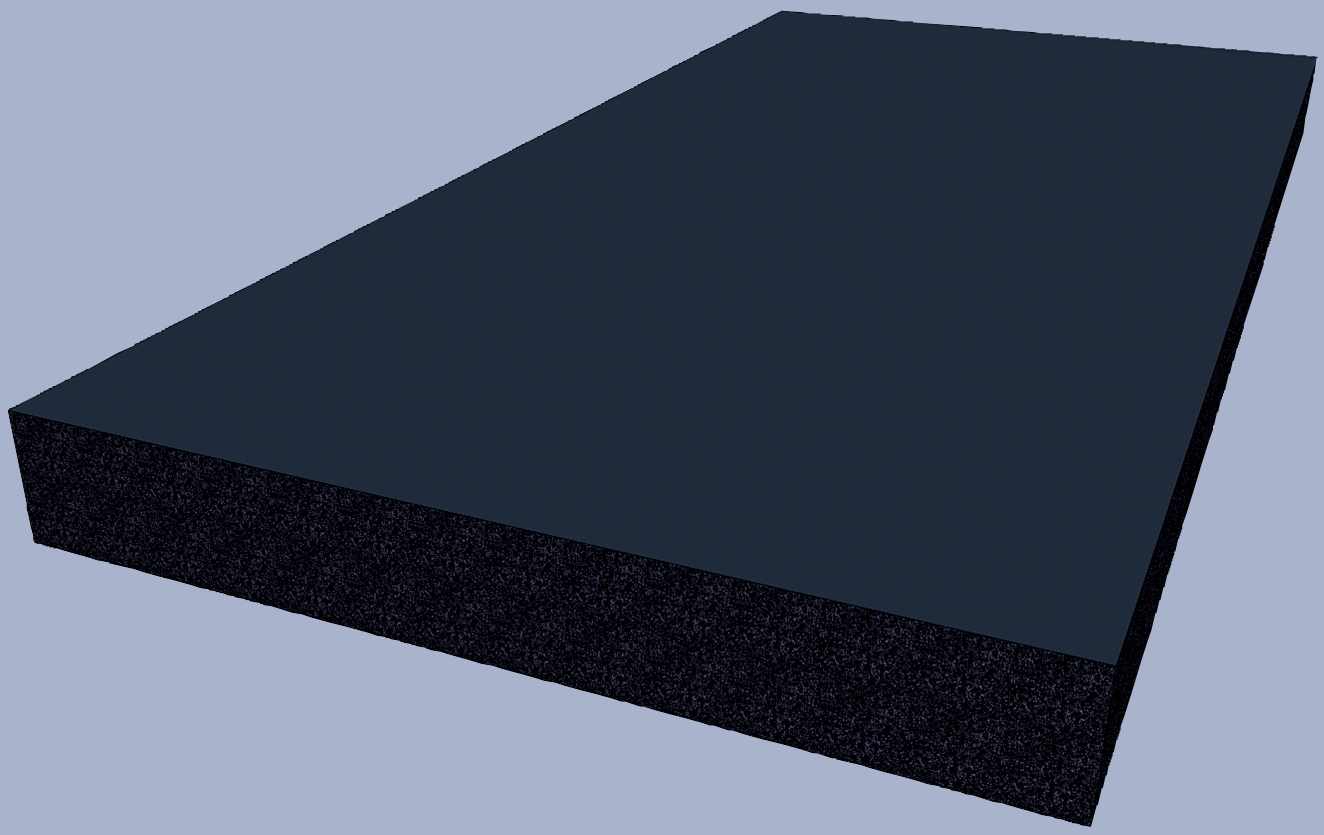
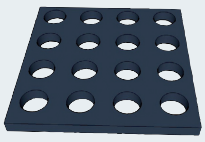
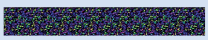
CALENBERG INGENIEURE

