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BS EN 16572:2015

BSI Standards Publication

Conservation of cultural heritage — Glossary of technical terms concerning mortars for masonry, renders and plasters used in cultural heritage

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National foreword

This British Standard is the UK implementation of EN 16572:2015.

The UK participation in its preparation was entrusted to Technical Committee B/560, Conservation of tangible cultural heritage.

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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EUROPEAN STANDARD

NORME EUROPÉENNE

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English Version

Conservation of cultural heritage - Glossary of technical terms concerning mortars for masonry, renders and plasters used in cultural heritage

Conservation des biens culturels - Glossaire des termes techniques relatifs aux mortiers de maçonnerie et aux enduits utilisés dans le domaine du patrimoine culturel

Erhaltung des kulturellen Erbes - Glossar für Mauermörtel und Putzmörtel zur Verwendung am kulturellen Erbe

This European Standard was approved by CEN on 20 June 2015.

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European foreword

This document (EN 16572:2015) has been prepared by Technical Committee CEN/TC 346 “Conservation of Cultural Heritage”, 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of an identical text or by endorsement, at the latest by January 2016 and conflicting national standards shall be withdrawn at the latest by January 2016.

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Introduction

Mortars for cultural heritage buildings may fulfil different functions, like masonry mortar, pointing mortar, plaster or render mortar and substrate for mural paintings.

This standard contains terminology and definitions with respect to historic mortars and repair mortars. Both mortar types and components are dealt with. Specific damage terms concerning mortars have been included in this document. The definitions are divided into 8 sections and these are listed at the beginning of Clause 3.

Translations of the terms in French, German, Dutch, Italian, Greek, Swedish and Spanish have been provided. Translations in other languages may be added in later revisions.

Although some of the terms defined in this standard are included in other published European Standards the aim of this standard is to provide professionals working in the field of cultural heritage with a common language for (historic) mortars.

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1 Scope

This European Standard describes the terminology for mortars used in the field of cultural heritage.

NOTE In addition to terms used in the three official CEN languages (English, French and German), this European Standard gives the equivalent terms in Dutch, Italian, Greek, Swedish and Spanish; these are published under the responsibility of the member body/National Committee for NEN, UNI, ELOT, SIS and AENOR and are given for information only. Only the terms and definitions given in the official languages can be considered as CEN terms and definitions.

2 Normative references

Not applicable.

3 Terms and definitions

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

NOTE The systematic order used is as follows:

— general terms mortar/render;

— functional applications of mortar;

— binders;

— production;

— mortar joints;

— mortar components;

— properties of fresh and hardened mortars;

— types of damage.

3.1 General terms

3.1.1
mortar (en)
mortier (fr)
mörtel (de)
mortel (nl)
malta (it)
κονίαμα (gr)
bruk (se)
mortero (sp)
material traditionally composed of one or more (usually inorganic) binders, aggregates, water, possible additives and admixtures combined to form a paste used in masonry for bedding, jointing and bonding, and for surface finishing (plastering and rendering) of masonry units, which subsequently sets to form a stiff material

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3.1.2
binder (en)
liant (fr)
Bindemittel (de)
bindmiddel (nl)
legante (it)
συνδετική κονία (gr)
bindemedel (se)
conglomerante (sp)
material with adhesive and cohesive properties capable of binding aggregates in a coherent mass

3.1.3
aggregate (en)
agrégat (fr)
Zuschlag (de)
aggregaat (nl)
aggregato (it)
αδρανές (gr)
ballast (se)
árido (sp)
particles of natural sediments or crushed rocks or other artificial materials, with a range of particle sizes, used in the mortar (see also sand)

Note 1 to entry: Apart from rock aggregates, light-weight aggregates exist like expanded clay, vermiculite, perlite.

3.1.4
additive (en)
adjuvant (fr)
Zusatzstoff (de)
additief (nl)
additivo (it)
πρόσθετο (gr)
tillsatsmaterial (se)
aditivo (sp)
additive (EN) or addition (ASTM): constituent usually added in small quantity to binder to modify its manufacture or properties (for example accelerators, plasticizers and air-entraining agents)

3.1.5
admixture (en)
ajout (fr)
Zusatzmittel (de)
toeslagstof (nl)
aggiunta (it)
πρόσμικτο (gr)
tillsatsmedel (se)
adición (sp)
substance other than binder, aggregate or water, added in quantities of at least 1 % w/w to the mix to alter its properties

Note 1 to entry: Pigments as well as pozzolana (as long as added in small quantities and not as a latent binder) and fibrous substances are admixtures.

