



SLOVENSKI STANDARD
SIST-TP CEN/TR 16239:2011
01-december-2011

Pravila za vgradnjo mavčnih odlitkov, ojačenih z vlakni

Installation rules of fibrous (gypsum) plaster works

Regeln für den Einbau von Formteilen aus faserverstärktem Gips

Règles d'exécution des ouvrages en staff

Ta slovenski standard je istoveten z: CEN/TR 16239:2011

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ICS:

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

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TECHNICAL REPORT
RAPPORT TECHNIQUE
TECHNISCHER BERICHT

CEN/TR 16239

July 2011

ICS 91.180; 91.100.10

English Version

Installation rules of fibrous (gypsum) plaster works

Règles d'exécution des ouvrages en staff

Regeln für den Einbau von Formteilen aus
faserverstärktem Gips

This Technical Report was approved by CEN on 28 May 2011. It has been drawn up by the Technical Committee CEN/TC 241.

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Foreword

This document (CEN/TR 16239:2011) has been prepared by Technical Committee CEN/TC 241 "Gypsum and gypsum based products", the secretariat of which is held by AFNOR.

This Technical Report is one of a series of European Standards including:

- construction products standards, concerning gypsum and gypsum based products;
- works design standards, providing general principles for the design of works to realize with these products;
- technical reports, providing rules and recommendations for installation of works on site realized with these same products.

NOTE 1 The fibrous plaster products are the subject of the European Standard EN 13815 "Fibrous (gypsum) plaster casts - Definitions, requirements and test methods".

NOTE 2 The principles of design of fibrous plaster works are the subject of the European Standard EN 15319 "General principles of design of fibrous (gypsum) plaster works".

It has been assumed in the draft of this Technical Report that the application of its provisions is entrusted to appropriately qualified and experienced professionals, for whose guidance it has been prepared.

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Introduction

This Technical Report applies to works carried out using fibrous (gypsum) plaster products-traditional and GRG - made by the moulding of thin reinforced gypsum.

The fibrous plaster work is installed by positioning and fastening of these products to the appropriate part of the building construction. Then they are sealed or screwed and jointed to form continuous surfaces without apparent joints.

NOTE The figures used to illustrate this document are intended to make the text easier to understand. Therefore, they shall be taken as indicative and non-restrictive examples of the works described in the text.

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1 Scope

This Technical Report provides details on the rules and recommendations for the installation of works carried out using fibrous (gypsum) plaster casts as defined in European Standard EN 13815, with instructions and details about construction.

Fibrous (gypsum) plaster casts from the three categories of production below (see 4.1 of EN 13815:2006) should be involved in this Technical Report:

- a) "cpp" allowing regulatory marking CE,
- b) "cppv" allowing regulatory marking CE,
- c) "ipp" either when CE marking is required or without CE marking (see Annex D, note 2 of EN 13815:2006).

There are three products:

- traditional fibrous (gypsum) plaster casts, and two specific products:
- GRG casts,
- PMGRG casts.

NOTE 1 Construction of traditional gypsum plaster works using screwed system, showing similar provisions with GRG works screwed construction, is not dealt in this Technical Report.

NOTE 2 PMGRG works are not dealt in this Technical Report.

There are three ranges of casts, defined by their principal functions shapes and configurations (see 4.2 of EN 13815:2006): <https://standards.iteh.ai/catalog/standards/sist/4f323842-e820-40b9-b720-a895a2398f68/sist-tp-cen-tr-16239-2011>

- casts for interior architecture,
- casts for technical functions and
- units.

The equipment, accessories and devices are defined in this document.

This Technical Report applies to both new construction and to the refurbishment, restructuring or conversion of existing buildings.

Fibrous plastering work should be capable of having the usual finishes applied directly to them (e.g. paint, wallpaper), subject to the normal preparatory work applicable for the finish.

This Technical Report should not apply to:

- works consisting of various boards, elements or casts when they are not fibrous (gypsum) plaster casts or fibrous plaster works which, by their nature, do not form an integral part of the structure by the use of permanent fixing (see the scope of EN 15319:2007).
- fibrous plaster works consisting of casts and embellishments, when they are to be applied directly to either new or existing wall or ceiling surfaces, for purely decorative applications (see Figures 3 and 4 of EN 15319:2007); works of these types should be carried out in accordance with standard practice.

