

# Application Guide



## Jotamastic 80

### Product description

This is a two component polyamine cured epoxy mastic coating. It is a surface tolerant, high solids product. Specially designed for areas where optimum surface preparation is not possible or desired. Can be used as primer, mid coat, finish coat or as single coat system in atmospheric environments. Suitable for properly prepared carbon steel and aged coating surfaces. It can be applied at sub zero surface temperatures.

### 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 with efficient 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) for all the products used as part of the coating system.

### Referred standards

Reference is generally made to ISO Standards. When using standards from other regions it is recommended to reference only one corresponding standard for the substrate being treated.

### Surface preparation

The required quality of surface preparation can vary depending on the area of use, expected durability and if applicable, project specification.

When preparing new surfaces, maintaining already coated surfaces or aged coatings it is necessary to remove all contamination that can interfere with coating adhesion, and prepare a sound substrate for the subsequent product.

Inspect the surface for hydrocarbon and other contamination and if present, remove with an alkaline detergent. Agitate the surface to activate the cleaner and before it dries, wash the treated area using fresh water. Paint solvents (thinners) shall not be used for general degreasing or preparation of the surface for painting due to the risk of spreading dissolved hydrocarbon contamination. Paint thinners can be used to treat small localized areas of contamination such as marks from marker pens. Use clean, white cotton cloths that are turned and replaced often. Do not bundle used solvent saturated cloths. Place used cloths into water.

### Process sequence

Surface preparation and coating should normally be commenced only after all welding, degreasing, removal of sharp edges, weld spatter and treatment of welds is complete. It is important that all hot work is completed before coating commences.

### Soluble salts removal

Soluble salts have a negative impact on the coating systems performance, especially when immersed. Jotun's general recommendations for maximum soluble salts (sampled and measured as per ISO 8502-6 and -9) content on a surface are:

For areas exposed to (ISO 12944-2):  
 C1-C4: 200 mg/m<sup>2</sup>  
 C5M or C5I: 100 mg/m<sup>2</sup>  
 Im1-Im3: 80 mg/m<sup>2</sup>

### Carbon steel

# Application Guide

## Jotamastic 80



### Initial rust grade

The steel shall preferably be Rust Grade A or B (ISO 8501-1). It is technically possible to apply the coating to rust grades C and D, but it is practically challenging to ensure specified film thickness on such a rough surface, hence risk of reduced lifetime of the coating system. When steel of Rust Grade C or D is coated, the frequency of inspection and testing should be increased. For steel with Rust Grades C or D, contact your nearest Jotun office for advice.

### Metal finishing

For areas in corrosivity category C1 to C4 (ISO 12944-2) all irregularities, burrs, slivers, slag and spatter on welds, sharp edges and corners shall conform to minimum grade P2 (ISO 8501-3) Table 1, or as specified. All edges shall have a rounded radius of minimum 2 mm subjected to three pass grinding or equally effective method.

For areas in corrosivity category C5 the requirement is conformance to grade P3 (ISO 8501-3) Table 1. Defective welds shall be replaced and treated to an acceptable finish before painting. Temporary welds and brackets shall be ground to a flat finish after removal from the parent metal.

### Pitting repair

Pittings in steel can be difficult to cover fully with most coatings. In some areas it is practically feasible to use filler to fill pittings. This should then be done either after the initial surface preparation or after application of first coat.

## Abrasive blast cleaning

### Cleanliness

After pre-treatment is complete, the surface shall be dry abrasive blast cleaned to Sa 2 (ISO 8501-1) using abrasive media suitable to achieve a sharp and angular surface profile.

### Surface profile

Recommended surface profile 30-85 µm, grade Fine to Medium G (ISO 8503-2).

### Abrasive media quality

The selected abrasive must be compatible with both the surface to be blast cleaned and the specified coating system. The abrasive shall meet specifications as per relevant parts of ISO 11124 (Specification for metallic blast-cleaning abrasives), or ISO 11126 (Specification for non-metallic blast-cleaning abrasives). It should be sampled and tested as per relevant parts of ISO 11125 (metallic abrasives) or ISO 11127 (non-metallic abrasives). Dry storage of abrasive and shelter for blasting pots is necessary to prevent equipment becoming clogged with damp abrasive.