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3.1.6
mix (en)
mélange (fr)
Mischung (de)
mengsel (nl)
miscela (it)
μίγμα (gr)
blandning (se)
mezcla (sp)
combination of the various materials used in a mortar

3.1.7
mix design (en)
formulation de mortier (fr)
Mörtelrezept (de)
mortelsamenstelling (nl)
formulazione della malta (it)
σχεδιασμός σύνθεσης κονιάματος (gr)
bruksrecept (se)
dosificación (sp)
various materials, and their relative proportions, used in a mortar

3.1.8
setting (en)
prise (fr)
Abbinden (de)
zetten (nl)
presa (it)
πήξη (gr)
sätta sig (se)
fraguado (sp)
process through which the mortar changes from a workable plastic state to an unworkable stiffer state

3.1.9
setting time (en)
temps de prise (fr)
Abbindezeit (de)
zetting tijd (nl)
tempo di presa (it)
χρόνος πήξης (gr)
sättningstid (se)
tiempo de fraguado (sp)
time taken for a mortar to achieve a specific hardness and strength

3.1.10
hardening (en)
durcissement (fr)
Erhärten (de)
verharden (nl)
indurimento (it)
σκλήρυνση (gr)
hårdnande (se)
endurecimiento (sp)
strength development that accompanies and continues after the initial setting of the mortar

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3.1.11
curing (en)
cure (fr)
Nachbehandlung (de)
nabehandeling (nl)
stagionatura (it)
ωρίμανση (gr)
härdning (se)
curado (sp)
process by which mortars develop strength due to carbonation and/or hydration and where the process is controlled by environmental conditions and/or protective measures

3.1.12
matrix (en)
matrice (fr)
Matrix (de)
matrix (nl)
matrice (it)
μήτρα (συνδετική) (gr)
matrix (se)
matriz (sp)
part of the hardened mortar, consisting of binder or binder and very fine grained materials between the aggregate particles

3.2 Terms related to functional applications of mortar

3.2.1
bedding mortar (en)
mortier de pose (fr)
mortier de pose (fr)
Einbettmörtel (de)
metselmortel (nl)
malta di allettamento (it)
στρώση κονιάματος (gr)
murbruk (se)
mortero de agarre (sp)
mortar used to provide an even bed and jointing for masonry units or used as substratum for tesserae (or slabs) for mosaics during construction, repair or rebuilding

3.2.2
pointing mortar (en)
mortier de joint (fr)
Fugenmörtel (de)
voegmortel (nl)
malta da stilatura (it)
κονίαμα αρμών (gr)
fogbruk (se)
mortero de junta (sp)
mortar used to fill the outer part of an existing mortar joint (usually not greater than one-third of the total depth of the joint)

Note 1 to entry: Fresh, plastic bedding mortar may be removed (raked out) from the outer part of the joint and replaced with pointing mortar, or the outer part of a hardened mortar joint may be removed and replaced with a pointing mortar (repointing).

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3.2.3
repair mortar (en)
mortier de réparation (fr)
Reparaturmörtel (de)
reparatiemortel / herstelmortel (nl)
malta di reintegro (it)
επισκευαστικό κονίαμα (gr)
reparationsbruk (se)
mortero de reparación (sp)
mortar replacing damaged mortar in existing masonry, and which is also used for patching damaged stone and other inorganic materials

Note1 to entry: Specific repair mortars are used for the resurfacing of stones or mortars, as defined in 3.2.4.

3.2.4
surface repair mortar (en)
plastic repair mortar (en)
mortier de modelage (fr)
Steinersatzmörtel (de)
steenherstelmortel (nl)
malta di reintegrazione superficiale (it)
κονίαμα αποκατάστασης μονολιθικότητας (gr)
stenlagningsbruk (se)
mortero de restauración (sp)
mortars used to replace or to model a missing part of an original material with a new material which remains plastic long enough in order to be adapted into various shapes and finished with required surface textures

3.2.5
plaster (en)
enduit intérieur (fr)
Innenputzmörtel (de)
pleister (nl)
intonaco per interno (it)
εσωτερικό επίχρισμα (gr)
puts (se)
enlucido (sp)
coating composed of one or more mortar layers applied in one accomplishment sequence, used on internal masonry surface such as ceiling, walls, and partition

Note 1 to entry: Plaster is a traditional English term.

3.2.6
render (en)
enduit extérieur (fr)
Außenputzmörtel (de)
buitenpleister (nl)
intonaco per esterno (it)
εξωτερικό επίχρισμα (gr)
putsbruk (se)
revoco (sp)
coating composed of one or more mortar layers applied in one sequence, used on *external* masonry surfaces; it serves as protection as well as surface finishing

Note 1 to entry: Render(ing) is a traditional English term.

