

# Sylodyn® NB

## Material Data Sheet

**Material** closed cellular polyurethane  
**Colour** red

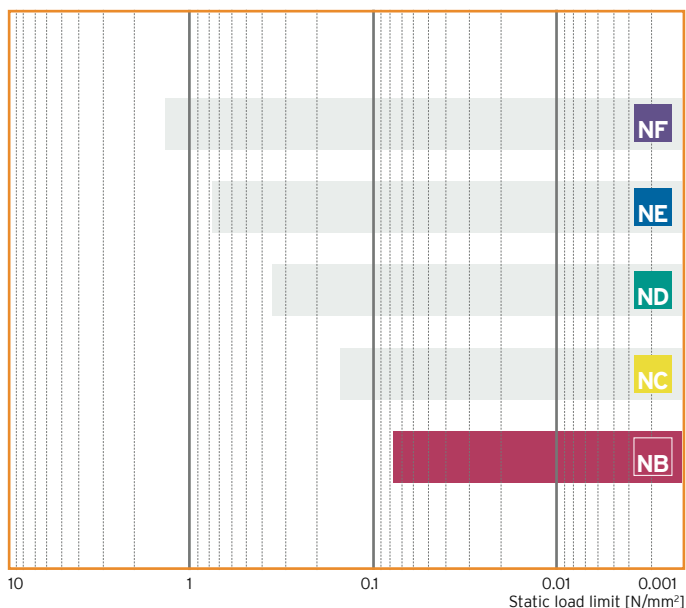
### Standard dimensions on stock

Thickness: 12.5 mm with Sylodyn® NB 12  
25 mm with Sylodyn® NB 25  
Rolls: 1.5 m wide, 5.0 m long  
Stripes: max. 1.5 m wide, up to 5.0 m long

Other dimensions (also thickness) as well as stamped and molded parts on request.

Area of application	Compression load	Deflection (depending on form factor)
Static load limit	up to 0.075 N/mm <sup>2</sup> **	approx. 7 %**
Operating load range (static plus dynamic loads)	up to 0.120 N/mm <sup>2</sup> **	approx. 15 %**
Load peaks (short term, infrequent loads)	up to 2.0 N/mm <sup>2</sup> **	approx. 70 %**

### Standard Sylodyn® range



Material properties		Test methods	Comment
Tensile stress at break	0.75 N/mm <sup>2</sup>	DIN EN ISO 527-3/5/100*	minimum value
Elongation at break	450 %	DIN EN ISO 527-3/5/100*	minimum value
Tear strength	3.0 N/mm	DIN 53515*	minimum value
Abrasion	1,400 mm <sup>3</sup>	DIN 53516	load 5 N, bottom surface
Coefficient of friction (steel)	0.7	Getzner Werkstoffe	dry
Coefficient of friction (concrete)	0.7	Getzner Werkstoffe	dry
Compression set	< 5 %	EN ISO 1856	50 %, 23 °C, 70 h, 30 minutes after unloading
Static shear modulus	0.13 N/mm <sup>2</sup>	DIN ISO 1827*	at static load limit
Dynamic shear modulus	0.18 N/mm <sup>2</sup>	DIN ISO 1827*	at static load limit
Mechanical loss factor	0.07	DIN 53513*	depending on frequency, load and amplitude (reference value)
Rebound elasticity	70 %	DIN 53573	tolerance +/- 10 %
Operating temperature	-30 to 70 °C		short term higher temperatures possible
Flammability	B2 class E	DIN 4102 EN ISO 11925-2	normal flammable EN 13501-1
Specific volume resistance	> 10 <sup>1</sup> Ω·cm	DIN IEC 93	dry
Thermal conductivity	0.06 W/[m·K]	DIN 52612/1	

Further characteristic values on request

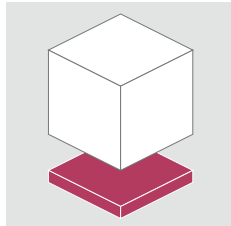
\* Tests according to respective standards  
\*\* At form factor q=3

All information and data is based on our current knowledge. The data can be applied for calculations and as guidelines, are subject to typical manufacturing tolerances, and are not guaranteed. We reserve the right to amend the data.

