

EUROPEAN ASSOCIATION OF PLASTER PROFILE MANUFACTURERS

Recommendation for the
**Design, preparation and application of metal profiles
for internal plastering and external rendering.**

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Information sheet for the design and use of metal plaster profiles in interior and exterior
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www.iwm.de



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www.smgv.ch



Wirtschaftskammer Österreich

www.wko.at/bauhilfsgewerbe



Syndicat National des Mortiers Industriels

www.desmortiersdesidees.com



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www.tbafbouw.nl

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➤ Table of contents

0	General	5
1	Product specifications	5
2	Project Planning / Planning and Profile Selection	6
	2.1 Warranty, Specification, Storage	6
	2.2 Product Selection based on Substrate Properties	6
	2.3 Material Selection	7
	2.4 Profile Selection based on Mortar Type	8
	2.5 Project Planning / Planning and Construction Work	9
3	Profile Installation	10
	3.1 General	10
	3.2 Substrate Requirements and Testing	10
	3.3 Fixing Profiles in Place	10
	3.4 Tools	11
	3.5 Effect of Moisture on the Corrosion Behaviour of Plaster Profiles	11
	3.6 Types of Corrosion	12
	3.7 Specific Points to Note	13
4	Literature	14
	4.1 Standards – for information	15
	4.2 Information sheets	16

0 General

This sheet provides information for designers, developers, contractors and professionals on metal plaster profiles and their correct specification and application.

Plaster is both a design feature and a means of protecting the building façade. Edges and delineating details provide clean lines and thus convey the developer's intentions and the architect's ideas. Delineations made using plaster profiles help to define the contours of a building.

In addition, plaster profiles can be used to establish the required thickness of the plaster coat, in order to optimise the now standard machine application of industrial mortars and at the same time secure edge sections.

1 Product Specification

Plaster profiles are used to apply plaster to edges, corners, joints and connections in both interior and exterior uses.

Plaster profiles used on edges and bases provide increased strength against mechanical loads and at the same time add a design feature to the structure.

Plaster profiles are made from expanded metal, wire mesh or perforated metal strip in a range of materials.

The choice of profile material depends on the plaster and the application. The correct choice of profile avoids excessive risks, claims and consequential damage.

The contractor must ensure that, in the case of the mechanical or manual application of plaster mortar, the perforations or apertures in the profile are filled completely in order to obtain a solid bond between the plaster substrate and the profiles.

2 Project Planning / Planning and Profile Selection

2.1 Warranty, Specification, Storage

The plaster profile manufacturers warrant that the plaster profiles supplied by them in accordance with the applicable standards EN 13658-1 and EN 13658-2 are free of defects (CE marking). They are manufactured in accordance with ISO certification or internal quality assurance systems.

With regard to the planning and use of the profiles with plasters and on plaster substrates (section 2.3), care must be taken that the various materials are mutually compatible in accordance with the table in section 2.4.

If the table in section 2.4 is not followed, it is expressly noted that the combination and the chemical and physical properties of the plasters used are outside the competence of the profile manufacturers. In such cases, the corrosion resistance of the plaster profiles cannot be guaranteed.

The products are to be stored in a dry environment until required.

2.2 Product Selection based on Substrate Properties

Depending on how the plaster is used (interior/exterior), the following factors are to be taken into account in selecting and specifying profile systems and grades:

- Interior or exterior use
- Wall fabric e.g. brick, calcium silicate brick, concrete, aerated concrete, lightweight concrete, mixed masonry
- Compatibility with the plaster mortar (see section 2.4)
- Cleanliness of the substrate
- Smoothness
- Plaster thickness, system structure
- Humidity level
- Salt content of the substrate (chlorides, nitrates, sulphates)
- Type and condition of joints

2.3 Material Selection

If the plaster and profiles are exposed to high levels of humidity after installation, e.g. in wet rooms, swimming pools and domestic bathrooms, profiles made from corrosion resistant materials, e.g. stainless steel, are to be used.