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3.2.7
sacrificial plaster/render (en)
enduit sacrificiel (fr)
Opferputz (de)
opofferingspleister (nl)
intonaco di sacrificio (it)
offerputs (se)
mortero de sacrificio (sp)
plaster or render weakly bound by carbonation that is used for the protection of historically valuable substrates and which is expected to have a short service life

3.2.8
stucco (en)
stuc (fr)
Stuckmörtel (de)
stuc (nl)
stucco (it)
στούκο (gr)
stuck (se)
estuco (sp)
mortars used for decorative purposes, which allow making mouldings, architectural castings and other decorations on the facades and in the interiors of the buildings

3.2.9
sgraffito (en)
sgraffito (fr)
Sgraffito (de)
sgraffito (nl)
sgraffito (it)
esgrafiado (sp)
multilayer plaster comprising several differently coloured layers which are partially exposed when the plaster is scratched to produce a pattern

3.2.10
Roman concrete (en)
béton romain (fr)
Römischer Beton (de)
Romeins beton (nl)
opus caementitium/opera cementizia/calcestruzzo romano (it)
σκυρόδεμα/λιθόδεμα (gr)
romersk betong (se)
hormigón romano (sp)
composite material, from the period of Roman period, that consists essentially of lime mixed with natural (e.g. volcanic tuff, pumice, …) or artificial pozzolanic material (e.g. crushed bricks or pottery) within which are embedded brick and/or stone rubble and sand

Note1 to entry: The material was able to harden within a formwork with scarcely any contact with the air even under extremely wet conditions.

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3.2.11
conglomerate (en)
conglomérat (fr)
Konglomerat (de)
conglomeraat (nl)
conglomerato (it)
αδρομερές (gr)
konglomerat (se)
conglomerado (sp)
general term for materials composed of one or more inorganic binders, fine aggregates, coarse aggregates (gravel and crushed stone >4 mm), water, additives and admixtures, used in masonry

Note 1 to entry: Both Roman concrete and modern concrete can be considered a conglomerate.

3.2.12
fine stuff (en)
mortier de finition (fr)
Feinputz (de)
blauwpleister (nl)
intonachino (it)
λεπτό φινίρισμα (gr)
finbruk (se)
relleno fino (sp)
mortar made of lime and fine aggregate, used for pointing finely-jointed ashlar and for the finishing coat in plastering and rendering

3.3 Terms related to binders

3.3.1
gypsum (en)
plâtre (fr)
Gips (de)
Gips (nl)
Gesso (it)
Γύψος (gr)
gips (se)
yeso (sp)
material composed of calcium sulphate, used as binder (plaster, stucco mortar) and which, after the addition of water, is able to set and harden, forming calcium sulphate dihydrate $CaSO_4.2H_2O$

3.3.2
lime (general) (en)
chaux (fr)
Kalk (de)
kalk (nl)
calce (it)
ασβέστης (gr)
kalk (se)
cal (sp)
material composed of oxides (quicklime) or hydroxides (hydrated or slaked lime) of calcium or calcium and magnesium used as binder in traditional masonry or in mineral paints (for example limewash)

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3.3.3
quicklime (en)
chaux vive (fr)
Branntkalk (de)
ongebluste kalk (nl)
calce viva (it)
(άσβυστη) άσβεστος (gr)
bränd osläckt kalk (se)
cal viva (sp)
product of the calcination of limestone (at approx. 900° C), composed of mainly calcium oxide (CaO) or calcium oxide in combination with magnesium oxide (MgO)

3.3.4
slaked lime (en)
chaux éteinte (fr)
gelöschter Kalk (de)
gebluste kalk (nl)
calce spenta (it)
σβησμένη άσβεστος (gr)
släckt kalk (se)
cal apagada (sp)
calcium hydroxide ($Ca(OH)_2$) prepared by hydrating (or slaking) quicklime (CaO) with water to produce a powder or putty

3.3.5
lime putty (en)
chaux en pâte (fr)
Kalkteig (de)
kalkdeeg (nl)
grassello (it)
πολτός ασβέστη (gr)
kalkdeg (se)
cal en pasta (sp)
plastic material resulting from slaking quicklime with an amount of water that exceeds that required to result in a powder

Note 1 to entry: A putty of inferior quality is made by the addition of water to hydrated lime powder.

Note 2 to entry: The addition of water, slaking, causes a strong exothermic reaction resulting in hydration of the oxides to hydroxides.

3.3.6
air lime (en)
chaux aérienne (fr)
Luftkalk (de)
luchtkalk (nl)
calce aerea (it)
αερικός ασβέστης (gr)
luftkalk (se)
cal aérea (sp)
non-hydraulic lime which hardens by a reaction with carbon dioxide from the air in the presence of moisture to form a carbonate

Note 1 to entry: It does not harden under water or in the absence of carbon dioxide.

