

SVENSK STANDARD

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Natursten – Terminologi

Natural stone – Terminology

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Denna standard ersätter SS-EN 12670, utgåva 1.

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This standard supersedes the SS-EN 12670, edition 1.

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EUROPEAN STANDARD

EN 12670

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2019

ICS 01.040.91; 91.100.15

Supersedes EN 12670:2001

English Version

Natural stone - Terminology

Pierre naturelle - Terminologie

Naturstein - Terminologie

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

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COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 12670:2019) 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of an identical text or by endorsement, at the latest by December 2019, and conflicting national standards shall be withdrawn at the latest by December 2019.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 12670:2001.

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

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

This document is one of a series of standards for natural stone products including denomination, test methods and product standards.

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

The term Natural Stone groups several rock types with marked geological differences. The extraction, elaboration and commerce of Natural Stone have set a very particular vocabulary. Many of these terms have been taken from the popular or quarrymen language, which sometimes is far from scientific definitions. This document establishes the terminological bases for geological and petrologic definitions of Natural Stone and its classification. References to definitions of natural stone products, defined in other European Standards, are provided when necessary. It also incorporates most of the popular or commercial terminology.

The terminology covers the fields of geology, mining, processing, marketing and products of Natural Stone. The included scientific classifications allow setting the scientific name of the stone varieties. If the stone variety is not included in this document, the rock should be classified using its three main mineralogical components.

1 Scope

This document defines the recommended terminology covering scientific and technical terms, test methods, products, and the classification of Natural Stones. This document does not cover roofing slate, for roofing slate see EN 12326-1 and EN 12326-2.

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 12326-1, *Slate and stone for discontinuous roofing and external cladding - Part 1: Specifications for slate and carbonate slate*

EN 12326-2, *Slate and stone for discontinuous roofing and external cladding - Part 2: Methods of test for slate and carbonate slate*

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

3.1 Geological terms

3.1.1

accessory minerals

rock forming minerals that occur in such small amounts that they are not relevant in the classification or nomenclature of the rock

3.1.2

acid rock

igneous rock that contains more than 66 % vol. of silica

3.1.3

actinolite

Ca-Mg-Fe-amphibole (see amphibole formula)

3.1.4

agate

distinctly banded variety of chalcedony

3.1.5

age

fourth order geological time unit

Note 1 to entry: See Table 2.

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3.1.6

agglomerate

pyroclastic rock in which bombs (with diameters greater than 64 mm) > 75 % vol.

3.1.7

agglutinate

welded splatter, commonly of basaltic composition, deposited ballistically in strombolian or fire fountain volcanic eruptions

3.1.8

alabaster

fine grained, compact variety of gypsum, usually white or pale coloured and translucent

3.1.9

albite

sodium plagioclase, formula $\text{Na}(\text{AlSi}_3\text{O}_8)$ (see plagioclase)

3.1.10

alkali feldspar

alkali rich feldspars microcline, orthoclase, sanidine, albite, with less than 5 % vol. anorthite

Note 1 to entry: See feldspar and plagioclase.

3.1.11

allochems

coarser framework grains in most mechanically deposited limestones in the basin of sedimentation

Note 1 to entry: Allochems include: intraclasts, ooids, skeletal particles, pellets (including peloids).

3.1.12

allotriomorphic

anhedral

xenomorphic

mineral which shows in thin sections no characteristic or rational faces, suggested by its crystalline structure

3.1.13

alteration

post-formational change of the mineralogical and or chemical composition of a rock brought about by physical, chemical, or biological means, including actions of hydrothermal solutions and weathering processes, excluding metasomatic and metamorphic changes

3.1.14

alumina

Al_2O_3

chemical compound used in fine polishing

3.1.15

amorphous

phase that does not have a crystalline structure

3.1.16

amphibole

family of dark ferromagnesian silicate minerals, general formula $A_{2-3}B_5(Si,Al)_8O_{22}(OH)_2$, where A = Mg, Fe^{2+} , Ca, Na; B = Mg, Fe^{2+} , Fe^{3+} , Al

3.1.17

amphibolite

gneissose or granofelsic metamorphic rock mainly consisting of green, brown, or black amphibole and plagioclase

Note 1 to entry: A gneissose/granofelsic mesostructure is typical of true amphibolites, in contrast with schistose, green amphibole-albite greenschists.

3.1.18

amygdaloidal

texture of volcanic rocks where almond-shaped vesicles are, fully or partially, filled with secondary minerals

3.1.19

analcime

mineral, $Na(AlSi_2O_6)H_2O$ of the zeolite group

Note 1 to entry: See zeolite, secondary minerals.

