
**Thermal-insulating materials —
Determination of long-term water
absorption by diffusion**

*Matériaux d'isolation thermique — Détermination de l'absorption d'eau à
long terme par diffusion*



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Published in Switzerland

Foreword

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ISO 20393 was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 10, *Cellular plastics*.

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Thermal-insulating materials — Determination of long-term water absorption by diffusion

1 Scope

This International Standard specifies equipment and procedures for determining the long-term water absorption of test specimens by diffusion. It is intended for use with thermal-insulation products. It is designed to simulate the absorption of water by products subjected for a long period of time not only to high relative humidity, approximating 100 %, on both sides, but also to a water vapour pressure gradient, as experienced by e.g. inverted roof or unprotected ground insulation.

The test is not applicable to all types of thermal-insulation product. The product standard should normally state whether this test is applicable to a particular product.

NOTE For unprotected ground insulation, a lower temperature might, when more data is available, replace the test temperature of 50 °C currently specified in this International Standard.

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 472, *Plastics — Vocabulary*

ISO 1923, *Cellular plastics and rubbers — Determination of linear dimensions*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 472 apply.

4 Principle

The long-term water absorption by diffusion is determined by measuring the increase in mass of a test specimen when it is subjected to a water vapour pressure difference and temperature gradient between its upper and lower surfaces for a period of 28 days.

5 Apparatus and materials

- 5.1 **Balance**, capable of determining the mass of the test specimen to within 0,1 g.
- 5.2 **Corrosion-resistant container**, with a frame supporting the test specimen.
- 5.3 **Heating device**, with a thermostat capable of controlling the water temperature at (50 ± 1) °C.
- 5.4 **Cooling plate**, thermally insulated on the outside, operating at a temperature of $(1 \pm 0,5)$ °C.
- 5.5 **Tap water**, kept at a temperature of (50 ± 1) °C.