

Penguard HSP MIO E

Product description

This is a two component amine cured epoxy coating. This product is LEED compliant and contains no solvents on the Hazardous Air Pollutants (HAPs) list. It is a fast drying, micaceous iron oxide (MIO) pigmented, high solids, high build product. Can be used as primer or mid coat in atmospheric environments. Specially designed for new construction where short dry to handle and over coating times are required. Suitable for properly prepared aluminum, carbon steel, galvanized steel, shop primed steel and stainless steel substrate.

Typical use

Suitable for structural steel and piping to be exposed to corrosive environments. Recommended for power plants, airports, buildings, refineries and mining equipment.

Approvals and certificates

This product contributes to the Green Buildings Standard credits. Please see section Green Building Standards. Additional certificates and approvals may be available on request.

Other variants available

Penguard HSP E
Penguard HSP ZP E
Refer to separate TDS for each variant.

Colors

selected range of colors

Product data

Property	Test/Standard	Description
Solids by volume	ISO 3233	75 ± 2 %
Gloss level (GU 60 °)	ISO 2813	matt (0-35)
Flash point	ISO 3679 Method 1	81 °F (27 °C)
Density	calculated	1.7 kg/l

Region	Regulation	Test Standard	VOC Value
US	CARB(SCM)2020 / SCAQMD rule 1113	Calculated	2.09 lbs/gal

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

Gloss description: According to Jotun Performance Coatings' definition.

The VOC values refer to grey colour.

Film thickness per coat

Typical recommended specification range

Dry film thickness	2.4 mils (60 µm)	10 mils (250 µm)
Wet film thickness	3 mils (80 µm)	13 mils (335 µm)
Theoretical spreading rate	510 ft ² /gal (12.5 m ² /l)	120 ft ² /gal (3 m ² /l)

Surface preparation

Surface preparation summary table

Substrate	Surface preparation	
	Minimum	Recommended
Carbon steel	St 2 (ISO 8501-1) or SSPC SP-2	Sa 2½ (ISO 8501-1) or NACE No. 2 / SSPC SP-10
Stainless steel	The surface shall be hand or machine abraded with non-metallic abrasives or bonded fibre machine or hand abrasive pads to impart a scratch pattern to the surface.	Abrasive blast cleaning to achieve a surface profile using non-metallic abrasive media which is suitable to achieve a sharp and angular surface profile.
Aluminum	The surface shall be hand or machine abraded with non-metallic abrasives or bonded fibre machine or hand abrasive pads to impart a scratch pattern to the surface.	Abrasive blast cleaning to achieve a surface profile using non-metallic abrasive media which is suitable to achieve a sharp and angular surface profile.
Shop primed steel	Dry, clean and intact shop primer.	Sweep blasted or alternatively blasted to Sa 2 (ISO 8501-1) or SP 6 / NACE No. 3 (SSPC-VIS 1) of at least 70 % of the surface.
Galvanized steel	The surface shall be clean, dry and appear with a rough and dull profile.	Sweep blast-cleaning using non-metallic abrasive leaving a clean, rough and even pattern.
Coated surfaces	Clean, dry and undamaged compatible coating	Clean, dry and undamaged compatible coating

Optimum performance, including adhesion, corrosion protection, heat resistance and chemical resistance is achieved with recommended surface preparation.

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 HSP MIO E Comp A	4 part(s)
Penguard HSP E Comp B	1 part(s)

Thinner/Cleaning solvent

Thinner: Jotun Thinner No. 26

Thinning is not normally required. Consult the local representative for advice during application in extreme conditions. Do not thin more than allowed by local environmental legislation.

Guiding data for airless spray

Nozzle tip (inch/1000):	17-23
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	0 °C	5 °C	10 °C	23 °C	40 °C
Surface (touch) dry	11 h	5 h	2 h	1 h	30 min
Walk-on-dry	18 h	12 h	6 h	3 h	2 h
Dried to over coat, minimum	18 h	12 h	4 h	2 h	1 h
Dried/cured for service	21 d	13 d	8 d	4 d	3 d

For maximum overcoating intervals, refer to the Application Guide (AG) for this product.

Drying and curing times are determined under controlled temperatures and relative humidity below 85%, and at the typical DFT 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.

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: epoxy, epoxy mastic, inorganic zinc shop primer

Subsequent coat: acrylic, epoxy, polyurethane, polysiloxane

Packaging (typical)

	Volume (liters)	Size of containers (liters)
Penguard HSP MIO E Comp A	16	20
Penguard HSP E Comp B	4	5

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, shaded, 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 HSP MIO E Comp A	12 month(s)
Penguard HSP E 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.

Environmental Documentation

This product contributes to Green Building Standard credits by meeting the following specific requirements:

LEED®v4 (2013)

EQ credit: Low emitting materials

- VOC content for Industrial Maintenance Coatings (250 g/l) (CARB(SCM)2007) and emission 0.5 - 5.0 mg/m³ (CDPH method 1.2).

MR credit: Building product disclosure and optimization

- Material Ingredients, Option 2: Material Ingredient Optimization, International Alternative Compliance Path -

REACH optimization: Fully inventoried chemical ingredients to 100 ppm and not containing substances on the

REACH Authorization list – Annex XIV, the Restriction list – Annex XVII and the SVHC candidate list.

- Environmental Product Declarations. Product-specific Type III EPD (ISO 14025;21930, EN 15804).

LEED® (2009)

- IEQ Credit 4.2: The VOC requirements of Green Seal Standard GC-03, 1997.

BREEAM® International (2016)

- Mat 01: Product-specific Type III EPD (ISO 14025;21930, EN 15804).

BREEAM® International (2013)

- Hea 02: VOC content for Two-pack performance Coatings SB (500 g/l) (EU Directive 2004/42/CE).

This product is tested by RISE Research Institutes of Sweden/SP Technical Research Institute of Sweden or Eurofins in accordance with California Department of Public Health (CDPH) Standard Method v1.1-2010.

The EPDs are available at www.epd-norge.no

Note

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.

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.

Color variation

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

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

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.
