

Superior soundproofing Getzner Sylodyn® in modern timber construction

HABERKORN



Sound insulation in modern timber construction

The six most important topics

10 years

of proven solutions for timber construction

Sound and vibration reduction by Getzner have made their mark in timber construction for a decade. In other industries, we have been doing so for 50 years.

35 years

of permanent aging resistance

Getzner Sylodyn® and Sylomer® have proven themselves under the most difficult environmental conditions: in the Munich underground, these materials have been in use as under-gravel mats for more than 35 years.



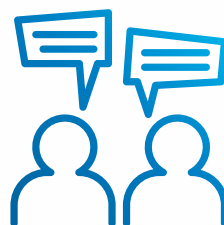
Effectiveness for generations

The Philharmonic Orchestra performing in the Gasteig hall of Munich has been effectively protected from the vibrations of the nearby underground and city train for 35 years. Recent measurements indicate that Getzner's damping mats will remain highly effective for at least another 30 years.

ÖKOBESTÄTIGUNG

Certification of structural ecology

A certification of structural ecology confirms it: Getzner's damping mats are a first-class solution also from the viewpoint of ecology.



Functioning comprehensive system

The best vibration damping alone cannot be effective if the wrong connection agents are used which transmit the sound after all. Getzner Sylodyn® and Sylomer® therefore offer a coordinated system including the fastening technology. In order to avoid serious errors during the application, Haberkorn offers not only the complete system but also well-founded expert advice.



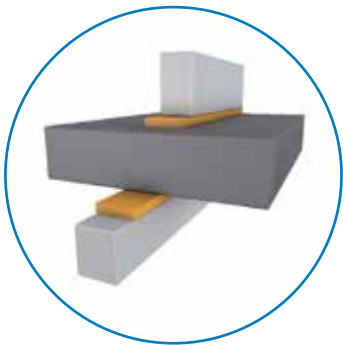
Building inspectorate approval

The certified elastic bearings made of Sylomer® and Sylodyn® have been approved by the building inspectorate. As a result, a simple and secure procedure of furnishing static proof can be performed with the design concept provided.

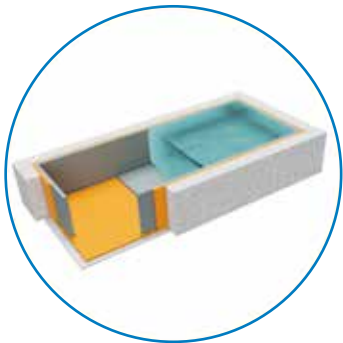
One system

For all applications

Getzner Sylodyn® and Sylomer® can be used easily, effectively and without any planning restrictions in all building types and for all soundproofing measures. However, the system plays out its advantages especially in the sound-technical decoupling of wooden components and modules. Conventional measures such as facing formwork can be omitted. Reservations for the clairauidence of wooden buildings are finally a thing of the past.



