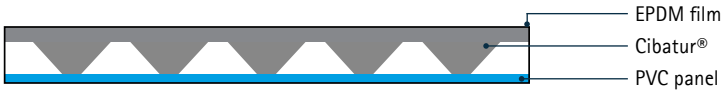
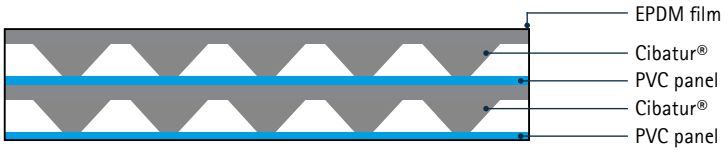
Cimax®

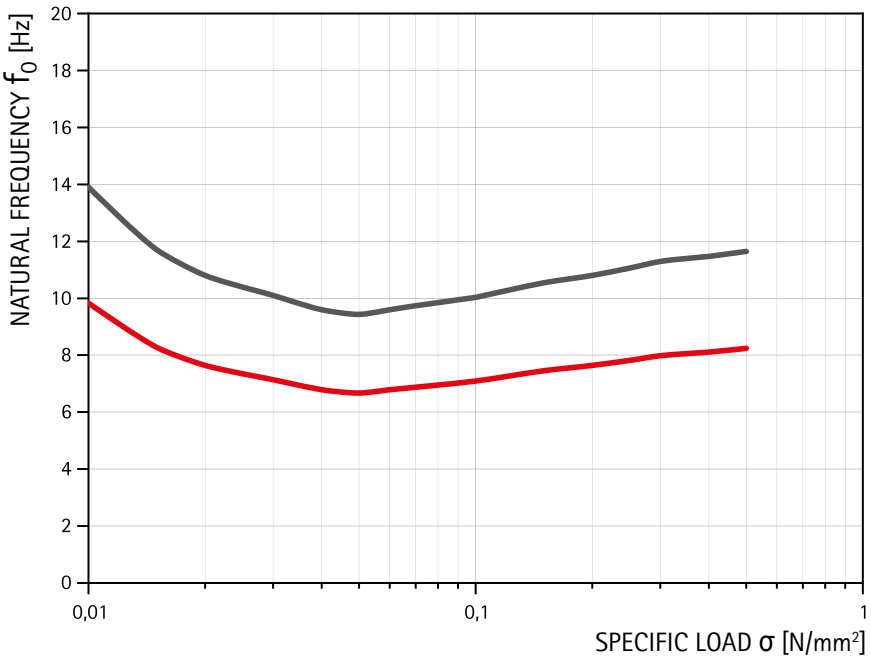
Vibration protection for buildings in groundwater

Product information

DIMENSIONS		
Element size	1550 mm x 980 mm 1040 mm x 980 mm Special sizes on request	
Thickness	Cimax one-layer: 35 mm Cimax two-layer: 70 mm	

PROPERTIES	
Materials	NR, CR, EPDM, PVC
Bearing keeping	Outdoors
Technical approval	Nr. Z-16.32-495
Permanent load	≤ 0,5 N/mm²
Permanent load + dynamic load	0,7 N/mm²
Load peaks (occasional and short-term)	≤ 1,2 N/mm²
Thermal stability	-40°C + 70°C
Flammability	B2 acc. to DIN 4102 (normally combustible)
Use in groundwater	Assured effectiveness in groundwater. Documented in: VDI report no. 1941, 2006: Elastic building bearing in groundwater, N. Breitsamter, H. Schmitz, H. Molzberger, F. Müller-Boruttau

Natural frequency



NATURAL FREQUENCY CURVE

The diagram shows the natural frequency of a single-mass oscillator with Cimax® as spring element.
If Cimax® is used in two-layers, the stiffness of the bearing is approximately halved and the natural frequency decreases significantly.

