

## STEGLJUDS- NIVÅ OCH -REDUKTION FÖR INSTALLATIONSGOLVSPROVER AV NIVELL SYSTEM

### SAMMANFATTNING

Stegljudsnivå för olika installationsgolvspår från Nivell System på ett 170 mm KL-träbjälklag och 160 mm referensbetongbjälklag har mätts enligt SS-EN ISO 10140-3:2021 och utvärderats enligt SS EN ISO 717-2:2020.

En sammanfattning av resultaten redovisas i tabellen nedan.

| Mät-<br>protokoll | Testfall                                                                                                           | $L_{n,w}$<br>(dB) | $\Delta L_w$<br>(dB) |
|-------------------|--------------------------------------------------------------------------------------------------------------------|-------------------|----------------------|
| M1                | KL-Trä 170 mm, Ljudfot "blå" 25 mm med 150 mm plastskruv, golvspån 22mm, aerolen, parkett                          | 54                |                      |
| M2                | KL-Trä, Ljudfot "blå" 25 mm med 150 mm plastskruv, golvspån 22mm, 1x golvgips, aerolen, parkett                    | 51                |                      |
| M3                | KL-Trä, Ljudfot "blå" 25 mm med 150 mm plastskruv, golvspån 22mm, 2x golvgips, aerolen, parkett                    | 50                |                      |
| M4/M18            | Referensbjälklag betong, Ljudfot "blå" 25 mm med 150 mm plastskruv, golvspån 22mm, aerolen, parkett                | 46                | 30                   |
| M5/M19            | Referensbjälklag betong, Ljudfot "blå" 25 mm med 150 mm plastskruv, golvspån 22mm, 1x golvgips, aerolen, parkett   | 44                | 33                   |
| M6/M20            | Referensbjälklag betong, Ljudfot "blå" 25 mm med 150mm plastskruv, golvspån 22mm 2x golvgips, aerolen, parkett     | 44                | 34                   |
| M7                | KL-Trä, Ljudfot "grön" 25 mm med 150mm plastskruv, golvspån 22mm, aerolen, parkett                                 | 54                |                      |
| M8                | KL-Trä, Ljudfot "grön" 25 mm med 150mm plastskruv, golvspån 22mm, 2x golvgips, aerolen, parkett                    | 49                |                      |
| M9/M21            | Referensbjälklag betong, Ljudfot "blå" 12,5 mm med 150 mm plastskruv, golvspån 22mm, aerolen, parkett              | 48                | 28                   |
| M10/M22           | Referensbjälklag betong, Ljudfot "blå" 12,5 mm med 150 mm plastskruv, golvspån 22mm, 1x golvgips, aerolen, parkett | 45                | 32                   |

|         |                                                                                                                                                                  |    |    |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|
| M11/M23 | Referensbjälklag betong, Ljudfot "blå" 12,5 mm med 150 mm plastskruv, golvspån 22mm, 2x golvgips, aerolen, parkett                                               | 47 | 31 |
| M12     | KL-Trä, Ljudfot "blå" 12,5 mm med 150 mm plastskruv, golvspån 22mm, aerolen, parkett                                                                             | 58 |    |
| M13     | KL-Trä, Ljudfot "blå" 12,5 mm med 150 mm plastskruv, golvspån 22mm, 1x golvgips, aerolen, parkett                                                                | 55 |    |
| M14     | KL-Trä, Ljudfot "blå" 12,5 mm med 150 mm plastskruv, golvspån 22mm, 2x golvgips, aerolen, parkett                                                                | 53 |    |
| M15/M24 | Referensbjälklag betong, Ljudfot "grön" 12,5 mm med 150 mm plastskruv, golvspån 22mm, aerolen, parkett                                                           | 47 | 30 |
| M16/M25 | Referensbjälklag betong, Ljudskruv Original med stödplatta 150 mm, aerolen, parkett                                                                              | 52 | 25 |
| M17/M26 | Referensbjälklag betong, Ljudfot "blå" 50 mm med 150 mm plastskruv, PAROC eXtra, Forestia Golvspånskiva P6, betong 50 mm, aerolen, parkett. Cc400 mellan reglar. | 39 | 39 |
| M27     | Referensbjälklag, Provyta 3                                                                                                                                      | 80 |    |
| M28     | Referensbjälklag, Provyta 4                                                                                                                                      | 80 |    |

Tabell 1: Sammanfattning av mätresultaten.

## 1 UPPDRAGSGIVARE

Nivell System AB, Förrådsgatan 35 B, 542 35 Mariestad  
 Kontaktperson: Gustaf Ehn, 070-276 69 06, gustaf.ehn@nivellsystem.se

## 2 UPPDRAG

Att mäta stegljudsnivå för olika prover av installationsgolv för Nivell System på ett KL-träbjälklag (korslimmat trä) och ett referensbetongbjälklag enligt SS-EN ISO 10140-3:2021, samt utvärdera dessa enligt SS EN ISO 717-2:2020.

## 3 TESTOBJEKT

### 3.1 KL-träbjälklag och installation i laboratoriet

Golvet är ett 170 mm tjockt KL-träbjälklag med fem lager från Södra. Vikten är enligt tillverkaren 72 kg/m<sup>2</sup>. Golvet placerades i testöppningen mellan Testrum 3 och Testrum 2 på en vibrationsisolerande remsa. Golvet var 2480 x 3980 mm för att passa i testöppningen 2500 x 4000 mm (10 m<sup>2</sup>). Mellanrummet mellan KL-träbjälklaget och omgivande betongram fylldes med mineralull och tätades med gipsremсор och latex.

Ett 150 mm installationsgolv var byggt runt KL-träbjälklaget. Proven som uppmättes var av mindre yta varvid ytor av KL-träbjälklaget var exponerat under proven.

### 3.2 Referensbjälklag i laboratoriet

Betongbjälklaget är 160 mm och enligt referensbjälklag i SS-EN ISO 10140-5.

### 3.3 Material

Till det testade installationsgolven användes vibrationsdämpande material kallat Ljudfot ”blå” eller ”grön” i olika tjocklekar som limmades fast på bjälklagen. Ljudfoten var 150 mm och skruvades i en 70x45 regel, justerades och ovanpå skruvades ett lager 22 mm golvspånskiva av typen P6. Alla prov monterades med ett regelcentrumavstånd 600 mm förutom prov M17 och M25.

Prov M16 och M25 bestod av en annan fottyp, för foten limmades fotens metallyta på bjälklaget. Vikter om 24 kg/m<sup>2</sup> fördelades utmed provytan för prov M16.

För prov M17 och M26 användes 2 lager 22 mm golvspånskiva samt 5 cm betongskivor. Regelcentrumavstånd var här 400 mm och fyra regler användes.

Golvgips av typen Norgips golv med tjockleken 12,5 mm användes vid flertalet prov i antingen ett eller två lager. Golvgipset lades löst.

Ovanpå samtliga prov lades Aerolen 4 mm och en parkett. Stenullsskivor av typen Paroc eXtra 70 mm placerades under samtliga prov direkt på bjälklaget.

Samtliga prov bestod av 3 regler med längden 180 mm. Totala ytan av parkett som var synlig var 130 x 180 mm. Provens kanter var blottade. Totalt användes 4 provytor, 2 på betongbjälklaget och 2 på KL-träbjälklaget. Övrig yta av bjälklaget var exponerat. Samtliga prov monterades av Nivell System.

I bilaga 4 visas foton på testobjekten samt montage.

## 4 MÄTPROCEDUR

Mätningarna av stegljudsnivå utfördes enligt SS-EN ISO 10140-3:2021 med stegljudsapparaten i fyra positioner. Mikrofonen placerad på roterande stativ i mottagarrummet. Mätperioden var 62 s.

Efterklangstiden i mottagarrummet mättes med två högtalarpositioner och mikrofonen i fyra positioner.

Mätningarna utfördes 2025-01-24 av Staffan Andersson i Akustikverkstans byggnadsakustiklaboratorium i Skultorp. Mer information om laboratoriet återfinns i bilaga 1. Mätutrustningen anges i bilaga 2.

## 5 RESULTAT

Mätresultaten har utvärderats enligt SS-EN ISO 717-2:2020 och resultat presenteras i tabell 1 på förstasidan. Detaljerade mätresultat för stegljudsnivån och presenteras i mätprotokoll 4068-M1 till M17. Stegljudsförbättringen presenteras i protokoll M18 – M26 och för referensbetongbjälklagets provytor i M27 och M28.

Mätresultaten gäller endast de provobjekt som användes vid mätningarna. Mätnoggrannheten redovisas i bilaga 3.

## 6 KOMMENTARER

Vid provtillfället monterades flera prov samtidigt i samma rum och vid tillfället var övrig yta av bjälklagen synlig. En kontrollmätning av luftljudsisolering och analys har utförts på uppmätta stegljud. Resultaten kan innehålla luftburet ljud via det exponerade bjälklaget, primärt vid högre frekvensband. Ingen kompensering för luftburet ljud har gjorts.

## 7 AVVIKELSER FRÅN MÄTMETODEN

Uppmätta stegljudsnivå är utförda på en mindre yta än 10 m<sup>2</sup> vilket avviker från mätmetoden. Mätresultaten besitter därför en högre mätosäkerhet.

Denna rapport får endast användas i sin helhet, även om enskilda protokoll får användas oberoende av rapporten.



Staffan Andersson  
*Laboratorieingenjör*

Granskad av Carl Nyqvist, 2025-02-11

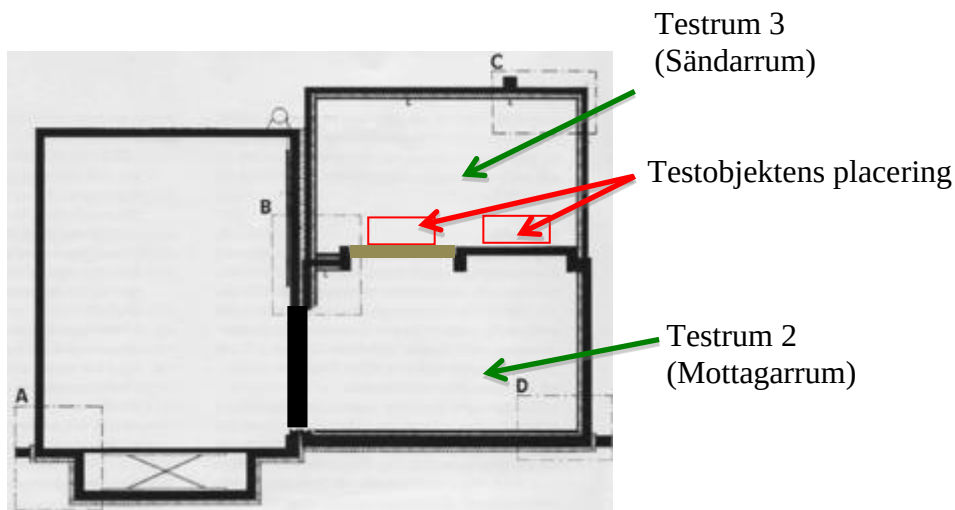
## BILAGA 1: INFORMATION OM LABORATORIET

Testrum 3 på andra våning är rektangulärt med dimensionerna  $L \times B \times H = 4,96 \times 6,25 \times 3,25$  m. Rummets volym är  $101 \text{ m}^3$  och total yta för väggar, golv och tak är  $135 \text{ m}^2$ .

Testrum 2 (används som mottagarrum vid stegljudsmätningar) är rektangulärt med dimensionerna  $L \times B \times H = 5,0 \times 6,25 \times 3,93$  m. Rummets volym är  $123 \text{ m}^3$  och total yta för väggar, golv och tak är  $151 \text{ m}^2$ .

Ett tvärsnitt för de två rummen med testobjektens placering visas i figur B1.1.

Testbjälklagens storlek är  $4,0 \times 2,5$  m.



Figur B1.1: Tvärsnitt för Testrum 2 och Testrum 3 samt testobjektens placering.

Väggarna i Testrum 2 och 3 består av tegel (25 cm) med två lager gips och ett lager träfiberskiva med 100 mm mineralull bakom

Laboratoriets adress är Vallmovägen 11, 541 55 Skövde.

## BILAGA 2: MÄTUTRUSTNING

Tabell B2.1 anger de mätinstrument som användes vid mätningarna. Utrustningen uppfyller klass 1 enligt SS-EN 61672-1, 60942 och 61260. Datum för senaste kalibrering finns i Akustikverkstans instrumentjournal. Utrustningen kontrollkalibrerades före och efter mätningarna.

| Instrument          | Fabrikat och typ | Serienummer |
|---------------------|------------------|-------------|
| Analysator          | Norsonic 140,    | 1403782,    |
| Mikrofon            | Norsonic 1225    | 106957      |
| Mikrofonförstärkare | Norsonic 1209    | 13098       |
| Kalibrator          | Norsonic 1256    | 32505       |
| Stegljudsapparat    | Norsonic 277     | 2775763     |
| Högtalare           | IMA Kub 1        | 8           |
| Equalizer           | Monacor MEQ-2152 | -           |
| Förstärkare         | Denon POA-2200   | -           |

Tabell B2.1: Utrustning som användes vid mätningarna.

### BILAGA 3: MÄTNOGGRANNHET

Mätosäkerheten är normalt  $\pm 2,2$  dB för vägd stegljudsnivå. Typisk osäkerhet för varje tersband visas i tabell B3.1. Dessa värden motsvarar en standardavvikelse för laboratoriets egna repeterbarhet, baserat på tio mätningar på referensbetongbjälklaget åren 2004 till 2015.

| 50 Hz        | 63 Hz        | 80 Hz        | 100 Hz       | 125 Hz       | 160 Hz       | 200 Hz       |
|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| $\pm 3,8$ dB | $\pm 3,2$ dB | $\pm 3,1$ dB | $\pm 2,2$ dB | $\pm 2,1$ dB | $\pm 1,5$ dB | $\pm 1,5$ dB |
| 250 Hz       | 315 Hz       | 400 Hz       | 500 Hz       | 630 Hz       | 800 Hz       | 1 kHz        |
| $\pm 1,1$ dB | $\pm 1,4$ dB | $\pm 0,8$ dB | $\pm 1,1$ dB | $\pm 1,1$ dB | $\pm 1,2$ dB | $\pm 1,3$ dB |
| 1,25 kHz     | 1,6 kHz      | 2,0 kHz      | 2,5 kHz      | 3,15 kHz     | 4,0 kHz      | 5,0 kHz      |
| $\pm 1,5$ dB | $\pm 1,9$ dB | $\pm 1,8$ dB | $\pm 2,3$ dB | $\pm 2,3$ dB | $\pm 2,5$ dB | $\pm 2,8$ dB |

Tabell B3.1: En standardavvikelse för stegljudsnivåmätningar utförda på 160 mm referensbetongbjälklag.

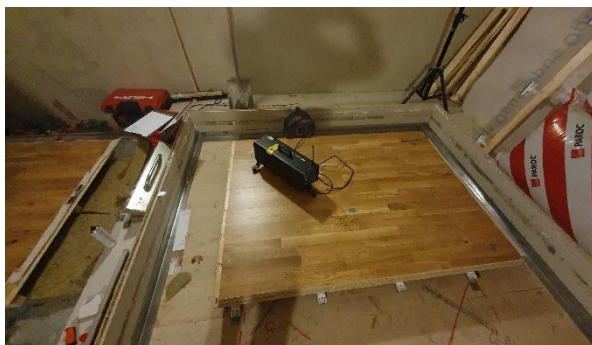
Mätosäkerheten för övriga parametrar visas i tabell B3.2.

| Parameter     | Osäkerhet              |
|---------------|------------------------|
| Temperatur    | $\pm 0,5^{\circ}$ C    |
| Luftfuktighet | $\pm 3$ procentenheter |
| Lufttryck     | $\pm 0,5$ kPa          |

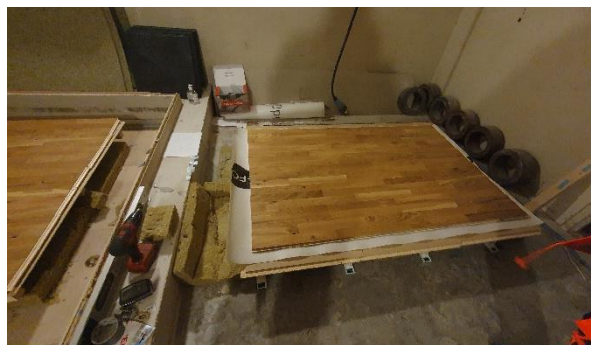
Tabell B3.2: Mätosäkerhet

## BILAGA 4: FOTON

Foto på uppställning för M4 saknas.



