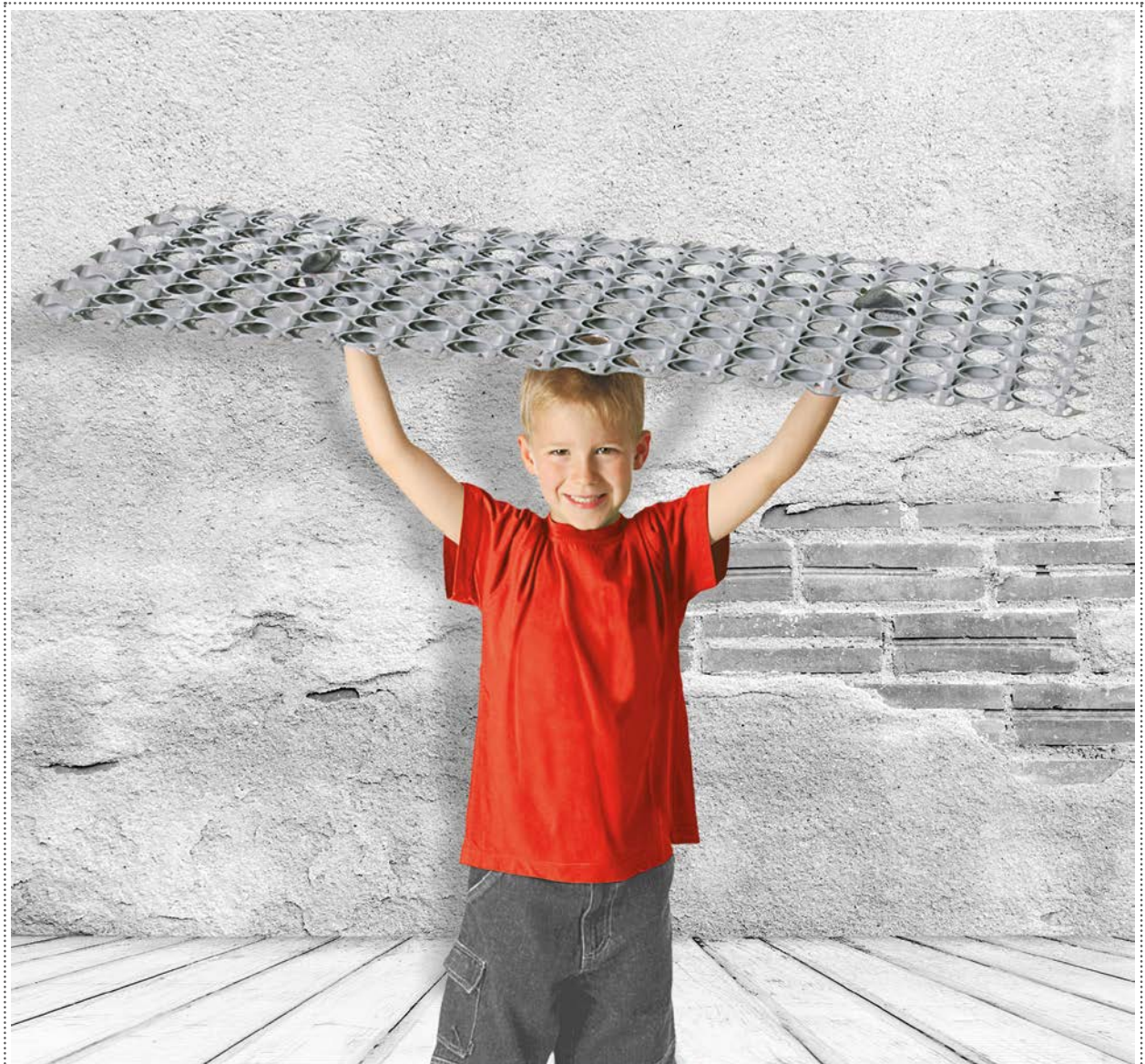


# **THE FLOOR RENOVATION SYSTEM WP 900**

## **INTRODUCTION**

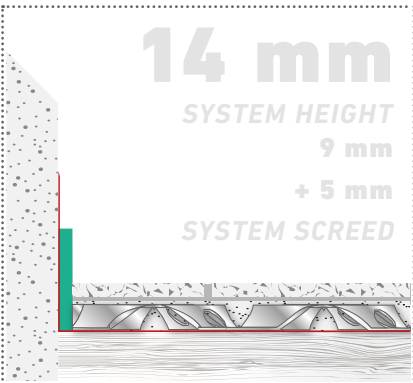
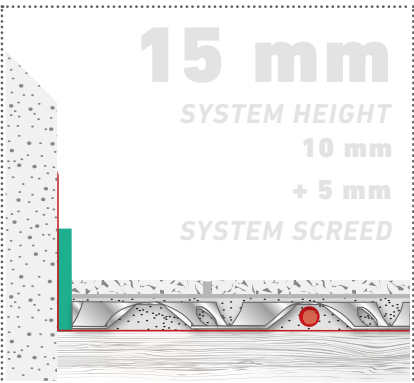
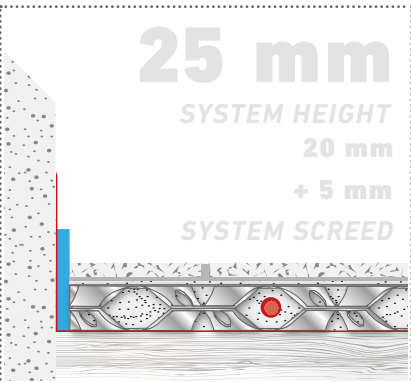
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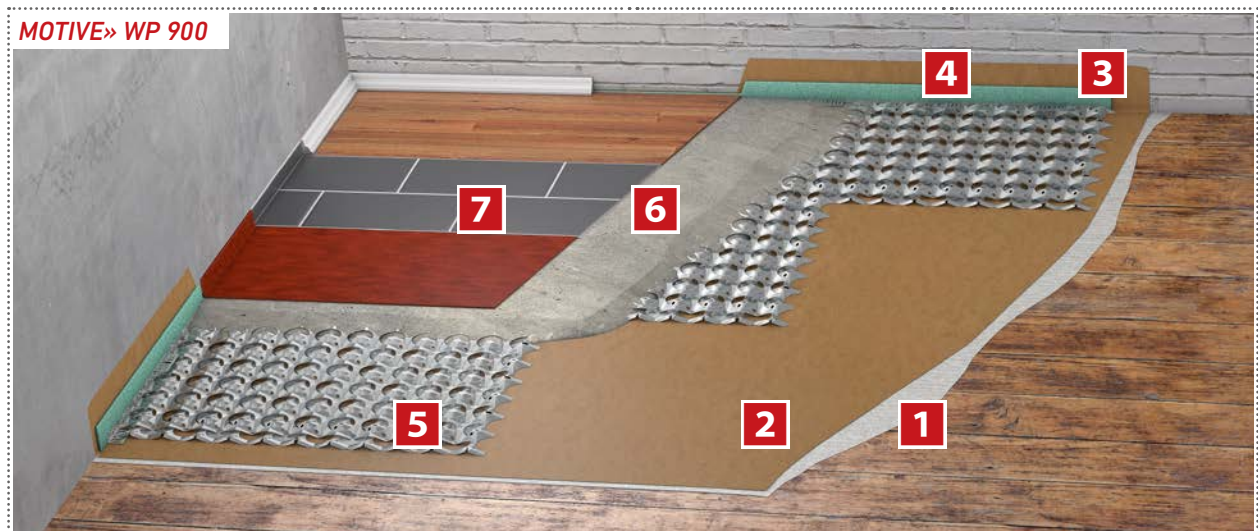


### BASIC PRINCIPLE OF COMB PANELS

EFFIDUR floor systems WP consist of two preformed steel sheets that are firmly connected to each other to form a honeycomb shaped panel. These comb panels (WP) are fit as floating floor area without connection to the sub-floor, if necessary equipped with pipes and backfilled with screed with a minimum overlap in height of only 5 mm. This way an innovative, highly stable floor system is created, that can be used as floor reinforcement or equipped with pipe for heating or cooling just as required.

