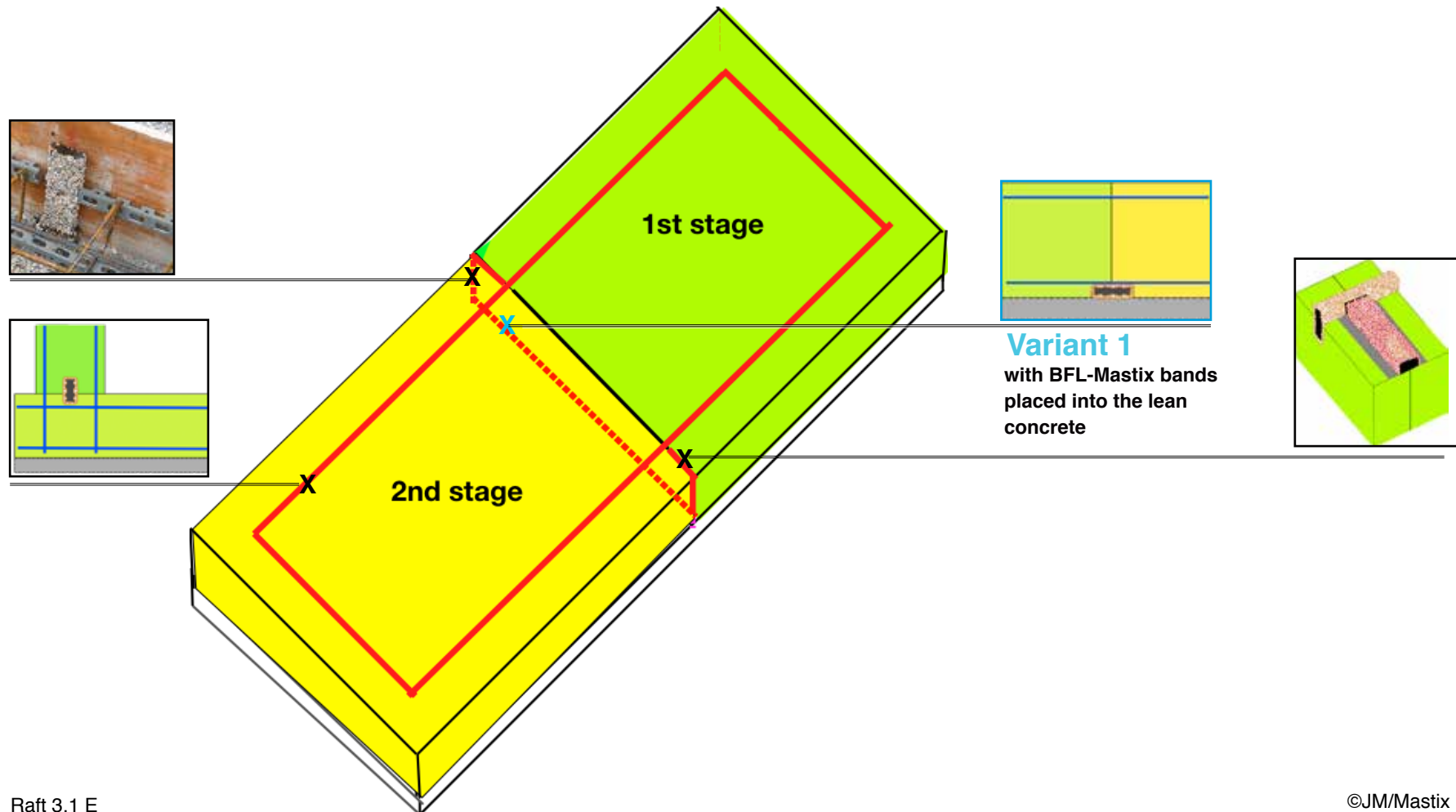



3.1 Carrying out of a raft in two stages or more, using **BFL-Mastix bands** for the waterproofing between the concreting stages of the raft and between raft and walls