Figur B4.1: Provyta på KL-träbjälklag, Prov M1.



Figur B4.2: Provyta på betongbjälklag, Prov M15.



Figur B4.3: Montering av regler, prov M1.



Figur B4.4: Montering prov M8.



Figur B4.5: Montering prov M1.



Figur B4.9: Montering prov M3.



Figur B4.6: Montering prov M7.



Figur B4.7: Montering prov M9.



Figur B4.8: Montering prov M15.



Figur B4.10: Stenullisulering som användes.



Figur B4.11: Montering prov M2.



Figur B4.12: Montering prov M10.



Figur B4.13: Montering prov M11.



Figur B4.16: Montering prov M13.



Figur B4.15: Montering prov M14.



Figur B4.14: Montering prov M16.



Figur B4.17: Montering prov M5.



Figur B4.20: Montering prov M6.



Figur B4.18: Montering prov M12.



Figur B4.19: Montering prov M17.

# Normalized impact sound pressure levels according to ISO 10140-3

Laboratory measurements of impact sound insulation of floors

No. of test report: 4068-M1

Date of report: 2025-02-05

Date of test: 2025-01-24

Name: Staffan Andersson

Client: Nivell System

Manufacturer: Nivell System

Test specimen mounted by: Nivell System

## Test room identification:

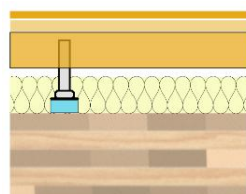
Testrum 3 (sändarrum) till testrum 2 (mottagarum)

## Product identification:

KL-Trä, Ljudfot "blå" 25 mm med 150 mm plastskruv, PAROC eXtra, Forestia Golvspånskiva P6

## Description of the specimen:

KL-trä 170 mm, Ljudfot "blå" 25 mm, plastskruv 150 mm, golvspån 22 mm, aerolen, parkett med stenullsisolering 70 mm. Provytan var 130 x 180 cm och avviker från mätstandard, mätresultat besitter en högre osäkerhet.



Parkett  
Aerolen  
golvspånskiva P6 22 mm  
Plastskruv 150 mm i  
träregel 70 mm  
Ljudfot "blå" 25 mm  
Stenull 70 mm  
KLT 170 mm

Mass per unit area: 101 kg/m<sup>2</sup>

Curing time: - days

Barometric pressure: 99,3 kPa

Temperature - source room: 18,0 °C

- receiving room: 18,0 °C

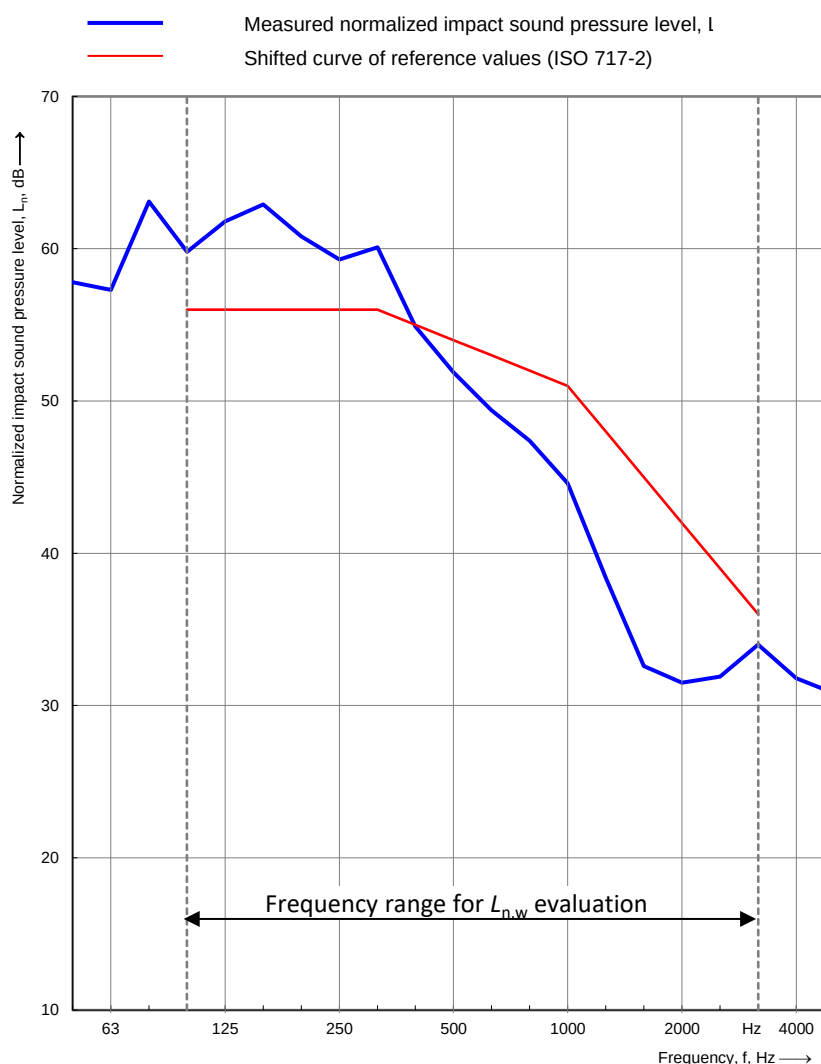
Air humidity - source room: 35 %

- receiving room: 35 %

Source room volume: 101,0 m<sup>3</sup>

Receiving room volume: 123,0 m<sup>3</sup>

| Frequency<br>f<br>[Hz] | L <sub>n</sub><br>1/3 octave<br>[dB] |
|------------------------|--------------------------------------|
| 50                     | 57,8                                 |
| 63                     | 57,3                                 |
| 80                     | 63,1                                 |
| 100                    | 59,8                                 |
| 125                    | 61,8                                 |
| 160                    | 62,9                                 |
| 200                    | 60,8                                 |
| 250                    | 59,3                                 |
| 315                    | 60,1                                 |
| 400                    | 54,9                                 |
| 500                    | 51,9                                 |
| 630                    | 49,4                                 |
| 800                    | 47,4                                 |
| 1000                   | 44,6                                 |
| 1250                   | 38,4                                 |
| 1600                   | 32,6                                 |
| 2000                   | 31,5                                 |
| 2500                   | 31,9                                 |
| 3150                   | 34,0                                 |
| 4000                   | 31,8                                 |
| 5000                   | 30,8                                 |



Rating according to ISO 717-2

$$L_{n,w}(C_i) = 54 ( 0 ) \text{ dB}$$

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

$$C_{1,50-2500} = 2 \text{ dB}$$

## Normalized impact sound pressure levels according to ISO 10140-3

Laboratory measurements of impact sound insulation of floors

No. of test report: 4068-M2

Date of report: 2025-02-05

Date of test: 2025-01-24

Name: Staffan Andersson

Client: Nivell System

Nivell System

Test specimen mounted by: Nivell System

**Test room identification:**

Testrum 3 (sändarrum) till testrum 2 (mottagarum)

**Product identification:**

KL-Trä, Ljudfot "blå" 25 mm med 150 mm plastskruv, PAROC eXtra, Forestia Golvspånskiva P6, Norgips golv

**Description of the specimen:**

KL-trä 170 mm, Ljudfot "blå" 25 mm, plastskruv 150 mm, golvspån 22 mm, golvgips 12,5 mm, aerolen, parkett med stenullsisolering 70 mm. Provytan var 130 x 180 cm och avviker från mätstandard, mätresultat besitter en högre osäkerhet.

Mass per unit area: 115 kg/m<sup>2</sup>

Curing time: - days

Barometric pressure: 99,3 kPa

Temperature - source room: 18,0 °C

- receiving room: 18,0 °C

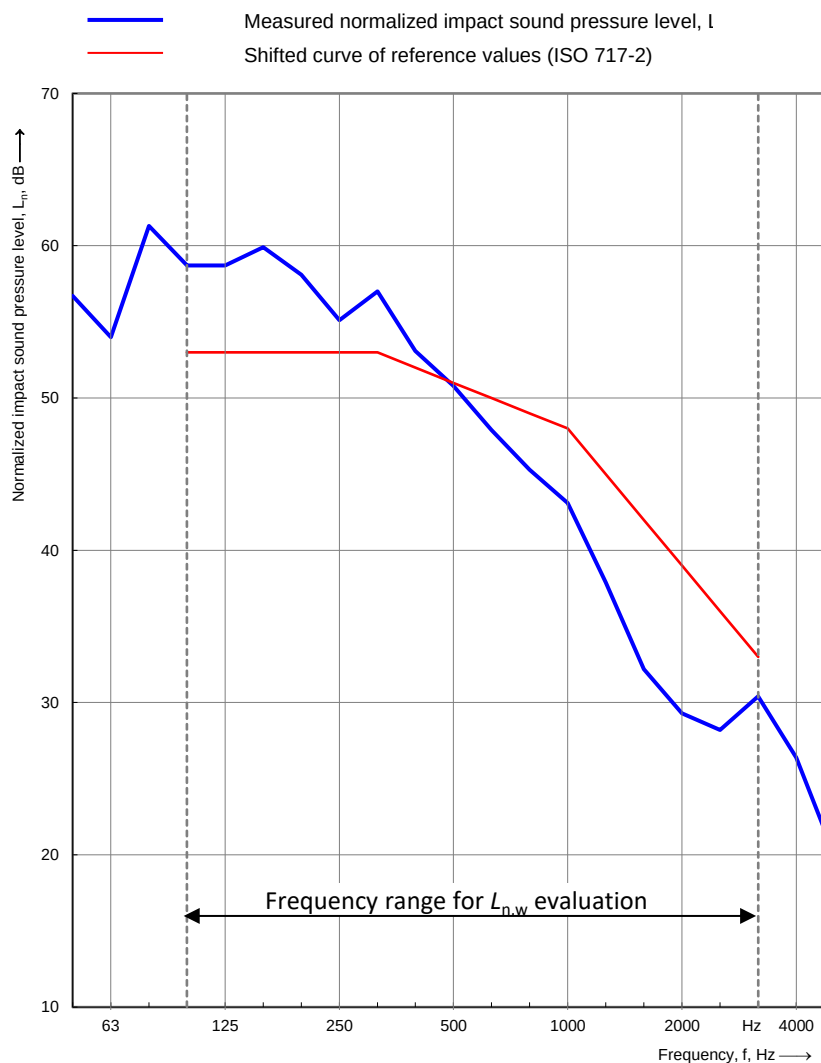
Air humidity - source room: 36 %

- receiving room: 36 %

Source room volume: 101,0 m<sup>3</sup>Receiving room volume: 123,0 m<sup>3</sup>

| Frequency<br>f<br>[Hz] | L <sub>n</sub><br>1/3 octave<br>[dB] |
|------------------------|--------------------------------------|
| 50                     | 56,7                                 |
| 63                     | 54,0                                 |
| 80                     | 61,3                                 |
| 100                    | 58,7                                 |
| 125                    | 58,7                                 |
| 160                    | 59,9                                 |
| 200                    | 58,1                                 |
| 250                    | 55,1                                 |
| 315                    | 57,0                                 |
| 400                    | 53,1                                 |
| 500                    | 50,8                                 |
| 630                    | 47,9                                 |
| 800                    | 45,3                                 |
| 1000                   | 43,1                                 |
| 1250                   | 37,9                                 |
| 1600                   | 32,2                                 |
| 2000                   | 29,3                                 |
| 2500                   | 28,2                                 |
| 3150                   | 30,4                                 |
| 4000                   | 26,4                                 |
| 5000                   | 20,0                                 |

Background noise too high



Rating according to ISO 717-2

$$L_{n,w}(C_i) = 51 ( 0 ) \text{ dB}$$

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

$$C_{1,50-2500} = 2 \text{ dB}$$

# Normalized impact sound pressure levels according to ISO 10140-3

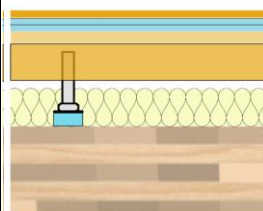
No. of test report: 4068-M3  
Date of report: 2025-02-05  
Date of test: 2025-01-24  
Name: Staffan Andersson

Laboratory measurements of impact sound insulation of floors

Client: Nivell System  
Manufacturer: Nivell System  
Test specimen mounted by: Nivell System  
Test room identification: Testrum 3 (sändarrum) till testrum 2 (mottagarum)

Product identification:  
KL-Trä, Ljudfot "blå" 25 mm med 150 mm plastskruv, PAROC eXtra, Forestia  
Golvspånskiva P6, Norgips golv

Description of the specimen:  
KL-trä 170 mm, Ljudfot "blå" 25 mm, plastskruv 150 mm, golvspån 22 mm, golvgips 2x12,5mm, aerolen, parkett med stenullsisolering 70 mm. Provytan var 130 x 180 cm och avviker från mätstandard, mätresultat besitter en högre osäkerhet.

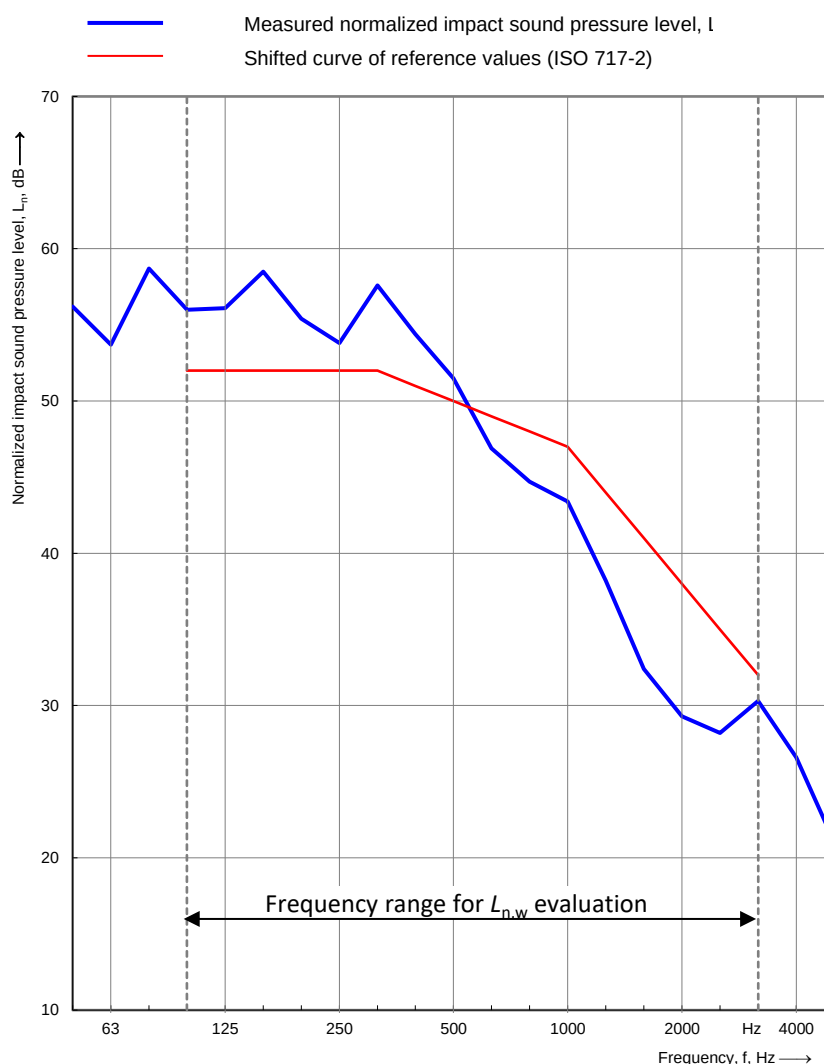


Parkett  
Aerolen  
Golvspånskiva P6 22 mm  
Plastskruv 150 mm i  
träregel 70 mm  
Ljudfot "blå" 25 mm  
Stenull 70 mm  
KLT 170 mm

Mass per unit area: 130 kg/m<sup>2</sup>  
Curing time: - days  
Barometric pressure: 99,3 kPa  
Temperature - source room: 18,0 °C  
- receiving room: 18,0 °C  
Air humidity - source room: 36 %  
- receiving room: 36 %  
Source room volume: 101,0 m<sup>3</sup>  
Receiving room volume: 123,0 m<sup>3</sup>

| Frequency<br>f<br>[Hz] | L <sub>n</sub><br>1/3 octave<br>[dB] |
|------------------------|--------------------------------------|
| 50                     | 56,2                                 |
| 63                     | 53,7                                 |
| 80                     | 58,7                                 |
| 100                    | 56,0                                 |
| 125                    | 56,1                                 |
| 160                    | 58,5                                 |
| 200                    | 55,4                                 |
| 250                    | 53,8                                 |
| 315                    | 57,6                                 |
| 400                    | 54,4                                 |
| 500                    | 51,5                                 |
| 630                    | 46,9                                 |
| 800                    | 44,7                                 |
| 1000                   | 43,4                                 |
| 1250                   | 38,2                                 |
| 1600                   | 32,4                                 |
| 2000                   | 29,3                                 |
| 2500                   | 28,2                                 |
| 3150                   | 30,3                                 |
| 4000                   | 26,6                                 |
| 5000                   | 21,0                                 |

Background noise too high



Rating according to ISO 717-2

$$L_{n,w}(C_i) = 50 ( 0 ) \text{ dB}$$

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

$$C_{1,50-2500} = 2 \text{ dB}$$

# Normalized impact sound pressure levels according to ISO 10140-3

No. of test report: 4068-M4  
Date of report: 2025-02-05  
Date of test: 2025-01-24  
Name: Staffan Andersson

Laboratory measurements of impact sound insulation of floors

Client: Nivell System

Manufacturer: Nivell System

Test specimen mounted by: Nivell System

## Test room identification:

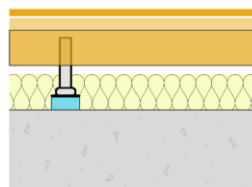
Testrum 3 (sändarrum) till testrum 2 (mottagarum)

## Product identification:

Referensbjälklag betong, Ljudfot "blå" 25 mm med 150 mm plastskruv, PAROC eXtra, Forestia Golvspånskiva P6

## Description of the specimen:

Referensbjälklag betong 160 mm, Ljudfot "blå" 25 mm, plastskruv 150 mm, golvspån 22 mm, aerolen, parkett med stenullsisolering 70 mm. Provytan var 130 x 180 cm och avviker från mätstandard, mätresultat besitter en högre osäkerhet.