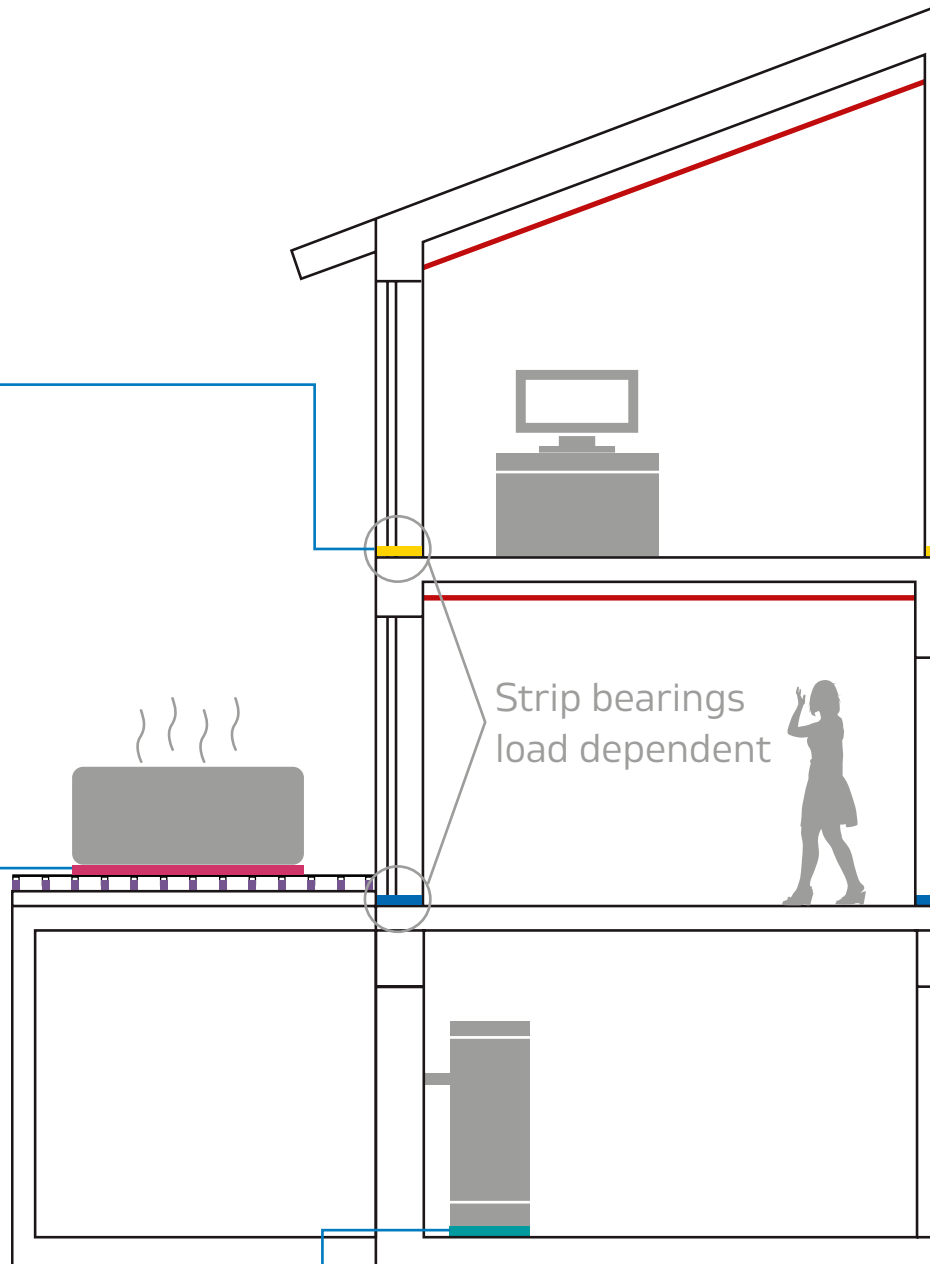
Elastic storage of flanking construction components