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3.3.7
air-hardening binder (en)
liant à prise aérienne (fr)
lufthärtendes Bindemittel (de)
luchthardend bindmiddel (nl)
legante aereo (it)
αερική κονία (gr)
lufthärdande bindemedel (se)
conglomerante aéreo (sp)
non-hydraulic binder that hardens by for example reacting with carbon dioxide from the air and moisture to form a carbonate or through the evaporation of water (i.e. clay)

3.3.8
dolomitic lime (en)
chaux dolimitique (fr)
Dolomitkalk (de)
dolomietkalk (nl)
calce dolomitica (it)
δολομιτική άσβεστος (gr)
dolomitisk kalk (se)
cal dolomítica (sp)
air lime, derived from dolomitic limestone, consisting mainly of calcium magnesium oxide and / or calcium magnesium hydroxide

3.3.9
fat lime (en)
chaux grasse (fr)
Sumpfkalk (de)
vette kalk (nl)
calce grassa (it)
παχειά άσβεστος (gr)
fet kalk (se)
cal grasa (sp)
air lime characterized by good workability properties usually related to a high content of calcium oxide (CaO + MgO >95 %)

Note 1 to entry: When slaked it approximately doubles its volume.

Note 2 to entry: Where MgO is > 5 % the lime is treated as a lean lime.

3.3.10
lean lime (en)
chaux maigre (fr)
Magerkalk (de)
magere kalk (nl)
calce magra (it)
ισχνή άσβεστος (gr)
mager kalk (se)
cal magra (sp)
air lime with less calcium oxide than a fat lime (85 % < CaO + MgO < 95 %)

Note 1 to entry: When slaked, its volume increases very little. When used in a mortar these limes will bind less aggregate than fat limes.

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3.3.11
chalk lime (en)
chaux de craie (fr)
Kreidekalk (de)
krijtkalk (nl)
pietra da calce (it)
άσβεστος από κιμωλία (gr)
kritkalk (se)
cal de creta (sp)
lime derived from a very soft, calcium carbonate limestone composed of the remains of micro-organisms in a matrix of finely crystalline calcium carbonate

3.3.12
hydrated lime (en)
chaux éteinte ou chaux hydrate (fr)
Kalkhydrat (de)
gebluste kalk (nl)
calce idrata (it)
υδράσβεστος (gr)
hydratkalk (se)
cal hidratada en polvo (sp)
any lime mainly in the hydroxide form, produced by slaking (hydration) of quicklime

Note 1 to entry: Dry powdered lime mainly in the hydroxide form, is produced by slaking (hydration) of quicklime with the addition of a stoichiometric amount of water.

3.3.13
hydraulic lime (en)
chaux hydraulique (fr)
hydraulischer Kalk (de)
hydraulische kalk (nl)
calce idraulica (it)
υδραυλικός ασβέστης (gr)
hydraulisk kalk (se)
cal hidráulica (sp)
lime with hydraulic properties setting primarily by reaction with water, which is made either by firing naturally-occurring limestone that contains clay minerals (e.g. silica and alumina) at temperatures up to 1 250 °C to from hydraulic quicklime which may be slaked to form hydrated hydraulic lime (*Natural Hydraulic Lime* or NHL in EN 459-1), or by blending non-hydraulic lime powder with other materials such as cement, blast furnace slag, fly ash and other suitable materials (*Hydraulic Lime* or HL in EN 459-1)

Note 1 to entry: Natural hydraulic lime contains a mix of hydrated lime, silicates and aluminates which harden through reaction with water and by carbonation.

Note 2 to entry: Based on research published by Vicat in 1828, which defined three classes of hydraulicity of hydraulic lime, corresponding to setting time under water and other properties, a UK system of classification evolved which, by the early 20th century, comprised three classes known as:

— *Feebly (slightly) hydraulic lime:* a lime with low hydraulic properties produced from limestone containing less than 12 % clay.

— *Moderately hydraulic lime:* a lime with moderate hydraulic properties produced form limestone containing between 12 % to 18 % clay.

— *Eminently hydraulic lime:* a lime with high hydraulic properties produced from limestone containing between 18 % to 25 % clay.

Note 3 to entry: These historic classifications do not correspond to the three classes of hydraulic lime defined in EN 459-1, which are based on compressive strengths at 28 d:

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— NHL2 or HL 2 ≥ 2 to ≤ 7 Mpa;

— NHL3.5 or HL 3.5 ≥ 3.5 to ≤ 10 Mpa;

— NHL5 or NHL 5 ≥ 5 to ≤ 15 Mpa.

The modern classes are considerably stronger than their historic counterparts.

