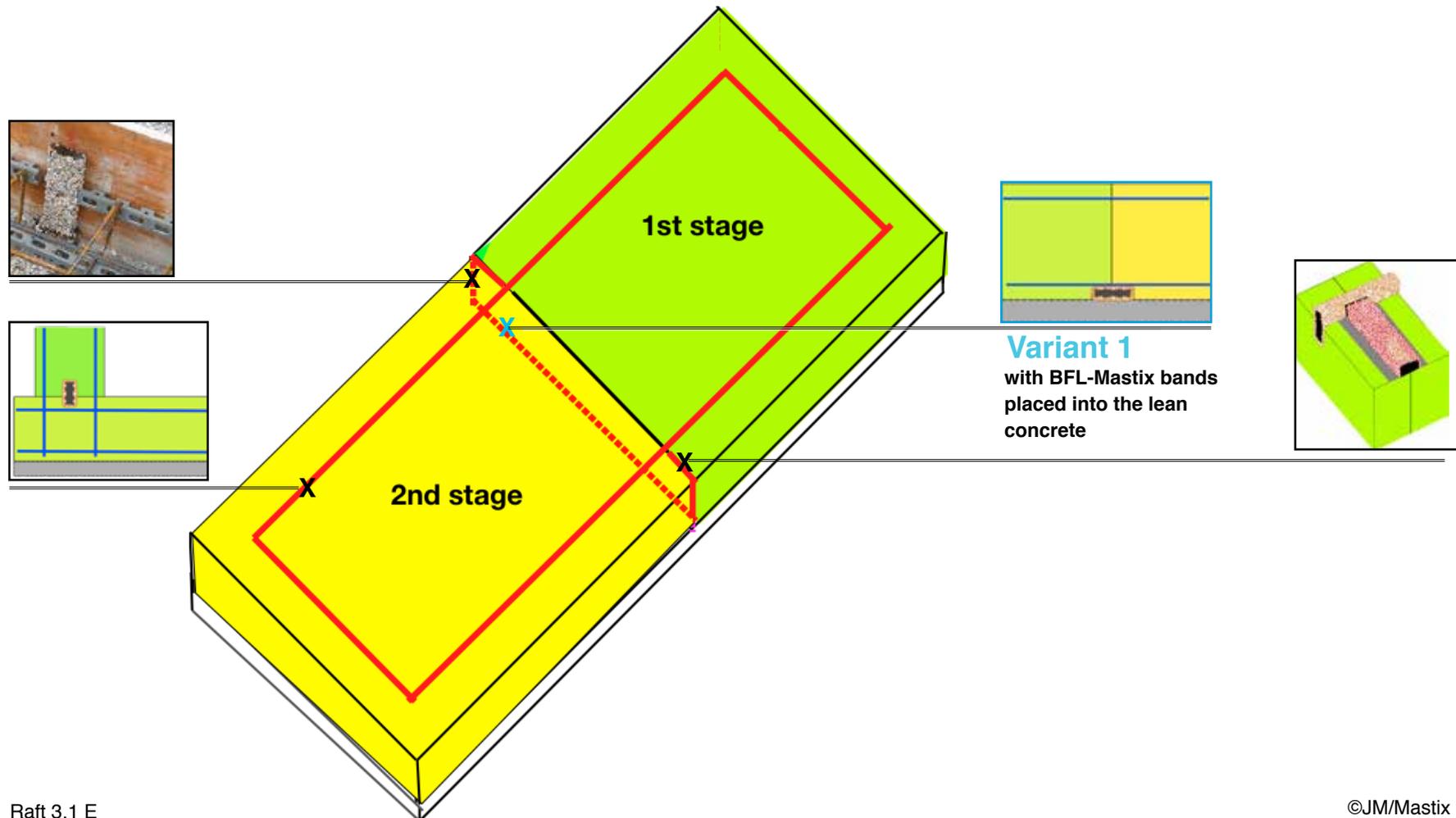


3.1 Carrying out of a raft in two stages or more, using

BFL-Mastix bands for the waterproofing between the concreting stages of the raft and between raft and walls

Variant 1 with BFL-Mastix bands placed into the lean concrete



3.1 Carrying out of a raft in two stages or more, using **BFL-Mastix bands** for the waterproofing between the concreting stages of the raft and between raft and walls

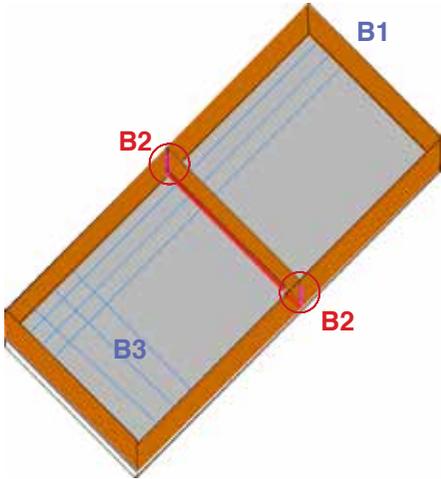
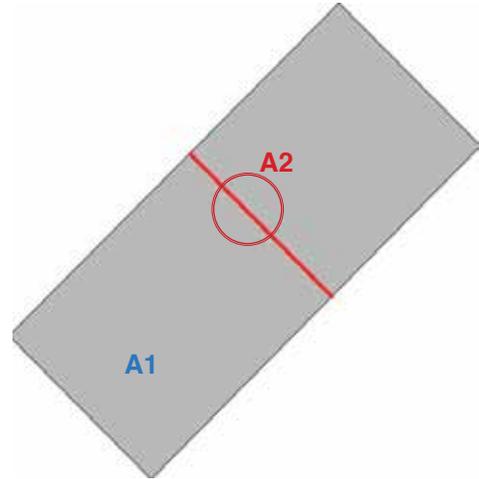
Procedures

