HALFEN SOUND INSULATION PRODUCTS
Technical Product Information
We are one team. We are Leviat.

Leviat is the new name of CRH’s construction accessories companies worldwide.

Under the Leviat brand, we are uniting the expertise, skills and resources of HALFEN and its sister companies to create a world leader in fixing, connecting and anchoring technology.

The products you know and trust, including HALFEN Sound insulation products, will remain an integral part of Leviat’s comprehensive brand and product portfolio. As Leviat, we can offer you an extended range of specialist products and services, greater technical expertise, a larger and more agile supply chain and better, faster innovation.

By bringing together CRH’s construction accessories family as one global organisation, we are better equipped to meet the needs of our customers, and the demands of construction projects, of any scale, anywhere in the world.

This is an exciting change. Join us on our journey.

Read more about Leviat at Leviat.com
Our product brands include:

Ancon®

HALFEN

PLAKA


60 locations

sales in 30+ countries

3000 people worldwide
HALFEN IMPACT SOUND INSULATION

Product Overview

HALFEN Sound Insulation Products – Overview

HTT
Impact sound insulation unit for installation between on-site cast or precast stair elements and on-site cast concrete stair landing slabs
▸ pages 4–5

HTF
Impact sound insulation for installation between precast stair elements and stair landing slabs
▸ pages 6–7

HTF-B
Impact sound insulation element for installation between precast stair element and floor slab
▸ page 8

HTPL
Perimeter insulation
▸ page 9
HALFEN IMPACT SOUND INSULATION
Product Overview

HBB-F
bi-Trapez box for precast landing slabs
▶ page 10

HBB-O
bi-Trapez box for in-situ cast concrete landing slabs
▶ page 11

HBB Rebar cage
▶ page 12

Using a HBB Rebar cage reduces the complex, filigree and time-consuming on-site installation of reinforcement for consoles. A type test is available for this application.

HBB-SET
bi-Trapez box HBB-F, with pre-assembled reinforcement cage
▶ page 13
HALFEN IMPACT SOUND INSULATION
HALFEN HTT Sound Insulation Element – Installation Between In-Situ Cast / Precast Concrete Stair Elements, And In-Situ Cast Concrete Stair Landings

Product description

Stair landing slab  in-situ cast concrete or semi-precast element
Stair elements  in-situ cast concrete or precast element
Sound insulation  impact sound reduction: $\Delta L = 12$ dB

Certified acoustic properties: test report 2027/7205-1-Re, IBMB Braunschweig

Fire protection  Fire protection verification: F90/F120 and R90/R120 according to report GA-2017/128, IBB GmbH

Type tested  S-WUE 040519, LGA Würzburg

Product range  Available in three load sizes for stair widths of 90 cm up to 200 cm, and landing slab thickness from 16 cm to 25 cm.

Materials  Galvanised steel sheet, mineral fibre insulation material and non-reinforced elastomer bearings with general building authority approval, B500NR reinforcement steel.

HALFEN HTT Impact sound insulation units are suitable for supporting in-situ and precast concrete stair elements in in-situ cast landing slabs subjected to predominantly static loads. HTT Units are only suitable for lateral and horizontal forces, which may result from short-term loads, or from restraint loads or impact loads or from planned external loads. Static verification must be provided for the stair element and the landing slab.

Verification of lateral load capacity is provided if additional stirrups reinforcement as specified in the drawing on page 5 is installed.

 Depending on the concrete cover of the stair elements using HTT Units provide a particularly high level of safety in the event of fire. This allows classification in fire resistance class R90/R120 (F90/F120).