### THE COMB PANEL SYSTEM CONSISTS OF THREE TYPES

| WP 900 [14 mm total]   | WP 1000 [15 mm total]  | WP 2000 [25 mm total]  |
|--|--|--|
| <b>BASIS</b> WITHOUT HEATING   | <b>CLIMATE</b> HEATING / COOLING   | <b>CLIMATE</b> HEATING / COOLING   |
|  <p><b>14 mm</b><br/>SYSTEM HEIGHT<br/>9 mm<br/>+ 5 mm<br/>SYSTEM SCREED</p> |  <p><b>15 mm</b><br/>SYSTEM HEIGHT<br/>10 mm<br/>+ 5 mm<br/>SYSTEM SCREED</p>                  |  <p><b>25 mm</b><br/>SYSTEM HEIGHT<br/>20 mm<br/>+ 5 mm<br/>SYSTEM SCREED</p> |
| <p><b>system height 9 mm</b> [+ 5 mm SFM]<br/>Applicable for reinforcement of the old sub-floor without heating of the new floor.</p>                          | <p><b>system height 10 mm</b> [+ 5 mm SFM]<br/>Especially suited for the retrofit of old buildings, where an underfloor heating is only feasible with a low building height.</p> | <p><b>system height 20 mm</b> [+ 5 mm SFM]<br/>Advantage here»<br/>Heating pipes ø 8 mm can be crossed and other media might be integrated.</p>                  |



|                                  |                           |                                 |                  |
|----------------------------------|---------------------------|---------------------------------|------------------|
| <b>1</b> Impact Sound Insulation | <b>2</b> Separation Layer | <b>3</b> Border Insulation Tape | <b>4</b> Bracket |
| <b>5</b> Comb Panel              | <b>6</b> System Screed    | <b>7</b> Floor Covering         |                  |

Each comb panel type is delivered to the building site in handy measurements of 1192 x 556 mm (length x width) or in a specific case with a variable length including all components through qualified wholesalers / craftsmen. The packages containing 10 comb panels can easily be carried to the building site (1200 x 560 x 1 resp. 200 mm) weighing about 30 kg.

## ADVANTAGES AT A GLANCE

- » Low building height from 9 mm\* flush floor finish possible for barrier-free access.
- » widely independent from sub-floor - unevenness of up to 20 mm can be balanced out without further works.
- » Reinforcement of sub-floor - highly load-bearing traffic areas feasible.
- » Excellent controllability - comparable to radiators through fast heat spreading of the steel panel and heating pipe close to the surface this way very short heating-up periods, ideal for temporarily used rooms, fast reaction to external heat input (solar irradiation).
- » Homogeneous head spreading - low temperature ripple at the floor surface already from a system size of only 15 mm, confirmed through testing according to DIN CERTCO Nr. 7F257.
- » Highly energy-efficient through low flow temperatures - up to 5 K lower than conventional underfloor heating, i.e. savings on heating costs of up to 10 %
- » Low material input - this way low static impact on the building through weight of the floor system.
- » Quickly ready for floor covering already after 5 days, when using system WP1000 heated, system screed SFM with a thickness of 10 mm\* and under ideal ambient conditions.
- » Ideal for modern low temperature heating facilities, condensing boiler technology and heat pumps.