3.1.20

andalusite

mineral, Al_2SiO_5 polymorphous with sillimanite and kyanite

3.1.21

andesite

volcanic rock of intermediate composition mainly composed of plagioclase (oligoclase - andesine) and one or more of the mafic minerals amphibole, pyroxene, and biotite

Note 1 to entry: See 4.2.1.5

3.1.22

anhedral

(see allotriomorphic, 3.1.12)

3.1.23

anhydrite

mineral with $CaSO_4$ formula

3.1.24

anisotropy

vectorial behaviour of physical and mechanical properties in minerals and rocks, i.e. hardness in kyanite, thermal expansion in calcite, flexural resistance in slate

3.1.25

ankerite

mineral of dolomite group with calcium and iron

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3.1.26

anorthite

calcic plagioclase, $\text{Ca}(\text{Al}_2\text{Si}_2\text{O}_8)$

Note 1 to entry: See plagioclase.

3.1.27

anorthoclase

sodium-rich mineral of the alkali feldspar group, formula $(\text{Na,K})\text{AlSi}_3\text{O}_8$

Note 1 to entry: Its composition, in terms of the mole fraction of the orthoclase component (or) and the albite component (ab) is $\text{or}_{40}\text{ab}_{60}$ to $\text{or}_{10}\text{ab}_{90}$ (see feldspar, microcline, plagioclase, orthoclase).

3.1.28

anorthosite

plutonic rock mainly composed of anorthite – rich plagioclase and little or no mafic minerals

Note 1 to entry: See 4.2.1.2.

3.1.29

antiperthite

perthitic intergrowth of plagioclase host and subsidiary K-rich feldspar

3.1.30

apatite

group of minerals, of which the formula is $\text{Ca}_5(\text{PO}_4, \text{CO}_3)_3(\text{F}, \text{OH}, \text{Cl})$

3.1.31

aphanitic

of or relating to an igneous rock in which the crystals are so fine that individual minerals cannot be distinguished with the naked eye

Note 1 to entry: Aphanitic rocks are extrusive rocks that cooled so quickly that crystal growth was inhibited.

3.1.32

aplite

fine grained igneous rock of granitic composition with allotriomorphic texture and, commonly, leucogranitic composition

3.1.33

aragonite

mineral, polymorphous with calcite, of which the formula is CaCO_3

3.1.34

Archaean

the older eon of the Precambrian ranging from the formation of the Earth at ~4 000 Ma to 2 500 Ma

Note 1 to entry: See Table 1.

3.1.35

arenite

loose soil or consolidated sedimentary rock, mainly composed of sand size detrital lithic fragments or mineral grains (between 1/16 mm and 2 mm)

Note 1 to entry: Usually the term is used with a prefix that refers to its composition or genesis, e.g. quartzarenite (see 4.2.2.5).

3.1.36

argillite

layered or not-layered consolidated sedimentary rock mainly composed of detrital clay size particles or clay minerals

3.1.37

arkose

sedimentary detrital rock with less than 75 % vol. quartz and a high content of feldspar grains

Note 1 to entry: See 4.2.2.5.

3.1.38

arkosic wacke

sandstone comprising >5 % vol. of sand grade particles, with the feldspar content exceeding that of rock fragments and >15 % vol. of mud matrix (material <30 µm in diameter)

3.1.39

ash

fine-grained volcanic material

3.1.40

augen fabric

fabric in some rocks, usually metamorphic, consisting of ellipsoidal or lens shaped porphyroblasts, crystals, or fragments, rounded and enveloped by the foliation, resembling eyes (augen) in a cross section

3.1.41

augen mylonite

mylonite containing distinctive large crystals or lithic fragments around which the foliated fine-grained matrix is wrapped, often forming symmetric or asymmetric trails

3.1.42

augite

clinopyroxene

mineral of the pyroxene group (clinopyroxenes), the general formula of which is $(Ca,Na)(Mg,Fe^{2+},Al)(Si,Al)_2O_6$ with minor amounts of Na, Fe^{3+} , Al, Ti admitted, the colour of which is dark green to black, and which is an essential constituent in basic igneous rocks such as basalts and gabbros

3.1.43

bafflestone

autochthonous carbonate rock whose original components were bound organically during deposition, the organisms forming baffles to trap finer matrix material

3.1.44

banded

rock having alternating nearly parallel layers that differ in colour, fabric or mineral composition, and because of that it shows alternating bands in a cross section

3.1.45

basalt

volcanic rock consisting essentially of plagioclase (labradorite-bytownite) and pyroxene with variable amount of phenocrysts set in a fine-grained matrix

Note 1 to entry: Commercially natural stone as per the scientific definition of basalt and other rocks such as, picrites, diabases, dolerites and microgabbros.

Note 2 to entry: See 4.2.1.5.