Parkett  
Aerolen  
Golvspånskiva P6 22 mm  
Plastskruv 150 mm i  
träregel 70 mm  
Ljudfot "blå" 25 mm  
Stenull 70 mm  
Betong 160 mm

Mass per unit area: 404 kg/m<sup>2</sup>

Curing time: - days

Barometric pressure: 99,3 kPa

Temperature - source room: 16,0 °C

- receiving room: 16,0 °C

Air humidity - source room: 39 %

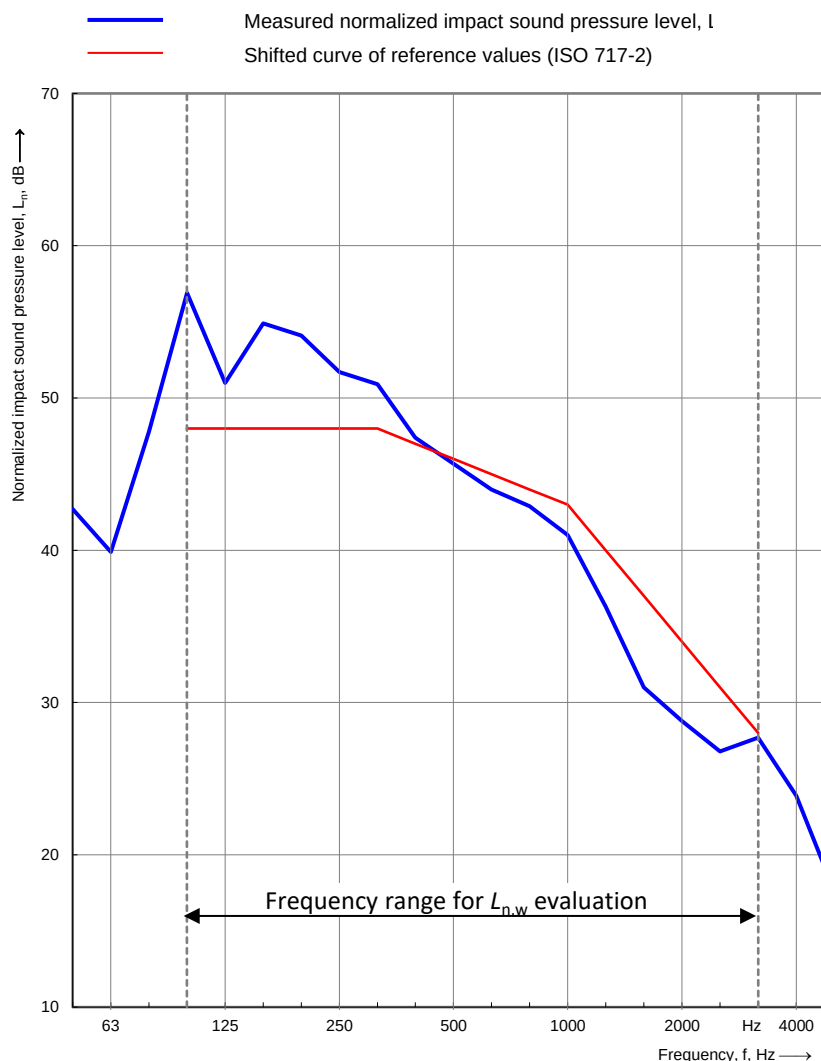
- receiving room: 39 %

Source room volume: 101,0 m<sup>3</sup>

Receiving room volume: 123,0 m<sup>3</sup>

| Frequency<br>f<br>[Hz] | L <sub>n</sub><br>1/3 octave<br>[dB] |
|------------------------|--------------------------------------|
| 50                     | 42,7                                 |
| 63                     | 39,9 <sup>1</sup>                    |
| 80                     | 47,8                                 |
| 100                    | 56,9                                 |
| 125                    | 51,0                                 |
| 160                    | 54,9                                 |
| 200                    | 54,1                                 |
| 250                    | 51,7                                 |
| 315                    | 50,9                                 |
| 400                    | 47,4                                 |
| 500                    | 45,7                                 |
| 630                    | 44,0                                 |
| 800                    | 42,9                                 |
| 1000                   | 41,0                                 |
| 1250                   | 36,3                                 |
| 1600                   | 31,0                                 |
| 2000                   | 28,8                                 |
| 2500                   | 26,8                                 |
| 3150                   | 27,7                                 |
| 4000                   | 23,9 <sup>1</sup>                    |
| 5000                   | 17,6 <sup>1</sup>                    |

Background noise too high



Rating according to ISO 717-2

$$L_{n,w}(C_i) = 46 (1) \text{ dB}$$

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

$$C_{1,50-2500} = 1 \text{ dB}$$

# Normalized impact sound pressure levels according to ISO 10140-3

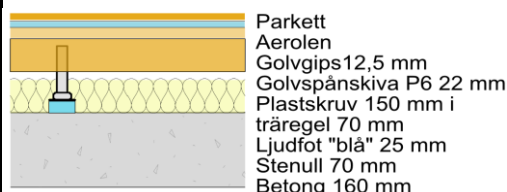
No. of test report: 4068-M5  
Date of report: 2025-02-05  
Date of test: 2025-01-24  
Name: Staffan Andersson

Laboratory measurements of impact sound insulation of floors

**Client:** Nivell System  
**Manufacturer:** Nivell System  
**Test specimen mounted by:** Nivell System  
**Test room identification:**  
Testrum 3 (sändarrum) till testrum 2 (mottagarrum)

**Product identification:**  
Referensbjälklag betong, Ljudfot "blå" 25 mm med 150 mm plastskruv, PAROC eXtra, Forestia Golvspånskiva P6, Norgips golv

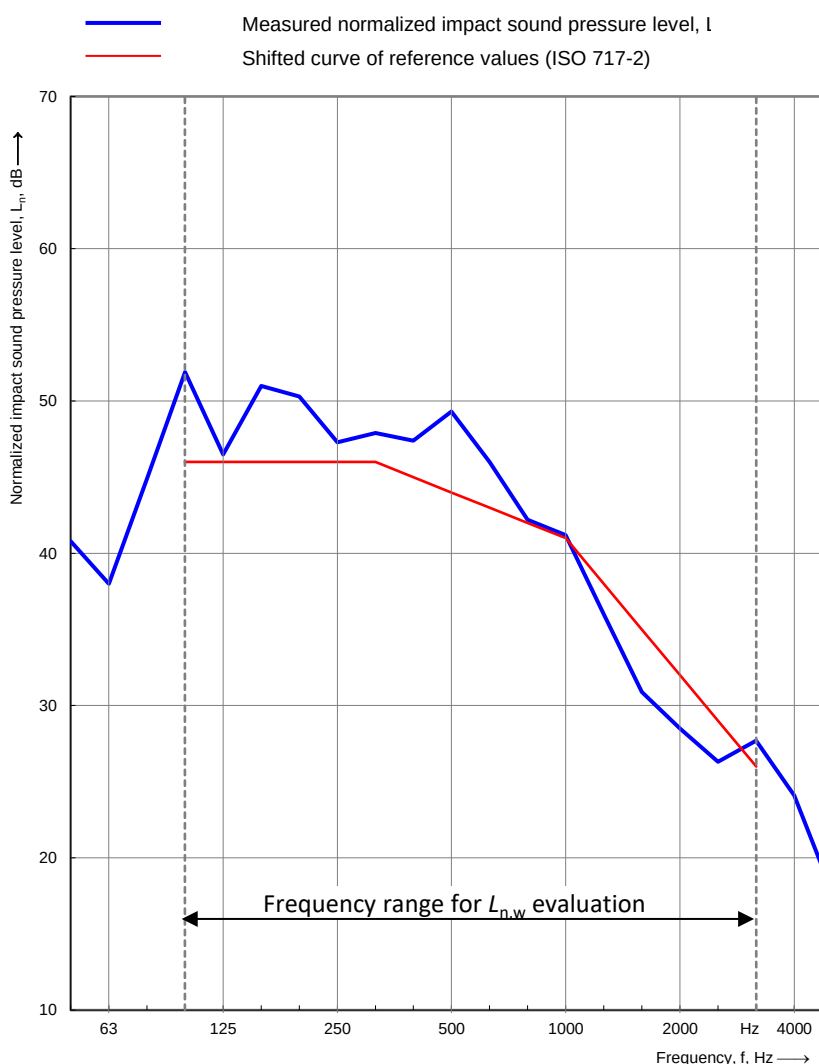
**Description of the specimen:**  
Referensbjälklag betong 160 mm, Ljudfot "blå" 25 mm, plastskruv 150 mm, golvspån 22 mm, golvgips 12,5 mm, aerolen, parkett med stenullsisolering 70 mm. Provytan var 130 x 180 cm och avviker från mätstandard, mätresultat besitter en högre osäkerhet.



**Mass per unit area:** 418 kg/m<sup>2</sup>  
**Curing time:** - days  
**Barometric pressure:** 99,3 kPa  
**Temperature - source room:** 16,0 °C  
**- receiving room:** 16,0 °C  
**Air humidity - source room:** 39 %  
**- receiving room:** 39 %  
**Source room volume:** 101,0 m<sup>3</sup>  
**Receiving room volume:** 123,0 m<sup>3</sup>

| Frequency<br>f<br>[Hz] | L <sub>n</sub><br>1/3 octave<br>[dB] |
|------------------------|--------------------------------------|
| 50                     | 40,8                                 |
| 63                     | 38,0 <sup>1</sup>                    |
| 80                     | 44,9                                 |
| 100                    | 51,9                                 |
| 125                    | 46,5                                 |
| 160                    | 51,0                                 |
| 200                    | 50,3                                 |
| 250                    | 47,3                                 |
| 315                    | 47,9                                 |
| 400                    | 47,4                                 |
| 500                    | 49,3                                 |
| 630                    | 46,0                                 |
| 800                    | 42,2                                 |
| 1000                   | 41,2                                 |
| 1250                   | 36,0                                 |
| 1600                   | 30,9                                 |
| 2000                   | 28,5                                 |
| 2500                   | 26,3                                 |
| 3150                   | 27,7                                 |
| 4000                   | 24,1 <sup>1</sup>                    |
| 5000                   | 17,7 <sup>1</sup>                    |

Background noise too high



Rating according to ISO 717-2

$$L_{n,w}(C_i) = 44 ( 0 ) \text{ dB}$$

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

$$C_{1,50-2500} = 0 \text{ dB}$$

# Normalized impact sound pressure levels according to ISO 10140-3

Laboratory measurements of impact sound insulation of floors

No. of test report: 4068-M6

Date of report: 2025-02-05

Date of test: 2025-01-24

Name: Staffan Andersson

Client: Nivell System

Manufacturer: Nivell System

Test specimen mounted by: Nivell System

## Test room identification:

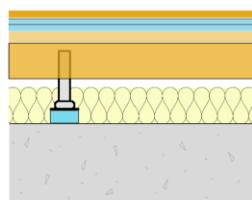
Testrum 3 (sändarrum) till testrum 2 (mottagarum)

## Product identification:

Referensbjälklag betong, Ljudfot "blå" 25 mm med 150mm plastskruv, PAROC eXtra, Forestia Golvspånskiva P6, Norgips golv

## Description of the specimen:

Referensbjälklag betong 160 mm, Ljudfot "blå" 25 mm, plastskruv 150 mm, golvspån 22 mm, golvgips 2x12,5 mm, aerolen, parkett med stenullsisolering 70 mm. Provytan var 130 x 180 cm och avviker från mätstandard, mätresultat besitter en högre osäkerhet.



Parkett  
Aerolen  
Golvgips 2 x 12,5 mm  
Golvspånskiva P6 22 mm  
Plastskruv 150 mm i  
träregel 70 mm  
Ljudfot "blå" 25 mm  
Stenull 70 mm  
Betong 160 mm

Mass per unit area: 433 kg/m<sup>2</sup>

Curing time: - days

Barometric pressure: 99,3 kPa

Temperature - source room: 16,0 °C

- receiving room: 16,0 °C

Air humidity - source room: 39 %

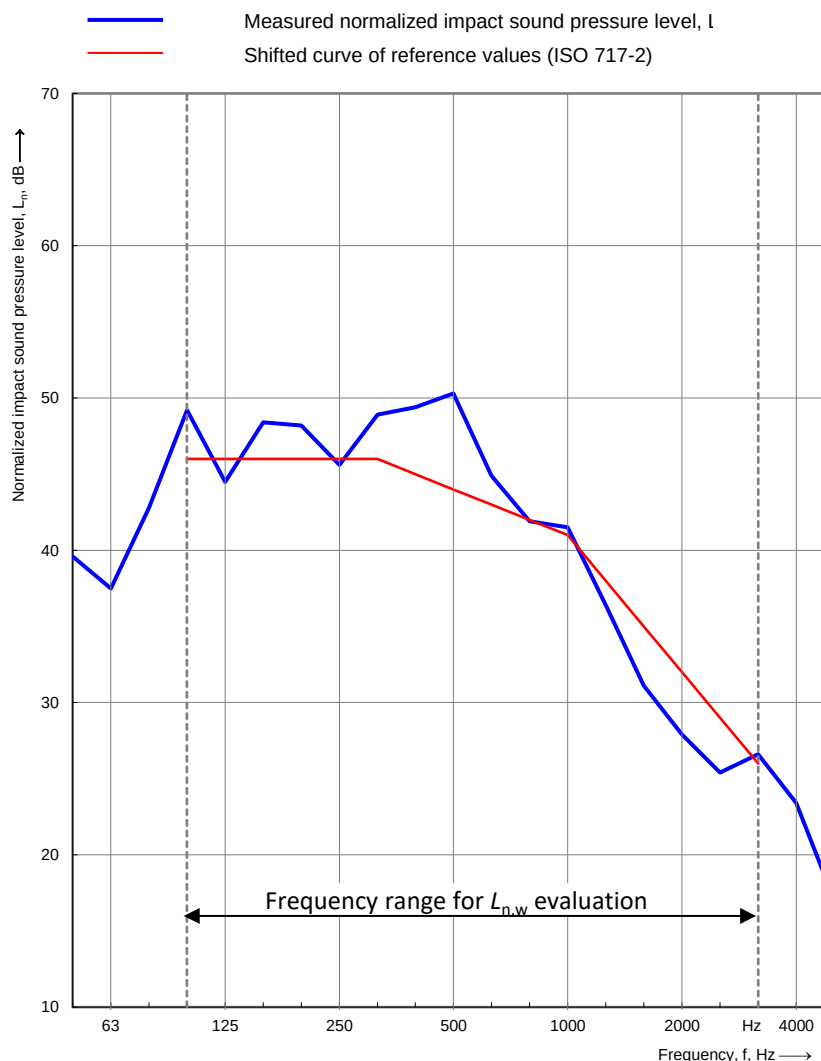
- receiving room: 39 %

Source room volume: 101,0 m<sup>3</sup>

Receiving room volume: 123,0 m<sup>3</sup>

| Frequency<br>f<br>[Hz] | L <sub>n</sub><br>1/3 octave<br>[dB] |
|------------------------|--------------------------------------|
| 50                     | 39,6 <sup>1</sup>                    |
| 63                     | 37,5 <sup>1</sup>                    |
| 80                     | 42,8                                 |
| 100                    | 49,2                                 |
| 125                    | 44,5                                 |
| 160                    | 48,4                                 |
| 200                    | 48,2                                 |
| 250                    | 45,6                                 |
| 315                    | 48,9                                 |
| 400                    | 49,4                                 |
| 500                    | 50,3                                 |
| 630                    | 44,9                                 |
| 800                    | 41,9                                 |
| 1000                   | 41,5                                 |
| 1250                   | 36,4                                 |
| 1600                   | 31,1                                 |
| 2000                   | 27,9                                 |
| 2500                   | 25,4                                 |
| 3150                   | 26,6                                 |
| 4000                   | 23,4 <sup>1</sup>                    |
| 5000                   | 17,0 <sup>1</sup>                    |

