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Projektiranje, priprava in uporaba zunanjih in notranjih ometov - 1. del: Zunanji ometi

Design, preparation and application of external rendering and internal plastering - Part 1: External rendering

Planung, Zubereitung und Ausführung von Außen- und Innenputzen - Teil 1: Außenputz

Conception, préparation et application des enduits extérieurs et intérieurs - Partie 1: Enduits extérieurs

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ICS:

91.100.10	Cement. Mavec. Apno. Malta	Cement. Gypsum. Lime. Mortar

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Design, preparation and application of external rendering and internal plastering - Part 1: External rendering

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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European foreword

This document (EN 13914-1:2016) has been prepared by Technical Committee CEN/TC 125 “Masonry”, the secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by September 2016, and conflicting national standards shall be withdrawn at the latest by September 2016.

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

This document supersedes EN 13914-1:2005.

The first draft of this document was prepared by the European Union of Contractors of Plastering, Dry Lining, Stucco and Related Activities (UEEP) at the request of the CEN Technical Sector Board (Resolution No. BTS1/56/1991).

This document gives requirements and recommendations for building details, design and materials considerations, the selection of mixes and the application of renders based on cement, lime or organic binders for use on external backgrounds.

NOTE The term ‘rendering mortar’ is used in the European Standard product specification EN 998-1, but to reflect common usage in relation to this document and for ease of reference the term ‘render’ (noun) has been used.

A rendered finish may be applied to a variety of backgrounds, either to improve resistance to rain penetration and weathering and/or for aesthetic reasons.

For the purposes of this document (except where stated in relation to a specific product standard) the term ‘strength’ should be considered in terms of relative strengths between different types of backgrounds compared with the nominal strengths of prescribed render mixes. Although it may be possible to consider this in terms of compressive strength, this standard deals with aspects of a craft as opposed to design calculations. Therefore ‘strength’ is not considered in terms of numerical values derived from testing. Similar considerations also apply to terms such as ‘movement’, ‘absorbency’ and ‘permeability’ etc. used in this document.

This document refers only to the technical suitability of materials and/or procedures. During the application the user will need to observe any legal obligations relating to health and safety at any stage.

Because this document is a code-like document as opposed to the more conventional European product standard, it is appropriate to mention that, as with product standards, the use of the verbal form 'shall' denotes a requirement for which verification of compliance has to be able to be demonstrated. Recommendations are denoted by the verbal form 'should' and should be followed unless there is a justifiable reason for not doing so.

It is not the function of this standard to assign responsibility for the design and application of any work or actions mentioned within to any specific party. Such responsibility is a matter for other documentation associated with the work, e.g. the contract.

It has been assumed in the drafting of this document that the application of its provisions is entrusted to appropriately qualified and experienced people, for whose guidance it has been prepared.

According to the CEN/CENELEC Internal Regulations, the national standards organizations 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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies requirements and recommendations for the design, preparation and application of

— renders based on cement, lime or other mineral binders, and/or combinations thereof, masonry cement and polymer modified binder based external renderings, in accordance with EN 998-1 or site made renders;

— renders based on organic binders in accordance with EN 15824

on all common types of backgrounds. It includes rendering on both new and old backgrounds and the maintenance and repair of existing work. This document gives guidance on the use of established site, factory and semi-finished factory made renders.

This document does not cover the following:

a) the use and application of special renders for liquid retaining structures, e.g. coatings, and for backgrounds to cladding systems;

b) the structural repair of concrete;

c) the installation of external thermal insulation composite systems (ETICS);

d) the specification and use of sealants used to seal joints for use with rendering;

e) the use of gypsum based renders used externally, but their use may be permitted in some countries;

Gypsum based products soften when subject to prolonged moist conditions. The use of such products externally will depend upon the climatic conditions where the render will be used and on the local building traditions. With the exception of some drier countries in southern Europe gypsum based renders are generally not recommended for external use and are therefore not included within the scope of this document. However, their use may be permitted and controlled locally.[1)]

f) renders on historical monuments or buildings in protected areas which may be regulated by national codes;

g) the design and installation of flashings at windowsills and elsewhere.

Because of the many and varied materials and practices and different climatic conditions in Europe it is not possible for certain aspects of the standard to enter into sufficient detail to be fully usable to practitioners in each country. Appropriate guidance to complement, but not alter any basic European recommendations is given in documentation prepared by each country. Aspects of this European Standard whose basic recommendations may need to be complemented are indicated where they occur by a footnote referencing this clause.

