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Maintenance and cleaning of metal facades

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Guideline 61.01

Swiss Central Window and Facade SZFF

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Maintenance and cleaning of metal facades

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1. purpose2

This recommendation describes the precautions and working methods to be observed for the proper cleaning and care of metal facades and windows, as well as the tools required for this purpose.

It is also intended to enable the client to determine the most suitable cleaning methods for his object and thus to protect him from competition-distorting offers and improper cleaning procedures that are not beneficial to the materials and the environment.

. Fields of application

- 2.1 Components made of aluminum or aluminum alloys that have been provided with an artificially produced oxide layer by anodic oxidation (colorless, colored or colored).
- 2.2 Components made of aluminum or aluminum alloys that have been organically coated (liquid or powder coating).
- 2.3 Stainless steel components (bright)
- 2.4 Components made of unalloyed steel that have been organically coated (liquid or powder coating)
- 2.5 Non-ferrous metal components (bare)
- 2.6 Plastic components
- 2.7 Facades in mixed construction (e.g. Metall/natural stone)

3. Responsibility for cleaning work in the time schedule

Facades need to be cleaned several times during their service life. This chart shows which cleaning classes A-F are required at what time and who is responsible for placing the order.

Figure 1 **Aluminum anodized**

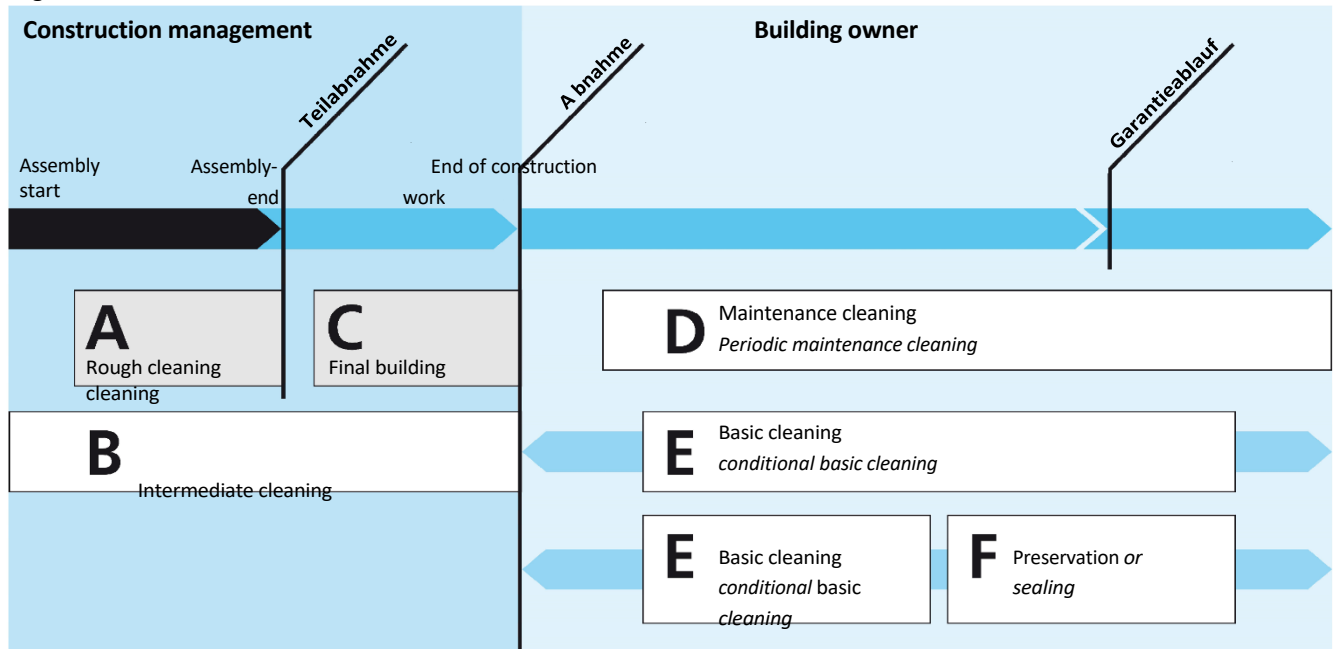
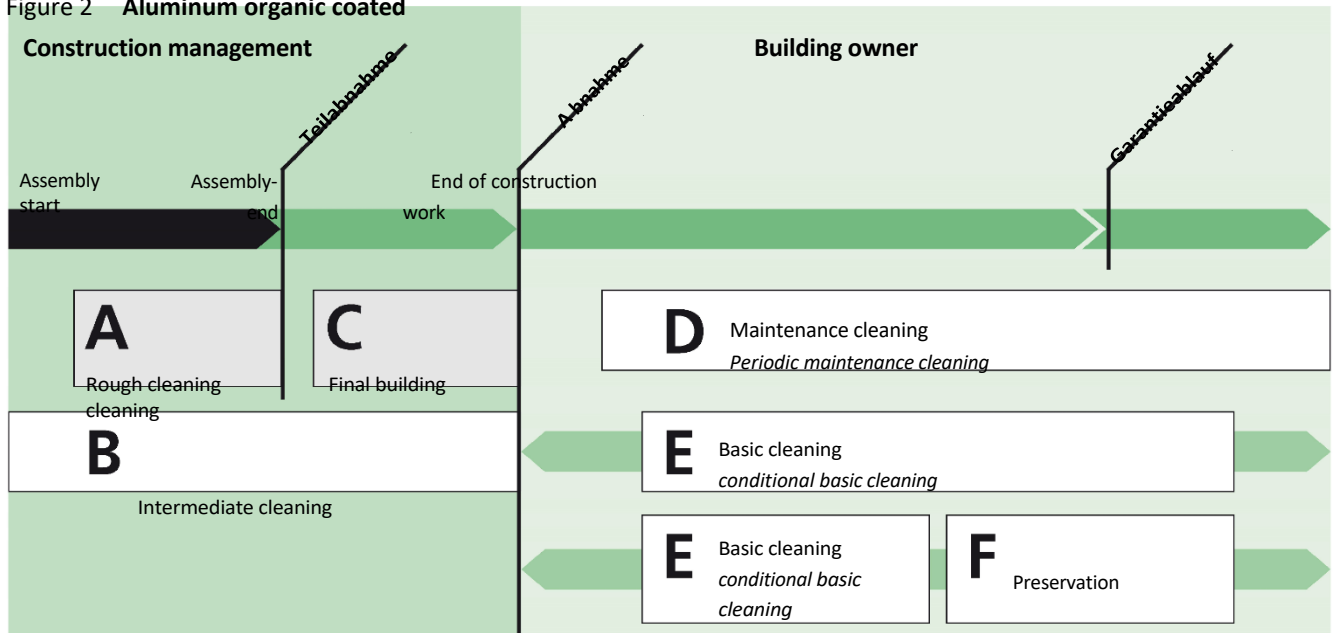


Figure 2 **Aluminum organic coated**



Notes on figures 1 and 2:

- During the entire construction period, various contractors work simultaneously on the construction site. Although a reciprocal return of already assembled parts is expected, components can become heavily soiled. Therefore, intermediate cleaning is necessary on site.
- After completion of the installation work, a rough cleaning is usually carried out by the facade builder. Partial acceptance can then take place.
- The final cleaning of the building is carried out by the customer.
- Cleaning classes A to F stand for different requirements.

4. Cleaning classes

4.1 A Rough cleaning

- After the end of the assembly, to enable partial acceptance

4.2 B Intermediate cleaning

(new buildings, conversions, renovations)

- From facade installation to scaffold removal, several intermediate cleanings are recommended

4.3 C Final construction cleaning

(new buildings, conversions, renovations)

- If possible shortly before building occupancy
- Final cleaning of the construction should be carried out in all circumstances
- Work execution from scaffolding, from static/mobile facade lifts, from hydraulic lifting platforms or rolling scaffolds
- The degree of soiling and the color of the components are decisive for the cleaning steps to be selected; the darker, the more delicate!