Background noise too high



Rating according to ISO 717-2

$$L_{n,w}(C_i) = 44 \text{ ( -1 ) dB}$$

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

$$C_{1,50-2500} = -1 \text{ dB}$$

# Normalized impact sound pressure levels according to ISO 10140-3

No. of test report: 4068-M7  
Date of report: 2025-02-05  
Date of test: 2025-01-24  
Name: Staffan Andersson

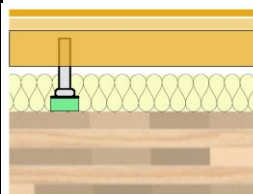
Laboratory measurements of impact sound insulation of floors

Client: Nivell System  
Manufacturer: Nivell System  
Test specimen mounted by: Nivell System

Test room identification:  
Testrum 3 (sändarrum) till testrum 2 (mottagarum)

Product identification:  
KL-Trä, Ljudfot "grön" 25 mm med 150mm plastskruv, PAROC eXtra, Forestia Golvspånskiva P6

Description of the specimen:  
KL-trä 170 mm, Ljudfot "grön" 25 mm, plastskruv 150 mm, golvspån 22 mm, aerolen, parkett med stenullsisolering 70 mm. Provytan var 130 x 180 cm och avviker från mätstandard, mätresultat besitter en högre osäkerhet.

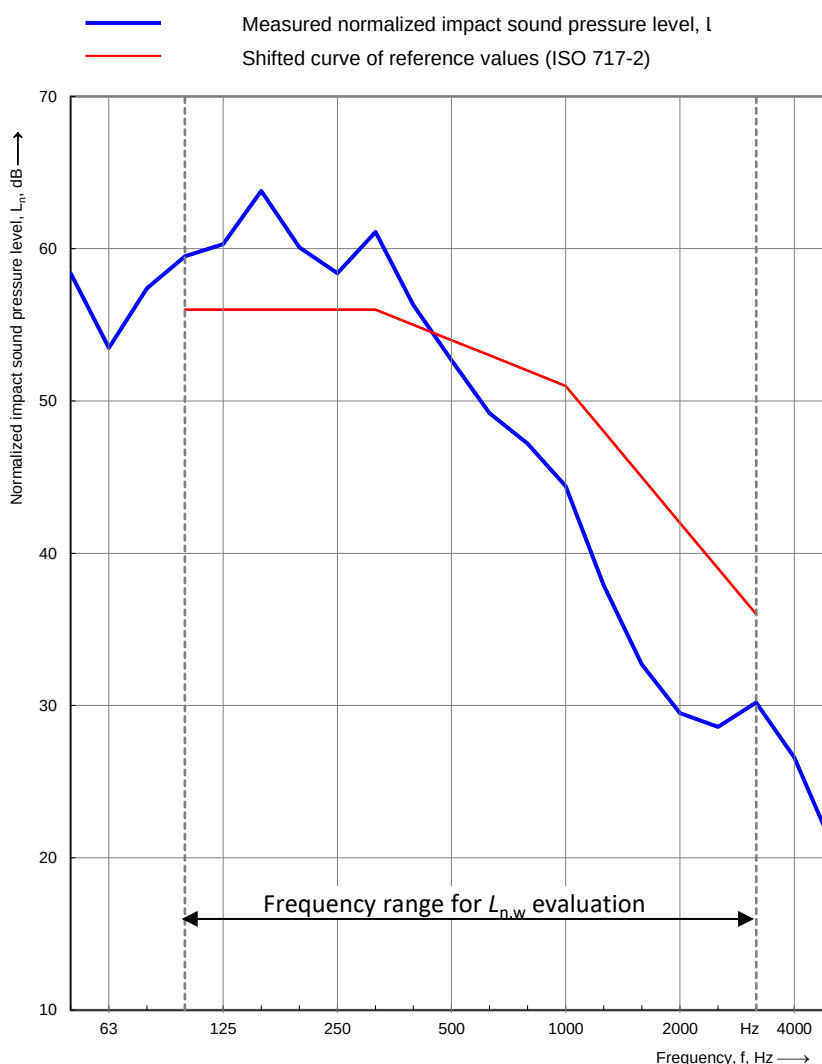


Parkett  
Aerolen  
Golvspånskiva P6 22 mm  
Plastskruv 150 mm i träregel 70 mm  
Ljudfot "grön" 25 mm  
Stenull 70 mm  
KLT 170 mm

Mass per unit area: 101 kg/m<sup>2</sup>  
Curing time: - days  
Barometric pressure: 99,3 kPa  
Temperature - source room: 18,0 °C  
- receiving room: 18,0 °C  
Air humidity - source room: 35 %  
- receiving room: 35 %  
Source room volume: 101,0 m<sup>3</sup>  
Receiving room volume: 123,0 m<sup>3</sup>

| Frequency<br>f<br>[Hz] | L <sub>n</sub><br>1/3 octave<br>[dB] |
|------------------------|--------------------------------------|
| 50                     | 58,4                                 |
| 63                     | 53,5                                 |
| 80                     | 57,4                                 |
| 100                    | 59,5                                 |
| 125                    | 60,3                                 |
| 160                    | 63,8                                 |
| 200                    | 60,1                                 |
| 250                    | 58,4                                 |
| 315                    | 61,1                                 |
| 400                    | 56,3                                 |
| 500                    | 52,7                                 |
| 630                    | 49,2                                 |
| 800                    | 47,2                                 |
| 1000                   | 44,4                                 |
| 1250                   | 37,9                                 |
| 1600                   | 32,7                                 |
| 2000                   | 29,5                                 |
| 2500                   | 28,6                                 |
| 3150                   | 30,2                                 |
| 4000                   | 26,6                                 |
| 5000                   | 20,8                                 |

Background noise too high



Rating according to ISO 717-2

$$L_{n,w}(C_i) = 54 ( 0 ) \text{ dB}$$

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

$$C_{1,50-2500} = 1 \text{ dB}$$

## Normalized impact sound pressure levels according to ISO 10140-3

Laboratory measurements of impact sound insulation of floors

No. of test report: 4068-M8

Date of report: 2025-02-05

Date of test: 2025-01-24

Name: Staffan Andersson

Client: Nivell System

Manufacturer: Nivell System

Test specimen mounted by: Nivell System

### Test room identification:

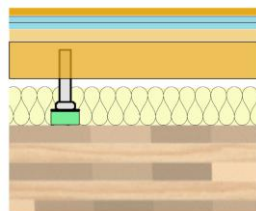
Testrum 3 (sändarrum) till testrum 2 (mottagarum)

### Product identification:

KL-Trä, Ljudfot "grön" 25 mm med 150mm plastskruv, PAROC eXtra, Forestia Golvspånskiva P6, Norgips golv

### Description of the specimen:

KL-trä 170 mm, Ljudfot "grön" 25 mm, plastskruv 150 mm, golvspån 22 mm, golvgips 2x12,5 mm, aerolen, parkett med stenullsisolering 70 mm. Provytan var 130 x 180 cm och avviker från mätstandard, mätresultat besitter en högre osäkerhet.



Parkett  
Aerolen  
Golvgips 2 x 12,5 mm  
Golvspånskiva P6 22 mm  
Plastskruv 150 mm i  
träregel 70 mm  
Ljudfot "grön" 25 mm  
Stenull 70 mm  
KLT 170 mm

Mass per unit area: 130 kg/m<sup>2</sup>

Curing time: - days

Barometric pressure: 99,3 kPa

Temperature - source room: 17,0 °C

- receiving room: 17,0 °C

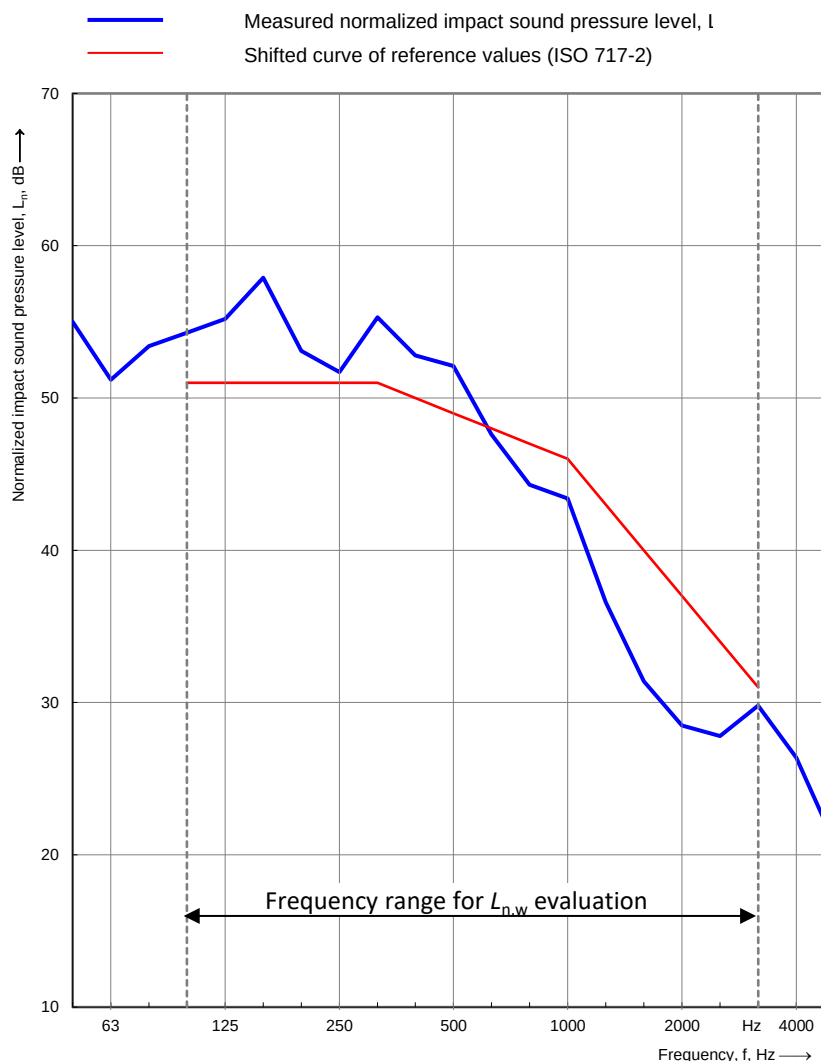
Air humidity - source room: 36 %

- receiving room: 36 %

Source room volume: 101,0 m<sup>3</sup>Receiving room volume: 123,0 m<sup>3</sup>

| Frequency<br>f<br>[Hz] | L <sub>n</sub><br>1/3 octave<br>[dB] |
|------------------------|--------------------------------------|
| 50                     | 55,0                                 |
| 63                     | 51,2                                 |
| 80                     | 53,4                                 |
| 100                    | 54,3                                 |
| 125                    | 55,2                                 |
| 160                    | 57,9                                 |
| 200                    | 53,1                                 |
| 250                    | 51,7                                 |
| 315                    | 55,3                                 |
| 400                    | 52,8                                 |
| 500                    | 52,1                                 |
| 630                    | 47,6                                 |
| 800                    | 44,3                                 |
| 1000                   | 43,4                                 |
| 1250                   | 36,6                                 |
| 1600                   | 31,4                                 |
| 2000                   | 28,5                                 |
| 2500                   | 27,8                                 |
| 3150                   | 29,8                                 |
| 4000                   | 26,4 <sup>1</sup>                    |
| 5000                   | 20,8 <sup>1</sup>                    |

Background noise too high



Rating according to ISO 717-2

$$L_{n,w}(C_i) = 49 (0) \text{ dB}$$

Evaluation based on laboratory measurement results  
obtained in one-third-octave bands by an engineering method.

$$C_{1,50-2500} = 1 \text{ dB}$$

# Normalized impact sound pressure levels according to ISO 10140-3

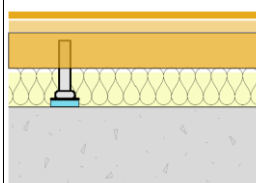
No. of test report: 4068-M9  
Date of report: 2025-02-05  
Date of test: 2025-01-24  
Name: Staffan Andersson

Laboratory measurements of impact sound insulation of floors

Client: Nivell System  
Manufacturer: Nivell System  
Test specimen mounted by: Nivell System  
Test room identification: Testrum 3 (sändarrum) till testrum 2 (mottagarrum)

Product identification:  
Referensbjälklag betong, Ljudfot "blå" 12,5 mm med 150 mm plastskruv, PAROC eXtra, Forestia Golvspånskiva P6

Description of the specimen:  
Referensbjälklag betong 160 mm, Ljudfot "blå" 12,5 mm, plastskruv 150 mm, golvspån 22 mm, aerolen, parkett med stenullsisolering 70 mm. Provytan var 130 x 180 cm och avviker från mätstandard, mätresultat besitter en högre osäkerhet.

