VIBRAX® – Elastomeric bearings
PUR vibration isolation mats

VIBRAX®PUR
premium vibration isolation, low natural frequency
Product properties

Principle
Vibration isolation is becoming increasingly important in the construction industry and in mechanical engineering. The noise and the vibrations caused have a negative impact on the environment and may lead to structural damage and health concerns. Vibration bearings made of VIBRAX®PUR form the link between a dynamically inducing system and the system to be protected. As a bearing element, VIBRAX®PUR highly efficiently reduces noise and vibrations.

Properties
- VIBRAX®PUR is a mixed cellular elastomer and is made of a special polyurethane.
- In contrast to non-cellular materials, VIBRAX®PUR exhibits gas volumes embedded in the structure. As a result, the material is volume compressible under static and dynamic load. This means that the spring stiffness does not exclusively depend on shore hardness and shape. The load deflection curve is almost linear up to the maximum static constant load. With higher loads on the bearings, a depressive behaviour follows, which allows the bearing to react to additional dynamic forces particularly softly, enabling optimal vibration isolation.
- Due to the special polymer structure VIBRAX®PUR is not affected by brief peak loads. The material almost completely returns to its starting position after temporary overloads.
- VIBRAX®PUR exhibits a very low dynamic stiffening factor and enables high isolation efficiency even with low bearing thicknesses.
- Special types with adapted strengths can also be manufactured.

Aspects of vibration isolation
With vibration isolation, mass is decoupled from the foundation by the means of a damping spring. Two forms of vibration are to be distinguished:
- active vibration isolation that minimises vibrations in the direct surroundings of the exciter
- passive vibration isolation that shields the object to be protected from external impacts

The effectiveness of vibration isolation depends on the coupled masses and the flexibility of the spring used. The following basically applies: The softer the spring the better the vibration isolation at frequencies above the (v2-fold) resonance frequency. A low-tuned bearing with "soft" springs causes sinking under static load to a great extent. Even small variations in load may cause large relative movements between the foundation and the object to be supported. As the requirement of maximum vibration isolation with a "soft" spring is confronted with stability, the implementation of vibration isolation usually consists of a compromise.

In first-order approximation, an elastically supported system may be considered as a damped single-mass oscillator (figure 3). This model theoretically assumes dynamic infinitely stiff masses and a rigid foundation. This generally applies to exciter masses which are very small compared to the foundation. In remark, considerations have to be amended if discontinuous impact forces are impinging on the system instead of continuous exciter forces.

Aspects of implementation
In the simplest case (one-dimensional mass-spring-system) of vibration isolation with an elastomer, the calculated natural frequencies can be found in the product data sheets using the static pressure. Depending on the implementation, the required frequency ratio $f/f_0$ – according to which the necessary thickness of VIBRAX®PUR and the pressure can be calculated – can be determined using a required isolation efficiency or isolation value.

1 Isolation effect depending on frequency ratio and damping
2 VIBRAX®PUR stock range
3 Damped single-mass oscillator
Overview VIBRAX®PUR

Delivery form
- Material: mixed cellular polyether-urethane
- Thickness: 12.5 mm and 25 mm
- Mats: 2.0 m long, 0.5 m wide
- Other dimensions available on request (incl. stamped and molded components)

Working range

<table>
<thead>
<tr>
<th>Eigenschaft</th>
<th>10</th>
<th>16</th>
<th>26</th>
<th>40</th>
<th>65</th>
<th>110</th>
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<th>260</th>
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<td>Colour</td>
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<td>orange</td>
<td>yellow</td>
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<td>green</td>
<td>dark green</td>
<td>petrol</td>
<td>blue</td>
<td>dark blue</td>
<td>dark violet</td>
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<td>0.016</td>
<td>0.026</td>
<td>0.040</td>
<td>0.065</td>
<td>0.110</td>
<td>0.170</td>
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<td>0.650</td>
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<td>Dynamic loads [N/mm²] (1)</td>
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<td>0.026</td>
<td>0.040</td>
<td>0.065</td>
<td>0.110</td>
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<td>&lt; 5</td>
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<td>&gt; 10¹⁰</td>
<td>&gt; 10¹⁰</td>
<td>&gt; 10¹⁰</td>
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<td>&gt; 10¹⁰</td>
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<td>0.05</td>
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<td>Temperature peak [°C]</td>
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<td>Inflammability</td>
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</table>

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Application examples

Application
The VIBRAX®PUR product range is used as an elastic bearing element in various fields of application. Main applications as full-surface mount, strip or discrete bearing include the machinery and construction industries as well as the railway sector. VIBRAX®PUR is an economic solution in the area of structure-borne sound decoupling and vibration isolation thanks to its long-term stability and simple installation.

Application areas
Industry
VIBRAX®PUR is used for elastic bearings of machines and systems as well as floor constructions. According to the structure and individual needs full-surface, strip or point bearings can be realised.

Machine bearings
- Point bearings directly underneath the system
- Full-surface mount of large scale foundations

Construction
As part of vibration protection measures, e.g. for construction projects in close proximity to railway lines, VIBRAX®PUR is used for the decoupling of entire buildings. The type of bearings depends on the required tuning frequency and the constructive marginal conditions. Due to careful planning and realisation, the air-borne sound level in the building is reduced audibly.