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

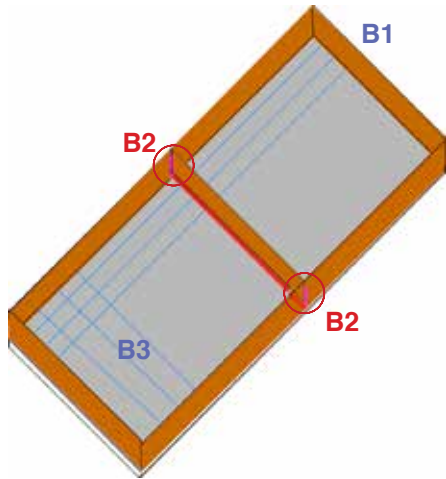
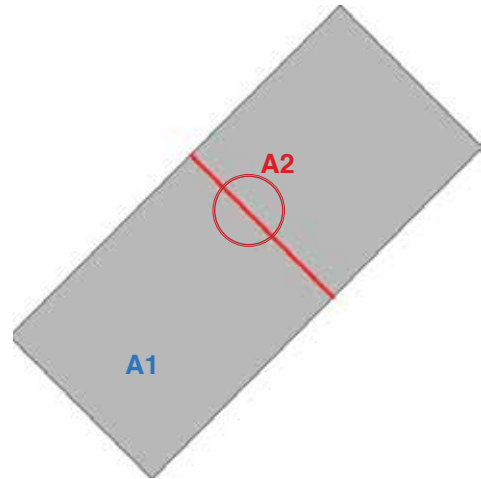
Procedures

A 

waterproofing against capillary water from subsoil

B 

Waterproofing against lateral infiltrations



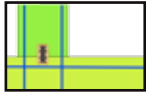
A1 Carrying out of the lean concrete layer

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

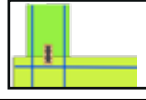

B1 Formwork

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

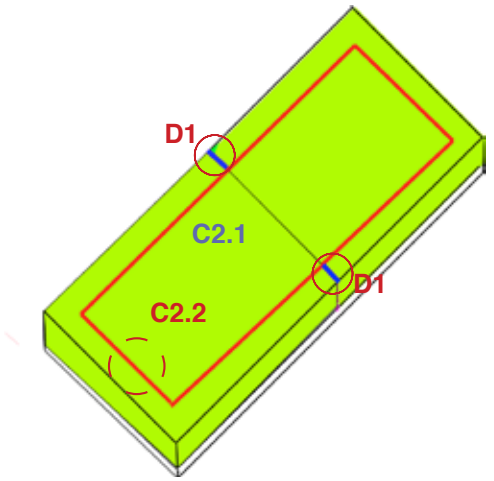
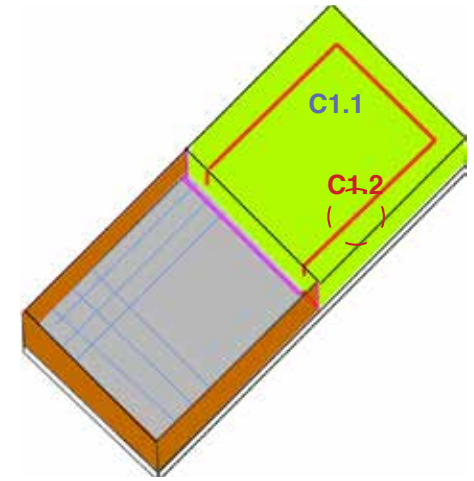
B3 Placing of the rebars

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

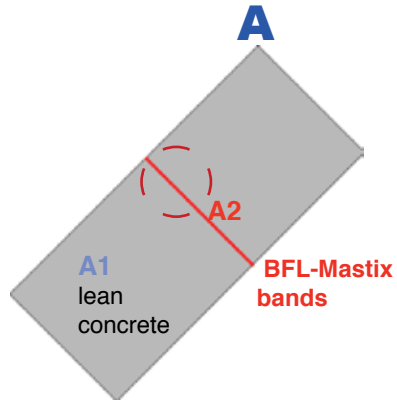
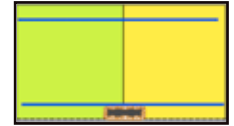
C2.1 Placing of the concrete

