Presentation of BFL-Mastix waterstops

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Mastix system : technical file 301

Waterproofing

Waterproofing of joints

Waterproofing principle of the Mastix waterstop system

Introduction

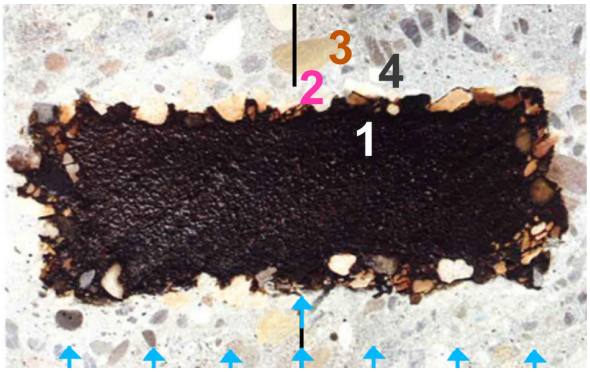
Waterproofing is an entity of applied mesures to assure, that water and humidity cannot constructively endanger important building elements.
Penetration of water through joints can sooner or later, for example in the presence of the AAR phenomen (alkali-aggregate reaction) lead to a destruction of the structure.

Waterproofing principle of the Mastix waterstop system

BFL-Mastix waterstops are linked to the

" Coherence principle "

The "**Coherence principle**" in a waterproofing system of joints in concrete structures concerns soft and deformable fine gravel covered waterstops.
This fine crushed gravel must be porous and rough.
The fine crushed gravel is in direct contact with the cement paste of the concrete. It participates in the concrete as well as its own gravel.
The liaison ordinary gravel/cement paste/fine crushed gravel is therefore "**coherent**". ***It combines materials of the same kind and properties.***
The liaison fine crushed gravel/soft and deformable band core is "**coherent**". The mechanically applied fine crushed gravel is an ***interface between band core and the concrete***.



1 Core of BFL-Mastix waterstops

2 Fine crushed gravel on BFL-Mastix waterstops

3 Concrete granulate

4 Cement paste

The Mastix system

The Mastix system comprises the totality of the BFL-Mastix waterstops with their core of a bitumen/rubber mixture, covering partly or totally the core, mechanically coated with fine crushed rough and porous gravel, size 4/8 mm.
Consult the Mastix system over ***www.mastix.ch***

The catalog

The catalog of the BFL-Mastix system can be consulted on the web site www.mastix.ch

Technical documentation

The complete "Technical documentation of BFL-Mastix waterstops" can be consulted in www.mastix.ch

The Mastix system is simple to work with and naturally compatible with concrete and concrete structures

Mastix system : technical file 302

Waterproofing

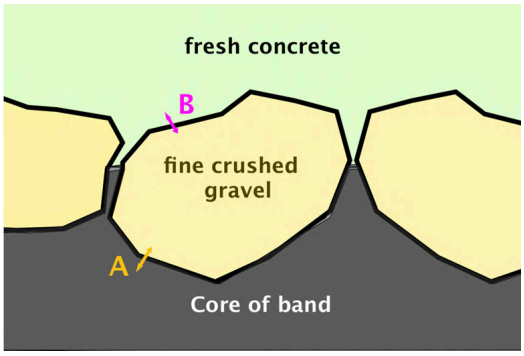
Waterproofing of joints

The base of the BFL-Mastix system

Introduction

The Mastix system is based on the quality of two important connections.

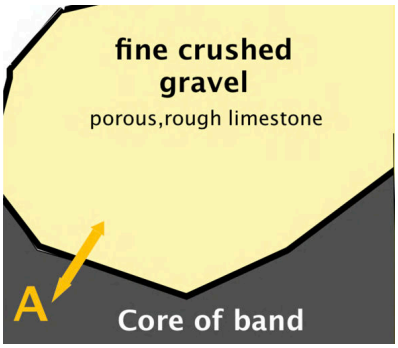
A.- The connection of fine crushed gravel/band core
B.- The connection of fine crushed gravel/fresh concrete



The core of BFL-Mastix waterstop is composed of a soft and deformable material, based on deformable elastomer rubber.

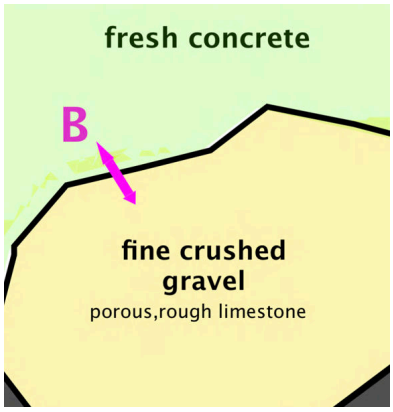
A. The connection of fine crushed gravel/band core

This is a **heated** connection of two materials.
This assures a greater contact surface through filling the gravel pores with liquified bituminous material, anchoring itself through pressure on the core material.