A 

waterproofing against capillary water from subsoil

B 

Waterproofing against lateral infiltrations



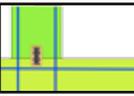
A1 Carrying out of the lean concrete layer

A2 Placing of **BFL-Mastix bands type R or R4** on the lean concrete

B1 Formwork

B2 Placing of **BFL-Mastix bands type R or R4** on formwork

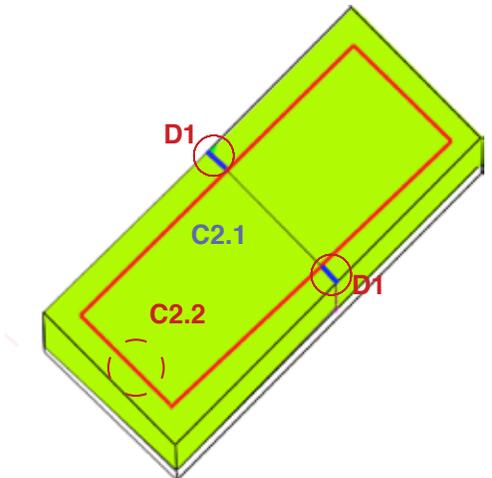
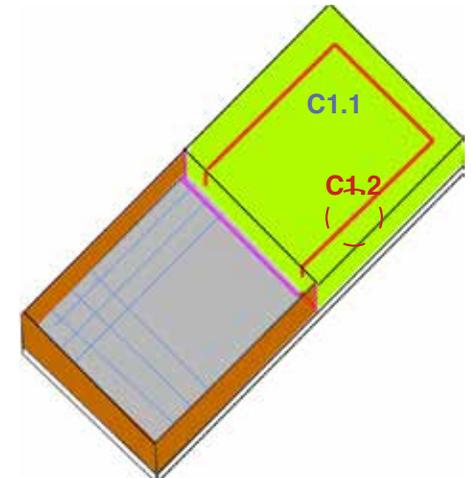
B3 Placing of the rebars

C1 

waterproofing of joints between raft and walls

C2 - D  

- waterproofing of joints between raft and walls
- waterproofing against infiltration along the work joint



C1.1 Placing of the concrete

C1.2 Introducing the **BFL-Mastix bands type R4** into the fresh concrete

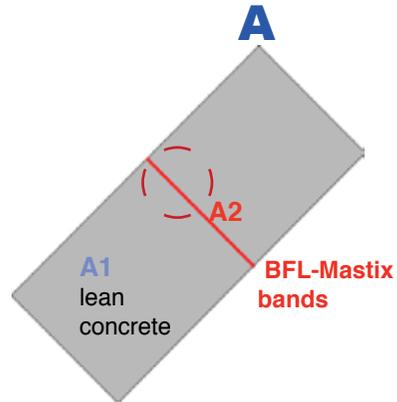
C2.1 Placing of the concrete

C2.2 Introducing of bands **BFL-Mastix type R4** into the fresh concrete

D1 Placing of bands **BFL-Mastix type R**

3.1 Carrying out of a raft in two stages or more, using **BFL-Mastix bands** for the waterproofing between **the concreting stages of the raft** and between **raft and walls**

Procedure A waterproofing against capillary water from subsoil



A1 Carrying out of the lean concrete layer

A2 Placing of **BFL-Mastix bands** on the lean concrete

A2.1 Variant 1 : **BFL-Mastix bands type R** glued on the lean concrete

A2.2 Variant 2 : **BFL-Mastix bands type R4** placed into the the lean concrete



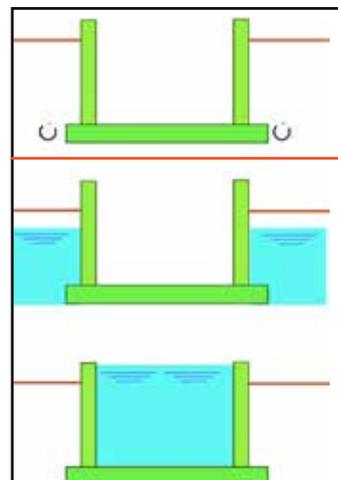
Variante 2
BFL-Mastix bands type R4
placed into the the lean concrete



Variante 1
BFL-Mastix bands type R
glued on the lean concrete

Choice of a BFL-Mastix band

Risk of water infiltration



subsoil water
- rain
- spring
20/70 R
or
20/70 R4

water level
- permanent
- intermittent
20/120 R
or
20/120 R4

- swimming
- basin
- reservoir
20/120 R4

Text :
BFL-Mastix bandsR
glued on the lean concrete

Text :
BFL-Mastix bandsR4
placed into the the lean
concrete

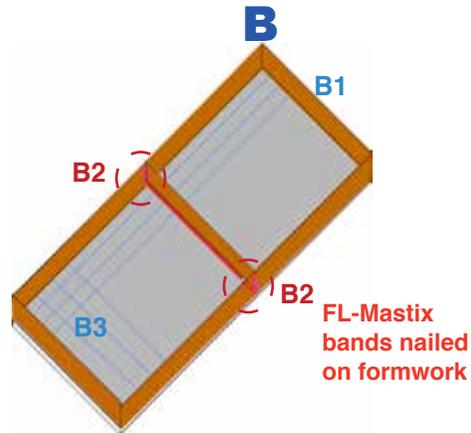
page 11 :
Procedure for placing bands type R
page 12 : Catalogue of BFL-Mastix waterproofing
bands R

pages 8 and 9:
Procedure for placing bands type R4
page 10 : Catalogue of BFL-Mastix waterproofing
bands R4