Full-surface bearings for buildings
- Continuous bearings of base plate
- Strip and/or point bearings of walls and columns
- Continuous bearings above ground floor and/or cellar

Railway
VIBRAX®PUR is used in overground and underground railway transport in order to minimise vibrations transmitted into the ground. By means of the PUR mats the track system is completely separated from its environment.
Overview VIBRAX®PUR 10

**Working range**

![Graph showing specific load vs. type]

**Recommendations for elastic bearing:**
- Static load: up to [N/mm²]
  - 0.010
- Dynamic load: up to [N/mm²]
  - 0.016
- Load peaks: up to [N/mm²]
  - 0.5

Values depending on form factor and apply to form factor q = 3

**Material:** mixed cellular polyether-urethane

**Colour:** red

**Delivery specifications**
- Thickness: 12.5 mm and 25 mm
- Mats: 0.5 m wide, 2.0 m long
- Stripes: max. 2.0 m long
- Other dimensions on request (also stamping and moulded parts)

### Properties

<table>
<thead>
<tr>
<th>Properties</th>
<th>Value</th>
<th>Test method</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical loss factor</td>
<td>0.25</td>
<td>DIN 53513 [2]</td>
<td>guide value</td>
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<td>Static E-modulus [1]</td>
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<tr>
<td>Dynamic E-modulus [1]</td>
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<td>Resistance to strain</td>
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<td>at 10 % deformation</td>
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<tr>
<td>Residual compression set</td>
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<td>DIN EN ISO 1856</td>
<td>50 %, 23 °C, 70 h, 30 min after unloading</td>
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<tr>
<td>Tensile strength</td>
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<td>DIN 53455-6-4</td>
<td>minimum</td>
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<tr>
<td>Elongation at break</td>
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<td>DIN 53455-6-4</td>
<td>minimum</td>
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<tr>
<td>Rebound elasticity</td>
<td>50 %</td>
<td>DIN EN ISO 8307</td>
<td>±10 %</td>
</tr>
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<td>Specific volume resistance</td>
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<td>dry</td>
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<tr>
<td>Temperature peak</td>
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<td>Inflammability</td>
<td>Class E / EN 13501-1</td>
<td>EN ISO 11925-1</td>
<td>normal flammable</td>
</tr>
</tbody>
</table>

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Product data sheet VIBRAX®PUR 10

Load deflection curve

- Recording of the 3rd loading; testing between steel plates at room temperature
- Measured with a deflection rate of 1% of the thickness per second
- Form factor \( q = 3 \)

Modulus of elasticity

- Dynamic test: sinusoidal excitation with an oscillating range of ±0.22 mm at 10 Hz and ±0.08 mm at 30 Hz
- Quasistatic modulus of elasticity: tangent modulus taken from the load deflection curve
- Test according to DIN 53513
- Form factor \( q = 3 \)

Natural frequency

- Natural frequency of a single degree of freedom system consisting of a fixed mass and an elastic bearing consisting of VIBRAX®PUR 10 on a stiff subgrade
- Form factor \( q = 3 \)
Product data sheet VIBRAX®PUR 10

Correction values varying form factors
- specific load 0.010 N/mm², form factor q = 3

Static load range

Deflection

Dynamic modulus of elasticity at 10 Hz

Natural frequency

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Overview VIBRAX®PUR 16

Working range

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<td>(2)</td>
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<td>Dynamic E-modulus</td>
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<td>(2)</td>
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<td>Rebound elasticity</td>
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<td>±10 %</td>
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<td>Specific volume resistance</td>
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<td>dry</td>
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<td>Thermal conductivity</td>
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<td>Temperature peak</td>
<td>+120 °C</td>
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<td>normal flammable</td>
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</table>

(1) measured at maximum limit of static application range
(2) test according to DIN 53513

Recommendations for elastic bearing:

- Static load: up to [N/mm²]
  - 0.016
- Dynamic load: up to [N/mm²]
  - 0.026
- Load peaks: up to [N/mm²]
  - 0.7

Values depending on form factor and apply to form factor q = 3

Material: mixed cellular polyether-urethane
Colour: pink

Delivery specifications
- Thickness: 12.5 mm and 25 mm
- Mats: 0.5 m wide, 2.0 m long
- Stripes: max. 2.0 m long
- Other dimensions on request (also stamping and moulded parts)
Product data sheet VIBRAX® PUR 16

- Recording of the 3rd loading; testing between steel plates at room temperature
- Measured with a deflection rate of 1% of the thickness per second
- Form factor \( q = 3 \)

**Load deflection curve**

**Modulus of elasticity**

- Dynamic test: sinusoidal excitation with an oscillating range of \( \pm 0.22 \) mm at 10 Hz and \( \pm 0.08 \) mm at 30 Hz
- Quasistatic modulus of elasticity: tangent modulus taken from the load deflection curve
- Test according to DIN 53513
- Form factor \( q = 3 \)

**Natural frequency**

- Natural frequency of a single degree of freedom system consisting of a fixed mass and an elastic bearing consisting of VIBRAX® PUR 16 on a stiff subgrade
- Form factor \( q = 3 \)
Product data sheet VIBRAX®PUR 16

Correction values varying form factors
• specific load 0.016 N/mm², form factor q = 3

Static load range

Deflection

Dynamic modulus of elasticity at 10 Hz

Natural frequency

This data sheet is not subject to any change service. All information is given without warranty.
Upon publication of this product data sheet, all previous issues become void.
Overview VIBRAX®PUR 26

Recommendations for elastic bearing:
Static load: up to [N/mm²]
0.026
Dynamic load: up to [N/mm²]
0.040
Load peaks: up to [N/mm²]
1.0

Values depending on form factor and apply to form factor q = 3

Material: mixed cellular polyether-urethane
Colour: orange

Delivery specifications
Thickness: 12.5 mm and 25 mm
Mats: 0.5 m wide, 2.0 m long
Stripes: max. 2.0 m long
Other dimensions on request (also stamping and moulded parts)

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<thead>
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<th>Properties</th>
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¹¹ measured at maximum limit of static application range
²² test according to DIN 53513

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Product data sheet VIBRAX®PUR 26

Load deflection curve

- Recording of the 3rd loading; testing between steel plates at room temperature
- Measured with a deflection rate of 1% of the thickness per second
- Form factor \( q = 3 \)