1) Refer to final paragraph of Clause 1 for further information.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 197-1, *Cement — Part 1: Composition, specifications and conformity criteria for common cements*

EN 413-1, *Masonry cement — Part 1: Composition, specifications and conformity criteria*

EN 459-1, *Building lime — Part 1: Definitions, specifications and conformity criteria*

EN 934-3, *Admixtures for concrete, mortar and grout — Part 3: Admixtures for masonry mortar — Definitions, requirements, conformity and marking and labelling*

EN 998-1:2010, *Specification for mortar for masonry — Part 1: Rendering and plastering mortar*

EN 1008, *Mixing water for concrete — Specification for sampling, testing and assessing the suitability of water, including water recovered from processes in the concrete industry, as mixing water for concrete*

EN 1996-2, *Eurocode 6 — Design of masonry structures — Part 2: Design considerations, selection of materials and execution of masonry*

EN 10088-1, *Stainless steels — Part 1: List of stainless steels*

EN 10346, *Continuously hot-dip coated steel flat products for cold forming — Technical delivery conditions*

EN 12878, *Pigments for the colouring of building materials based on cement and/or lime — Specifications and methods of test*

EN 13055 (all parts), *Lightweight aggregates*

EN 13139, *Aggregates for mortar*

EN 13496, *Thermal insulation products for building applications — Determination of the mechanical properties of glass fibre meshes as reinforcement for External Thermal Insulation Composite Systems with renders (ETICS)*

EN 13658-2, *Metal lath and beads — Definitions, requirements and test methods — Part 2: External rendering*

EN 15824:2009, *Specifications for external renders and internal plasters based on organic binders*

EN ISO 1461, *Hot dip galvanized coatings on fabricated iron and steel articles — Specifications and test methods (ISO 1461)*

EN ISO 16120-2, *Non-alloy steel wire rod for conversion to wire — Part 2: Specific requirements for general-purpose wire rod (ISO 16120-2)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 998-1, EN 13658-2, EN 15824 and the following apply.

3.1
render (noun)
mix of one or more inorganic and/or organic binders, aggregates, water and sometimes admixtures and/or additions used for protective and/or decorative reasons to obtain a surface finish which is applied to walls and ceilings

[SOURCE: EN 998-1:2010, 3.1, EN 15824:2009, 3.1, modified]

3.2
rendering (verb)
application of render

3.3
factory made render
render batched and mixed in a factory

Note 1 to entry: It may be 'dry render' which is ready mixed only requiring the addition of water and further mixing or 'wet render' which is supplied ready to use.

[SOURCE: EN 998-1:2010, 3.4.1, modified]

3.4
prebatched render
mortar whose constituents are wholly batched in a factory, supplied to the building site and mixed there in accordance with the manufacturer's specification and conditions

[SOURCE: EN 998-1:2010, 3.4.2.1, modified]

3.5
pre-mixed lime/sand
render constituents batched and mixed in a factory, supplied to the building site where further constituents specified or supplied by the factory are added (e.g. cement)

3.6
wet retarded ready-to-use render
factory made render for which the set has been retarded

3.7
ready mixed dry render
dry factory made render

3.8
site made render
mortar composed of individual constituents batched and mixed on the building site

3.9
render mix
proportions of the constituent materials that are used to make the render

3.10
designed render
render whose composition and manufacturing method is chosen by the producer in order to achieve specified properties (performance concept)

[SOURCE: EN 998-1:2010, 3.3.1, modified]

3.11
prescribed render
render made in pre-determined proportions, the properties of which are assumed from the stated proportions of the constituents (prescription or recipe concept)

[SOURCE: EN 998-1:2010, 3.3.2 modified]

3.12
render system
sequence of coats to be applied to a background which can be used with a support and/or reinforcement and/or a pre-treatment

Note 1 to entry: In some cases the pre-treatment may be regarded as a separate coat in addition to the specified system.

[SOURCE: EN 998-1:2010, 3.6.3, modified]

3.13
site made render
render batched and mixed on site

3.14
renovation render
factory made rendering mortar used on moist masonry walls containing water soluble salts

Note 1 to entry: These mortars have a high porosity and vapour permeability and reduced capillary action

3.15
thermal insulating render
render system containing of thermal insulating render, reinforced-render and final coat

3.16
undercoat
lower coat or coats of a system

[SOURCE: EN 998-1:2010, 3.6.5]

3.17
reinforcement
material incorporated within a render to improve resistance to cracking (e.g. welded wire mesh, glass fibre mesh, fibres)

3.18
reinforcing coat
polymer modified mineral or organic render layer with a mesh embedded into it and applied over an undercoat or defective background which contributes to the minimizing of cracks

3.19
final coat
last coat, decorative or not, of a render system

3.20
one coat render
for external use designed rendering mortar applied in one coat which fulfils all the functions of a multicoat system used externally and which is usually coloured

Note 1 to entry: One coat mortars for external use can be manufactured using normal and/or lightweight aggregates.

[SOURCE: EN 998-1:2010, 3.5.4, modified]

3.21
render sealer
waterproofing coat generally intended to be applied to the surface of renders to prevent the water penetration from soil

3.22
background
surface of a construction element to which a render or a render system is to be applied

3.23
preparatory treatment
actions to be taken on backgrounds with devices, machines and/or tools, to remove dust and unstable or deleterious material, e.g. efflorescence

3.24
key
property of a background or render coat which allows the bonding of a render without the need for a pre-treatment or carrier

3.25
pre-treatment
application of a material on the background to improve the application properties of the render (e.g. spatterdash, primer, bonding agent)

3.26
bond
mechanical and/or chemical adhesion between the render and the background

3.27
bonding agent
proprietary material used to provide or improve adhesion of the render or render system to the background where necessary

3.28
primer
material for pre-treatment of the background

Note 1 to entry: For example primers can be used to reduce suction or to stabilize the surface of the background.