CISADOR







Vibration isolation and structure-borne noise insulation for machines, buildings et.al. supported on strips

planmäßig elastisch lagern

Natural Frequency

Contents

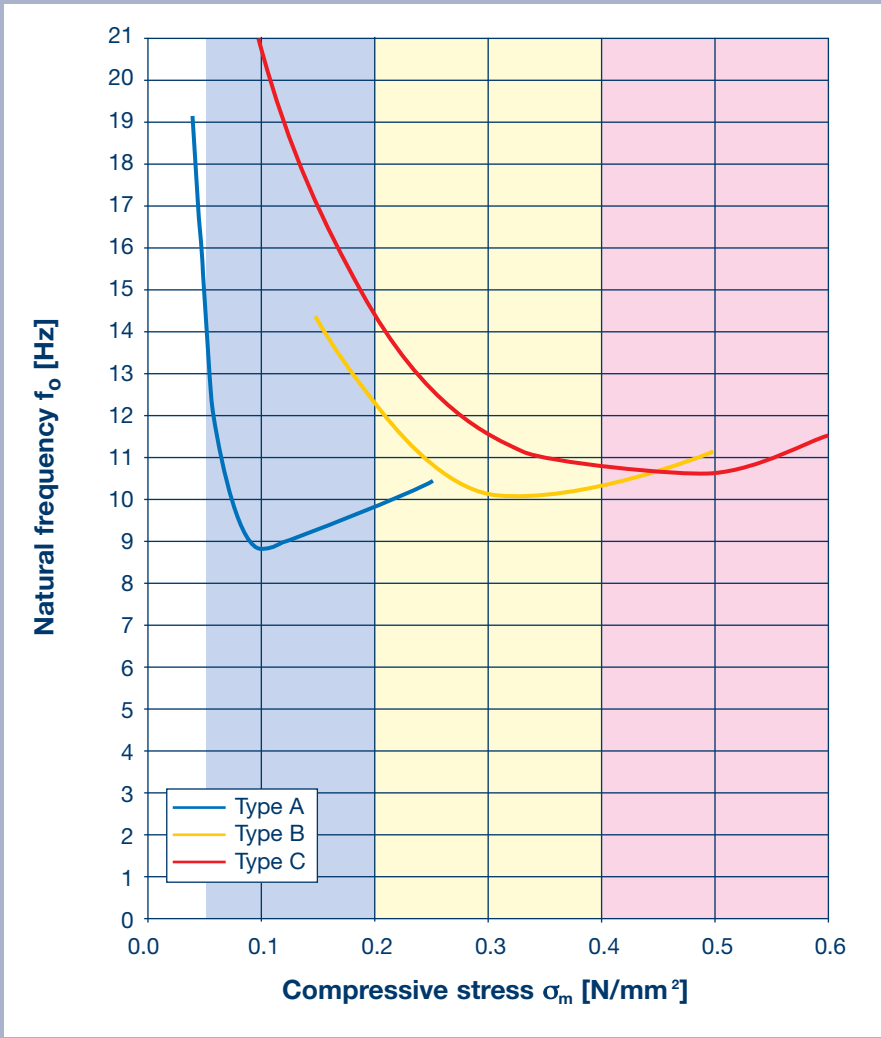
Product Description

Cisador is used for vibration isolation of buildings and machines. It consists of closed cell EPDM material and is generally laid in two layers of 15 mm thickness each. There are 3 types of Cisador: Types A, B and C which are applied at different compressive stress ranges (see table on page 5). In difference to type B and C the lower layer of type A is perforated.