Modulus of elasticity

- Dynamic test: sinusoidal excitation with an oscillating range of \( \pm 0.22 \text{ mm at 10 Hz and } \pm 0.08 \text{ mm at 30 Hz} \)
- Quasistatic modulus of elasticity: tangent modulus taken from the load deflection curve
- Test according to DIN 53513
- Form factor \( q = 3 \)

Natural frequency

- Natural frequency of a single degree of freedom system consisting of a fixed mass and an elastic bearing consisting of VIBRAX®PUR 26 on a stiff subgrade
- Form factor \( q = 3 \)
**Correction values varying form factors**
- specific load 0.026 N/mm², form factor q = 3

**Static load range**

**Deflection**

**Dynamic modulus of elasticity at 10 Hz**

**Natural frequency**

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Vibration damping

Overview VIBRAX®PUR 40

**Properties** | **Value** | **Test method** | **Comment**
--- | --- | --- | ---
Mechanical loss factor | 0.15 | DIN 53513 | guide value
Static E-modulus | 0.316 N/mm² | DIN 53513 | (1)
Dynamic E-modulus | 0.743 N/mm² | DIN 53513 | (2)
Resistance to strain | 0.046 N/mm² | DIN EN ISO 1856 | at 10 % deformation
Residual compression set | < 5 % | DIN EN ISO 1856 | 50 %, 23 °C, 70 h, 30 min after unloading
Tensile strength | > 0.55 N/mm² | DIN 53455-6-4 | minimum
Elongation at break | > 400 % | DIN 53455-6-4 | minimum
Rebound elasticity | 50 % | DIN EN ISO 8307 | ±10 %
Specific volume resistance | >10¹¹ Ω·cm | DIN IEC 93 | dry
Thermal conductivity | 0.07 W/(m·K) | DIN 52612-1 | (3)
Operating temperature | -30 to +70 °C | | |
Temperature peak | +120 °C | | |
Inflammability | Class E / EN 13501-1 | EN ISO 11925-1 | normal flammable

(1) measured at maximum limit of static application range  
(2) test according to DIN 53513

The technical data mentioned in this product data sheet was derived from laboratory experiments. Circumstances beyond our control may lead to deviations from the effective values.
Product data sheet VIBRAX®PUR 40

Load deflection curve

- Recording of the 3rd loading; testing between steel plates at room temperature
- Measured with a deflection rate of 1% of the thickness per second
- Form factor $q = 3$

Modulus of elasticity

- Dynamic test: sinusoidal excitation with an oscillating range of ±0.22 mm at 10 Hz and ±0.08 mm at 30 Hz
- Quasistatic modulus of elasticity: tangent modulus taken from the load deflection curve
- Test according to DIN 53513
- Form factor $q = 3$

Natural frequency

- Natural frequency of a single degree of freedom system consisting of a fixed mass and an elastic bearing consisting of VIBRAX®PUR 40 on a stiff subgrade
- Form factor $q = 3$
Vibration damping

Product data sheet VIBRAX®PUR 40

Correction values varying form factors
- specific load 0.040 N/mm², form factor q = 3

Static load range

Deflection

Dynamic modulus of elasticity at 10 Hz

Natural frequency

This data sheet is not subject to any change service. All information is given without warranty. Upon publication of this product data sheet, all previous issues become void.
Overview VIBRAX®PUR 65

Recommendations for elastic bearing:

- **Static load:** up to [N/mm²] **0.065**
- **Dynamic load:** up to [N/mm²] **0.110**
- **Load peaks:** up to [N/mm²] **2.5**

Values depending on form factor and apply to form factor q = 3

**Material:** mixed cellular polyether-urethane

**Colour:** bright green

**Delivery specifications**
- **Thickness:** 12.5 mm and 25 mm
- **Mats:** 0.5 m wide, 2.0 m long
- **Stripes:** max. 2.0 m long

Other dimensions on request (also stamping and moulded parts)

The technical data mentioned in this product data sheet was derived from laboratory experiments. Circumstances beyond our control may lead to deviations from the effective values.
Product data sheet VIBRAX®PUR 65

Load deflection curve

- Recording of the 3rd loading; testing between steel plates at room temperature
- Measured with a deflection rate of 1% of the thickness per second
- Form factor $q = 3$

Modulus of elasticity

- Dynamic test: sinusoidal excitation with an oscillating range of ±0.22 mm at 10 Hz and ±0.08 mm at 30 Hz
- Quasistatic modulus of elasticity: tangent modulus taken from the load deflection curve
- Test according to DIN 53513
- Form factor $q = 3$

Natural frequency

- Natural frequency of a single degree of freedom system consisting of a fixed mass and an elastic bearing consisting of VIBRAX®PUR 65 on a stiff subgrade
- Form factor $q = 3$
Product data sheet VIBRAX®PUR 65

Correction values varying form factors
- specific load 0.065 N/mm², form factor q = 3

Static load range

Deflection

Dynamic modulus of elasticity at 10 Hz

Natural frequency

This data sheet is not subject to any change service. All information is given without warranty. Upon publication of this product data sheet, all previous issues become void.
Overview VIBRAX®PUR 110

### Working range

![Graph showing specific load vs. type]

#### Recommendations for elastic bearing:

- **Static load:** up to [N/mm²]
  - **0.110**

- **Dynamic load:** up to [N/mm²]
  - **0.170**

- **Load peaks:** up to [N/mm²]
  - **3.0**

Values depending on form factor and apply to form factor q = 3

#### Material:
- Mixed cellular polyether-urethane

#### Colour:
- Green

#### Delivery specifications
- **Thickness:** 12.5 mm and 25 mm
- **Mats:** 0.5 m wide, 2.0 m long
- **Stripes:** max. 2.0 m long

Other dimensions on request (also stamping and moulded parts)