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3.1.46

basanite

silica-undersaturated alkali olivine basalt containing olivine, clinopyroxene and plagioclase feldspar with >10 % vol. feldspathoids in the form of nepheline or leucite, which is found in association with other alkaline igneous rocks

3.1.47

basic

Mg,- Fe- and Ca-rich igneous rock with more than 45 % vol. and less than 52 % vol. of silica

3.1.48

bed of blocks

unweathered rock beneath unconsolidated material formed by blocks

3.1.49

bedding plane

a) planar or nearly planar surface that visibly separates the individual beds, layers or strata, in sedimentary rocks;

b) any surface, even when conspicuously bent or deformed by folding

3.1.50

benmoreite

alkali lava intermediate in composition between mugearite and trachyte

3.1.51

bindstone

autochthonous carbonate rock whose original components were bound organically during deposition, with the organisms binding finer matrix material together

3.1.52

bioclastic rock

sedimentary rock consisting of fragments and broken remains of organisms; e.g. limestone composed of shell fragments

3.1.53

biolithite

limestone essentially constituted of reef structures, animal or plant

3.1.54

biotite

mafic rock forming mineral of the mica group with general formula $K(Mg,Fe^{2+})_3(Al,Fe^{3+})Si_3O_{10}(OH)_2$

3.1.55

black granite

commercial term for black or dark coloured plutonic rocks

Note 1 to entry: See e.g. gabbro, diabase, basalt.

3.1.56

blasto-

prefix used to describe the metamorphic rock fabrics denoting the presence of primary crystals or pre-existing fabric modified by metamorphism, but still recognized; e.g. blastogranular, blastomylonitic, blastopsephitic

3.1.57

blastomylonite

mylonite which displays a significant degree of grain growth related to or following deformation

3.1.58

block

angular fragment of rock with a diameter >256 mm

3.1.59

blue schist

schist whose bluish colour is due to the presence of sodic amphibole

3.1.60

bomb

mass of liquid lava thrown through the air which rotates and takes on a characteristic shape and structure

3.1.61

boundstone

limestone, in which the grain were bound by an organism or organisms

3.1.62

breccia

a) coarse grained clastic sedimentary rock composed by angular rock fragments held together by a mineral cement or in a fine grained matrix;

b) clastic rock consisting of highly angular gravel-size fragments, of sedimentary, tectonic or volcanic origin

3.1.63

calc silicate marble

marble with calcium and silicate minerals

Note 1 to entry: See marble, ophicalcite.

3.1.64

calcarenite

limestone consisting predominantly of recycled detrital calcite grains of sand size (1/16 mm – 2 mm)

3.1.65

calcareous

containing calcium carbonate

3.1.66

calcilutite

limestone consisting predominantly of detrital calcite grains or fragments of silt or clay size (<1/16 mm)

3.1.67

calciphyre

metacarbonate rock containing a conspicuous amount of calcium- and/or magnesium-silicate minerals

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3.1.68

calcirudite

limestone consisting predominantly of detrital calcite grains or fragments larger than sand size

Note 1 to entry: See rudite.

3.1.69

calcsiltite

limestone consisting predominantly of detrital calcite grains or fragments of silt size

3.1.70

calcite

mineral, the formula of which is CaCO_3 ; trimorphous with aragonite and vaterite

Note 1 to entry: Very common in some sedimentary and metamorphic rocks.

3.1.71

calcitic dolomite

carbonate rock which 50 % vol. to 89 % vol. of the mineral dolomite

Note 1 to entry: See also 4.2.2.11.

3.1.72

calcitic marble

marble containing more than 50 % vol. of calcite

3.1.73

calc-schist

carbonate silicate-schist

metamorphosed argillaceous limestone containing calcite as a substantial component and with a schistose structure produced by parallelism of platy minerals

Note 1 to entry: The term carbonate-silicate schist should be used when the non-carbonate mineral content is >50 % vol. See schist, 4.2.3.

3.1.74

Cambrian

oldest system and period into which the Palaeozoic is divided

Note 1 to entry: See Table 1.

3.1.75

carbonate

mineral containing CO_3^{2-} ; calcite, dolomite, magnesite, and siderite, etc. which are frequent rock forming carbonate minerals

3.1.76

carbonate rock

rock consisting chiefly of carbonate minerals, especially a sedimentary rock; limestone, dolomite, and carbonatite are examples of carbonate rocks

Note 1 to entry: See 4.2.2.8, 4.2.2.9, 4.2.2.10 and 4.2.2.11.

3.1.77

carbonate-silicate rock

metamorphic rock mainly composed of silicate minerals (including calcium-silicate minerals) and containing between 5 % vol. vol and 50 % vol. vol of carbonate minerals

3.1.78

Carboniferous

period and system of the Palaeozoic

Note 1 to entry: See Table 1.