HALFEN HTT Impact sound insulation – dimensions and load bearing capacities

<table>
<thead>
<tr>
<th>Article no.</th>
<th>Element height h [cm]</th>
<th>Element length l [cm]</th>
<th>Reinforcement</th>
<th>Spacings (approx.)</th>
<th>Values for structural design</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Edge distance $e_R$</td>
<td>Bar spacing $e_S$</td>
</tr>
<tr>
<td>HTT-4</td>
<td>16–25</td>
<td>90–200</td>
<td>3 $\varnothing$ 6</td>
<td>1/6</td>
<td>1/3</td>
</tr>
<tr>
<td>HTT-6</td>
<td>5 $\varnothing$ 6</td>
<td>10–120</td>
<td>5 $\varnothing$ 6</td>
<td>1/10</td>
<td>1/5</td>
</tr>
<tr>
<td>HTT-8</td>
<td>6 $\varnothing$ 6</td>
<td>12–120</td>
<td>6 $\varnothing$ 6</td>
<td>1/12</td>
<td>1/6</td>
</tr>
</tbody>
</table>

$\varnothing$ max. possible horizontal load in longitudinal direction of the stairs (applies for maximum shear load) see type test

Materials

Galvanised steel sheet, mineral fibre insulation material and non-reinforced elastomer bearings with general building authority approval, B500NR reinforcement steel.

Figure: Installed HTT Sound insulation units (install HTPL Sound insulation plates on all sides). Also see the installation instructions on page 5.

Dimensioning diagram

Standard lengths $l = 100$ / 120 cm
Custom lengths $l = 90$ – 200 cm

Ordering example

<table>
<thead>
<tr>
<th>HTT</th>
<th>6</th>
<th>18</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

① product designation
② load group
③ landing slab height [cm]
④ element slab height l / stair width [cm]
HALFEN IMPACT SOUND INSULATION
HALFEN HTT Sound Insulation Element – Installation Between In-Situ Cast / Precast Concrete Stair Elements, And In-Situ Cast Concrete Stair Landings

Regulations for reinforcing and installation notes

Additional on-site reinforcement
(static verification required in accordance with the type test by a structural engineer):

1. End stirrups or mesh reinforcement
2. Top reinforcement layer
3. End stirrup, bent as hanger reinforcement
4. Bottom reinforcement layer, bent as hanger reinforcement
5. End stirrups, $2 \times \Phi 6$
6. Reinforcement bar $\Phi 8$ (HTT-4, -6) or $\Phi 10$ (HTT-8)

Note
Positions 1 – 4 are calculated according to static requirements. Moments resulting from excentric connections have to be considered in the design calculation for the stair elements.

Application with in-situ cast concrete stairs and landing

Installation procedure for on-site cast stairs

► HTPL Sound insulation plate ① are fixed to the wall, following the contours of the stairs. The clearance to the wall must be completely clean ensuring there are no gaps between the plates
► the bottom HTT Nailing bar ② is fixed to the formwork at the specified position
► insert the HTT Unit in the nailing bar
► the top HTT Nailing bar ② is fixed using an auxiliary aid (e.g. timber batten ③) and slotted to the top of the HTT impact sound insulation element

Correctly align and fix the HTT Unit at the required vertical position.

Application with precast stairs and an in-situ cast, or semi-precast concrete landing slab

Installation in the precast plant:

► formwork according to figure 2
► fix the HTT Impact sound insulation unit with the nailing bars (included) as shown in figure 1
► The HTT Unit must be aligned and fixed vertically at the appropriate position

Installation of precast element on-site:

► installation according to figure 3
► both in-situ cast concrete and semi-precast concrete landing slabs are possible
► place the HALFEN HTPL Sound insulation plates in the gap between the stairs and the adjoining staircase wall

Installation note
① HALFEN HTPL Impact sound insulation plate
② Nailing bar (supplied)
③ Auxiliary aid
④ On-site formwork

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HALFEN IMPACT SOUND INSULATION

