

## General Instructions for Maintenance and Cleaning of Noise Control Products by Forster Metallbau GmbH

### Cleaning instructions for powder coated surfaces

To prevent damage to coated surfaces, proper care is necessary. Cleaning, inspection and maintenance of coated surfaces must be carried out by competent personnel only.

#### Obligatory cleaning interval:

- Depending on the level of dirt, areas with severe and heavy dirt are usually only cleanable by abrasive means and with questionable results.
- Warranty up to 5 years - once a year
- Warranty over 5 years - obligatory at least once a year directly after the winter period.

Performance of cleaning shall be documented by written protocol, which has to be transmitted to the manufacturer within 4 weeks after cleaning. Archiving of protocols is performed by contracting Parties for agreed warranty period plus additional one year.

#### Cleaning material:

- Clear water
- Neutral cleansers with pH value between 5 and 8 (eg: Clin facade cleaning agent (Henkel) - Wetting agent)
- **Never use** aggressive cleaners or mechanical additives that may damage the surface!!

#### Cleaning:

Cleaning must be carried out only on surfaces with a maximum temperature of 25°C, avoid direct sunlight.

The elements are to be pre-cleaned with plenty of clear water and soft cleaning cloths, rags or large-pored sponges to remove rough, loose dirt.

Subsequently rinse with plenty of water. If necessary neutral detergent (pH 5-8) can be added in small quantities to the water.

When using high-pressure washers or tunnel washing machines, ensure that the inside-lying absorption mats are not damaged (reduce pressure, increase distance).

#### Other maintenance:

Scratches in the coating film (eg by mounting or stone-chipping) have to be cleaned and repaired appropriately.

#### Relevant technical rules for cleaning performance:

- GRM RAL-GZ 632 („Gütegemeinschaft für die Reinigung von Metallfassaden“, Nürnberg) / Quality association for maintenance of metal facades, Nuremberg)
- Verband der Fenster- und Fassadenhersteller, Frankfurt/ Main, (Merkblatt VFF-WP. 05) / Association of Window and Façade Manufacturers, Frankfurt/Main, (technical leaflet VFF WP 05th)
- EMPA SZFF, Zurich (Standard 61.01)
- Qualicare: Verband für Qualität von Reinigung und Unterhalt bei Metallfassaden, Zürich / Quality association for cleaning and maintenance of metal facades, Zurich

#### Disclaimer and exclusion of warranty:

- Damage due to non-observance of generally recognized codes of practice.
- Damage caused by improper maintenance (cleaning and maintenance) of coated surfaces.
- Damage occurred due to contact with sealing strips or sealing compounds and aggressive cleaning agents.
- Damage caused by continuous heat over 70°C.
- Damage caused by locations near the sea / in the sphere of industrial emissions including lacquer-depleting substances and coloring organic products.
- Damage caused by improper storage of the product.
- Damage caused by mechanical injuries (eg shocks) by accidents, considerable heat shock, friction with blunt objects or as a result of chemical reactions.

The classification of upcoming defects follows the guidelines of „Qualitäts- und Prüfrichtlinien für Beschichtungsbetriebe GSB AL631 (Internationale Qualitätsrichtlinien für die Beschichtung von Bauteilen aus Aluminium)“ / International quality regulations for the coating of aluminium building components GSB AL631

The evaluation of decorative appearance of industrially produced surfaces regarding uniformity of color, gloss level and texture has to be done without any tools, in diffuse daylight, at a viewing angle of 90° ± 30° degrees and for outer parts in a minimum distance of 3 meters.

### Cleaning of transparent elements

Transparent noise barrier elements are exposed to natural and construction-related dirt. This does usually not result in any problems as long as the chemical and physical dirt elements are appropriately removed by means of professional cleaning without any residuals left on the elements. Climate, local environment and surface treatment may lead to different levels of dirt and hence must be cleaned in an appropriate and timely manner. Continuous or heavy concentrated impact of chemical dirt on the glass surface or inappropriate mechanical cleaning may lead to irreparable damages to the surface. This may not only impact the visual appearance but also stability and consequently usability of the product.

### Cleaning of acrylic glass

Glass surfaces may also be cleaned with a high-pressure spray-cleaning device from dirt elements, potentially with addition of a cleaning agent.

#### High-Pressure cleaning

For large glass areas or facades often machine-supported cleaning methods are applied. All systems supported by mechanical devices such as rotating brushes etc are not suitable for acrylic glass. Even when a lot of water is added, the acrylic surface may be scratched.

