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Paints and varnishes — Fillers for internal and/or external works — Adaptation of fillers to European standards

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National foreword

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A list of organizations represented on this committee can be obtained on request to its secretary.

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Peintures et vernis - Enduits de peinture pour travaux intérieurs et/ou extérieurs - Adaptation des enduits de peinture aux Normes européennes

Beschichtungsstoffe - Spachtelmassen bei Innen- und/oder Außenarbeiten - Anpassung der Spachtelmassen an die europäischen Normen

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Foreword

This document (EN 16566:2014) has been prepared by Technical Committee CEN/TC 139 “Paints and varnishes”, the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by November 2014, and conflicting national standards shall be withdrawn at the latest by November 2014.

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Introduction

This European Standard defines the characteristics, specifications, and the corresponding classification of interior and/or exterior fillers, whether in powder or paste form, in aqueous or solvent phase, mono- or multi-component. It completes these by other properties to be specified on a case by case basis.

It identifies the criteria that need to be taken into consideration when it is wished to evaluate the aptitude of a filler system for a particular use in painting and provides a framework for the exchange of this information between manufacturers and users. It is incumbent on the manufacturer to define the appropriate categories related to the intended use and appearance.

The aim of this European Standard is to combine by normative references the use of existing standards complemented, when necessary, with additional and/or modified requirements so that fillers can be described and evaluated under comparable conditions.

1 Scope

This European Standard defines coating materials designed to cover all backgrounds and substrates in traditional materials or compliant with the standards in force, whether new or existing, bare or coated, absorbent or non-absorbent, smooth or rough, in order to prepare them to receive a paint or related system, or a bonded cover, whether specific or not. More generally intended to improve the surface appearance, they can also:

— not be over-coated;

— create a textured appearance or not;

— be treated/coloured or not (pigments, wax, etc.).

Exterior fillers are not intended as top coat.

Interior coating materials with grain size over 1 mm are not covered by this European Standard.

Fillers specifically intended for wooden and metal substrates are not covered by this European Standard.

This European Standard complies with the general system for classification of water-borne coating materials and coating systems for interior walls and ceilings described in EN 13300.

This European Standard complies with the general system for the description of coating materials and coating systems for exterior masonry and concrete described in EN 1062-1.

The essential function of fillers covered by this European Standard is therefore a decorative function. Therefore, these fillers are considered here as preparatory and/or decorative fillers, of smooth or textured appearance.

NOTE Nothing prevents preparatory surface filler from being coated with a paint system comprising protective functions.

However, the fillers in the case of this European Standard are not suitable for truing of backgrounds, without specifications regarding the verticality, angularity or flatness under a 2-m straight edge, or thickness. Their application never requires, to ensure they bond correctly, the prior application of a rigid reinforcement such as a lathwork or wire mesh, or a spatter-dash or bagging or scoring of the surface between two coats. They may nevertheless incorporate a flexible reinforcement (strip of natural or synthetic fabric) for example along joints between different or same materials, in order to limit visible cracking.

Under these conditions, this European Standard does not concern products covered by the following standards: EN 998-1, EN 998-2, EN 15824, EN 13279-1, EN 13963, EN 12860, EN 13813, EN ISO 11600.

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 1062-1, *Paints and varnishes — Coating materials and coating systems for exterior masonry and concrete — Part 1: Classification*

EN 1062-3, *Paints and varnishes — Coating materials and coating systems for exterior masonry and concrete — Part 3: Determination of liquid water permeability*

EN 13687-3, *Products and systems for the protection and repair of concrete structures — Test methods — Determination of thermal compatibility — Part 3: Thermal cycling without de-icing salt impact*

EN ISO 2813, *Paints and varnishes — Determination of specular gloss of non-metallic paint films at 20°, 60° and 85° (ISO 2813)*

EN ISO 4624, *Paints and varnishes — Pull-off test for adhesion (ISO 4624)*

EN ISO 7783, *Paints and varnishes — Determination of water-vapour transmission properties — Cup method (ISO 7783)*