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



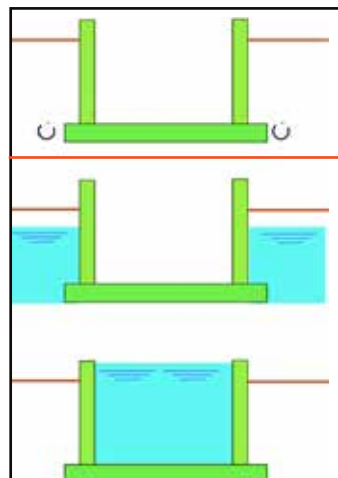
Variante 2
BFL-Mastix bands type R4
placed into the the lean concrete



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

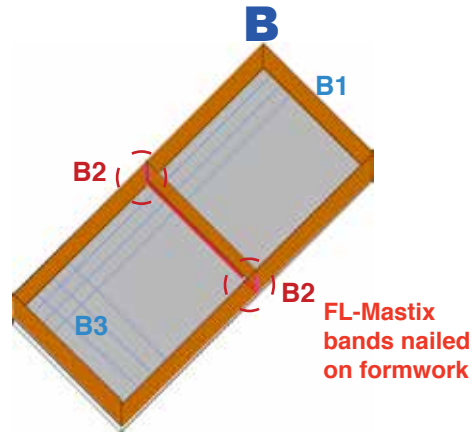
page 11 :
Procedure for placing bands type R
page 12 : Catalogue of BFL-Mastix waterproofing
bands R

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

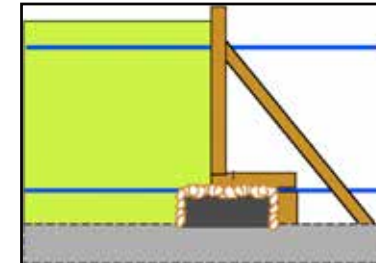
3.1 Carrying out of a raft in two stages or more, using **BFL-Mastix bands** for the waterproofing between **the concreting stages of the raft** and between **raft and walls**



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



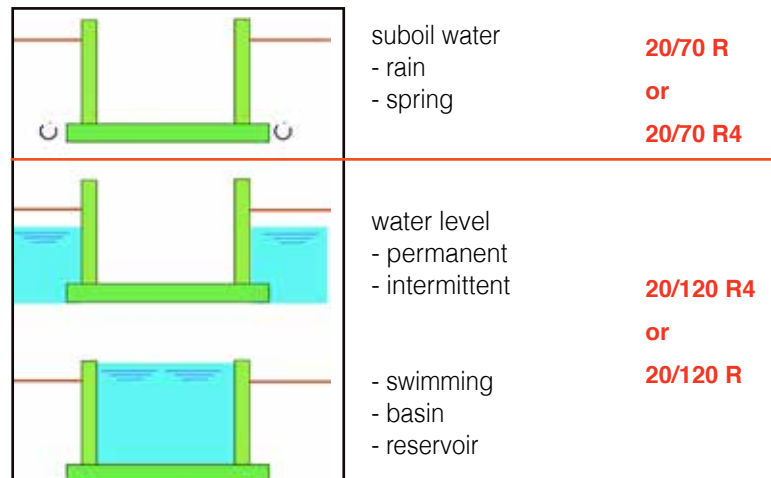
Example of the formwork for a work joint



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

Choice of a BFL-Mastix band

Risk of water infiltration



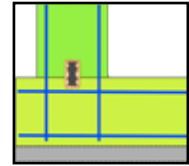
Text :
BFL-Mastix bandsR
nailed on formwork

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

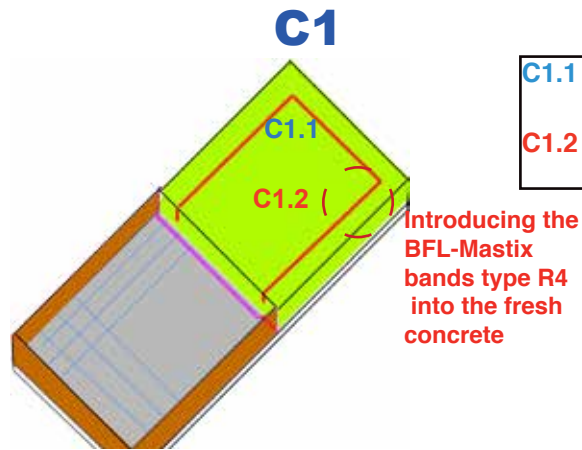
Text :
BFL-Mastix bandsR4
nailed on formwork