3.3.14
hydraulic binder (en)
liant hydraulique (fr)
Bindemittel hydraulisches (de)
hydraulisch bindmiddel (nl)
legante idraulico (it)
υδραυλική κονία (gr)
hydrauliskt bindemedel (se)
conglomerante hidráulico (sp)
binder that sets and hardens partly or primarily by chemical reaction with water (for example Portland cement, hydraulic lime)

Note 1 to entry: Most hydraulic binders undergo a two stage hardening process – a rapid initial set due to hydration followed by a longer hardening process due to carbonation.

3.3.15
mixed binder (en)
liant mixte (fr)
Mischbinder (de)
gemengd bindmiddel (nl)
miscela di leganti (it)
μικτή κονία (gr)
blandade bindemedel (se)
pasta (sp)
binder that hardens both by chemical reaction with water and by reaction with carbon dioxide (for example, lime-gypsum)

3.3.16
natural cement (en)
ciment naturel (fr)
Naturzement (de)
natuurlijk cement (nl)
cemento natural (it)
φυσικό τσιμέντο (gr)
naturlig cement (se)
cemento natural (sp)
hydraulic binder, produced by calcination of a naturally-occurring argillaceous limestone at a temperature below its sintering point, which is then ground to a fine powder

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3.3.17
Portland cement (en)
ciment Portland (fr)
Portlandzement (de)
Portland cement (nl)
cemento Portland (it)
τσιμέντο Πόρτλαντ (gr)
Portlandcement (se)
cemento Portland (sp)
product of calcinations of a mixture of limestone and clay containing materials at temperatures up to 1 450 °C

Note 1 to entry: The resulting clinker is ground to a fine powder and other materials (up to 5 %) may be added or blended. Most cements contain a small amount of gypsum added to regulate the setting time.

Note 2 to entry: Portland cement is the dominant hydraulic binder in use today for buildings.

3.3.18
Roman cement (Parker's cement) (en)
ciment romain (fr)
Romanzement (de)
Romeins cement (nl)
cemento Parker (it)
Ρωμαϊκό τσιμέντο / τσιμέντο Parker (gr)
romancement (Parkers cement) (se)
cemento romano o cemento Parker (sp)
natural hydraulic cements of which the raw materials contain a high percentage of clay

Note 1 to entry: Parker's cement was patented in 1796 and was prepared by calcinating nodules of septaria from the London clay (at a lower temperature than Portland cement). 'The quality of performance and the appearance of the cement were thought to equal ancient Roman mortars, hence the name. Roman cements were principally used during the nineteenth and early twentieth century for decorating exterior of buildings – rendering, and making architectural mouldings and castings. They were also used for pointing, especially in restoration and repair'.

3.4 Terms related to production

3.4.1
calcination (en)
calcination (fr)
Kalzinierung (de)
calcinatie (nl)
calcinazione (it)
έψηση (gr)
kalcinering (se)
calcinación (sp)
process of heating a raw material to bring about its desired transformation, for example thermal decomposition of limestone to quicklime with loss of carbon dioxide

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3.4.2
slaking (en)
extinction (fr)
Löschen (de)
blussen (nl)
spegnimento (it)
σβέση ασβέστου (gr)
släckning (se)
apagado (sp)
hydration process whereby quicklime (calcium oxide, CaO or calcium magnesium oxide, CaMgO) is combined with water to form slaked lime (calcium hydroxide, $Ca(OH)_2$ or calcium magnesium hydroxide, $CaMg(OH)_2$) in the form of lime putty or dry powdered lime

Note 1 to entry: Slaking is a strongly exothermic reaction.

3.4.3
hydration (en)
hydratation (fr)
Hydratation (de)
hydratatie (nl)
idratazione (it)
ενυδάτωση (gr)
hydratisering (se)
hidratación (sp)
reaction of an anhydrous or partially-dehydrated compound with water, yielding a new compound, in a hydrated form, that combines water in its structure during the setting of the binding materials

Note 1 to entry: In hydraulic binders, where the above compounds exists in non-hydrated form the hydration process is described through the reaction of calcium silicate (CS) and calcium aluminate (CA) with water. In the case of mixed binders hydration refers to the reaction of aluminium and silicate phases with lime and water towards the formation of the hydrated phases (calcium silicate hydrate (CSH) and calcium aluminate hydrate (CAH).