EN ISO 11998, *Paints and varnishes — Determination of wet-scrub resistance and cleanability of coatings (ISO 11998)*

3 Terms and definitions

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

3.1
coating material
product in liquid, paste or powder form, that, when applied to a substrate, forms a **film** possessing protective, decorative and/or other specific properties

[SOURCE: EN ISO 4618, 2.50]

3.2
coat
continuous layer of a **coating material** resulting from a single application

[SOURCE: EN ISO 4618, 2.48]

3.3
coating
film
continuous layer formed from a single or multiple application of a **coating material** to a **substrate**

[SOURCE: EN ISO 4618, 2.49]

Note 1 to entry: The term “film” is rarely employed for a coat of filler or a coating by filling/surfacing.

3.4
filler
coating material with a high proportion of extender, in powder or paste form, intended primarily to even out irregularities in substrates both internally and externally and/or to improve their surface appearance in order to prepare them to receive when required a paint or related system or bonded cover

Note 1 to entry: According to this definition, the product in question may be covered by wall paper or other decorative materials, or not over-coated, resulting in a textured coating left as it is or coloured in its bulk.

3.5
filler system
series of filler coats that are applied to a substrate

3.6
substrate
surface to which a **coating material** is applied or is to be applied

[SOURCE: EN ISO 4618, 2.219]

3.7
background
untreated surface of a building element on which a **coating material** may be applied directly

Note 1 to entry: If the background has already been coated with a coating material, the corresponding surface is more generally designated as a substrate.

3.8
textured coating
coating which, after drying, is characterised by a non-smooth but regularly structured surface

[SOURCE: EN ISO 4618, 2.227]

3.9
decoration
treatments with the primary objective to change or restore the appearance of the **substrate**

[SOURCE: EN 1062-1, 3.4]

3.10
filling
application of **filler** to give a level surface

[SOURCE: EN ISO 4618, 2.104]

4 Description

4.1 General

Fillers are factory manufactured products for general use without any additions on the worksite other than water.

They are applied either manually or in a mechanized manner, in one or several runs or coats, with the types of tools recommended by the manufacturer. Depending on the surface aspect of the background, the deposited thickness varies from the thinnest coat up to 5 mm. For this reason, the classification of film thickness according to EN 1062-1 is not applicable to fillers.

For applications of textured appearance and for stopping or repairs, fillers may be used at higher thickness.

The use of the filler system and its thickness falls within the scope of the manufacturer's recommendations and depends on the method of application, the desired appearance, the background or substrate, as well as the formulation of the product. These factors influence numerous properties such as the shrinkage, the sandability, the drying speed and the surface appearance.

All due care shall be taken to correctly apply the fillers under suitable temperature and humidity conditions, while complying with the manufacturer's recommendations for use.

NOTE On a smooth and non-absorbent substrate, it may be necessary before filling to carry out a light sanding and/or apply a suitable bonding primer.

4.2 Types of fillers

4.2.1 Fillers may be supplied:

— either in powder form;

— or as a ready to use water or solvent based paste;

— or in the form of several components (powder, liquid, paste) intended to be mixed together in defined proportions before use; these fillers are known as “multi-component”.

These fillers may be used for:

— stopping, patching: preparatory filling operation intended to fill cavities or discontinuities in the surface;

— blow-hole filling: filling and stopping of concrete blow holes;

— dressing: high build filling operation, carried out on a localized surface, mainly on masonry;

— levelling: continuous or discontinuous preparatory filling operation to eliminate bubbling, lessen any unevenness, fill internal angles and other irregularities, reliefs or degradations;

— smoothing: continuous preparatory filling operation to obtain a smooth appearance;

— repairing: non-structural operation intended to restore the geometric aspect of the background;

— surfacing: operation using a preparatory filler with a view to obtain a surface specifically adapted to the coating to be applied (paint or related system, bonded covering, or decorative filler). The surfacing that incorporates the previous preparation techniques corrects the defects and irregularities of the background but does not enable it to be trued;

— decorative filling: application of a filler to obtain a finished coating of smooth or textured appearance; the related system may include functions of protection for external applications.

