IGP POWDER COATINGS

Processing guideline

VR214 – Processing of IGP fine structures

Introduction

Certain application and system requirements must be observed when processing IGP fine-textured coatings:

VR 214 informs the processor about the process parameters that have a significant influence on the coating result. In principle, IGP fine structure powders are very application reliable and ensure a uniform structure formation within a wide range of coating thicknesses. IGP fine-textured powder coatings are labelled with a "1 or 4" in the third position of the IGP product code (e.g.: 561, 591,...). The gloss is labelled in the fourth position as "M" for a matt and as "T" for a deep matte gloss (example: 381M, 561T,).

Processing

Corona guns with electrostatic charge in negative polarity are recommended for Processing IGP fine structure powder coatings. Processing with tribo charging may also be possible, depending on the powder coating system. IGP coating powders with pearl mica effect can only be applied with corona guns with electrostatic charge in negative polarity. Please also refer to processing guideline VR201.1 (Processing of IGP effect powder coatings). Both flat spray nozzles and baffle plate nozzles can be used for automatic and manual spray guns.

Processing can be carried out as manual coating, but also with automatic systems in an automatic or semi-automatic coating process. In order to achieve the most even layer thickness distribution possible, we recommend processing in automatic mode. When coating in long-stroke mode, the speed of the lifting devices must be adapted to the transport speed (coordinated sinusoidal flow of the guns). When coating in short-stroke mode, the lifting height must be adapted to the distance between the guns (coordinated gun turning points).

Structural training

In principle, IGP fine structure powders produce uniform surface structures within a wide range of layer thicknesses. In order to achieve a uniform texture, Film thicknesses of 60 - 90 µm are recommended as an average measurement and medium high-voltage settings between 60 and 80 kV should be used. Settings greater than 80 kV can have a negative influence on the coating result, especially at shorter spraying distances. Limiting the spray current (µA) is not absolutely necessary, but can contribute to the formation of a more uniform structure. A value <10µA is recommended.

In order to minimise the influence of the high voltage and Film thickness on the structure, the use of ion-leakage rings (low-ion charge) is recommended. Film thicknesses of up to 150 µm can be achieved when coating with ion-leakage rings without noticeable changes to the surface. The use of ion-leakage rings is particularly recommended when components are coated manually or objects with difficult geometries need to be coated. During coating, the spraying distance should not be less than 200-250 mm. Smaller distances may result in visible streaking on the surface. A greater distance must be maintained, especially with IGP coating powders with pearl mica effect, to prevent streaks and cloud formation. Please also refer to processing guideline VR201.1 (Processing of IGP effect powder coatings) and processing guideline 213 (LivingSurfaces). When processing fine texture powders, it is important to avoid large differences in layer thickness on the components. This often occurs during manual pre- and follow-up coating and on outer edges (picture frame effect). In order to reduce differences in coating thickness during pre-coating and subsequent automatic final coating, it is advisable to carry out tests before starting the coating process to determine the areas that require pre-coating.

In this way, double coating of parts of the object can be avoided. With light, red, yellow and orange shades, complete coverage of the substrate is not always guaranteed with the recommended layer thicknesses. A pre-coating in the corresponding shade is recommended to cover the substrate (2-layer structure).

Reclaiming

Reclaimability is generally possible with all IGP fine structure powders. However, care should be taken to generate as little overspray as possible, as the processability of the powder can deteriorate slightly over time due to the high stress in the recovery process. The reclaimed powder should be added to the fresh powder (automatically if possible) and in uniform quantities. This ensures a constant ratio of fresh and reclaimed powder in the powder container.
For pearl mica effects, the processing guideline VR 201.2 (Processing of IGP effect powder coatings) must also be observed.

In contrast to smooth powder coatings, fine structures contain structuring agents that create a moving, slightly ordered surface. The structuring agents are incompatible with all smooth powder coatings. Even small quantities can cause craters in smooth flowing powder coatings. When changing powders, it is therefore important to ensure that all powder-conveying or reclaiming system components in the coating plants are kept clean.

Mounting the parts

The mounting of the workpieces must be determined before coating (horizontal or vertical). The distances between the coating objects within the hanger as well as the distances between the hangers should be as small and even as possible. If the distances between the hangers are large, it is advisable to switch the guns on and off automatically via a parts detection system.

Curing

Curing conditions can be found in the corresponding technical data sheets.

Earthing

When processing fine-textured powder coatings, particular care must be taken to ensure sufficient earthing. This measure contributes significantly to a uniform layer thickness and texture embossing.

Resistance and technical data

These can be found in the relevant information sheets.

Hint

This technical processing advice is based on the current state of knowledge, but is only non-binding and does not exempt the user from carrying out their own tests. The application, use and processing of the products are beyond our control and are therefore the sole responsibility of the user.
