
**Thermal insulating products
for industrial installations —
Determination of the coefficient of
linear thermal expansion at sub-
ambient temperatures**

*Produits isolants thermiques pour les installations industrielles —
Détermination du coefficient de dilatation thermique linéique à des
températures inférieures à la température ambiante*



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Published in Switzerland

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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.

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 163, *Thermal performance and energy use in the built environment*, Subcommittee SC 1, *Test and measurement methods*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Thermal insulating products for industrial installations — Determination of the coefficient of linear thermal expansion at sub-ambient temperatures

1 Scope

This document specifies the equipment and procedures for determining the coefficient of linear thermal expansion at sub-ambient temperatures (–196 °C to 25 °C), subject to the possible temperature limitation of the test specimens. It is not applicable to products which experience dimensional changes during the test due to the loss of hydration water or which undergo other phase changes.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 9229, *Thermal insulation — Vocabulary*

ISO 18099, *Thermal insulating products for building equipment and industrial installations — Determination of the coefficient of thermal expansion*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 9229, ISO 18099 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

sub-ambient temperature

temperature from –196 °C to 25 °C at which the thermal insulation product is used to reduce heat flow

4 Method A — Optical method

4.1 Principle

The changes in a product's linear dimensions, as its temperature is changed, are measured and characterized by the optical measurement method (See [Figure 1](#) for an example).