One-layer
Two-layer

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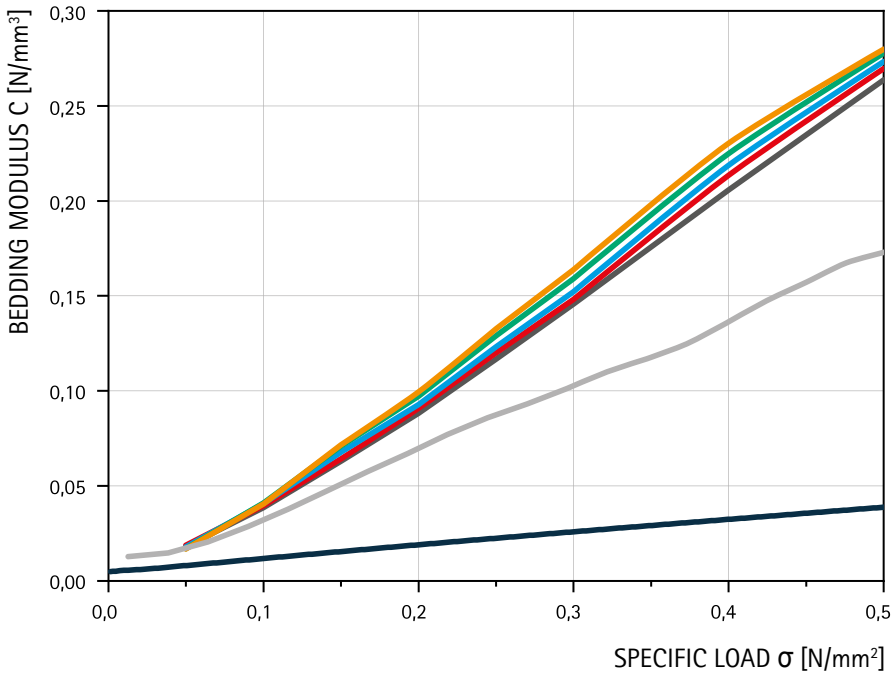
Bedding modulus depending on specific load, Cimax® one-layer

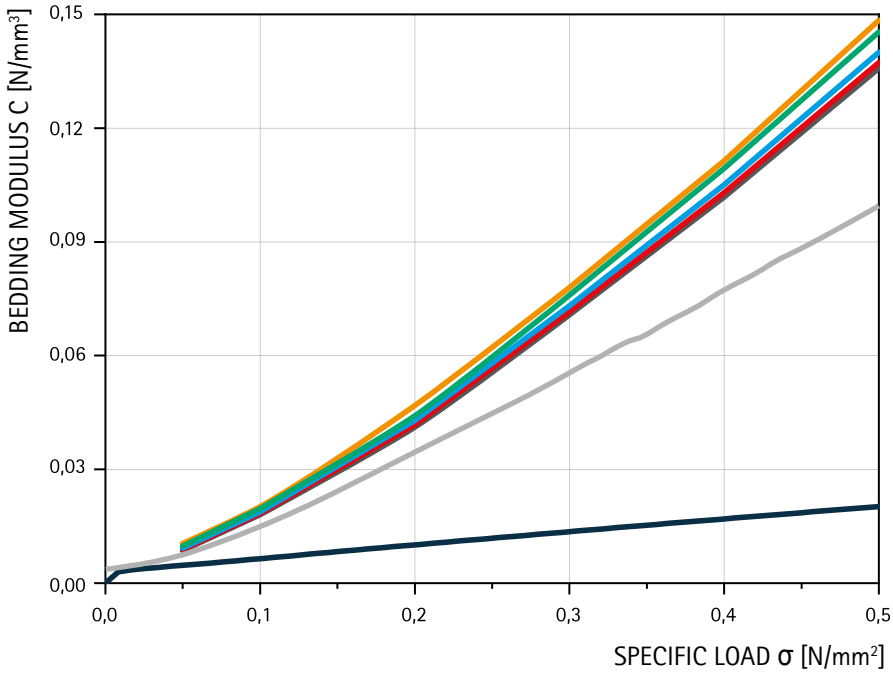


DIAGRAM

The diagrams show the static tangent module and secant module for one and two-layer Cimax® in addition to the dynamic bedding modules.

- C_{dyn}, f = 2,5 Hz
- C_{dyn}, f = 5 Hz
- C_{dyn}, f = 10 Hz
- C_{dyn}, f = 20 Hz
- C_{dyn}, f = 40 Hz
- Stat. tangent module
- Stat. secant module

Bedding modulus depending on specific load, Cimax® two-layer



DIAGRAM

- C_{dyn}, f = 2,5 Hz, one-layer
- C_{dyn}, f = 5 Hz
- C_{dyn}, f = 10 Hz
- C_{dyn}, f = 20 Hz
- C_{dyn}, f = 40 Hz
- Stat. tangent module
- Stat. secant module