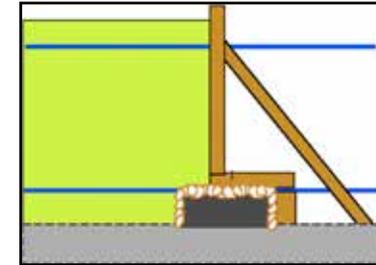
3.1 Carrying out of a raft in two stages or more, using **BFL-Mastix bands** for the waterproofing between **the concreting stages of the raft** and between **raft and walls**



Procedure B Waterproofing against lateral infiltrations



- B1** Shuttering
- B2** **BFL-Mastix bands** nailed on formwork
 - B2.1 Variante 1** : BFL-Mastix bands type R
 - B2.2 Variante 2** : BFL-Mastix bands type R4
- B3** Placing of the rebars



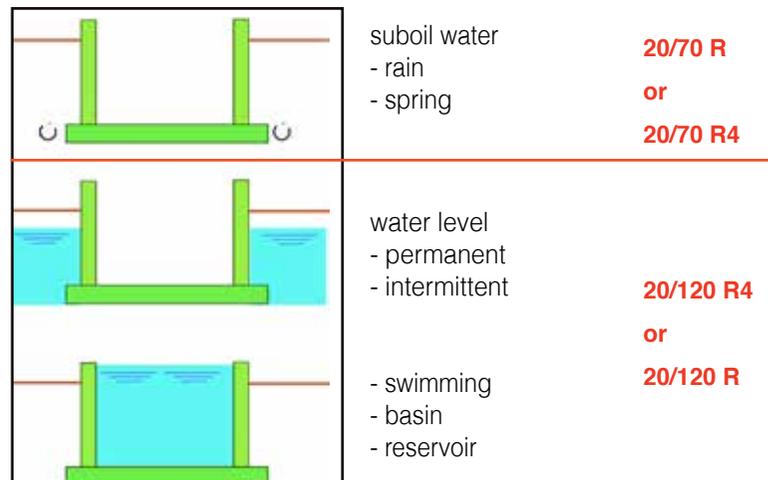
Example of the formwork for a work joint



B2 Connection of bands black on black between horizontal and vertical bands

Choice of a BFL-Mastix band

Risk of water infiltration



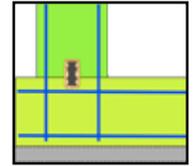
Text :
BFL-Mastix bandsR
nailed on formwork

page 11 :
Procedure for placing bands type R
page 12 : Catalogue of BFL-Mastix waterproofing bands R

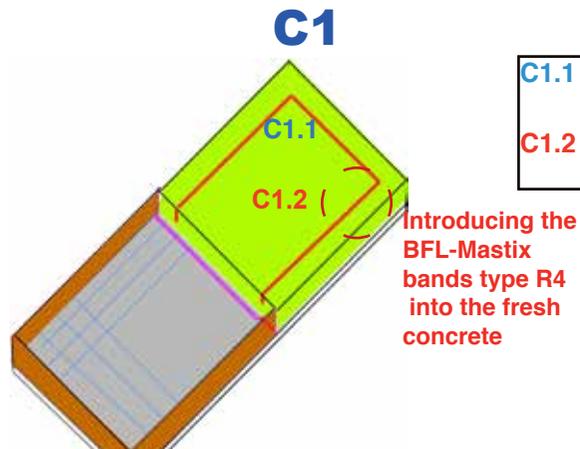
Text :
BFL-Mastix bandsR4
nailed on formwork

pages 8 and 9:
Procedure for placing bands type R4
page 10 : Catalogue of BFL-Mastix waterproofing bands R4

3.1 Carrying out of a raft in two stages or more, using BFL-Mastix bands for the waterproofing between the concreting stages of the raft and between raft and walls



Procedure C1 waterproofing of joints between raft and walls



C1.1 Concreting of the first raft stage
C1.2 BFL-Mastix bands type R4 placed into the raft concrete

Introducing the BFL-Mastix bands type R4 into the fresh concrete



Introducing the BFL-Mastix bands type R4 into the fresh concrete

Choice of a BFL-Mastix band

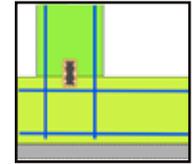
Risk of water infiltration

	subsoil water	
	- rain	20/40 R4
	- spring	30/40 R4
	water level	
	- permanent	20/70 R4
	- intermittent	30/40 R4
		40/50 R4
	- swimming basin	40/70 R4
	- reservoir	

