

The core of BFL-Mastix bands

Technical information

Core identification

- Regarding its aspect, **the core** presents as an elastic mass of black colour and rough surface.

- The **core material** is rot-proof, chemically neutral and insensitive against concrete alkalinity.

- The **core material** is highly resistant against de-icing-salt water, acid water, liquid manure or sulphated and chlorinated water in swimming pools.

- In confined position, the **core** resists very well against chemical aggression by hydrocarbon.

- The core resists against ammonium sulphate 10g/l, ammonium chloride 10g/l, sodium oxide 30g/l, ammonia 25%, acetic acid 20%, sulphuric acid 50%, pure oleic acid and ethyl alcohol (ethanol).

- Density in dry state= 1,28 g/cm³

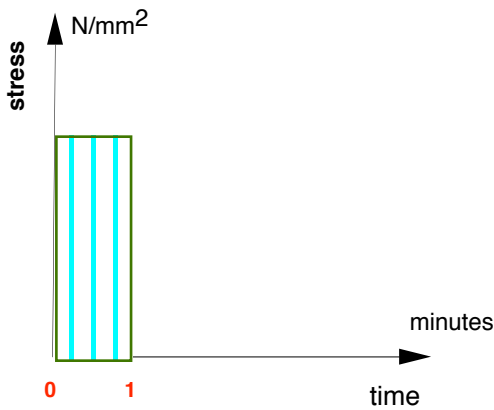
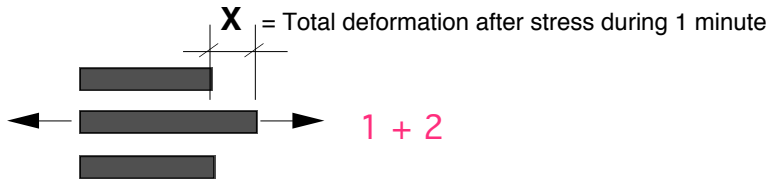
- Ash content = 34,67 % from weight

- Water absorption : 0,227 volume % as to DIN 1996

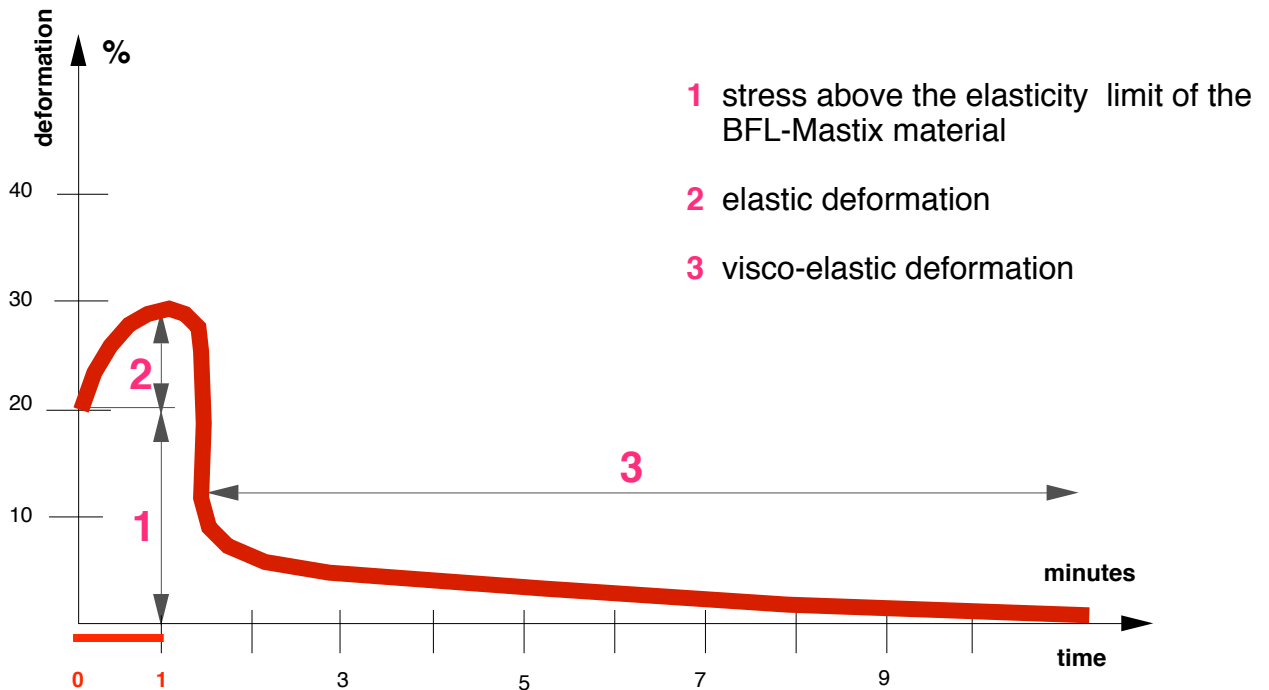
- Behaviour : similar to a liquid of high viscosity