This Technical Report does not contain the regulatory requirements with which fibrous plaster works (e.g. ceiling) must comply in certain buildings.

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NOTE 3 In the field of safety, most regulations relate to certain types of building for example:

- public buildings (PB),
- high rise buildings (HRB),
- buildings for educational purposes,
- buildings for sanitary purposes.

This Technical Report does not deal with the ability of fibrous plastering works to comply with particular technical requirements (e.g. fire behaviour, protection against noise, energy economy, etc) needed for the works to comply with the requirements of the particular building contract.

2 Normative references

The following referenced documents are indispensable for the application 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 335 (all parts), *Durability of wood and wood-based products — Definition of use classes.*

EN 350 (all parts), *Durability of wood and wood-based products — Natural durability of solid wood.*

EN 351 (all parts), *Durability of wood and wood-based products — Preservative-treated solid wood.*

EN 460, *Durability of wood and wood-based products — Natural durability of solid wood — Guide to the durability requirements for wood to be used in hazard classes.*

EN 573-3, *Aluminium and aluminium alloys — Chemical composition and form of wrought products — Part 3 : Chemical composition and form of products.*

EN 599-2, *Durability of wood and wood-based products — Performance of preventive wood preservatives as determined by biological tests — Part 2 : Classification and labelling.*

EN 1396, *Aluminium and aluminium alloys — Coil coated sheet and strip for general applications — Specifications.*

EN 1611-1, *Sawn timber — Appearance grading of softwoods — Part 1: European spruces, firs, pines and Douglas firs.*

EN 1912, *Structural timber — Strength classes — Assignment of visual grades and species.*

EN 1993-1-1, *Eurocode 3: Design of steel structures — Part 1-1: General rules and rules for buildings.*

EN 1995-1-1, *Eurocode 5: Design of timber structures — Part 1-1: General — Common rules and rules for buildings.*

EN 10143, *Continuously hot-dip coated steel sheet and strip — Tolerances on dimensions and shape.*

EN 10152, *Electrolytically zinc coated cold rolled steel flat products for cold forming — Technical delivery conditions.*

EN 10169, *Continuously organic coated (coil coated) steel flat products - Technical delivery conditions.*

EN 10244-2, *Steel wire and wire products — Non-ferrous metallic coatings on steel wire — Part 2: Zinc or zinc alloy coatings.*

EN 10346, *Continuously hot-dip coated steel flat products - Technical delivery conditions.*

EN 13279-1, *Gypsum binders and gypsum plasters — Part 1: Definitions and requirements.*

EN 13815:2006, *Fibrous gypsum plaster casts — Definitions, requirements and test methods.*

EN 13963, *Jointing materials for gypsum plasterboard — Definitions, requirements and test methods.*

EN 14195:2005, *Metal framing components for gypsum plasterboard systems — Definitions, requirements and test methods.*

EN 14566, *Mechanical fasteners for gypsum plasterboard systems — Definitions, requirements and test methods.*

prEN 15303-1, *Design and application of plasterboard systems on frames — Part 1: General principles of design*

EN 15319:2007, *General principles of design of fibrous (gypsum) plaster works.*

EN ISO 12944-3, *Paints and varnishes — Corrosion protection of steel structures by protective paint systems — Part 3: Design considerations (ISO 12944-3: 1998).*

3 Terms, definitions, symbols and abbreviations

See Clause 3 and Figures 1 and 2 of EN 15319:2007.

4 Technical requirements

See Subclause 4.3 of EN 15319:2007.

5 Site installation

5.1 Conditions required prior to commencing the installation of fibrous plaster works

See Subclause 5.1 of EN 1531:2007.

5.2 Equipments to be used for fixing to the backgrounds

5.2.1 Safe loads

The equipment, accessories and devices described in this subclause are those commonly used. Other materials or procedures may be used, provided that they are suitable to maintain an equivalent level of reliability. The safe loads adopted for the hangers are determined by the test results of breaking loads of these, and application of a safety factor equal to 3.

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5.2.2 Humidity and moisture conditions

Table 1 — Classes of exposure

Classes	Conditions
A	Building components generally exposed to varying relative humidity up to 70 % and varying temperature up to 25 °C but without corrosive pollutants.
B	Building components frequently exposed to varying relative humidity up to 90 % and varying temperature up to 30 °C but without corrosive pollutants
C	Building components exposed to an atmosphere with level of humidity higher than 90 % and accompanied by a risk of condensation
D	More severe than the above

The level of protection against corrosion of metal equipment and accessories as set out in Tables 2, 3 and 7, when exposed in the range of exposure conditions given in Table 1 below (see 4.3.1.1.1, 4.3.1.1.2, 4.3.1.1.4 and 4.3.1.2 of EN 15319:2007), are contained in Annex A.