4.4 D Maintenance cleaning

(buildings 2 years and older)

Periodic maintenance cleaning:

- Following the final cleaning of the building
- The degree of soiling and the color of the components are decisive for the cleaning steps to be selected; the darker, the more delicate!
- Cleaning interval depending on aesthetic requirements, 2 or 3 years (do not miss the time for organically coated facades!).
- Shorter cleaning interval for exposed locations and/or unusual facade design.
- Plan sensible combination of cleaning work for all facade components!

4.5 E Basic cleaning

(Buildings 5 years and older)

Condition-based basic cleaning:

- In the event of improper or non-executed final construction cleaning
- For facades without previous periodic maintenance cleaning
- For old and/or insufficiently maintained buildings.

4.6 F Preservation or sealing

Following final or basic cleaning, preservation or sealing can be applied for additional protection. Following maintenance cleaning, however, only preservation is possible.

4.6.1 Preservation (short-term effect)

Components with organic coatings can be preserved without restrictions.

In the case of anodized components, preservation is only suitable for small areas (e.g. doorways and shop windows).

- Thorough prior cleaning necessary
- Periodic cleaning essential (photochemical degradation, interference colors)
- Low cost, short protection time (max. 1 year for anodically oxidized components, max. 2 years for organically coated components)

4.6.2 Sealing (long-term effect)

Anodically oxidized components can be sealed without restrictions. Sealing of components with organic coatings proved to be problematic and is not recommended.

- Thorough prior cleaning indispensable (final construction or basic cleaning)
- Periodic cleaning is **hardly necessary and** can be carried out with little effort.
- High cost, long protection (5 to 8 years)
- Costly renewal after 7 to 10 years

5. Facades inspection

It is recommended to check the individual façade components **before cleaning** and to record existing damage and defects in writing, paying attention to the following points:

5.1 Aluminum facade components

- Corrosion damage
- Condition of the organic coatings
- Mechanical damage (e.g. from facade lifts)
- Damaged brackets and fasteners
- Mounting screws

5.2 Other facade components

- Inspection according to specific properties of individual building materials
- Mechanical damage (e.g. from facade lifts)

5.3 Substructures

- Visual inspection
- Corrosion damage

5.4 Glasses and fittings

- Cracks, run-ins, impact and gunshot wounds
- Glass displacements in the holders (horizontal/vertical)
- Condensate between IV glasses
- Damage to window and door hardware

5.5 Sun protection systems

- Corrosion damage and condition of the organic coating
- Damage to cranks, guide rails, cords and elevator belts
- Impact and pressure marks on slats
- webbing, fabric, etc.

5.6 Seals

- Defective rubber seals on glasses and an-schluss construc- tions
- Defective putty joints on metal constructions or at connections to other facade components

6. Sample cleaning (see appendix 1+2)

In order for the client to be able to assess the success of a facade cleaning (cleaning, preservation, sealing), large-scale work samples including all facade components are recommended. On the one hand, the technical condition of the surfaces can be largely assessed and, on the other hand, the work sample shows the visual result of the cleaning. The test cleaning is the safest way to a serious offer.

As a rule, metal parts must be handled more gently than the other building materials. The cleaning method for non-metallic building materials must be based on the compatibility of the neighboring metal parts.

6.1 Implementation, cleaning technology

The cleaning company creates work samples in various places, which are particularly dirty.

The cleaning technique to be selected depends on the standard in question, the age and condition of the facade components or surfaces and the aesthetic requirements.

6.2 Protocol

The cleaning company reports in writing on the selected cleaning technique(s), the cleaning and care products used and the results of the work samples. This report is an important part of the planned facade cleaning.

Protocol forms can be found in Appendices 1 and 2.

The client is advised to check the work sample(s) and protocol against the recommendations contained in these guidelines for compliance. Any change in the cleaning technique requires a new sample cleaning.

6.3 Third party appraisal

In case of technical problems (old components, corrosive phenomena, damages, etc.) and/or for the inspection of the work samples and protocols, it is advantageous for the client to contact the manufacturer of the facade.