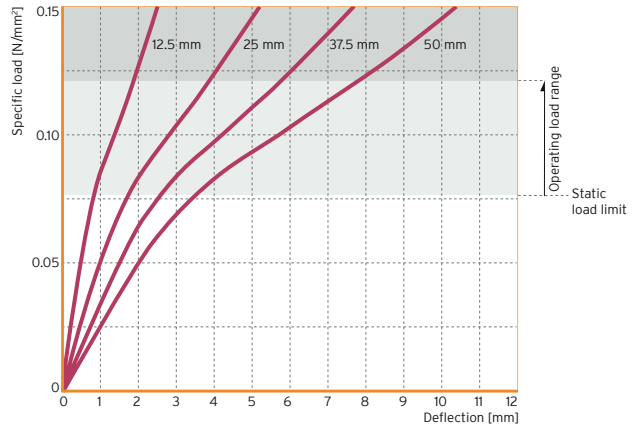
Further information can be found in VDI Guideline 2062 - Page 2.

Load deflection curve

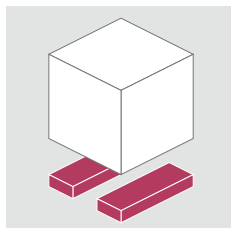
Full surface bearing



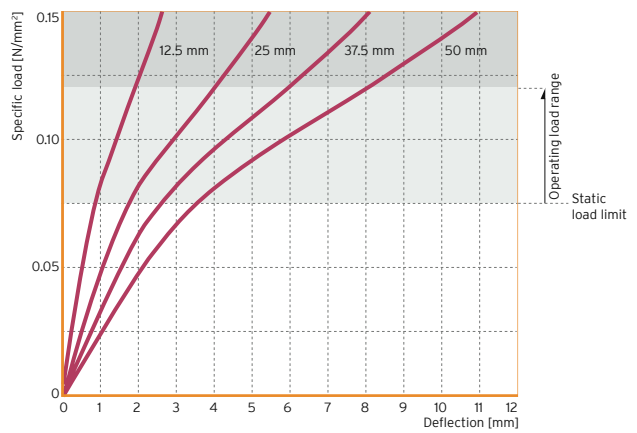
Form factor:  $q=6$



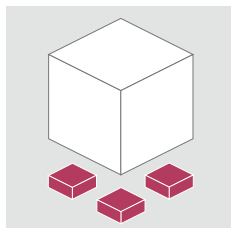
Strip bearing



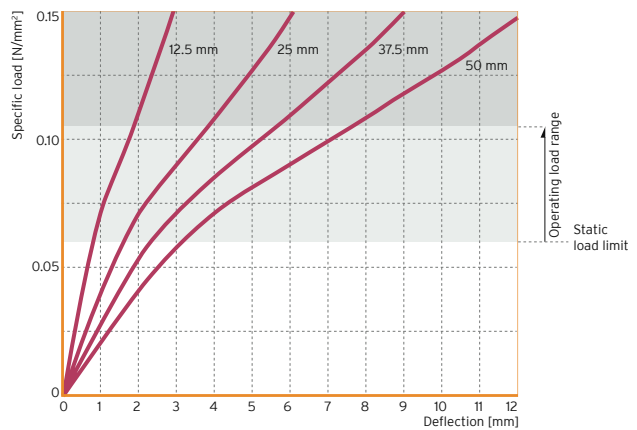
Form factor:  $q=3$



Point bearing



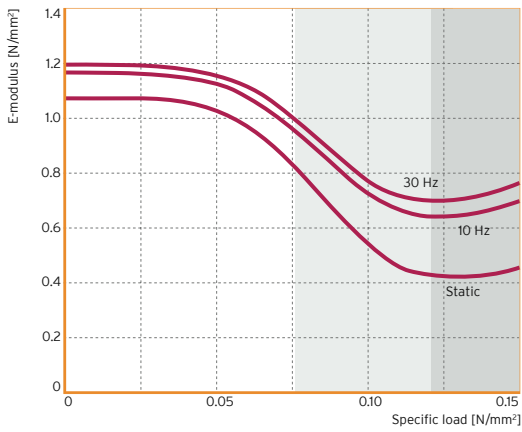
Form factor:  $q=1.5$



Quasi-static load deflection curve measured at a velocity of deformation of 1% of the thickness per second; testing between flat steel-plates; recording of the 3<sup>rd</sup> loading; testing at room temperature