[\*without screed overlap flushed for flooring with tiles and flags in middle-bed method, see detailed information at installation instructions under chapter "Backfilling with system screed SFM".]

| PARAMETER                         | WP 900   | WP 1000                             | WP 2000                             | NOTES  |
|-----------------------------------|--|-------------------------------------|-------------------------------------|--|
| system height                     | 9 mm   | 10 mm                               | 20 mm                               | without screed (SFM) overlap and sub- or super-structure   |
| building height                   | 14 mm  | 15 mm                               | 25 mm                               | comb panel with 5 mm screed (SFM) overlap  |
| dimensions in mm                  | 1080 x 480<br>≈ 0,52 m <sup>2</sup>  | 1080 x 480<br>≈ 0,52 m <sup>2</sup> | 1080 x 480<br>≈ 0,52 m <sup>2</sup> | usable area per comb panel   |
| weight without screed             | approx. 5 kg/m <sup>2</sup>  | approx. 5 kg/m <sup>2</sup>         | approx. 5 kg/m <sup>2</sup>         | one packing unit = 5 m <sup>2</sup> (10 comb panels)   |
| weight with screed                | approx.<br>29 kg/m <sup>2</sup>  | approx.<br>30 kg/m <sup>2</sup>     | approx.<br>45 kg/m <sup>2</sup>     | comb panel with 5 mm screed (SFM) overlap, at even subfloor  |
| heat flow density                 | - - -  | 60 - 90 W/m <sup>2</sup>            | 60 - 90 W/m <sup>2</sup>            | at a pipe distance of 120 mm and a pipe ø 8 - 10 mm for $\vartheta_i = 20^\circ\text{C}$   |
| cooling flow density              | - - -  | 20 - 40 W/m <sup>2</sup>            | 20 - 40 W/m <sup>2</sup>            | at a pipe distance of 120 mm and a pipe ø 8 - 10 mm for $\vartheta_i = 26^\circ\text{C}$ einem Rohr ø 8 - 10 mm für $\vartheta_i = 26^\circ\text{C}$ |
| maximum field size without joints | up to 200 m <sup>2</sup> for heated areas<br>up to 300 m <sup>2</sup> for unheated areas |                                     |                                     | using system screed SFM  |

## LOAD-BEARING BEHAVIOUR OF THE FLOOR SYSTEMS (EXCERPT FROM SURVEY REPORT OF MPA STUTTGART)

|   |   |  |  |                            |
|---|---|--|--|----------------------------|
| <b>MPA</b><br><b>MPA STUTTGART</b><br><b>Otto-Graf-Institut</b><br>Materialprüfungsanstalt<br>Universität Stuttgart | effidur comb panel in combination with effidur system screed upon separation layer / various insulation   |  | licit traffic loads in kN/m <sup>2</sup> *** | licit point loads in kN*** |
|   | 15 mm made of 10 mm WP 1000 with 5 mm system screed SFM overlap, directly borne on reinforced concrete floor  |  | up to 5,0                                    | up to 4,0                  |
|   | 15 mm made of 10 mm WP 1000 with 5 mm system screed SFM overlap, upon acoustic fleece 4 mm (CP 2)   |  | up to 2,0                                    | up to 2,0                  |
|   | 25 mm made of 20 mm WP 2000 with 5 mm system screed SFM overlap, upon acoustic panel 25 mm (CP 5)   |  | up to 2,0                                    | up to 1,0                  |
|   | 25 mm made of 20 mm WP 2000 with 5 mm system screed SFM overlap, upon acoustic fleece 4 mm (CP 2)   |  | up to 3,0                                    | up to 3,0                  |
|   | 35 mm made of 20 mm WP 2000 with 15 mm system screed SFM overlap, upon acoustic fleeces 4 mm (CP 2)   |  | up to 5,0                                    | up to 4,0                  |
|   | When avoiding point loads in corner and border areas and subject to the applied insulation material load-bearing capacity of up to 8 kN/m <sup>2</sup> feasible |  |  |                            |

\*\*  $\vartheta_i$  = Indoor temperature / \*\*\* application fields acc. to DIN 1055 part 3, edition 2002



## APPLICATION FIELD OF THE COMB PANEL WP 900

### RETROFIT OF OLD BUILDINGS

- » system can be fit upon old, but load-bearing floor boards and other floorings.
- » system can be fit upon worn-out and contaminated sub-floors.
- » imperfections of up to 0,2 m<sup>2</sup> per m<sup>2</sup> can be covered with the effidur floor system (for larger imperfections please contact us).
- » unevenness of up to 20 mm can be balanced out by backfilling with system screed without further works.
- » considerable improvement of sound insulation of the floor feasible.