7. Controls before and during cleaning

7.1 Client

- Check sample cleaning and protocol (possibly consult facade manufacturer)
- Check work execution in accordance with the protocol

7.2 Contractor

- Obtain locally required permits from authorities
- Comply with SUVA regulations on accident prevention
- Take measures to protect people, animals and plants against dirty water and against falling working equipment.
- Sensitive components, such as flat roofs, Protect glass roofs and gardens
- Protect adjacent components
- Expose roof drains, sewage shafts and drainage slots.
- Comply with requirement about wastewater discharges

8. Scaffolding

The contractor shall select the most suitable scaffolding to ensure that the work is carried out safely and expeditiously. When using the scaffolding, the contractor checks that the safety regulations are observed and takes all measures to ensure that the facade components to be cleaned are not damaged by the scaffolding.

The regulations for the use of public land, but also the scaffolding controls are handled differently. The contractor informs himself in good time about the local requirements and obtains the necessary permits.

8.1 Stationary facade lifts

- Component of the building
- Horizontal and vertical driving possibility
- High working comfort

8.2 Mobile facade lifts

- Optimal working tool for buildings without stationary systems
- Use possible in almost all buildings with flat roof
- Different lift widths possible, 1 to 8 meters

8.3 Rolling scaffolds, stair towers

- Quick assembly and disassembly
- Suitable for work up to 10 meters (high scaffolds and ladders are not suitable for speedy and safe work).

8.4 Hydraulic lifts

- Suitable for work in hard to reach places
- Safe working tools for a speedy operation
- Relatively expensive, but usually more economical than other scaffolds
- Working heights 10 to 40 meters

9. Cleaning recommendations for anodized components

(Figures 3-8)

9.1 Figure 3, rough cleaning

Cleaning class	Pollution/ position, group	Cleaning steps	Comments
A Rough cleaning	Packaging residues, labels, adhesive tapes and protective films, transport and storage contamination	Careful removal by hand without water or solvents. Abrasive instruments such as brushes, etc. are to be avoided	This cleaning is usually performed by the facade and window manufacturer to enable partial acceptance. performed

9.2 Figure 4, intermediate cleaning

Cleaning class	Pollution/ position, group	Cleaning steps	Comments
B Intermediate cleaning	<p>Cement and mortar splashes Concrete precipitation Gypsum splashes</p> <p>Tar, paint splashes Putty residues, glue</p> <p>Construction residues on facades and scaffolding Scaffolding</p> <p>Dust deposits on horizontal and inclined surfaces</p>	<p>Immediate removal with sponge and soft brush. Wash off with running water</p> <p>Careful removal with suitable solvent and clean cotton cloth</p> <p>Careful removal by hand</p> <p>Wipe carefully, tilt scaffold boards outwards if necessary, wash off with running water</p> <p>Washing with running water, possibly cleaning with sponge</p>	Consultation with metal construction company necessary

9.3 Figure 5, final cleaning of the building

Cleaning class	Pollution/ position, group	Cleaning steps	Comments
C Building end cleaning	Low pollution and/or low aesthetic demands regarding long-term behavior, short construction time (approx. 1 month)	Rinse with plenty of water. Clean with wetting agent and sponge. Rinse and dry	The degree of soiling and the color of the aluminum components are decisive. for the cleaning technique to be chosen; the darker, the trickier!
	Medium pollution and/or high aesthetic demands regarding long-term behavior and/or medium construction time (over 4 months)	Rinse with plenty of water. Mechanical cleaning with wetting agent solution, vibrator and Scotchbrite pad. Rinse and dry	See above
	Heavy soiling and/or high aesthetic demands regarding long-term behavior and/or long construction time (over 9 months)	Rinse with plenty of water. Mechanical cleaning with basic cleaning agent and vibro-sucker with Scotchbrite pad. Rinse and dry See intermediate cleaning	See above
	Cleaning scaffolding		Should be carried out in any case
	Cleaning windows and other building materials on the facade		Do not forget!
	Preservation, sealing	See F, preservation, sealing	Provide reliable protection against environmental influences. The advantages and disadvantages of the two options should be clarified in each case. become

