Memo

ArcelorMittal

Date January 2010 (revision)
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Steel sheet piles: summary of the sealing product BELTAN

Introduction

Beltan is a bituminous product (hot applied) for applications with an average performance ($\rho = 6 \bullet 10^{-8}$ m/s) is required in respect of water tightness of the interlocks

Features of the product

Composition:	bitumen-polymers-filler
Density at 25°C:	0.98 ÷ 1.00 g/cm³
Softening point:	~ 90°C
Colour:	black-brown

These features are only given as an indication and can be modified by the supplier as required.
The product can be supplied in barrels.

Conditions of application

The behaviour of the bituminous product when it is installed (hot) is set out below:

- application on a surface covered with standing water: to be avoided
- application on damp metal (dew point): very good, but to be avoided as far as possible
- application on metal at -10°C to +70°C: excellent
- hardening in rain: excellent
- drying under UV light: excellent

Durability of the product in different environments

i.e. durability in the installed steel sheet piling:

- water with pH 3.5 to pH 11.5: excellent
- sea water: excellent
- mineral oil: low
- petrol: very low
- crude oil: very low

Consumption

- Application into an open interlock: approximately 0.3 l per meter of interlock
- Application into threaded interlocks: approximately 0.1 l per meter of interlock

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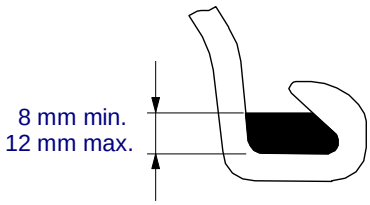
Installation of seal at the factory / workshop

The application of the bituminous product at the factory is carried out to comply with the following requirements:

- the interlocks must be dry;
- the piling must be laid out in a perfectly horizontal position;
- so that the product can adhere in the interlocks, cleaning with a jet of compressed air, a steel wire brush or high-pressure water jet is recommended if any corrosion products are present;
- to prevent the hot liquid product from flowing out of the ends of the piles when the interlocks are filled, the ends must be blocked at the top and bottom using mastic;
- the product is heated to a maximum temperature indicated on the information sheet accompanying (normally < 140°C);
- the product is stirred to give a homogeneous mixture;
- the product is poured into the interlocks;
- the interlocks are filled using an appropriate pourer, taking into account the direction of driving and the position in relation to hydrostatic pressure (please refer to our brochure):
    - if the piles are supplied in single units: fill one free interlock per single pile;
    - if the piles are supplied in multiple units (doubles): fill the intermediate crimped interlock and one free interlock
    - depth of filling of free interlocks: 8 to 12 mm.



Note

So that the strength of the crimping points is not reduced in the case of threaded and crimped piles, the bituminous product must be applied after the piles are crimped.

Installing the seal in situ

The application of the bituminous product in situ is made in accordance with the requirements stated in installation at the factory.
In dry weather, installation in the open air does not pose a problem.
In rain, care must be taken, possibly by using a tarpaulin or a plastic sheet, to avoid the presence of water in the interlocks before they are filled with the hot bituminous product.
When sheet piling is simply installed without driving, it is possible that the piling will not slide down to the required depth if there is an excess of the product in the interlock, or if the product has stiffened at low temperature. In such cases a driving engine must be provided on the site to allow correct installation, or, possibly, the recalcitrant interlock can be heated very gently and carefully with a blow-lamp. This procedure needs special care!

Transport of treated piling

If the bituminous product has not solidified, the treated piles must be transported horizontally with the openings of the treated interlocks turned to face upwards.
After the product has cooled, the sheet piling must be protected from getting too hot (softening point of the product: 90°C) in order to prevent the product from leaking out of the interlock.