HTF Impact Sound Insulation Element for Precast Concrete Stairs

**Product description**

Stair landing: in-situ cast, or precast concrete element  
Stairs: precast element  
Available sizes: widths 100 cm and 120 cm (stair width)  
Accessories: HTF Unit or insulation strip for adapting the width on-site  
Maximum load: $V_{Ed} = 200 \text{kN} (+100 \text{kN for each additional bearing})$  
Recommended load for optimal sound insulation:  
$V_{Ed} = 10 \text{kN} (+5 \text{kN for each additional bearing})$  
Bearing: bi-Trapez bearing® 200×50×10 mm (see page 14 for details)  
Material: plastic foam building material class B2 according to DIN 4102

HALFEN HTF Impact sound insulation units were developed for elastic support of precast staircases in in-situ cast, concrete stair landings slabs. They are only suitable for lateral loads. The statics proof must be provided in the design calculation of the building. The bi-Trapez bearings® are certified as building material class B2 according to DIN 4102.

<table>
<thead>
<tr>
<th>Designation</th>
<th>Article no.</th>
<th>Stair width [cm]</th>
<th>Thickness $t = 10 \text{mm}$ for all elements HTF, -DS, -LS</th>
<th>Dimensions [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTF - 100</td>
<td>0972.010-00001</td>
<td>70–100</td>
<td>Impact sound insulation unit</td>
<td>bi-Trapez bearing® perforations adhesive tape backing</td>
</tr>
<tr>
<td>HTF - 120</td>
<td>0972.010-00002</td>
<td>101–120</td>
<td>Insulating strip</td>
<td>perforations</td>
</tr>
<tr>
<td>HTF - DS -100</td>
<td>0972.020-00001</td>
<td>≥ 120</td>
<td>Bedding strip</td>
<td>adhesive tape backing</td>
</tr>
<tr>
<td>HTF - LS -100</td>
<td>0972.020-00002</td>
<td>≥ 120</td>
<td></td>
<td>perforations</td>
</tr>
</tbody>
</table>

Figure: Installation of the HTT Impact sound insulation units (install HTPL Sound insulating plates at all edges, see installation instructions on page 7)
HALFEN IMPACT SOUND INSULATION
HTF Impact Sound Insulation Element for Precast Concrete Stairs

Installation notes

Support design (figures 1–4)
► Landing supports can be designed as shown in figure 1 or figure 2.

► Figure 3 shows the installed HTF Impact sound insulation unit. Adhesive tape on the back of the unit fixes and secures the insulation element to the landing slab on assembly.

► Landing support design as shown in figure 2 also requires the installation of HTPL Impact sound insulation plates towards the staircase walls (page 9).

Adjusting to the support depth (fig. 5–7)
► Adjusting to the support depth is simple, fold the element at the factory pre-marked lines. Any excess length is cut off on site.

Adjusting to the support width (fig. 8–10)
► The HTF-DS Insulation strip can be used for small required increases in the length of the HTF elements (order the HTF-DS Insulation strip separately).

The insulation strip is cut to the required length on site and inserted between the standard elements. Adhesive tape on the back of the element fixes the strip securely to the support.

► The HTF-LS Insulation strip (order separately) is used if static requirements require larger support area and therefore considerably lengthened elements. The strip is cut to the necessary length and then placed between the standard HTF Unit.

► Seal all gaps between the insulation elements with HALFEN Adhesive tape to avoid sound bridges.

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HALFEN IMPACT SOUND INSULATION

HTF-B Impact Sound Insulation Element for Installation Between Precast Concrete Stairs and Floor Slabs

Product description

Stair element  precast element
Maximum load  \( V_{Ed} = 105 \text{kN} (+52.5 \text{kN} \text{per additional bearing}) \)
Recommended load for optimum sound insulation:
  \( V_{Ed} = 7.6 \text{kN} (+3.8 \text{kN} \text{for each additional support}) \)
Bearing  bi-Trapez bearing\(^\text{©}\), 150 \( \times \) 50 \( \times \) 15 mm
  (details on page 14)
Material  foam; building material class B2
  according to DIN 4102
HALFEN HTF-B Impact sound insulation is used for elastic support of precast stair elements onto floor slabs at ground level.