### Properties

<table>
<thead>
<tr>
<th>Properties</th>
<th>Value</th>
<th>Test method</th>
<th>Comment</th>
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<tbody>
<tr>
<td>Static E-modulus</td>
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<td>Resistance to strain</td>
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<td>at 10 % deformation</td>
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<tr>
<td>Residual compression set</td>
<td>≤ 5 %</td>
<td>DIN EN ISO 1856</td>
<td>50 %, 23 °C, 70 h, 30 min after unloading</td>
</tr>
<tr>
<td>Tensile strength</td>
<td>&gt; 0.95 N/mm²</td>
<td>DIN 53455-6-4</td>
<td>Minimum</td>
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<tr>
<td>Elongation at break</td>
<td>&gt; 400 %</td>
<td>DIN 53455-6-4</td>
<td>Minimum</td>
</tr>
<tr>
<td>Rebound elasticity</td>
<td>50 %</td>
<td>DIN EN ISO 8307</td>
<td>±10 %</td>
</tr>
<tr>
<td>Specific volume resistance</td>
<td>&gt;10¹¹ Ω·cm</td>
<td>DIN IEC 93</td>
<td>Dry</td>
</tr>
<tr>
<td>Thermal conductivity</td>
<td>0.08 W/(m·K)</td>
<td>DIN 52612-1</td>
<td></td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-30 to +70 °C</td>
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<td></td>
</tr>
<tr>
<td>Temperature peak</td>
<td>+120 °C</td>
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<td></td>
</tr>
<tr>
<td>Inflammability</td>
<td>Class E / EN 13501-1</td>
<td>EN ISO 11925-1</td>
<td>Normal flammable</td>
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</tbody>
</table>

[1] measured at maximum limit of static application range
[2] test according to DIN 53513

The technical data mentioned in this product data sheet was derived from laboratory experiments. Circumstances beyond our control may lead to deviations from the effective values.
Product data sheet VIBRAX®PUR 110

Load deflection curve

- Recording of the 3rd loading; testing between steel plates at room temperature
- Measured with a deflection rate of 1% of the thickness per second
- Form factor $q = 3$

Modulus of elasticity

- Dynamic test: sinusoidal excitation with an oscillating range of ±0.22 mm at 10 Hz and ±0.08 mm at 30 Hz
- Quasistatic modulus of elasticity: tangent modulus taken from the load deflection curve
- Test according to DIN 53513
- Form factor $q = 3$

Natural frequency

- Natural frequency of a single degree of freedom system consisting of a fixed mass and an elastic bearing consisting of VIBRAX®PUR 110 on a stiff subgrade
- Form factor $q = 3$
Vibration damping

Product data sheet VIBRAX®PUR 110

Correction values varying form factors
- specific load 0.110 N/mm², form factor q = 3

Static load range

![Static load range graph](image)

Deflection

![Deflection graph](image)

Dynamic modulus of elasticity at 10 Hz

![Dynamic modulus graph](image)

Natural frequency

![Natural frequency graph](image)

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Upon publication of this product data sheet, all previous issues become void.
Overview VIBRAX®PUR 170

Recommendations for elastic bearing:

Static load: up to [N/mm²]

0.170

Dynamic load: up to [N/mm²]

0.260

Load peaks: up to [N/mm²]

3.5

Values depending on form factor and apply to form factor q = 3

Material: mixed cellular polyether-urethane

Colour: dark green

Delivery specifications

Thickess: 12.5 mm and 25 mm

Mats: 0.5 m wide, 2.0 m long

Stripes: max. 2.0 m long

Other dimensions on request (also stamping and moulded parts)

<table>
<thead>
<tr>
<th>Properties</th>
<th>Value</th>
<th>Test method</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static E-modulus [1]</td>
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<td>DIN 53513 [2]</td>
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<tr>
<td>Dynamic E-modulus [1]</td>
<td>2.27 N/mm²</td>
<td>DIN 53513 [2]</td>
<td></td>
</tr>
<tr>
<td>Resistance to strain</td>
<td>0.17 N/mm²</td>
<td>at 10 % deformation</td>
<td></td>
</tr>
<tr>
<td>Residual compression set</td>
<td>&lt; 5 %</td>
<td>DIN EN ISO 1856</td>
<td>50 %, 23 °C, 70 h, 30 min after unloading</td>
</tr>
<tr>
<td>Tensile strength</td>
<td>&gt; 1.25 N/mm²</td>
<td>DIN 53455-6-4</td>
<td>minimum</td>
</tr>
<tr>
<td>Elongation at break</td>
<td>&gt; 400 %</td>
<td>DIN 53455-6-4</td>
<td>minimum</td>
</tr>
<tr>
<td>Rebound elasticity</td>
<td>50 %</td>
<td>DIN EN ISO 8307</td>
<td>±10 %</td>
</tr>
<tr>
<td>Specific volume resistance</td>
<td>&gt;10¹¹ Ω·cm</td>
<td>DIN IEC 93</td>
<td>dry</td>
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<tr>
<td>Thermal conductivity</td>
<td>0.08 W/[m·K]</td>
<td>DIN 52612-1</td>
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<td>Operating temperature</td>
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<td>Temperature peak</td>
<td>+120 °C</td>
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<tr>
<td>Inflammability</td>
<td>Class E / EN 13501-1</td>
<td>EN ISO 11925-1</td>
<td>normal flammable</td>
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</tbody>
</table>

[1] measured at maximum limit of static application range
[2] test according to DIN 53513

The technical data mentioned in this product data sheet was derived from laboratory experiments. Circumstances beyond our control may lead to deviations from the effective values.
Product data sheet VIBRAX®PUR 170

Load deflection curve

- Recording of the 3rd loading; testing between steel plates at room temperature
- Measured with a deflection rate of 1% of the thickness per second
- Form factor $q = 3$

Modulus of elasticity

- Dynamic test: sinusoidal excitation with an oscillating range of ±0.22 mm at 10 Hz and ±0.08 mm at 30 Hz
- Quasistatic modulus of elasticity: tangent modulus taken from the load deflection curve
- Test according to DIN 53513
- Form factor $q = 3$