The core of the BFL-Mastix band is a visco-elastic firm body (modified polymer)

From -20 °C to 40 °C, the core reacts under stress by an immediate elastic deformation (1) followed by a visco-elastic deformation (2) . Next, after a short relaxation break, the core tries to return to its initial state (3).



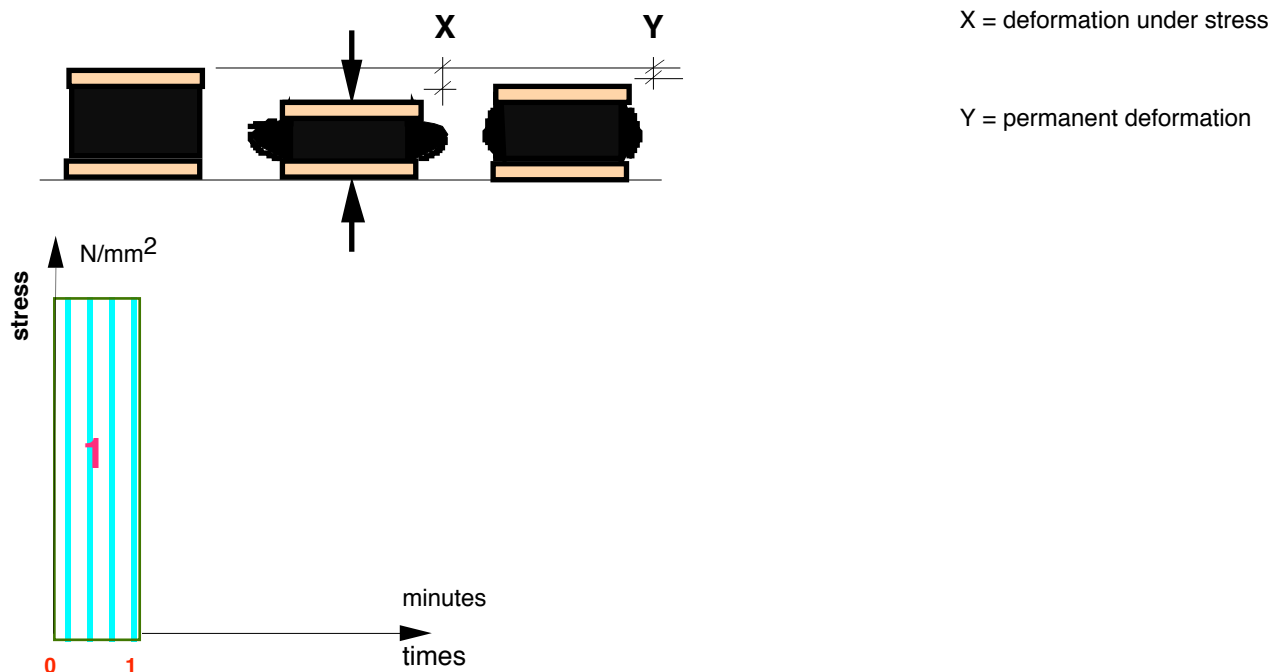
Visco-elastic behaviour of the core under a stress (p) during 1 minute at a temperature of + 20°C