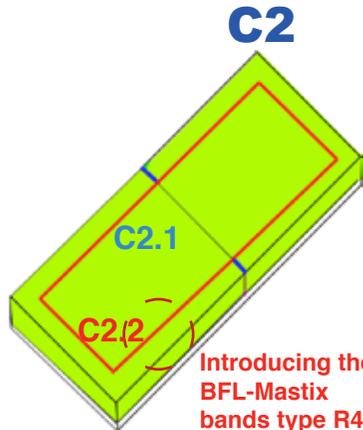
Text :
 BFL-Mastix bands.....R4 placed into the raft concrete

pages 8 and 9:
 Procedure for placing bands type R4
page 10 : Catalogue of BFL-Mastix waterproofing

3.1 Carrying out of a raft in two stages or more, using **BFL-Mastix bands** for the waterproofing between **the concreting stages of the raft** and between **raft and walls**



Procedure **C2** waterproofing of joints between raft and walls



Introducing the BFL-Mastix bands type R4 into the fresh concrete

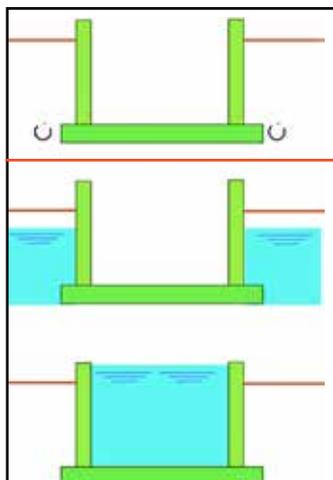
C2.1 Concreting of the second raft stage
C2.2 BFL-Mastix bands type R4 placed into the raft concrete



BFL-Mastix bands type R4 placed into the raft concrete

Choice of a BFL-Mastix band

Risk of water infiltration



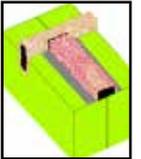
- subsoil water
 - rain **20/40 R4**
 - spring **30/40 R4**

- water level
 - permanent **20/70 R4**
 - intermittent **30/40 R4**
- swimming **40/50 R4**
 - basin **40/70 R4**
 - reservoir

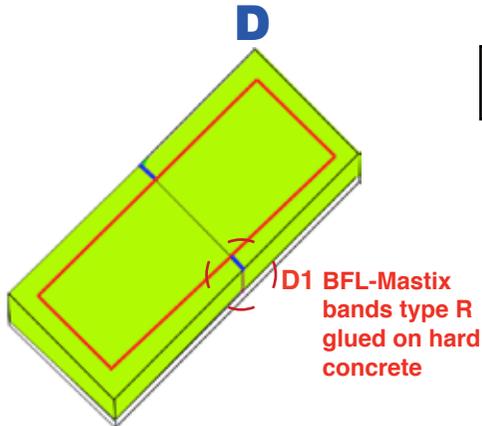
Text :
 BFL-Mastix bands.....
 R4
 placed into the raft concrete

pages 8 and 9:
 Procedure for placing bands type R4
page 10 : Catalogue of BFL-Mastix waterproofing bands R4

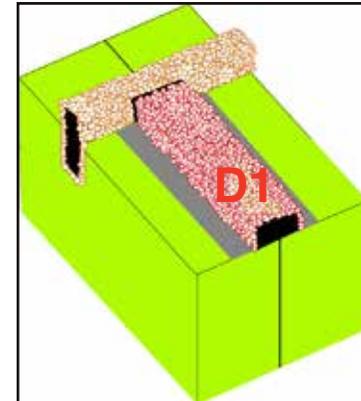
3.1 Carrying out of a raft in two stages or more, using **BFL-Mastix bands** for the waterproofing between **the concreting stages of the raft** and between **raft and walls**



