

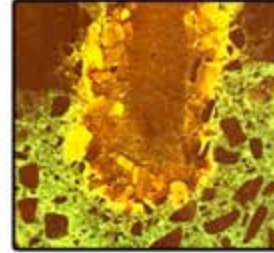
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BFL-Mastix bands **Joints in concrete structures**

Work joint
Strinkage joint
Setting joint
Programmed shrinkage joint



The essential of BFL-Mastix waterproofing bands

Composition

Compatibility

Watertightness

Behaviour

The BFL-Mastix bands



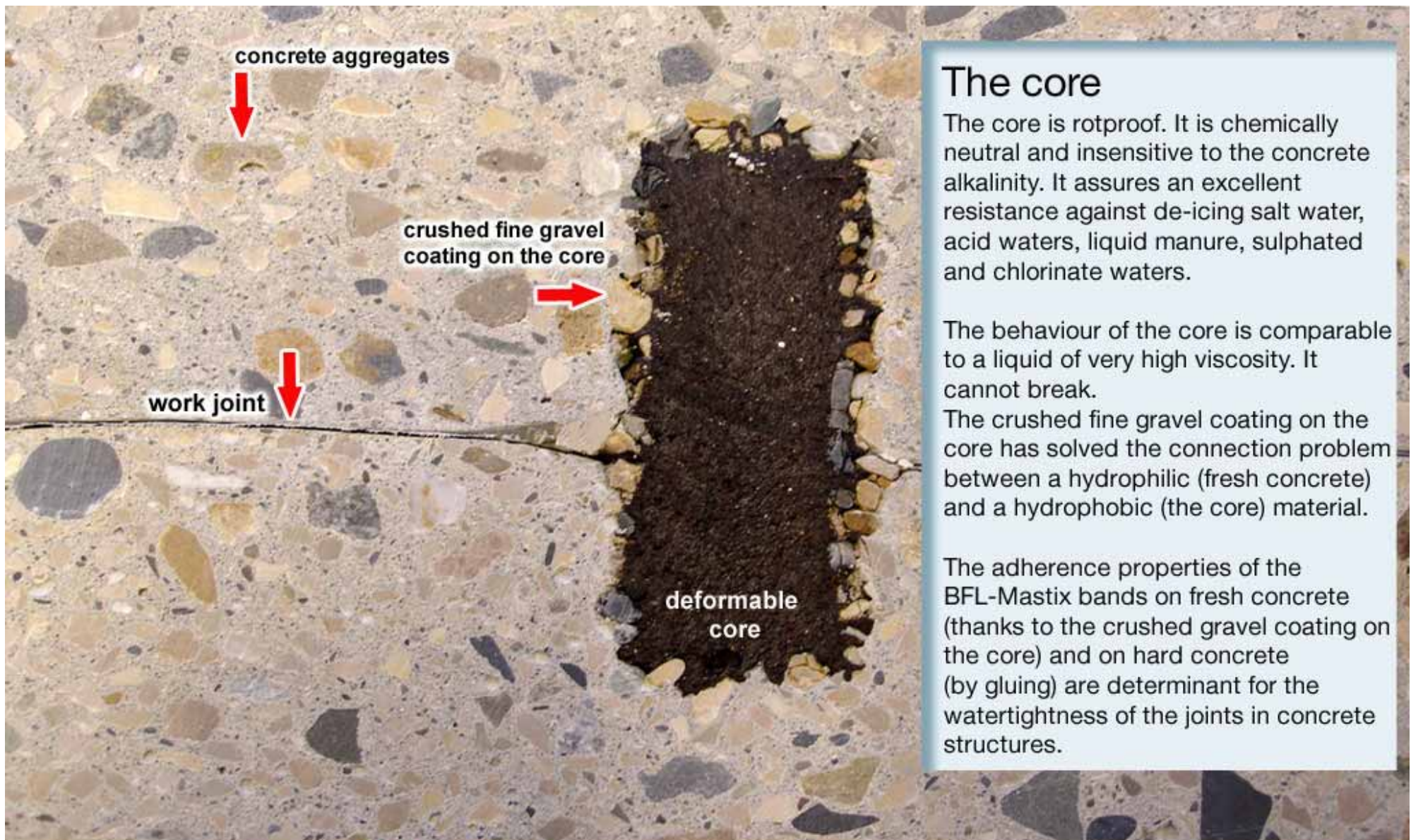
The bands **BFL-Mastix** are products designed to assure a durable watertightness of joints in concrete structures

The BFL-Mastix bands consist of a plastified synthetic rubber core of rectangular section, with fine gravel coating on all four sides, on three sides or not at all. The BFL-Mastix bands behave like a visco-elastic or a visco-plastic body.

