

## “Powder-in-powder” Processing

Certain application and plant-technical requirements must be observed when processing primers and top coats in the so-called “powder in powder” process. These processing instructions inform the processor of the parameters that are essential for a safe process in terms of processing and an ideal coating result.

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### Fundamental Information

In contrast to a conventional two-coat structure with the application of the primer, the subsequent gelling or curing and the following top coat, the coating process without primer curing prior to the top coat places special demands on the coater.

Furthermore, only certain powder coatings from the standard product range are suitable for this process.

The utilisation of the IGP-KORROPRIMER 1001A in combination with the IGP-DURA<sup>face</sup> 5807A or 5803A top coat is recommended. Furthermore, effective top coats from the IGP-*Effectives*<sup>®</sup> 5807U and 5803U product groups can be used without restriction.

Structured top coats cannot be used due to the excessively deviating surface characteristics.

### General Processing Information

When performing the “powder in powder” process, the use of corona charging is strongly recommended for the application of the primer and the use of tribo charging is strongly recommended for the application of the top coat.

All standard devices with corona and tribo charging can be used.

In doing so, the use of classic tribo guns or so-called tribo lances is insignificant. The only advantage of tribo lances is the ability to comfortably coat areas at a greater distance when dealing with larger workpieces.

The primer and the top coat can also be processed with tribo charging for both powders. However, this reduces the efficiency of the coating and increases the risk of both powders mixing during the application process. Coating using the corona charging method should not be applied as this method generates a less appealing surface and quickly leads to a spray-back effect and a mixing of the powders.

As is the case with all electrostatic powder coatings, sufficient earthing must also be ensured when processing using the powder-in-powder effect. The correct earthing of the components should be regularly monitored during the entire coating process.

An insufficient earthing can lead to a significant worsening of the coating result and efficiency.

### Substrates

In principle, “powder-in-powder” processing is possible on substrates such as steel and aluminium. Limitations must be made when using galvanised steel.

Due to the outgassing tendency of galvanised surfaces during the curing process, a special, outgassing-friendly primer is usually used on these substrates. Due to the combined curing with the top coat, this outgassing effect is severely limited during the “powder-in-powder” processing.

### Primer Powder Application

No special aspects need to be taken into account when coating with the primer powder. The applicants can be performed in a similar manner as when coating using the conventional two-coat structure.

However, limiting the current and adjusting the high voltage to <80 kV may make the later application of the top coat easier and reduce the probability of spray-back effects or powder mixing.

Furthermore, primer coating thicknesses >100 µm should be avoided as they can have a negative impact on the subsequent coating thickness. Once the primer has been coated, the top coat should be applied immediately as the primer is not cured.

### Top Coat Application

The utilisation of tribo charging is strongly recommended for the top coat.

During the coating process, special attention should be given to ensuring that the powder is sufficiently charged. A leakage current of >1.5 µA is recommended depending on the utilised gun.

Furthermore, consideration should be given to achieving the “softest possible cloud” during the coating process.

This is achieved by applying an adapted ratio between the conveying and dosing air (also applies to the total air and powder quantity depending on the plant type) as well as the set tribo air. Insufficient air quantities lead to issues ranging from irregular powder ejection and the formation of spitters to a low application of powder. If the air values are too high, the powder is ejected from the nozzle at an excessively high speed and can therefore result in the powder and the primer being blown away. This immediately results in a mixing of the top coat and primer.

Insufficient spraying distances should also be avoided in order to prevent a blowing away as described above.

Following the actual coating, it must be observed that the workpiece is conveyed with as few vibrations as possible until curing has taken place. If vibrations occur, this can lead to a partial detachment of the powder and a partial contamination of the underlying surfaces.

### Recycling

The recycling mode should not be utilised if the coating of the primer and the top coat takes place in the same chamber and the entry of the primer powder into the powder circuit of the top coat or the entry of the top coat into the powder circuit of the primer powder cannot be prevented during the coating process.

The recycling can be utilised when processing the primer and top coat in separate coating chambers. However, it should be ensured that the lowest amount of overspray is generated as the processability of the

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powder can slightly decrease over time due to the high stress generated in the recycling process. The dosage of recycled powder into the fresh powder should take place in constant volumes (and automatically where possible). This ensures a constant ratio of fresh and recycled powder in the powder container.

### Cross-linking

Use the information from the respective data sheets belonging to the utilised powder coatings during the curing procedure. In doing so it must be ensured that settings that neither lead to an over-curing of the primer nor to an under-curing of the top coat are utilised.

The joint fusing and curing of the primer powder and top coat can lead to interactions that impact the characteristics and the gloss of the cured surface.

For instance, the surface may exhibit gloss values that are outside of the values stated in the technical data sheets. The surface may also exhibit instances of slight inhomogeneity.

These results are reproducible and should be determined and released by limiting samples prior to the start of production.

These limiting samples can be used during application in order to monitor quality.

#### Note:

This processing-related consulting is provided to the best of knowledge. However, it only represents non-binding information and does not release the user from the need to perform their own tests.

Application, use and processing of the products take place beyond our control and are therefore exclusively the responsibility of the user.