IGP POWDER COATINGS

Processing guideline

VR201.2 – IGP coating powder in the IGP-Effectives® process

Introduction

IGP-Effectives® is an innovative finishing process. This process gives effective powder coatings exceptional application reliability.

In contrast to conventional effect powder coatings, the application parameters or even the system configuration have only a minor influence on a perfect coating result. Processing parameters and reclaiming mode only lead to very small differences in colour and effect. Regardless of the system and the Application, IGP-Effectives® generally produces a uniform coating result.

This processing guideline VR 201.2 has been drawn up to draw the user's attention to the relevant processing characteristics of IGP-Effectives®.

In principle, IGP coating powders with effect agents are agglomerate-free and fulfil the requirements for problem-free and reproducible processing. There are five main processing categories for IGP effect powder coatings, ranging from * to *****. The products in the IGP-Effectives® group are all labelled 5* and therefore do not place any higher demands on the coater than the processing of uni powder coatings.

Fundamentals

First and foremost, these effect powder coatings are application reliable, very stable in circulation and ideally suited for processing in reclaiming mode.

The otherwise very high demands on the processing of effect powder coatings are significantly reduced by the application of IGP-Effectives® technology. The user receives a product that is easy and safe to process while maintaining known quality criteria in the application process.

IGP-Effectives® technology is primarily used for weathering-resistant façade qualities of the product series 56, 57 and 59 (e.g. 5607U; 5703U, 5903U,) and is labelled with a "U" in the fifth position of the product key.

Order organisation

One batch - one application equipment

If the components are installed directly next to each other, we recommend determining the amount of powder required for coating the entire job, allowing for a certain reserve and coating the entire job with one finished batch of paint. This ensures colour and effect consistency when coating the entire order. For follow-up orders, we recommend only using powder coatings that have also been produced using IGP-Effectives® technology.

Processing

Processing of IGP-Effectives® powder coating products should always be carried out using corona guns with electrostatic charge in negative polarity. For this purpose, we recommend a high voltage setting of 60 to 90 KV.

With an electron flow of at least 2µA, the products can also be processed with tribo guns. We recommend spraying and curing a sample before starting production. This should be compared with an approved limit sample. Depending on the electron flow (µA), different nuances in brightness may occur when processing with tribo guns.

In order to produce a smooth, even surface, especially on large objects, the spraying distance from the gun should not be less than 180 mm. Further measures within the Application, such as optimising the movement sequences in long-stroke operation using sinusoidal programs, or adjusting the distances between the guns and the stroke height in short-stroke operation, ensure the best possible coating thickness distribution on the workpieces to be coated.

Ideally, any manual application required in semi-automatic operation is always carried out as a pre-coating. If this is not possible for technical reasons, IGP-Effectives® powder coatings can also be applied by hand as a follow-up coating. In this case, we recommend a spraying distance of at least 200 mm for the final coat. This also applies to Processing in pure manual coating operation.

For fine structure powder coatings, VR 214 "IGP fine structures" must also be observed.

Reclaiming

In principle, IGP-Effectives® effect powder coatings are very stable in circulation and ideally suited for processing in reclaiming mode.

The proportion of overspray that is reclaimed via the separation system can lead to an accumulation of fine powder particles (fines) during reclaiming using a filter. When processing IGP-Effectives® in reclaiming mode using a cyclone, fine powder particles (fines) are continuously removed from the powder coating. In both cases, there is a shift in the particle distribution.

In order to ensure the most consistent particle distribution possible when processing in reclaiming mode, we recommend the continuous addition of fresh powder.

Maintenance and Cleaning of the system

To ensure reducible coating results on the coating plants, the maintenance work recommended by the manufacturer to replace wearing parts must be carried out on the entire system at the intervals provided for this purpose. Various functional checks, such as checking the high voltage, must be carried out at regular intervals.

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

Different curing temperatures and heating speeds of the parts must be avoided, just as thick and thin-walled parts must not be coated at the same time. The recommended curing window must be adhered to.

Earthing

When processing coating powders with pearl mica effect, particular care must be taken to ensure sufficient earthing. This measure contributes significantly to a uniform consistency of the shade and effect formation.

Applicable documents

- Technical data sheets
- TI 106, Cleaning recommendations for IGP coating powders with pearl mica effect
- TI000, Classification of effect powder coatings

Recommendations for Processing IGP-Effectives®

The values given here are recommendations. When processing IGP-Effectives®, we recommend adapting the processing parameters of the coating plants to the product to be processed.

Equipment and processing parameters (equipment / accessories)	Setting (parameter) according to categorisation	Possible effect (comment)
	*****	
High voltage setting (gun)	60 - 90 kV	Setting range for Processing
Current limiter µA (gun)	80 µA → < 10 µA →	→ For normal operation → Reduces spray-back effects
Total air$^{m3/h}$/ conveying + dosing air (inner diameter of powder hose)	12 mm = 5$^{m3/h}$ 11 mm = 4$^{m3/h}$ 10 mm = 3$^{m3/h}$	Prevents pulsation of the powder cloud, ensures optimum atomisation.
POE powder hose with integrated earthing (injector gun)	Injector grounding	Prevents electrostatic charge of the powder in the powder hose.
Nozzle (gun) with flat spray nozzles	Suitable	Good depth, even atomisation
Nozzle (gun) with baffle plate	Suitable	Reduced depth of atomisation
Processing with ion-leakage ring (gun)	Suitable with or without	Reduces spray-back effects, improves levelling properties with Film thicknesses > 120 µm.
Coating spraying distance (gun-workpiece)	>180mm	Uniform layer thickness distribution
Coating with tribo guns (guns)	Possible with tribosuitable products after checking the shade	Brightness differs in nuances compared to corona coating

Equipment and processing parameters (equipment / accessories)	Setting (parameter) according to categorisation	Possible effect (comment)
	*****	
Powder delivery with fluidised container	Well suited, fluidising air as required	Uniform powder feed and powder cloud
Powder delivery from the box	Suitable	Slightly irregular conveying in some cases.
Screening with US screen (screening machine)	Suitable with mesh size >140µm	Better fluidisation more slippery Application
Maximum proportion of reclaimed powder in recirculation mode without testing the shade	<90%	Risk of shifting the particle size distribution with a higher proportion
Document processing parameters (control unit programme)	Recommended, but not necessary	Facilitates reproducibility of the coating results
Limit sample in advance	Not necessary, incoming inspection sufficient	Prevents excessive colour deviations from being subsequently coated
Coating on different coating plants	Possible	The same batch should be used on all systems
Manual pre-coating of the workpieces in semi-automatic operation	Possible	With spraying distance >200mm
Manual follow-up coating of the workpieces in semi-automatic operation	Possible	With spraying distance >200mm
Manual coating only	Possible	With spraying distance >200mm