The long term efficiency of the BFL-Mastix bands is assured by two unique properties, **the adherence on the adjacent concrete and their capacity to adapt themselves to the deformations** which the concrete structure is undergoing (shrinkage, settling, vibrations, earthquake).

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A1



The core

The core is rotproof. It is chemically neutral and insensitive to the concrete alkalinity. It assures an excellent resistance against de-icing salt water, acid waters, liquid manure, sulphated and chlorinate waters.

The behaviour of the core is comparable to a liquid of very high viscosity. It cannot break.

The crushed fine gravel coating on the core has solved the connection problem between a hydrophilic (fresh concrete) and a hydrophobic (the core) material.

The adherence properties of the BFL-Mastix bands on fresh concrete (thanks to the crushed gravel coating on the core) and on hard concrete (by gluing) are determinant for the watertightness of the joints in concrete structures.

The adherence of the **BFL-Mastix** bands in fresh concrete has been solved by its crushed fine graveling on the core.

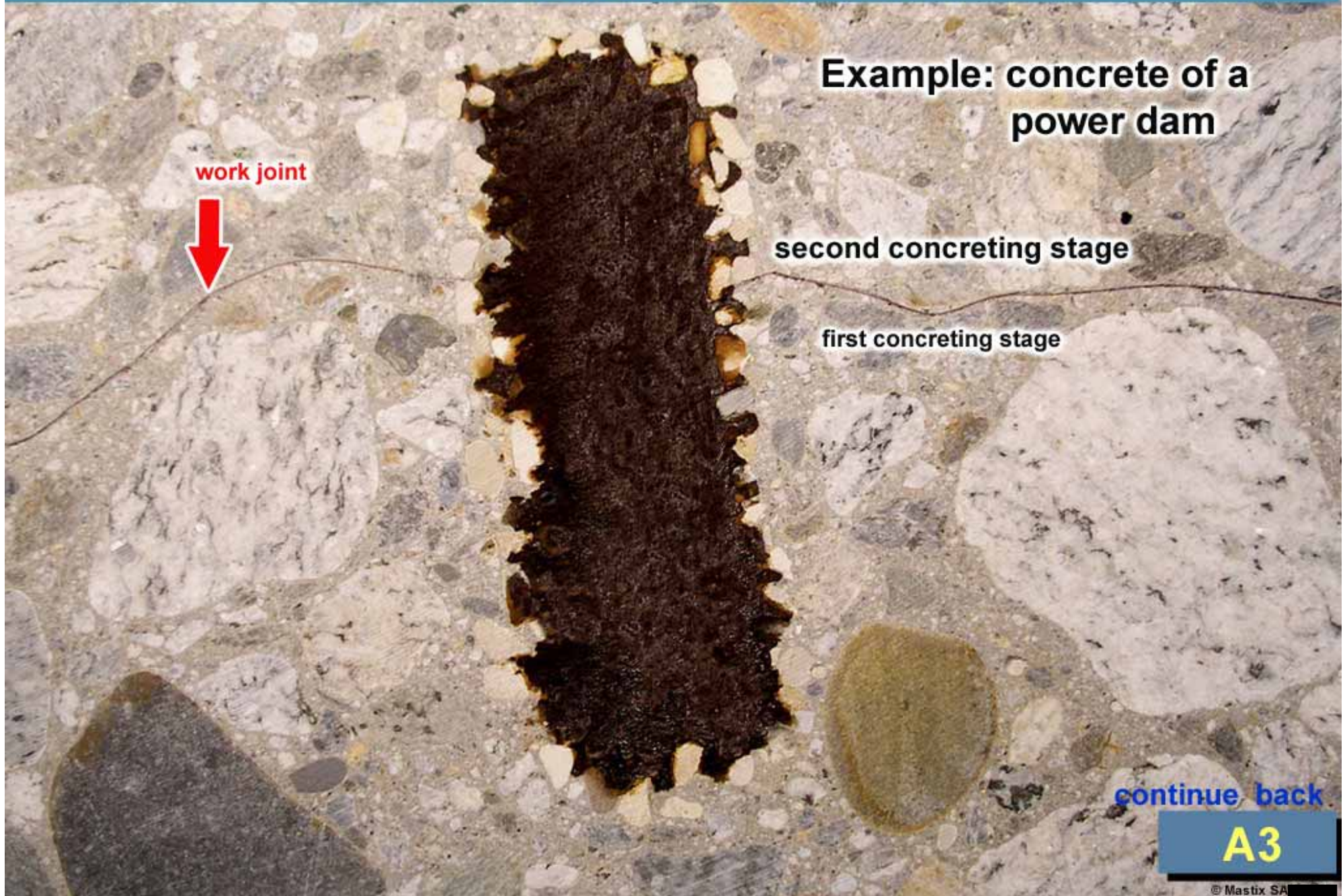
The gravel coating on the core forms an anchor surface against the very humid fresh concrete. This coating becomes part of the aggregates and the cement paste of the adjacent concrete.

