

Primax Xtend

Product description

This powder coating product is zinc-free offering to meet standard service requirements for blast-cleaned, phosphated and galvanized steel objects and structures. This product is designed to provide advantage of excellent corrosion protection and inter-coat adhesion properties.

For the combined benefit of corrosion protection with UV exposure and attractive finish, this product can be top coated with suitable exterior durable product offerings from Jotun. The exterior durable product offering from Jotun includes Jotun Facade, Jotun Super Durable, Reveal Era and many more.

The combined coating system of Primax Xtend and Jotun Super Durable is tested at third party test laboratory for corrosion protection for up to CX corrosivity category as per ISO 12944-9.

This product contributes to the Green Buildings Standard credits. Please see section Green Building Standards.

Critical steps

The critical steps that must be controlled are:

- 1) Surface preparation and pre-treatment
- 2) Drying
- 3) Primax Xtend application
- 4) Partial (green) curing
- 5) Jotun topcoat powder application
- 6) Curing of the coating system
- 7) Final inspection and quality control
- 8) Packing

Scope

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

The data and information provided are not definite instructions. 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 AG must be read in conjunction with the relevant specification, Technical Data Sheet (TDS) and Safety Data Sheet (SDS).

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 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.

Refer to relevant Jotun product SDS for further information.

Surface preparation and pre-treatment

Proper attention must be given to the cleaning and surface preparation of components (objects) or substrates.

The substrates must be suitable for pretreatment and the coating process. It must allow the coating properties to perform as specified in the relevant TDS for Primax Xtend as well as other properties specified for this system. The substrates must be bare, clean, free from corrosion and not exposed beforehand to any anodic or organic coating.

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

Handling

Components shall be carefully handled. Avoid contamination with dust, oil, fat, finger marks, etc. Care should be taken to secure a proper treatment of the total area.

Mechanical surface treatment

Suitable mechanical (e.g. grit blasting) surface treatment is recommended (and / or in combination with chemical pre-treatment) if higher demand / requirement on the coating is required.

Grit blasting

The ferrous (or non-ferrous) substrates need to be dirt-free and degreased prior to any blast cleaning

Inspect the ferrous (or non-ferrous) surface for contaminations and if present, remove with an alkaline detergent. All edges shall have a rounded radius of minimum 2 mm subjected to three pass grinding or equally effective method. One may use a mechanical grinder fitted with a suitable abrasive disc. All sharp irregularities, burrs, slivers, slag and spatter on welds, whether apparent before or after blast cleaning, shall be removed before coating application.

After pre-inspection is complete, the surface shall be dry abrasive blast cleaned to Sa 2½ (ISO 8501-1) using abrasive media suitable to achieve a sharp and angular surface profile. The surface shall have a sharp and angular surface profile 40-80 µm, grade Fine to Medium G (ISO 8503-2). Measure the achieved profile with surface replication tape (Testex) (ISO 8503-5) or by surface roughness stylus instrument (ISO 8503-4).

At the completion of abrasive blasting the prepared surface shall be cleaned to remove residues of corrosion products and abrasive media and inspected for surface particulate contamination.

Maximum contamination level is rating 2 (ISO 8502-3). Dust size no greater than class 2.

Salt content shall be measured and on blasted surface shall have a maximum content of 100 mg / m².

If no chemical pre-treatment is to be made after grit blasting, to reduce the risk of deterioration of prepared surface the primer coating should be applied immediately after completion of the preparation activity or before any visible deterioration of the surface.

If surface discoloration is seen, the surface should be re-blasted.

After blasting operations, an additional chemical pretreatment (e.g. chrome pre-treatment) can be applied per recommendation of the pre-treatment supplier.

Sweep blasting on hot dipped galvanized substrates

The outer layer of pure zinc requires very little impact or scouring action to promote adequate surface roughness.

The blasting process should lightly roughen the surface without removing a significant amount of the galvanized coating and provide a key to promote adhesion of the paint film. The procedure should be carried out using the following criteria:

- A fine, non-metallic abrasive (e.g. soft mineral sands with Mohr hardness of < 5)
- Abrasive size which will pass through a test sieve of nominal aperture size 150µm - 180µm
- Blast pressure < 275kPa (40psi)
- Angle of blasting to surface @ 30-60°
- Distance from surface 350 – 400 mm
- Nozzle orifice diameter 10 – 13 mm of venture-type

These controls will ensure that the severity of blasting does not damage the galvanized surface and should remove only 10µm of surface zinc.

Chrome pre-treatment

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

- a) Degreasing / etching
- 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 µSiemens/cm).

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

Iron phosphate or 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 µSiemens/cm).

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

Nano-technology (thin-film) pre-treatment

Suitable chrome-free (or nanotechnology) pre-treatments are also recommended. Due to the variety of chrome-free (or nanotechnology) pre-treatments available today, detailed advice must be sought from the pre-treatment supplier.