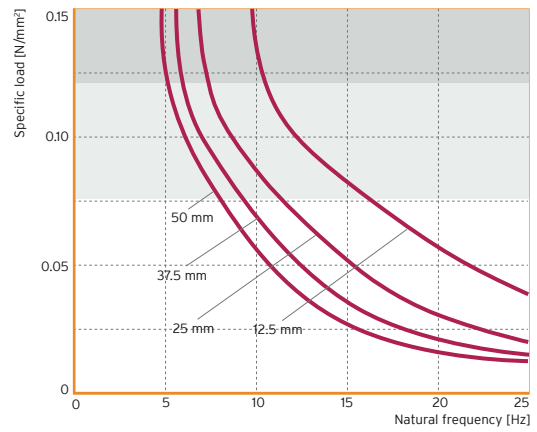
## Modulus of elasticity

Form factor:  $q=6$

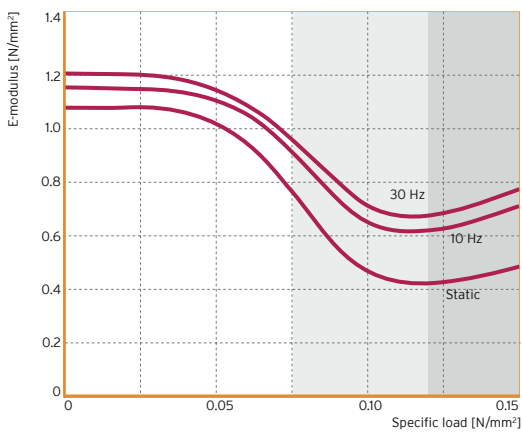


## Natural frequency

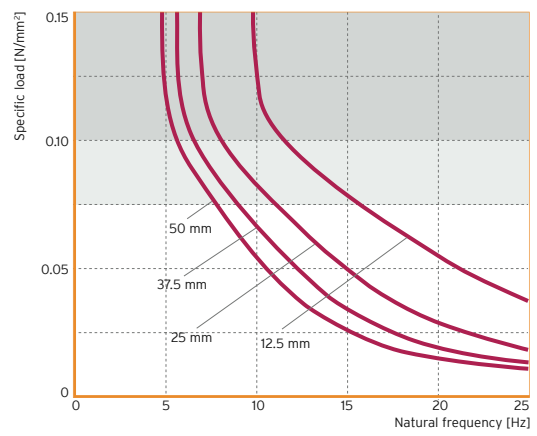
Form factor:  $q=6$



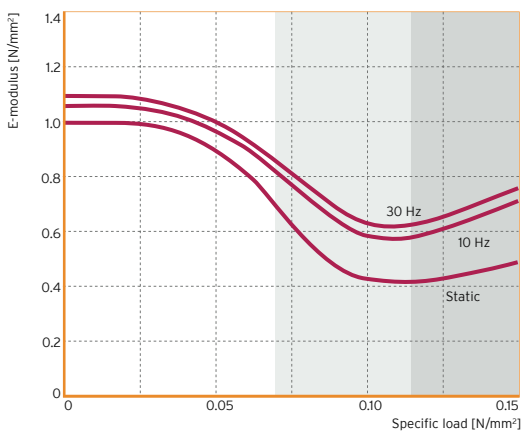
Form factor:  $q=3$



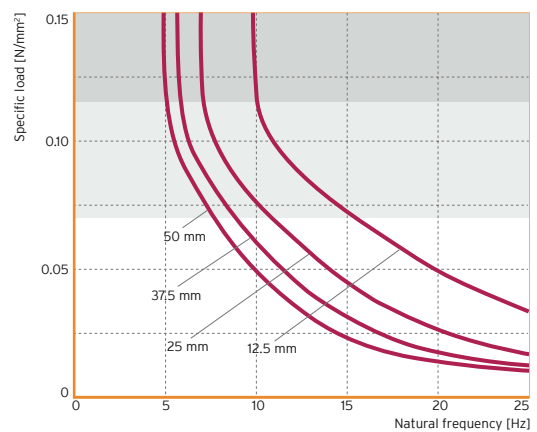
Form factor:  $q=3$



Form factor:  $q=1.5$



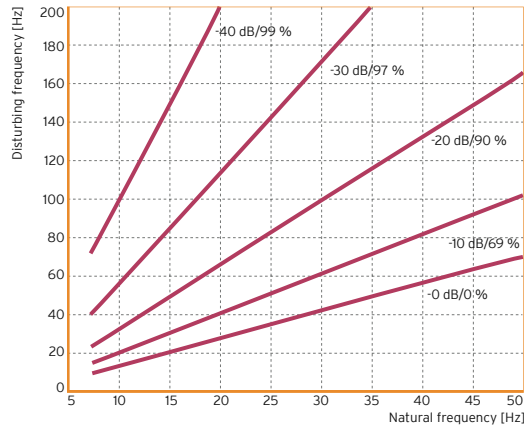
Form factor:  $q=1.5$



Static modulus of elasticity as a tangent modulus taken from the load deflection curve; dynamic modulus of elasticity due to sinusoidal excitation with a velocity level of 100 dBv re.  $5 \cdot 10^{-8}$  m/s; test according to DIN 53513