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

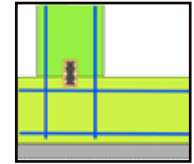
Risk of water infiltration

	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

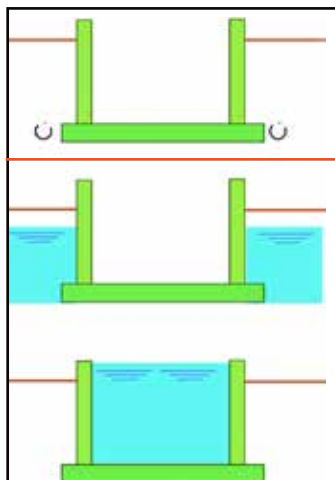
C2.1 Concreting of the second raft stage
C2.2 BFL-Mastix bands type R4 placed into the raft concrete



BFL-Mastix bands type R4 placed into the raft concrete

Choice of a BFL-Mastix band

Risk of water infiltration

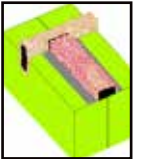


subsoil water	
- rain	20/40 R4
- spring	30/40 R4
<hr/>	
water level	
- permanent	20/70 R4
- intermittent	30/40 R4
	40/50 R4
- swimming basin	40/70 R4
- reservoir	

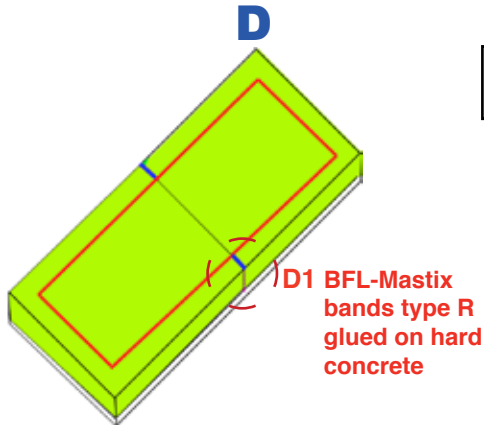
Text :
 BFL-Mastix bands.....
 R4
 placed into the raft concrete

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

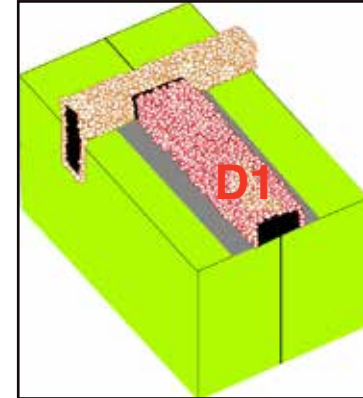
3.1 Carrying out of a raft in two stages or more, using **BFL-Mastix bands** for the waterproofing between **the concreting stages of the raft** and between **raft and walls**