<table>
<thead>
<tr>
<th>Designation</th>
<th>Article no.</th>
<th>Thickness ( a / b ) [cm]</th>
<th>Thickness ( t = 15 \text{mm} ) for all elements HTF-B</th>
<th>Dimensions [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTF-B - 125 ( \times ) 55</td>
<td>0973.010-00001</td>
<td>125 / 55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HTF-B - 125 ( \times ) 80</td>
<td>0973.010-00002</td>
<td>125 / 80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HTF-B - 145 ( \times ) 55</td>
<td>0973.010-00003</td>
<td>145 / 55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HTF-B - 145 ( \times ) 80</td>
<td>0973.010-00004</td>
<td>145 / 80</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Installation notes

HALFEN HTF-B Impact sound insulation element

Section of a typical HTF-B application

Isometric view: HTPL Impact sound insulation plates also need to be installed for stair elements with no clearance to the staircase walls (see page 9).
HALFEN IMPACT SOUND INSULATION

HTPL-100 Impact Sound Insulation Plate

**Product description**

**Stairs**  in-situ cast concrete or precast element

**Material**  plastic foam building material class B2 according to DIN 4102

The HALFEN HTPL-100 Impact sound installation plate reliably prevents the transmission of impact sound. Acoustic decoupling of stairs and wall is very simple: Install the insulation strips between the components and the walls and fix using HALFEN Adhesive tape.

<table>
<thead>
<tr>
<th>Designation</th>
<th>Article no.</th>
<th>Element dimensions $a / b$ [cm]</th>
<th>Thickness $t = 10$ mm for elements HTPL</th>
<th>Dimensions [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTPL - 100</td>
<td>0974.010-00001</td>
<td>100 / 35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adhesive tape</td>
<td>9602.040-00054</td>
<td>Roll of adhesive tape, 50 mm wide</td>
<td></td>
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</tr>
</tbody>
</table>

**Installation notes**

HTPL 100 Impact sound insulation plates are part of the HALFEN Sound insulation system and can be combined with all HALFEN Sound insulation products to avoid sound transmission resulting from direct connection of stair elements and the staircase wall.

Meticulous installation is required as gaps left between the elements may cause sound bridging. This can a negative effect on the quality of the adjoining rooms and building.

Installation of the HTPL Impact sound installation plates

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HALFEN IMPACT SOUND INSULATION

HBB-F bi-Trapez Box for Precast Landings Slabs

Product description

HBB-F
incl. one bi-Trapez bearing® inside on the bottom of the box

HBB-FQ
for additional loads in vertical upward direction:
incl. two bi-Trapez bearings® inside the box, on the bottom and the top

HBB-FQS
for additional loads in vertical upward direction:
incl. four bi-Trapez bearings® one on each surface inside the box

Stair landing
precast element

bi-Trapez bearing®
(t = 10 mm)

Available sizes
three landing slab thicknesses (d = 16 /18/ 20 cm)
number of included bi-Trapez bearing® depends on the load case (see illustrations)

Fire protection
Fire protection proof: fire resistance grade F90 no. 3799/7357-AR by IBMB Braunschweig

HALFEN bi-Trapez boxes HBB-F, FQ and FQS are easily slid over the corbel before installing the precast landing slab. The corbel is cast with the inner dimensions of the bi-Trapez box at the same time as the landing slab.


