
**Rigid cellular plastics — Spray-applied
polyurethane foam for thermal
insulation —**

**Part 1:
Material specifications**

iTeh STANDARD PREVIEW
*Plastiques alvéolaires rigides — Mousse de polyuréthane projetée
pour l'isolation thermique —
(standards.iteh.ai)
Partie 1: Spécifications des matériaux*

ISO 8873-1:2006

<https://standards.iteh.ai/catalog/standards/sist/24e8385b-fdc4-44f8-ac15-b3524a13a0af/iso-8873-1-2006>



PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO 8873-1:2006](https://standards.iteh.ai/catalog/standards/sist/24e8385b-fdc4-44f8-ac15-b3524a13a0af/iso-8873-1-2006)

<https://standards.iteh.ai/catalog/standards/sist/24e8385b-fdc4-44f8-ac15-b3524a13a0af/iso-8873-1-2006>

© ISO 2006

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

| | | |
|-------------|--|----------|
| 1 | Scope | 1 |
| 2 | Normative references | 1 |
| 3 | Terms and definitions | 2 |
| 4 | Requirements | 3 |
| 4.1 | General requirements | 3 |
| 4.2 | Categories | 3 |
| 5 | Sampling | 4 |
| 5.1 | General | 4 |
| 5.2 | Preparation of sample panels | 4 |
| 5.3 | Conditioning of sample panels | 4 |
| 5.4 | Preparation of specimens | 4 |
| 6 | Test methods | 5 |
| 6.1 | Air permeance | 5 |
| 6.2 | Apparent core density | 5 |
| 6.3 | Compressive strength | 5 |
| 6.4 | Dimensional stability | 5 |
| 6.5 | Surface burning characteristics | 5 |
| 6.6 | Open-cell content: Volume | 5 |
| 6.7 | Initial thermal resistance | 5 |
| 6.8 | Long-term thermal resistance (LTTR) | 6 |
| 6.9 | Tensile strength | 6 |
| 6.10 | Substrate adhesion | 7 |
| 6.11 | Volatile organic emissions | 7 |
| 6.12 | Water absorption | 7 |
| 6.13 | Water vapour permeability | 7 |
| 7 | Reporting requirements | 7 |
| 8 | Marking, labelling and packaging | 8 |
| 8.1 | Packaging | 8 |
| 8.2 | Marking and/or labelling | 8 |
| 9 | Manufacturer's documentation | 8 |

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 8873-1 was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 10, *Cellular plastics*.

This first edition of ISO 8873-1, together with ISO 8873-2 and ISO 8873-3, cancels and replaces ISO 8873:1987, which has been technically revised.

ISO 8873 consists of the following parts, under the general title *Rigid cellular plastics — Spray-applied polyurethane foam for thermal insulation*:

— Part 1: *Material specifications*

— Part 2: *Application*

— Part 3: *Test methods*

[ISO 8873-1:2006](https://standards.iteh.ai/catalog/standards/sist/24e8385b-fdc4-44f8-ae15-b3524a13a0af/iso-8873-1-2006)

<https://standards.iteh.ai/catalog/standards/sist/24e8385b-fdc4-44f8-ae15-b3524a13a0af/iso-8873-1-2006>

Introduction

ISO 8873 defines the requirements for rigid cellular plastic spray polyurethane foam when used as a thermal insulation in buildings and non-buildings.

This part of ISO 8873 specifies requirements for the physical properties of rigid cellular plastic spray polyurethane foam and lists the test methods to be used.

The designer has the responsibility for confirming that the physical properties provided by material manufactured to this part of ISO 8873 will conform to the requirements for a specific application.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO 8873-1:2006](https://standards.iteh.ai/catalog/standards/sist/24e8385b-fdc4-44f8-ae15-b3524a13a0af/iso-8873-1-2006)

<https://standards.iteh.ai/catalog/standards/sist/24e8385b-fdc4-44f8-ae15-b3524a13a0af/iso-8873-1-2006>

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO 8873-1:2006

<https://standards.iteh.ai/catalog/standards/sist/24e8385b-fdc4-44f8-ac15-b3524a13a0af/iso-8873-1-2006>

Rigid cellular plastics — Spray-applied polyurethane foam for thermal insulation —

Part 1: Material specifications

WARNING — Persons using this document should be familiar with normal laboratory practice, if applicable. This document does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any regulatory requirements.

1 Scope

This part of ISO 8873 specifies minimum requirements and test methods for spray-applied polyurethane rigid cellular plastic, used as a thermal insulation for both building, whether applied on a building site or in a prefabrication (manufacturing) facility, and non-building applications. The material is also known as *in-situ* thermal insulation.

The spray-applied polyurethane rigid cellular plastic thermal insulation is not to be used when the continuous service temperature of the substrate is outside the range of $-60\text{ }^{\circ}\text{C}$ to $+80\text{ }^{\circ}\text{C}$.

The test methods used to determine the material properties provide a means of comparing different cellular plastic thermal insulations. They are intended for use in specifications, product evaluations and quality control. They are not intended to predict end-use product performance.

