SLOVENSKI STANDARD

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Sploġna naļ ela za projektiranje in vgradnjo mavļ nih odlitkov, ojaļ anih z vlakni

General principles of design of fibrous (gypsum) plaster works

Allgemeine Grundsätze der Planung von Arbeiten aus Formteilen aus faserverstärktem Gips

Principes généraux de conception des ouvrages en staff

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Principes généraux de conception des ouvrages en staff

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This European Standard was approved by CEN on 7 June 2007.

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

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Foreword

This document (EN 15319:2007) has been prepared by Technical Committee CEN/TC 241 "Gypsum and gypsum based products", the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by January 2008, and conflicting national standards shall be withdrawn at the latest by January 2008.

This European Standard is one of a series of European standardization documents including:

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

NOTE 1 The fibrous plaster products are the subject of EN 13815.

NOTE 2 The rules and recommendations for installation of fibrous (gypsum) plaster works on site are the subject of the European Technical Report "Installation rules of fibrous (gypsum) plaster works".

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

This European Standard applies to works carried out using fibrous (gypsum) plaster products made by the moulding of thin reinforced gypsum.

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

Fibrous plaster is used to enhance the architectural effects and the decorative effects to the interior of buildings, and to provide technical solutions.

Examples of types of buildings where fibrous plastering works are often installed include: public buildings, banks, department stores, shopping malls, hotels, buildings for cultural and leisure activities, and churches.

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

1 Scope

This European Standard defines the principles for the design of works carried out using fibrous (gypsum) plaster products as defined in EN 13815.

Fibrous (gypsum) plaster casts from the three categories of production below (see Clause 4 of EN 13815:2006) should be involved:

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).

This European Standard applies to both new constructions and to the refurbishment, restructuring or conversion of existing buildings.

The common fields of application of fibrous plaster are as set out in Table 1 below.

Table 1 — Common fields of application of fibrous plaster

Fields of application	Examples
Architectural effects	— decorating: cornices, pilasters, columns (see exception below); — on the ceiling: flat or shaped ceilings (included suspended ceilings), coffered ceilings, vaults, domes; — in a vertical position : flat or shaped surfaces (partitions, linings); — encasements, casings; — embellishments for direct or concealed lighting; — structures to improve acoustical performance (insulation, absorption, diffusion).
Technical functions	— shafts and ducts for ventilation, air conditioning, smoke extraction; — ceiling voids and chambers for pressurization; — structures to enhance fire safety.
NOTE 1 This classification is not exclusive, as the same fibrous plaster work can have several functions. NOTE 2 Table 1 does not mention the use of fibrous plaster externally; as it can only be used under certain conditions (see 4.3.1.2).	

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 type of finish.

This European Standard should not apply to:

- works formed from fibre reinforced gypsum sheet products, that are the subject of prEN 15283;
- suspended ceilings formed from gypsum units and/or tills, installed dry in a framework, that are the subject of EN 14246;
- works formed of solid casts;
- run moulded plaster works formed in situ;
- works formed from plaster based stucco casts, carton-pierre decors, resin decors;
- fibrous plaster works which, by their nature, do not from an integral part of the structure by the use of permanent fixing (e.g. exhibition stands);
- 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). Works of these types should be carried out in accordance with standard practice.

This European Standard does not contain the regulatory requirements with which fibrous plaster works e.g. ceilings need to comply in certain buildings.

NOTE In the field of safety, the main regulations relate to certain types of buildings, for example:

- public buildings (PB);
- high rise buildings (HRB);

- buildings for educational purposes;
- buildings for sanitary purposes.

This European Standard does not deal with the ability of fibrous plastering works to comply with particular technical requirements (e.g. acoustical) needed in order 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 13279-1, *Gypsum binders and gypsum plasters - Part 1: Definitions and requirements*

EN 13501-1, *Fire classification of construction products and building elements - Part 1: Classification using test data from reaction to fire tests*

EN 13501-2, *Fire classification of construction products and building elements - Part 2: Classification using data from fire resistance tests, excluding ventilation services*

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

EN 20140-9, *Acoustics - Measurement of sound insulation in buildings and of building elements - Part 9: Laboratory measurements of room-to-room airborne sound insulation of a suspended ceiling with a plenum above it (ISO 140-9:1985)*

EN ISO 140-3, *Acoustics - Measurements of sound insulation in buildings and of building elements - Part 3: Laboratory measurements of airborne sound insulation of building elements (ISO 140-3:1995)*

EN ISO 354, *Acoustics - Measurement of sound absorption in a reverberation room (ISO 354:2003)*

EN ISO 717-1, *Acoustics - Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation (ISO 717-1:1996)*