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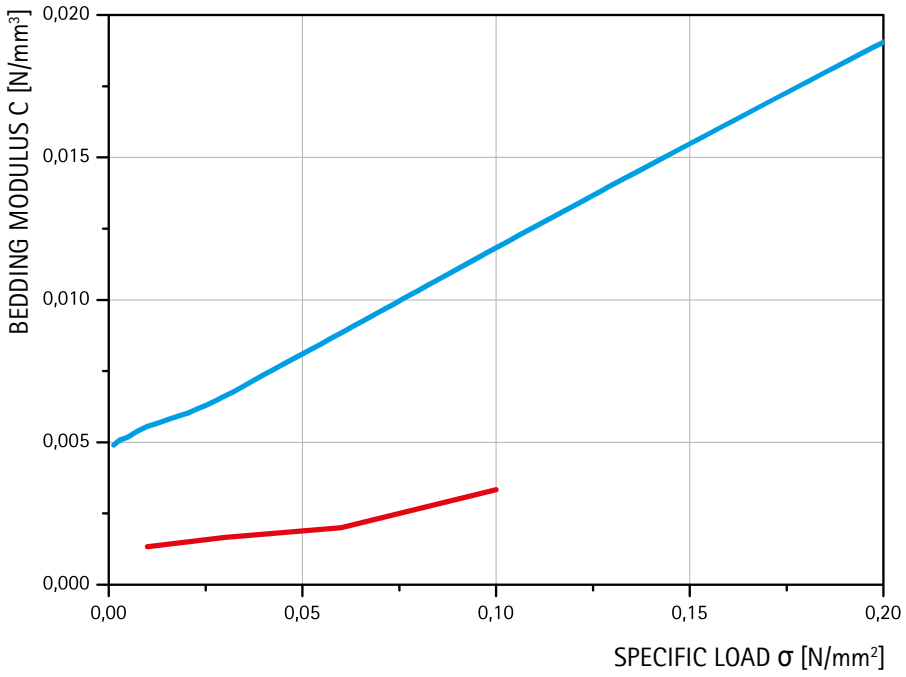
Vertical and horizontal stiffness

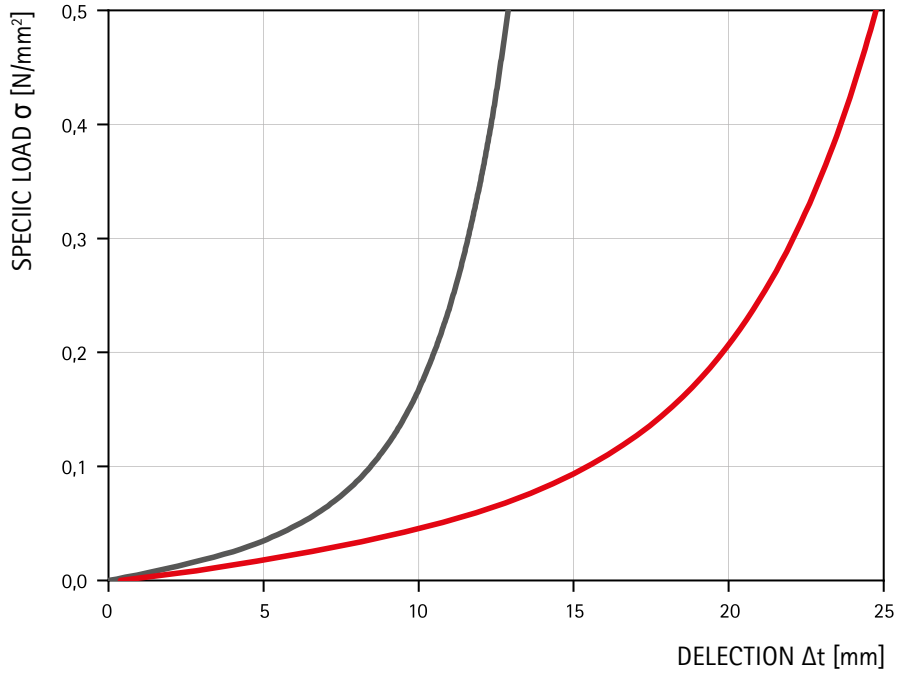


STIFFNESS CURVE

The diagram shows vertical and horizontal secant modules of a layer of Cimax® are plotted against the pressure. As a result, the shear modulus is significantly lower than the bedding modulus.

- vertical bedding modulus as static secant modulus
- horizontal friction bedding as static secant modulus

Compression



LOAD DEFLECTION CURVE

Uniaxial pressure against vertical deformation for one and two-layer Cimax®.

