Maintenance

a) Aluminium profiles

Powder-coated and anodised profiles and products made from such profiles can be used in normal weather conditions (providing they are not exposed to aggressive liquids, gases or particles). In cases where paint-coated or anodised constructions are mounted close to the seaside (in the distance less than 10 km), in rural surroundings, in the environment exposed to industrial emissions, chemical substances or vapour (swimming pools, laboratories, etc.), special rules are applicable with regard to the coating process or the thickness of the anodised layer.

Profiles should be stored in dry and clean rooms, free of any chemically active vapour and gases.

Profiles should be transported in covered, dry and clean means of transport, equipped with pneumatic suspension. For the period of transportation the profiles should be protected against any damage and harmful effects of weather conditions.

Powder or oxide coatings are not resistant to mechanical damage caused by sharp objects and abrasives.

Powder and oxide coatings are sensitive to, inter alia, organic diluents, concentrated alcohol, acids, bases and petroleum derivatives. Therefore any contact of the coating with the substances mentioned above is forbidden.

Particular care should be taken to protect coatings against coming into contact with lime, cement and other alkaline building materials. Sealants applied to seal joints as well as other auxiliary materials, such as caulks and glazier's putties, lubricants and coolants applied in cutting and drilling, adhesives, sealing compounds, putties, adhesive tapes, etc., which come into contact with coated surfaces, must be pH-neutral and must not contain any substances damaging the applied coating or oxide layer. Exposure to the sun enhances aggressive effect of chemicals. That is why, prior to their use, the materials mentioned above must undergo suitability testing, applicable for a particular coating.

Leaving foil protecting powder-coated profiles during transportation, especially when exposed to the sun and when the ambient temperature is high may trigger chemical reactions, which will in turn lead to binding the foil with powder coating. The result of this reaction is such that it is impossible to remove the foil without damaging powder coating. Protective foil must be removed from profiles immediately after their delivery.

Leaving tapes protecting powder-coated profiles during transportation, especially when exposed to the sun and when the ambient temperature is high may trigger chemical reactions, which will in turn lead to binding the tape with powder coating. Protective tapes must be removed from profiles immediately after completing the assembly.

Apart from negative effects related to weather conditions (sun, frost, rainfall and snowfall) aluminium profiles installed in external walls are exposed to aggressive components of air and thus pollutants gather on their surface. Therefore constructional elements must be cleaned on regular

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basis, with frequency dependent on the location of the construction. Cleaning frequency depends on a number of factors, such as:

- geographical location of the building;
- environment (surrounding) in which the building is erected, e.g. seaside, industrial site, acid / base environment, etc.;
- atmosphere contamination level;
- wind zone;
- to what degree the building is shielded by neighbouring buildings;
- possibility of particles transfer (especially of sand), causing erosion of the coating;
- transformation of the surrounding conditions of the building aduring its use, e.g. from rural into industrial.

Coating defects are often caused by cleaning, that is why the rules described below should be followed:

1. Cleaning should be performed at east twice a year. The fact of cleaning must be duly documented in a report.
2. The method recommended to clean powder coatings is by regular washing with a mild detergent (e.g. 5% washing liquid) dissolved in warm water. All surfaces should be wiped with a soft sponge or a cloth. Any brushes harsher than those made from natural hair are forbidden (for convenience, washing of glazed sections may be done at the same time). After cleaning, surfaces should be thoroughly rinsed with clean water.
3. After washing and rinsing, anodised surfaces may be polished with a dry, soft cloth to restore their gloss, while any local impurities should be polished with a mild abrasive compound and finished with a protective layer of a special agent, free of wax, Vaseline, lanolin or similar substances.
4. If air pollution has caused stains which are difficult to remove, then extraction naphtha is recommended to remove such stains from powder coatings. Where this is the case, application of any abrasives is strongly forbidden (abrasive paper, abrasive compounds), as well as any solvents containing ketones, esters or alcohols.
5. Only clean water should be used for cleaning. Cleaning may be made more effective when a cloth not scratching the surface is applied to wipe a decorative surface.
6. While cleaning, the temperature of coatings must not exceed 25°C.
7. The temperature of water used for cleaning must not be higher than 25°C. Cleaning surfaces with a steam jet is forbidden.
8. Before starting cleaning, check the effect of agents used for that purpose. The test should be carried out on surfaces which are not seen. If undesired effects appear, do not use the cleaner being tested.
9. Under no circumstances should any cleaning agents be use if their pH is below 5 or over 8.

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10. Strong acid or strong alkaline cleaning agents must not be used (including the ones containing detergents). Surface-active agents, which may react with aluminium, must not be used, either.
11. Do not use any abrasive cleaners and do not clean the surface by rubbing. Soft cotton cloths intended for industrial cleaning are allowed. While cleaning with a wiping cloth, do not apply too much pressure to the surface being cleaned.
12. Do not use any organic solvents containing esters, ketones, alcohols, aromatic compounds, glycol esters, chlorinated hydrocarbons, etc.
13. Do not use any detergents of unknown origin.
14. Do not use salt or chemical substances used to remove icing near profiles.
15. Maximum reaction time of a cleaning agent must not exceed one hour. If necessary, the cleaning process may be repeated after 24 hours.
16. After each cleaning, the surface must be immediately rinsed with cold water.
17. Regular cleaning prevents building up strong soling difficult to remove. For external applications where decorative appearance and protective function are of particular importance, e.g. portals, entrances, shop fronts, etc. recommended frequency of cleaning is once a week. In this case use water and chamois leather for cleaning and then wipe the elements, working from top to bottom with a soft and dry cloth.
18. Window frames, sills and façades must be regularly cleaned and the frequency depends on the aggressiveness of the environment and the construction of the façade.

b) Gaskets

Gaskets made of EPDM do not require any special maintenance procedures, provided that they have been fabricated and installed in accordance with Aluprof instruction.

c) Hardware

In order to ensure efficient operations of hardware, the following actions are recommended:

- remove any traces of lime, cement or masonry mortar from the hardware, in order to prevent potential inoperability or mechanical failure;
- lubricate all moving parts with an acid-free machine lubricant once a year;
- check the operation of the hardware and make any necessary locking or vent adjustments at least once a year;
- check fitting reliability of hardware connecting members;
- check and adjust the position of window slides.

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