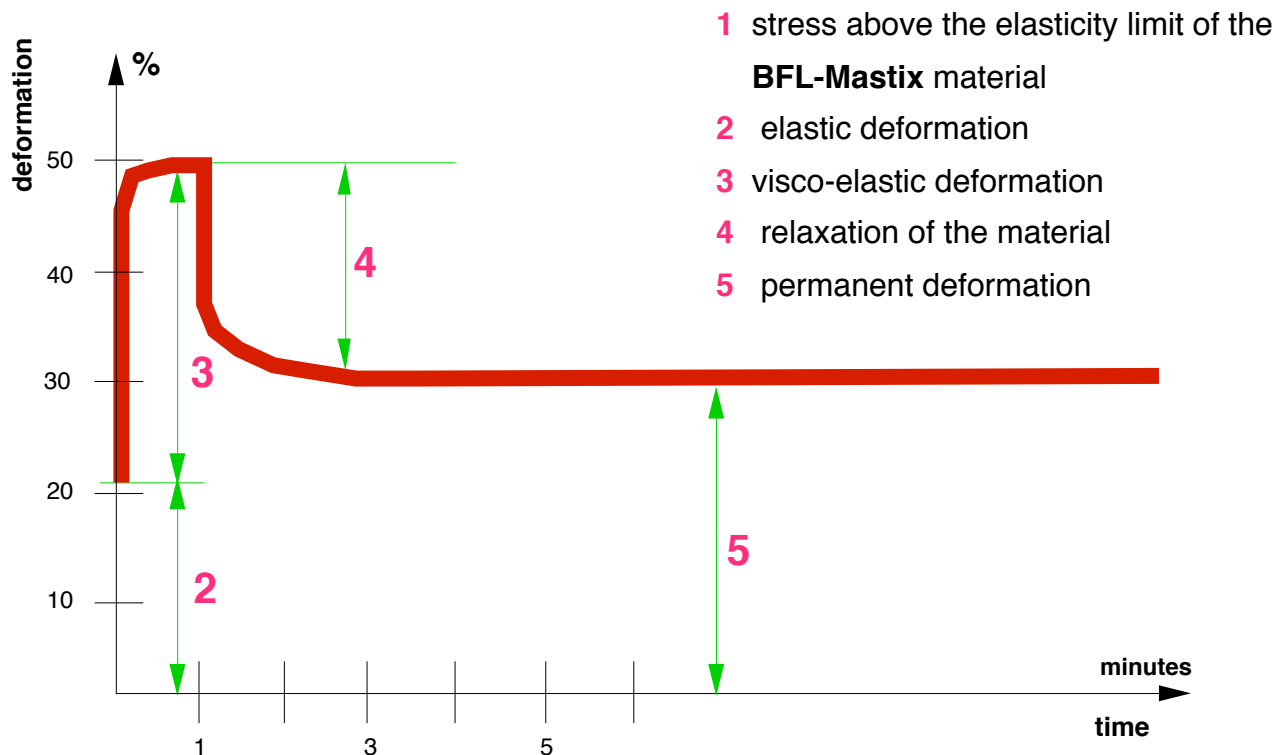
The core of the BFL-Mastix band is a visco-plastic firm body

(modified polymer)

At temperature exceeding 40°C and if the elasticity limit of the BFL-Mastix material is passed, a permanent deformation of the core material will be obtained. The visco-plasticity shows up also in the case of creep.



Visco-plastic behaviour of the core under a stress (p) during 1 minute at a temperature of + 40°C



Elasticity module of the BFL-Mastix core material

at	-20° C	frequency	0,25 s	4,419 MPa
at	0° C	frequency	0,25 s	0,477 MPa
at	0° C	frequency	15,70 s	2,075 MPa
at	20° C	frequency	0,25 s	0,133 MPa
at	20° C	frequency	15,70 s	0,308 MPa
at	40° C	frequency	0,25 s	0,049 MPa
at	40° C	frequency	15,70 s	0,120 MPa