Outside acrylic glass surfaces may however well be cleaned with a common high-pressure (warm) water cleaner. Along with a water temperature of 50°C to 80°C a pressure of 50 to 100 bar is recommended. Via a built-in dosing device low quantities of a low-foaming cleanser are to be added. Afterwards blade swiping is neither recommended nor necessary, however swiping the glass surface with a dry and clean cloth may speed up the drying process.

### Cleaning of silicate glass

Use as much clean water as possible to avoid dirt parts to cause any scratches on the surface. Soft and clean cloths, leather, sponges or rubber blades are well suited for cleaning. Neutral cleaning agents or commonly used glass cleaning agents support and enhance the cleaning effect.

Heavy dirt, glueing residuals or siliconisations can be removed with either common kitchen cleaning agents (Sidel, Stahlfix etc.) or Cerium C and cerium oxide. Cleaning agents must not contain any abrasive components!

Dusty and granular dirt must not be removed in a dry manner. With wet cleaning it is recommended to exchange the cleaning water as well as the application device (cloth, sponge, etc.) as often as possible to avoid re-application of already removed dirt particles onto the glass surface and the risk of scratches.

Intense dirt (e.g. residual glue from stickers) can be removed either by a soft sponge or a plastic blade and plenty of soap sud. Colour or tar residuals shall be softened by an appropriate solvent, such as washing benzine, ethanole, acetone or isopropanole an afterwards removed carefully. Special care shall be taken for the bordering sealing materials as these shall not be affected by the solvents.

The glass surface must not be cleaned by cleaning agents which contain abrasive components, aggressive detergents, razorblades, steel blades or any other sharp metallic objects. In case of the exceptional use of mineral wool a grain size of 000 or less is allowed, however it must be used always with plenty of water and never in dry conditions. A glass slicer must not be used!

The glass surface must not be affected visibly by any cleaning agent.

Alkaline solutions, acids or fluoride-containing agents must generally not be used for cleaning of glass surfaces.



ID of notified body: 1268  
Norm: EN 14388:2008

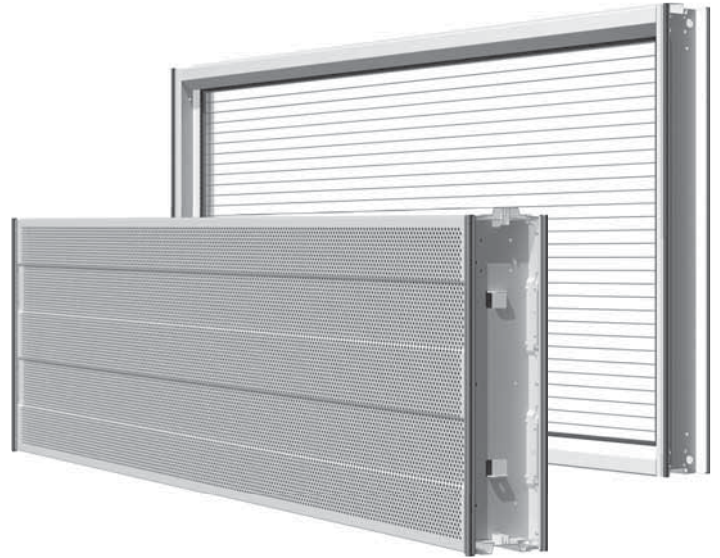
## Maintenance of aluminum and transparent noise barrier elements

Noise barrier elements made of aluminum or (acrylic) glass are generally maintenance-free.

Nevertheless, monitoring and examination at least once a year is recommended and also to be documented accordingly.

During this process the following criteria are to be checked and reviewed:

- Are there any mechanical damages which have a negative effect on the stability?
- Are there changes in the distance between uprights through subsidence?  
Are the noise barrier elements still integrated at least 40 mm into the upright?
- Are there any gaps between noise barrier elements due to subsidence of base boards and the resulting shifts?
- Are the securing ropes at bridge structures located over other traffic routes still functional?
- Is the powder coating of the aluminum parts in any way damaged?



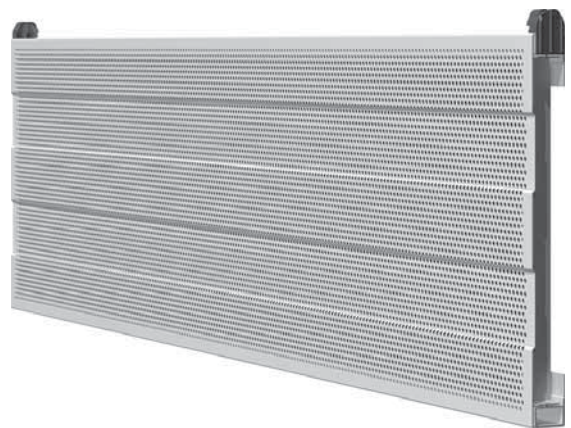
## Maintenance of cladding panels

Noise reducing cladding panels made of aluminum are generally maintenance-free.