### INDUSTRIAL BUILDINGS

- » highly load-bearing traffic areas with low heights.

### NEW BUILDINGS / PRE-FABRICATED BUILDINGS

- » floors with comfortable sound insulation feasible in spite of lightweight construction.
- » ceramic and natural stone floorings in combination with the comb panel system feasible upon nearly all kinds of sub-floors.

### PUBLIC BUILDINGS / CHURCHES

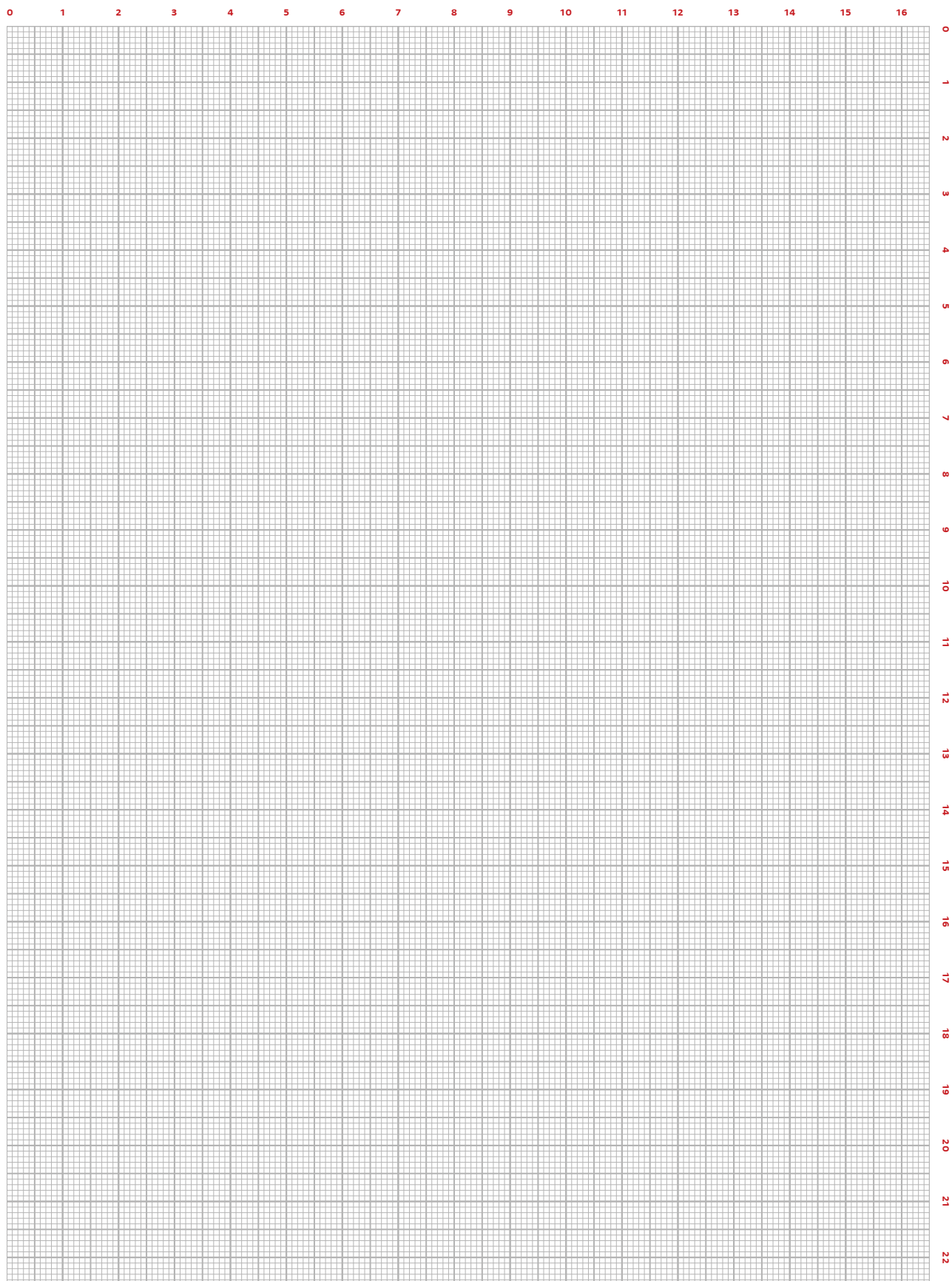
- » barrier-free building feasible (e.g. hospitals, homes for the elderly).