1 MPa = 1 N/mm² = 10 Kg/cm²

1 MPa = 145 psi

Viscosity module of the BFL-Mastix core material

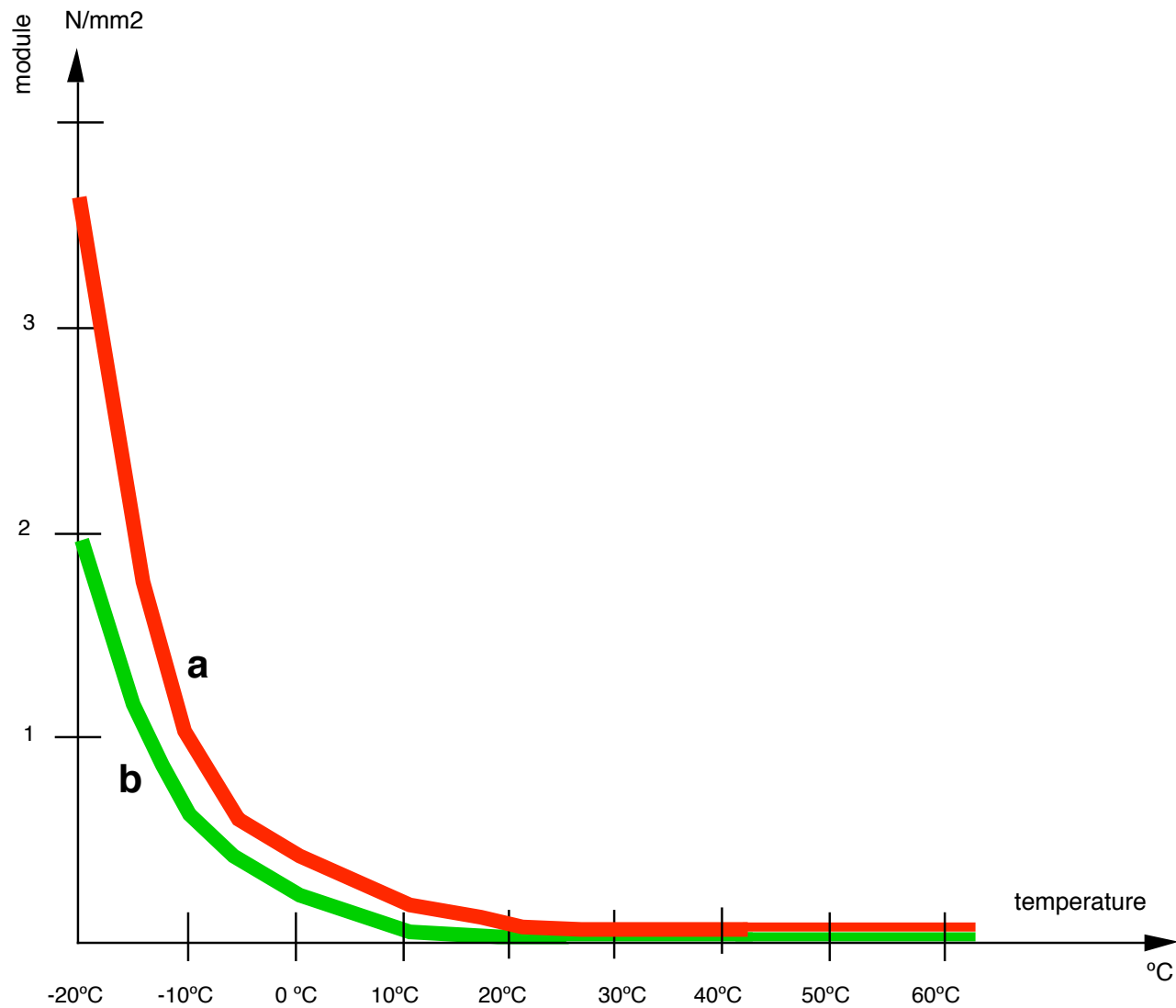
at	-20° C	frequency	0,25 s	2,252 MPa
at	0° C	frequency	0,25 s	0,309 MPa
at	0° C	frequency	15,70 s	1,616 MPa
at	20° C	frequency	0,25 s	0,056 MPa
at	20° C	frequency	15,70 s	0,222 MPa
at	40° C	frequency	0,25 s	0,024 MPa
at	40° C	frequency	15,70 s	0,074 MPa