Pool storage



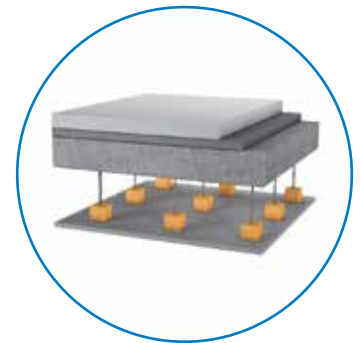
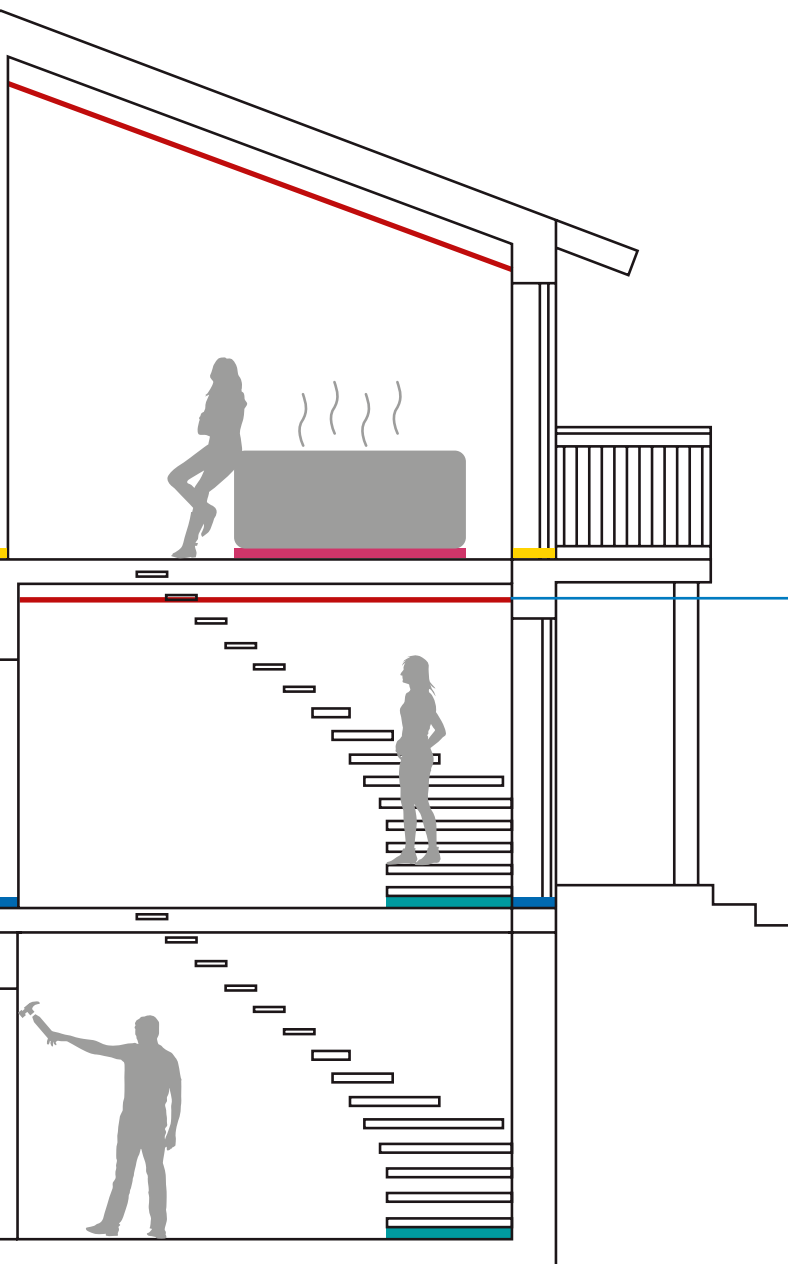
Storage of machinery and other building engineering equipment



EXPERT TIP

Thanks to the intelligent material tuning in our Sylodyn® bearings, we can leave wooden surface areas visible and thereby save costs and still ensure highly efficient sound decoupling that exceeds the requirements of the existing standards.

GERHARD BERLINGER
Specialist vibration technology



**Ceiling structures
with elastic materials**



Storage of modules

Cut off, stick on, and done!

Soundproofing can be as simple as that

Haberkorn delivers the pre-tailored Sylodyn® strips directly to your plant or construction site. With the included installation plan and the colour coding of the strips, the sound insulation can be mounted quickly and easily. The strips are cut-to-length with a cutter. There is hardly any waste, because the chippings can be used for other purposes. Subsequently, the Sylodyn® strips which are equipped with self-adhesive film are put in place.

Tips on how to work with Getzner Sylodyn® can be found in the video clips on www.youtube.com/user/GetznerWerkstoffe. Our processing technicians are also happy to support you on site.