Procedure **D** waterproofing against infiltration along the work joint

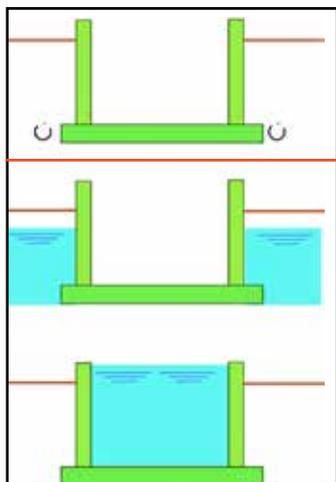


D1 Gluing of **BFL-Mastix bands type R** on hard concrete with BFL-Primer



Choice of a BFL-Mastix band

Risk of water infiltration



subsoil water
- rain
- spring
20/40 R

water level
- permanent
- intermittent
20/40 R

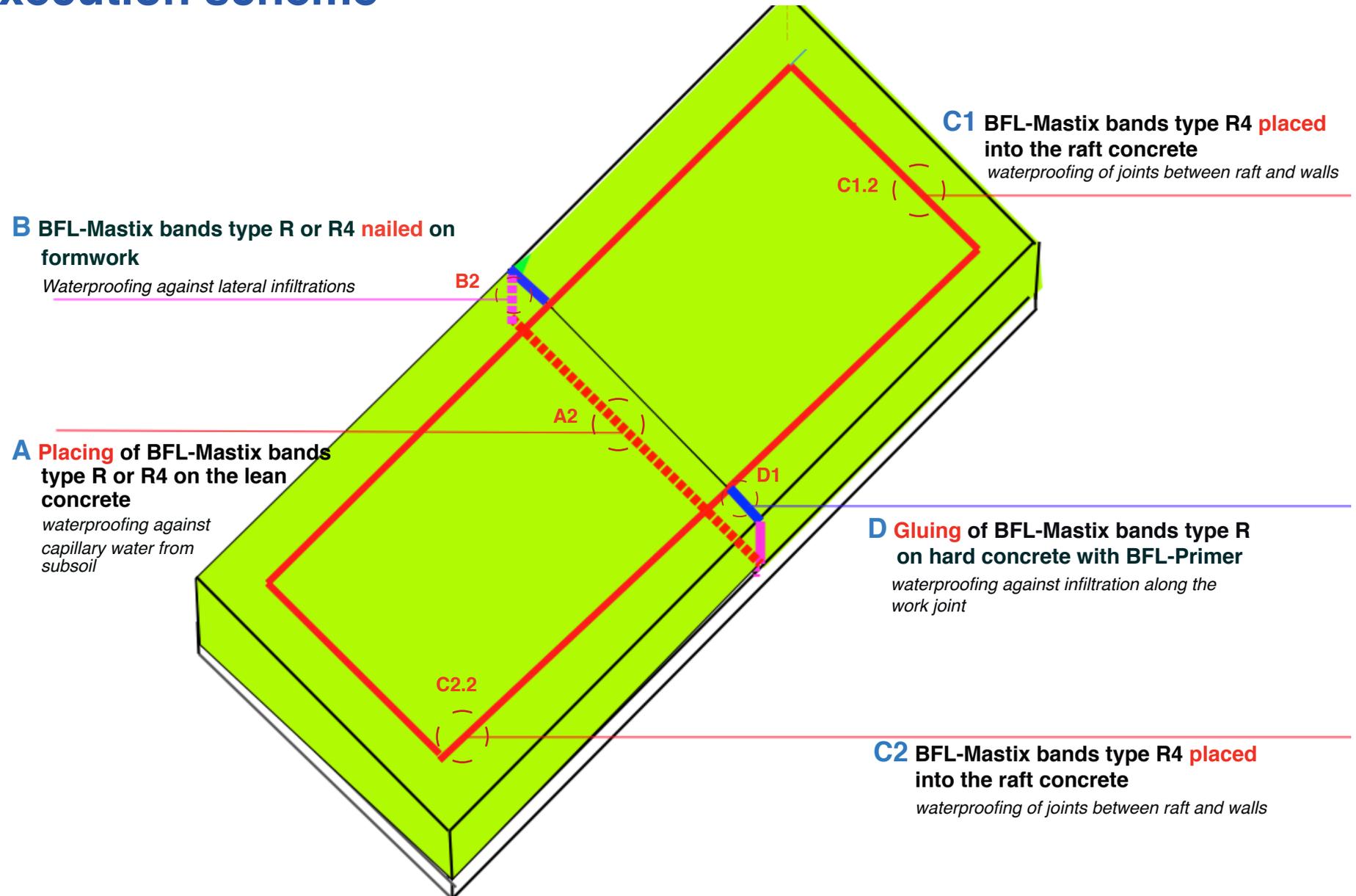
- swimming
- basin
- reservoir

Text :
BFL-Mastix bands R
glued on hard concrete

page 11 :
Procedure for placing bands type R
page 12 : Catalogue of BFL-Mastix waterproofing bands R

3.1 Carrying out of a raft in two stages or more, using BFL-Mastix bands for the waterproofing between the concreting stages of the raft and between raft and walls

Execution scheme



3.1 Carrying out of a raft in two stages or more, using **BFL-Mastix bands** for the waterproofing between **the concreting stages of the raft** and between **raft and walls**

Procedure for placing BFL-Mastix bands type R4 into the fresh raft concrete

Material

A small propane gas burner - a spatula for cutting the bands - In order to avoid injuries, gloves and protection goggles should be used

Procedure

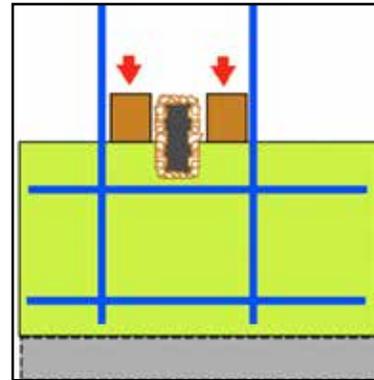
- **BFL-Mastix bands type R4 are incorporated into the fresh raft (1)** The appropriate moment depends on the workability of the concrete
- For facilitating the placing of the bands, a ruler or a lath can be used to shape a groove in the concrete.
- At the end of the placing work, **a short vibrating around the bands will definitely combine the band and the concrete.**
- The connection between bands or between preassembled band parts is done **with a small bottle-gas burner (2)**
- **The BFL-Mastix bands must be protected** in circulation areas **(3)**
- **For avoiding a loss of cement milk**, it is necessary that the foot of the wall formwork is watertight. This, to avoid the formation of gravel nests and a loss of the concrete resistance **(4)**.



