FreiLacke

EFD Info

Guidelines
on the application of metallic powder coatings

General information on the application of metallic powder coatings

- Special coating line equipment, e.g. special spray guns, is required for the application of these coatings
- A high level of cleaning and maintenance is necessary
- Own filters are essential in filter booths

Check list of possibly occurring problems in the powder coating film:

Error	Cause	Corrective measure
1) Poor degree of deposition	poorly charged powder coating, i.e. voltage too low or pressure of carrier air too high	- increase the voltage - reduce the pressure of the carrier air
2) Poor primary adhesion	a) see error 1) b) unsuitable application (tribo charging)	a) see error 1) b) select suitable application (corona external charging)
3) Rough surface	See error 1)	See error 1)
4) Colour does not comply with specification	a) see 2b) b) components and basic material (in non-bonded grades)	a) see 2b) b) add small amounts of fresh powder frequently when there is only a small amount of material left in the supply tank. If this does not solve the problem, do not use a circulation system or change to a bonded grade
5) "Metallic spots" on coated surfaces	Powder aggregations under the lee of the application disc become dislodged from time to time	Use a suitable nozzle system (e.g. an application disc with internal ventilation)

DIN EN ISO 9001
ISO TS 16949
EMAS

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Gun types and spray parameters

A distinction is made between **bonded** and **non-bonded** metallic powder coatings.

We recommend corona external charging for the application of both, as tribo charging can cause an adverse degree of separation (even in the case of suitable types), a less pronounced metallic effect and colour changes due to the arrangement of metal pigments. Spray parameters need to be adjusted to the system.

Differences between corona and tribo application

The suitability of corona and tribo charging must be checked before application. Please read the technical data sheets.

Corona

- Coating appears more metallic
- Effect pigments are horizontally oriented
- Limited penetration into cavities (Faraday cage)

Tribo

- Coating appears less metallic
- Effect pigments are vertically oriented
- Better penetration into cavities

- Non-bonded metallic powder coatings cannot be tribo-charged

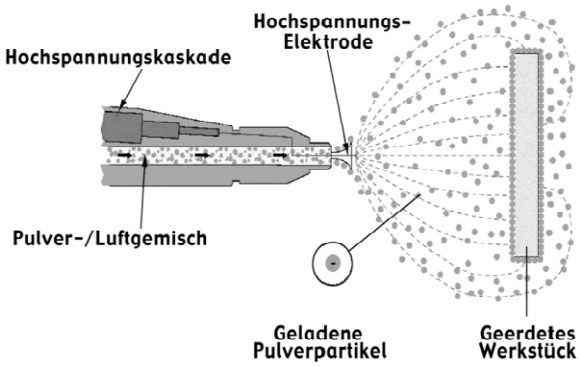

Figure 1: Corona charging

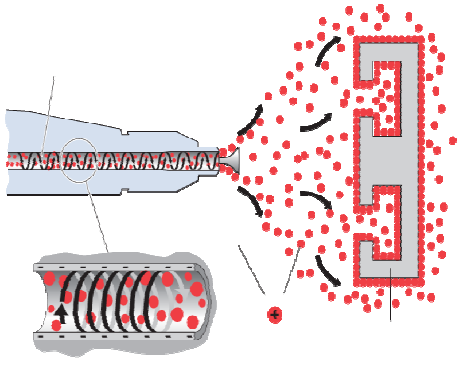

Figure 2: Tribo charging

Bonded metallic powder coating

The bonded grades are characterised by good circulation stability with a high degree of colour consistency and, as a rule, by good application properties.

Non-bonded metallic powder coating

In the case of non-bonded qualities, effect components are added later.
Difficulties can be encountered during application, especially with regard to circulation stability.
However, as a rule good results with regard to colour consistency can be obtained, even for these grades, by the **continuous addition of small quantities of fresh powder** into the supply tank.

Special effects

Hammer effects
- High film thickness necessary (>100µm)
- Recuperation reduced, because separations of added metal pigments are possible
- Effect fluctuations resulting from different film thicknesses, material thicknesses and baking conditions possible

Extra effects
- For example nacre and glitter colours
- Formulation and application must be checked

Application of metallic powder coatings by means of a circulation system

Several points must be observed during the application of metallic powder coatings by means of a circulation system in order to prevent subsequent coating defects.

- The application of non-bonded metallic powder coatings by means of a circulation system is not recommended, as the coatings can separate and the metallic flakes do not remain homogeneously distributed throughout the coatings.
- Bonded metallic powder coatings are more stable during such application, but should nevertheless not remain in circulation for prolonged periods, as this can lead to effect loss and colour changes over time.
- Adding fresh powder regularly is very important.
- Keep overspray to a minimum.

Cleaning equipment

Equipment must be cleaned between applications, especially when applying metallic powder coatings. Otherwise, particles are deposited on the application disc or nozzle and transported to the object along with the powder coating, which causes spots to form on the surface.

Cleaning coatings

- Use pH-neutral cleaners
- Do not use any abrasive, acidic or alkaline cleaners
- Take special care with metallic coatings
- Take note of and comply with cleaner mixing ratios

See EFD Info No. 8 "Cleaning recommendation for powder-coated surfaces"

If the above-mentioned corrective measures do not solve the problem, please contact the applications department of the manufacturer of the powder coating.

Additional information is available in our safety and technical data sheets.