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

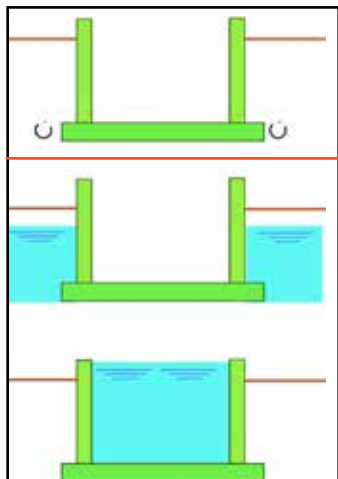


D1 Gluing of **BFL-Mastix bands type R** on hard concrete with BFL-Primer



Choice of a BFL-Mastix band

Risk of water infiltration



subsoil water
- rain
- spring
20/40 R

water level
- permanent
- intermittent
20/40 R

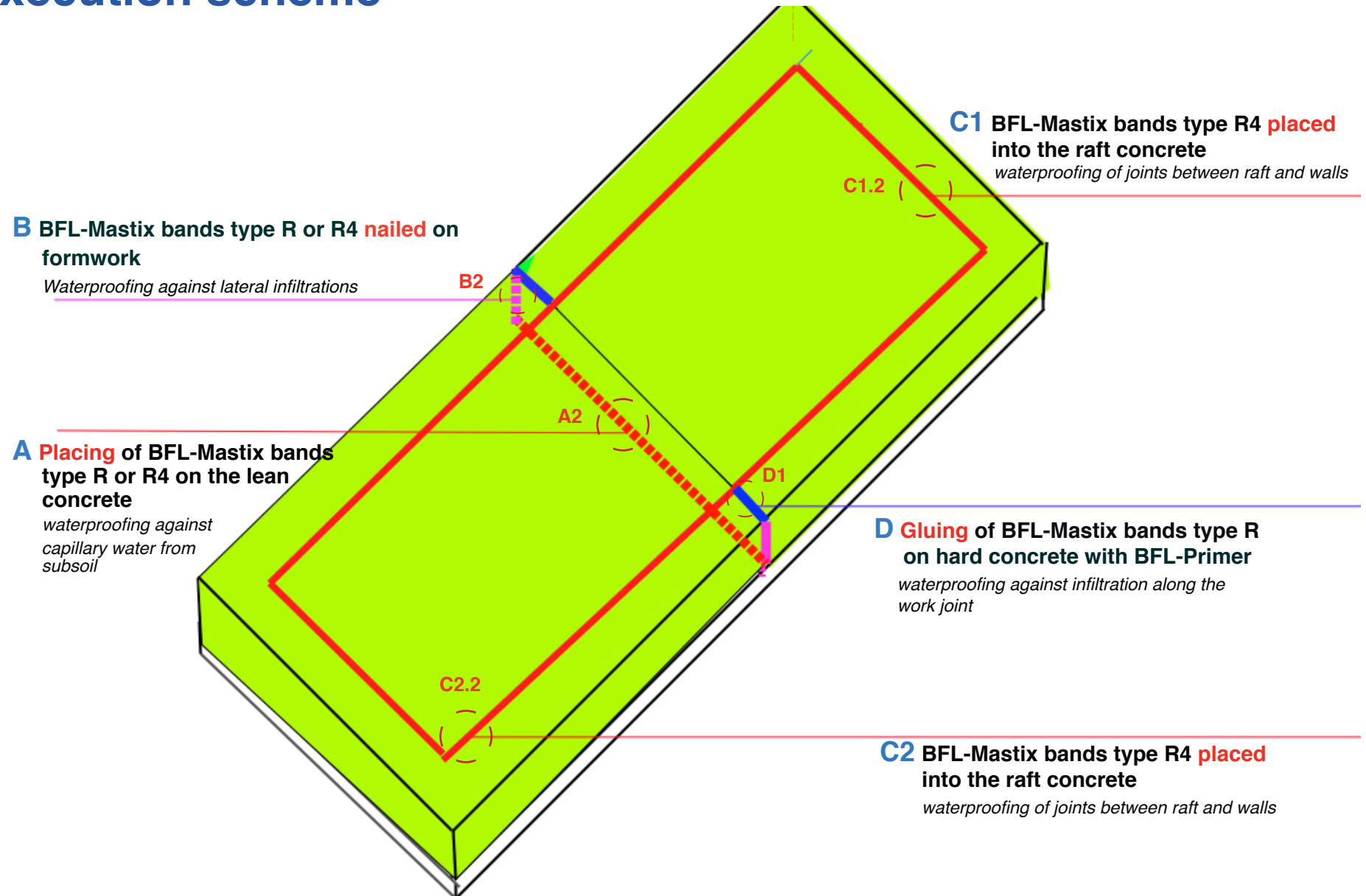
- swimming
- basin
- reservoir

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

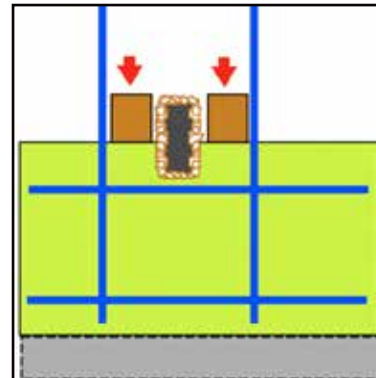
- **BFL-Mastix bands type R4 are incorporated into the fresh raft (1)** The appropriate moment depends on the workability of the concrete
- For facilitating the placing of the bands, a ruler or a lath can be used to shape a groove in the concrete.
- At the end of the placing work, **a short vibrating 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)**.