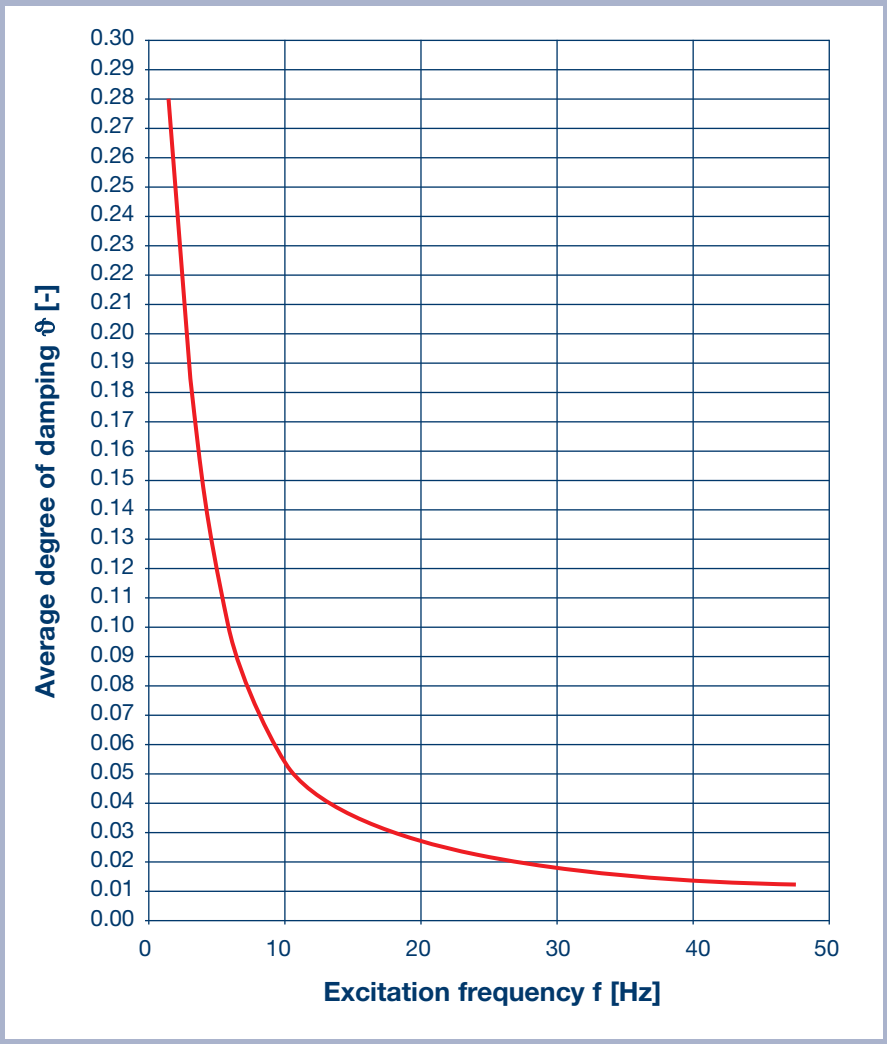
= optimum range of compressive stress of type A

= optimum range of compressive stress of type B

= optimum range of compressive stress of type C



Vibration velocity 1 mm/s



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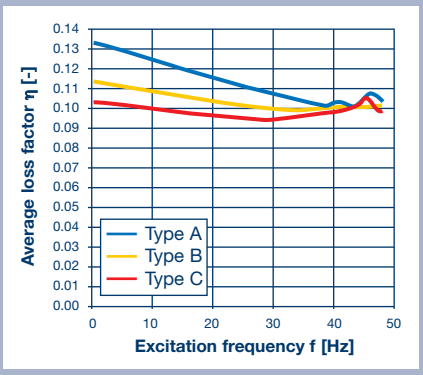


Degree of Damping

The damping ratio ϑ (often given as percentage) is a measure of how rapidly free oscillations die down.

In general: An increase in ϑ, leads to lower resonance amplifications $Ü_{max}$. The damping effect sets in at a frequency ratio of $f/f_o > 1.4$.