3.4.4
carbonation (en)
carbonatation (fr)
Karbonatisierung (de)
carbonatatie (nl)
carbonatazione (it)
ενανθράκωση (gr)
karbonatisering (se)
carbonatación (sp)
process by which lime (calcium hydroxide $Ca(OH)_2$) or calcium magnesium hydroxide ($CaMg(OH)_2$) reacts with carbon dioxide (CO2) from the ambient environment and reverts to corresponding carbonate compounds which are harder, more stable and less soluble in water

3.4.5
cementation index (C.I.) / hydraulic index (en)
indice de cimentation (fr)
hydraulischer Index (de)
hydrauliciteitsindex (nl)
indice di idraulicita (it)
δείκτης υδραυλικότητας (gr)
cementindex (se)
índice de hidraulicidad (sp)
formula for assessing the capacity of binder materials such as hydraulic lime to develop strength by reacting directly with water

Note 1 to entry: (Boyton 1966) defines the CI as:

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$$CI = \frac{2,8SiO_2 + 1,1Al_2O_3 + 0,7Fe_2O_3}{CaO + 1,4MgO}$$

where

SiO_2 is the reactive silica.

Note 2 to entry: This definition applies to modern hydraulic binders. In the past, there have been other indices, for example Vicat, which were applied to natural hydraulic binders.

3.4.6
slurry (en)
barbotine (fr)
Schlämme (de)
slurry (nl)
"boiacca" (it)
υδατικό αιώρημα /αριάνι (gr)
(kalk)slam (se)
lechada (sp)
generally inorganic, thick but fluid suspension of an inorganic solid material in water

EXAMPLE A lime slurry made from hydrated lime and water.

3.5 Terms related to mortar joints

3.5.1
perpend (en)
joint vertical (fr)
Stoßfuge (de)
stootvoeg (nl)
giunto verticale (it)
κατακόρυφος αρμός (gr)
stötfog (se)
llaga (sp)
vertical joints between ends of masonry units

Note 1 to entry: The term *head joint* is also used.

3.5.2
pointing (en)
jointoiement (fr)
Verfugen / Fugung (de)
voegen / voegwerk (nl)
stilatura (it)
αρμολόγημα (gr)
fogning (se)
retundido (sp)
raking out of fresh, plastic mortar from the outer part of the mortar joint and insertion of mortar (see 3.2.2) that may differ in composition from the bedding mortar

Note 1 to entry: The word is also used to describe the full depth of mortar which has been inserted at a later date than the original bedding mortar. Also, pointing is the (process of) filling of the outer part of a masonry joint with a mortar.

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3.5.3
repointing (en)
rejointoiement (fr)
Neuverfugung (de)
Hervoegen (nl)
Ristilatura (it)
επισκευή αρμολογήματος (gr)
omfogning (se)
rejuntado (sp)
process of removing the outer part of a hardened mortar joint and replacing with pointing mortar (see 3.2.2)

3.5.4
raked joint (en)
joint évidé (fr)
ausgeraeumte Fuge (de)
uitgekrabde voeg (nl)
scarnificazione del giunto (it)
ξυσμένος αρμός /αρμολόγημα (gr)
urrakad fog (se)
rehundido (sp)
space in a joint resulting from the removal of the outer mortar so that it is set back from the surface of the masonry, usually with the intention of repointing

Note 1 to entry: It is called a recessed joint when intentionally left unfilled.

3.5.5
tooled joint (en)
joint ciselé (fr)
bearbeitete Fuge (de)
bewerkte voeg (nl)
giunto lavorato (it)
αρμός επεξεργασμένος με εργαλείο (gr)
bearbetad fog (se)
llagueado (sp)
joint surface which has been compressed and shaped with a special tool other than a trowel

3.6 Terms related to mortar components

3.6.1
clay mineral (en)
minéral argileux (fr)
Tonmineral (de)
kleimineraal (nl)
minerale argilloso (it)
ορυκτά αργίλου (gr)
lermineral (se)
mineral arcilloso (sp)
different groups of finely crystalline (< 4 micron) to amorphous hydrated (mainly alumina) silicates with lamellar structure

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3.6.2
clinker (en)
clinker (fr)
Klinker (de)
klinker (nl)
clinker (it)
κλίνκερ (gr)
klinker (se)
clinker (sp)
solid material formed by burning lime and clay containing raw materials at elevated temperatures (i.e. their sintering temperature of ca 1 450 °C) to produce calcium silicates and aluminates

3.6.3
limestone (en)
calcaire (fr)
Kalkstein (de)
kalksteen (nl)
pietra calcarea (it)
ασβεστόλιθος (gr)
kalksten (se)
caliza (sp)
sedimentary rock composed mainly of calcium carbonate

3.6.4
Portland cement clinker (en)
clinker de ciment (fr)
Portland Portlandzementklinker (de)
Portlandcement klinker (nl)
clinker di cemento Portland (it)
κλίνκερ τσιμέντου Πόρτλαντ (gr)
Portlandcementklinker (se)
clinker de cemento Portland (sp)
partially fused clinker consisting primarily of hydraulic calcium silicates and aluminates (see 3.6.2)

3.6.5
pozzolan (en)
pouzzolane (fr)
Puzzolan (de)
Pozzolaan (nl)
Pozzolana (it)
Ποζολάνη (gr)
puzzolan (se)
puzolana (sp)
in its general meaning, siliceous or siliceous and aluminous material with amorphous and/or micro crystalline structure, or with an amorphous or micro crystalline component, which as such possesses little or no hydraulic properties but will, in a finely divided form and in the presence of moisture, chemically react with calcium hydroxide at ordinary temperatures to form compounds possessing hydraulic properties

Note 1 to entry: Originally the term derives from Pozzuoli (It).

