

## Penguard Express MIO

### Product description

This is a two component amine cured epoxy coating. It is a fast drying, micaceous iron oxide (MIO) pigmented, high solids, high build product. Specially designed for new construction where fast dry to handle and over coating times are required. Can be used as primer, mid coat, finish coat or as single coat system in atmospheric environments. Suitable for properly prepared carbon steel, stainless steel, aluminum and concrete substrates. It can be applied at sub zero surface temperatures.

### Typical use

Suitable for structural steel and piping to be exposed to highly corrosive environments, C5I or C5M (ISO 12944-2). Recommended for offshore environments, refineries, power plants, bridges, buildings and mining equipment.

### Approvals and certificates

Contributes to satisfying the following credit(s):  
- Indoor Environmental Quality (IEQ) under LEED® 2009

Additional certificates and approvals may be available on request.

### Other variants available

Penguard Express  
Penguard Express ZP  
Penguard Express CF

Refer to separate TDS for each variant.

### Colors

grey, red

## Product data

Property	Test/Standard	Description
Solids by volume	ISO 3233	74 ± 2 %
Gloss level (GU 60 °)	ISO 2813	matt (0-35)
Flash point	ISO 3679 Method 1	90 °F (32 °C)
Density	calculated	1,53 kg/l
VOC-US/Hong Kong	US EPA method 24 (tested)	2,14 lbs/gal

The provided data is typical for factory produced products, subject to slight variation depending on color.

All data is valid for mixed paint.

Gloss description: According to Jotun Performance Coatings' definition.

## Film thickness per coat

### Typical recommended specification range

Dry film thickness	3 mils (75 µm)	- 10 mils (250 µm)
Wet film thickness	4 mils (100 µm)	- 13 mils (340 µm)
Theoretical spreading rate	403 ft <sup>2</sup> /gl (9,9 m <sup>2</sup> /l)	- 122 ft <sup>2</sup> /gl (3 m <sup>2</sup> /l)

## Surface preparation

To secure lasting adhesion to the subsequent product all surfaces shall be clean, dry and free from any contamination.

### Surface preparation summary table

Substrate	Surface preparation	
	Minimum	Recommended
Carbon steel	St 2 (ISO 8501-1)	Sa 2½ (ISO 8501-1)
Galvanized steel	Cleanliness corresponding to description of NACE No. 4 / SSPC SP-7 (Sa 1, ISO 8501-1)	Cleanliness corresponding to description of NACE No. 4 / SSPC SP-7 (Sa 1, ISO 8501-1)
Aluminum	Cleanliness corresponding to description of NACE No. 4 / SSPC SP-7 (Sa 1, ISO 8501-1)	Cleanliness corresponding to description of NACE No. 4 / SSPC SP-7 (Sa 1, ISO 8501-1)
Shop primed steel	Clean, dry and undamaged approved shop primer (ISO 12944-4 6.1)	Clean, dry and undamaged approved shop primer (ISO 12944-4 6.1)
Coated surfaces	Clean, dry and undamaged compatible coating (ISO 12944-4 6.1)	Clean, dry and undamaged compatible coating (ISO 12944-4 6.1)
Concrete	Low pressure water washing to a rough, clean, dry and laitance free surface.	Minimum 4 weeks curing. Moisture content maximum 5 %. Low pressure water washing to a rough, clean, dry and laitance free surface.

## Application

### Application methods

The product can be applied by

Spray:	Use airless spray.
Brush:	Recommended for stripe coating and small areas. Care must be taken to achieve the specified dry film thickness.

### Product mixing ratio (by volume)

Penguard Express MIO Comp A	4 part(s)
Penguard Express Comp B	1 part(s)

### Thinner/Cleaning solvent

Thinner: Jotun Thinner No. 17

### Guiding data for airless spray

Nozzle tip (inch/1000): 13-23  
Pressure at nozzle (minimum): 150 bar/2100 psi

## Drying and Curing time

Temperatures:  
-10°C = 14°F / -5°C = 23°F / 0°C = 32°F / 5°C = 41°F / 10°C = 50°F / 15°C = 59°F / 23°C = 73°F / 35°C = 95°F / 40°C = 104°F / 100°C = 212°F

Substrate temperature	-5 °C	0 °C	5 °C	10 °C	23 °C	40 °C
Surface (touch) dry	16h	11h	4h	2h	1h	30min
Walk-on-dry	38h	24h	10h	6h	3h	2h
Dried to over coat, minimum	24h	14h	8h	4h	2h	1h
Dried/cured for service		21d	13d	8d	4d	3d

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 shortest time allowed 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.

## Induction time and Pot life

Temperatures: 15°C = 59°F / 23°C = 73°F

Paint temperature	23 °C
Pot life	2 h

## Heat resistance

	Temperature	
	Continuous	Peak
Dry, atmospheric	120 °C	140 °C

Peak temperature duration max. 1 hour.

The temperatures listed relate to retention of protective properties. Aesthetic properties may suffer at these temperatures.

## Product compatibility

Depending on the actual exposure of the coating system, various primers and topcoats can be used in combination with this product. Some examples are shown below. Contact Jotun for specific system recommendation.

Previous coat: inorganic zinc silicate shop primer, epoxy, epoxy mastic, zinc epoxy, zinc silicate, organic shop primer

Subsequent coat: acrylic, epoxy, polyurethane, polysiloxane

## Packaging (typical)

	Volume (liters)	Size of containers (liters)
Penguard Express MIO Comp A	4 / 16	5 / 20
Penguard Express Comp B	1 / 4	1 / 5

1 l = 0.26 gal

4 l = 1.06 gal

16 l = 4.23 gal

The volume stated is for factory made colors. Note that local variants in pack size and filled volumes can vary due to local regulations.

## Storage

The product must be stored in accordance with national regulations. Keep the containers in a dry, cool, well ventilated space and away from sources of heat and ignition. Containers must be kept tightly closed. Handle with care.

## Shelf life at 73°F (23 °C)

Penguard Express MIO Comp A	24 month(s)
Penguard Express Comp B	24 month(s)

In some markets commercial shelf life can be dictated shorter by local legislation. The above is minimum shelf life, thereafter the paint quality is subject to re-inspection.

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## 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.

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## 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.

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## Color variation

When applicable, products primarily meant for use as primers or antifoulings may have slight color variations from batch to batch. Such products may fade and chalk when exposed to sunlight and weathering.

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## 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.

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