3.1.79

cataclasite

fault rock which is cohesive with a poorly developed or absent schistosity, or which is incohesive, characterised by generally angular porphyroclasts and lithic fragments in a finer-grained matrix of similar composition

Note 1 to entry: Generally, no preferred orientation of grains of individual fragments is present as a result of the deformation, but fractures may have a preferred orientation. A foliation is not generated unless the fragments are drawn out or new minerals grow during the deformation. Plastic deformation may be present but is always subordinate to some combination of fracturing, rotation and frictional sliding of particles. Cataclasite may be subdivided according to the relative proportion of finer-grained matrix into protocataclasite, mesocataclasite and ultracataclasite

3.1.80

cataclastic

pertaining to the structure and texture produced in a rock by severe mechanical stress during dynamic metamorphism; bending, breaking, and fragmentation of the mineral grains are characteristic features; also said of the rocks exhibiting such structure

Note 1 to entry: See breccia.

3.1.81

cement

mineral material, usually chemically precipitated during the rock compaction that occurs in the interstitial spaces among the individual grains of a sedimentary rock, thereby binding the grains together as a rigid mass; silica, carbonates and iron oxides are common cements

3.1.82

Cenozoic

youngest era of geologic time

Note 1 to entry: See Table 1.

3.1.83

chalcedony

group name for the compact varieties of silica composed of minute crystals of quartz with sub microscopic pores

3.1.84

chalcopyrite

sulphide mineral, the formula of which is CuFeS_2

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3.1.85

chalk

soft fine grained limestone, usually white consisting mostly of calcitic remains from microorganisms, and minor silt and clay

3.1.86

charnockite

orthopyroxene-bearing rock of granitoid composition

3.1.87

chert

fine-grained, hard, compact and dense sedimentary rock, consisting dominantly of the SiO₂ minerals quartz, chalcedony and opal. cryptocrystalline and/or amorphous silica

Note 1 to entry: Flint is a variety of chert.

3.1.88

chlorite Group

group of phyllosilicates, some of them of green colour, with general formula (Mg, Fe²⁺, Fe³⁺)₆AlSi₃O₁₀(OH)₈

3.1.89

chloritoid

micaceous mineral, the formula of which is Fe₂Al₄Si₂O₁₀(OH)₄

3.1.90

chromite

mineral, the formula of which is (Fe,Mg)(Cr,Al)₂O₄

3.1.91

chronostratigraphic unit

stage or zone which, independent of facies, represents a layer of specific age

3.1.92

cipollino marble

impure marble with band coloured structure, consisting in layers of calcite or dolomite grains mixed with variable quantities of silicate minerals

3.1.93

clast

mineral or rock fragment composing clastic sedimentary rocks

3.1.94

cisuralian

oldest epoch of the Permian

Note 1 to entry: See Table 1.

3.1.95

clastic

pertaining to a rock or sediment composed principally of broken fragments that are derived from pre-existing minerals, rocks or organic structures and that have been transported some distance from its original place

3.1.96

clay minerals

group of minerals, essentially hydrous silicates of aluminium with a layered crystalline structure; iron, magnesium, potassium, and other cations are also present in their formula; the most common of which belong to illite, montmorillonite, and kaolinite mineral subgroups

3.1.97

**clay slate
shale**

weakly metamorphosed clay stone with intermediate character between a clay stone and a true slate

3.1.98

clay

loose, extremely fine grained sediment or soft rock composed of particles with diameters less than 0,002 mm, mainly of clay minerals and other minerals, especially quartz, feldspars, and carbonates

3.1.99

clay stone

rock with more than 67 % vol. clay sized minerals

3.1.100

cleavage

a) property of a rock to split along closely spaced planar surfaces (see slaty cleavage, crenulation cleavage, schistosity, and rough cleavage);

b) splitting of a mineral along its crystallographic planes, thus reflecting crystal structure

3.1.101

clinopyroxene

monoclinic pyroxene exhibiting non-parallel extinction

3.1.102

columnar

structure of some volcanic rocks, such as basalt, consisting of parallel, prismatic columns, polygonal in cross section, nearly perpendicular to the top and the bottom of the flow unit

3.1.103

comb layering

fabric of igneous rocks consisting of bands of elongated crystals with nearly vertical mineral-elongation relative to the border of the bands

3.1.104

concretion

collective term applied loosely to various primary and secondary segregations of diverse origin, including irregular nodules, spherulites, crystalline aggregates, geodes, septarias and related bodies

3.1.105

conglomerate

coarse grained sedimentary rock composed of rounded to sub angular fragments (pebbles, cobbles, boulders), set in a fine grained matrix of sand or clay, and commonly cemented

3.1.106

consertal

fabric of rocks showing toothed border lines between adjoining crystals