



# Good2know Tuesday

GOOD2KNOW – 10/11/2015  
Process Instructions

**Good2know that...** some points need to be considered prior to the powder coating process in order to guarantee good quality of the coated end result.

## Rough materials

Because of the perfect flow of polyester powders, powder coatings will not smooth out imperfections in the substrate

## Suspension points

- It is necessary to hang each item on to a conveyer to put on the coating. However, the contact points should not affect the appearance of the finished product. It is even necessary to allow for tilting of the component, where the center of gravity is not at the center line of the assembly.

## Powder penetration

During coating, powder adheres on account of electrostatic forces. But with corona-guns a phenomenon known as the "Faraday cage" effect can counter the attraction on components with narrow recesses, slots or sharp enclosed corners (*see article on the effect of Faraday – Good2Know 03/11/2015*).

## Components size

The size of a component is of great importance to the powder applicator. Depending on the pretreatment baths and/or tunnels and the curing oven, the components will need to be assigned to a specific applicator.

### Contact between metals or other materials

Assemblies consisting of different metals must be avoided. The differing materials may require non-compatible pretreatments and electrolytic corrosion may also occur. "When two different metals in a humid environment are in contact, an electrical tension is made and has an oxidizing influence on the most electronegative metal. In an example case, in a combination of steel and aluminum, the steel will rust and attack the aluminum. To prevent corrosion it is advised to put an isolating layer between the two metals. Contact of aluminum with stainless steel (18/8) does not cause problems. Contact of aluminum with copper or its alloys is very dangerous. It is necessary to isolate lead from aluminium.

Most types of wood don't affect aluminum. Oak and walnut do excrete an acid that can affect the metal, especially in a humid environment or when the wood is not yet dry. Isolation (e.g. bituminous paint) is advised. When the wood has been treated against rot or insects, it has to be checked if the substances used are not harmful to aluminum. Products containing copper salts, quicksilver salts or fluorine compounds may not be applied.

Lime or cement can have a superficial impact on aluminum when being in humid air or during the application process. After cleaning white stains can appear. It is advised to protect the metal with suitable tape.

### Heavy masses

Heavy components require a longer heating cycle due to the slower metal temperature build-up of the heavy mass. Therefore, these components are more expensive to coat.

When substrates with high wall thicknesses are cured together with substrates of low thickness, it does not need saying that the temperature effect will not be reached simultaneously. The powder on the low thicknesses can yellow (due to over curing), or the powder on high thicknesses will get under cured.

### Orange peel effect

Orange peel is the term generally used to describe a failure in the surface finished coating when the coating layer(s) literally take on the appearance of an orange skin and is mainly caused by a too high film thickness.

The degree of orange peel depends on a number of contributing factors including colour, gloss level and application techniques.

### Powders with textured finish

Powders with textured finishes can smooth away imperfections in the materials, however, these powders cannot be used for window or door profiles requiring an architectural guarantee of Qualicoat, GSB, BBA, etc., as the thicknesses of the coating layer vary (textured effect), the anti-corrosion characteristics cannot be compared to those of smooth powder coatings.

### Exposure to friction or humidity

If some special effect powder coatings (e.g. antique finish or a dry blends with metallic) will be exposed to friction and/or humidity, then a transparent topcoat (second layer) is the best protection.

### Thickness

The applied powder layers on aluminum profiles have thicknesses from 60 to 100 µm. Differing thicknesses of one powder can cause colour differences in flat colours or can cause different effects in metallic and textured powders. Keeping a constant thickness is of great importance, especially when several pieces have to be assembled.

At all times can we offer you are assistance, whether it be by phone, at your production site or during our training days, feel free to ask. We are confident that are experts can help.

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