Spray-applied polyurethane rigid cellular plastics are to be applied (installed) in accordance with the manufacturer's instructions and the requirements of ISO 8873-2. Applications, requirements for applications and limitations of use are included in ISO 8873-2.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 291, *Plastics — Standard atmospheres for conditioning and testing*

ISO 844, *Rigid cellular plastics — Determination of compression properties*

ISO 845, *Cellular plastics and rubbers — Determination of apparent density*

ISO 1663, *Rigid cellular plastics — Determination of water vapour transmission properties*

ISO 1926, *Rigid cellular plastics — Determination of tensile properties*

ISO 2796, *Cellular plastics, rigid — Test for dimensional stability*

ISO 2896, *Rigid cellular plastics — Determination of water absorption*

ISO 4590, *Rigid cellular plastics — Determination of the volume percentage of open cells and of closed cells*

ISO 8301, *Thermal insulation — Determination of steady-state thermal resistance and related properties — Heat flow meter apparatus*

ISO 8302, *Thermal insulation — Determination of steady-state thermal resistance and related properties — Guarded hot plate apparatus*

ISO 8873-2:—¹⁾, *Rigid cellular plastics — Spray-applied polyurethane foam for thermal insulation — Part 2: Application*

ISO 8873-3:—²⁾, *Rigid cellular plastics — Spray-applied polyurethane foam for thermal insulation — Part 3: Test methods*

ISO 10456, *Building materials and products — Hygrothermal properties — Tabulated design values and procedures for determining declared and design thermal values*

ISO 11561, *Ageing of thermal insulation materials — Determination of the long-term change in thermal resistance of closed-cell plastics (accelerated laboratory test methods)*

ISO/IEC 17024, *Conformity assessment — General requirements for bodies operating certification of persons*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ITEH STANDARD PREVIEW
(standards.iteh.ai)

3.1 authority having jurisdiction

officer or officers having authority, under appropriate regulatory instruments, to exercise enforcement

[ISO 8873-1:2006](#)

3.2 certification organization

impartial body possessing the necessary competence and reliability to operate a certification system in accordance with ISO/IEC 17024, in which the interests of all parties concerned with the functioning of the system are represented

<https://standards.iteh.ai/catalog/standards/sist/24e8385b-fdc4-44f8-ae15-b3524a13a0af/iso-8873-1-2006>

3.3 equipment manufacturer

manufacturer of equipment designed for spray-application of rigid polyurethane cellular plastic thermal insulation

3.4 *in-situ* thermal insulation

thermal insulation product produced or taking its final form at the site of application and which achieves its properties after installation

3.5 spray-applied polyurethane foam

rigid cellular plastic material with substantially closed cell structure based on polyurethanes, which is foamed *in-situ* by the catalysed reaction of polyisocyanates and polyhydroxyl compounds, expanded with blowing agents

3.6 spray polyurethane foam contractor

individual, organization or corporation who is responsible for all requirements and obligations for the installation of the product

1) To be published.

2) To be published.

3.7

spray polyurethane foam installer

individual or worker who applies the chemical components by mixing and spraying them to form the rigid cellular plastic spray polyurethane foam product

NOTE The installer is responsible for the actual installation and site requirements identified by the manufacturer and/or ISO 8873-2 for application of the product. The installer shall be trained, and qualified as having demonstrated the required knowledge for proper application of the product by a Certification Organization (CO). The installer shall follow the requirements for installation and the obligations for installers identified by the manufacturer and ISO 8873-2.

3.8

spray polyurethane foam system manufacturer

manufacturer/supplier of the liquid chemical components, polyisocyanates and a polyhydroxyl blends containing also flame retardants, blowing agent and catalysts (system), which are designed to be mixed and sprayed to form rigid polyurethane foam insulation material *in situ*

4 Requirements

4.1 General requirements

Rigid cellular plastic spray-applied polyurethane foam thermal insulation shall be applied by a spray polyurethane foam contractor using a spray polyurethane foam installer in accordance with ISO 8873-2 and the instructions given by the chemical manufacturer.

When applied, the polyurethane rigid cellular plastic thermal insulation shall not present a health hazard to the potential occupants nor shall the cured insulation have any residual odour.

Special applications may require properties other than, or in addition to, those specified in this part of ISO 8873. These properties, when agreed upon by the interested parties, may be added to the requirements of this specification.

<https://standards.iteh.ai/catalog/standards/sist/24e8385b-fdc4-44f8-ae15-b3524a13a0af/iso-8873-1-2006>

When stored in accordance with the chemical manufacturer's instructions, applied in accordance with ISO 8873-2, and within the shelf life of the chemicals as declared by the manufacturer, the chemical components shall produce an insulation that meets the requirements of this part of ISO 8873.

4.2 Categories

Category IA: Suitable for non-load-bearing insulations that may not be exposed to weather, such as wall insulations, interior roof insulations and similar applications where the insulation is only required to be self-supporting, expanded with fluorocarbons and producing a predominantly closed-cell product.

Category IB: Suitable for non-load-bearing insulations that may not be exposed to weather, such as wall insulations, interior roof insulations and similar applications where the insulation is only required to be self-supporting, expanded with carbon dioxide and producing a predominantly semi-closed-cell product.

Category IC: Suitable for non-load-bearing insulations that may not be exposed to weather, such as wall insulations, interior roof insulations and similar applications where the insulation is only required to be self-supporting, expanded with carbon dioxide and producing a predominantly open-cell product.

Category IIA: Suitable for limited-load-bearing insulations that may or may not be exposed to weather, intended for surfaces carrying foot-traffic from maintenance personnel only, such as overdeck insulations or similar applications where elevated temperatures may be encountered and when compressive creep resistance is required, expanded with fluorocarbons and producing a predominantly closed-cell product.

Category IIB: Suitable for limited-load-bearing insulations that may or may not be exposed to weather, intended for surfaces carrying foot-traffic from maintenance personnel only, such as overdeck insulations or similar applications where elevated temperatures may be encountered and when compressive creep resistance is required, expanded with carbon dioxide and producing a predominantly closed-cell product.