The bearing strips are put in place by simple bonding onto ceiling or wall either already in the factory or on the construction site.

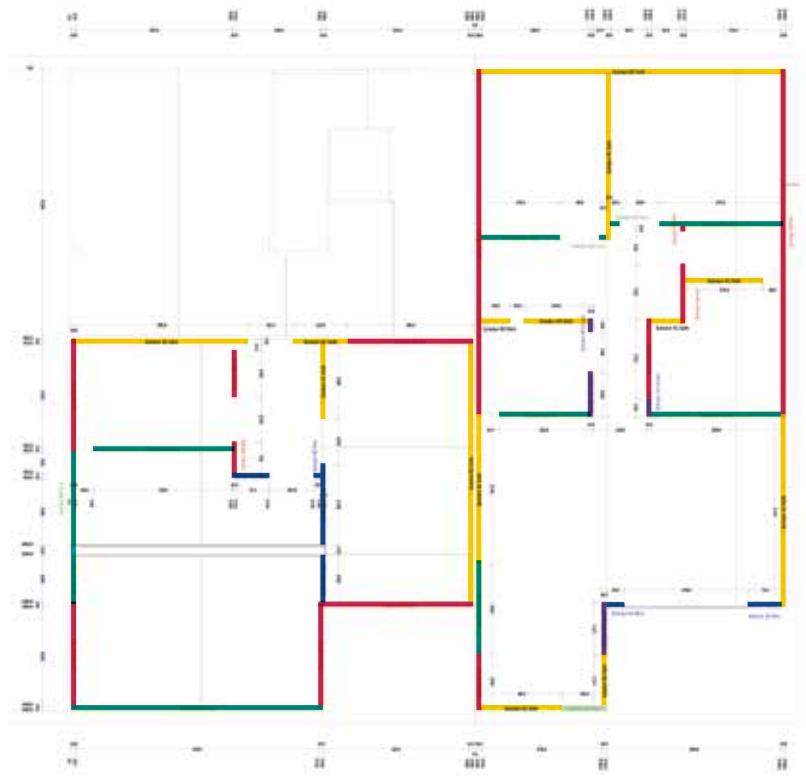


The right bearing for every load

Depending on the load, Sylodyn® and Sylomer® strips with different stiffness and width are used. These are easily distinguishable by their colour coding. The thickness of the strips is always the same.

Sylodyn® NB	[kN/m] from 1 to 7.5*
Sylodyn® NC	[kN/m] from 7.5 to 15*
Sylodyn® ND	[kN/m] from 15 to 35*
Sylodyn® NE	[kN/m] from 35 to 75*
Sylodyn® NF	[kN/m] from 75 to 150*

* in 100 mm wide strips



Design concept

For Sylodyn® und Sylomer®



Procedure for furnishing proof

In selecting the material of the elastomer bearings, the following points must be considered separately:

Proof in the limit state of suitability for use

To achieve dynamically optimal effectiveness, Getzner has defined a so-called static application $\sigma_{R,perm}$. The virtually constant effective loads, which are permanently present and, accordingly, impose a stress on the material in the long term, should lie within the static field of application.

This ensures that the dynamic properties of the material are preserved for decades and that the optimum sound decoupling occurs during any usual event of use. Temporary overloads or load reductions do not have any significant influence on the product characteristics of Sylodyn® and Sylomer®.