Likewise, there is a risk of corrosion being caused to galvanised profiles by materials containing synthetic resin which are used as sealants or in tiling.

In the case of synthetic resin, silicone resin or silicate finishing plasters/top coats on mineral substrates, incorporated galvanised profiles are to be protected additionally with a quartz filled, organically bound plaster primer (not thinned), in order to prevent possible corrosion (see also section 2.4, footnote 1 to the table).

Stainless steel profiles are to be used in commercial kitchens or food manufacturing facilities.

In areas in contact with the ground and/or water splashes, profiles are to be protected against moisture or stainless steel profiles are to be used.

Where renovating plaster is used, stainless steel profiles are to be specified and used.

Stainless steel profiles shall be preferred in marine and industrial environments. The profiles shall be fully embedded in the plaster.

2.4 Profile Selection based on Mortar Type

The following table gives the correct combinations of plaster profile and plaster mortar:

Mortar/Plaster	Profile materials for exterior use					Profile materials for interior use (except wet rooms and domestic bathrooms)				
	galvanised	galvanised with coating	galvanised with PVC edge	aluminium	stainless steel	galvanised	galvanised with coating	galvanised with PVC edge	aluminium	stainless steel
Gypsum mortar and mortars containing gypsum	⊖	⊖	⊖	⊖	⊖	✓	✓	✓	✓	✓
Lime plaster	✓	✓	✓	✓ ²	✓	✓	✓	✓	✓	✓
Lime cement plaster	✓	✓	✓	✓ ²	✓	✓	✓	✓	✓	✓
Cement plaster	✓	✓	✓	✓ ²	✓	✓	✓	✓	✓	✓
Silicate plaster	✗ ¹	✓	✓	✓ ²	✓	✗ ¹	✓	✓	✓	✓
Silicone resin plaster	✗ ¹	✓	✓	✓	✓	✗ ¹	✓	✓	✓	✓
Synthetic resin plaster	✗ ¹	✓	✓	✓	✓	✗ ¹	✓	✓	✓	✓
One-coat plaster (single layer)	✗	✓	✓	✓ ²	✓	✓	✓	✓	✓	✓
Insulating plaster	✓	✓	✓	⊖	✓	✓	✓	✓	✓	✓
Renovating plaster	✗	✗	✗	✗	✓	✗	✗	✗	✗	✓
Clay plasters	⊖	⊖	⊖	⊖	⊖	✗	✓	✗	✓	✓
Reinforcement plaster organic	✗	✓	✗	✓	✓	✗	✓	✗	✓	✓
Reinforcement plaster mineral	✓	✓	✓	✓ ²	✓	✓	✓	✓	✓	✓
Adhesive plaster	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

1) In the case of synthetic resin, silicone resin or silicate finishing plasters/top coats on mineral substrates, incorporated galvanised profiles are to be protected additionally with a quartz filled, organically bound plaster primer (not thinned).

2) Aluminium with base coat.

✓ permitted

✗ not permitted

⊖ not suitable

Notes on the table:

- Galvanised profiles must not come into contact with aluminium and stainless steel profiles.
- Galvanised profiles with smooth PVC edges must not be plastered over. The PVC edge must be cleaned immediately after plastering. The PVC edge must be UV resistant.
- Galvanised profiles with rough-surface PVC edges may be plastered over.
- In the case of expansion joints, the joint area must remain open and free of mortar/plaster.
- In the case of galvanised profiles with a coating, care must be taken that this is not damaged.

2.5 Project Planning / Planning and Construction Work

Planning and construction work must follow generally accepted good practice. In particular, care must be taken to ensure that moisture does not damage the plaster profiles or the plaster and thus that any possible corrosion is prevented.

Sufficient ventilation or rapid drying is to be ensured. Project planning must include sufficiently long waiting times, e.g. planned drying times.