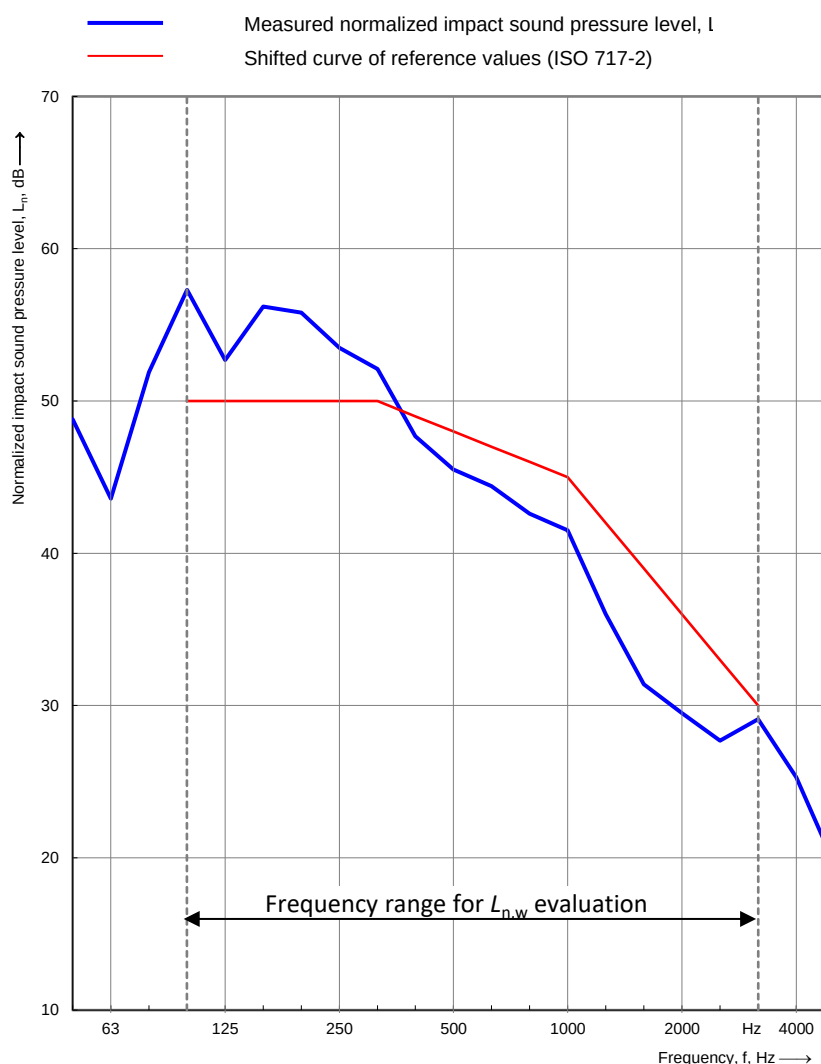


Parkett  
Aerolen  
Golvspånskiva P6 22 mm  
Plastskruv 150 mm i träregel 70 mm  
Ljudfot "blå" 12,5 mm  
Stenull 70 mm  
Betong 160 mm

Mass per unit area: 404 kg/m<sup>2</sup>  
Curing time: - days  
Barometric pressure: 99,3 kPa  
Temperature - source room: 18,0 °C  
- receiving room: 18,0 °C  
Air humidity - source room: 35 %  
- receiving room: 35 %  
Source room volume: 101,0 m<sup>3</sup>  
Receiving room volume: 123,0 m<sup>3</sup>

| Frequency<br>f<br>[Hz] | L <sub>n</sub><br>1/3 octave<br>[dB] |
|------------------------|--------------------------------------|
| 50                     | 48,8                                 |
| 63                     | 43,6                                 |
| 80                     | 51,9                                 |
| 100                    | 57,3                                 |
| 125                    | 52,7                                 |
| 160                    | 56,2                                 |
| 200                    | 55,8                                 |
| 250                    | 53,5                                 |
| 315                    | 52,1                                 |
| 400                    | 47,7                                 |
| 500                    | 45,5                                 |
| 630                    | 44,4                                 |
| 800                    | 42,6                                 |
| 1000                   | 41,5                                 |
| 1250                   | 36,0                                 |
| 1600                   | 31,4                                 |
| 2000                   | 29,5                                 |
| 2500                   | 27,7                                 |
| 3150                   | 29,1                                 |
| 4000                   | 25,3                                 |
| 5000                   | 19,6                                 |

Background noise too high



Rating according to ISO 717-2

$$L_{n,w}(C_i) = 48 ( 0 ) \text{ dB}$$

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

$$C_{1,50-2500} = 1 \text{ dB}$$

# Normalized impact sound pressure levels according to ISO 10140-3

No. of test report: 4068-M10

Date of report: 2025-02-05

Date of test: 2025-01-24

Name: Staffan Andersson

Laboratory measurements of impact sound insulation of floors

Client: Nivell System

Manufacturer: Nivell System

Test specimen mounted by: Nivell System

## Test room identification:

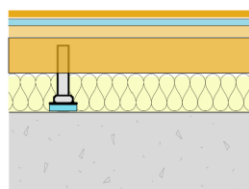
Testrum 3 (sändarrum) till testrum 2 (mottagarum)

## Product identification:

Referensbjälklag betong, Ljudfot "blå" 12,5 mm med 150 mm plastskruv, PAROC eXtra, Forestia Golvspånskiva P6, Norgips golv

## Description of the specimen:

Referensbjälklag betong 160 mm, Ljudfot "blå" 12,5 mm, plastskruv 150 mm, golvspån 22 mm, golvgips 12,5 mm, aerolen, parkett med stenullsisolering 70 mm. Provytan var 130 x 180 cm och avviker från mätstandard, mätresultatet besitter en högre osäkerhet.



Parkett  
Aerolen  
Golvgips 12,5 mm  
Golvspånskiva P6 22 mm  
Plastskruv 150 mm i  
träregel 70 mm  
Ljudfot "blå" 12,5 mm  
Stenull 70 mm  
Betong 160 mm

Mass per unit area: 418 kg/m<sup>2</sup>

Curing time: - days

Barometric pressure: 99,3 kPa

Temperature - source room: 17,0 °C

- receiving room: 17,0 °C

Air humidity - source room: 35 %

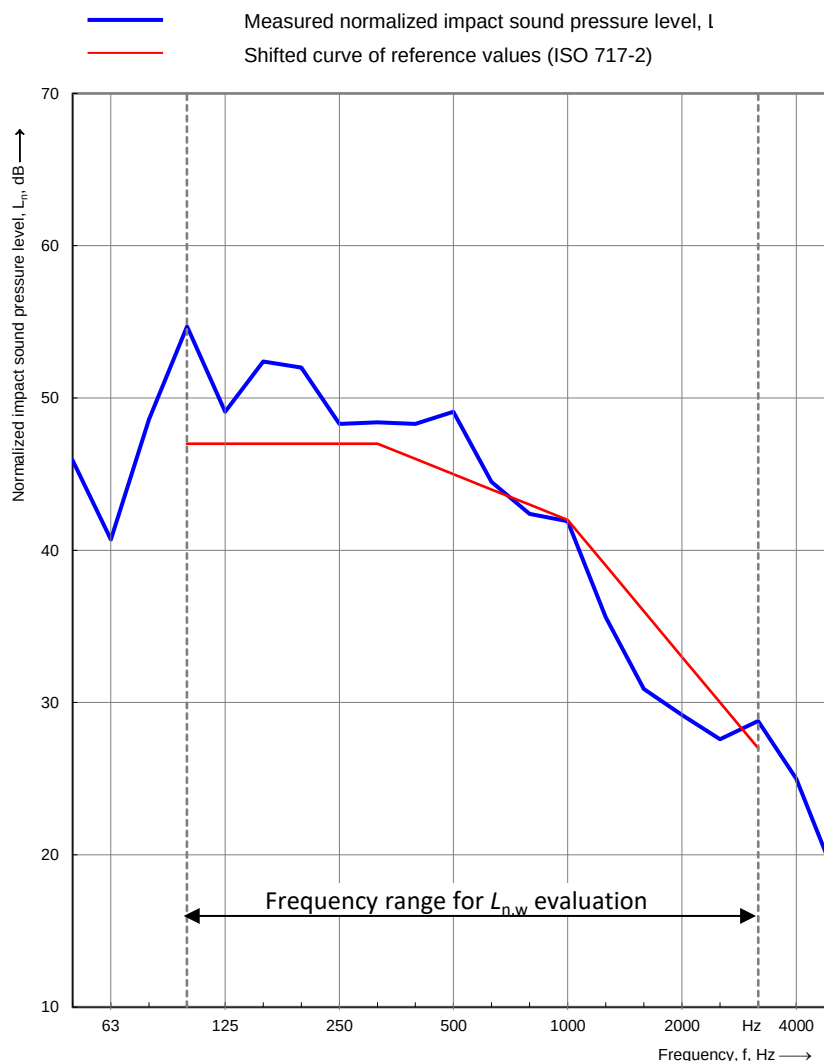
- receiving room: 35 %

Source room volume: 101,0 m<sup>3</sup>

Receiving room volume: 123,0 m<sup>3</sup>

| Frequency<br>f<br>[Hz] | L <sub>n</sub><br>1/3 octave<br>[dB] |
|------------------------|--------------------------------------|
| 50                     | 45,9                                 |
| 63                     | 40,7 <sup>1</sup>                    |
| 80                     | 48,6                                 |
| 100                    | 54,7                                 |
| 125                    | 49,1                                 |
| 160                    | 52,4                                 |
| 200                    | 52,0                                 |
| 250                    | 48,3                                 |
| 315                    | 48,4                                 |
| 400                    | 48,3                                 |
| 500                    | 49,1                                 |
| 630                    | 44,5                                 |
| 800                    | 42,4                                 |
| 1000                   | 41,9                                 |
| 1250                   | 35,6                                 |
| 1600                   | 30,9                                 |
| 2000                   | 29,2                                 |
| 2500                   | 27,6                                 |
| 3150                   | 28,8                                 |
| 4000                   | 25,0 <sup>1</sup>                    |
| 5000                   | 18,7 <sup>1</sup>                    |

Background noise too high



Rating according to ISO 717-2

L<sub>n,w</sub>(C<sub>i</sub>) = 45 ( 0 ) dB

C<sub>i,50-2500</sub> = 1 dB

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

# Normalized impact sound pressure levels according to ISO 10140-3

No. of test report: 4068-M11

Date of report: 2025-02-05

Date of test: 2025-01-24

Name: Staffan Andersson

Laboratory measurements of impact sound insulation of floors

Client: Nivell System

Manufacturer: Nivell System

Test specimen mounted by: Nivell System

## Test room identification:

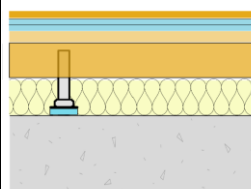
Testrum 3 (sändarrum) till testrum 2 (mottagarum)

## Product identification:

Referensbjälklag betong, Ljudfot "blå" 12,5 mm med 150 mm plastskruv, PAROC eXtra, Forestia Golvspånskiva P6, Norgips golv

## Description of the specimen:

Referensbjälklag betong 160 mm, Ljudfot "blå" 12,5 mm, plastskruv 150 mm, golvspån 22 mm, golvgips 2x12,5 mm, aerolen, parkett med stenullsisolering 70 mm. Provytan var 130 x 180 cm och avviker från mätstandard, mätresultat besitter en högre osäkerhet.



Parkett  
Aerolen  
Golvgips 2 x 12,5 mm  
Golvspånskiva P6 22 mm  
Plastskruv 150 mm i  
träregel 70 mm  
Ljudfot "blå" 12,5 mm  
Stenull 70 mm  
Betong 160 mm

Mass per unit area: 433 kg/m<sup>2</sup>

Curing time: - days

Barometric pressure: 99,3 kPa

Temperature - source room: 17,0 °C

- receiving room: 17,0 °C

Air humidity - source room: 37 %

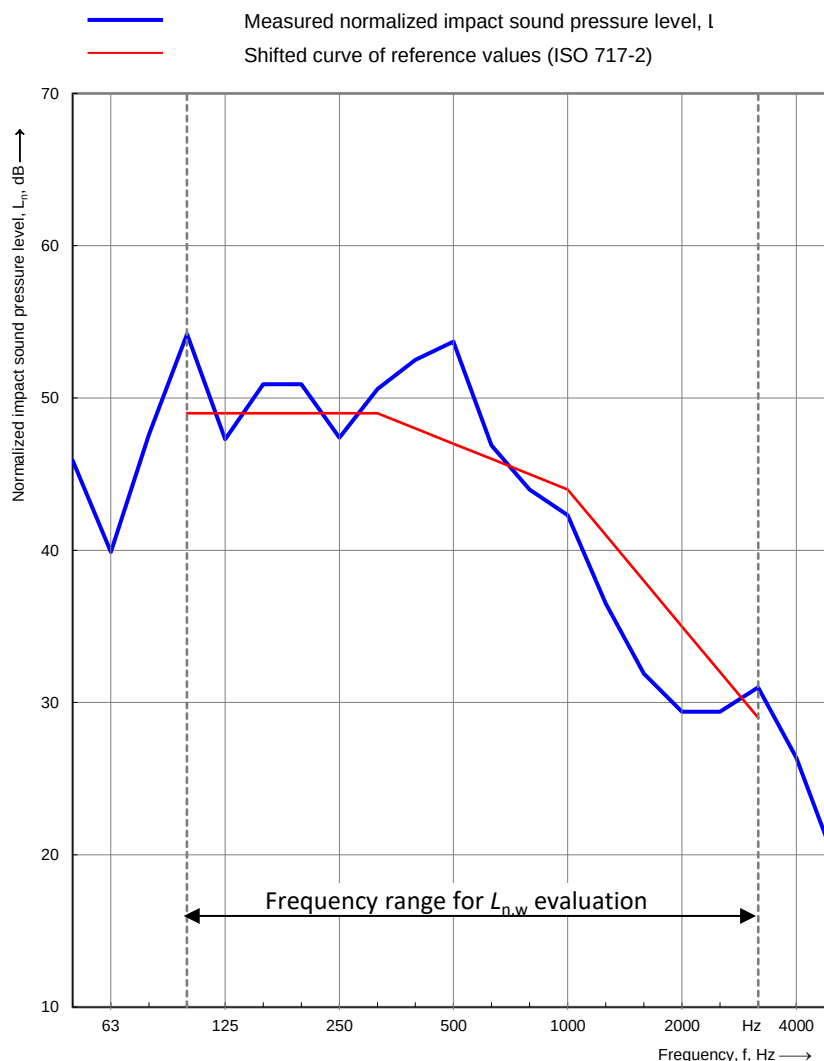
- receiving room: 37 %

Source room volume: 101,0 m<sup>3</sup>

Receiving room volume: 123,0 m<sup>3</sup>

| Frequency<br>f<br>[Hz] | L <sub>n</sub><br>1/3 octave<br>[dB] |
|------------------------|--------------------------------------|
| 50                     | 45,9                                 |
| 63                     | 39,9 <sup>1</sup>                    |
| 80                     | 47,6                                 |
| 100                    | 54,2                                 |
| 125                    | 47,3                                 |
| 160                    | 50,9                                 |
| 200                    | 50,9                                 |
| 250                    | 47,4                                 |
| 315                    | 50,6                                 |
| 400                    | 52,5                                 |
| 500                    | 53,7                                 |
| 630                    | 46,9                                 |
| 800                    | 44,0                                 |
| 1000                   | 42,3                                 |
| 1250                   | 36,5                                 |
| 1600                   | 31,9                                 |
| 2000                   | 29,4                                 |
| 2500                   | 29,4                                 |
| 3150                   | 31,0                                 |
| 4000                   | 26,4 <sup>1</sup>                    |
| 5000                   | 19,7 <sup>1</sup>                    |

Background noise too high



Rating according to ISO 717-2

$$L_{n,w}(C_i) = 47 \text{ ( -1 ) dB}$$

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

$$C_{1,50-2500} = -1 \text{ dB}$$

# Normalized impact sound pressure levels according to ISO 10140-3

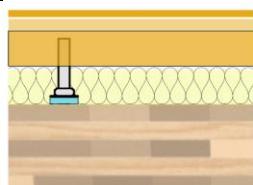
No. of test report: 4068-M12  
Date of report: 2025-02-05  
Date of test: 2025-01-24  
Name: Staffan Andersson

Laboratory measurements of impact sound insulation of floors

Client: Nivell System  
Manufacturer: Nivell System  
Test specimen mounted by: Nivell System  
Test room identification: Testrum 3 (sändarrum) till testrum 2 (mottagarrum)

Product identification:  
KL-Trä, Ljudfot "blå" 12,5 mm med 150 mm plastskruv, PAROC eXtra, Forestia  
Golvspånskiva P6

Description of the specimen:  
KL-trä 170 mm, Ljudfot "blå" 12,5 mm, plastskruv 150 mm, golvspån 22 mm, aerolen, parkett med stenullsisolering 70 mm. Provytan var 130 x 180 cm och avviker från mätstandard, mätresultat besitter en högre osäkerhet.