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A2

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Compatibility of the bands **BFL-Mastix** with the concrete and the concrete structures



Example: concrete of a power dam

work joint



second concreting stage

first concreting stage

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A3

Case of a concrete with aggregates 0–16 mm



Case of a concrete with aggregates 0–32 mm



BFL-Mastix bands are compatible
with all types of concrete

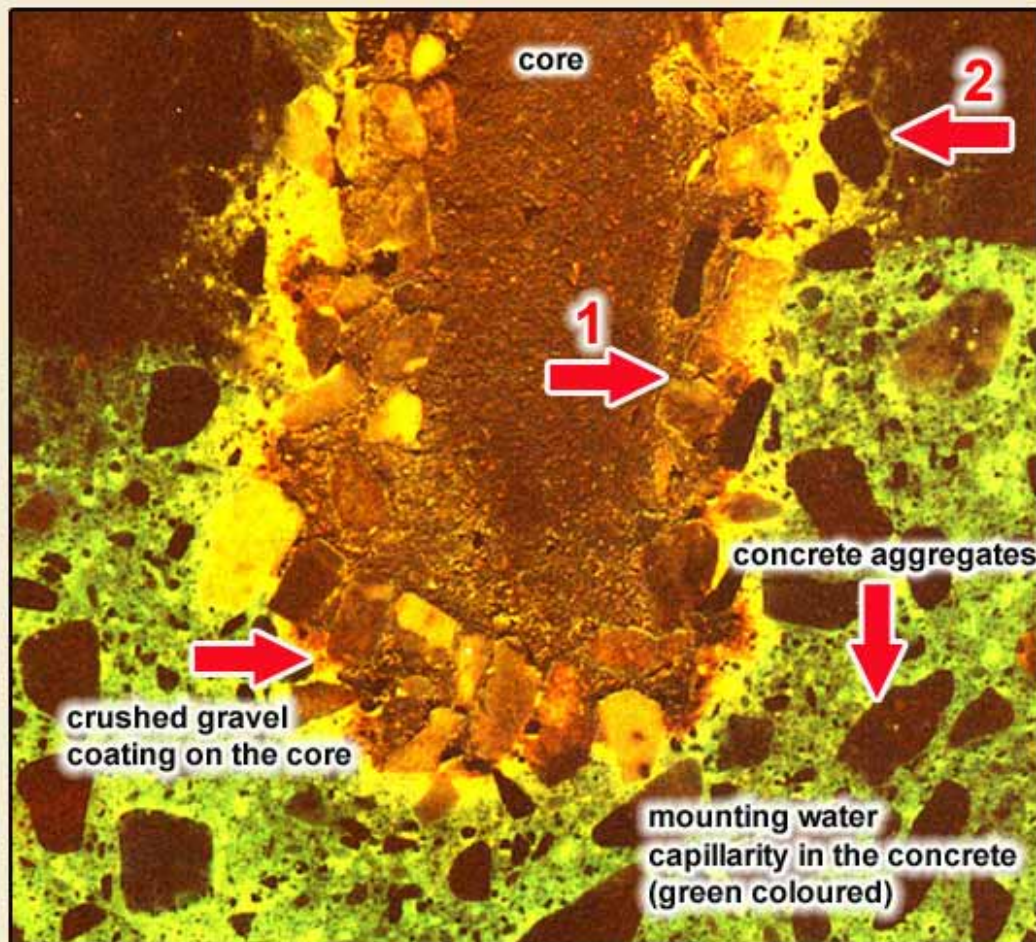
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A4

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The bands **BFL-Mastix** are products designed to fulfil all conditions to assure the durable watertightness of joints in concrete structures.