Proof in the limit state of load-bearing capacity

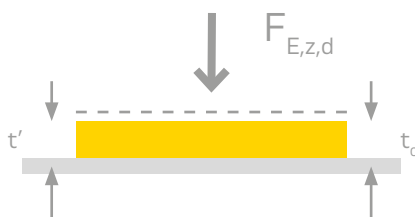
For the proof of load-bearing capacity in the construction industry, appropriately tested and approved elastomers should be used. For the materials Sylodyn® and Sylomer®, this requirement has been met by a General Building Inspection Approval (abZ) according to Building Rules List B, part 1 – issue 2013/1, 1.7.2 elastomer bearings. Sylodyn® and Sylomer® have spring characteristic curves due to their material specifics, which have a positive effect on the maximum permissible load capacity $\sigma_{E,d}$ in detecting the load-bearing capacity. The bearing resistances $\sigma_{R,d}$ have been demonstrated both internally and externally, are continuously checked and can be found in the following tables or in the approval document for verification purposes.

Vertical load absorption

To select the right bearings, extract and apply the loads from the structural calculation. The proof must be furnished with the bearing resistances of the respective type of material.

$$F_{E,z,d} \leq F_{R,z,d} \quad F_{R,z,d} = \sigma_{R,d} * A$$

$F_{E,z,d}$	Vertical action at design level
$F_{R,z,d}$	Vertical bearing resistance at design level
A	Load-carrying area of the bearing
$\sigma_{R,d}$	Bearing resistance at design level
$\sigma_{R,perm}$	Bearing resistance for virtually constant vertical loads
ϵ_{cd}	Design value of crushing at maximum load at design level
$\epsilon_{c,perm}$	Crushing under maximum virtually constant vertical loads



Horizontal load transfer

The maximum transfer forces result from the shear resistance $\tau_{R,d}$ and the corresponding bearing surface.

$$F_{E,xy,d} \leq F_{R,xy,d} \quad F_{R,xy,d} = \tau_{R,d} * A$$

$F_{E,xy,d}$	Horizontal impact at design level
$F_{R,xy,d}$	Horizontal bearing resistance at design level
$\tau_{R,d}$	Shear resistance at design level



Glide

Coefficient of friction μ on the attached component of the bearing; values for μ on concrete = 0.7; on steel and wood = 0.5 (or tested value).

If this proof cannot be provided, appropriate bonding or constructive anchorages for the occurring horizontal forces $F_{xy,d}$ should be provided.

Rigidity of the bearings

Sylodyn® and Sylomer® materials have a nonlinear bedding module, which depends on bearing thickness, pressing, amplitude and frequency. Exact values can be found in the respective material data sheet.

For modelling in common FEM programs, bilinear material models can be used in a simplified manner. Material parameters can be made available on request.

Chemical resistance

Oils, varnishes and solvents used in the construction industry can influence the properties of elastomers. Sylodyn® and Sylomer® have good properties of resistance to the substances commonly used in the construction sector.

Getzner has carried out extensive investigations and summarised the results in the data sheet on „Chemical Resistance“.

Exclusively at Haberkorn

Long-term behaviour

The long-term properties of elastomer bearings are particularly noteworthy due to the usually difficult accessibility and interchangeability. Sylodyn® and Sylomer® have been successfully used in the construction sector for decades. With the right design, the properties of these materials have been proven to remain constant for several decades. For each material type, the detailed material parameters for the static and dynamic creep behaviour are shown in the data sheets.

Exclusively at Haberkorn

General building approval

A general building inspection permit (abZ), which is granted exclusively by the German Institute for Construction Technology (DIBt), is reliable proof of how a product meets the construction requirements.

All information and data are based on our current state of knowledge. They can be used as requisition or guide values, are subject to normal manufacturing tolerances and do not represent more secure properties. All technical information is unbinding and in no way replaces the currently relevant regulations or standards. Subject to change.

Exclusively at Haberkorn

Aging resistance

Sylodyn® and Sylomer® materials are 100% plasticizers and therefore less susceptible to sprain or aging in the V compared to other elastomers (such as EPDM, CR, NR, NBR or SBR). In addition, accelerated aging tests were carried out on Getzner's materials, which showed no change in material strength. The resistance to UV irradiation and the ozone resistance of the materials could also be demonstrated by external tests.