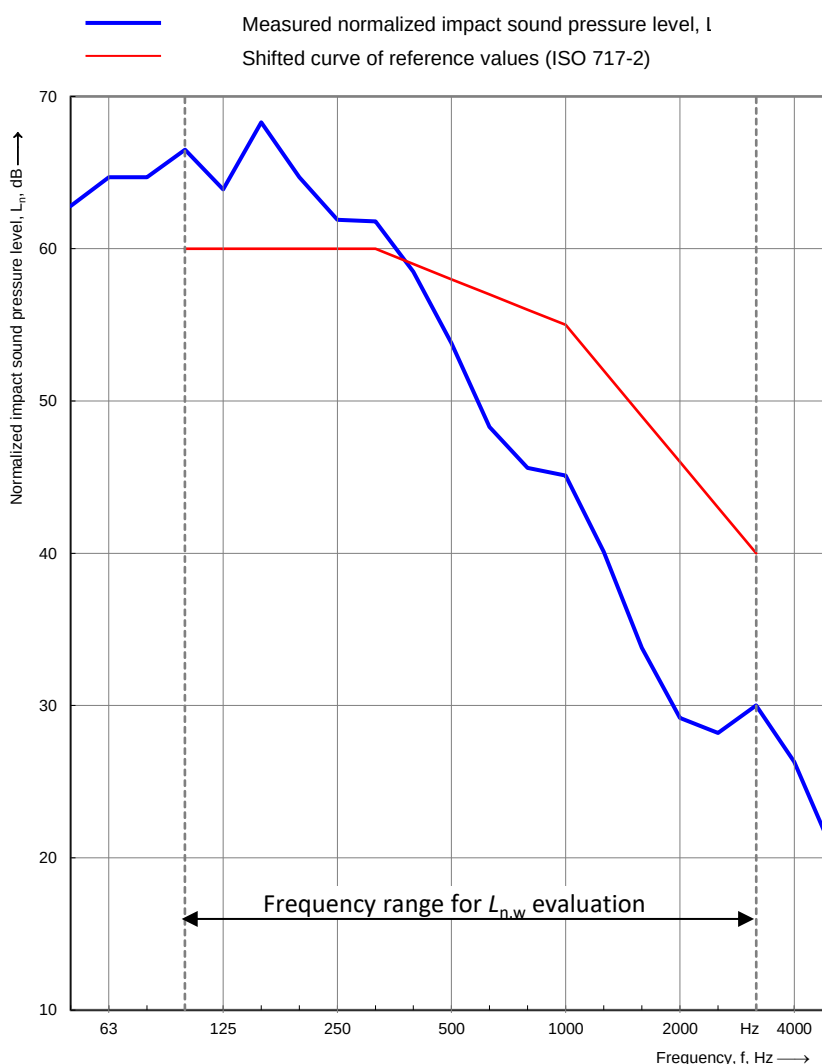


Parkett  
Aerolen  
Golvspånskiva P6 22 mm  
Plastskruv 150 mm i  
träregel 70 mm  
Ljudfot "blå" 12,5 mm  
Stenull 70 mm  
KLT 170 mm

Mass per unit area: 101 kg/m<sup>2</sup>  
Curing time: - days  
Barometric pressure: 99,3 kPa  
Temperature - source room: 36,0 °C  
- receiving room: 36,0 °C  
Air humidity - source room: 39 %  
- receiving room: 39 %  
Source room volume: 101,0 m<sup>3</sup>  
Receiving room volume: 123,0 m<sup>3</sup>

| Frequency<br>f<br>[Hz] | L <sub>n</sub><br>1/3 octave<br>[dB] |
|------------------------|--------------------------------------|
| 50                     | 62,8                                 |
| 63                     | 64,7                                 |
| 80                     | 64,7                                 |
| 100                    | 66,5                                 |
| 125                    | 63,9                                 |
| 160                    | 68,3                                 |
| 200                    | 64,7                                 |
| 250                    | 61,9                                 |
| 315                    | 61,8                                 |
| 400                    | 58,5                                 |
| 500                    | 53,8                                 |
| 630                    | 48,3                                 |
| 800                    | 45,6                                 |
| 1000                   | 45,1                                 |
| 1250                   | 40,1                                 |
| 1600                   | 33,8                                 |
| 2000                   | 29,2                                 |
| 2500                   | 28,2                                 |
| 3150                   | 30,0                                 |
| 4000                   | 26,3                                 |
| 5000                   | 20,5                                 |

Background noise too high



Rating according to ISO 717-2

$$L_{n,w}(C_i) = 58 ( 0 ) \text{ dB}$$

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

$$C_{1,50-2500} = 2 \text{ dB}$$

## Normalized impact sound pressure levels according to ISO 10140-3

Laboratory measurements of impact sound insulation of floors

No. of test report: 4068-M13

Date of report: 2025-02-05

Date of test: 2025-01-24

Name: Staffan Andersson

Client: Nivell System

Manufacturer: Nivell System

Test specimen mounted by: Nivell System

**Test room identification:**

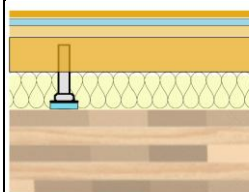
Testrum 3 (sändarrum) till testrum 2 (mottagarum)

**Product identification:**

KL-Trä, Ljudfot "blå" 12,5 mm med 150 mm plastskruv, PAROC eXtra, Forestia Golvspånskiva P6, Norgips golv

**Description of the specimen:**

KL-trä 170 mm, Ljudfot "blå" 12,5 mm, plastskruv 150 mm, golvspån 22 mm, golvgips 12,5 mm, aerolen, parkett med stenullsisolering 70 mm. Provytan var 130 x 180 cm och avviker från mätstandard, mätresultat besitter en högre osäkerhet.



Parkett  
Aerolen  
Golvspånskiva P6 22 mm  
Plastskruv 150 mm i  
träregel 70 mm  
Ljudfot "blå" 12,5 mm  
Stenull 70 mm  
KLT 170 mm

Mass per unit area: 115 kg/m<sup>2</sup>

Curing time: - days

Barometric pressure: 99,3 kPa

Temperature - source room: 16,0 °C

- receiving room: 16,0 °C

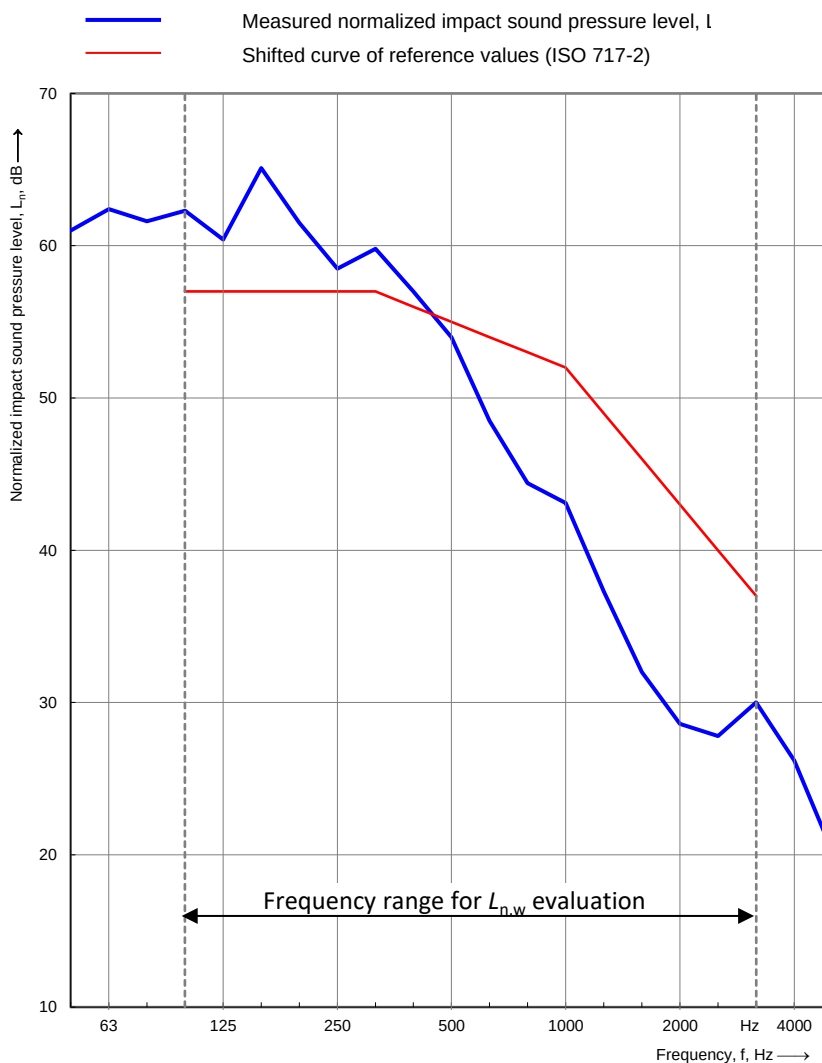
Air humidity - source room: 39 %

- receiving room: 39 %

Source room volume: 101,0 m<sup>3</sup>Receiving room volume: 123,0 m<sup>3</sup>

| Frequency<br>f<br>[Hz] | L <sub>n</sub><br>1/3 octave<br>[dB] |
|------------------------|--------------------------------------|
| 50                     | 61,0                                 |
| 63                     | 62,4                                 |
| 80                     | 61,6                                 |
| 100                    | 62,3                                 |
| 125                    | 60,4                                 |
| 160                    | 65,1                                 |
| 200                    | 61,5                                 |
| 250                    | 58,5                                 |
| 315                    | 59,8                                 |
| 400                    | 57,0                                 |
| 500                    | 54,0                                 |
| 630                    | 48,5                                 |
| 800                    | 44,4                                 |
| 1000                   | 43,1                                 |
| 1250                   | 37,3                                 |
| 1600                   | 32,0                                 |
| 2000                   | 28,6                                 |
| 2500                   | 27,8                                 |
| 3150                   | 30,0                                 |
| 4000                   | 26,2                                 |
| 5000                   | 20,2                                 |

Background noise too high



Rating according to ISO 717-2

$$L_{n,w}(C_i) = 55 ( 0 ) \text{ dB}$$

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

$$C_{1,50-2500} = 2 \text{ dB}$$

# Normalized impact sound pressure levels according to ISO 10140-3

No. of test report: 4068-M14  
Date of report: 2025-02-05  
Date of test: 2025-01-24  
Name: Staffan Andersson

Laboratory measurements of impact sound insulation of floors

Client: Nivell System

Manufacturer: Nivell System

Test specimen mounted by: Nivell System

## Test room identification:

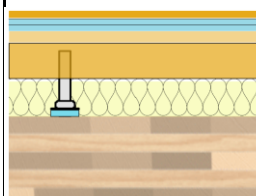
Testrum 3 (sändarrum) till testrum 2 (mottagarum)

## Product identification:

KL-Trä, Ljudfot "blå" 12,5 mm med 150 mm plastskruv, PAROC eXtra, Forestia  
Golvspånskiva P6, Norgips golv

## Description of the specimen:

KL-trä 170 mm, Ljudfot "blå" 12,5 mm, plastskruv 150 mm, golvspån 22 mm,  
golvgips 2x12,5 mm, aerolen, parkett med stenullsisolering 70 mm. Provytan  
var 130 x 180 cm och avviker från mätstandard, mätresultat besitter en högre  
osäkerhet.



Parkett  
Aerolen  
Golvspån 2 x 12,5 mm  
Golvspånskiva P6 22 mm  
Plastskruv 150 mm i  
träregel 70 mm  
Ljudfot "blå" 12,5 mm  
Stenull 70 mm  
KLT 170 mm

Mass per unit area: 130 kg/m<sup>2</sup>

Curing time: - days

Barometric pressure: 99,3 kPa

Temperature - source room: 16,0 °C

- receiving room: 16,0 °C

Air humidity - source room: 39 %

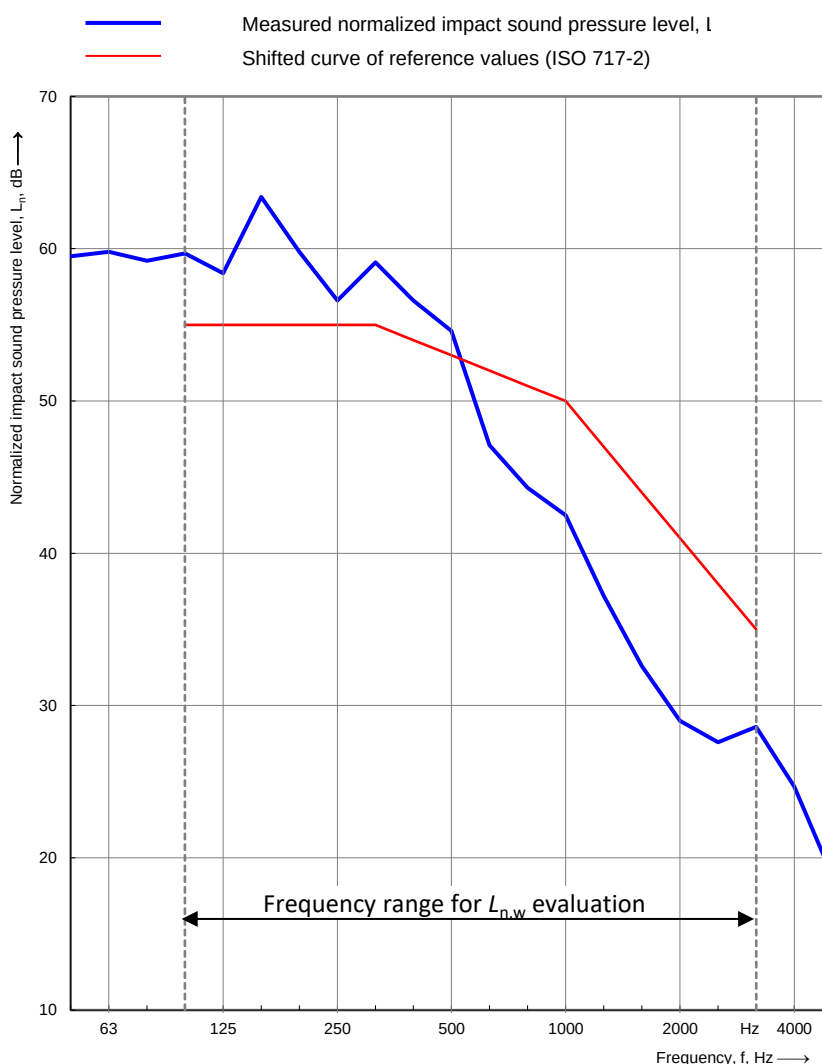
- receiving room: 39 %

Source room volume: 101,0 m<sup>3</sup>

Receiving room volume: 123,0 m<sup>3</sup>

| Frequency<br>f<br>[Hz] | L <sub>n</sub><br>1/3 octave<br>[dB] |
|------------------------|--------------------------------------|
| 50                     | 59,5                                 |
| 63                     | 59,8                                 |
| 80                     | 59,2                                 |
| 100                    | 59,7                                 |
| 125                    | 58,4                                 |
| 160                    | 63,4                                 |
| 200                    | 59,8                                 |
| 250                    | 56,6                                 |
| 315                    | 59,1                                 |
| 400                    | 56,6                                 |
| 500                    | 54,6                                 |
| 630                    | 47,1                                 |
| 800                    | 44,3                                 |
| 1000                   | 42,5                                 |
| 1250                   | 37,2                                 |
| 1600                   | 32,6                                 |
| 2000                   | 29,0                                 |
| 2500                   | 27,6                                 |
| 3150                   | 28,6                                 |
| 4000                   | 24,7                                 |
| 5000                   | 18,8                                 |

Background noise too high



Rating according to ISO 717-2

L<sub>n,w</sub>(C<sub>i</sub>) = 53 ( 0 ) dB

Evaluation based on laboratory measurement results  
obtained in one-third-octave bands by an engineering method.

C<sub>i,50-2500</sub> = 2 dB

# Normalized impact sound pressure levels according to ISO 10140-3

No. of test report: 4068-M15

Date of report: 2025-02-05

Date of test: 2025-01-24

Name: Staffan Andersson

Laboratory measurements of impact sound insulation of floors

Client: Nivell System

Manufacturer: Nivell System

Test specimen mounted by: Nivell System

## Test room identification:

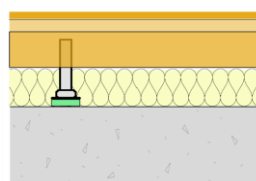
Testrum 3 (sändarrum) till testrum 2 (mottagarum)

## Product identification:

Referensbjälklag betong, Ljudfot "grön" 12,5 mm med 150 mm plastskruv, PAROC eXtra, Forestia Golvspånskiva P6

## Description of the specimen:

Referensbjälklag betong 160 mm, Ljudfot "grön" 12,5 mm, plastskruv 150 mm, golvspån 22 mm, aerolen, parkett med stenullsisolering 70 mm. Provytan var 130 x 180 cm och avviker från mätstandard, mätresultat besitter en högre osäkerhet.