3.29
spatterdash
technique for pre-treatment characterized by brushing, throwing or spraying of site or factory made mortar onto a background to improve its bonding properties and/or to regulate the suction of the background

3.30
dubbing out
process of filling large localized irregularities in the background, such as hollows, prior to the application of an undercoat

3.31
carrier
product attached to the background to which a render is applied so that the render system is largely independent of the background (e.g. lathing)

3.32
firring
additional support for the carrier

3.33
crazing
network of short, irregular and very fine cracks up to approximately 0,2 mm in width

Note 1 to entry: Hairline cracks do not impair the function of the render and are therefore acceptable to a limited extent.

3.34
depth gauge

band of render or bead used in setting out for a required thickness or evenness

3.35
drying time
necessary hardening- and drying- time until the next layer or coating can be applied

3.36
efflorescence
deposit of salts on a surface during drying caused by the presence of soluble substances

4 Essential principles and building programme

4.1 Essential principles

The design shall include working drawings and specifications prepared in sufficient detail to afford proper guidance for the execution of the work. In the preparation of rendering details the design shall take into account all the following points:

a) the nature and condition of the background;

b) the nature and conditions of exposure of the rendering;

c) the functional requirements;

d) the type of rendering;

e) the type of finish/appearance.

As soon as possible there should be an exchange of information between those responsible for the constructional work, the rendering and any subsequent work, and with other trades whose work will affect or be affected by the rendering. Other requirements to be declared are as follows:

f) scaffolding;

g) any curing required;

h) monitoring of progress.

4.2 Building programme

In preparing a time schedule for the work involved in a building, each operation should be considered in relation to the others.

Agreement shall be obtained between all the various parties on the programme times for all the necessary operations and the correct sequence for carrying out these operations. The programme should be kept up-to-date as the project proceeds and damage by subsequent trades should be avoided.

The following items shall be considered by all those involved in planning the programme:

a) the suitability of the weather conditions for the application of the render;

b) sufficient time for the background to be inspected and to dry out;

c) sufficient time for preparation of the background, application and drying out of each coat of rendering;

d) the programme should be kept up to date as the project proceeds;

e) sufficient time for inspection of the work as it proceeds;

f) background and air temperatures shall not fall below 5 °C, except for silicate plasters, which shall not be used below 8 °C (alternatively heating may be provided to maintain these temperatures).

A record should be kept of the dates of completion of each area.

5 Materials

5.1 Types of render

5.1.1 General

Ready mixed renders can be mixed entirely in the factory or partly in the factory and subsequently completed on site. Alternatively, render may be mixed entirely on site.

Further detailed design recommendations and sub-division in accordance with location of manufacture and purpose are given in 6.17.

5.1.2 Factory made and semi-finished factory made renders

Factory made and semi-finished factory made renders shall conform to the requirements of EN 998-1 or EN 15824 for those parts of the process either wholly or partly carried out in the factory. For those parts of the process for semi-finished factory made renders completed on site, only materials permitted by the manufacturer shall be used. No addition of any material is permitted for wet, ready-to-use

renders. Unless otherwise specified by the manufacturer, no addition, other than water in the recommended proportions, shall be added to dry factory made renders. Where permitted, only materials conforming to the requirements of 5.1 and 5.2 should be used.

5.1.3 Renders with mineral binders

These renders harden mainly by chemical reaction. They shall conform to EN 998-1.

5.1.4 Renders with organic binders

These thin coat renders harden mainly by physical drying which can sometimes limit the coat thickness. They shall conform to EN 15824.

Silicate render contain silicate and organic binders and harden by physical drying and chemical reaction. They shall conform to EN 15824.

5.1.5 Overview of renders

The following tables give an overview of the possible types of renders that can be used externally.

Table 1 — Types of render with mineral binders

Designation	Description	Typical, indicative category of compressive strength based on EN 998-1	Application examples
Air hardening lime mortar	Render mortar with air lime (air hardening lime) as the main active binder	CS I or less	Weak structures, preservation of historical buildings
Hydraulic lime (NHL, HL)	Render mortar with hydraulic lime as the main active binder	CS I/CS II	Most applications, preservation of historical buildings
Hydrated lime and cement	Render mortar that contains hydrated lime and cement	CS II/CS III	Most applications, plinth
Cement	Render mortar with cement as basic binder	CS III/CS IV	External area (plinth, cellar outer walls)

Table 2 — Types of render with organic binders

Designation	Description	Typical, indicative category of water absorption based on EN 15824	Typical, indicative category of water vapour transmission based on EN 15824	Application area
Organic-silicate render (silicate render)	Render with silicate and polymer emulsion as main binder	W_2	V_1	External
Synthetic resin render	Render with polymer emulsion as main binder	W_3	V_1 till V_2	External
Silicon render	Render with silicon and polymer emulsion as main binder	W_3	V_1	External