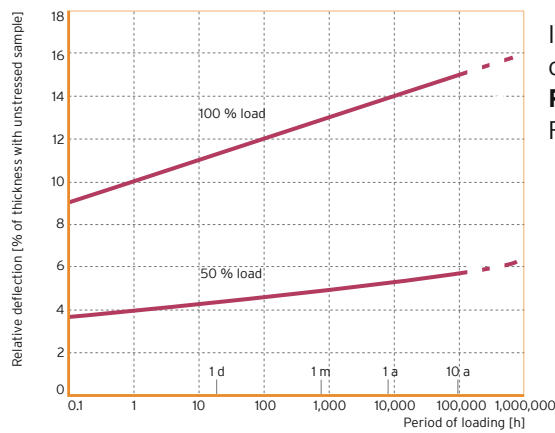
Natural frequency of a single-degree-of-freedom system (SDOF system) consisting of a fixed mass and an elastic bearing consisting of Sylodyn® NB based on a stiff subgrade; parameter: thickness of elastomeric bearing

### Vibration isolation - efficiency



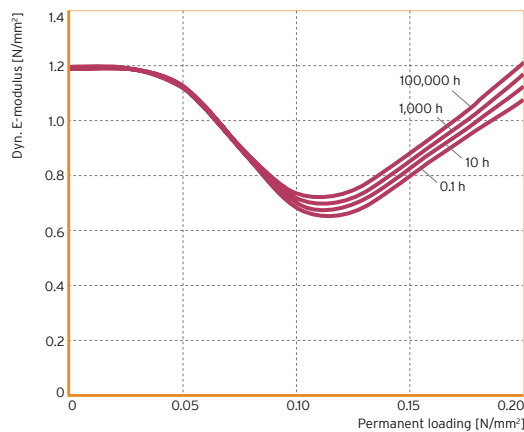
Reduction of the transmitted mechanical vibrations by implementation of an elastic bearing consisting of Sylodyn® NB  
**Parameter:** factor of transmission in dB, isolation rate in %

