

Application Guide for Jotun
Super Durable 2901, 2903,
2905 and 2908



Application Guide for Jotun Super Durable 2901, 2903, 2905 and 2908 Powder Coatings

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1.0 Introduction

This document provides guidelines for the factory application of Jotun Super Durable 2901, 2903, 2905 and 2908 Powder Coatings for the aesthetics and corrosion protection of architectural aluminum and claddings.

2.0 General overview

Jotun Super Durable Powder Coatings are designed to withstand the most stringent weather conditions and meet industry requirements for high performance and long lasting attractive finishes. It provides outstanding gloss retention and color stability properties and ensures highest corrosion resistance levels.

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
- 6) Packing

3.0 Scope

The Application Guide offers product details and recommended practices for the use of the product.

The data and information provided are not definite requirements. They are guidelines to assist in smooth and safe use, and optimum service of the product. Adherence to the guidelines does not relieve the applicator of responsibility for ensuring that the work meets specification requirements. Jotun's liability is in accordance with general product liability rules.

The Application Guide (AG) must be read in conjunction with the relevant specification, Technical Data Sheet (TDS) and Safety Data Sheet (SDS).

4.0 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. Suitable Personal Protective Equipment (PPE) should always be worn in the powder application line. These includes the following:

- 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.

5.0 Surface preparation and pre-treatment

Proper attention should be given to the cleaning and preparation of the aluminum components.

The aluminum or aluminum alloy shall 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 Super Durable 2901, 2903, 2905 and 2908 as well as other properties specified for these systems. The substrate shall be bare clean, free from corrosion, and not exposed beforehand to any anodic or organic coating.

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

5.1 Handling

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

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

5.2 Pre-treatment

5.2.1 Chrome pre-treatment

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

- a) Degreasing / etching – alkaline or acidic. Etching degree must be $\geq 1 \text{ g/m}^2$
- b) Rinse
- c) Acid wash
- d) Rinse
- e) Chromating
- f) Rinse
- g) Rinse, using demineralized water (the last running water from the object should be tested at 20°C. The readings should be taken from the open sections and conductivity readings should be below $30 \text{ }\mu\text{Siemens/cm}$).

The chemical deposition of the chromate conversion layer should be:

Yellow chromate = $0.6 - 1.2 \text{ g/m}^2$

Green chromate = $0.6 - 1.5 \text{ g/m}^2$

5.2.2 Other suitable pre-treatment

Suitable chrome-free/nano-technology/flash anodizing pre-treatment systems are also recommended. However, due to the variety of chrome-free/nano-technology/flash anodizing pre-treatment that are available in the market today, only the approved chrome-free/nano-technology/flash anodizing systems from Qualicoat and GSB shall be used. Detailed advice should be sought from the pre-treatment supplier. The use of chrome-free/nano-technology/flash anodizing pre-treatment needs to be quality assured/tested by the powder applicator prior to any use.

6.0 Drying

Pre-treated aluminum components should be dried in an oven. Maximum object temperatures in the drying oven must not exceed 100°C. Perform the process per the chemical supplier's written instructions.

7.0 Powder Coating Application

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

Pre-treated aluminum 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 60 microns for exposed areas. The coating thickness should not exceed 120 microns if the coated aluminum component is to be treated mechanically after coating (i.e. sawing, milling, drilling, etc.).

Jotun Super Durable 2901, 2903, 2905 and 2908 have exceptionally excellent chargeability during the corona application. It is recommended to start the corona application of 40 KV and 5 μ A on the application current. Adjustments on spraying application parameters may be needed 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

8.0 Curing

The powder coating must be cured as specified by Jotun Powder Coatings for Jotun Super Durable (see the relevant Technical Data Sheet).

It is also recommended to conduct an oven test, once a week. E.g. to make 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 $\pm 10^{\circ}\text{C}$.

8.1 Post Cure Handling

Coated aluminum 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.

9.0 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 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.

10.0 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 like crepe paper, with a weight of 150 gms/m^2 , or other suitable cellulose based packaging. Additionally, polyolefin packaging can also be used. For example, LDPE plastic packaging can be used provided, that the thickness of the foil is >60 microns and has a coefficient of friction of <0.25 and has a minimum melting point of $>120^{\circ}\text{C}$. It is the responsibility of the powder coating applicator to quality assure the use of any packaging materials prior to any use.

If coated aluminum components are wrapped with any plastic sheet, these coated aluminum components must not be subjected to high heat or high humidity or direct sunlight.

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

11.0 Repair Procedures

It is probable that during fabrication, erection and installation there are on site activities like cutting, fixing of nuts/bolts, handling and movement of aluminum structures. These activities can result in physical damage to the coating. In order, to repair the coating the following procedure is recommended.

- Complete cleaning of damaged area
- Surface preparation prior to application of liquid touch up paint
- Application of 2 component surface tolerant Jotun Paints' Jotamastic 90 by brush (depending on the damage) with a dry film thickness (DFT) of 75 - 100 microns and allowing it to 'dry to over coat' for a minimum of 3 hours @ 25 °C
- Followed by two coats of top coat, Jotun Paints' 2-component HardTop XP or XPL depending on the gloss levels @ DFT of 20 - 25 microns per coat.
- The repaired coating system should then be dried / cured for service for 7 days @ 25 °C. Dried / cured for service is the minimum time before the coating can be permanently exposed to the intended environment / medium.

Detailed repair procedure can be found on "Touch Up and Repair Procedure for Damaged Powder Coated Substrates Using Jotun Jotamastic 90 and Hardtop XP and XPL". Your Jotun representative should be contacted if clarifications are needed. Additionally, your Jotun representative should be contacted to secure the nearest shade in Hardtop matching the powder coating. The gloss/shade may differ slightly between powder and liquid coats.

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