Note 1 to entry: Pozzolans are natural (e.g. earth from Pozzuoli, Santorini earth, trass); artificial ones (e.g. fly ash, ceramic powder, silica fume, ...) are described as pozzolanic materials.

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3.6.6
sand (en)
sable (fr)
Sand (de)
zand (nl)
sabbia (it)
άμμος (gr)
sand (se)
arena (sp)
fine aggregates used in mortar usually consisting of quartz and silica or silicates/carbonates with a particle size within the range of 4 mm to 0,063 mm

3.6.7
sharp (sand) (en)
anguleux (fr)
gebrochen (de)
scherp (nl)
spigoloso (it)
θραυστή (άμμος) (gr)
skarp (se)
arena de machaqueo (sp)
sand with mainly angular grains

3.6.8
soft (sand) (en)
roulé fr)
rund (de)
rond (nl)
arrotondato (it)
στρογγυλεμένη (άμμος)(gr)
rundad (se)
arena redondeada (sp)
sand with mainly rounded grains

Note 1 to entry: Also imprecisely in the vernacular: sand with higher proportion of finer particles.

3.6.9
silt (en)
silt/limon (fr)
Silt (de)
silt (nl)
limo (it)
ιλύς (gr)
silt (se)
limo (sp)
fine natural particles, with a size in the range 0,002 mm to 0,063 mm; smaller sizes are classified as clay

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3.6.10
fibre (en)
fibre(fr)
Faser (de)
Vezel (nl)
Fibra (it)
ίνα (gr)
fiber (se)
fibra vegetal (sp)
organic material such as straw or other fibres, added to the mix in order to obtain improved properties, for example flexural strength, control of shrinkage, reduction of density

3.6.11
gravel (en)
gravier (fr)
Kies (de)
grind (nl)
ghiaia (it)
χαλίκι/ λατύπη (gr)
grus (se)
grava (sp)
natural aggregate resulting from alluvial and glacial phenomena, and which is characterized by coarse, smooth, rounded or spherical grains predominately formed of dimensions greater than 4 mm

3.6.12
crushed stone (en)
pierre concassée (fr)
Gesteinsbruchstuecke (de)
gebroken steen / steenslag (nl)
pietrisco (it)
θραυσμένη Πέτρα (gr)
krossad sten (se)
grava de machaqueo (sp)
natural or artificial aggregate from particular quarries or intentionally produced, and which is characterized by angular, coarse grains

3.6.13
cocciopesto (en)
tuileau (fr)
Ziegelmehl (de)
baksteenpoeder / cocciopesto (nl)
cocciopesto (it)
κουρασάνι (gr)
tegelkross (se)
chamota (sp)
crushed fired clay products such as bricks or roof tiles, which may give a pozzolanic reaction, which are ground or crushed to different aggregate sizes (from dust to several cm in size), and which are characterized by an orange-red colour and high porosity

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3.7 Terms related to properties of fresh and hardened mortars

3.7.1
hydraulicity (en)
hydraulicité (fr)
Hydraulizität / Wasserbindevermögen (de)
hydrauliciteit (nl)
Idraulicitá (it)
υδραυλικότητα (gr)
hydraulicitet (se)
hidraulicidad (sp)
binder's ability to form hydrated hydraulic compounds

3.7.2
dense (mortar) (en)
dense (fr)
Dicht (de)
dicht (nl)
denso (it)
πυκνός (gr)
styvt bruk (se)
denso (mortero) (sp)
hard, strong or impervious mortar with a high density

3.7.3
plasticity (en)
plasticité (fr)
Plastizität (de)
plasticiteit (nl)
plasticitá (it)
πλαστικότητα (gr)
smidighet (se)
plasticidad (sp)
rheological property of a fresh mortar mix to be worked, modeled and formed; indication of its cohesiveness and general plastic properties

3.7.4
pozzolanicity (en)
pouzzolanicité (fr)
Puzzolanität (de)
pozzolaniciteit (nl)
pozzolanicitá (it)
ποζολανικότητα (gr)
puzzolanitet (se)
puzolanicidad (sp)
extent to which a material can react with calcium hydroxide and water at normal temperature to produce compounds which can set and develop strength under water, i.e. in absence of CO_2