1 MPa = 1 N/mm² = 10 kg/cm²

1 MPa = 145 psi

a) Elasticity module of BFL-Mastix

b) Viscosity module of BFL-Mastix

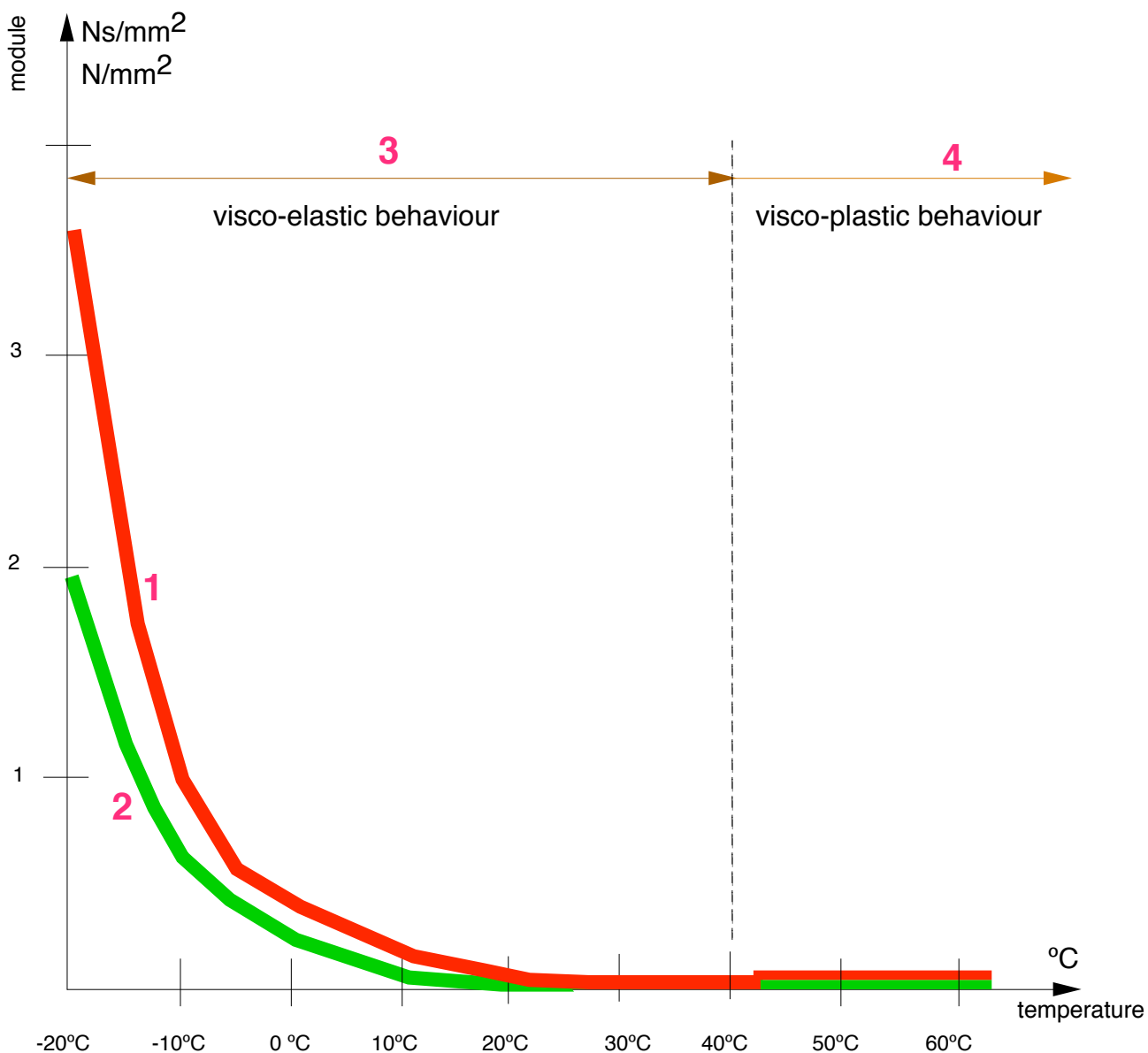


Temperature influence

The increase in temperature leads the BFL-Mastix material from a visco-elastic into visco-plastic state.

- 1 elasticity module of BFL-Mastix material
- 2 viscosity module of BFL-Mastix material
- 3 visco-elastic behaviour
- 4 visco-plastic behaviour

