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Thermal insulation products — Flexible microporous insulation for industrial applications — Specification

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This document was prepared by Technical Committee ISO/TC 163, *Thermal performance and energy use in the built environment*, Subcommittee SC 3, *Thermal insulation products, components and systems*.

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.

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Thermal insulation products — Flexible microporous insulation for industrial applications — Specification

1 Scope

This document specifies the requirements for factory-made flexible microporous insulation (FMI), which is used for the thermal insulation of industrial applications. It specifies requirements for insulation that exhibits thermal insulating performance through nano-sized pore composite material comprising a blend of inorganic powder, fibres and opacifiers. The products are delivered as a flexible microporous type.

This document describes product characteristics and includes procedures for testing, evaluation of conformity, marking and labelling.

It does not specify the required level of a given property to be achieved by a product to demonstrate fitness for purpose in a particular application. The levels required for a given application can be found in regulations or non-conflicting standards.

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 846:2019, *Plastics — Evaluation of the action of microorganisms*

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

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 23993, *Thermal insulation products for building equipment and industrial installations — Determination of design thermal conductivity*

ISO 12576-1, *Thermal insulation — Insulating materials and products for buildings — Conformity control systems — Part 1: Factory-made products*

ISO 12624, *Thermal insulating products for building equipment and industrial installations — Determination of trace quantities of water-soluble chloride, fluoride, silicate, sodium ions and pH*

ISO 13787, *Thermal insulation products for building equipment and industrial installations — Determination of declared thermal conductivity*

ISO 16535, *Thermal insulating products for building applications — Determination of long-term water absorption by immersion*

ISO 18097, *Thermal insulating products for building equipment and industrial installations — Determination of maximum service temperature*

ISO 29465, *Thermal insulating products for building applications — Determination of length and width*

ISO 29466, *Thermal insulating products for building applications — Determination of thickness*

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ISO 29469:2022, *Thermal insulating products for building applications — Determination of compression behaviour*

ISO 29470, *Thermal insulating products for building applications — Determination of the apparent density*

ISO 29767, *Thermal insulating products for building applications — Determination of short-term water absorption by partial immersion*

3 Terms, definitions, symbols and abbreviated terms

For the purposes of this document, the following terms and definitions 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 http://www.electropedia.org/

3.1 Terms and definitions

3.1.1
inorganic powder
base ingredient of microporous thermal insulation (e.g. fumed silica) composed of SiO_2 and fumed alumina oxide

3.1.2
microporous
composite material that comes in the form of fibre reinforced inorganic powder (e.g. small particles of dispersed silica), creating micro-pores

3.1.3
flexible microporous thermal insulation
type of microporous thermal insulation that is encased in incombustible fabric (e.g. glass fibre fabric, silica fibre fabric) and stitched with sewing thread for flexibility

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3.2 Symbols and units

Symbol	Quantity	Unit
l	length	mm
b	width	mm
t	thickness	mm
$\Delta\varepsilon_l$,	relative change in length	%
$\Delta\varepsilon_b$	relative change in width	%
$\Delta\varepsilon_t$	relative change in thickness	%
λ	thermal conductivity	W/(m·K)
λ_D	declared thermal conductivity as determined by ISO 13787, and expressed with three significant digits	W/(m·K)

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