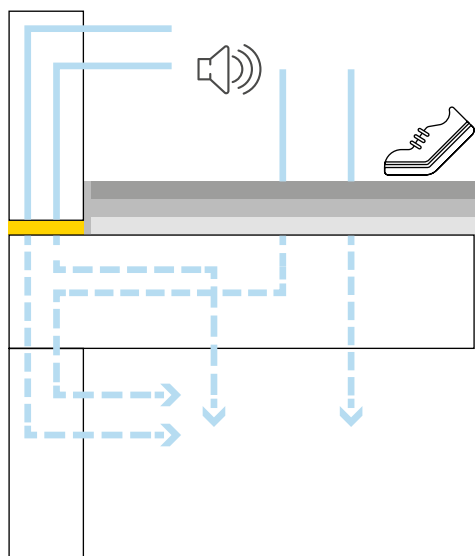
Fire

Sylomer® and Sylodyn® materials are classified in Class E according to DIN EN 11925-2 and DIN EN 13501-1. Fire resistance classes such as F60 or F90 must be ensured by a suitable joint formation. Fire test carried out at Holzforschung Austria.



Design rules

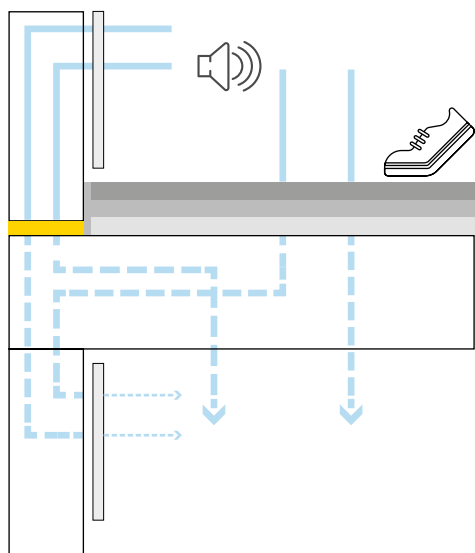
Sylodyn® and Sylomer® bearing strips should be used as shown at the nodes listed below.



**No enclosed shells on the walls,
no peeled ceiling**



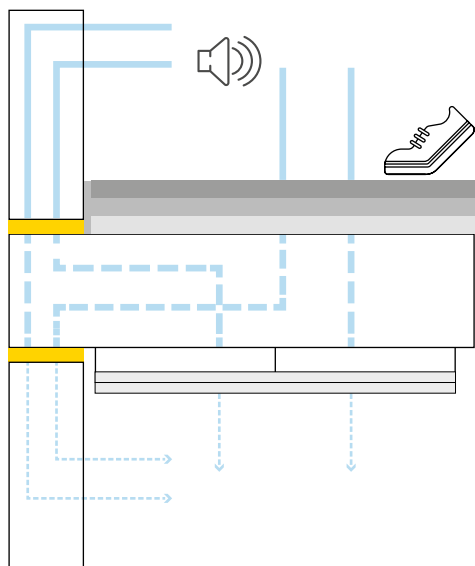
Sylodyn® and Sylomer® bearings above the ceiling



**Attachment shells on the walls,
no peeled ceiling**



Sylodyn® and Sylomer® bearings above the ceiling



**Suspended ceiling,
no attachment shells on the walls**



Sylodyn® and Sylomer® bearings above and below the ceiling

Soundproof bearing S-Plus, Quiet Stripe

H-Plus sound insulation bearing made of PUR elastomer (100% polyurethane) for decoupling flank sound.