<table>
<thead>
<tr>
<th>Designation</th>
<th>Order no.</th>
<th>Internal dimensions h × b × t [mm]</th>
<th>max. load /option load [kN]</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBB 16-F</td>
<td>00001</td>
<td>160 × 250 × 140</td>
<td>+</td>
</tr>
<tr>
<td>HBB 18-F</td>
<td>00002</td>
<td>180 × 250 × 140</td>
<td>+</td>
</tr>
<tr>
<td>HBB 20-F</td>
<td>00003</td>
<td>200 × 250 × 140</td>
<td>+</td>
</tr>
<tr>
<td>HBB 16-FQ</td>
<td>00004</td>
<td>160 × 250 × 140</td>
<td>+</td>
</tr>
<tr>
<td>HBB 18-FQ</td>
<td>00005</td>
<td>180 × 250 × 140</td>
<td>+</td>
</tr>
<tr>
<td>HBB 20-FQ</td>
<td>00006</td>
<td>200 × 250 × 140</td>
<td>+</td>
</tr>
<tr>
<td>HBB 16-FQS</td>
<td>00007</td>
<td>160 × 250 × 140</td>
<td>+</td>
</tr>
<tr>
<td>HBB 18-FQS</td>
<td>00008</td>
<td>180 × 250 × 140</td>
<td>+</td>
</tr>
<tr>
<td>HBB 20-FQS</td>
<td>00009</td>
<td>200 × 250 × 140</td>
<td>+</td>
</tr>
</tbody>
</table>

According to the test certificate the elastomeric supports can be used up to 10 N/mm². Support dimension of 100 x 200 mm are used for positive support loads, and 50 x 100 mm are used for upward vertical loads and lateral loads.

The values when assuming γo = 1.5 are: +VRd = 300 N, −VRd = 75 N, ±HRd = 75 N.

The statics verification for the corbel and the load bearing wall are the responsibility of the building contractor. The optimal sound reduction is achieved with a compression stress of 0.5 N/mm² (see information and diagram on page 14).

Installation notes

Avoid sound bridge!

Precast concrete landing slab

Concrete or brickwork wall

Install HTPL Insulation plates

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HALFEN IMPACT SOUND INSULATION

HBB-O bi-Trapez Box for In-situ Concrete Landings

### Product description

**HBB-O**
- incl. one bi-Trapez bearing® inside on the bottom of the box

**HBB-OQ**
- for additional loads in vertical upward direction:
  - incl. two bi-Trapez bearings® inside the box, on the bottom and top

**HBB-OQS**
- for additional lateral loads and vertical upward directed loads:
  - incl. four bi-Trapez bearings® one on each surface inside the box

### Stair landing slab
- in-situ concrete

**bi-Trapez bearing®**
- • building building authority approval
  - P-849.0554/1, MPA Hanover
- • Certified acoustic properties:
  - report No. 2729/1054, IBMB Braunschweig
- • Impact sound reduction: max. 23 dB
  - • building material class B2 according to DIN 4102

### Availability sizes
- three landing thicknesses (d = 16/18/20 cm):
  - number of included bi-Trapez bearing® depends on the load case; four special nails, polystyrene filler, protective cardboard inlay

### Fire protection
- Fire protection certification: fire resistance grading F90
  - no. 3799/7357-AR by IBMB Braunschweig

When installed in masonry, the polystyrene filler ensures the box keeps its shape while the surrounding brickwork is finished. When installing in reinforced concrete walls, the recess filler is fastened to the formwork using the special nails (supplied). The box is then installed flush with the formwork over the recess filler.

<table>
<thead>
<tr>
<th>Designation</th>
<th>Order no. 0970.020-</th>
<th>Overall dimensions h × b × t [mm]</th>
<th>Max. load /opt. load [kN]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>+V_Rd</td>
</tr>
<tr>
<td>HBB 16-O</td>
<td>00001</td>
<td>187 × 274 × 155</td>
<td>+</td>
</tr>
<tr>
<td>HBB 18-O</td>
<td>00002</td>
<td>207 × 274 × 155</td>
<td>+</td>
</tr>
<tr>
<td>HBB 20-O</td>
<td>00003</td>
<td>227 × 274 × 155</td>
<td>+</td>
</tr>
<tr>
<td>HBB 16-OQ</td>
<td>00004</td>
<td>187 × 274 × 155</td>
<td>+</td>
</tr>
<tr>
<td>HBB 18-OQ</td>
<td>00005</td>
<td>207 × 274 × 155</td>
<td>+</td>
</tr>
<tr>
<td>HBB 20-OQ</td>
<td>00006</td>
<td>227 × 274 × 155</td>
<td>+</td>
</tr>
<tr>
<td>HBB 18-OQS</td>
<td>00008</td>
<td>207 × 274 × 155</td>
<td>+</td>
</tr>
<tr>
<td>HBB 20-OQS</td>
<td>00009</td>
<td>227 × 274 × 155</td>
<td>+</td>
</tr>
</tbody>
</table>