- **Absence of capillarity**
- **Watertightness under pressure**



Test

A test of capillary penetration in the TFB labs has shown the absence of capillary water movements in the interface between the core and its crushed gravel coating (1). No capillary water movement has been observed between the gravel coating and the concrete (2).



The **BFL-Mastix** bands are fully compatible with the material concrete. The bands act as a barrier opposed to the passage of the water.

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Test

A test for watertightness has been carried out in a pressure chamber over a period of 159 days, with a maximum pressure of 10 bar, corresponding to a water column of 100 m.

No trace of humidity in the lower part of the test cube (3) has been observed.

It is recommended to take some constructive precautions in order to avoid a larger opening of the shrinkage joint in the presence of water under pressure.

R4 1/2 D through a string of epoxy glue.

return

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Behaviour of the core depending on temperature

-20°C

0°C

Visco-elastic behaviour

From -20 °C to +40 °C the core of the BFL-Mastix bands reacts under stress by **an elastic deformation**.

40°C

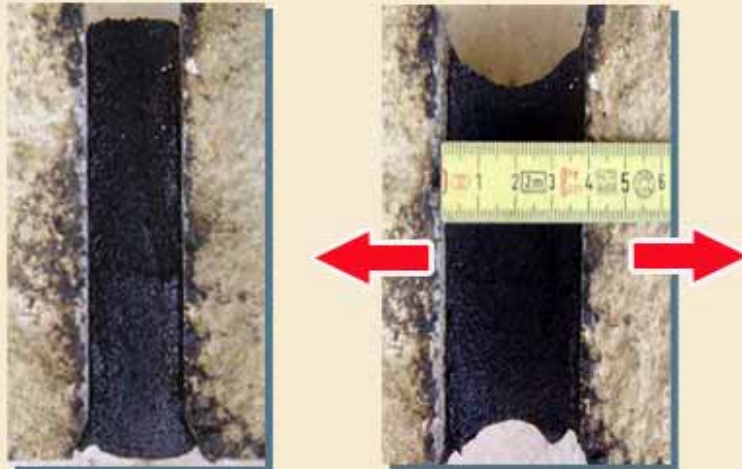
80°

100°C

Visco-plastic behaviour

At temperatures above 40 °C, when the elasticity limit of the core is exceeded under stress, it results in **a permanent deformation of the core**.

Elasticity : property of a body to return to its initial shape after a deformation.



Elastic deformation of a non gravel coated band core under traction stress

Plasticity: capacity of a body to take on different forms.



Permanent deformation of a band BFL-Mastix glued on rock.

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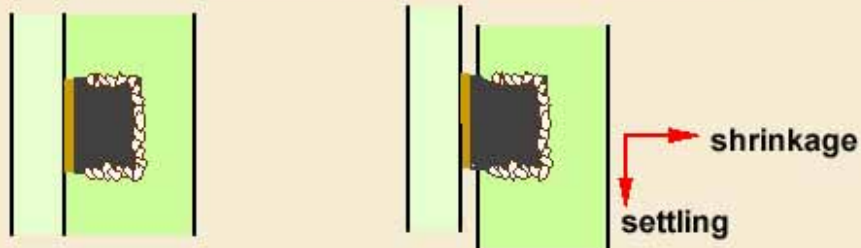


Band R4 1/2

Band R4 1/2 D

Half the perimeter of these two band types is not gravel coated. In this way, a volume of the core material is available to absorb shrinkage and settling movements.

This volume is an elastic reserve that deforms under stress, thus avoiding to weaken the glued interface and the gravel coating.



Hot gluing of a band **BFL-Mastix 40/70 R** on an existing concrete.

The heat treatment allows the band to adhere perfectly to the existing concrete surface relief.

