



## ELASTICALLY SEPARATED FLOOR

**N**oise in buildings is extremely irritating. Disruptions can have a wide variety of causes. For instance, the residents produce noise when walking, which can be transmitted to the neighboring rooms as impact noise. But the operation of machines and equipment also contributes to a burden on the residents.

The transmission of "noises" takes place as structure-borne noise through the bordering walls and ceilings. The permissible values in apartment buildings are specified in e.g. DIN 4109. The per-

the values required in the DIN. The magnitude for impact noise sources is generally 10 dB for the requirements as per DIN 4109 and 17 dB for the increased requirements as per DIN 4109 Addendum 2. For sufficient impact noise (foot fall) protection, the increased requirements should absolutely be applied.

In order to achieve the values for impact noise (foot fall) attenuation required in the DIN, "floating screed" applied directly onto impact noise insulation panels (floating floors) has become

## **Elastically Separated Floor**

missible levels at the recipient are each specified as single values, with respect to a 10 m<sup>2</sup> comparison area. The single value is determined from the one-third octave band level of the air-borne noise in the reception room, measured between 100 and 3150 Hz and in comparison with a reference curve.

The excitation for impact noise (foot fall) measurements is provided by a standardized striking mechanism.

The required improvement is determined by the transmission behavior of the construction components without measures and

common in new buildings. In the area of renovation, special solutions are generally required for elevated floor structures and special requirements for noise protection or the carrying capacity of the floor.





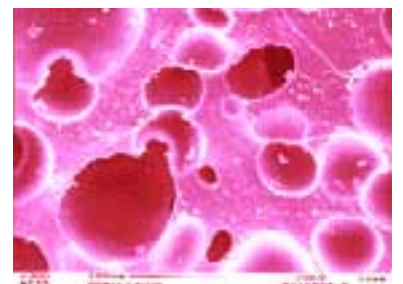
**W**ith Sylomer®, consultants have the option of adapting the bearing to the functional design, thereby designing a solution which is optimal both technically and economically. The bearing can be laid in sheets, strips or at individual points. The additional height required for the elastic bearing is very small. The increased requirements for impact noise protection as per DIN 4109 Addendum 2 are already safely fulfilled under typical installation conditions with a 12 mm layer thickness. The volume required for deformation is provided “with-

The dimensioning of the bearing is determined in accordance with the bearing dimensions, the dead weight of the structure and the expected traffic load. A wide-ranging type selection ensures that the bearing can be adapted optimally to the specified bearing surfaces and loads. Short-term load peaks are easily accepted by Sylomer®.

Bearings of Sylomer® have proven themselves for decades. With correct dimensioning, no dynamic stiffening of the bearing takes place. The effectiveness of the

## **Material**

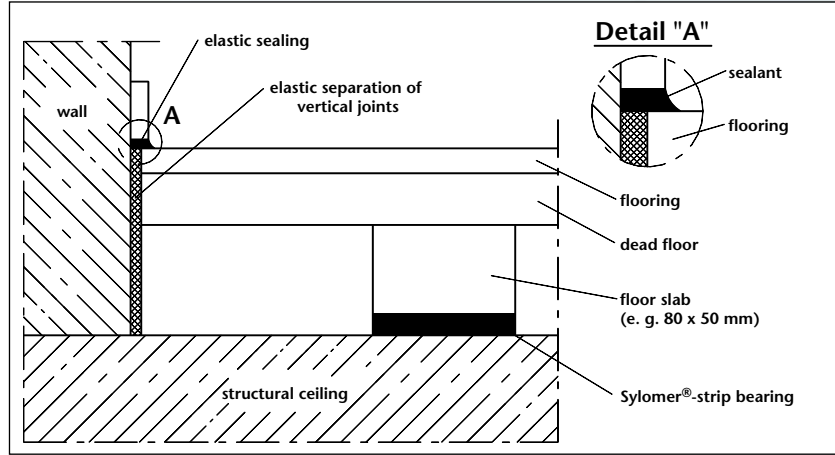
in” the microporous structure of the material. Sylomer® bearings therefore remain effective without limitations even if they are installed completely enclosed. Areas not occupied by the bearing can be filled up with a soft, non-supporting material. This significantly reduces the risk of sound bridges.



measure is therefore maintained even after decades.