All abrasive blast media used should be new and not recirculated, with the exception of Steel Grit. If this is utilized the circulation process must include a cleaning process.

### Compressed air quality

The supply of clean air to blasting pots must be secured to avoid contamination of abrasive and thereby of blast cleaned surfaces. Compressors must be fitted with sufficient traps for oil and water. It is also recommended to fit two water separators at the blasting machine to ensure a supply of moisture-free air to the abrasive chamber.

### Dust contamination

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) as per Figure 1. Dust size no greater than class 2.

## Hand and Power Tool Cleaning

### Power tool cleaning

## Application Guide

### Jotamastic 80



Jotun Protects Property

Surfaces to be coated shall be prepared by mechanical preparation methods to minimum St 2 (ISO 8501-1). Suitable methods are disc grinding, hand sanding or hand wire brushing. Ensure the surface is free from mill scale, residual corrosion, failed coating and is suitable for painting. If power wire brushing is used, care should be taken not to polish the metal surface, as this can reduce adhesion of the coating. The surface should appear rough and mat.

Overlapping zones to intact coating shall have all leading edges feathered back by sanding methods to remove all sharp leading edges and establish a smooth transition from the exposed substrate to the surrounding coating. Consecutive layers of coating shall be feathered to expose each layer and new coating shall always overlap to an abraded existing layer. Abrade intact coatings around the damaged areas for a minimum 100 mm to ensure a mat, rough surface profile, suitable for over coating.

#### Water jetting

High pressure water jetting surface preparation refers to ISO 8501-4, for substrates previously coated either with a full coating system (surface DC A, DC B, DC C) or shop primer (surface DP I and DP Z). The surface definition for existing coating (DC) refers to the degree of coating breakdown according to ISO 4628.

It is important before considering hydro jetting, to ensure that the specified coating system is compatible with the existing coating system. High pressure water jetting does not remove mill scale or create surface roughness, and is only useful for surfaces with an initial roughness suitable for the subsequent coat.

Optimum performance is achieved with preparation grade Wa 2 (ISO 8501-4). Minimum preparation grade is Wa 1. For DP I and DP Z surface Wa 2 is accepted.

Maximum accepted grade of flash rust for any preparation is FR M (ISO 8501-4).

Alternatively minimum approved preparation grade is SSPC-SP WJ-2/ NACE WJ-2, Very thorough cleaning. Maximum accepted flash rust grade is Moderate (M).

### Coated surfaces

#### Verification of existing coatings including primers

When the surface is an existing coating, verify with technical data sheet and application guide of the involved products, both over coatability and the given maximum over coating interval.

#### Over coating

High pressure water jetting surface preparation refers to ISO 8501-4, for substrates previously coated either with a full coating system (surface DC A, DC B, DC C) or shop primer (surface DP I and DP Z). The surface definition for existing coating (DC) refers to the degree of coating breakdown according to ISO 4628.

It is important before considering hydro jetting, to ensure that the specified coating system is compatible with the existing coating system. High pressure water jetting does not remove mill scale or create surface roughness, and is only useful for surfaces with an initial roughness suitable for the subsequent coat.

#### Shop primers

Shop primers are accepted as temporary protection of steel plates and profiles. Refer to the technical data sheet for the generic types accepted. Certain standards require pre-approval of the shop primer as part of a complete system. Contact your nearest Jotun office for specific system compatibility. Before being overcoated the shop primer must be fully cured, clean, dust free, dry and undamaged. Inorganic zinc shop primers must be free of zinc salts (white rust).

Corroded and damaged areas must be blast cleaned to minimum Sa 1 (ISO 8501-1).

## Application

### Acceptable environmental conditions - before and during application

Before application, test the atmospheric conditions in the vicinity of the substrate for the dew formation according to ISO 8502-4.

#### Standard grade

Air temperature	10 - 60	°C
Substrate temperature	10 - 60	°C

This Application Guide supersedes those previously issued.

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.

For your nearest local Jotun office, please visit our website at [www.jotun.com](http://www.jotun.com).

