

Metallic and Pearlescent Powder Coatings

Application Guidelines

1. Introduction

Metallic and Pearlescent powder coatings are growing in popularity among specifiers and applicators. Jotun Powder Coatings' metallic and pearl finishes are available in an extensive range of RAL and custom-made shades in Corro-Coat PE-SDF *Super Durable*, Corro-Coat PE-F *Façade*, Corro-Coat PE and Corro-Coat MX.

Jotun Powder Coatings' metallic and pearlescent powder coatings are specifically designed to be applied as a single coat system. Formulated with special pigment technology, these products satisfy the most stringent requirements of colour stability, gloss retention and corrosion protection, without sacrificing the key benefit of being a single coat system.

In addition, Corro-Coat PE-SDF *Super Durable* and Corro-Coat PE-F *Façade*, both solid colours and metallic finishes, are supplied with a comprehensive product warranty for exterior and interior applications when used on aluminium substrates and applied in accordance to Jotun Powder Coatings' instructions. (For more information on product warranties, please refer to Part 3 of Jotun Powder Coatings' Quality and Warranty document, reference JPC-INS-ARC-1026EN-1204, or contact your local sales representative).

All metallic and pearl finishes are metamereric by their nature, i.e. the colour appears different as the angle of incidence of light or even the light source changes. This is a key difference that metallic and pearl finishes sport compared to non-metallic solid colours. Consequently, when comparing components coated with metallic finish, it is advisable to be attentive to these differences, and a degree of shade variation should be allowed.

Due to the presence of mica and/or metallic flakes and other additives in the formulation, metallic and pearlescent powder coatings are more sensitive to variations in application parameters than non-metallic solid colours.

This guide is intended to provide applicators with supporting information on the quality-related issues that may arise when using these types of finishes and on the additional measures that must be undertaken during the powder application process.

2. Application line parameters and system considerations

2.1. Automatic spraying guns should be selected as the main application method since they provide a more consistent finish than manual guns. The recommended gun-to-component distance, when using automatic equipment, should be approximately 8 to 12 inches. Manual touch-up should be restricted to difficult areas of the component and should preferably be done prior to the automatic application.

2.2. In cases where manual spraying constitutes the main application method, it is recommended to maintain the gun-to-component distance at a constant level, approximately 6 to 8 inches. Varying gun-to-component distance can cause a patchy appearance on the component.

2.3. Due to the presence of very fine additives that lead to powder build-up around the nozzles, intermediate gun purge should be carried out more frequently than with solid colour powder coatings. In particular, the spray gun nozzles need to be checked and cleaned every 10 to 15 minutes. Build-up of metallic particles around the nozzle can cause the gun to spit, resulting in unwanted blotches on the component.

2.4. Spray gun voltage needs to be monitored and adjusted to suit the component being coated and the gun-to-component distance setting. Increasing the KV may result in a higher metallic appearance but will also result in a faster build-up of metallic particles around the nozzle.

2.5. Due to differences in specific gravity between base powder and metallic additives, it is extremely important to ensure good and steady fluidization in the powder hopper. Inadequate or unsteady fluidization can lead to stratification causing inconsistent metallic appearance of the component.

2.6. Proper earthing of the component is needed, to avoid uneven film build and patchy appearance. Poor earthing is the main cause for back ionization, often leading to excessive orange peel appearance.

2.7. In general, atmospheric conditions such as humidity affect the quality of powder coated finish. This is more pronounced when applying metallic and pearl finishes. Applicators need to be aware of the effect of high atmospheric humidity on the final finish.

2.8. Film thickness control is more important in metallic and pearlescent powder coatings as excessive thickness variation can cause an inconsistent metallic appearance.

2.9. The stroke of the reciprocator should be aligned, as far as possible, with the height of the components jiggged on the line. In addition, the jiggging method should minimize the gap between components on the line. These measures will ensure minimization of the picture framing effect (build-up of powder or metallic particles around the edge of the component).

2.10. The amount of reclaimed powder in the system needs to be monitored closely. On small jobs, the best practice is to spray to waste. On larger production runs, the reclaimed powder must be quality assured before re-use. In any case, reclaimed powder of more than 10% may affect the colour consistency.

3. Sampling and control procedures

3.1. It is the applicator's responsibility to ensure that desired metallic appearance is achievable in the plant and operating conditions. Prior to production runs, the Applicator is required to produce a sufficient number of reference samples of coated component and compare them against Jotun Powder Coatings' master colour standards. If a large variety of components are to be coated, the applicator is required to produce a representative mix of the parts. Reference samples should be submitted by the applicator to the project's competent authority for approval prior to commencing the job and subsequently kept as reference standards for the duration of the contract.

3.2. When coating the approved samples, plant and spray-gun set-up parameters should be recorded and used for all future processing of the coating job.

3.3. During actual processing, the first load should be subject to a stringent inspection to make sure that the colour and appearance is in line with approved reference samples. If not, necessary adjustments should be made to plant and spray-gun settings until the desired appearance is obtained. The new settings must be recorded for use in production run.

3.4. During production, a higher level of inspection is required especially to monitor the visual appearance and to compare with the reference samples to avoid any colour drift during the life of the project. This is in addition to the recommended inspection and testing requirements reported in Part 2 of Jotun Powder Coatings' *Quality and Warranty* document (reference JPC-INS-ARC-1026EN-1204).

3.5. It is recommended that the same applicator is used throughout the duration of the project. The risk of varying or inconsistent appearance becomes significant when multiple applicators are used with different plant set-ups and operating parameters.