



Good2know

Tuesday

GOOD2KNOW – 24/11/2015
General Information

Good2know that... your end result depends on four powder properties, strictly controlled by your powder coating producer.

The following elements are key in the final aspect of the applied coating:

➤ **Viscosity**

The degree of viscosity gets determined during the melting stage of the powder. A low or high viscosity influences the final aspect of the coating. The viscosity progress is measured at a constant temperature.

Viscosity is defined in the aspect of gel time and pill flow. Gel time meaning the time frame in which the powder is in a gel-like fase (see following aspect “reactivity”), and pill flow denoting the tightness of the coating film. Finding a balance between these two aspects is crucial taken into account that the coating needs to be able to cover also the corners and edges of a substrate but does not provoke powder drips.

The degree of powder viscosity depends on a number of factors, such as pigmentation, type of filler, type of resin and possible flow additives.

➤ **Particle size distribution**

Powder coatings are a consistent blend of powder particles. The size of the particles is of vital influence on powder handling, charging, application, film aspect and the equipment used for application. Particle size consequently plays an important role in product design and product choice. A correct preparation and management of particle size offers a consistent coating quality and prevents coating failures.

A powder mix with a too big difference in particle size will create orange peel. A powder mix with too small particles will not get charged and will be impossible to apply.

The particle size distribution can be measured through an air flow sieve, a laser diffraction or mechanical sieve system.

➤ **Reactivity**

Under the influence of warmth, powder applied on the substrate undergoes two changes:

- when the powder melts and flows out
- when the hardener begins reacting

The reactivity is important for the levelling and appearance of the film, the line speed (=curing time) but also the storage stability.

The most common test on this subject is the determination of the “gel time”. The “gel”-time at a specific temperature gives a relative indication of the reactivity.

➤ **Curing schedule**

The film formation takes place in the curing oven at a temperature between 120 to 200°C, depending on the powder used, the mass of the object to coat and the length of the oven. At a determined temperature the resident time of the object in the oven depends on the type and thickness of the substrate, the form of the object and the type of oven.

It's important to use the accurate temperature to cure the powder, otherwise under curing or over curing (with effects as yellowing, matting ...) will occur.

The degree of cross-linking and the mechanical properties is determined in the gradient oven of the laboratory by the powder coating producer, whereby the curing progress and properties of the film are determined and compared on one and the same test panel, at temperatures of 150°C to 220°C , for example.

The applicator himself can work out the correct curing schedule by using a Grant Recorder in his oven.

For more questions and information, we are at your service!

Direct help: **+32 9 326 79 30** (Europe)
 +1-800-361-9364 (North America)