EN ISO 6946, *Building components and building elements - Thermal resistance and thermal transmittance - Calculation method (ISO 6946:1996)*

EN ISO 10456, *Building materials and products - Procedures for determining declared and design thermal values (ISO 10456:1999)*

3 Terms, definitions, symbols and abbreviations

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

3.1 General definitions

3.1.1
fibrous (gypsum) plaster work
completed work formed from the installation of fibrous plaster casts

3.1.2
fibrous (gypsum) plaster surface
whole surface formed from fibrous plaster casts (e.g. ceiling, wall lining)

3.1.3
fibrous (gypsum) plaster cast
product made by casting specified gypsum plaster mixed with water and reinforced with fibres, cloth, grilles, lathwork, lath or profiles. It may contain admixtures, fillers or aggregates as long as they will not contribute in any stage of the fire and they are not classified as dangerous substances in European regulations

3.1.4
fibrous (gypsum) interior architectural cast
cast of any shape and configuration, intended for interior architecture works similar to those in Table 1

3.1.5
fibrous (gypsum) plaster technical function cast
cast of any shape and configuration, intended for technical function similar to those in Table 1

3.1.6
fibrous (gypsum) plaster unit; slab
flat rectangular cast

3.1.7
suspended ceiling
ceiling hung at a distance below the floor or roof above (see Figures 1 a), 1 b), 1 c))

3.1.8
partition
self-supporting dividing wall, non load-bearing

3.1.9
wall lining
dry covering to any internal building surface (see Figure 1 d))

3.1.10
independent wall lining
lining fixed independently from background

3.1.11
shaft
space formed for carry air or smoke (e.g. ventilation)

3.1.12
duct
space formed for the passage of cables, pipes etc.

3.1.13
ceiling void; plenum
space between the suspended fibrous plaster ceiling and the soffit of the floor or roof above, allowing ducts, pipes and cables to be run (see Figures 1 a), 1 b), 1 c))

3.1.14
depth of suspension
distance between the point of fixing or anchoring to the background and the finished surface of the fibrous plaster cast in ceiling works, measured at the position of the fixing (see Figures 1 a), 1 b), 1 c), 2)

3.1.15
spacing from the background
distance between the point of fixing or anchoring to the background and the finished surface of the fibrous plaster cast in vertical position works, measured at the position of the fixing (see Figure 1 d))

3.1.16
background or supporting structure
existing or specially constructed work of one of the two following types:

a) backgrounds having a continuous surface such as masonry walls or reinforced concrete flooring (see Figures 1 and 2);

b) metal, timber or other framed structures

3.2 Technical definitions

3.2.1
face
visible surface of the fibrous plaster cast in the completed work

3.2.2
back
non-visible surface of the fibrous plaster cast in the completed work

3.2.3
edge of the cast
boundary of the cast

3.2.4
edge of the work
peripheral limit of the fibrous plaster work

3.2.5
thickness
distance between the face and the back of the fibrous plaster cast

3.2.6
fixing to the background
device for securing the fibrous plaster casts or the spaced fixing accessories directly to the background (see 5.2.2)

3.2.7
anchor
fixing to the background which is partially or totally embedded in it (see Figures 1 and 2)

3.2.8
accessories for fixing and spacing from the background
devices to ensure that the fibrous plaster casts forming the work are held in position (see 5.2.2) such as:

a) hanger: spaced fixing accessory connecting horizontal fibrous plaster work (e.g. a ceiling) to the background (see Figures 1 a), 1,b), 1 c), 2);

b) supporting lug: spaced fixing accessory connecting vertical fibrous plaster work (e.g. wall lining) to the background (see Figure 1 d));

c) intermediate framework: spaced fixing accessory formed from a lightweight intermediate framework generally made of primary and secondary framed parallel laths or sections (see Figures 1 and 2);

d) attachment: spaced fixing accessory fixing the fibrous plaster cast to a hanger, a supporting lug or an intermediate framework (e.g. wad, screw)

3.2.9
handling framework

separate component used to provide temporary rigidity and/or support to products during removal from its mould, handling and assembly, usually removed after use

3.2.10
wad; fixing pad
scrim comprising natural fibres usually jute or sisal fully impregnated with plaster and extended to form a grip or handle, specially used for sealed fixing of fibrous plaster work.

Glass fibres can be used too (long fibres weave or mat)

3.2.11
fibrous plastered rope
long scrim comprising natural fibres usually jute or sisal, or strip of Hessian, fully impregnated with plaster and extended to form a grip, specially used for complementary reinforcement.