# Application Guide

## Jotamastic 80



Relative Humidity (RH) 10 - 85 %

### Winter grade

Air temperature -5 - 60 °C  
 Substrate temperature -5 - 60 °C  
 Relative Humidity (RH) 10 - 85 %

The following restrictions must be observed:

- Only apply the coating when the substrate temperature is at least 3 °C (5 °F) above the dew point
- Do not apply the coating if the substrate is wet or likely to become wet
- Do not apply the coating if the weather is clearly deteriorating or unfavourable for application or curing
- Do not apply the coating in high wind conditions

## Product mixing

Independent on substrate temperature the minimum temperature of the mixed base and curing agent is 10 °C. Lower temperature may require additional thinner to reach correct application viscosity. Additional thinner gives lower sag resistance and slower curing. If addition of thinner is required, this shall be done after mixing of the two components.

### Product mixing ratio (by volume)

#### STANDARD GRADE

Jotamastic 80 Comp A 7 part(s)  
 Jotamastic 80 STD Comp B 1 part(s)

#### WINTER GRADE

Jotamastic 80 Comp A 4 part(s)  
 Jotamastic 80 Wintergrade Comp B 1 part(s)

### Induction time and Pot life

**Paint temperature** **23 °C**

#### Standard grade

Induction time 10 min  
 Pot life 2 h

#### Winter grade

Pot life 1 h

The temperature of base and curing agent is recommended to be 18 °C or higher when the product is mixed.

### Thinner/Cleaning solvent

Thinner: Jotun Thinner No. 17

# Application Guide

## Jotamastic 80



### Application data

#### Spray application

##### Airless Spray Equipment

Pump ratio (minimum) :	42:1
Pressure at nozzle (minimum) :	150 bar/2100 psi
Nozzle tip (inch/1000) :	19-25
Nozzle output (litres/minute) :	1.5-2.6
Filters (mesh) :	70

Several factors influence, and need to be observed to maintain the recommended pressure at the nozzle. Among factors causing pressure drop are:

- extended hoses or hose bundles
- extended hose whip-end line
- small internal diameter hoses
- high paint viscosity
- large spray nozzle size
- inadequate air capacity from compressor
- incorrect or clogged filters

### Film thickness per coat

#### Typical recommended specification range

##### STANDARD GRADE

Dry film thickness	75 - 200	µm
Wet film thickness	95 - 250	µm
Theoretical spreading rate	10.7 - 4	m <sup>2</sup> /l

##### WINTER GRADE

Dry film thickness	75 - 200	µm
Wet film thickness	105 - 280	µm
Theoretical spreading rate	9.6 - 3.6	m <sup>2</sup> /l

This product can be applied up to 50 % higher than maximum specified film thickness without loss of technical properties.

### Film thickness measurement

#### Wet film thickness (WFT) measurement and calculation

To ensure correct film thickness, it is recommended to measure the wet film thickness continuously during application using a painter's wet film comb (ISO 2808 Method 1A). The measurements should be done as soon as possible after application.

Fast drying paints may give incorrect (too low) readings resulting in excessive dry film thickness. For multi layer physically drying (resoluble) coating systems the wet film thickness comb may give too high readings resulting in too low dry film thickness of the intermediate and top coats.

Use a wet-to-dry film calculation table (available on the Jotun Web site) to calculate the required wet film thickness per coat.

#### Dry film thickness (DFT) measurement

## Application Guide

### Jotamastic 80



When the coating has cured to hard dry state the dry film thickness can be checked to SSPC PA 2 or equivalent standard using statistical sampling to verify the actual dry film thickness. Measurement and control of the WFT and DFT on welds is done by measuring adjacent to and no further than 15 cm from the weld.

#### Ventilation

Sufficient ventilation is very important to ensure proper drying/curing of the film.

#### Coating loss

The consumption of paint should be controlled carefully, with thorough planning and a practical approach to reducing loss. Application of liquid coatings will result in some material loss. Understanding the ways that coating can be lost during the application process, and making appropriate changes, can help reducing material loss.