According to the test certificate the elastomeric supports can be used up to 10 N/mm². Support dimension of 100 × 200 mm are used for positive support loads, and 50 × 100 mm are used for upward vertical loads and lateral loads.

The values when assuming γ_F = 1.5 are: +V_Rd = 300 kN, -V_Rd = 75 kN, ±H_Rd = 75 kN.

The statics verification for the corbel and the load bearing wall are the responsibility of the building contractor. The optimal sound reduction is achieved with a compression stress of 0.5 N/mm² (see information and diagram on page 14).

### Installation notes

- **Elastomeric joint**
  - Avoid sound bridge!
  - Install HTPL Insulation plates
  - Fixing the HBB bi-Trapez box to the formwork
  - Install the HBB-O bi-Trapez box before pouring the concrete for the landing

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HALFEN IMPACT SOUND INSULATION
HBB-Rebar-Cage-Q-Unit

Product description

**HBB-Rebar-cage-Q-unit**
(bi-Trapez box not included)

**Reinforcement cage**
- reinforcing steel B500

**Type tested**
- according to no. S-WUE 150270, LGA Würzburg

**Available sizes**
- HBB-Rebar-cage-Q-unit is available for three landing slab thicknesses (d = 16 /18/ 20 cm)

**Fire protection**
- Fire resistance rating: R90 acc. to DIN EN 1992-1-2, table 5.8

The pre-assembled HALFEN HBB-Rebar-cage-Q-unit is easy to install and can reduce construction time. The optimized reinforcement layout and the type tested load capacities are further benefits. Planning with consoles is no longer required.

<table>
<thead>
<tr>
<th>Designation</th>
<th>0970.050-</th>
<th>d [mm]</th>
<th>max. load [kN] for ≥ C20/25</th>
<th>V_{rd,v}</th>
<th>V_{rd,v}</th>
<th>V_{rd,h}</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBB-Rebar-cage 16-Q-unit</td>
<td>00101</td>
<td>≥ 160</td>
<td>85.0</td>
<td>12.4</td>
<td>42.3</td>
<td></td>
</tr>
<tr>
<td>HBB-Rebar-cage 18-Q-unit</td>
<td>00102</td>
<td>≥ 180</td>
<td>25.2</td>
<td>42.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HBB-Rebar-cage 20-Q-unit</td>
<td>00103</td>
<td>≥ 200</td>
<td>40.0</td>
<td>42.3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Load Interaction**

- *landing slab thickness of d = 160 mm/180 mm/200 mm

**Installation notes**

- Use spacers to ensure minimal concrete cover. (Spacers are not illustrated)
- The specifications in the type test must be observed for design calculation and installation.
**Product description**