Nevertheless, monitoring and examination at least once a year is recommended and also to be documented accordingly.

During this process the following criteria are to be checked and reviewed:

- Is the powder coating of the aluminum parts in any way damaged?
- Are there any mechanical damages which lessen the stability?
- The functionality of any connecting parts has to be assessed.
- Particularly in tunnel areas load-bearing as well as connecting parts have to be checked for corrosion appearances.
- In tunnels with strong corrosive forces (salt spray, exhaust fumes, etc.), cleaning of the cladding panels is to be ensured at least once a year.



## Comment to aluminum and transparent noise barrier elements / cladding panels:

The producer of the powder recommends cleaning the powder-coated surfaces once a year with water to ensure a long-term consistent appearance (see also: Cleaning of powder-coated surfaces).

The ongoing monitoring, examination and cleaning is to be documented.

## Maintenance of single-leaf and double-leaf service doors

### Visual inspection

- Position and tightness of mechanical connecting parts (screws, rivets, hinges, guide roller etc.)
- All parts in regard to mechanical damages, wear
- Traces of wear from dynamic loads (guide rollers, sealing rubber, door closer, ...)

### Functional inspection

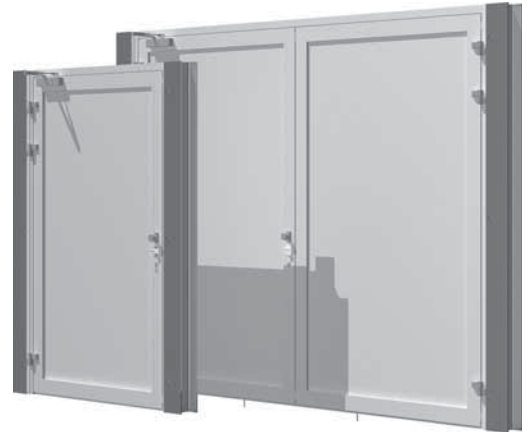
- Closing behavior (door closer, sealing rubber, closing support)
- Door running action (door hanger, apron housing, rolling apparatus, door lock etc.)
- Geometry (interface door frame - steel upright, door crack)

### Maintenance as part of inspection

- Caution: DO NOT grease door hinges! Bearing bush made of maintenance-free synthetic material containing Teflon
- Grease the door closer and door lock (resin-free oil, no graphite). Grease protruding moving parts with ordinary grease.
- In case of multi-point locking system lubricate push rod with teflon spray (e.g. PTFE-Spray firm "Spiral", spiral.at).
- Oil apron housing and lock cylinder, rolling apparatus (customary spray oil, e.g.: WD40)
- Cleaning of powder-coated parts (see also: Cleaning of powder-coated surfaces, www.forster.at)
- The counterbalances for locking the sliding door have to be tarred again during the first inspection after the noise protection installation has been commissioned.

### If required:

- Readjust the door crack see:  
"Door hinge installation and adjustment instruction" under <https://www.forster.at/en/gmc/>
- Readjust the closing pressure with door closer see:  
"Door closer installation and adjustment instruction" under <https://www.forster.at/en/gmc/>



## Maintenance of large-sized double-leaf gates

### Visual inspection

- Position, completeness and tightness of mechanical connecting parts (screws, rivets, hangers, etc.)
- All parts in regard to mechanical damages and wear
- Wear marks from dynamic loads on locking bars and sheets

### Functional inspection

- Closing behavior (locking, springs)
- Door movement (interface door frame – steel base, door crack)
- bearing clearance locking pin top and bottom
- Check the drilling for the locking pin in the locking sheet for foreign objects before every closing process!

### Maintenance during inspection

- Greasing of movable parts in the apron housing incl. locking bars and sheets as well as hangers
- Oil locking combination (using customary spray oil e.g. : WD40)
- Cleaning of coated parts (see also: cleaning of powder coated surfaces, see www.forster.at)

### If required

- Readjust the door crack (see mounting manual)



## Comment to service doors / gates:

The producer of the powder recommends cleaning the powder-coated surfaces once a year with water to ensure a long-term consistent appearance (see also: Cleaning of powder-coated surfaces).

The ongoing monitoring, examination and cleaning is to be documented.