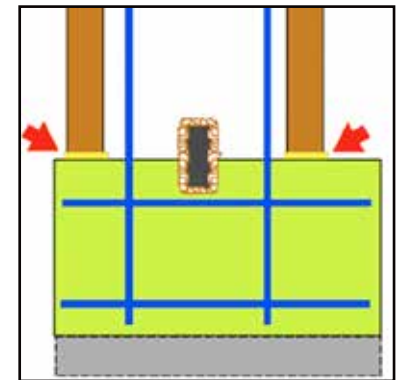
1



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



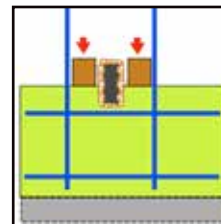
2



3



4



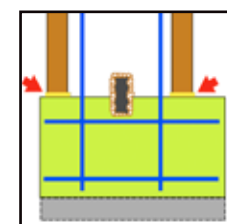
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6



7



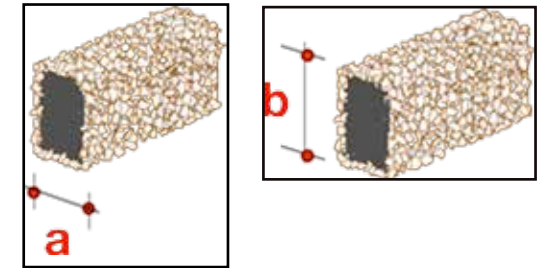
8

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 m³/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

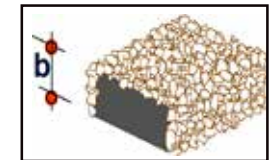
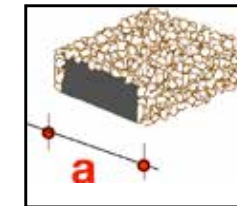


10

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	

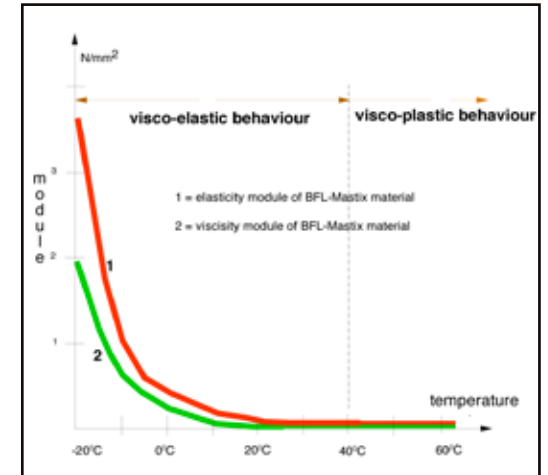
The behaviour of the core is comparable to liquid of very high viscosity. It cannot break

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

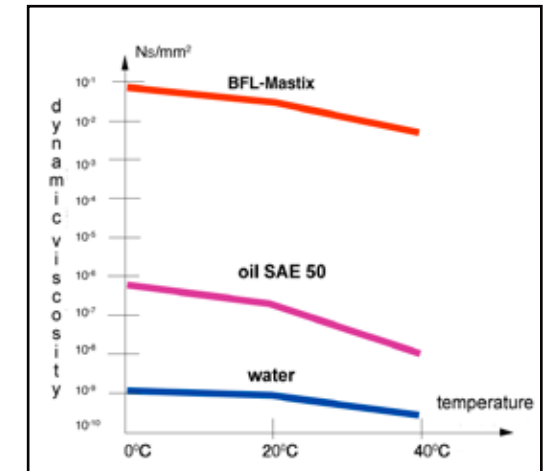
- at -20°C 60.8% after 15 minutes	- at -20°C 66 % after 60 minutes
- at 0°C 84.8% after 15 minutes	- at 0°C 89,2% after 60 minutes
- at 20°C 96.8% after 15 minutes	- at 20°C 100 % after 60 minutes
- at 40°C 98.0% after 15 minutes	- at 40°C 100 % after 60 minutes

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