4.2.2 Fillers may also be classified according to their description and main mechanisms of hardening, as follows:

— air drying fillers: compounds whose principle mechanism of hardening is air drying;

— setting fillers: compounds whose principle mechanism of hardening is setting;

— reactive fillers: compounds supplied in any form, but whose principle mechanism of hardening is neither air-drying nor setting.

4.3 Description of a filler

The description of filler comprises at least the following information:

— product brand name;

— usage for interior and/or exterior applications;

— type of product as per 4.2;

— indication of compliance to this standard.

A designation code for the product shall be given by the manufacturer at least on the product data sheet:

G_i gloss

S_i grain size

V_i water vapour transmission

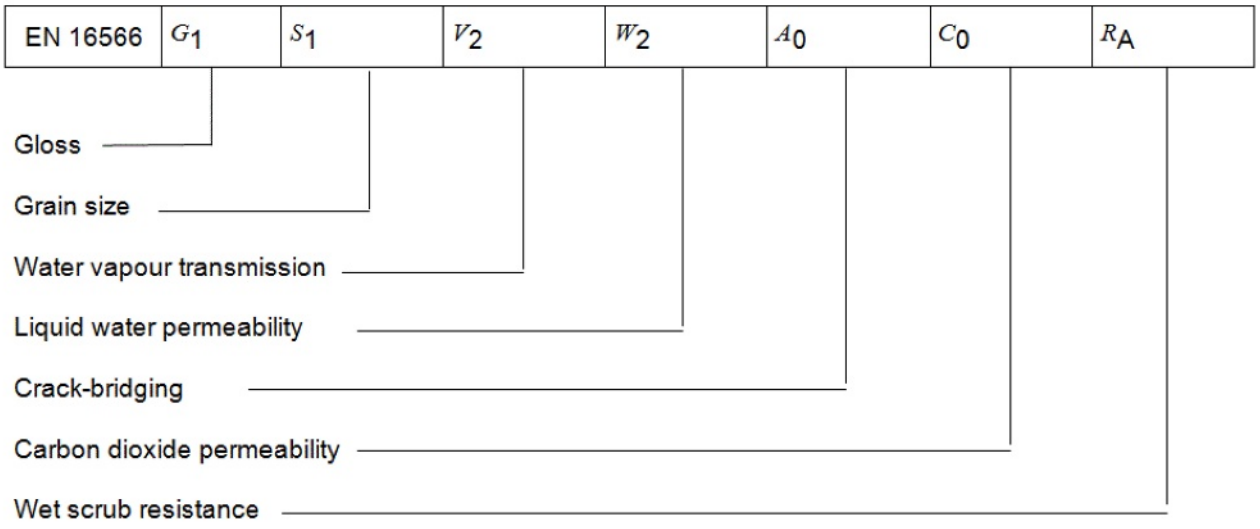
W_i liquid water permeability

A_i crack-bridging

C_i carbon dioxide permeability

R_i Wet scrub resistance

An example of the designation code for a filler with gloss, fine grain size, water vapour transmission rate > 15 g/(m^2 · d) to ≤ 150 g/(m^2 · d), liquid water permeability > 0,1 kg/(m^2 · $h^{0,5}$) to ≤ 0,5 kg/(m^2 · $h^{0,5}$), for crack-bridging with no requirement, carbon dioxide permeability with no requirement and wet scrub resistance category A, is illustrated by:



5 Characteristics and classification

5.1 The gloss, G, shall be measured according to EN ISO 2813, and classified according to EN 1062-1. If the gloss is not measurable according to EN ISO 2813, or/and is not claimed by the manufacturer, the class shall be designated as G_0.