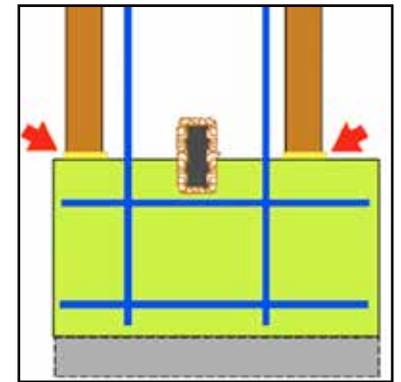
1



2



3



4

3.1 Carrying out of a raft in two stages or more, using **BFL-Mastix bands** for the waterproofing between **the concreting stages of the raft** and between **raft and walls**

Recommendations for placing the BFL-Mastix bands

- **Joining bands is done with the help of a small propane gas burner.** This operation consists of heating rapidly both band ends and press them together **(1,2,3)**. Perpendicular joints are made by scratching off the fine gravel and heating the surface to be glued **(4)**.
- BFL-Mastix bands must be protected in areas where workers are circulating **(5)**.
- **Washing the work joint surface is necessary before placing the wall formwork.** It is also necessary to saturate this surface with water, when it is windy, so that the water in the fresh wall concrete is not absorbed by the dry raft concrete: blotting paper effect **(6)**.
- To avoid that a steel formwork crashes the incorporated bands, some preventive measures are necessary by introducing a space under the formwork **(7)**.
- To avoid the loss of cement milk, the formwork foot must be watertight. This, to avoid formation of gravel nets and a loss of compressive strength in the concrete **(8)**.



1



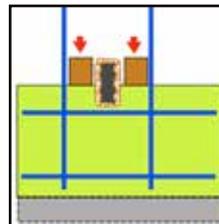
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3



4



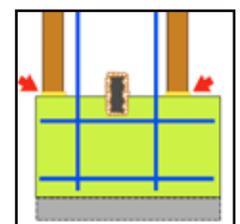
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6



7



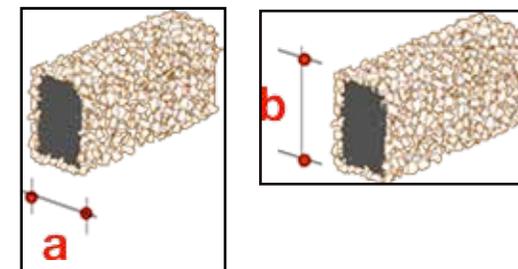
8

3.1 Carrying out of a raft in two stages or more, using **BFL-Mastix bands** for the waterproofing between **the concreting stages of the raft** and between **raft and walls**

Catalogue of BFL-Mastix waterproofing bands R4

Bands	Dimensions		Length cm	Packaging m'/box	Weight kg/m'
	cm a	cm b			
20/40 R4	3.00	6.00	60.00	12.00	2.40
20/70 R4	3.00	9.00	60.00	6.00	4.00
20/120 R4	12.00	3.00	60.00	6.00	5.50
30/40 R4	4.00	6.00	60.00	9.00	3.50
40/50 R4	5.00	7.00	60.00	6.00	5.00
40/70 R4	5.00	9.00	60.00	6.00	5.50
40/100 R4	5.00	12.00	60.00	3.60	7.00

Bands	Dimensions		Length in.	Packaging ft./box	Weight lb./ft.
	in. a	in. b			
20/40 R4	1.18	2.36	23.62	39.37	1.61
20/70 R4	1.18	3.54	23.62	19.68	2.68
20/120 R4	4.72	1.18	23.62	19.68	3.69
30/40 R4	1.57	2.36	23.62	29.52	2.35
40/50 R4	1.96	2.75	23.62	19.68	3.35
40/70 R4	1.96	3.54	23.62	19.68	3.69
40/100 R4	1.96	4.72	23.62	11.81	4.70



Placing yield

- With two workmen it is generally possible to place some **25 to 30 m²/hour** of **BFL-Mastix bands type R4**

Storing conditions

- covered shelter
- In case of packaging damage, the bands will be put in a new box.

Compatibility of BFL-Mastix bands with concrete

- Thanks to the gravel coating of the core, the **BFL-Mastix bands assure a perfect liaison with fresh concrete.**
- **The fine crushed gravel is not alkali-reactive.**
- **The core of the BFL-Mastix bands is form-stable in the presence of water, the bands do not swell.**

3.1 Carrying out of a raft in two stages or more, using **BFL-Mastix bands** for the waterproofing between **the concreting stages of the raft** and between **raft and walls**

Procedure for placing bands type R

Material

A small propane gas burner - a spatula for cutting the bands - In order to avoid injuries, gloves and protection goggles should be used -

Procedure

- **The gluing surface must be clean and dry.** The surface treatment is made by brushing, sand blasting or high pressure water. A rough surface is better than a smooth one.
- Applying a BFL-Primer paint results in a **better impermeabilization of the gluing surface.** The BFL-Primer reinforces also the gluing quality on old concrete **(1,2)**.
- The gluing surface is heated up to **a minimum of 100 °C (212 °F) (3)**. When the BFL-Mastix bands enter in contact with the heated support surface, the band surface becomes liquid. **The material of the core can therefore penetrate into the pores of the concrete and form a mechanical anchorage .**
- **For heating the gluing surface,** a propane gas burner with a jet diameter of 20 to 25 mm is used **(4)**.
- Before placing the bands on the heated concrete, **their surface must be flamed.** This means to pass with the gas flame over the naked band surface.**(5)**.
- **It is recommended to proceed to an adhesion test to control every time the strength of the gluing (6).**
- Joining bands is done with the help of a small propane gas burner. This operation consists of heating rapidly both band ends and press them together **(7,8,9)**. Perpendicular joints **are made by scratching off the fine gravel and heating the surface to be glued (10)**



1



2



3



4



5



6



7



8



9

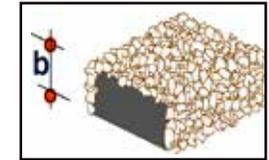
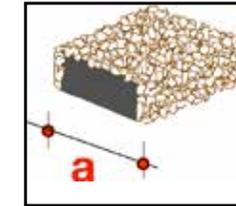