Parkett  
Aerolen  
Golvspånskiva P6 22 mm  
Plastskruv 150 mm i  
träregel 70 mm  
Ljudfot "grön" 12,5 mm  
Stenull 70 mm  
Betong 160 mm

Mass per unit area: 404 kg/m<sup>2</sup>

Curing time: - days

Barometric pressure: 99,3 kPa

Temperature - source room: 17,0 °C

- receiving room: 17,0 °C

Air humidity - source room: 35 %

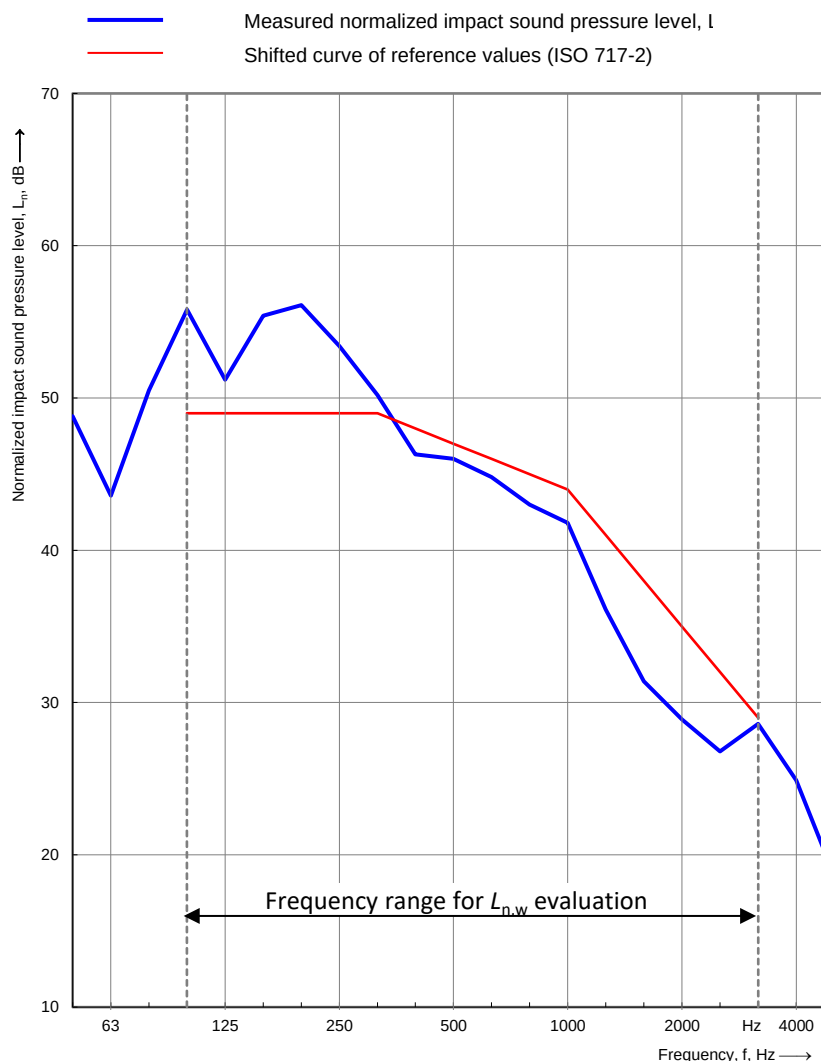
- receiving room: 35 %

Source room volume: 101,0 m<sup>3</sup>

Receiving room volume: 123,0 m<sup>3</sup>

| Frequency<br>f<br>[Hz] | L <sub>n</sub><br>1/3 octave<br>[dB] |
|------------------------|--------------------------------------|
| 50                     | 48,8                                 |
| 63                     | 43,6                                 |
| 80                     | 50,5                                 |
| 100                    | 55,8                                 |
| 125                    | 51,2                                 |
| 160                    | 55,4                                 |
| 200                    | 56,1                                 |
| 250                    | 53,4                                 |
| 315                    | 50,2                                 |
| 400                    | 46,3                                 |
| 500                    | 46,0                                 |
| 630                    | 44,8                                 |
| 800                    | 43,0                                 |
| 1000                   | 41,8                                 |
| 1250                   | 36,1                                 |
| 1600                   | 31,4                                 |
| 2000                   | 28,9                                 |
| 2500                   | 26,8                                 |
| 3150                   | 28,6                                 |
| 4000                   | 24,9                                 |
| 5000                   | 18,6                                 |

Background noise too high



Rating according to ISO 717-2

$$L_{n,w}(C_i) = 47 ( 0 ) \text{ dB}$$

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

$$C_{i,50-2500} = 1 \text{ dB}$$

# Normalized impact sound pressure levels according to ISO 10140-3

No. of test report: 4068-M16

Date of report: 2025-02-05

Date of test: 2025-01-24

Name: Staffan Andersson

Laboratory measurements of impact sound insulation of floors

Client: Nivell System

Manufacturer: Nivell System

Test specimen mounted by: Nivell System

## Test room identification:

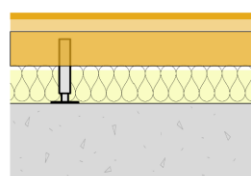
Testrum 3 (sändarrum) till testrum 2 (mottagarum)

## Product identification:

Referensbjälklag betong, Ljudskruv Original med stödplatta 150 mm, PAROC eXtra, Forestia Golvspånskiva P6

## Description of the specimen:

Referensbjälklag betong 160 mm, Ljudskruv Original med stödplatta 150 mm, träregel 70 mm, golvspån 22 mm, aerolen, parkett med stenullsisolering 70 mm. Provytan var 130 x 180 cm och avviker från mätstandard, mätresultat besitter en högre osäkerhet.



Parkett  
Aerolen  
Golvspånskiva P6 22 mm  
Ljudskruv Original med  
stödplatta i träregel 70  
mm  
Stenull 70 mm  
Betong 160 mm

Mass per unit area: 404 kg/m<sup>2</sup>

Curing time: - days

Barometric pressure: 99,3 kPa

Temperature - source room: 16,0 °C

- receiving room: 16,0 °C

Air humidity - source room: 38 %

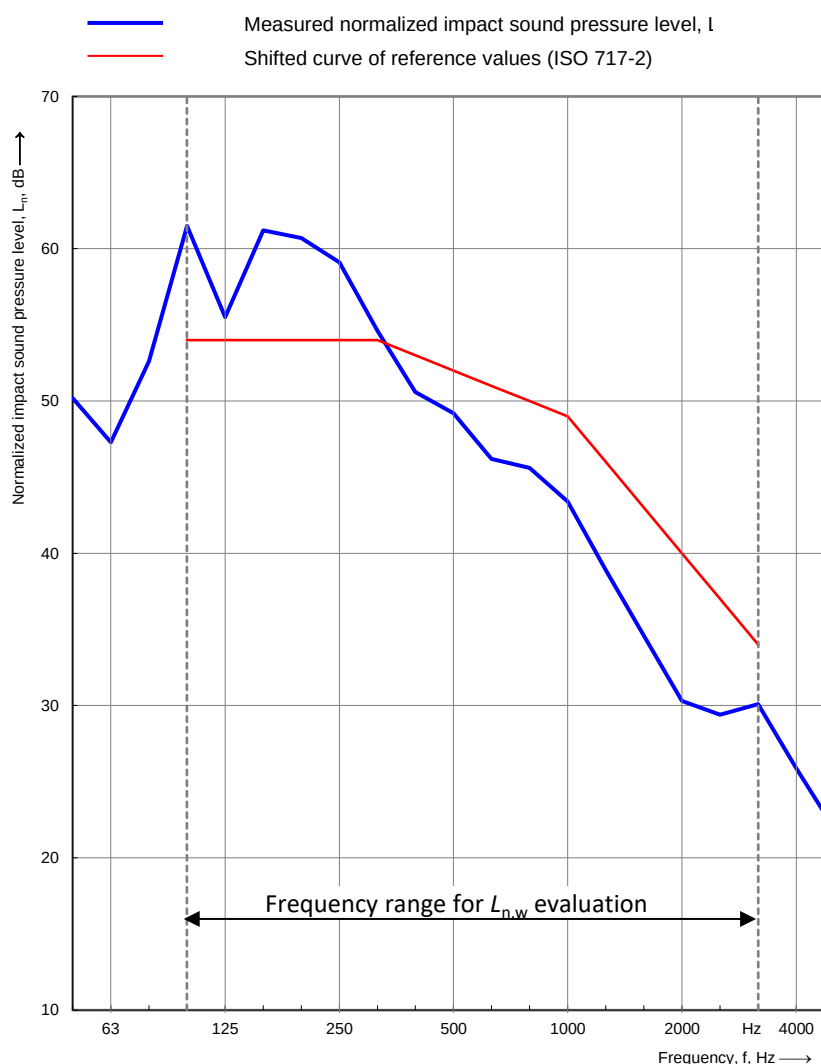
- receiving room: 38 %

Source room volume: 101,0 m<sup>3</sup>

Receiving room volume: 123,0 m<sup>3</sup>

| Frequency<br>f<br>[Hz] | L <sub>n</sub><br>1/3 octave<br>[dB] |
|------------------------|--------------------------------------|
| 50                     | 50,2                                 |
| 63                     | 47,3                                 |
| 80                     | 52,6                                 |
| 100                    | 61,5                                 |
| 125                    | 55,5                                 |
| 160                    | 61,2                                 |
| 200                    | 60,7                                 |
| 250                    | 59,1                                 |
| 315                    | 54,6                                 |
| 400                    | 50,6                                 |
| 500                    | 49,2                                 |
| 630                    | 46,2                                 |
| 800                    | 45,6                                 |
| 1000                   | 43,4                                 |
| 1250                   | 38,9                                 |
| 1600                   | 34,6                                 |
| 2000                   | 30,3                                 |
| 2500                   | 29,4                                 |
| 3150                   | 30,1                                 |
| 4000                   | 25,9                                 |
| 5000                   | 21,9                                 |

Background noise too high



Rating according to ISO 717-2

$$L_{n,w}(C_i) = 52 (1) \text{ dB}$$

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

$$C_{1,50-2500} = 1 \text{ dB}$$

# Normalized impact sound pressure levels according to ISO 10140-3

Laboratory measurements of impact sound insulation of floors

No. of test report: 4068-M17

Date of report: 2025-02-19

Date of test: 2025-01-24

Name: Staffan Andersson

Client: Nivell System

Manufacturer: Nivell System

Test specimen mounted by: Nivell System

## Test room identification:

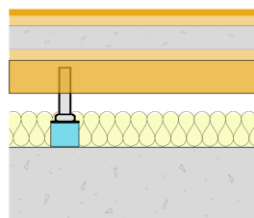
Testrum 3 (sändarrum) till testrum 2 (mottagarum)

## Product identification:

Referensbjälklag betong, Ljudfot "blå" 50 mm med 150 mm plastskruv och 70mm träregel cc400, PAROC eXtra, Forestia Golvspånskiva P6, betong 50 mm

## Description of the specimen:

Referensbjälklag betong 160 mm, Ljudskruv Original med stödplatta 150 mm, golvspån 22 mm, betong 50 mm, golvspån 22 mm, aerolen, parkett med stenullsisolering 70 mm. Provytan var 130 x 180 cm och avviker från mätstandard, mätresultat besitter en högre osäkerhet.



Parkett  
Aerolen  
Golvspånskiva P6 22 mm  
Betong 50 mm  
Golvspånskiva P6 22 mm  
Plastskruv 150 mm i  
träregel 70 mm cc 400  
Ljudfot "blå" 2x25 mm  
Stenull 70 mm  
Betong 160 mm

Mass per unit area: 586 kg/m<sup>2</sup>

Curing time: - days

Barometric pressure: 99,3 kPa

Temperature - source room: 16,0 °C

- receiving room: 16,0 °C

Air humidity - source room: 38 %

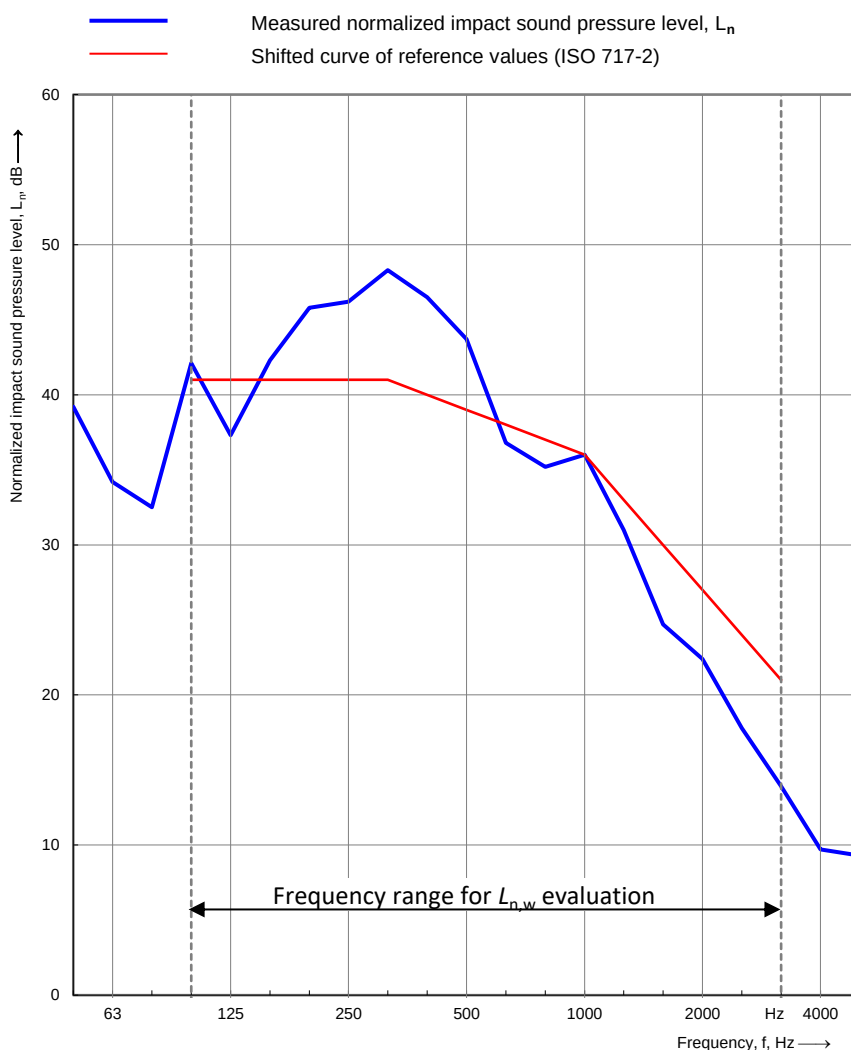
- receiving room: 38 %

Source room volume: 101,0 m<sup>3</sup>

Receiving room volume: 123,0 m<sup>3</sup>

| Frequency<br>f<br>[Hz] | L <sub>n</sub><br>1/3 octave<br>[dB] |
|------------------------|--------------------------------------|
| 50                     | 39,2 <sup>1</sup>                    |
| 63                     | 34,2 <sup>1</sup>                    |
| 80                     | 32,5 <sup>1</sup>                    |
| 100                    | 42,1                                 |
| 125                    | 37,3                                 |
| 160                    | 42,3                                 |
| 200                    | 45,8                                 |
| 250                    | 46,2                                 |
| 315                    | 48,3                                 |
| 400                    | 46,5                                 |
| 500                    | 43,7                                 |
| 630                    | 36,8                                 |
| 800                    | 35,2                                 |
| 1000                   | 36,0                                 |
| 1250                   | 31,0                                 |
| 1600                   | 24,7                                 |
| 2000                   | 22,4 <sup>1</sup>                    |
| 2500                   | 17,8 <sup>1</sup>                    |
| 3150                   | 13,9 <sup>1</sup>                    |
| 4000                   | 9,7 <sup>1</sup>                     |
| 5000                   | 9,3 <sup>1</sup>                     |

Background noise too high



Rating according to ISO 717-2

$$L_{n,w}(C_i) = 39 ( 0 ) \text{ dB}$$

$$C_{i,50-2500} = 0 \text{ dB}$$

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

## Reduction of impact sound pressure level according to ISO 10140

Laboratory measurements of the reduction of transmitted impact noise by floor coverings on a heavyweight standard floor

No. of test report: 4068-M18  
Date of report: 2025-02-05  
Date of test: 2025-01-24  
Name: Staffan Andersson