5.2 The grain size, S, (maximum particle size), shall be measured and classified from S_1 to S_3 as defined in EN 1062-1, where the classification shall be based on the largest size of the particles dispersed in sufficient quantity to influence the texture and/or the applicability of the filler system;

5.3 The water vapour permeability, V, which plays an important role in the regulation of exchanges between the background and the atmosphere, is classified according to the intended use.

The water vapour permeability shall be measured according to EN ISO 7783 and classified according to EN 1062-1.

For exterior fillers, the water vapour permeability shall be V_1 or V_2.

Exterior stopping, patching and repairing fillers (see 4.2) have a negligible influence on this phenomenon. Therefore, these fillers are classified V_0 for “no requirement”. Interior fillers are also classified V_0 for “no requirement”.

5.4 The liquid water permeability, W, which plays, for fillers, a complementary role in the prevention of water penetration in porous mineral materials, is classified according to the intended use.

The liquid water permeability shall be measured according to EN 1062-3, and classified according to EN 1062-1.

Exterior stopping, patching and repairing fillers (see 4.2) have a negligible influence on this phenomenon. Therefore, these fillers are classified W_0 for "no requirement". Interior fillers are also classified W_0 for "no requirement".

When a manufacturer claims any hydrophobic behaviour, the liquid water permeability shall be declared W_2 or W_3.

5.5 Crack-bridging resistance, A, shall be determined in accordance with EN 1062-7 method A and classified according to EN 1062-1 when the manufacturer claims for A_1 to A_5.

NOTE Apart from manufacturer's claim for a class A_1 to A_5, fillers are classified A_0 for "no requirements".

5.6 The carbon dioxide permeability, C, shall be determined in accordance with EN 1062-6 and classified according to EN 1062-1 in case of manufacturer's claim for class C_1.

NOTE Apart from manufacturer's claim for class C, fillers are classified C_0 for "no requirements".

5.7 The adhesion-cohesion is measured after a maximum drying time of 28 days at (23 ± 2) °C and (50 ± 5) % RH, according to EN ISO 4624 on a substrate(s) claimed as suitable for the test by the manufacturer. The measurement is performed on a coat of filler, the surface of which is flat and homogeneous.

For external fillers, the adhesion after 10 freeze–thaw cycles shall be declared if the liquid water permeability of a filler is w > 0,5 kg/(m^2 · h^{0,5}). In this case it shall be assessed according to EN 13687-3.

Except in the case of decohesion of the substrate, whatever the failure mode, the mean value obtained shall not be less than:

— 0,5 MPa for interior fillers;

— 0,8 MPa for exterior fillers.

5.8 The wet-scrub resistance, R, evaluates the resistance of fillers used as interior top coats to repeated cleaning. It can be also used to evaluate the water sensitivity of over coated fillers.

The wet scrub resistance shall be evaluated in case of manufacturer's claim only for fillers with grain size less than 300 µm (S_1 and S_2). For fillers with grain size equal to or above 300 µm (S_3), this method is not applicable.

The wet scrub resistance is determined in accordance with the procedure in EN ISO 11998 after a drying period of 28 days (23 ± 2) °C and (50 ± 5) % relative humidity with the deviation that test specimen are prepared with wet film thickness 1 mm for all products.

The filler shall be applied uniformly. Test specimen and fillers showing any unusual surface defect or irregularity shall not be used for the test. In case of fillers used as textured coatings, the test specimen shall be prepared with a smooth surface.

It is classified according to the loss of thickness of the coat as follows:

— Category A: < 50 µm after 100 scrubbing cycles;

— Category B: ≥ 50 µm and < 150 µm after 100 scrubbing cycles;

— Category C: ≥ 150 µm and < 300 µm after 100 scrubbing cycles;

— Category D: ≥ 300 µm after 100 scrubbing cycles.

NOTE Apart from manufacturer's claim for class R, fillers are classified R_0 for "no requirements".