Some of the factors that can influence the loss of coating material are:

- type of spray gun/unit used
- air pressure used for airless pump or for atomization
- orifice size of the spray tip or nozzle
- fan width of the spray tip or nozzle
- the amount of thinner added
- the distance between spray gun and substrate
- the profile or surface roughness of the substrate. Higher profiles will lead to a higher "dead volume"
- the shape of the substrate target
- environmental conditions such as wind and air temperature

## Drying and Curing time

Substrate temperature	-5 °C	0 °C	5 °C	10 °C	23 °C	40 °C
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#### STANDARD GRADE

Surface (touch) dry				8 h	4 h	2 h
Walk-on-dry				24 h	10 h	4 h
Dry to over coat, minimum				24 h	10 h	4 h
Dried/cured for service				14 d	7 d	2 d

#### WINTER GRADE

Surface (touch) dry	24 h	18 h	12 h	6 h	2.5 h
Walk-on-dry	48 h	26 h	18 h	12 h	5 h
Dry to over coat, minimum	48 h	26 h	18 h	12 h	5 h
Dried/cured for service	21 d	14 d	7 d	3 d	2 d

Drying and curing times are determined under controlled temperatures and relative humidity below 85 %, and at average of the DFT range for the product.

Surface (touch) dry: The state of drying when slight pressure with a finger does not leave an imprint or reveal tackiness.

Walk-on-dry: Minimum time before the coating can tolerate normal foot traffic without permanent marks, imprints or other physical damage.

Dry to over coat, minimum: The recommended shortest time before the next coat can be applied.

Dried/cured for service: Minimum time before the coating can be permanently exposed to the intended environment/medium.

## Maximum over coating intervals

Maximum time before thorough surface preparation is required. The surface must be clean and dry and suitable for over coating. Inspect the surface for chalking and other contamination and if present, remove with an alkaline detergent. Agitate the surface to activate the cleaner and before it dries, wash the treated area by low-pressure water jetting to Wa 1 (ISO 8501-4) using fresh water.

If maximum over coating interval is exceeded the surface should in addition be carefully roughened to ensure good inter coat adhesion.

The referred intervals relate specifically to over coating with Jotun Performance Coating products.

At temperatures below 5 °C, Jotamastic 90 WG is the recommended primer for epoxy Passive Fire Protection.

### Areas for atmospheric exposure

Average temperature during drying/curing	-5 °C	0 °C	5 °C	10 °C	23 °C	40 °C
<b>Standard grade</b>						
Itself			extended	extended	extended	extended
acrylic			10 d	10 d	7 d	5 d
epoxy			3 mth	3 mth	3 mth	2 mth
epoxy Passive Fire Protection			21 d	21 d	21 d	14 d
polyurethane			3 mth	3 mth	3 mth	2 mth
epoxy mastic			extended	extended	extended	extended

#### Winter grade

Itself	3 mth	3 mth	3 mth	3 mth	3 mth	2 mth
acrylic	14 d	10 d	7 d	7 d	5 d	1 d
epoxy	3 mth	3 mth	3 mth	3 mth	3 mth	2 mth
polyurethane	10 d	10 d	10 d	10 d	7 d	5 d
epoxy mastic	3 mth	3 mth	3 mth	3 mth	3 mth	2 mth

### Areas for immersed exposure

Average temperature during drying/curing	-5 °C	0 °C	5 °C	10 °C	23 °C	40 °C
<b>Standard grade</b>						
Itself			21 d	18 d	14 d	14 d
epoxy			21 d	18 d	14 d	14 d
vinyl epoxy			10 d	10 d	7 d	5 d
epoxy mastic			21 d	18 d	14 d	14 d
<b>Winter grade</b>						
Itself	14 d	10 d	10 d	10 d	7 d	7 d
epoxy	14 d	10 d	10 d	10 d	7 d	7 d
vinyl epoxy	14 d	10 d	7 d	4 d	2 d	1 d
epoxy mastic	14 d	10 d	10 d	10 d	7 d	7 d

# Application Guide

## Jotamastic 80



### Other conditions that can affect drying / curing / over coating

#### Adding anti-skid to the coating system

Anti skid aggregate should only be added in the final coat, and should not be used in single coat systems. Spread the aggregate evenly on the surface before half of time to Surface dry. Use Jotun Anti-skid, medium particle size (400 - 600 µm) for coatings applied in 150 to 400 µm DFT. The recommended usage is 2.5 - 3.3 kg per 10 litres of paint.

#### Repair of coating system

##### Damages to the coating layers:

Prepare the area through sandpapering or grinding, followed by thorough cleaning/vacuuming. When the surface is clean and dry the coating may be over coated by itself or by another product, ref. original specification.