Where two coats of plaster are applied, care must be taken that the first coat is sufficiently dry. The minimum time required for adequate drying and hardening of the plaster before further work varies depending on the type of plaster and must be taken into account in the schedule.

Work is to be planned /scheduled such that the galvanised plaster profiles in the undercoat are not exposed to the elements unprotected (without the top coat) for too long, e.g. in winter.

3 Profile Installation

3.1 General

Profiles, e.g. metal angle profiles, stop profiles, movement joint profiles, corner and edging profiles, must be galvanised or corrosion resistant depending on the application.

Care must be taken that the plaster profiles are correctly transported and stored.

3.2 Substrate Requirements and Testing

The substrate must be dry, clean, dust-free and absorbent and load-bearing in accordance with the requirements of the plaster coats to be applied.

The wall surface must not contain salts or foreign substances and efflorescence must be removed.

The substrate is to be tested by standard industry methods in compliance with the applicable national regulations.

3.3 Fixing Profiles in Place

Profiles can be fixed in place with mineral adhesive mortars or with the plaster mortar to be used (mineral undercoat or single coat plaster).

Adhesive mortars with set accelerators containing chlorides are not suitable for fixing galvanised profiles.

Fixing aids used (e.g. galvanised nails) must be removed before the adhesive mortar hardens.

Galvanised profiles must not come into contact with aluminium and stainless steel profiles.

3.4 Tools

Galvanised profiles must be cut using sheet metal shears or similar tools.

Galvanised profiles must not be cut with an angle grinder.

Stainless steel profiles may be cut with an angle grinder. Care must be taken that only cutting discs suitable for stainless steel are used.

When planing the surface, care must be taken that the galvanising and/or coating on the profiles is not damaged.

Bare steel or galvanised steel tools must not be drawn over the edges of stainless steel profiles, as there is a risk of contact corrosion.

3.5 Effect of Moisture on the Corrosion Behaviour of Plaster Profiles

The mixing of plaster mortar with water produces an alkaline medium.

This attacks and briefly degrades the zinc coating. For this reason it is important to provide for and achieve rapid drying of the plaster. If this is not done and sufficient ventilation is not provided, there is a risk of corrosion if galvanised profiles are used.

Excessive dampness at a later stage can reactivate the alkaline potential still present in the plaster and cause corrosion to recur.

3.6 Types of Corrosion

Metal corrosion is caused by chlorides, carbon dioxide or a combination of moisture and oxygen. This can lead to the following different types of corrosion:

Type of Corrosion	Appearance	Cause
General corrosion	brown	Steel with no protective coating exposed to the air.
Pitting corrosion	brown / white	Effect of corrosion stimulators (e.g. chlorides) on metals, including stainless steel.
Contact corrosion	brown / white	Contact between two different metals causing the less noble one to corrode.
White rust	white	Corrosion of aluminium.
Rust film	orange / brown	Incipient surface corrosion in a thin layer. Often caused by moisture during storage or use.
Crevice corrosion	brown	Caused by crevices in the metal surface.
Interlayer corrosion	detachment of surface layer	Corrosion in the contact and surface layer adhesion zone between metal surface and surface layer. Caused by corrosive behaviour of the surface layer.

3.7 Specific Points to Note

Interior Plaster

In the case of interior plaster work, sufficient air circulation must be ensured.

Depending on the system used (single plaster coat or two coats), the profile edge should remain visible or be covered.

Exterior Plaster

In the case of top coats with grain size $< 3\text{mm}$, the top coat must be applied such that the profile edge is covered and no longer visible.

Coated or stainless steel profiles should preferably be used.

In the case of galvanised profiles with coating or aluminium profiles with coating, the covering must be at least the thickness of the mortar paste. The aim should be for a covering of the grain size thickness.

Galvanised profiles with smooth PVC edges must not be plastered over.