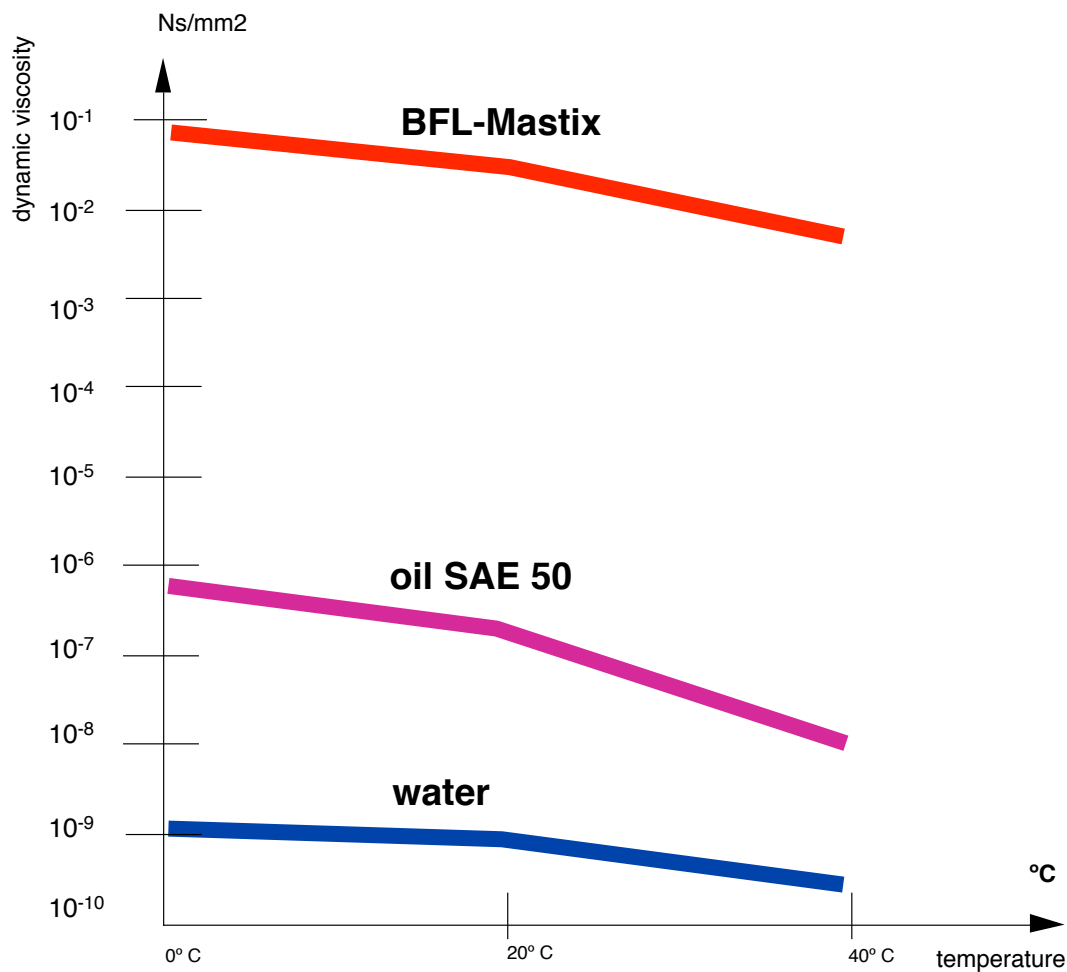
Temperature influence on the core material