Annex A
(normative)

Summary of specifications

	Characteristic	Test method	Requirements
5.3	Water vapour permeability (for exterior fillers)	EN ISO 7783	V_1 or V_2
5.4	Liquid water permeability (for exterior fillers)	EN 1062–3	W_1 to W_3
5.4	Liquid water permeability (for hydrophobic behaviour declared)	EN 1062–3	W_2 or W_3
5.7	Adhesion (for interior fillers)	EN ISO 4624	≥ 0,5 MPa
5.7	Adhesion (for exterior fillers)	EN ISO 4624	≥ 0,8 MPa
5.7	Adhesion after 10 freeze–thaw cycles (only for exterior fillers if w > 0,5 kg/(m^2 · h^{0,5})	EN 13687–3	≥ 0,8 MPa
5.8	Wet scrub resistance (if manufacturer's claim)	EN ISO 11998	Declared R category

Annex B
(informative)

List of equivalent English – French – German terms

English	French	German
angularity (EN 13914–2)	angularité	Winkligkeit
bagging	barbotine	Schlämme
blow-hole filling	bouche-bullage	Lunkerspachteln
decoration	décoration	Gestaltung
levelling	dégrossissage	Spachteln
truing	dressage	Verputzen
filling	enduisage (de peinture)	Spachteln
filler (EN ISO 4618), skim coat, surfacer	enduit, enduit de peinture, surfaceur	Spachtel(masse)
painting filler	enduit de peinture (peinturage)	Spachtel(masse)
render (EN 15824)	enduit de maçonnerie extérieur	Außenputz
plaster (EN 15824)	enduit de maçonnerie intérieur	Innenputz
decorative (textured effect) filler	enduit décoratif (structuré/ texturé)	Dekor-(Struktureffekt) Spachtel(masse)
preparatory (surface) filler	enduit préparatoire (de surface)	Grundierspachtel
spatter-dash	gobetis	Spritzbewurf
lathwork	lattis	Putzträger
smoothing	lissage	Glätten
mineral or organic rendering/plastering mortars	mortiers d'enduisage minéraux ou organiques	Mineralische oder organische Außen-/Innenputze
flatness	planéité	Ebenheit
coating material (EN ISO 4618)	produit de peinture	Beschichtungsstoff
surface dressing	ragréage	Ausbessern
stopping (EN ISO 4618)	rebouchage	Füllen
repair filler	enduit de réparation	Reparaturspachtel
textured coating	revêtement structuré/texturé	Strukturbeschichtung
surfacing	surfaçage	Beschichten
substrate (EN ISO 4618)	subjectile	Substrat, Untergrund
background (EN 13914–1)	support	Putzgrund

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

[3] EN 998-2, *Specification for mortar for masonry — Part 2: Masonry mortar*

[4] EN 1062-11, *Paints and varnishes — Coating materials and coating systems for exterior masonry and concrete — Part 11: Methods of conditioning before testing*

[5] EN 12860, *Gypsum based adhesives for gypsum blocks — Definitions, requirements and test methods*

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

[7] EN 13300, *Paints and varnishes — Water-borne coating materials and coating systems for interior walls and ceilings — Classification*

[8] EN 13813, *Screed material and floor screeds — Screed material — Properties and requirements*

[9] EN 13914-1, *Design, preparation and application of external rendering and internal plastering — External rendering*

[10] EN 13914-2, *Design, preparation and application of external rendering and internal plastering - Part 2: Design considerations and essential principles for internal plastering*

[11] EN 13963, *Jointing materials for gypsum plasterboards — Definitions, requirements and test methods*

[12] EN 15824, *Specifications for external renders and internal plasters based on organic binders*

[13] EN ISO 4618, *Paints and varnishes — Terms and definitions (ISO 4618)*

[14] EN ISO 787-7, *General methods of test for pigments and extenders — Part 7: Determination of residue on sieve - Water method — Manual procedure (ISO 787-7)*

[15] EN ISO 787-18, *General methods of test for pigments and extenders — Part 18: Determination of residue on sieve — Mechanical flushing procedure (ISO 787-18)*

[16] EN ISO 11600, *Building construction — Jointing products — Classification and requirements for sealants (ISO 11600)*

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