### APPLICATION FIELDS ACC. TO LICIT AREA AND POINT LOADS

| APPLICATION FIELD (EXAMPLE) |   |   | work load<br>kN/m <sup>2</sup> | point load<br>kN |
|-----------------------------|---|---|--------------------------------|------------------|
| A1                          | attic   | non-suited for residential purposes, but accessible attic with clear height of up to 1.80 m   | 1,0                            | 1,0              |
| A2                          | lounge areas  | rooms with sufficient lateral distribution of loads, rooms and hallways in residential buildings bed rooms in hospitals, hotel rooms incl. kitchen and bath rooms | 1,5                            | -                |
| A3                          |   | as A2, but without sufficient lateral distribution of loads   | 2,0                            | 1,0              |
| B1                          | offices,<br>working areas,<br>hallways  | hallways in office buildings, offices, medical practice, waiting rooms, lounges incl. hallways, barns for small domestic animals                                  | 2,0                            | 2,0              |
| B2                          |   | hallways in hospitals, hotels, home for the elderly, boarding schools etc. kitchens, medical treatment rooms incl. operating rooms without heavy devices          | 3,0                            | 3,0              |
| B3                          |   | as B2, but with heavy devices   | 5,0                            | 4,0              |
| C1                          | rooms,<br>meeting rooms and<br>areas suited for<br>meetings<br>(except for categories<br>A, B, D and E) | areas with tables e.g. class rooms, cafés, restaurants, dining halls, reading halls, entrance halls   | 3,0                            | 4,0              |
| C2                          |   | areas with firm seating, e.g. areas in churches, theatres or cinemas, convention halls, auditorium, waiting rooms   | 4,0                            | 4,0              |
| C3                          |   | freely accessible areas, e.g. museum areas, exhibition areas etc. entrance areas of public buildings and hotels, impassable yard cellar ceilings                  | 5,0                            | 4,0              |
| C4                          |   | sports and play areas, e.g. dancing halls, sports halls, gymnastics and power sports areas, stages  | 5,0                            | 7,0              |
| C5                          |   | areas for large gatherings, e.g. in buildings as concert halls, terraces, entrance halls as well as tribunes with firm seating                                    | 5,0                            | 4,0              |
| D1                          | sales rooms   | sales rooms up to 50 m <sup>2</sup> net area within residential or office buildings or similar  | 2,0                            | 2,0              |
| D2                          |   | areas in retail and department stores   | 5,0                            | 4,0              |
| D3                          |   | as D2, but with increased point loads due to high storage racks   | 5,0                            | 7,0              |

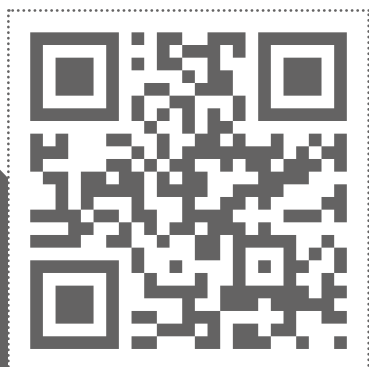
excerpt from survey report of MPA Stuttgart, on the basis of DIN 1055 part 3, edition 2002

The matching especially with the according current edition of DIN EN 1991-1-1 and DIN EN 1991-1-1/NA is necessary!





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