The choice of gypsum casting plaster use for manufacture of traditional casts is given in 5.3.1.1.

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Table 2 — Examples of accessories for fixing and anchoring to the background and for attachment (see 3.2.6, 3.2.7 and 3.2.8 of EN 15319:2007)

Designations	Constituents and treatments against the corrosion	Characteristics and sizes mm	Examples of uses
Mason's nails	Galvanised steel	70 x 1.7	Anchoring on wood, plaster, etc, made of two nails driven in diagonally, with securing wad (see Figure 1).
Slater's nails	Zinc electroplated steel		Lightweight fixings on wood, plaster.
Plasterboard nails	See EN 14566	35 x 2.3	Lightweight fixings on wood.
Flat trumpet screws	See EN 14566	35 x 3.5	Varied lightweight fixings.
Self-tapping flat trumpet screws (TMN, TSN, THN)	See EN 14566	Length : 25 to 140	— Fixings on metal and wood, — Attachments.
Rehabilitation screws eyes	Zinc electroplated steel	With screwed tip	Fixings on timber through existing plaster ceiling.
Expanding, self-drilling or chemical threaded bolts	— Zinc electroplated steel — Stainless steel — Brass	Thread ϕ : 6 to 12	Anchoring on concrete and masonry.
Nails and studs driven by cartridge hammer	Zinc electroplated steel		Anchoring on metal.
Fixings called "alligator clips"	Zinc electroplated (25 μ m) tempered steel		Fixings to flanges of beams; Connectings
Wads	See 3.2.10 of EN 15319:2007 Use of sisal fibres should be recommended		— Fixings on masonry, plaster (see Figure 3) and to wood laths, metal sections, etc; — Fastenings of hangers or supporting lugs on the background (see Figure 2) ; — Attachments (see Figure 4)
Ties wire	Round steel wire		Connectings (see Figure 9)

The thickness of the zinc coating should be at least 5 μ m.

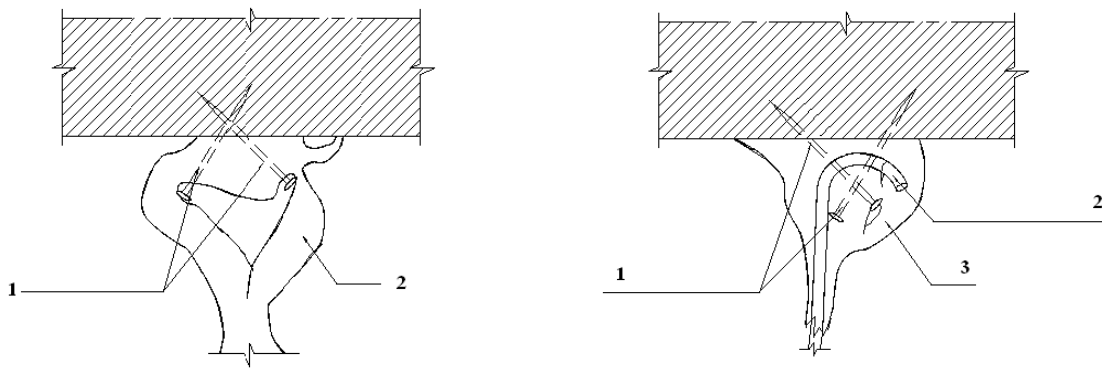
Equivalent processes of treatment against the corrosion should be allowed.

Installation of fixings and anchorings should be carried out in accordance with:

- either the planning documents (design documents), if required with reference to the relevant ETAG,
- or the manufacturer's technical instructions, with reference to the national building regulations.

Where the fixing is into steel or timber the requirements of ENV 1993-1-1 and ENV 1995-1-1 respectively should apply.