Application

- Laminated plywood
- Wood module construction
- Wood element construction
- Wood hybrid construction

Technical data

- Operating temperature: -30°C to $+70^{\circ}\text{C}$
- Fire behaviour: EN ISO 11925-2 Class E / EN 13501-1
- Improves the shock-stroke dimming of the ΔK_{ij} : 5.6 dB in accordance with EN ISO 10848
- Load range: 35 kN/m
- Hardness: 35° Shore A according to DIN ISO 7619-1
- Vertical coating: 65 kN/mm in accordance with EN ISO 844 (at 0.39 N/mm² and per meter)
- Coefficient of friction: 0.5 (dry, friction)

Benefits/Excerpts

- Balancing construction tolerances
- Low settling behaviour
- Flexible application range up to 35 kN/m
- Quick and easy to deploy
- Excellent aging stability

Material

Polyurethanes, black

Part No.

K28342

Part No.

K64551



Sylodyn®

The range



*With building approval
(documented coefficient of
friction) as a result, fewer
fasteners are required*

Sylodyn® is a closed-cell polyetherurethane (PUR) with excellent springs and is therefore excellently suited as sound and vibration protection.

Application

- Constructive timber construction
- Laminate plywood construction
- Shocktell/flanks
- Suitable for very high loads
- Protected soundproofing properties (HFA)

Technical data

- Operating temperature: -30 °C to +70 °C (short-term +120 °C)
- Fire behaviour: EN ISO 11925-2 Class E / EN 13501-1
- Ecologically harmless
- With building approval (abZ)

Applications/Notes

- Eight layer stiffnesses for the corresponding load situations
- For optimal sound coupling
- Various additions or technical formats available
- Standard material thickness 6 mm, 12.5 mm or 25 mm available

Benefits/Excerpts

- Low creep inclination
- Fatigue strength
- High dynamic resilience
- Aging-resistant



Sylodyn®	σR , perm. ¹ static Application	$\sigma R, d^{1,2}$ vertical Bearing resistance at design level	$\tau R, d$ horizontal Bearing resistance at design level
NB	75.00 kN / m ²	163.0 kN / m ²	28.6 kN / m ²
NC	150.00 kN / m ²	345.00 kN / m ²	46.20 kN / m ²
ND	350.00 kN / m ²	838.00 kN / m ²	77.00 kN / m ²
NE	750.00 kN / m ²	2.009.00 kN / m ²	134.2 kN / m ²
NF	1.500.00 kN / m ²	4.015.00 kN / m ²	176.00 kN / m ²
HRB HS 3000	3.000.00 kN / m ²	8.018.00 kN / m ²	528.00 kN / m ²
HRB HS 6000	6.000.00 kN / m ²	16.643.00 kN / m ²	770.00 kN / m ²
HRB HS 12000	12.000.00 kN / m ²	16.643.00 kN / m ²	770.00 kN / m ²

Bearing width 80 mm	σR , perm. ¹ static Application	$\sigma R, d^{1,2}$ vertical Bearing resistance at design level	$\tau R, d$ horizontal Bearing resistance at design level
NB	6.00 kN / lfm	13.04 kN / lfm	2.28 kN / lfm
NC	12.00 kN / lfm	27.60 kN / lfm	3.69 kN / lfm
ND	28.00 kN / lfm	67.04 kN / lfm	6.16 kN / lfm
NE	60.00 kN / lfm	160.72 kN / lfm	10.73 kN / lfm
NF	120.00 kN / lfm	321.20 kN / lfm	14.08 kN / lfm
HRB HS 3000	240.00 kN / lfm	641.44 kN / lfm	42.24 kN / lfm
HRB HS 6000	480.00 kN / lfm	1.331.44 kN / lfm	61.60 kN / lfm
HRB HS 12000	960.00 kN / lfm	1.331.44 kN / lfm	61.60 kN / lfm

