



ALUMINIUM FINISHING ASSOCIATION

What Goes Wrong?

If the advice and guidance in other sections are followed, specifiers can ensure that finishes are specified and applied correctly and thus the failures illustrated will not occur.

Nevertheless it is important that architects and specifiers are aware of the ways in which finishes can fail so that, through correct selection, correct specification, correct pre-treatment, correct application of finish and rigorous quality control such failures can be eliminated.

PVDF Wet Paints

Inclusions

Extraneous matter such as dust in the coating is the result of poor application or poor quality paint. Such work is inherently unacceptable.

Adhesion failure

Common causes of PVDF adhesion failure are poor application, incorrect stoving or inadequate pre-treatment of the metal. This is particularly relevant with PVDF paints as the finish cannot be chemically stripped for reprocessing.

Failure can also result from lack of adhesion between the coats of a PVDF finish. This is a result of poor application.

Anodising

Blooming

Soft film blooming is the most common failure on anodising. This white, powdery bloom is most noticeable on dark colours. It is caused by the surface of the anodic film being soft and breaking up into powder. It cannot readily be cleaned off.

The abrasion resistance testing included in BS 3987 will prevent this failure. Note that European Standards do not currently include this type of test and that work meeting agreed European Standards may be subject to blooming against which the specifier would have no recourse for rectification.

Pitting

Pitting is the premature development of corrosion that disfigures the anodic film. It is caused by lack of maintenance, or film thickness below 25 microns. Note that BS 3987 requires a minimum thickness of 25mm. Resistance to pitting corrosion is directly proportional to film thickness.

Sealing bloom

Inadequate sealing of the anodic film will result in a white bloom similar in appearance to soft film blooming.

Poor colour matching

Coloured anodising does vary in colour, albeit very slightly. It can be minimised by selecting an anodiser employing rigorous process controls and using colour matching technology. Unacceptable colour matching can result from the incorrect aluminium alloy being used. Sometimes an exact match will appear to be different owing to lighting variations or due to mixed sourcing of the anodised metal. The latter phenomenon is a result of metamerism, where differences in pigments used will scatter the reflected light slightly differently in some lighting conditions.

Architectural Powder Coating

Adhesion failure

Adhesion failure of architectural powder coatings can result from poor application or inadequate pre-treatment of the metal or from incorrect curing of the finish.

Inclusions

Extraneous matter such as dust in the coating is a result of poor application or poor quality powder.

Filiform corrosion

Filiform corrosion is a very unsightly failure that resembles worm-like filaments that travel under the paint film and lift it off. The phenomenon seems to be more widely experienced on work processed and coated on mainland continental Europe and could relate to the emphasis on different process routes used in the pre-treatment processes employed and the application methods. However, the precise cause is still unknown but most cases occur near the sea and mainly at joints in fabrications.

Chalking

Chalking is generally the result of using inappropriate powders and unsuitable resins. As its name suggests chalking appears as a white powdery effect on the coated surface. It cannot be rectified but will be prevented by using specialist architectural powders and a specialist applicator, who can ensure full cure of the coating.

Poor colour matching

Colour variation very rarely occurs with coated aluminium, and then only if different sources are used for architectural powder. Dark metallic finishes may be more difficult to match. Sometimes an exact match will appear to be different owing to variations in the lighting conditions, type of light source and comparison against a sample prepared using different application equipment or an alternative method for curing the coating.