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British Standard Methods for Determining thermal insulating properties

Part 1. Introduction, definitions and principles of measurement

Méthodes de détermination des propriétés d'isolation thermique
Partie 1. Introduction, définitions et principes de mesurage

Verfahren zur Bestimmung der wärmedämmenden Eigenschaften
Teil 1. Einführung, Begriffsbestimmung und Meßprinzip

Foreword

This Part of BS 874 was prepared under the direction of the Refrigeration, Heating and Air Conditioning Standards Committee.

BS 874 was first issued in 1939 and was revised in 1956, 1965 and 1973. In these revisions the basic format of the document remained essentially unchanged. The standard summarized the methods available for determining thermal insulating properties and indicated which methods were applicable to various materials intended for use in a variety of temperature ranges. The methods themselves were not defined in detail.

It became clear that, although BS 874 had been a very useful document for many years, much more detailed specifications of the test methods were required, in view of the growing importance of energy conservation and the consequent need to have reliable information about the insulating properties of materials. Accordingly, it was decided to undertake a complete revision of the standard, with each test method being considered and rewritten. Recent advances in testing techniques have enabled much more detailed specifications of apparatus and operating procedures than was possible hitherto. In addition, one of the appendix methods of the 1973 standard, the heat-flow meter method, is now considered sufficiently well established to take its place alongside the other methods in the body of the standard.

BS 874 : 1973 included only a very brief and cursory description of a hot-box method for determining the thermal transmittance and thermal conductance of elements of a structure. Since then, hot-box methods have become much more widely used and in the revised British Standard two versions of the hot-box method are specified in detail.

On the other hand, it has been decided to omit a number of methods from the revision of BS 874. These include methods:

- (a) for high temperature insulating and refractory materials (covered by BS 1902 : Part 1A);
- (b) for loose fill materials, in air or in vacuum, at low temperatures;
- (c) for metals and dense ceramics;

(d) for emissivity; and

(e) for heat capacity per unit mass.

However, BS 874 is now structured so as to make it relatively simple to add these or any other methods at a later date. To facilitate such additions, to make it easier to revise Parts of the British Standard and to accommodate the vastly increased bulk of the document, BS 874 is being issued as a series of separate Parts as follows.

Part 1 Introduction, definitions and principles of measurement

Part 2 Tests for thermal conductivity and related properties

Section 2.1 Guarded hot-plate method

Section 2.2 Unguarded hot-plate method*

Section 2.3 Heated-disc method for sheet materials*

Section 2.4 Heat-flow meter method*

Section 2.5 High-temperature guarded hot-plate method*

Section 2.6 Water calorimeter method*

Section 2.7 Hot-pipe method*

Part 3 Tests for thermal transmittance and conductance

Section 3.1 Guarded hot-box method

Section 3.2 Calibrated hot-box method*

In drafting the above Parts of BS 874 due attention has been paid to the activities of Committee ISO/TC 163/SC 1 of the International Organization for Standardization in which guarded hot-plate, heat-flow meter, hot-pipe and hot-box methods are currently being prepared. These ISO documents discuss the general principles of the methods and the design requirements for the apparatus, but a specific apparatus or a specific procedure is not defined in any of the drafts. Consequently these are considered to be inappropriate for adoption as dual-numbered British Standards. Where the various Parts of BS 874 fall within the requirements of the ISO standards, this will be stated, and compliance with BS 874 will imply compliance with the ISO documents, although the reverse may not be true.

This Part of BS 874 constitutes a revision of clauses 1.2, 2, 3 and 4.1 of BS 874 : 1973, which it supersedes, and which were deleted by an amendment to that standard.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

*In preparation.