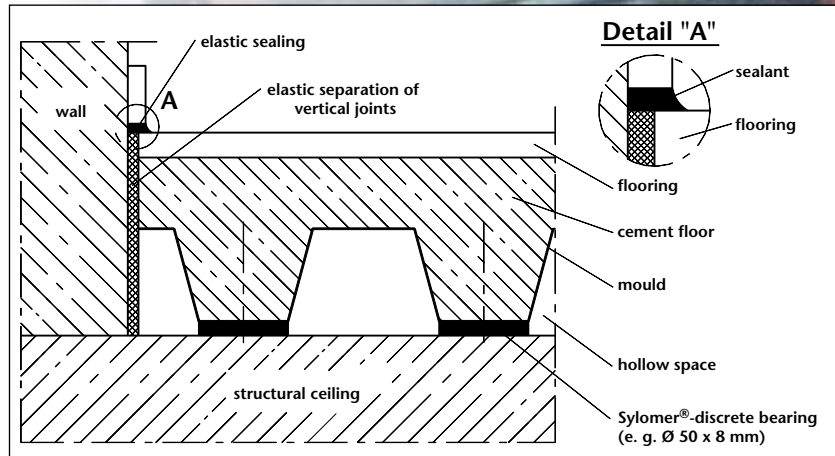
Strip bearings are generally used for elastically supporting wooden floors or for the renovation of old buildings. The bearings are situated between the bare ceiling or ceiling joist and the flooring joist.



strip bearing

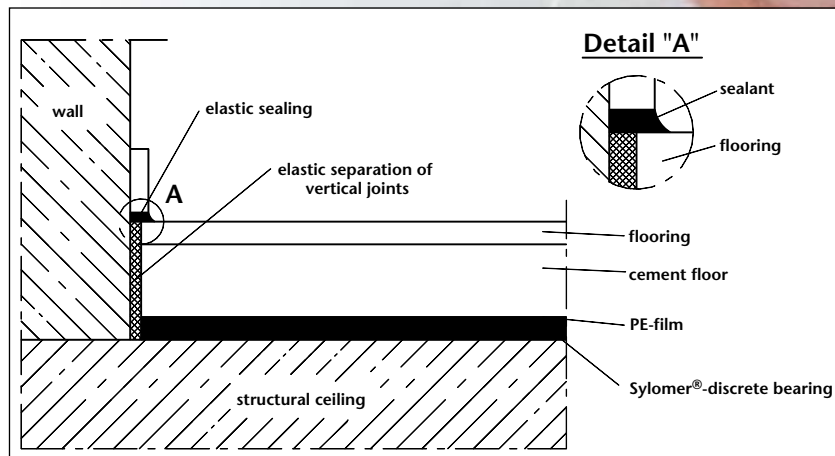
## Impact Noise (Foot Fall) Insulation with Sylomer®

Point bearings are suitable for impact noise (foot fall) insulation of elevated floor structures.



discrete bearing

Full-surface bearings of Sylomer® are characterized by high effectiveness with low installation height.



full surface bearing

Standard thickness for full surface and discrete bearings are between 6 to 12 mm. For full surface bearings 12 mm will be sufficient.



## Installation

The installation is performed according to the specifications of the planner. Sylomer® can be processed easily at the construction site. Adhesion with typical construction adhesives is possible. For a high-performance adhesion, a PUR adhesive should be used. Strip and point bearings can also be delivered with a single-side self-adhesive feature.

The bearing surfaces should be level and free of sharp-edged

elevations or depressions. Concrete surfaces should be roughly scraped or smoothed. The required surface accuracy is determined by the bearing thickness. Unevenness of up to 2 mm is permissible for typical thickness of 12 mm.