Degree of Damping

Isolation Efficiency

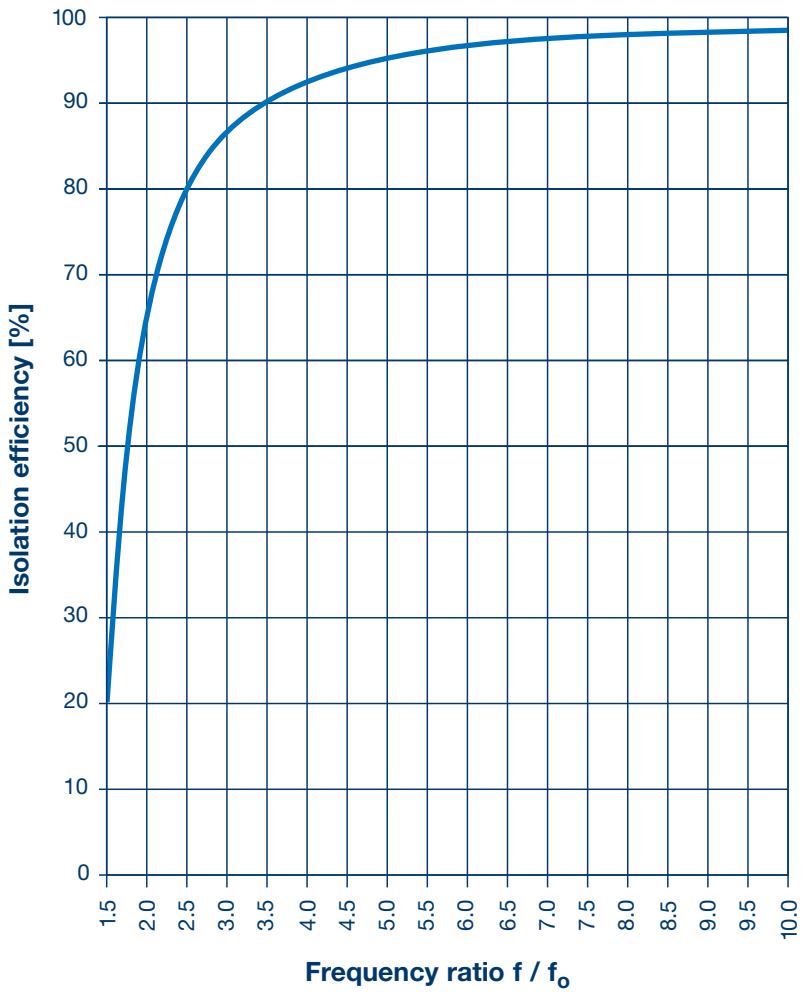
Field of Application

Compressive stress: 0.05 – 0.60 N/mm²

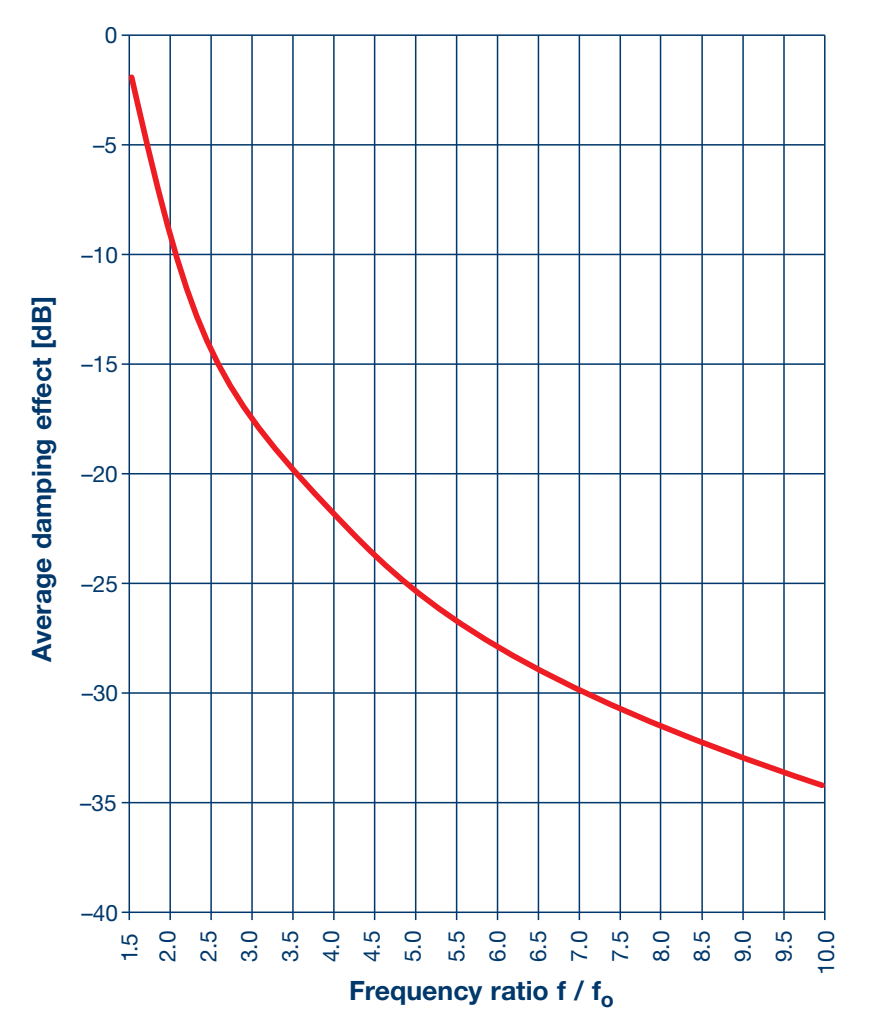
Cisador is used as an elastic component so as to reduce the forces which act on bearings or foundation. That way the transmission of vibration or structure-borne noise is reduced. Depending on the compressive stress and area considered three different types of Cisador can be chosen from and it can be installed over a larger area as well as in strip form. The material is closed cell and does not absorb water. It can also be used in areas where surface water may occur.

For all applications a minimum distance of 30 mm has to be observed to the outer edges of the structural elements.

Note:
The tests were carried out at vibration velocities of 1 mm/s and 2 mm/s. However, for 2 mm/s the results deviate on average by a maximum of 10 % from the values shown.