Comparison of viscosity modules

The **BFL-Mastix** material is comparable with a fluid of high viscosity

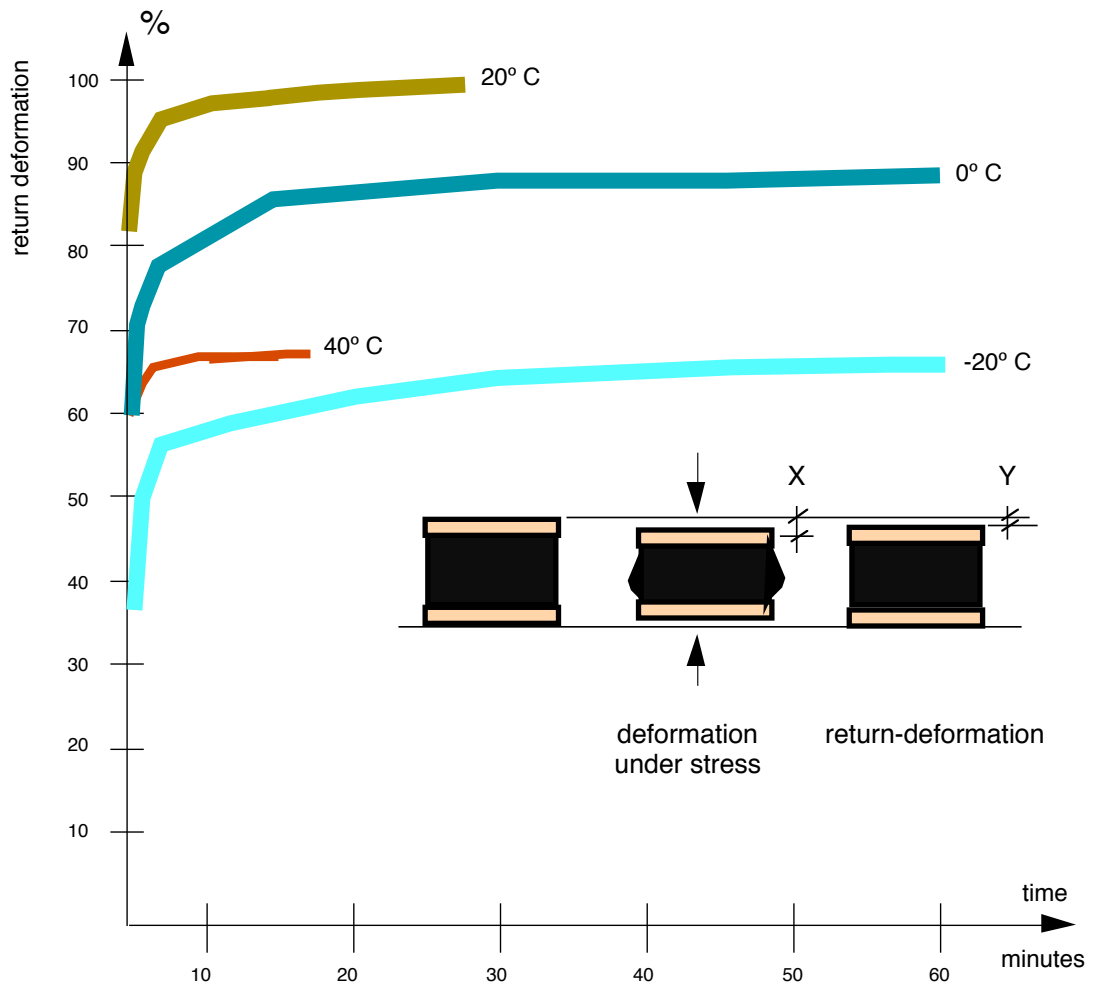
fluid	temperature	dynam. viscosity module Ns/mm ²
water	0°C	$1,70 \cdot 10^{-9}$
oil SAE 50	0°C	$3,82 \cdot 10^{-6}$
BFL-Mastix	0°C	$2,30 \cdot 10^{-1}$
water	20°C	$1,00 \cdot 10^{-9}$
oil SAE 50	20°C	$0,63 \cdot 10^{-6}$
BFL-Mastix	20°C	$0,56 \cdot 10^{-1}$
water	40°C	$0,50 \cdot 10^{-9}$
oil SAE 50	40°C	$0,10 \cdot 10^{-6}$
BFL-Mastix	40°C	$0,20 \cdot 10^{-1}$



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	%	after 15 minutes
at	40° C	100	%	after 60 minutes



Watertightness of the material

The watertightness of the BFL-Mastix material has been tested under a pressures of to 10 bar.

kPa	kg/cm ²	bars	water column in m	
20	0,2	0,2	2	watertight
50	0,5	0,5	5	watertight
100	1 = 14,5 psi	1	10	watertight
200	2	2	20	watertight
500	5 = 72,5 psi	5	50	watertight
1000	10 = 145 psi	10	100	watertight

1N = 0,1 kg
 1daN = 1 kg
 1daN = 2,205 lb

1lb = 4.5536 10⁻¹ kg

1 MPa = 1 N/mm² = 10 kg/cm²
 1 Pa = 1 N/m²
 1 MPa = 145 psi

1 psi = 1lb/po²
 1 psi = 6.895 10⁻² kg/cm²

1 kg/cm² = 10⁵Pa
 1 kg/cm² = 14.5 psi
 1 kg/cm² = 1 bar

1 pi = 3.048 10⁻¹ m' = 30 cm
 1 po = 2,550 10⁻² m' = 2,5 cm

1m' = 3,281 pi
 1m' = 39.37 po