possible, unless specified otherwise in the instructions for installation.

6.101.2 If the radiating surface of the radiators is planar or approximately planar, as shown in Figure 103, divide the vertical center line of the radiating surface of the radiators into four equal parts; and then arrange the thermocouples at the center points of each equal division. Test the two planar radiating surfaces of the radiators; meanwhile, use the temperature measuring and recording instrument to measure and record the temperature curve (as shown in Figure 101) and temperature value from the room temperature to the steady state of temperature. Determine the maximum temperature of all measured surfaces when the steady state is established; use the

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