**HBB-SET**
incl. bi-Trapez box HBB-F and HBB-Rebar-cage-Q-unit

**HBB-SET-Q**
for additional upward loads including bi-Trapez box HBB-FQ and HBB-Rebar-cage-Q-unit.

**HBB-SET-QS**
for additional horizontal loads including bi-Trapez box HBB-FQS and HBB-Rebar-cage-Q-unit.

<table>
<thead>
<tr>
<th>Designation</th>
<th>Order No.</th>
<th>For landing slab thickness $d$ [mm]</th>
<th>max. load $[\text{kN}]$ for $\geq C20/25^{\circ}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBB 16-SET</td>
<td>00001</td>
<td>$\geq 160$</td>
<td>85.0</td>
</tr>
<tr>
<td>HBB 18-SET</td>
<td>00002</td>
<td>$\geq 180$</td>
<td>$-$</td>
</tr>
<tr>
<td>HBB 20-SET</td>
<td>00003</td>
<td>$\geq 200$</td>
<td>$-$</td>
</tr>
<tr>
<td>HBB 16-SET-Q</td>
<td>00004</td>
<td>$\geq 160$</td>
<td>85.0</td>
</tr>
<tr>
<td>HBB 18-SET-Q</td>
<td>00005</td>
<td>$\geq 180$</td>
<td>40</td>
</tr>
<tr>
<td>HBB 20-SET-Q</td>
<td>00006</td>
<td>$\geq 200$</td>
<td>$-$</td>
</tr>
<tr>
<td>HBB 16-SET-QS</td>
<td>00007</td>
<td>$\geq 160$</td>
<td>85.0</td>
</tr>
<tr>
<td>HBB 18-SET-QS</td>
<td>00008</td>
<td>$\geq 180$</td>
<td>40</td>
</tr>
<tr>
<td>HBB 20-SET-QS</td>
<td>00009</td>
<td>$\geq 200$</td>
<td>42.3</td>
</tr>
</tbody>
</table>

The HBB-SET/-Q/-QS can be used for in-situ cast concrete and precast slabs. The HBB-Box is regarded as lost formwork when used for in-situ cast concrete slabs. The HBB system set and its variants are suitable for use in both masonry and concrete walls.

**Installation notes**

- The HBB Rebar cage is fitted in the prepared HBB bi-Trapez box using spacers before pouring the concrete for the landing slab (spacers are not shown).
- The specification in the type test have to be observed at installation and for dimensioning.
HALFEN IMPACT SOUND INSULATION
HALFEN bi-Trapez Bearing® – a Component of the Impact Sound Insulation Element System

Product features

Test certification: building authority approval
P-849.0554/1, MPA Hanover

Sound protection: Impact sound reduction: max. 23 dB
Certified acoustic properties: report no. 2729/1045, IBMB Braunschweig

Fire protection: building material class 2 acc. to DIN 4102

When planning for sound insulation requirements, it should be noted that the sound-insulating properties depend to a large extent on the compressive stress in the support.

This dependency is why we include the HTF Impact sound insulation units in our product range. These products are high-quality bi-trapezoidal bearings® made of elastic ethylene propylene diene M-class rubber (EPDM).

These supports are characterized by good sound insulation properties over a wide range of compressive stresses. The diagram below shows the insulation characteristics of the support.

In addition to the allowable compression stresses we also specify the optimal compression stress yield for the HTF und HBB range to facilitate the best possible sound insulation for your project. It should be noted that, depending on the application, the service load for stairwells according to DIN 1055-3 are 3.0 and 5.0 kN/m² respectively, however, these very high values are only attained in exceptional cases.

We recommend assuming a significantly lower value for the service load (0.5 to 1.0 kN/m²) when verifying sound insulation, as the standard experienced load values are typically within this range.

Impact sound insulation

Table: bi-Trapez bearing® of 10 and 15 mm

<table>
<thead>
<tr>
<th>Bearing thickness ( t ) [mm]</th>
<th>10</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allowable average compression stress ( \sigma ) [N/mm²]</td>
<td>10.00</td>
<td>7.00</td>
</tr>
</tbody>
</table>

Diagram: Insulation properties of the bi-Trapez bearings®
Innovative engineered products and construction solutions that allow the industry to build safer, stronger and faster.
**Worldwide contacts for Leviat:**

<table>
<thead>
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<th>Address</th>
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<td>Leviat&lt;br&gt;98 Kurrajong Avenue, Mount Druitt Sydney, NSW 2770&lt;br&gt;Tel: +61 - 2 8808 3100&lt;br&gt;Email: <a href="mailto:info.au@leviat.com">info.au@leviat.com</a></td>
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