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**Key**

- 1 nails driven in diagonally
- 2 wad

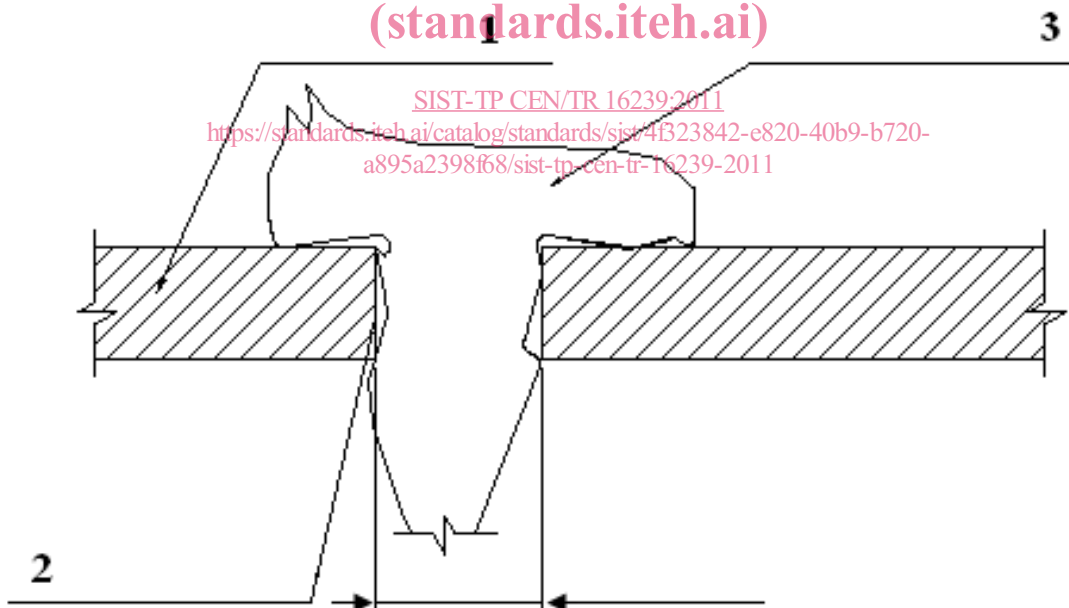
Key

- 1 nails driven in diagonally
- 2 round rod hanger
- 3 wad

Figure 1 — Example of fixing using nails and wad

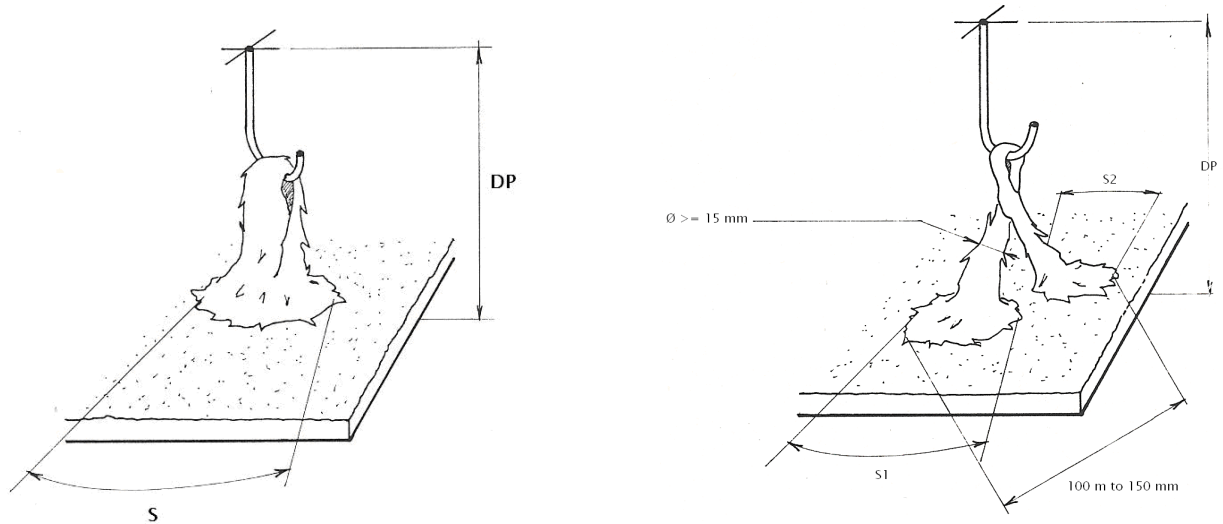
Figure 2 — Example of fixing using nails and wad securing of hanger