### Creep behaviour



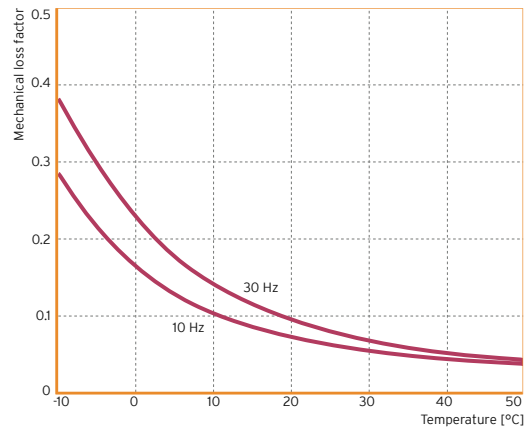
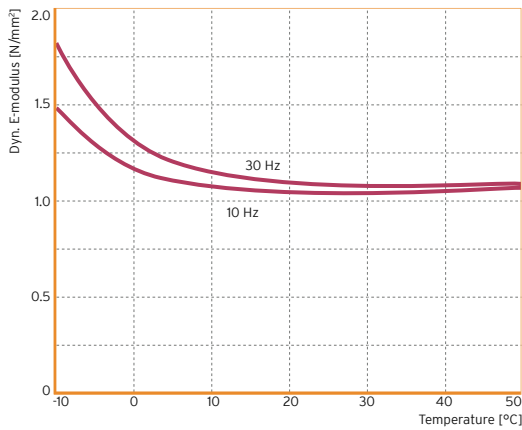
Increase in deformation under consistent loading  
**Parameter:** permanent loading  
 Form factor:  $q=3$

### Dynamic E-modulus at long term loading



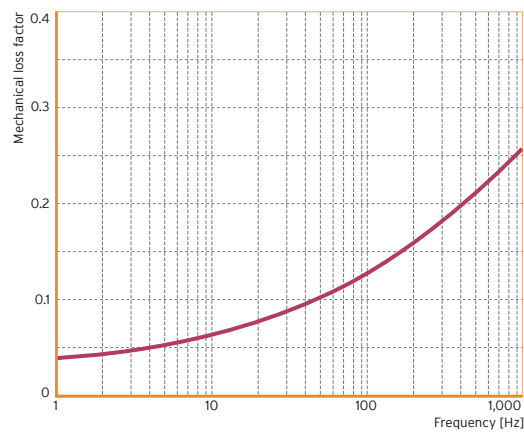
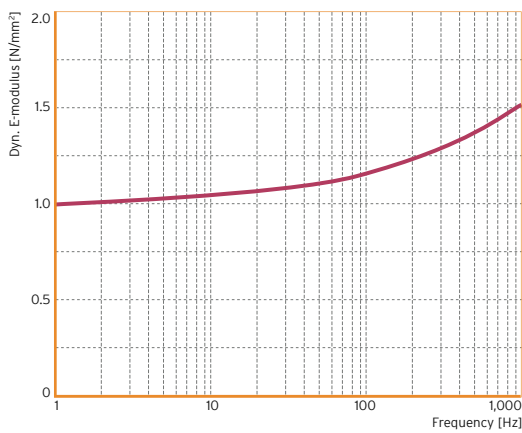
Change of dynamic modulus of elasticity under consistent loading (at 10 Hz)  
**Parameter:** load duration  
 Form factor:  $q=3$