Vibration velocity 1 mm/s



Vibration velocity 1 mm/s

Designation	Compressive stress range [N/mm²]	Thickness [mm]
Type A	0.05 – 0.20	2 x 15 *
Type B	0.20 – 0.40	2 x 15
Type C	0.40 – 0.60	2 x 15

* lower layer perforated

Text of Tender Document

Calenberg Cisador, 30 mm thick, closed cell, water repellent EPDM material, deliver and install according to manufacturer's installation instructions.

Type .....

Quantity: ..... m²

Length: ..... mm

Width: ..... mm

Price: ..... €/m²

Supplier:
Calenberg Ingenieure GmbH
Am Knübel 2–4
D-31020 Salzhemmendorf/Germany
Phone +49 (0) 51 53 / 94 00-0
Fax +49 (0) 51 53 / 94 00-49

Damping Effect

Dynamic Foundation Modulus

Installation Details

Cisador may be laid loosely over a large area on a foundation having adequate load bearing capacity or in strips on smooth screeded brick walls.

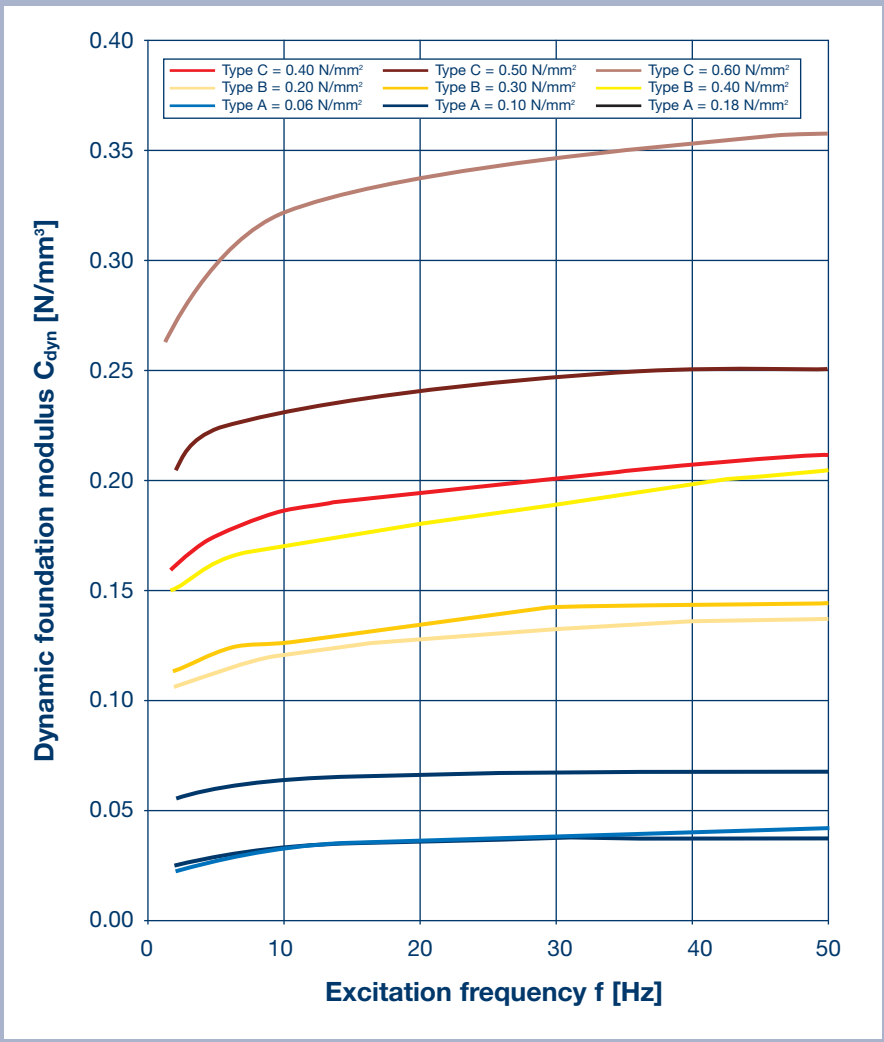
Large area application:

If the Cisador mat is placed underneath cast in-situ concrete, it shall be covered with standard PE foil.