4 Literature

4.1 Normen - informativ

EN 485-2	Aluminium and alu alloys, sheet, strip and plate – part 2: Mechanical properties
EN 485-3	Aluminium and alu alloys, sheet, strip and plate – part 3: Tolerances on dimensions and form
EN 573-3	Aluminium und -legierungen, chemische Eigenschaften
EN 988	Zinc and Zinc alloys – Specifications for rolled flat products for building
EN 998-1	Specification for mortar for masonry - Part 1: Rendering and plastering mortar
EN 10088-1	Stainless steels – Part 1: List of stainless steels
EN 10088-2	Stainless steels – Part 2: Technical delivery conditions for sheet and plate
EN 10142	Continuously hot-dip zinc coated low carbon steel strip and sheet for cold forming
EN 10143	Continuously hot-dip metal coated steel sheet and strip
EN 10215	Continuously hot-dip aluminium-zinc (AZ) coated steel strip and sheet
EN 10218-2	Steel wire and wire products - general – part 2: wire dimensions and tolerances
EN 10244-1	Steel wire and wire products - Non ferrous metallic coatings on steel wire PART 1 general principles
EN 10244-2	Steel wire and wire products - Non ferrous metallic coatings on steel wire Part 2: Zinc or Zinc alloy coatings
EN 10264-4	Steel wire and wire products - Part 4: Stainless steel wire
EN 13279-1	Gypsum binders and gypsum plasters - Part 1: Definitions and requirements
EN 13658-1	Metal lath and beads – definitions, requirements and test methods - Part 1 Internal Plastering
EN 13658-2	Metal lath and beads – definitions, requirements and test methods - Part 2 External rendering
EN 13914-1	Design, preparation an application of external and internal plastering – Part 1 : Design considerations and essential principles for external rendering
EN 13914-2	Design, preparation an application of external and internal plastering – Part 2 : Design considerations and essential principles for internal plastering
CSTC-199	Bruxelles 03/1996: Enduits interieurs
CSTC-201	Bruxelles 09/1996: Enduits interieurs: 2 partie mise en oeuvre
CSTC-209	Bruxelles 09/1998: Enduits exterieurs
DIN V 18550	Putz und Putzsysteme – Ausführung
DTU-26.1	Afnor NF p 15-201: Enduits aux mortiers de ciments, de chaux, et de mélange plâtre et chaux aérienne: partie 1 Cahier des clauses techniques
NF A 91-131	Revetements Métalliques – Dépôts électrolytiques de zinc et de cadmium sur fer ou acier
NF A 91-102	Revetements métalliques – Fils d'acier galvanisés à chaud - Spécification du revêtement de zinc.
SIA - V242/1	Verputz- und Gipserarbeiten, Zürich 1994
SIA 243	Verputzte Aussenwärmedämmung, Zürich 2008
EN 15284	Specifications for external renders and internal plasters based on organic binders

4.2 Information Sheets

Guidelines for the use of plaster supports - 12/1996;
Austrian Plasterers' Trade Association, (A)

Guidelines for the production of movement joints, plaster connections and stops, 3rd edition -
06/2007;
Österreichische Arbeitsgemeinschaft Putz, (A)

“Plastering at high and low temperatures“ - 08/2001;
Publisher: Österreichische Arbeitsgemeinschaft Putz (A), Schweizerischer Maler- und
Gipserunternehmer-Verband (SMGV) (Swiss Association of Painters and Plasterer Contractors),
Bundesverband Ausbau und Fassade (formerly Deutscher Stuckgewerbebund) (German Associa-
tion for Finishing and Façade Works)

Guidelines for the connection of plaster, drywall and thermal insulation bonding systems to
windows and roller shutters, 2nd edition – 10/2010;
Publisher: Fachverband der Stuckateure Baden-Württemberg (Baden-Württemberg Plasterers'
Trade Association), Stuttgart (D) et al.

Use of exterior plasters and plastered exterior thermal insulation in base areas - 07/2006;
Publisher: Schweizerischer Maler- und Gipserunternehmer-Verband



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