B. The connection of fine crushed gravel on the waterstop/concrete

This is at first a **body connection** through concrete penetration and its compaction. This connection is favoured through the quality of the fine crushed gravel (porous limestone, rough and clean).
This establishes a **chemical connection**, building up between the cement paste and the limestone.



The Mastix system is simple to work with and naturally compatible with concrete and concrete structures

Mastix system : technical file 303

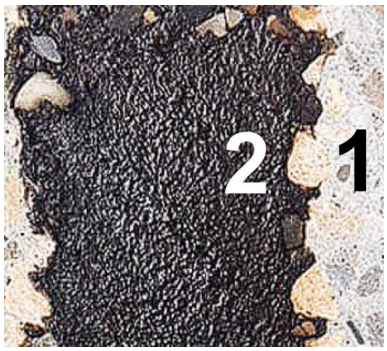
Waterproofing
Waterproofing of joints
The Mastix concept

Water **cannot penetrate** the BFL-Mastix waterstops.
The core of the BFL-Mastix waterstops **is deformable.**

Water **cannot penetrate** the BFL-Mastix waterstops
The core of the BFL-Mastix waterstops is watertight
(a mixture of extruded bitumen-rubber)

The core of the BFL-Mastix waterstops is **deformable**
In case of retreat- or settlement movements in the concrete structure, the core can deform itself without breaching its adhesion.
The connection is maintained.

Water **cannot pass** around the BFL-Mastix waterstops.
Water **cannot flow** along the waterstops.



Water **cannot pass** around the BFL-Mastix waterstops
Water **cannot flow** along the waterstops

1 The physical-chemical connection of the fine crushed gravel with the cement paste is waterproof, as well as the connection of aggregates with cement paste.

2 The physical connection of the limestone with the band core is waterproof, because the fine crushed gravel has been anchored mechanically on the core.

Définitions:

fine crushed gravel	refers to the BFL-Mastix waterstop.
aggregate	refers to the concrete structure.

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Waterproofing

Waterproofing of joints

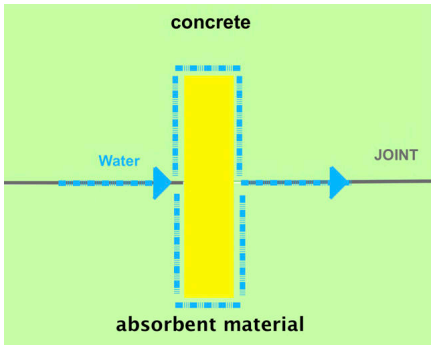
Why are BFL-Mastix waterstops with fine crushed gravel coated ?

A **hydrophobic** material is water repellent or is repelled from water.

A **hydrophobic** material cannot adhere on fresh concrete, because a physical-chemical adhesion between both materials is not possible.

Fresh concrete cannot adhere on hydrophobic material like metal, PVC, oiled formwork panels, etc. ...

Place *a bit concrete on a plastic bag. You will see, that after hardening, the concrete does not adhere on the bag (hydrophobic material).*



Water can circulate between a hydrophobic material and concrete.

An **absorbent** Material absorbs water.

An **absorbent** material can combine itself with fresh concrete, because a physical-chemical connection is built up.
Cement paste is then penetrating the pores of the absorbent material.

Fresh concrete is adhering on absorbent materials, such as bricks, hard concrete, limestone gravel, and others.
Cement paste is then penetrating the pores of the absorbent material.

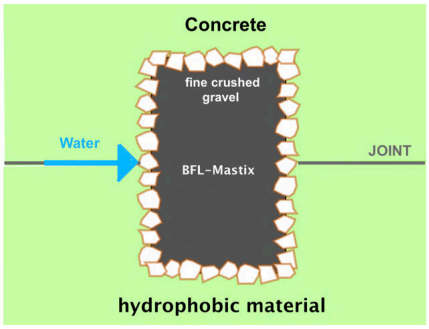
The limestone gravel covering the BFL-Mastix waterstops is **absorbent.**
It is a porous, rough and clean limestone.
The grain size is classified 4/8 mm.
The limestone gravel is tightly, mechanically anchored on the core.

Concrete *is a material composed of a mix of sand/gravel, cement and additives.*

Fresh concrete *is the situation after its mixing until the final hardening.*

Hard concrete *is absorbent.*

Fresh concrete adheres on a hard one and on ***BFL-Mastix waterstops****, thanks to the limestone gravel coating.*



Water cannot circulate between an absorbent material and the concrete

Thanks to their gravel coating, BFL-Mastix waterstops are tightly sticking to the concrete.

The connection between BFL-Mastix waterstops and the concrete is waterproof.

BFL-Mastix waterstops form a barrier blocking the water circulation.

Water cannot, neither circulate along the BFL-Mastix waterstops, nor pass around them in a concrete structure joint.