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**Key**

- 1 stability to be checked
- 2 hole formed with a drill between 25 and 30 mm \varnothing
- 3 wad forming a binder

Figure 3 — Example of anchoring to an old reinforced plaster ceiling

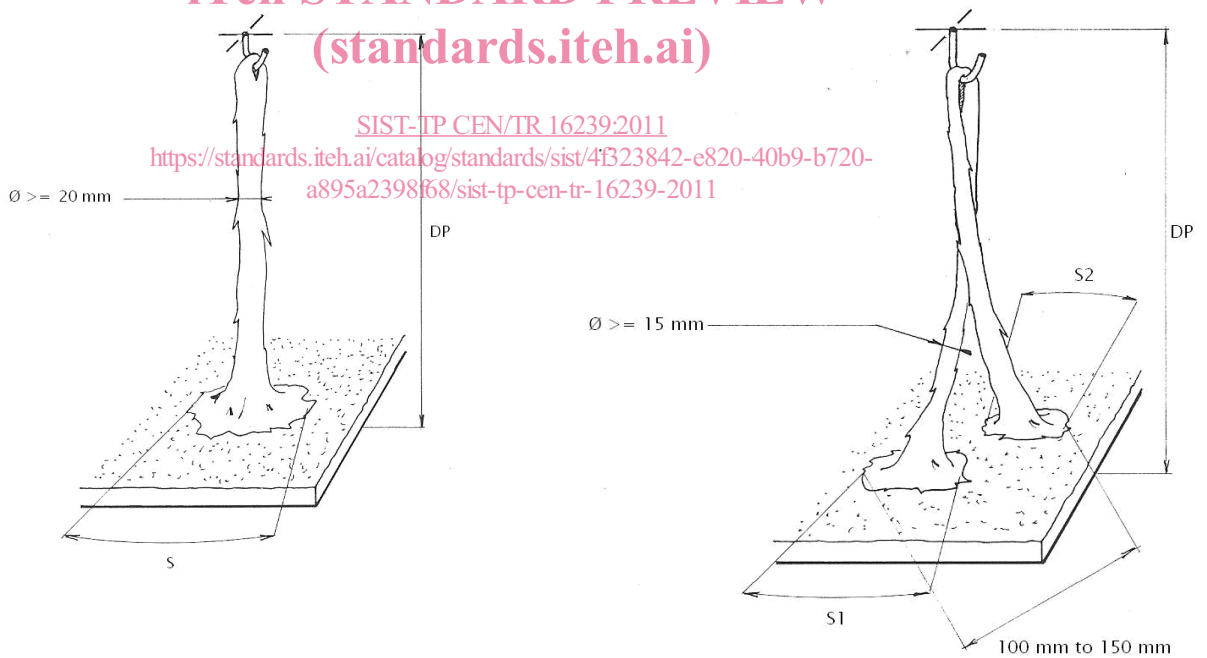
**Key**

Dp depth of suspension

S contact surface of wad (see Table 3)

Figure 4 — Examples of attaching wads (single and double)