- one-layer
- two-layer

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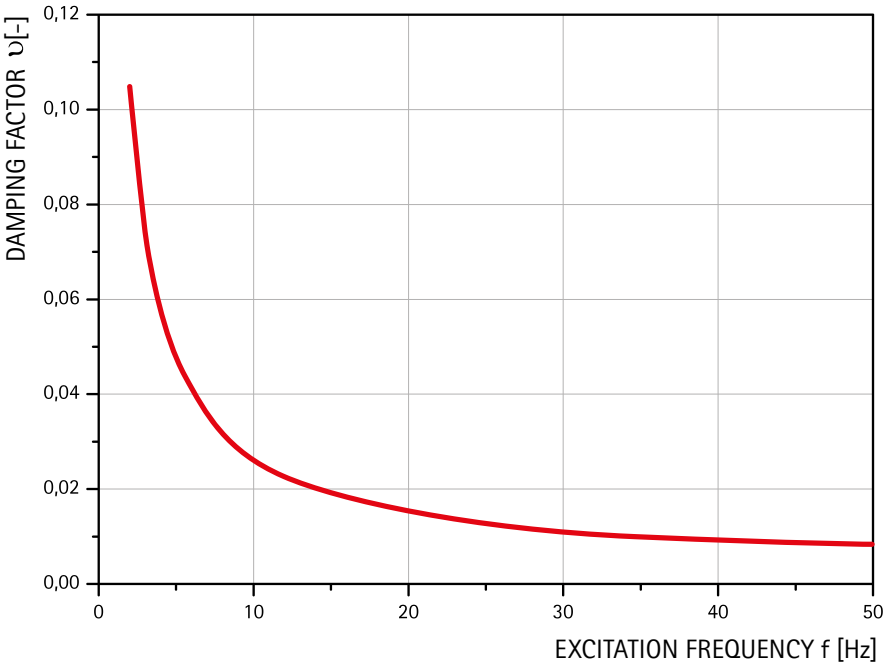
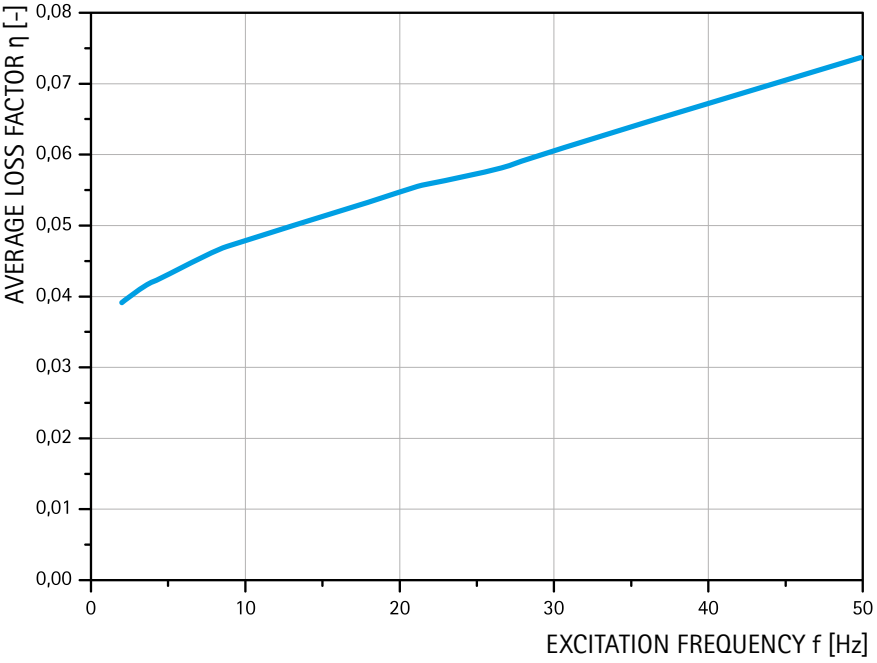
Damping factor



DAMPING FACTOR CURVE

The damping factor ϑ (frequently given as a percentage, previously referred to as Lehr damping factor D = ϑ) is a measurement of the decrease in amplitude of a free decay process.

Loss factor



LOSS FACTOR CURVE

Loss factor depending on specific load.

For a free oscillation, the two are related as follows: Loss factor η = 2 D = 2 ϑ

In general, the higher ϑ, the smaller are both the maximum increase of the amplitude in the case of resonance and the insulation effect for excitation frequencies higher than 1.4 times the natural frequency.

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