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3.1 Carrying out of a raft in two stages or more, using **BFL-Mastix bands** for the waterproofing between **the concreting stages of the raft** and between **raft and walls**

Catalogue of BFL-Mastix waterproofing bands R

Bands	Dimensions		Length cm	Packaging m ² /box	Weight kg/m ²
	cm a	cm b			
15/30 R	4.00	2.00	60.00	21.00	1.00
20/40 R	5.00	2.50	60.00	12.00	1.80
20/70 R	8.50	2.50	60.00	6.00	2.80
20/120 R	13.00	2.50	60.00	6.00	4.50
30/40 R	5.00	3.50	60.00	9.00	2.50
40/50 R	6.00	4.50	60.00	6.00	4.00
40/70 R	8.00	4.50	60.00	6.00	4.50
40/100 R	11.00	4.50	60.00	3.60	6.00
BFL-Primer	can of 1kg				



Bands	Dimensions		Length in.	Packaging ft./box	Weight lb./ft.
	in. a	in. b			
15/30 R	1.57	0.78	23.62	68.89	0.67
20/40 R	1.96	0.98	23.62	39.37	1.20
20/70 R	3.34	0.98	23.62	19.68	1.88
20/120 R	5.11	0.98	23.62	19.68	3.02
30/40 R	1.96	1.37	23.62	29.52	1.67
40/50 R	2.36	1.77	23.62	19.68	2.68
40/70 R	3.14	1.77	23.62	19.68	3.20
40/100 R	4.33	1.77	23.62	11.81	4.93
BFL-Primer	can of 2.20 lb.				

Placing yield

- With two workmen it is generally possible to place some **25 to 30 m²/hour** of **BFL-Mastix bands type R**

Storing conditions

- covered shelter
- In case of packaging damage, the bands will be put in a new box.

Compatibility of BFL-Mastix bands with concrete

- Thanks to the gravel coating of the core, the BFL-Mastix bands assure a perfect liaison with fresh concrete.
- The fine crushed gravel is not alkali-reactive.
- **The core of the BFL-Mastix bands is form-stable in the presence of water, the bands do not swell.**

3.1 Carrying out of a raft in two stages or more, using **BFL-Mastix bands** for the waterproofing between **the concreting stages of the raft** and between **raft and walls**

Arguments in favour of BFL-Mastix bands **type R4**

Presentation of the bands

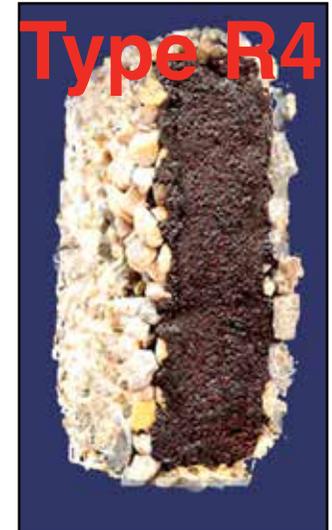
- BFL-Mastix bands are designed for a long term waterproofing of joints in concrete structures.
- The bands of type R4 consist of a deformable core, covered with crushed special fine gravel.
- The core of the BFL-Mastix bands type R4 behave like a liquid of very high viscosity.
- This is a deformable bituminous plasto-elastic polymer.
- The fine crushed gravel has the task to form an adhesion bridge between core and fresh concrete (concrete in liquid stage).
- The company Mastix SA. is certified ISO-2008, quality management.

Adherence in fresh concrete

- The very rough surface of the gravel covered BFL-Mastix band core offers an ideal base to assure a waterproof liaison with the fresh concrete.
- The fine crushed gravel, covering the band core is then enveloped in the same way by the cement milk as the sand/gravel of the concrete.
- **Fresh concrete adheres only on porous surfaces such as hard and clean concrete and the gravel covered core surfaces of BFL-Mastix bands.**
- Fresh concrete cannot adhere on impermeable surfaces, such as plastic, resins or metal.

On the job site

- BFL-Mastix bands type R4 placed into the concrete of a raft, remain insensitive against rain, snow or frost.
- **BFL-Mastix bands type R4 can remain, if necessary, uncovered for several weeks.**
- In case of intensive sunshine, the bands must be moistened as well as the raft concrete.



3.1 Carrying out of a raft in two stages or more, using **BFL-Mastix bands** for the waterproofing between **the concreting stages of the raft** and between **raft and walls**

Arguments in favour of BFL-Mastix bands **type R**

Presentation of the bands

- BFL-Mastix bands are designed for a long term waterproofing of joints in concrete structures.
- The bands of type R consist of a deformable core, covered with crushed special fine gravel on three faces
- The core of the BFL-Mastix bands type R behave like a liquid of very high viscosity.
- This is a deformable bituminous plasto-elastic polymer.
- The fine crushed gravel has the task to form an adhesion bridge between core and fresh concrete (concrete in liquid stage).
- The company Mastix SA. is certified ISO-2008, quality management.

