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

**GB/T 13475-2008**

Replacing GB/T 13475-1992

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**Thermal insulation -- Determination of steady-state thermal  
transmission Properties -- Calibrated and guard hot box**

绝热 稳态传热性质的测定 标定和防护热箱法

**(English Translation)**

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## Foreword

This standard is identical with ISO 8990:1994 (E) "insulation - Determination of steady-state thermal transmission properties - Calibrated and guarded hot box." this standard replaces GB/T 13475-1992 "building elements steady-state thermal transmission properties - Calibrated and guarded hot box." this standard compared with GB/T 13475-1992 main changes are as follows.

--- Standard topic made editorial changes;

- Chapter 2 normative references have been modified;
- Increasing the relevant provisions of the limitations and sources of error (see Section 1.6);
- Increasing the relevant provisions of the plant design requirements (see Chapter 2);
- Increasing the surface temperature of the relevant provisions of the device (see Chapter 2);
- Measuring input power output power, fan heaters and the like thermopile balance accuracy has been revised (1992 version 5.7; this version 2.8);
- Means the relevant provisions of performance evaluation and calibration have been revised and supplemented (see 2.9);
- Revision of the relevant provisions of the specimen conditioning (1992 version 6.1; this version 3.2);
- Delete the original standard in Appendix B, Appendix C and Appendix D (see the 1992 version of Appendix B, Appendix C and Appendix D);
- Added Appendix B references;
- Added Appendix NA.

Appendix A of this standard is a normative appendix, Appendix B and Appendix NA informative appendices.

Please note that some of the content of this standard may involve patents, the issuing authority of this standard should not bear the responsibility to identify these patents.

The standard proposed by China Building Materials Federation.

This standard by the National Standardization Technical Committee heat insulating material (SAC/TC191) centralized.

## Introduction

Many situations require insulation and heat transfer properties of the insulating structure data, including to determine whether compliance with regulations and standards, design guidelines, materials Materials and building performance simulation research and verification test.

Many insulation materials and systems for heat transfer are conduction, convection and radiation of a complex combination. This International Standard describes the measurement method at a given temperature, the specimen is passed from one side to the other side of the total heat, it does not correspond to a single mode of heat transfer, so the test results can be used such thermal properties required of the occasion. However, the

heat transfer properties of the specimen itself often and boundary conditions, the size of the specimen, the direction of heat transfer, temperature, Poor, air speed and relative humidity. Therefore, the test conditions must be expected to reproduce the practical application of the conditions, or in the assessment test the results measured under the conditions of whether meaningful.

It should also be remember that the determination of steady-state heat transfer and heat transfer characteristics of the nature of the specimen calculation is only able to explain or represent the actual product or system Performance measurement in order to consider the nature of material characterization, product or system feature is useful.

In addition, only a series of measurements from a plurality of samples of a plurality of test pieces having a sufficient reproducibility, the measured properties to generations

Table characteristics of the material, product or system.

Protection or calibration hot box design and operation is a complex task. Designers use of personnel and the device must have a complete biography Thermal background knowledge and experience in precision measurement technology.

There are many design calibration and guarded hot box apparatus in line with national standards in the world. Continued research and development of equipment and continually measure Technology improvements. The test structures may have a very big change, the conditions of the test requirements will be different, it is not necessary to limit Methods of measurement system and all measurements are limited to a single device it is wrong. Therefore, specify a particular design or size devices it is unrealistic.

Determination of steady heat transfer properties of the insulation Calibrated and guarded hot box

## 1.1 Scope

This standard specifies the laboratory steady heat transfer properties of the design principles and determination of building components and industrial components similar device should meet Minimum requirements. Due to changes in the requirements (in particular dimensions), it is not limited to a special design of the apparatus and the operating conditions Items specified in the smaller range.

This standard gives the means for measuring technical description data and the necessary reports.

This standard is not used to determine the specific components, such as windows, then the need for additional procedures, the standard does not cover these programs.

This standard does not consider moisture migration (or redistribution) on the measurement of heat flow, but should be considered in the design and operation of the device, because wet Migration may affect the test results accuracy and certainty.

Thermal properties of this standard is to measure the heat transfer coefficient and thermal resistance, provides two alternative methods. calibrated hot box and guarded hot box law. Both methods are used on the vertical specimen (such as walls) and the level of the specimen (e.g., floors and ceilings). The apparatus can be large enough to We study full size components.

This standard applies to the measurement of large-size heterogeneity in the laboratory specimen. Also applies to the determination of a homogeneous specimen, which is to calibrate and test Permit required.

Homogeneous specimen measured according to the method specified in this standard, experience shows that the accuracy can usually be achieved is  $\pm 5\%$ . However, for each the accuracy of a single device, you should use a homogeneous heat transfer standard specimens were evaluated within the device coverage measurement range. For non Evaluation of homogeneous specimens accuracy is more complex, and also contains a special type of heterogeneous specimens tested in the heat Mechanism.

Such analysis is beyond the scope of this standard.

This standard does not apply to the testing process through the specimen with a measurement of the mass transfer phenomena.

## 1.2 Normative references

The following documents contain provisions which, through reference in this standard and become the standard terms. For dated references, subsequent Amendments (not including errata content) or revisions do not apply to this standard, however, encourage the parties to the agreement are based on research Whether the latest versions of these documents. For undated reference documents, the latest versions apply to this standard.

ISO 7345. 1987 insulation materials --- Physical quantities and definitions

## 1.3 Terms and Definitions

ISO 7345. 1987 as well as to determine the following terms and definitions apply to this standard.

### 1.3.1

Specimen "visible" appropriate weights all surface temperature for determining the spread of radiation heat flux surface of the specimen (see Appendix A).

### 1.3.2

Weighted values of air temperature and radiation temperature, heat flux for determining the specimen surface (see Appendix A).