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3.7.5
shrinkage (en)
perte de volume (fr)
retrait (fr)
Schwinden (de)
krimp (nl)
ritiro (it)
συστολή/ συρρίκνωση (gr)
krympning (se)
retracción (sp)
irreversible decrease in volume of a mortar, predominately resulting from loss of moisture (drying shrinkage) and/or carbonation (carbonation shrinkage)

3.7.6
texture (en)
texture (fr)
Textur (de)
textuur (nl)
tessitura (it)
υφή (gr)
gräng (se)
textura (sp)
interconnection, orientation and distribution of parts or whole of the constituents of a mortar, resulting in a particular appearance of the finish

3.7.7
water retentivity (water retention) (en)
rétention d'eau (fr)
Wasserrückhaltevermögen(de)
waterretentie (nl)
ritenzione d'acqua (it)
κατακράτηση i (gr)
vattenkvarhållning (se)
retención de agua (sp)
capacity of mortar to retain water due to its very fine porous capillary system or due to specifically added components

Note 1 to entry: Water retention also means the amount of water retained by a certain mortar.

3.7.8
workability (en)
ouvrabilité (fr)
Verarbeitbarkeit (de)
Verwerkbaarheid (nl)
Lavorabilitá (it)
εργάσιμο/εργασιμότητα (gr)
arbetbarhet (se)
trabajabilidad (sp)
measure of the ease with which a fresh mix of concrete or mortar can be handled and placed

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3.8 Terms related to types of damage, typically found in mortars

3.8.1
bursting (en)
éclatement (fr)
Absprengung (de)
Openbarsten (nl)
rottura explosiva (it)
σκασίματα (gr)
sprängning (se)
abolsado (sp)
swelling of interior part of mortar together with disruption of the surface

3.8.2
crazing (en)
craquelé (fr)
Netzrissbildung (de)
Cracquelé (nl)
fessurazione a rete (it)
δίκτυο μικρορωγμών / κρακελάρισμα (gr)
krackelering (se)
cuarteado (sp)
network of minor cracks

3.8.3
lacuna (en)
lacune (fr)
Fehlstelle (de)
lacune (nl)
lacuna (it)
απώλεια υλικού / κενό (gr)
bortfall / lakun (se)
laguna (sp)
missing part in some formerly existing mortar surface

3.8.4
blistering/ bulging (en)
cloquage (fr)
Hohlraum (de)
blaas (nl)
Rigonfiamento (it)
απώλεια υλικού / κενό (gr)
hålrum, bomparti (se)
abombamiento (sp)
hollow space behind a plastered surface

3.8.5
layering (en)
détachement (par couches) (fr)
Schichten- (Schuppen-) bildung (de)
laagvorming (nl)
esfoliazione (it)
αποφλοίωση (gr)
exfoliering (se)
desprendimiento en capas (sp)
formation of parallel layers in a material

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Note1 to entry: Delamination and exfoliation are terms also used to describe layering.

3.8.6
lime staining (en)
voile de chaux (fr)
Kalkauslaugung (de)
kalkuitloging (nl)
formazione di macchie (it)
εξανθήματα ασβέστου (gr)
kalkutfällning (se)
costra de cal (incrustación) (sp)
accretion on surface of leached constituents from the mortars layers

Note 1 to entry: It mainly consists of whitish calcitic minerals and has a good adherence to the underlying material.

Note 2 to entry: Lime staining is different from efflorescence.

3.8.7
powdering/sanding (en)
pulvérulence/farinage (fr)
Abmehlen (de)
poederen (nl)
decoesione / polverizzazione (it)
κονιοποίηση (gr)
pulverisering (se)
pulverización (sp)
particles of a mortar are no longer bound; the affected material is reduced to fine powder

Note 1 to entry: Damage starts from the surface of the material.

3.8.8
push out (of pointing mortar) (en)
expulsion (des joints) (fr)
Herausdrücken (aus der Fuge) (de)
uitdrukken (van de voegen)) (nl)
espulsione (dei giunti di malta) (it)
διόγκωση (των αρμών) (gr)
utpressad (fog) (se)
descarnado (sp)
pointing mortar no longer adheres to the bedding mortar nor to the brick and has become loose and detached

3.8.9
void (en)
vide (fr)
Hohlräume (de)
holle ruimtes (nl)
vuoti (it)
ασυνέχειες δομής/ κενό (gr)
hålrum (se)
vacío (sp)
empty space (not including cracks) in mortar (for example between the horizontal joint and the masonry unit, or between vertical and horizontal joint or all around the masonry units)

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