Before commencing to any continuous coating production using Primax Xtend, tests must be performed to verify the suitability of the pre-treatment parameters. Consult with your pre-treatment supplier.

Drying

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

Primax coating application

Pre-treated components must never be handled with bare hands.

Pre-treated components are to be immediately transferred to the coating process in a clean and dry state to avoid deterioration of the pre-treatment integrity. Pre-treated components must be powder coated within 16 hours.

Application parameters

A single coat application must be taken in one operation to a minimum film thickness of 80 microns for exposed areas. The coating thickness must not exceed 120 microns if the coated component is to be treated mechanically after coating (e.g. sawing, milling, drilling, etc.). Refer to relevant TDS for further details.

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

Line and equipment considerations

Primax Xtend have high chargeability during corona application. It is recommended to start the corona application at 60 kV and 10 µA application current. Adjustments on spraying application parameters may be needed to achieve the final coating requirements.

Reclaim Powder

It is advisable to quality assure the reclaim powder prior to use. 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. The ratio of reclaim to virgin must not exceed 20%.

Partial (green) curing

Components once powder coated, must be cured as soon as possible otherwise, the risk of airborne contamination will be high. The powder coating must be cured as specified by Jotun for relevant TDS.

Laboratory tests show that a continuous heat up rate of $>15^{\circ}\text{C}/\text{min}$ can stabilize the gloss (and appearance) development of coatings.

Oven tracking test (using the same thickness of substrates to be coated) should be initially conducted prior to any continuous production. And adjustment shall be made if required. At any given point in time, the metal / object temperature inside the curing oven should be $\leq 200^{\circ}\text{C}$ but $>160^{\circ}\text{C}$. Failure to adhere to this temperature range may affect the inter-coat adhesion between this product and the selected Jotun topcoat.

The most suitable partial cure time of Primax Xtend at temperature selected from the given table is recommended to be defined by a practical experiment. The time and temperature will depend on several factors that includes (but not limited to) object thickness, curing oven efficiency, heat-up rate, type of substrate, etc. This will help optimize the best decorative and functional performance, considering differences in objects and curing ovens. Please consider contacting your nearest Jotun office for further details. That will help to secure the best decorative and functional performance, considering differences in coated objects and curing ovens.

It is recommended to conduct a weekly oven test. The temperature is best obtained by measuring it at the thickest wall of the component whilst the oven is fully loaded. The air temperature in the curing zone must not deviate from the adjusted nominal temperature by more than $\pm 10^{\circ}\text{C}$.

Jotun topcoat powder application

The primed substrates should never be handled with bared hands. Failure to do so may affect the inter-coat adhesion between this product and the Jotun topcoat.

The application of the selected Jotun topcoat must take place no later than 12 hours at the same site after the application of this product. The shortest possible interval is recommended.

If the primed substrates are going to be temporarily stored, then the primed substrates, shall be stored away from sunlight, covered with a clean and clear plastic sheet, in a dust-free, cool and dry place.

Before the application of a Jotun topcoat, it is always advisable to check if the primed substrates are free from any mechanical damage and should be cleaned using a clean, oil/water free compressed air. The inter-coat adhesion properties and the complete system cure must always be verified.

Jotun topcoat (e.g., Jotun Facade), have good chargeability during the corona application. It is recommended to start the corona application of 60 KV and 10 μA on the application current. Spraying application parameters may be adjusted to achieve the final coating requirements.

A single coat application of Jotun topcoat should be undertaken in one operation, to a minimum film thickness of 60 microns and a maximum of 120 microns.

It is advisable to quality assure the reclaim powder prior to use. 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. The ratio of reclaim to virgin must not exceed 30%.

Curing

The system should be fully cured in accordance with the recommended curing schedules of either the selected Jotun topcoat or the primer; whichever is more stringent. Please refer to relevant curing schedules of the specified products.

The primed and top coated substrates should be cured in a convection oven. Oven tracking test (using the same thickness of substrates to be coated) should be initially conducted prior to any continuous production. And adjustment shall be made if required. The air temperature in the curing zone shall not deviate from the adjusted nominal temperature by more than $\pm 10^{\circ}\text{C}$.

Failure to adhere to this temperature range may cause inferior mechanical and corrosion protection properties.

The inter-coat adhesion properties and the complete system cure must always be verified. When directly fired gas ovens are used, sample of complete system needs to be tested to ensure inter-coat adhesion between the primer and a top coat.

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.

Post cure handling

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

Final inspection and quality control

Thorough inspection and coordination with the other application steps are essential for a quality coating. Inspection must 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 after the curing process include, but not limited to, film thickness, visual color assessment, adhesion and other mechanical properties and physical appearance of the coating. Cure test can be carried out using a suitable solvent e.g. Methyl Ethyl Ketone (MEK).

