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BSI Standards Publication

Natural stone test methods – Petrographic examination

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National foreword

This British Standard is the UK implementation of EN 12407:2019. It supersedes BS EN 12407:2007, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/545, Natural stone.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Amendments/corrigenda issued since publication

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English Version

Natural stone test methods - Petrographic examination

Méthodes d'essai de pierres naturelles - Examen
pétrographique

Prüfverfahren für Naturstein - Petrographische
Prüfung

This European Standard was approved by CEN on 15 April 2019.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 12407:2019) 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of an identical text or by endorsement, at the latest by November 2019, and conflicting national standards shall be withdrawn at the latest by November 2019.

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 12407:2007.

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

- the changes concern essentially the proper scientific definitions, terminology, and diagrams.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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Introduction

A petrographic description of natural stones is important not only for the purposes of petrographic classification but also in order to highlight features affecting its chemical, physical and mechanical behaviour. In the same way the determination of the stone's origin could be necessary (e.g. in the case of restoration of historical monuments). It is therefore essential to characterize the natural stones for their mineral components and for their fabric and structure but also in terms of any features as: colour, presence of veins, of fossils, of discontinuities, etc.

To ensure that the petrographic classification is objective, it is essential that the characterization of the material is, as far as possible, quantitative.

The interpretation of the results obtained from the petrographic examination of natural stone should include evidences of a possible relationship between petrographic features and technical properties (pores/cleavages/schistosity with water absorption/gelivity/flexure resistance etc.).

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1 Scope

This document specifies methods for making technical petrographic descriptions of natural stone, except for roofing slates. For this product, the method for the petrographic examination is defined in EN 12326-2. Although chemical and physical methods of analysis are required for petrographic classification of some stone types, these methods will not be described in this standard.

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 12440, *Natural stone - Denomination criteria*

EN 12670, *Natural stone - Terminology*

3 Terms and definitions

No terms and definitions are listed in this document.

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

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

4 Symbols

vol.% unit of the volume percentage of the mineral phase present in the sample.

5 Principle

A macroscopic description of the sample is undertaken at first. The macroscopic description may involve a visual inspection aided by a hand lens or a stereoscopic microscope. Then one or more thin sections prepared from the sample are examined using an optical polarized transmitted light microscope in order to give a microscopic description and modal analysis (volume proportions of mineral phases) of the sample; where appropriate an additional polished section shall be prepared.

Modal analysis is the most accurate determination of quantitative mineralogical composition of natural stones. It attributes to each mineral phase a certain percentage (vol.%). Modal analysis is obtained by point counting following a standard procedure on thin sections (at least 44 mm × 28 mm) or using Shvetsov's diagrams (or any other similar diagrams commonly used by petrographers).

6 Apparatus

- 6.1 Hand lens or stereoscopic microscope (if required).
- 6.2 Water cooled rock cutter equipped with a continuous rim and sliding guide.
- 6.3 Automatic grinding machine or manual grinding machine with a cast-iron lapidary.
- 6.4 Electrical heating plate.
- 6.5 Bonding press.