Natural frequency

- Natural frequency of a single degree of freedom system consisting of a fixed mass and an elastic bearing consisting of VIBRAX®PUR 170 on a stiff subgrade
- Form factor $q = 3$
Product data sheet VIBRAX® PUR 170

Correction values varying form factors
- specific load 0.17 N/mm², form factor q = 3

Static load range

- Specific load (N/mm²)
  - Form factor
  - Variation of deflection [%]

Deflection

- Variation of deflection [%]
  - Form factor

Dynamic modulus of elasticity at 10 Hz

- Variation of the dynamic modulus of elasticity [%]
  - Form factor

Natural frequency

- Variation of the natural frequency [%]
  - Form factor

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Overview VIBRAX®PUR 260

Properties

<table>
<thead>
<tr>
<th>Properties</th>
<th>Value</th>
<th>Test method</th>
<th>Comment</th>
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</thead>
<tbody>
<tr>
<td>Mechanical loss factor (1)</td>
<td>0.11</td>
<td>DIN 53513 (2)</td>
<td>guide value</td>
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<td>Static E-modulus (3)</td>
<td>1.64 N/mm²</td>
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</tr>
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<td>Dynamic E-modulus (3)</td>
<td>3.63 N/mm²</td>
<td>DIN 53513 (2)</td>
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<tr>
<td>Resistance to strain</td>
<td>0.270 N/mm²</td>
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<td>at 10 % deformation</td>
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<tr>
<td>Residual compression set</td>
<td>&lt; 5 %</td>
<td>DIN EN ISO 1856</td>
<td>50 %, 23 °C, 70 h, 30 min after unloading</td>
</tr>
<tr>
<td>Tensile strength</td>
<td>&gt; 1.65 N/mm²</td>
<td>DIN 53455-6-4</td>
<td>minimum</td>
</tr>
<tr>
<td>Elongation at break</td>
<td>&gt; 400 %</td>
<td>DIN 53455-6-4</td>
<td>minimum</td>
</tr>
<tr>
<td>Rebound elasticity</td>
<td>50 %</td>
<td>DIN EN ISO 8307</td>
<td>±10 %</td>
</tr>
<tr>
<td>Specific volume resistance</td>
<td>&gt;10¹¹ Ω·cm</td>
<td>DIN IEC 93</td>
<td>dry</td>
</tr>
<tr>
<td>Thermal conductivity</td>
<td>0.08 W/(m·K)</td>
<td>DIN 52612-1</td>
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</tr>
<tr>
<td>Operating temperature</td>
<td>−30 to +70 °C</td>
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<tr>
<td>Temperature peak</td>
<td>+120 °C</td>
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<td>Inflammability</td>
<td>Class E / EN 13501-1</td>
<td>EN ISO 11925-1</td>
<td>normal flammable</td>
</tr>
</tbody>
</table>

Recommendations for elastic bearing:

- Static load: up to [N/mm²] 0.260
- Dynamic load: up to [N/mm²] 0.400
- Load peaks: up to [N/mm²] 4.0

Values depending on form factor and apply to form factor q = 3

Material: mixed cellular polyether-urethane
Colour: petrol

Delivery specifications

- Thickness: 12.5 mm and 25 mm
- Mats: 0.5 m wide, 2.0 m long
- Stripes: max. 2.0 m long

Other dimensions on request (also stamping and moulded parts)

Notes:

1) measured at maximum limit of static application range
2) test according to DIN 53513

The technical data mentioned in this product data sheet was derived from laboratory experiments. Circumstances beyond our control may lead to deviations from the effective values.
Product data sheet VIBRAX®PUR 260

Load deflection curve

- Recording of the 3rd loading; testing between steel plates at room temperature
- Measured with a deflection rate of 1% of the thickness per second
- Form factor $q = 3$

Modulus of elasticity

- Dynamic test: sinusoidal excitation with an oscillating range of ±0.22 mm at 10 Hz and ±0.08 mm at 30 Hz
- Quasistatic modulus of elasticity: tangent modulus taken from the load deflection curve
- Test according to DIN 53513
- Form factor $q = 3$

Natural frequency

- Natural frequency of a single degree of freedom system consisting of a fixed mass and an elastic bearing consisting of VIBRAX®PUR 260 on a stiff subgrade
- Form factor $q = 3$
Correction values varying form factors

- specific load 0.26 N/mm², form factor q = 3

Static load range

![Graph showing specific load vs form factor]

Deflection

![Graph showing variation of deflection vs form factor]

Dynamic modulus of elasticity at 10 Hz

![Graph showing variation of the dynamic modulus of elasticity vs form factor]

Natural frequency

![Graph showing variation of the natural frequency vs form factor]

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Overview VIBRAX® PUR 400

Recommendations for elastic bearing:
Static load: up to [N/mm²] 0.400
Dynamic load: up to [N/mm²] 0.650
Load peaks: up to [N/mm²] 4.5

Values depending on form factor and apply to form factor q = 3

Material: mixed cellular polyether-urethane
Colour: blue

Delivery specifications
Thickness: 12.5 mm and 25 mm
Mats: 0.5 m wide, 2.0 m long
Stripes: max. 2.0 m long

Other dimensions on request (also stamping and moulded parts)

The technical data mentioned in this product data sheet was derived from laboratory experiments. Circumstances beyond our control may lead to deviations from the effective values.
Product data sheet VIBRAX®PUR 400

Load deflection curve

- Recording of the 3rd loading; testing between steel plates at room temperature
- Measured with a deflection rate of 1% of the thickness per second
- Form factor $q = 3$

Modulus of elasticity

- Dynamic test: sinusoidal excitation with an oscillating range of ±0.22 mm at 10 Hz and ±0.08 mm at 30 Hz
- Quasistatic modulus of elasticity: tangent modulus taken from the load deflection curve
- Test according to DIN 53513
- Form factor $q = 3$