9.4 Figure 6, maintenance cleaning

Cleaning class	Pollution/ position, group	Cleaning steps	Comments
D Periodic maintenance cleaning	Components without special care treatment. Low pollution and/ or low aesthetic requirements	Rinse with plenty of water. Clean with wetting agent and sponge. Rinse and dry	Soiling and aesthetic requirements are decisive for the intervals!
	Medium pollution and/ or high aesthetic requirements	Rinse with plenty of water. Mechanical cleaning with wetting agent solution, vibrator and Scotchbrite pad. Rinse and dry	See above
	Sealed components	Rinse with plenty of water. Clean with wetting agent and sponge. Rinse and dry	Intervals every 2-3 years, more frequently for exposed locations and/ or unusual facade design!
	Preserved components	Rinse with plenty of water. Mechanical cleaning with wetting agent solution, vibrator and Scotchbrite. Pad. Rinse and dry. Renew preservation	See above
	Cleaning windows, window frames	Clean window on 2 sides. Clean window frame with rebates	Do not forget! All work should be combined sensibly
	Cleaning sunshade equipment	Clean all sides by hand	Cleaning only with chemically neutral agents!
	Other facade components (natural stone)	According to manufacturer recommendation	

9.5 Figure 7, basic cleaning

Cleaning class	Pollution/ position, group	Cleaning steps	Comments
E Basic cleaning	<p>Medium pollution</p> <p>Heavy soiling Removal of old preservation. Removal of old sealant</p> <p>Cleaning windows, window frames</p> <p>Cleaning of sunshades</p> <p>Other facade components (natural stone)</p>	<p>Rinse with plenty of water. Repeated mechanical cleaning with wetting agent solution, vibro-sucker and Scotchbrite pad.</p> <p>Rinse and dry Rinse with plenty of water.</p> <p>Repeated mechanical cleaning with basic cleaning agent, vibro-sucker and Scotchbrite pad.</p> <p>Rinse and dry</p> <p>Clean window on 2 sides.</p> <p>Clean window frame with rebates</p> <p>Clean all sides by hand According to manufacturer's recommendation</p>	<p>Only possible in a few cases! As a rule must Basic cleaning agents are used</p> <p>Dirt, coatings, old preservations and sealings must be completely removed.</p> <p>Do not forget! All work should be combined sensibly</p> <p>Cleaning only with chemically neutral agents!</p>

9.6 Figure 8, preservation, sealing

Cleaning class	Pollution/ position, group	Cleaning steps	Comments
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F Preservation	Together with final building cleaning Together with basic cleaning Together with maintenance cleaning	After mechanical cleaning: Apply preservative with clean cotton rag or cleaning wool; polish. After mechanical cleaning and removal of old preservative residues: apply preservative with clean cotton rag or cleaning wool; polish After mechanical cleaning: Apply sealant	Mechanical cleaning is essential beforehand! Mechanical cleaning beforehand is essential due to undesirable dirt coverage (caschie-ry)!
F Sealing	Together with final building cleaning Together with basic cleaning		Mechanical cleaning is essential beforehand! Observe application instructions! Best possible protection against weathering, economical maintenance cleaning; long-term protection (5-8 years) against immissions, costly cleaning and maintenance. tification after 7-10 years

10. Cleaning recommendations for components with organic coating and components made of plastic (Figures 9-14)

10.1 Figure 9, Rough cleaning

Cleaning class	Pollution/ position, group	Cleaning steps	Comments
A Rough cleaning	Packaging residues, labels, adhesive tapes and protective films, transport and storage contamination	Careful removal by hand without water or other solvents. Abrasive instruments such as Brushes or unsuitable rags should be avoided	This cleaning is usually performed by the façade and window manufacturer to enable partial acceptance

10.2 Figure 10, intermediate cleaning

Cleaning class	Pollution/ position, group	Cleaning steps	Comments
B Intermediate cleaning	<p>Cement and mortar splashes Concrete precipitation Gypsum splashes</p> <p>Tar, paint splashes Putty residues, glue</p> <p>Construction residues on facades and scaffolding</p> <p>Scaffolding</p> <p>Dust deposits on horizontal and inclined surfaces</p>	<p>Immediate removal with sponge and soft brush. Wash off with running water</p> <p>Careful removal with suitable solvent and clean cotton rag</p> <p>Careful removal by hand</p> <p>Wipe carefully, tilt scaffold boards outwards if necessary, wash off with running water.</p> <p>Washing with running water, possibly cleaning with sponge</p>	Consultation with metal construction company necessary