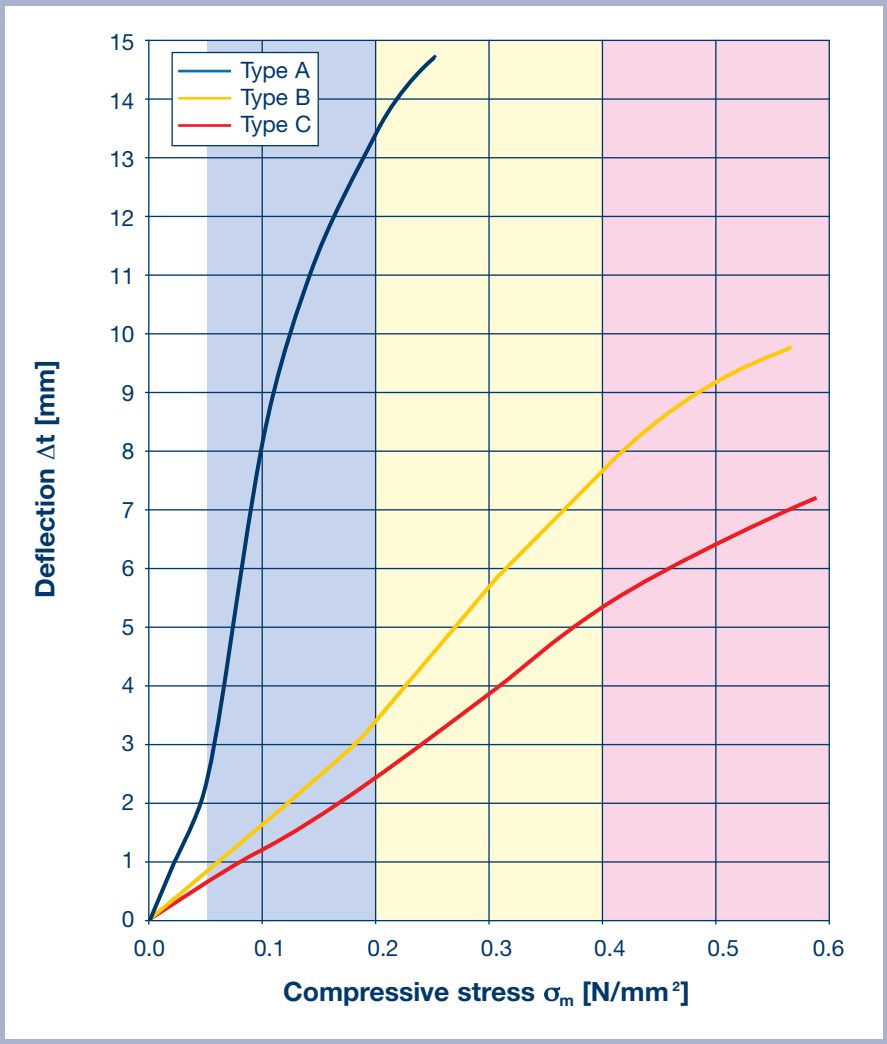
Strip type application:

If Cisador is laid on brick walls a firm cover needs to be applied over the total width of the wall; this may be a plastic sheet (e. g. Calenberg GRP-sheets, t = 5 mm).

The unrestrained deformation of the bearing has to be guaranteed at all times so as to avoid transmission of structure-borne noise.



Amplitude of vibration velocity 1 mm/s



Design Example for a Building

Objective:

- Vibration and structure-borne noise protection of a building situated near a railway line.
- Provision of an elastic joint between cellar walls and ceiling, interior walls 175 mm wide, existing vertical load 60 kN/m
- Excitation frequency of rail traffic 40 Hz

For design purpose a single degree of freedom system is used as equivalent system having one translatory movement.
For small support widths and vertical loads, deducting the minimum edge distances of 30 mm to the construction member edges, the resulting elastomeric strip width is 115 mm.

Selected: CISADOR TYP C,
115 mm wide, 30 mm thick

Given values:

– Compressive stress	0.52 N/mm²
– Natural frequency	10.7 Hz
– Deflection	6.6 mm
– Dyn. foundation modulus	0.25 N/mm³
– Av. degree of damping	0.015
– Loss factor	0.095
– Frequency ratio f/f_o	3.73
– Damping effect	21 dB
– Isolation effect	91 %

Static Deflection

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Test Certificate

"Determining the static and dynamic material behaviour of Cisador elastic bearings"
Research Report 30/08
Technical University of Dresden, 2008

Figure 1: Covered support joint e.g. to support the filigree slab panels

Figure 2: Stripped and finished horizontal joint

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