Natural frequency

- Natural frequency of a single degree of freedom system consisting of a fixed mass and an elastic bearing consisting of VIBRAX®PUR 400 on a stiff subgrade
- Form factor $q = 3$
Product data sheet VIBRAX®PUR 400

Correction values varying form factors
- specific load 0.40 N/mm², form factor q = 3

Static load range

Deflection

Dynamic modulus of elasticity at 10 Hz

Natural frequency

This data sheet is not subject to any change service. All information is given without warranty. Upon publication of this product data sheet, all previous issues become void.
Overview VIBRAX® PUR 650

<table>
<thead>
<tr>
<th>Properties</th>
<th>Value</th>
<th>Test method</th>
<th>Comment</th>
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<tbody>
<tr>
<td>Mechanical loss factor</td>
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<td>guide value</td>
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<td>Static E-modulus</td>
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<td>Dynamic E-modulus</td>
<td>10.4 N/mm²</td>
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<tr>
<td>Resistance to strain</td>
<td>0.590 N/mm²</td>
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<td>at 10 % deformation</td>
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<tr>
<td>Residual compression set</td>
<td>&lt; 7 %</td>
<td>DIN EN ISO 1856</td>
<td>50 %, 23 °C, 70 h, 30 min after unloading</td>
</tr>
<tr>
<td>Tensile strength</td>
<td>&gt; 3.00 N/mm²</td>
<td>DIN 53455-6-4</td>
<td>minimum</td>
</tr>
<tr>
<td>Elongation at break</td>
<td>&gt; 400 %</td>
<td>DIN 53455-6-4</td>
<td>minimum</td>
</tr>
<tr>
<td>Rebound elasticity</td>
<td>50 %</td>
<td>DIN EN ISO 8307</td>
<td>±10 %</td>
</tr>
<tr>
<td>Specific volume resistance</td>
<td>&gt;10¹¹ Ω·cm</td>
<td>DIN IEC 93</td>
<td>dry</td>
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<tr>
<td>Thermal conductivity</td>
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<td>Temperature peak</td>
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<td>Inflammability</td>
<td>Class E / EN 13501-1</td>
<td>EN ISO 11925-1</td>
<td>normal flammable</td>
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</table>

The technical data mentioned in this product data sheet was derived from laboratory experiments. Circumstances beyond our control may lead to deviations from the effective values.

Recommendations for elastic bearing:
- Static load: up to [N/mm²] 0.650
- Dynamic load: up to [N/mm²] 0.950
- Load peaks: up to [N/mm²] 5.5

Values depending on form factor and apply to form factor q = 3

Material: mixed cellular polyether-urethane
Colour: dark blue

Delivery specifications
- Thickness: 12.5 mm and 25 mm
- Mats: 0.5 m wide, 2.0 m long
- Stripes: max. 2.0 m long
- Other dimensions on request (also stamping and moulded parts)

Notes:
- (1) measured at maximum limit of static application range
- (2) test according to DIN 53513
Product data sheet VIBRAX® PUR 650

- Recording of the 3rd loading; testing between steel plates at room temperature
- Measured with a deflection rate of 1% of the thickness per second
- Form factor q = 2

**Modulus of elasticity**

- Dynamic test: sinusoidal excitation with an oscillating range of ±0.22 mm at 10 Hz and ±0.08 mm at 30 Hz
- Quasistatic modulus of elasticity: tangent modulus taken from the load deflection curve
- Test according to DIN 53513
- Form factor q = 2

**Natural frequency**

- Natural frequency of a single degree of freedom system consisting of a fixed mass and an elastic bearing consisting of VIBRAX® PUR 650 on a stiff subgrade
- Form factor q = 2
Correction values varying form factors
• specific load 0.60 N/mm², form factor q = 2

Static load range

Deflection

Dynamic modulus of elasticity at 10 Hz

Natural frequency

This data sheet is not subject to any change service. All information is given without warranty.
Upon publication of this product data sheet, all previous issues become void.
## Overview VIBRAX®PUR 950

<table>
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<th>Properties</th>
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<th>Test method</th>
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<td>Mechanical loss factor (1)</td>
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<td>guide value</td>
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<td>Dynamic E-modulus (1)</td>
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<td>Resistance to strain</td>
<td>0.93 N/mm²</td>
<td>DIN ISO 1856</td>
<td>at 10 % deformation</td>
</tr>
<tr>
<td>Residual compression set</td>
<td>&lt; 9 %</td>
<td>DIN 53455-6-4</td>
<td>50 %, 23 °C, 70 h, 30 min after unloading</td>
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<td>Tensile strength</td>
<td>&gt; 3.8 N/mm²</td>
<td>DIN 53455-6-4</td>
<td>minimum</td>
</tr>
<tr>
<td>Elongation at break</td>
<td>&gt; 400 %</td>
<td>DIN 53455-6-4</td>
<td>minimum</td>
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<tr>
<td>Rebound elasticity</td>
<td>50 %</td>
<td>DIN EN ISO 8307</td>
<td>±10 %</td>
</tr>
<tr>
<td>Specific volume resistance</td>
<td>&gt;10¹¹ Ω·cm</td>
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<td>dry</td>
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<tr>
<td>Thermal conductivity</td>
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<td>DIN 52612-1</td>
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<tr>
<td>Operating temperature</td>
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<td>Temperature peak</td>
<td>+120 °C</td>
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<tr>
<td>Inflammability</td>
<td>Class E / EN 13501-1</td>
<td>EN ISO 11925-1</td>
<td>normal flammable</td>
</tr>
</tbody>
</table>

### Recommendations for elastic bearing:
- **Static load:** up to [N/mm²] **0.950**
- **Dynamic load:** up to [N/mm²] **1.450**
- **Load peaks:** up to [N/mm²] **6.0**

