

**Corrosion protection for offshore installations**

**Product description**

In a project sponsored by the German Federal Ministry of Education and Research, a weather-resistant, extrudable corrosion protection coating was developed for use on hollow steel sections in offshore installations. It is a multi-layer system comprising a three-layer polyethylene coating (PE) with an epoxy resin primer (approx. 100 µm), an adhesive agent (approx. 200 µm), and a PE-layer (min. thickness 1.8 mm) as well as a weather-resistant top layer for mechanical protection. The material of this top layer (min. thickness 2.0 mm) is based on Polyamide 12 and has been specially adapted and optimized for the intended offshore application.

are factors that can severely affect the efficiency of corrosion protection.

To counter this threat, a corrosion protection system was developed that combines the well-established 3-layer polyethylene coating with a top layer of polyamide 12. However, the service properties of this coating system extend well beyond the application profile of a coating for offshore installations and are relevant to above-ground pipelines in every context, e.g.:

- Bridges
- Onshore installations
- Hydraulic steel structures
- Platforms for the oil & gas industry
- Piping systems for industrial plants

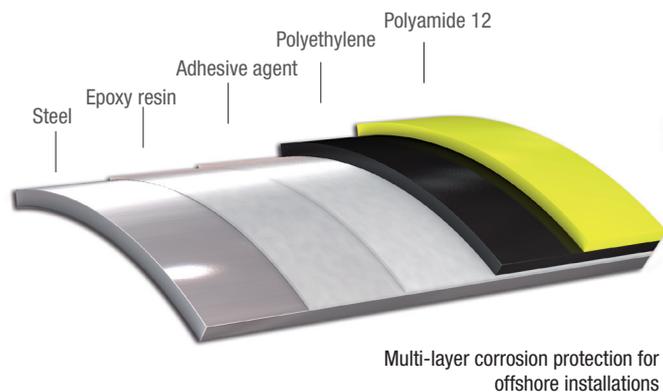
**Product properties**

*What is PA 12?*

The PA 12 used here is marketed under the tradename Vestamid® and is a modified polyamide. The best-known synthetic polyamides are Nylon (PA 6.6) and Perlon (PA 6), which are used in the textile sector.

The polyethylene-based corrosion protection coating is a long-lived system which has proved its efficiency on buried pipelines for decades. The additional extruded top layer of polyamide is responsible for mechanical protection and also possesses excellent resistance to ultra-violet radiation.

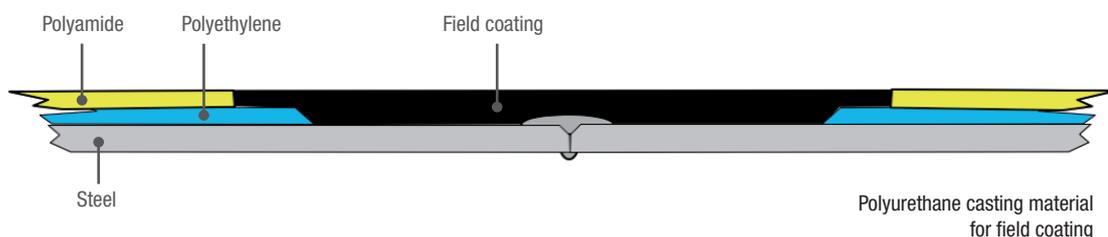
For the joint area between pipes or pipes and fittings, a field coating system based on polyurethane (PUR) is available. This has also been developed as part of the sponsored research project.



*This coating was developed in a research project (sponsored by the German Federal Ministry of Education and Research) for the foundation structures of offshore wind turbines.<sup>1)</sup>*

**Application**

Corrosion is a major threat to materials used in offshore installations. Salt water, mechanical loads due to drifting ice floes, swell, and – above all – exposure to ultra-violet radiation



<sup>1)</sup>The responsibility for the contents of this publication rests with the authors.

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**Typical product properties and data**

Pipe dimensions		Polyamide top layer	
Outside diameter	114.3 – 610 mm	Thickness	min. 2 mm
Wall thickness (dependent on diameter)	3.2 – 25.4 mm	Color	RAL1023, traffic yellow <sup>1)</sup>
Length	max. 18 mm	Shore hardness D	65
		Impact resistance (-40°C)	20 J/mm layer thickness
		Elongation at rupture (RT)	min. 200%

<sup>1)</sup> Other colors on request



**Note**

Tests and requirements for the multi-layer coating system on structural steel hollow sections are specified in Mill Standard T 10.00.001 of Mannesmann Line Pipe GmbH.

*Title: "Multi-layer coating system for circular steel hollow sections, comprising a three-layer polyethylene coating and a polyamide-based top coat – Requirements and tests"*

The works standard can be downloaded as a PDF file from the link "Mill standards" on our website:  
[www.mannesmann-linepipe.com](http://www.mannesmann-linepipe.com)



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