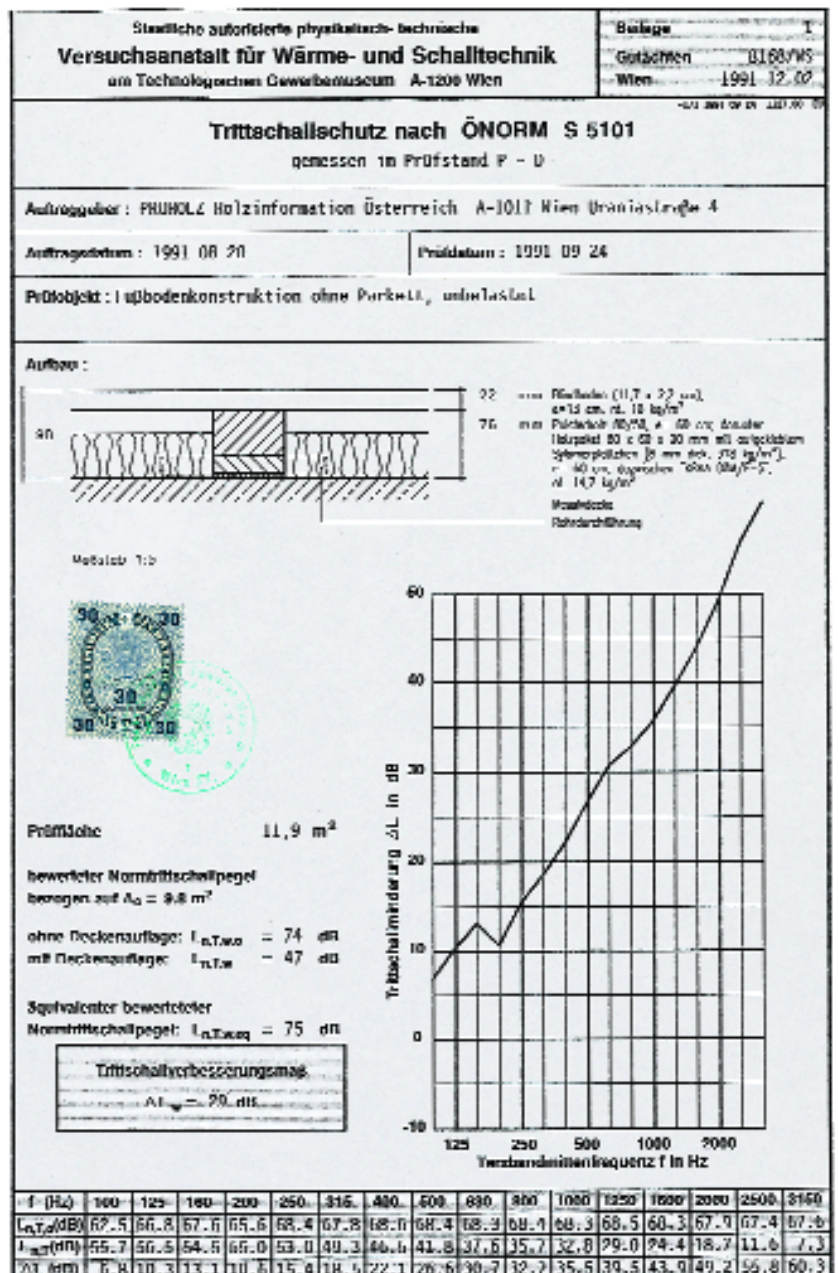
For simple installation of strip bearings, prefabricated bearing joists can also be used. The bearing joists offer the opportunity of bolting the bearing strips to the

bare ceiling and floor structure over a lower fastening profile or an upper flooring joist. The fastening profile and flooring joist are bonded to the bearing strips at the factory.

As with bearings for stairs and landings, Sylomer® R 12 is suitable for separation of the side joints in all structures.

## Effectiveness

Impact noise protection as per ÖNORM Technological Industrial Museum of Vienna



## Dimensioning

The basis for the selection of the suitable Sylomer® type is the expected bearing load and the permissible deflection. The bearing pressure is calculated from the realistically expected traffic load, the dead weight of the floor structure and the effective bearing surface. The expected

deflection can be found in the Sylomer® product data sheets.

The dead weight of the floor is generally negligible in comparison with the load from use.

The effective bearing surface for walking should be taken into account depending on the load

distribution of the floor structure. Short-term load peaks are easily accepted by Sylomer®.

The increased requirements demanded as per DIN 4109 Addendum 2 are safely fulfilled under typical installation conditions with a bearing thickness of 12 mm.

Sylomer®	Bearing	Color thickness	Load limit*	Reference value for deflection when walked on	Effective bearing pressure with the recommended spring deflection
Typ	[mm]		[N/mm <sup>2</sup> ]	[mm]	[N/mm <sup>2</sup> ]
G 12	12	yellow	0.015	1.6	0.012
R 12	12	blue	0.035	1.6	0.028
L 12	12	green	0.080	1.6	0.065

Material-specific values for typical Sylomer® bearings for impact noise (foot fall) insulation.

\* The load limit indicates the maximum bearing load from the static and realistically expected

traffic load. The basis for the bearing design should be the recommended deflection.

The permissible loads for individual bearing strips or bearing points are calculated from the material-specific values and the effective bearing surface.

Sylomer®	Strip width x thickness	Bearing strip spacing	Expected spring deflection for the specified traffic load	Suitable for traffic load up to
Typ	[mm] x [mm]	[mm]	[mm]	[kN/m <sup>2</sup> ]
R 12	60 x 12	800	1.6	2.0
R 12	80 x 12	1100	1.6	2.0
R 12	100 x 12	1400	1.6	2.0
R 12	80 x 12	650	1.6	3.5

Dimensions and permissible loads.