Values depending on form factor and apply to form factor q = 3

**Material:** mixed cellular polyether-urethane  
**Colour:** dark violet

**Delivery specifications**
- Thickness: 12.5 mm and 25 mm
- Mats: 0.5 m wide, 2.0 m long
- Stripes: max. 2.0 m long

*Other dimensions on request (also stamping and moulded parts)*

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The technical data mentioned in this product data sheet was derived from laboratory experiments. Circumstances beyond our control may lead to deviations from the effective values.
Product data sheet VIBRAX®PUR 950

Load deflection curve

- Recording of the 3rd loading: testing between steel plates at room temperature
- Measured with a deflection rate of 1% of the thickness per second
- Form factor $q = 2$

Modulus of elasticity

- Dynamic test: sinusoidal excitation with an oscillating range of ±0.22 mm at 10 Hz and ±0.08 mm at 30 Hz
- Quasistatic modulus of elasticity: tangent modulus taken from the load deflection curve
- Test according to DIN 53513
- Form factor $q = 2$

Natural frequency

- Natural frequency of a single degree of freedom system consisting of a fixed mass and an elastic bearing consisting of VIBRAX®PUR 950 on a stiff subgrade
- Form factor $q = 2$
Correction values varying form factors
- specific load 0.90 N/mm², form factor q = 2

Static load range

Deflection

Dynamic modulus of elasticity at 10 Hz

Natural frequency

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### Vibration damping

**Overview VIBRAX®PUR 1300**

**Working range**

<table>
<thead>
<tr>
<th>Type</th>
<th>Specific load [N/mm²]</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>0.001</td>
</tr>
<tr>
<td>16</td>
<td>0.01</td>
</tr>
<tr>
<td>26</td>
<td>0.1</td>
</tr>
<tr>
<td>40</td>
<td>1.0</td>
</tr>
<tr>
<td>65</td>
<td>10.0</td>
</tr>
<tr>
<td>110</td>
<td>100.0</td>
</tr>
<tr>
<td>170</td>
<td>1000.0</td>
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<td>10000.0</td>
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<td>400</td>
<td>100000.0</td>
</tr>
<tr>
<td>650</td>
<td>1000000.0</td>
</tr>
<tr>
<td>950</td>
<td>10000000.0</td>
</tr>
<tr>
<td>1300</td>
<td>100000000.0</td>
</tr>
<tr>
<td>1900</td>
<td>1000000000.0</td>
</tr>
</tbody>
</table>

#### Recommendations for elastic bearing:

- **Static load:** up to [N/mm²]
  - **1.300**

- **Dynamic load:** up to [N/mm²]
  - **2.000**

- **Load peaks:** up to [N/mm²]
  - **6.5**

  Values depending on form factor and apply to form factor q = 3

**Material:** mixed cellular polyether-urethane

**Colour:** violet

**Delivery specifications**

- **Thickness:** 12.5 mm and 25 mm
- **Mats:** 0.5 m wide, 2.0 m long
- **Stripes:** max. 2.0 m long

Other dimensions on request (also stamping and moulded parts)

---

#### Properties

<table>
<thead>
<tr>
<th>Properties</th>
<th>Value</th>
<th>Test method</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical loss factor (1)</td>
<td>0.09</td>
<td>DIN 53513 (2)</td>
<td>guide value</td>
</tr>
<tr>
<td>Static E-modulus (3)</td>
<td>12.0 N/mm²</td>
<td>DIN 53513 (2)</td>
<td></td>
</tr>
<tr>
<td>Dynamic E-modulus (3)</td>
<td>35.2 N/mm²</td>
<td>DIN 53513 (2)</td>
<td></td>
</tr>
<tr>
<td>Resistance to strain</td>
<td>1.34 N/mm²</td>
<td>DIN EN ISO 1856</td>
<td>at 10 % deformation</td>
</tr>
<tr>
<td>Residual compression set</td>
<td>&lt; 9 %</td>
<td>DIN EN ISO 1856</td>
<td>50 %, 23 °C, 70 h, 30 min after unloading</td>
</tr>
<tr>
<td>Tensile strength</td>
<td>&gt; 4.4 N/mm²</td>
<td>DIN 53455-6-4</td>
<td>minimum</td>
</tr>
<tr>
<td>Elongation at break</td>
<td>&gt; 400 %</td>
<td>DIN 53455-6-4</td>
<td>minimum</td>
</tr>
<tr>
<td>Rebound elasticity</td>
<td>50 %</td>
<td>DIN EN ISO 8307</td>
<td>±10 %</td>
</tr>
<tr>
<td>Specific volume resistance</td>
<td>&gt;10¹¹ Ω·cm</td>
<td>DIN IEC 93</td>
<td>dry</td>
</tr>
<tr>
<td>Thermal conductivity</td>
<td>0.11 W/(m·K)</td>
<td>DIN 52612-1</td>
<td></td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-30 to +70 °C</td>
<td>DIN 53513</td>
<td></td>
</tr>
<tr>
<td>Temperature peak</td>
<td>+120 °C</td>
<td>DIN 53513</td>
<td></td>
</tr>
<tr>
<td>Inflammability</td>
<td>Class E / EN 13501-1</td>
<td>EN ISO 11925-1</td>
<td>normal flammable</td>
</tr>
</tbody>
</table>

(1) measured at maximum limit of static application range

(2) test according to DIN 53513

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Product data sheet VIBRAX® PUR 1300

Load deflection curve

- Recording of the 3rd loading; testing between steel plates at room temperature
- Measured with a deflection rate of 1% of the thickness per second
- Form factor q = 2

Modulus of elasticity

- Dynamic test: sinusoidal excitation with an oscillating range of ±0.22 mm at 10 Hz and ±0.08 mm at 30 Hz
- Quasistatic modulus of elasticity: tangent modulus taken from the load deflection curve
- Test according to DIN 53513
- Form factor q = 2