Glass fibres can be used (long fibres weave or mat)

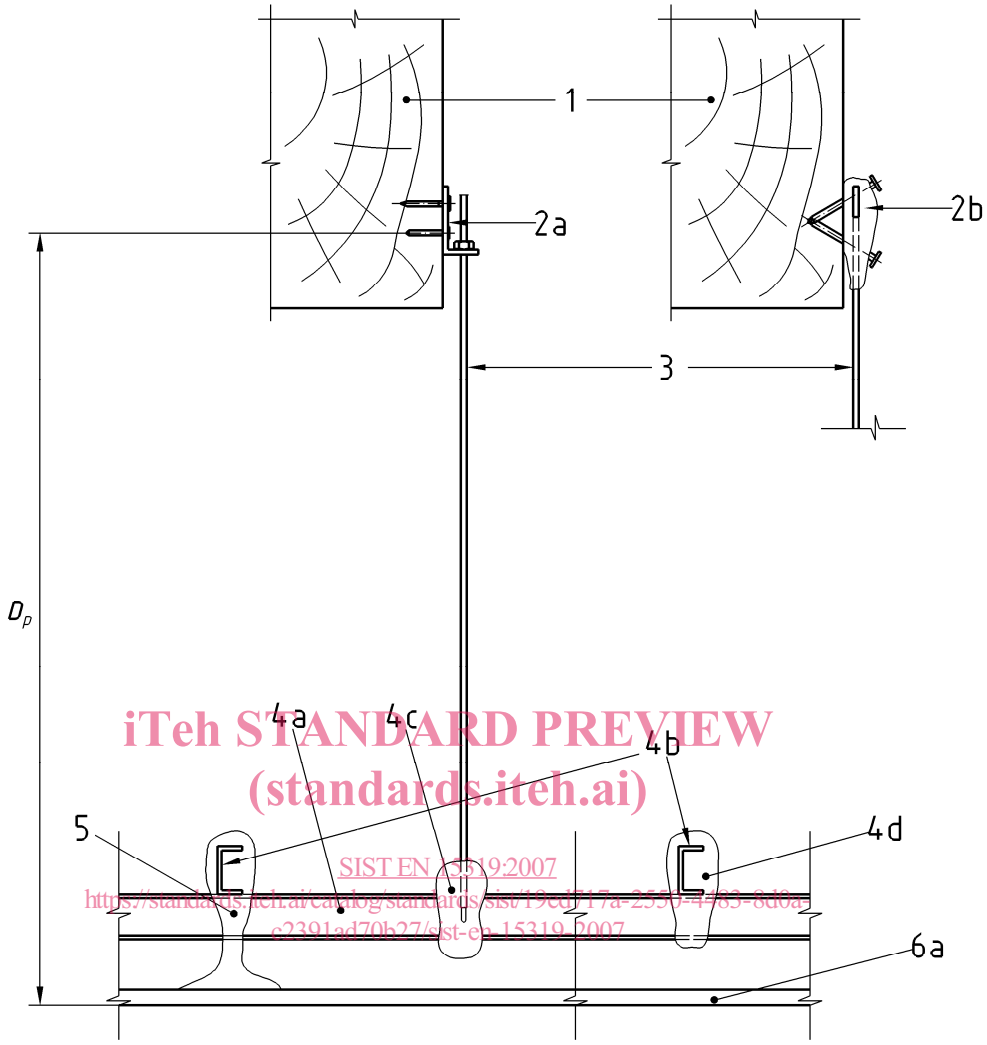
3.2.12
fibrous plastered
coated with fibrous plaster or made from fibrous plaster

3.2.13
sealed system
installed system using mainly wads and fibrous plastered ropes

3.2.14
screwed system
installation system prioritizing screwing on standard frames

3.2.15
GRG (glass fibre reinforced gypsum) cast
specific product made from plaster – calcium sulphate hemihydrate alpha based or specially modified beta based - mixed with water and in which the elementary reinforcement is glass fibre

3.2.16
PMGRG (polymer modified glass fibre reinforced gypsum) cast
specific product made from plaster - calcium sulphate hemihydrate alpha based or specially modified beta based - mixed with water with addition of resin and in which the elementary reinforcement is glass fibre.



Key

Background	1	timber
Anchors - fixings	2a	screws + corner plate
	2b	2 nails driven in diagonally + securing wads
Hangers	3	threaded rod - round wire
Intermediate framework	4a	primary: U section
	4b	secondary: U section
	4c	fibrous plastered collar fastening primary to hanger
	4d	fibrous plastered collar fastening secondary to primary
Attachment	5	wad
Cast	6a	ceiling

Figure 1 a) — Example of diagrams for the installation of fibrous plaster suspended ceilings (sealed system)