Bearing width 100 mm	σR , perm. ¹ static Application	$\sigma R, d^{1,2}$ vertical Bearing resistance at design level	$\tau R, d$ horizontal Bearing resistance at design level
NB	7.50 kN / lfm	16.30 kN / lfm	2.86 kN / lfm
NC	15.00 kN / lfm	34.50 kN / lfm	4.62 kN / lfm
ND	35.00 kN / lfm	83.80 kN / lfm	7.70 kN / lfm
NE	75.00 kN / lfm	200.90 kN / lfm	13.42 kN / lfm
NF	150.00 kN / lfm	401.50 kN / lfm	17.60 kN / lfm
HRB HS 3000	300.00 kN / lfm	801.80 kN / lfm	52.80 kN / lfm
HRB HS 6000	600.00 kN / lfm	1.664.30 kN / lfm	77.00 kN / lfm
HRB HS 12000	1.200.00 kN / lfm	1.664.30 kN / lfm	77.00 kN / lfm

Bearing width 120 mm	σR , perm. ¹ static Application	$\sigma R, d^{1,2}$ vertical Bearing resistance at design level	$\tau R, d$ horizontal Bearing resistance at design level
NB	9.00 kN / lfm	19.56 kN / lfm	3.43 kN / lfm
NC	18.00 kN / lfm	41.40 kN / lfm	5.54 kN / lfm
ND	42.00 kN / lfm	100.56 kN / lfm	9.24 kN / lfm
NE	90.00 kN / lfm	241.08 kN / lfm	16.10 kN / lfm
NF	180.00 kN / lfm	481.80 kN / lfm	21.12 kN / lfm
HRB HS 3000	360.00 kN / lfm	962.16 kN / lfm	63.36 kN / lfm
HRB HS 6000	720.00 kN / lfm	1.997.16 kN / lfm	92.40 kN / lfm
HRB HS 12000	1.440.00 kN / lfm	1.997.16 kN / lfm	92.40 kN / lfm

Bearing width 140 mm	σR , perm. ¹ static Application	$\sigma R, d^{1,2}$ vertical Bearing resistance at design level	$\tau R, d$ horizontal Bearing resistance at design level
NB	10.50 kN / lfm	22.82 kN / lfm	4.00 kN / lfm
NC	21.00 kN / lfm	48.30 kN / lfm	6.46 kN / lfm
ND	49.00 kN / lfm	117.32 kN / lfm	10.78 kN / lfm
NE	105.00 kN / lfm	281.26 kN / lfm	18.78 kN / lfm
NF	210.00 kN / lfm	562.10 kN / lfm	24.64 kN / lfm
HRB HS 3000	420.00 kN / lfm	1122.52 kN / lfm	73.92 kN / lfm
HRB HS 6000	840.00 kN / lfm	2.330.02 kN / lfm	107.80 kN / lfm
HRB HS 12000	1.680.00 kN / lfm	2.330.02 kN / lfm	107.80 kN / lfm

Project Skogveien Norway

Design Binderholz Bausystem GmbH
Customer Veidekke Entreprenor AS
Establishment 2019–2020

Work

Static calculation, coordination and implementation of models from other technical areas such as mechanics, electrics, ventilation, etc., production modelling, construction site assembly tarpaulin, calculation and delivery of fastening material, installation of the complete wooden construction

Delivery

- 40.000 m² BBS CLT laminated plywood
- 700 m³ of laminated wood
- Complete set of connecting material (incl. Sylodyn by Haberkorn) for the wooden construction





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Project New Construction 5* S Green Spa-Hotel MalisGarten Zell am Ziller, Austria

Customer
Construction
Architecture

Familie Binder-Egger
2019–2020
Matteo Thun Milano
Meissl Architects

Prestatics
Structural design
Timber construction
Material use

Binderholz Bausysteme GmbH
tragwerkspartner zt gmbh
Holzbau Schweinberger GmbH
Binderholz laminated plywood BBS
Laminated plywood
3-layer solid wood panels
Profiled wood
Sylodyn 12 mm

Soundproofing

„In order to achieve the best sound technology decoupling of the various radio units of the Malis Garden Hotel, we chose Getzner Sylodyn®, supplied by our partner Haberkorn.“

DI Christian Kolbitsch (Binderholz)

