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Natural stone test methods - Determination of resistance of marble to thermal and moisture cycles



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English Version

## Natural stone test methods - Determination of resistance of marble to thermal and moisture cycles

Méthodes d'essai pour pierres naturelles -  
Détermination de la résistance du marbre aux cycles  
thermiques et d'humidité

Prüfverfahren für Naturstein - Bestimmungen der  
Beständigkeit von Marmor bei zyklischer Belastung mit  
Wärme und Feuchte

This European Standard was approved by CEN on 1 August 2022.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

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## European foreword

This document (EN 16306:2022) has been prepared by Technical Committee CEN/TC 246 “Natural stones”, the secretariat of which is held by UNI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2023, and conflicting national standards shall be withdrawn at the latest by March 2023.

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

This document supersedes EN 16306:2013.

In comparison with the previous edition, the following technical modifications have been made:

- inclusion of a more detailed description of the test procedure and several clarifications;
- Clause 10, “Precision” has been deleted since data from precision trials is not yet available;
- Annex C has been amended with the recommendation to increase the number of measurement points in heterogeneous marble.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

## 1 Scope

This document specifies a laboratory method for determining the resistance to thermal and moisture cycling of marble intended for the external cladding of building facades.

NOTE Bowing and rapid strength loss is known to occur in some marbles when used as exterior cladding.

## 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.

EN 12372, *Natural stone test methods - Determination of flexural strength under concentrated load*

EN ISO 4892-1, *Plastics - Methods of exposure to laboratory light sources - Part 1: General guidance (ISO 4892-1)*

## 3 Terms and definitions

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

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

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

### 3.1

#### **bowing**

change in shape from flat and planar to a curved or dished shape in a convex or concave direction

Note 1 to entry: Other terms commonly used for the same phenomenon are dishing and warping.

Note 2 to entry: Convex bowing is quantified by positive values, concave bowing by negative values.

### 3.2

#### **convex bowing**

centre part of the specimen is bowing upwards, away from the moist substratum

### 3.3

#### **concave bowing**

centre part of the specimen is bowing downwards, away from the applied heat

### 3.4

#### **marble**

metamorphic rock containing more than 50 % vol. of carbonates (calcite and/or aragonite and/ or dolomite) formed by metamorphic recrystallization of a carbonate rock

Note 1 to entry: In this document, only geologically defined marble applies. The stones defined as marble only by the commercial meaning (e.g. polishable limestones) do not need to be tested.

[SOURCE: EN 12670:2019, 3.1.291, modified – deleted Notes to entry and added a new Note 1 to entry]