10.3 Figure 11, final cleaning of the building

Cleaning class	Pollution/ position, group	Cleaning steps	Comments
C Building end cleaning	Short to medium construction time (approx. 1-4 months)	Rinse with plenty of water. Cleaning with wetting agent and sponge. Rinse and dry See above	Degree of contamination and construction time are decisive for the amount of work required
	Longer construction time (over 4 months)	Several cleanings during the construction period are recommended (approx. every 2-3 months).	See above Plan maintenance cleaning in good time!
	Cleaning scaffolding		Should be carried out in any case Do not forget!
	Cleaning windows and other building materials on the facade conservation	See F, Preservation	Maintenance treatment is generally not necessary, but may be necessary in the case of unusual façade damage. design can be advantageous!

10.4 Figure 12, maintenance cleaning

Cleaning class	Pollution/ position, group	Cleaning steps	Comments
D Periodic maintenance cleaning	Components without special care treatment. Low pollution and/ or low aesthetic requirements Preserved components	Rinse with plenty of water. Clean with wetting agent and sponge. Rinse and dry	Interval 1 to 2 years, depending on soiling and aesthetic requirements
	Cleaning windows, window frames	Rinse with plenty of water. Remove preservative residues with a special agent. Cleaning with wetting agent and sponge. Rinse and dry. Renew preservation.	Interval every 2 to 3 years, for exposed sites. and/or exceptional facade design more often!
	Cleaning of sun protection system	Clean window on 2 sides. Clean window frame with rebates	Do not forget! All work should be combined sensibly
	Other facade components (natural stone)	Clean all sides by hand According to manufacturer recommendation	Cleaning only with chemically neutral agents!

10.5 Figure 13, basic cleaning

Cleaning class	Pollution/ position, group	Cleaning steps	Comments
E Basic cleaning	Medium pollution	Rinse with plenty of water. Repeated mechanical cleaning with basic cleaning agent, vibro-sucker and special Scotchbrite pad. Rinse and dry	Repeated mechanical cleaning necessary!
	Removal of old preservation	Rinse with plenty of water. Remove preservative residues with special agent, repeated mechanical cleaning with basic cleaning agent, vibro-sucker and special Scotchbrite pad. Rinse and dry	Preservation residues and soiling must be completely removed.
	Cleaning windows, window frames	Clean window on 2 sides. Clean window frame with rebates Clean all sides by hand	Do not forget! All work should be combined sensibly
	Cleaning sunshade devices Other facade components (natural stone)	According to manufacturer recommendation	Cleaning only with chemically neutral agents!

10.6 Figure 14, Preservation

Cleaning class	Pollution/ position, group	Cleaning steps	Comments
F Preservation	Together with building end cleaning Together with maintenance cleaning Together with basic cleaning	After cleaning: Apply preservative with clean cotton cloth or cleaning wool; polish.	Prior cleaning according to recommendation is essential!

Comments:

All the cleaning operations described in detail above (Figs. 4-14) can only be carried out using **chemically neutral agents**. The entire cleaning effect must therefore be achieved by mechanical work. Corresponding written guarantees are to be provided by the contractor. The use of high-pressure cleaning equipment must be rejected.

11. Cleaning recommendations for non-ferrous metals

11.1 General

Non-ferrous metals can change their color shade considerably over time due to natural oxidation. Alloys containing copper become darker over time due to natural oxidation.

11.2 Cleaning

Heavily soiled parts of the facade can be cleaned by washing with neutral wetting agents. It should be noted that all abrasive cleaning methods lead to stained whitening.

12. Various building materials

12.1 Glasses

Cleaning recommendations should be obtained from the glass industry.

12.2 Stone

Cleaning recommendations are to be requested from the stone supplier.

12.3 Stainless steel (bright) Cleaning recommendations regarding wetting agent type and mechanical aids are to be requested from the steel supplier.