Example for typical Sylomer® bearing strips; other strip widths and thickness can be delivered.



- The bearing can be applied in sheets, strips or at individual bearing points.
- The basis for the dimensioning of the bearing is generally the permissible rate of deflection when walked on.
- The Sylomer® type and bearing surface should be selected such that the rate of deflection when walked on does not exceed the permissible value.
- The floor must be completely separated from the bordering structures. Sound bridges should be absolutely avoided.
- The increased requirements as per DIN 4109 Addendum 2 are safely fulfilled under typical installation conditions with a bearing thickness of 12 mm.

### Suggestion for Tender Text

Acoustic separation of the floor according to the architects' plans.

Execution: full-surface / on bearing strips / on bearing points /

Material type: Sylomer® ..... or equivalent recommended pressure up to ..... N/mm<sup>2</sup>

Impact noise improvement:  $\Delta L_w = \dots\dots\dots (\geq 17 \text{ dB})$

Verifications: Confirmation of the effectiveness and the material suitability by a recognized testing institute.

Standard delivery form: Roll 5.0 m x 1.5 m

Required dimensions: Length: ..... mm  
Width: ..... mm  
Thickness: ..... mm

Quantity: ..... units

The floor must be completely separated from the bordering structures. Separation of the vertical joints with an elastic bearing strip of Sylomer® R 12 or equivalent. Sound bridges should be absolutely avoided.



In addition to the measures for impact noise (foot fall) insulation, Sylomer® can also be used to acoustically separate floor panels with special requirements or very high traffic loads, for instance warehouses or factory halls. The noise source is often forklift traffic or the operation of machines. The floor panels of recording studios, cinemas and event halls are also often separated.

The installation can be full-surface, on bearing strips or individual bearing points depending on the design. The suitable Sylomer® type is determined by the expected pressure. The required natural frequency and the maximum permissible spring deflection are the primary factors for the bearing

thickness. The stiffness can be optimally adapted to the specified installation conditions in the border areas or in areas with particularly high traffic loads through variation of the dimensions and/or the Sylomer® type.

## Elastically Separated Floor Panels







**S**ylomer® materials are delivered as mats or as fabricated individual bearings or bearing strips.

Adaptations can be performed easily on-site with standard construction tools.

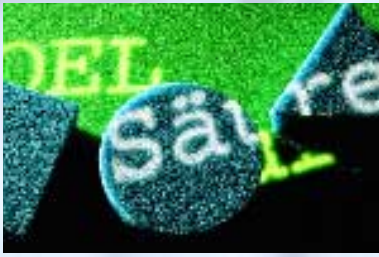
For a full-surface installation, the mats are simply laid onto the floor surface and bonded to the bare ceiling in a point-wise manner, if necessary. Butt-joints should be covered with tape. For multiple-layer bearings, it is recommended to lay the mats in an overlapping manner to avoid butt joints.

Strip and point bearings should be positioned on the floor according to the installation plan.

Remaining surfaces which can be filled up with a soft fiber insulation. Site-mixed concrete or pre-fabricated panels can be used for the floor panels. For the use of site-mixed concrete, a covering foil should be used between the floor panel and bearing to protect against sound bridges.

## Installation





## Certifications / Tests

Applications for Sylomer® bearings are classified as bearing class 2 according to DIN 4141 (ISO 6446). These are bearings which do not endanger the stability of the structure in the event of overloading or failure. A building inspection certification is not required for this bearing class.

The suitability of Sylomer® materials for the use as elastic bearings was thoroughly investigated both in our laboratory as well as by external test institutes. Tests of the use of Sylomer® as a

landing bearing and as an elastic bearing for track troughs were performed, among others. The tests of the suitability for use were performed at the Technical University of Munich, Testing Institute for Construction of Permanent Way Transportation Routes.



Tests on the use as stair bearing were performed by the Fraunhofer Institute for Building Physics in Stuttgart and the Testing and Research Institute of Section 39 of the City of Vienna. The material properties were investigated by Müller-BBM in Planegg near Munich, the Federal Testing and

Research Institute, Vienna Arsenal, and TÜV Rheinland, among others.

The fire behavior of Sylomer® materials is classified as class B2 (normally flammable) as per DIN 4102. The flammability of the bearing when installed is of primary significance for fire protection. The fire behavior of the entire structure can be significantly improved by sealing the joints with a flame-resistant elastic jointing compound.



Certified  
EN ISO 9001

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