

Application Guide for
Jotun Guard Endure D / D S



**Application Guide
for Jotun Guard Endure D / D S
Powder Coatings**

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1.0 Introduction

This document provides guidelines for the factory application of Jotun Guard Endure D / D S Powder Coatings for the aesthetic performance along with corrosion and chemical and mechanical protection of ferrous substrates.

2.0 General overview

Jotun Guard Endure D / D S Powder Coatings are developed for indoor furniture to provide scratch, mar and abrasion resistance properties to help coated items looking better for longer. Whilst still maintaining industry's standard for mechanical and chemical properties.

The critical steps that must be controlled are:

- 1) Surface preparation and pre-treatment
- 2) Drying
- 3) Powder Coating Application
- 4) Curing
- 5) Final inspection and quality control

3.0 Safety Considerations

Safety is of utmost importance in any powder coating application plant. Proper maintenance of equipment and good housekeeping must always be on the top list of the daily, weekly and monthly routines of any powder coating application plant. If engineering controls are inadequate in a powder coating plant, then the use of proper Personal Protective Equipment (PPE) is the last resort. The following PPEs should be used by operators in the powder coating application plant.

- a. Cotton overall
- b. Dust mask
- c. Safety goggles
- d. Hand gloves
- e. Ear plugs or muffs
- f. Anti-static steel toe safety shoes
- g. Hard hat

Please refer to relevant and updated Jotun product SDS.

4.0 Surface preparation and pre-treatment

Proper attention should be given to the cleaning and preparation of the ferrous

components.

The ferrous substrate must be suitable for the pre-treatment and the coating process. It should allow the coating to perform technical properties as specified in the relevant Technical Data Sheets (TDS) for Jotun Guard Endure D / D S Powder Coatings, as well as other properties specified for these systems. The substrate must be bare clean, free from corrosion, and not exposed beforehand to any anodic or organic coating.

There must be no sharp edges. The edges radii must allow the coating to completely cover the whole object's surface to ensure adequate film thickness and prevent holidays.

4.1 Handling

4.1.1. Components or objects must be carefully handled. Avoid contamination with dust, oil, fat, finger marks, etc.

4.1.2 Care should be taken to secure a proper treatment of the total area.

4.2 Pre-treatment

4.2.1 Iron Phosphate and Zinc Phosphate

It is recommended that the following pre-treatment is performed. Moreover, always follow the chemical supplier's recommendation.

- a) Degreasing
- b) Rinse
- c) Rinse (possibly activation)
- d) Rinse
- e) Phosphating
- f) Rinse
- g) Rinse (possibly with passivation), using demineralized water (the last running water from the object should be tested at 20°C. The readings should be below 30 μ Siemens/cm).

The chemical deposition of the phosphate conversion layer should be as per supplier's recommendation.

4.2.2 New Nano technology pre-treatment

Suitable nano-technology pre-treatments are also recommended. Moreover, nano-technology pre-treatment are environmentally friendly. However, due to the variety of nano-technology pre-treatments available today, detailed advice should be sought and followed from the pre-treatment supplier.

The chemical deposition of the conversion layer should be as per supplier's recommendation.

5.0 Drying

Pre-treated ferrous components should be dried in an oven. It is recommended that the maximum object temperatures in the drying oven < 100°C. However, it is always advisable to follow and perform the process as per chemical supplier's written instructions.

6.0 Powder Coating Application

Pre-treated ferrous components should never be handled with bare hands.

Pre-treated ferrous components are to be transferred to the coating process immediately in a clean and dry state, to avoid deterioration of the pre-treatment integrity. Pre-treated components should be powder coated within 16 hours. Otherwise, pre-treated components should be properly stored in a cool, dry place and should be covered with a clean plastic sheet.

A single coat application should be undertaken in one operation, to a minimum film thickness of 55 microns for exposed areas. The coating thickness should not exceed 70 microns if the coated ferrous component is to be treated mechanically after coating (e.g. bending etc.)

Jotun Guard Endure D / D S Powder Coatings, have good chargeability during the corona and tribo application. It is recommended to start the corona application of 60 KV and 15 μ A on the application current. Spraying application parameters may be adjusted to achieve the final coating requirements.

It is advisable to quality assure the reclaim powder prior to any use. Moreover, the use of sieving equipment is recommended to break any agglomeration and remove any foreign matter in the reclaim powder. It is recommended that reclaiming is done automatically. Virgin to reclaim ratio needs to be closely monitored. Normally, the ratio of reclaim to virgin should not exceed 30%.

For the application of Jotun's Metallic and Special Effect powder coatings, please refer to Jotun's Application Guidelines for Metallic Powder Coatings.

For optimum powder coating application process, it is recommended that grounding measurements are conducted on a regular basis. Resistance to ground should always be < 1.0 megaohm

7.0 Curing

The powder coating must be cured as specified by Jotun Guard Endure D / D S Powder Coatings (see the relevant Technical Data Sheet).

It is also recommended to conduct an oven test, once a week. E.g. proper adjustment/correction can be made, if required. The temperature is best obtained by measuring it at the thickest wall of the object, while the oven is fully loaded.

The air temperature in the curing zone must not deviate from the adjusted nominal temperature by more than $\pm 10^{\circ}\text{C}$.

7.1 Post Cure Handling

Coated ferrous components should be cooled to below 40°C before handling. Precaution should be taken to avoid damages on the finished coating during stacking, packaging, storing and transportation.

8.0 Final inspection and quality control

Thorough inspection and coordination with the other application steps are essential for a quality coating. Inspection should be considered as a part of the process control operation and not just a decision point for approving or rejecting coatings. If each processing step is done correctly, a high coating quality is assured.

Regular quality control tests to be carried out after the curing process include film thickness, visual assessment of the color, gloss, adhesion and other mechanical properties, and physical appearance of the coating. Cure test can be carried out using the MEK (Methyl Ethyl Ketone) test.

9.0 Packing

Special care must be taken when loading and unloading the coated components and objects. Reasonable care should be exercised during handling.

To prevent any damage during transportation, each coated object or component should be packed individually and isolated from other objects or components by craft paper, plastic sheet, foam pad or any other equivalent that serves the purpose.

Regular adhesive tapes should never come into direct contact with the coating. Should protective tape be required, then only tape designed for the protection of coated steel must be used.

No residue of any nature should be left on the finished product.

The suitability of any packaging material to be used for protecting coated substrates must

be quality assured by the applicator prior to any use.

If coated steel components are wrapped with any plastic sheet or any other suitable protection material, these coated steel components must not be subjected to high heat, high humidity or direct sunlight

Note: The information on this Application Guide is given to the best of the manufacturer's knowledge, based on laboratory testing and practical experience. Jotun Powder Coatings reserves the right, without notice, to alter or change the content of this Application Guide.

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THIS APPLICATION GUIDE SUPERSEDES ALL PREVIOUSLY ISSUED VERSIONS