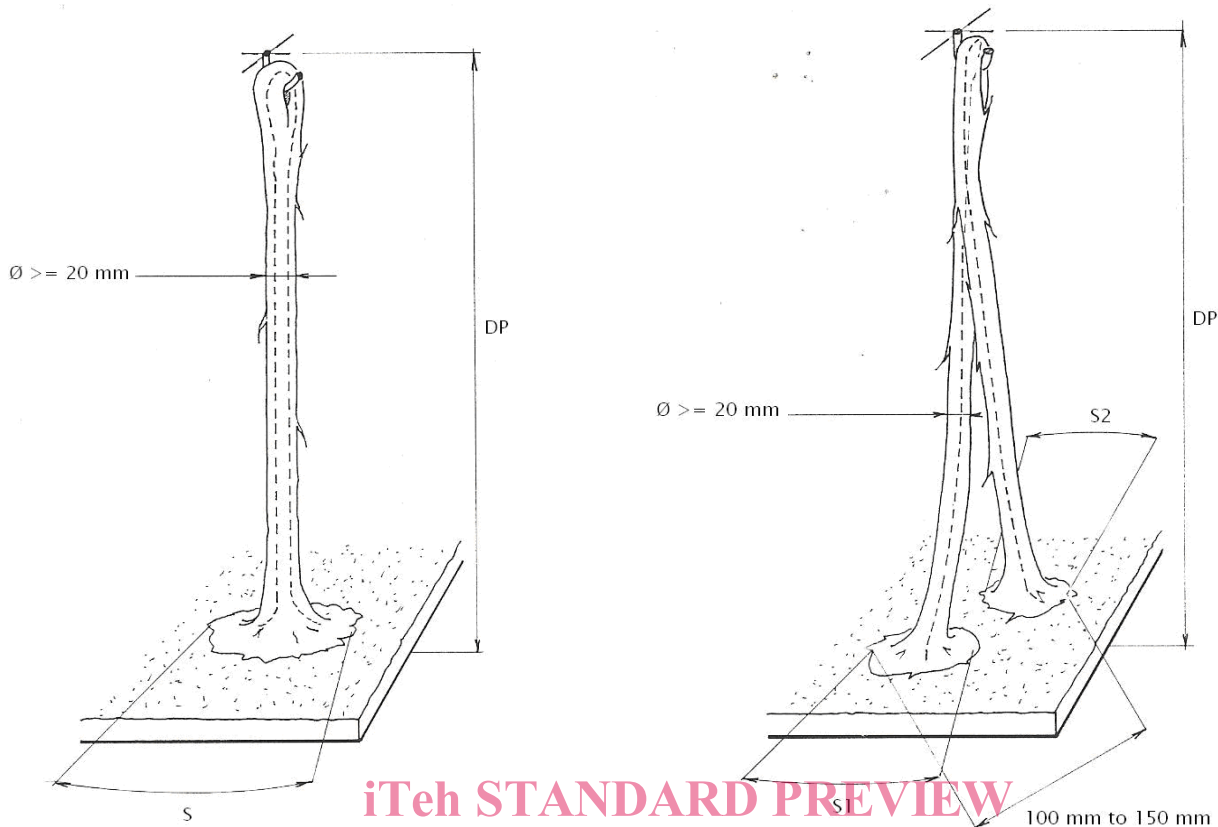
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**Key**

Dp depth of suspension

S contact surface of wad (see Table 3)

Figure 5 — Examples of fibrous plastered hangers (single and double)



Key

Dp depth of suspension

S contact surface of wad (see Table 3)

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Figure 6 — Examples of fibrous plastered wire hangers (single and double)

5.3 Installation of traditional fibrous gypsum plaster works using sealed system

5.3.1 Products and materials constituting this traditional fibrous plaster work itself

5.3.1.1 Traditional fibrous plaster casts (flat units or related and architectural casts)

The fibrous (gypsum) plaster casts used should comply with requirements of Clause 5 of EN 13815:2006, particularly:

- made from special gypsum casting plaster.
- unit surface mass:
 - common units $\geq 1 \text{ kg/m}^2$ per mm thickness,
 - unit for fire resistance function $\geq 0.9 \text{ kg/m}^2$ per mm thickness.

This surface mass may apply to developed area of shaped or elaborated casts.

- cast surface hardness:
 - common casts ≥ 70 Shore C units,

- casts for fire resistance function ≥ 60 units Shore C units.

These traditional fibrous plaster casts should comprise possible complementary reinforcement by softwood lath or lightweight section.

When the intended use of traditional casts is for areas with exposure conditions such as classes B, C or D (see Table 1):

- use of gypsum casting plasters with alpha hemihydrate average content ≥ 25 % should be recommended for manufacture of casts.
- use of mineral reinforcement according to 5.6.3.2 of EN 13815:2006 should be recommended.

5.3.1.2 Plasters used for installation

Gypsum casting plasters – calcium sulphate hemihydrate – used for installation should be manufactured according to EN 13279-1 (class C1)

5.3.1.3 Water

The mixing water should be clean and free from contamination and impurities.

Normal tap water may be used.

5.3.1.4 Fibres and hessian used for installation

The fibres and hessian used for installation should comply with the specifications shown in 5.6.3.1 and 5.6.3.2 of EN 13815:2006.

5.3.1.5 Fibrous plaster ropes (see 3.2.11 of EN 15319:2007)

These should be used, among other purposes, to join two fibrous plaster casts together in the work (sealed system) and to fix the work at the edges.

The fully impregnation of fibres with plaster should be necessary.

5.3.2 Equipment to be used for fibrous plaster works with spaced fixing suitable for installation by sealed system

Recommendations as specified in 5.2 (1st paragraph) applies