Jotun guarantees that the gloss measured during powder coating production lies within the TDS range. However, some variation of measured gloss on the powder coated component is possible due to differences in application lines such as oven types (batch vs. conveyor), component heat up rates, oven temperature stability etc.

Packing

Special care must be taken when loading and unloading the coated components.

To prevent any damage during transportation, each coated component must be packed individually and isolated from other components by crepe paper, with a weight of 150 grams/m², or other suitable cellulose based packaging. Additionally, polyolefin packaging can also be used. Laboratory tests shows low density polyethylene (LDPE) with a film thickness of >60 microns can be used for this purpose. However, due to several manufacturers/brands of packing materials having varying packaging properties, it is the responsibility of the powder coating applicator to quality assure the use of any packaging materials prior to any use.

If coated components are wrapped with any polyolefin sheet, these coated components must not be subjected to high heat (>70°C) and/or high humidity (>80%) and/or direct sunlight.

Regular adhesive tapes must never come into direct contact with the coating.

Should protective tape be required, then only tape designed for the protection of the coated component must be used. No residue of any nature must be left on the finished product.

The suitability of any packaging material for protecting coated substrates must be quality assured by the applicator prior to use.

Caution

This product is for professional use only. The applicators and operators shall be trained, experienced and have the capability and equipment to mix/stir and apply the coatings correctly and according to Jotun's technical documentation. Applicators and operators shall use appropriate personal protection equipment when using this product. This guideline is given based on the current knowledge of the product. Any suggested deviation to suit the site conditions shall be forwarded to the responsible Jotun representative for approval before commencing the work.

For further advice please contact your local Jotun office.

Health and safety

Please observe the precautionary notices displayed on the container. Use under well ventilated conditions. Do not inhale spray mist. Avoid skin contact. Spillage on the skin should immediately be removed with suitable cleanser, soap and water. Eyes should be well flushed with water and medical attention sought immediately.

Accuracy of information

Always refer to and use the current (last issued) version of the TDS, SDS and if available, the AG for this product. Always refer to and use the current (last issued) version of all International and Local Authority Standards referred to in the TDS, AG & SDS for this product.

Colour variation

When applicable, products primarily meant for use as primers or antifoulings may have slight colour variations from batch to batch. Such products and epoxy based products used as a finish coat may chalk when exposed to sunlight and weathering.

Colour and gloss retention on topcoats/finish coats may vary depending on type of colour, exposure environment such as temperature, UV intensity etc., application quality and generic type of paint. Contact your local Jotun office for further information.

Reference to related documents

The Application Guide (AG) must be read in conjunction with the relevant specification, Technical Data Sheet (TDS) and Safety Data Sheet (SDS) for all the products used as part of the coating system.

When applicable, refer to the separate application procedure for Jotun products that are approved to classification societies such as PSPC, IMO etc.

Symbols and abbreviations

min = minutes

h = hours

d = days

°C = degree Celsius

° = unit of angle

µm = microns = micrometres

g/l = grams per litre

g/kg = grams per kilogram

m²/l = square metres per litre

mg/m² = milligrams per square metre

psi = unit of pressure, pounds/inch²

Bar = unit of pressure

RH = Relative humidity (% RH)

UV = Ultraviolet

DFT = dry film thickness

WFT = wet film thickness

kV = kilovolts

µA = microampere

TDS = Technical Data Sheet

AG = Application Guide

SDS = Safety Data Sheet

VOC = Volatile Organic Compound

MCI = Jotun Multi Colour Industry (tinted colour)

RAQ = Required air quantity

PPE = Personal Protective Equipment

EU = European Union

UK = United Kingdom

EPA = Environmental Protection Agency

ISO = International Standards Organisation

ASTM = American Society of Testing and Materials

AS/NZS = Australian/New Zealand Standards

NACE = National Association of Corrosion Engineers

SSPC = The Society for Protective Coatings

PSPC = Performance Standard for Protective Coatings

IMO = International Maritime Organization

ASFP = Association for Specialist Fire Protection

AAMA = American Architectural Manufacture Association

CSA = Canadian Standards Association

Disclaimer

The information in this document is given to the best of Jotun's knowledge, based on laboratory testing and practical experience. Jotun's products are considered as semi-finished goods and as such, products are often used under conditions beyond Jotun's control. Jotun cannot guarantee anything but the quality of the product itself. Minor product variations may be implemented in order to comply with local requirements. Jotun reserves the right to change the given data without further notice.

Users should always consult Jotun for specific guidance on the general suitability of this product for their needs and specific application practices.

If there is any inconsistency between different language issues of this document, the English (United Kingdom) version will prevail.