### Temperature dependency



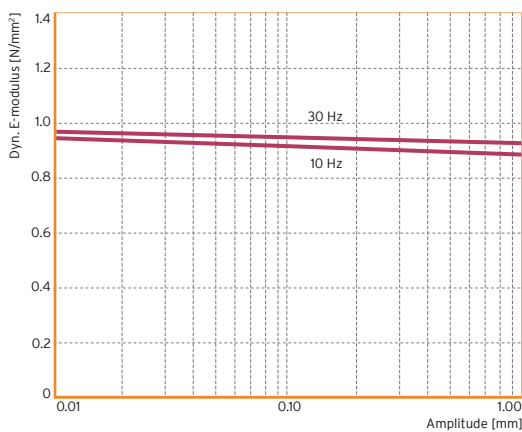
DMA-test (Dynamic Mechanical Analysis); tests within linear area of the load deflection curve, at low specific loads

### Frequency dependency

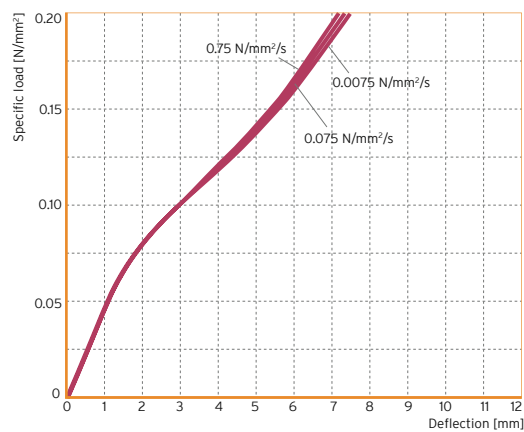


DMA-tests; mastercurve with a reference-temperature of 21 °C; tests within the linear area of the load deflection curve, at low specific loads

### Dependency on amplitude



### Dependency on loading velocity



**Dependency on amplitude:** preload at static load limit; Form factor:  $g=3$ , thickness of material 25 mm

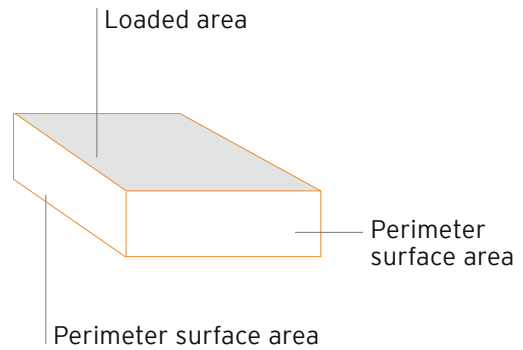
**Dependency on loading velocity:** Form factor:  $g=3$ , thickness of material 25 mm

## Form factor

The form factor is a geometric measure for the shape of an elastomeric bearing defined as the ratio of the loaded area and the area of sum of the perimeter surfaces.

Definition: 
$$\text{Form factor} = \frac{\text{Loaded area}}{\text{Perimeter surface area}}$$

For a rectangular shape: 
$$q = \frac{l \cdot w}{2 \cdot t \cdot (l + w)}$$
  
 (l..length, w..width, t..thickness)



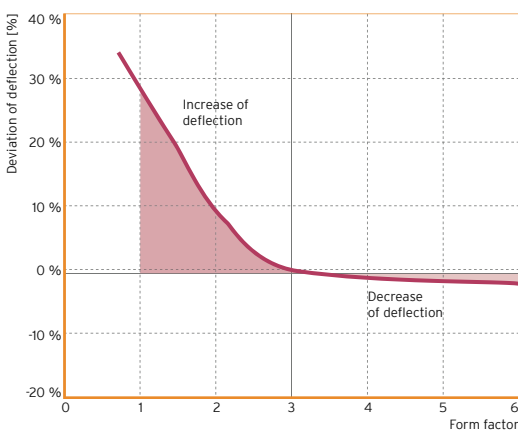
The form factor has an influence on the deflection and the static load limit respectively.

## Elastic Sylodyn®-bearings are considered as

- Full surface bearing: Form factor > 6
- Strip bearing: Form factor between 2 and 6
- Point bearing: Form factor < 2

## Influence of the form factor on the deflection at the static load limit for a homogeneous material

Reference value: Form factor q=3



## Influence of the form factor on the static load limit for a homogeneous material

Reference value: Form factor q=3