Always observe the maximum over coating intervals. If the maximum over coating interval is exceeded the surface should be carefully roughened in order to ensure good intercoat adhesion.

##### Damages exposing bare substrate:

Remove all rust, loose paint, grease or other contaminants by spot blasting, mechanical grinding, water and/or solvent washing. Feather edges and roughen the overlap zone of surrounding intact coating. Apply the coating system specified for repair.

#### Repair of damaged areas

Sags and runs can be caused by too high wet film thickness, too much thinner added or the spray gun used too close to the surface.

Repair by using a paint brush to smooth the film when still wet.

Sand down to a rough, even surface and re-coat if the coating is cured.

Orange peel can be caused by poor flow/levelling properties of the paint, poor atomization of the paint, thinner evaporating too fast or the spray gun held too close to the surface.

This can be rectified by abrading the surface and applying an additional coat after having adjusted the application properties or the application technique.

Dry spray can be caused by poor atomization of the paint, spray gun held too far from the surface, high air temperature, thinner evaporating too fast or coating applied in windy conditions.

Sand down to a rough even surface and re-coat.

Pinholes can be caused by entrapped solvents in the film or by incorrect application technique. Pinholes can be repaired as per procedure for damages to the coating layer or to the substrate, ref. above.

#### Surface finish

Amine sweating may occur when amine cured epoxy coatings are cured at low temperatures and/or humid conditions. Amine sweating can sometimes be observed on the surface as a sticky residue or as discolouration.

It can seriously affect the adhesion of the subsequent coat and must be removed. If amine sweating is suspected, wash the surface with warm water and detergent, and rinse thoroughly with water. Light abrasion of the surface and removal of dust before over coating will further secure good intercoat adhesion.

Amine sweating can be minimized by observing the induction time stated in TDS.

#### Coating film continuity

When required by the specification, the coating shall be tested for film discontinuity according to ASTM D 5162, test method A or B as appropriate for the actual dry film thickness.

All recorded defects shall be repaired by best practical means.



## Quality assurance

The following information is the minimum required. The specification may have additional requirements.

- Confirm that all welding and other metal work has been completed before commencing pre-treatment and surface preparation
- Confirm that installed ventilation is balanced and has the capacity to deliver and maintain the RAQ
- Confirm that the required surface preparation standard has been achieved and is held prior to coating application
- Confirm that the climatic conditions are within recommendations in the AG, and are held during the application
- Confirm that the required number of stripe coats have been applied
- Confirm that each coat meets the DFT requirements in the specification
- Confirm that the coating has not been adversely affected by rain or other factors during curing
- Observe that adequate coverage has been achieved on corners, crevices, edges and surfaces where the spray gun cannot be positioned so that its spray impinges on the surface at 90° angle
- Observe that the coating is free from defects, discontinuities, insects, abrasive media and other contamination
- Observe that the coating is free from misses, sags, runs, wrinkles, fat edges, mud cracking, blistering, obvious pinholes, excessive dry spray, heavy brush marks and excessive film build
- Observe that the uniformity and colour are satisfactory

All noted defects shall be fully repaired to conform to the coating specification.

### 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

Some coatings used as the final coat may fade and chalk in time when exposed to sunlight and weathering effects. Coatings designed for high temperature service can undergo colour changes without affecting performance. Some slight colour variation can occur from batch to batch. When long term colour and gloss retention is required, please seek advice from your local Jotun office for assistance in selection of the most suitable top coat for the exposure conditions and durability requirements.

### 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

TDS = Technical Data Sheet  
AG = Application Guide

## Application Guide

### Jotamastic 80



d = days  
 °C = degree Celsius  
 ° = unit of angle  
 µm = microns = micrometres  
 g/l = grams per litre  
 g/kg = grams per kilogram  
 m<sup>2</sup>/l = square metres per litre  
 mg/m<sup>2</sup> = milligrams per square metre  
 psi = unit of pressure, pounds/inch<sup>2</sup>  
 Bar = unit of pressure  
 RH = Relative humidity (% RH)  
 UV = Ultraviolet  
 DFT = dry film thickness  
 WFT = wet film thickness

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  
 PSCP = Performance Standard for Protective Coatings  
 IMO = International Maritime Organization  
 ASFP = Association for Specialist Fire Protection

## 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.