Natural frequency

- Natural frequency of a single degree of freedom system consisting of a fixed mass and an elastic bearing consisting of VIBRAX® PUR 1300 on a stiff subgrade
- Form factor q = 2
Correction values varying form factors

- specific load 1.20 N/mm², form factor q = 2

**Static load range**

![Graph showing static load range](image)

**Deflection**

![Graph showing deflection](image)

**Dynamic modulus of elasticity at 10 Hz**

![Graph showing dynamic modulus of elasticity at 10 Hz](image)

**Natural frequency**

![Graph showing natural frequency](image)

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# Overview VIBRAX®PUR 1900

## Properties

<table>
<thead>
<tr>
<th>Properties</th>
<th>Value</th>
<th>Test method</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical loss factor⁽¹⁾</td>
<td>0.09</td>
<td>DIN 53513⁽²⁾</td>
<td>guide value</td>
</tr>
<tr>
<td>Static E-modulus⁽¹⁾</td>
<td>20.4 N/mm²</td>
<td>DIN 53513⁽²⁾</td>
<td></td>
</tr>
<tr>
<td>Dynamic E-modulus⁽¹⁾</td>
<td>78.2 N/mm²</td>
<td>DIN 53513⁽²⁾</td>
<td></td>
</tr>
<tr>
<td>Resistance to strain</td>
<td>1.84 N/mm²</td>
<td></td>
<td>at 10 % deformation</td>
</tr>
<tr>
<td>Residual compression set</td>
<td>&lt; 8 %</td>
<td>DIN EN ISO 1856</td>
<td>50 %, 23 °C, 70 h, 30 min after unloading</td>
</tr>
<tr>
<td>Tensile strength</td>
<td>&gt; 5.0 N/mm²</td>
<td>DIN 53455-6-4</td>
<td>minimum</td>
</tr>
<tr>
<td>Elongation at break</td>
<td>&gt; 400 %</td>
<td>DIN 53455-6-4</td>
<td>minimum</td>
</tr>
<tr>
<td>Rebound elasticity</td>
<td>50 %</td>
<td>DIN EN ISO 8307</td>
<td>±10 %</td>
</tr>
<tr>
<td>Specific volume resistance</td>
<td>&gt;10⁽¹¹⁾ Ω·cm</td>
<td>DIN IEC 93</td>
<td>dry</td>
</tr>
<tr>
<td>Thermal conductivity</td>
<td>0.11 W/[m·K]</td>
<td>DIN 52612-1</td>
<td></td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-30 to +70 °C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature peak</td>
<td>+120 °C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflammability</td>
<td>Class E / EN 13501-1</td>
<td>EN ISO 11925-1</td>
<td>normal flammable</td>
</tr>
</tbody>
</table>

⁽¹⁾ measured at maximum limit of static application range
⁽²⁾ test according to DIN 53513

## Recommendations for elastic bearing:

### Static load:
- up to [N/mm²]
- **1.900**

### Dynamic load:
- up to [N/mm²]
- **2.800**

### Load peaks:
- up to [N/mm²]
- **7.0**

Values depending on form factor and apply to form factor q = 3

**Material:** mixed cellular polyether-urethane  
**Colour:** bordeaux red

**Delivery specifications**

- **Thickness:** 12.5 mm and 25 mm  
- **Mats:** 0.5 m wide, 2.0 m long  
- **Stripes:** max. 2.0 m long

Other dimensions on request (also stamping and moulded parts)

The technical data mentioned in this product data sheet was derived from laboratory experiments. Circumstances beyond our control may lead to deviations from the effective values.
Product data sheet VIBRAX®PUR 1900

Load deflection curve

- Recording of the 3rd loading; testing between steel plates at room temperature
- Measured with a deflection rate of 1% of the thickness per second
- Form factor $q = 1.25$

Modulus of elasticity

- Dynamic test: sinusoidal excitation with an oscillating range of ±0.22 mm at 10 Hz and ±0.08 mm at 30 Hz
- Quasistatic modulus of elasticity: tangent modulus taken from the load deflection curve
- Test according to DIN 53513
- Form factor $q = 1.25$

Natural frequency

- Natural frequency of a single degree of freedom system consisting of a fixed mass and an elastic bearing consisting of VIBRAX®PUR 400 on a stiff subgrade
- Form factor $q = 1.25$
Product data sheet VIBRAX® PUR 1900

Correction values varying form factors
• specific load 1.60 N/mm², form factor q = 1.25

Static load range

Deflection

Dynamic modulus of elasticity at 10 Hz

Natural frequency

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Project References

Residenz Seesicht Vitznau, Switzerland
mageba products:
Product: VIBRAX®BLOCK B
Vibration isolation
Installed: 2014

Multiplex Cinemas GAUMONT, France
mageba products:
Product: VIBRAX®BLOCK B
Vibration isolation
Installed: 2005

Escher-Terrassen Zürich, Switzerland
mageba products:
Product: VIBRAX®BLOCK B
Vibration isolation
Installed: 2014

Quartier Mailänder Platz Stuttgart, Germany
mageba products:
Product: VIBRAX®BLOCK B
Vibration isolation
Installed: 2014

Carpark Railway station, Winterthur, Switzerland
mageba products:
Product: TENSAGRIP RB
Steel joint, watertight with max. 50 mm movement
Installed: 2015

Main Station Zurich, Switzerland
mageba products:
Product: POLYFLEX®ADVANCED
PU FSJ type PA40 for buildings
Installed: 2015

Airside Center Kloten, Switzerland
mageba products:
Product: LASTOFLONPAD
High-grade Point-sliding-bearing
Installed: 2010

Nestlé Headquarters Vevey, Switzerland
mageba products:
Product: TENSA®BASE
Noise-reducing steel joint
Installed: 2009

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