Adherence on hard concrete and in fresh concrete

- BFL-Mastix bands type R adhere on hard concrete by hot gluing (thermal gluing), regardless the roughness of the contact surface. The temperature on the concrete surface must be at least 100 °Centigrades (212 ° Fahrenheit)
- The very rough surface of the gravel covered BFL-Mastix band core offers an ideal base to assure a waterproof liaison with the fresh concrete.
- The fine crushed gravel, covering the band core is then enveloped in the same way by the cement milk as the sand/gravel of the concrete.
- Fresh concrete adheres only on porous surfaces such as hard and clean concrete and the gravel covered core surfaces of BFL-Mastix bands.
- Fresh concrete cannot adhere on impermeable surfaces, such as plastic, resins or metal.

On the job site

- BFL-Mastix bands type R placed into the concrete of a raft, remain insensitive against rain, snow or frost.
- BFL-Mastix bands type R can remain, if necessary, uncovered for several weeks.
- In case of intensive sunshine, the bands must be moistened as well as the raft concrete.



**Adherence on
hard concrete**

3.1 Carrying out of a raft in two stages or more, using **BFL-Mastix bands** for the waterproofing between **the concreting stages of the raft** and between **raft and walls**

Technical specifications

The core of the BFL-Mastix bands

Bituminous rubber – density 1.28 g/cm³ – grey mat colour – consistency plasto-elastic – smooth surface – slightly smelling – square or rectangular sections – lengthening capacity between 200 and 380 %.

- Elasticity module

- at -20°C frequency 0,25 s 4,419 Mpa	- at 0°C frequency 0,25 s 0,477 Mpa
- at 0°C frequency 15,7 s 2,075 Mpa	- at 20°C frequency 0,25 s 0,133 Mpa
- at 20°C frequency 15,7 s 0,308 Mpa	- at 40°C frequency 0,25 s 0,049 Mpa
- at 40°C frequency 15,7 s 0,120 Mpa	

- Viscosity module

- at -20°C frequency 0,25 s 2,252 Mpa	- at 0°C frequency 0,25 s 0,309 Mpa
- at 0°C frequency 15,7 s 1,616 Mpa	- at 20°C frequency 0,25 s 0,056 Mpa
- at 20°C frequency 15,7 s 0,222 Mpa	- at 40°C frequency 0,25 s 0,024 Mpa
- at 40°C frequency 15,7 s 0,074 Mpa	

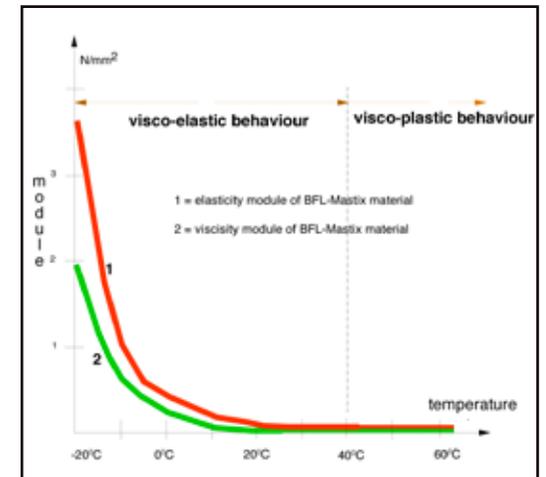
The behaviour of the core is comparable to liquid of very high viscosity. It cannot break

- return deformation : medium value of return deformation in % of the initial deformation

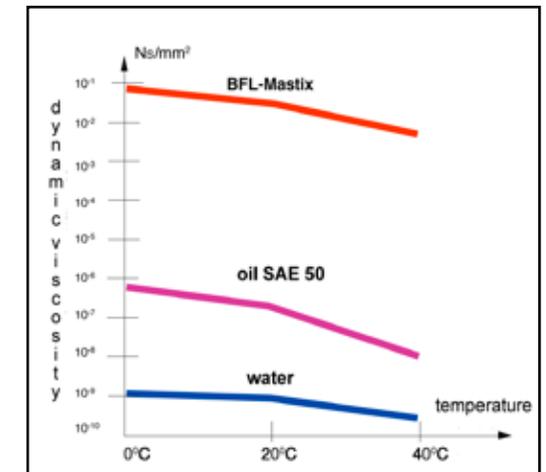
- at -20°C 60.8% after 15 minutes	- at -20°C 66 % after 60 minutes
- at 0°C 84.8% after 15 minutes	- at 0°C 89,2% after 60 minutes
- at 20°C 96.8% after 15 minutes	- at 20°C 100 % after 60 minutes
- at 40°C 98.0% after 15 minutes	- at 40°C 100 % after 60 minutes

Gravel covered bands

- The with fine gravel covered core surface is not alkali-reactive.
- The fine gravel is of 4/8 mm grain and mainly of calcareous rock.
- Integrated in concrete, the BFL-Mastix bands offer high resistance against chemical aggression and the alkalinity of the concrete.
- In possible contacts with petrol or hot oil in a basin, then the bands BFL-Mastix types 40/70 R4 or 40/100 R4 must be used for waterproofing joints between raft and walls.
- BFL-Mastix bands offer high resistance against deicing salt, acid water, liquid manure, sulfated or chlored water in swimming pools They offer also a high resistance against ammonium-sulfate 10 g/l, ammonium-chloride 10 g/l, caustic soda 30 g/l, ammonia 25 %, sulfuric acid 50 %, pure olein acid and ethyl alcohol (ethanol).
- Confined in concrete, BFL-Mastix waterstops are well protected against mechanical aggression, contrary to an external insulation, which in case of maintenance works, repairs or enlargements can easily suffer damages.



Temperature influence on the core material



Comparison of viscosity modules