

Application Guidelines

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 pigments technology, these products satisfy the most stringent requirements of colour stability, gloss retention and corrosion resistance, 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 metameric 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 a 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 quality problems 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 as they provide a more consistent finish than manual guns. The recommended gun-to-component distance when using automatic equipment is approximately 8 to 12 inches. Manual touch-up should be restricted to difficult areas of the component and should preferably be done prior to 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, at 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 color 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 the 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 (> 60%) on the final finish.

2.8 Film thickness control is more important in metallic and pearlescent powder coatings as excessive variation in film thickness 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. However, reclaimed powder of more than 10% is discouraged.

3. Sampling and control procedures

3.1 It is the applicator's responsibility to ensure the 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 the 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. The reference samples must 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 Plant and spray-gun set-up parameters when coating the approved samples 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 ensure the colour and appearance are in line with the approved reference samples. If they are not, necessary adjustments should be made to the plant and the spray-gun settings until the desired appearance is obtained. The new settings must be recorded for use during production runs.

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 throughout 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 to assign the job to one applicator per project. The risk of varying or inconsistent appearance becomes significant when multiple applicators with different plant set-ups and operating parameters are used.