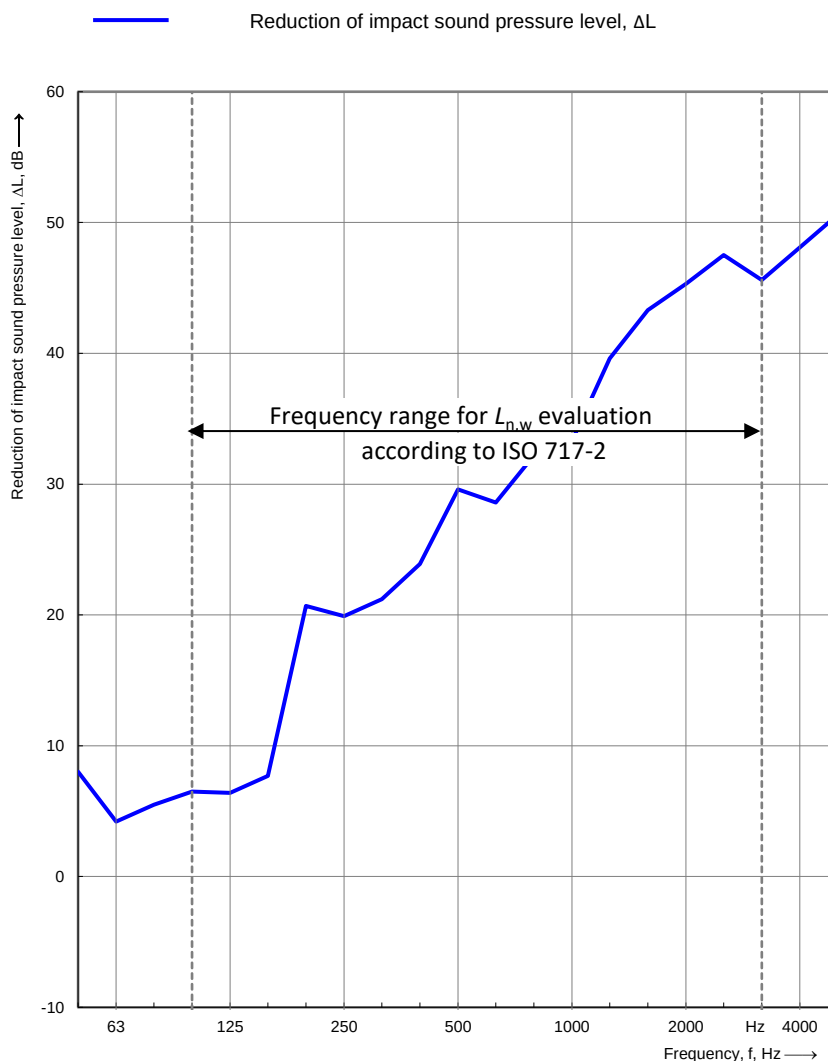
**Client:** Nivell System  
**Manufacturer:** Nivell System  
**Test specimen mounted by:** Nivell System  
**Test room identification:** Testrum 3 (sändarrum) till testrum 2 (mottagarrum)

**Product identification:** Referensbjälklag betong, Ljudfot "blå" 25 mm med 150 mm plastskruv, PAROC eXtra, Forestia Golvspånskiva P6

**Description of the specimen:** Referensbjälklag betong 160 mm, Ljudfot "blå" 25 mm, plastskruv 150 mm, golvspån 22 mm, aerolen, parkett med stenullsisolering 70 mm. Provytan var 130 x 180 cm och avviker från mätstandard, mätresultat besitter en högre osäkerhet.

**Mass per unit area:** 404 kg/m<sup>2</sup>  
**Curing time:** - days  
**Barometric pressure:** 99,3 kPa  
**Temperature - source room:** 16,0 °C  
**- receiving room:** 16,0 °C  
**Air humidity - source room:** 39 %  
**- receiving room:** 39 %  
**Source room volume:** 101,0 m<sup>3</sup>  
**Receiving room volume:** 123,0 m<sup>3</sup>

| Frequency<br>f<br>[Hz] | L <sub>n,0</sub><br>1/3 octave<br>[dB] | ΔL<br>1/3 octave<br>[dB] |
|------------------------|----------------------------------------|--------------------------|
| 50                     | 50,7                                   | 8,0                      |
| 63                     | 44,1                                   | 4,2                      |
| 80                     | 53,3                                   | 5,5                      |
| 100                    | 63,4                                   | 6,5                      |
| 125                    | 57,4                                   | 6,4                      |
| 160                    | 62,6                                   | 7,7                      |
| 200                    | 74,8                                   | 20,7                     |
| 250                    | 71,6                                   | 19,9                     |
| 315                    | 72,1                                   | 21,2                     |
| 400                    | 71,3                                   | 23,9                     |
| 500                    | 75,3                                   | 29,6                     |
| 630                    | 72,6                                   | 28,6                     |
| 800                    | 75,1                                   | 32,2                     |
| 1000                   | 74,3                                   | 33,3                     |
| 1250                   | 75,9                                   | 39,6                     |
| 1600                   | 74,3                                   | 43,3                     |
| 2000                   | 74,1                                   | 45,3                     |
| 2500                   | 74,3                                   | 47,5                     |
| 3150                   | 73,3                                   | 45,6                     |
| 4000                   | 72,0                                   | 48,1                     |
| 5000                   | 68,2                                   | 50,6                     |



Rating according to ISO 717-2

ΔL<sub>w</sub> = 30 dB

C<sub>l,Δ</sub> = -14 dB

C<sub>l,r</sub> = 3 dB

These results are based on test made with an artificial source under laboratory conditions obtained in one-third-octave bands by an engineering method.

# Reduction of impact sound pressure level according to ISO 10140

Laboratory measurements of the reduction of transmitted impact noise by floor coverings on a heavyweight standard floor

No. of test report: 4068-M19  
Date of report: 2025-02-05  
Date of test: 2025-01-24  
Name: Staffan Andersson

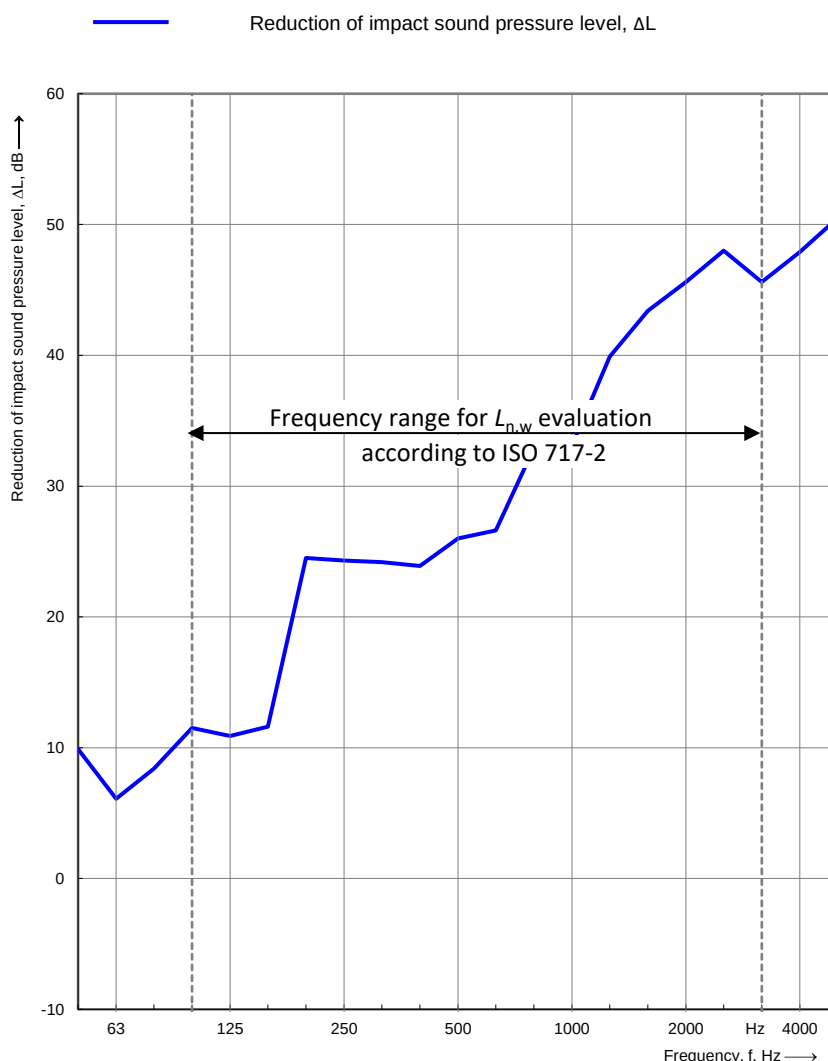
**Client:** Nivell System  
**Manufacturer:** Nivell System  
**Test specimen mounted by:** Nivell System  
**Test room identification:** Testrum 3 (sändarrum) till testrum 2 (mottagarrum)

**Product identification:** Referensbjälklag betong, Ljudfot "blå" 25 mm med 150 mm plastskruv, PAROC eXtra, Forestia Golvspånskiva P6, Norgips golv

**Description of the specimen:** Referensbjälklag betong 160 mm, Ljudfot "blå" 25 mm, plastskruv 150 mm, golvspån 22 mm, golvgips 12,5 mm, aerolen, parkett med stenullsisolering 70 mm. Provytan var 130 x 180 cm och avviker från mätstandard, mätresultat besitter en högre osäkerhet.

**Mass per unit area:** 418 kg/m<sup>2</sup>  
**Curing time:** - days  
**Barometric pressure:** 99,3 kPa  
**Temperature - source room:** 16,0 °C  
**- receiving room:** 16,0 °C  
**Air humidity - source room:** 39 %  
**- receiving room:** 39 %  
**Source room volume:** 101,0 m<sup>3</sup>  
**Receiving room volume:** 123,0 m<sup>3</sup>

| Frequency<br>f<br>[Hz] | L <sub>n,0</sub><br>1/3 octave<br>[dB] | ΔL<br>1/3 octave<br>[dB] |
|------------------------|----------------------------------------|--------------------------|
| 50                     | 50,7                                   | 9,9                      |
| 63                     | 44,1                                   | 6,1                      |
| 80                     | 53,3                                   | 8,4                      |
| 100                    | 63,4                                   | 11,5                     |
| 125                    | 57,4                                   | 10,9                     |
| 160                    | 62,6                                   | 11,6                     |
| 200                    | 74,8                                   | 24,5                     |
| 250                    | 71,6                                   | 24,3                     |
| 315                    | 72,1                                   | 24,2                     |
| 400                    | 71,3                                   | 23,9                     |
| 500                    | 75,3                                   | 26,0                     |
| 630                    | 72,6                                   | 26,6                     |
| 800                    | 75,1                                   | 32,9                     |
| 1000                   | 74,3                                   | 33,1                     |
| 1250                   | 75,9                                   | 39,9                     |
| 1600                   | 74,3                                   | 43,4                     |
| 2000                   | 74,1                                   | 45,6                     |
| 2500                   | 74,3                                   | 48,0                     |
| 3150                   | 73,3                                   | 45,6                     |
| 4000                   | 72,0                                   | 47,9                     |
| 5000                   | 68,2                                   | 50,5                     |



Rating according to ISO 717-2

$\Delta L_w = 33$  dB

$C_{l,\Delta} = -13$  dB

$C_{l,r} = 2$  dB

These results are based on test made with an artificial source under laboratory conditions obtained in one-third-octave bands by an engineering method.

# Reduction of impact sound pressure level according to ISO 10140

No. of test report: 4068-M20  
Date of report: 2025-02-05  
Date of test: 2025-01-24  
Name: Staffan Andersson

Laboratory measurements of the reduction of transmitted impact noise by floor coverings on a heavyweight standard floor

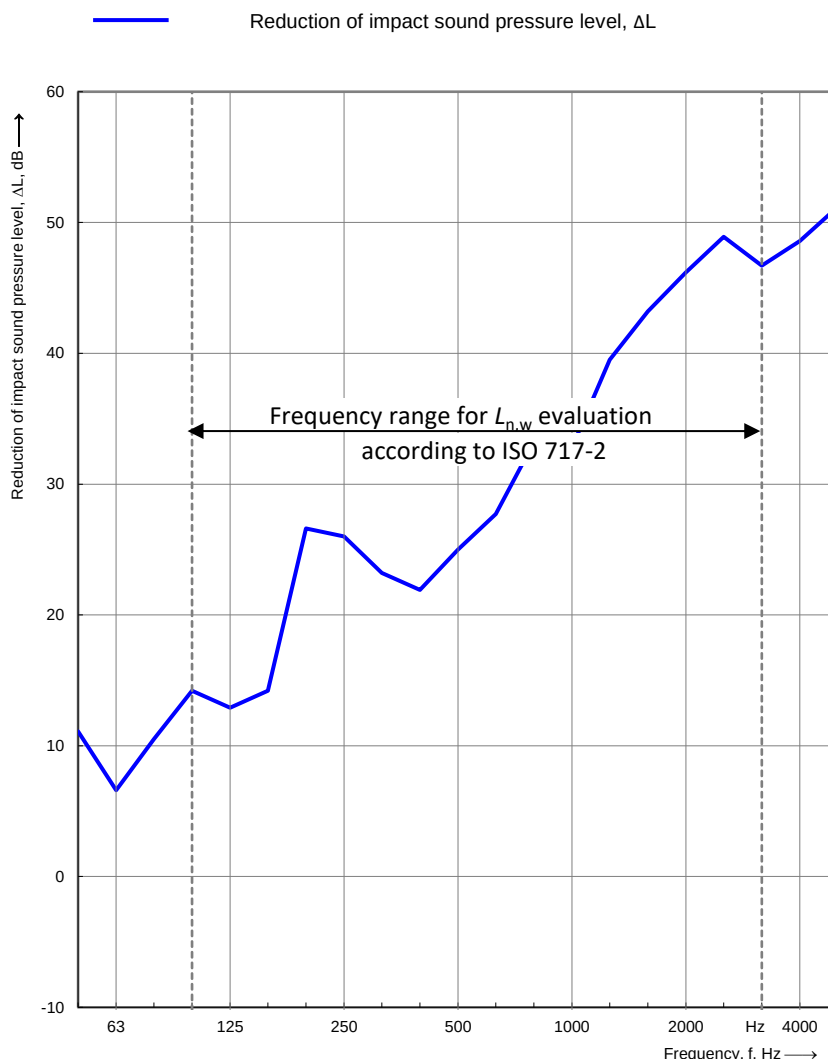
**Client:** Nivell System  
**Manufacturer:** Nivell System  
**Test specimen mounted by:** Nivell System  
**Test room identification:** Testrum 3 (sändarrum) till testrum 2 (mottagarrum)

**Product identification:** Referensbjälklag betong, Ljudfot "blå" 25 mm med 150mm plastskruv, PAROC eXtra, Forestia Golvspånskiva P6, Norgips golv

**Description of the specimen:** Referensbjälklag betong 160 mm, Ljudfot "blå" 25 mm, plastskruv 150 mm, golvspån 22 mm, golvgips 2x12,5 mm, aerolen, parkett med stenullsisolering 70 mm. Provytan var 130 x 180 cm och avviker från mätstandard, mätresultat besitter en högre osäkerhet.

**Mass per unit area:** 433 kg/m<sup>2</sup>  
**Curing time:** - days  
**Barometric pressure:** 99,3 kPa  
**Temperature - source room:** 16,0 °C  
**- receiving room:** 16,0 °C  
**Air humidity - source room:** 39 %  
**- receiving room:** 39 %  
**Source room volume:** 101,0 m<sup>3</sup>  
**Receiving room volume:** 123,0 m<sup>3</sup>

| Frequency<br>f<br>[Hz] | L <sub>n,0</sub><br>1/3 octave<br>[dB] | ΔL<br>1/3 octave<br>[dB] |
|------------------------|----------------------------------------|--------------------------|
| 50                     | 50,7                                   | 11,1                     |
| 63                     | 44,1                                   | 6,6                      |
| 80                     | 53,3                                   | 10,5                     |
| 100                    | 63,4                                   | 14,2                     |
| 125                    | 57,4                                   | 12,9                     |
| 160                    | 62,6                                   | 14,2                     |
| 200                    | 74,8                                   | 26,6                     |
| 250                    | 71,6                                   | 26,0                     |
| 315                    | 72,1                                   | 23,2                     |
| 400                    | 71,3                                   | 21,9                     |
| 500                    | 75,3                                   | 25,0                     |
| 630                    | 72,6                                   | 27,7                     |
| 800                    | 75,1                                   | 33,2                     |
| 1000                   | 74,3                                   | 32,8                     |
| 1250                   | 75,9                                   | 39,5                     |
| 1600                   | 74,3                                   | 43,2                     |
| 2000                   | 74,1                                   | 46,2                     |
| 2500                   | 74,3                                   | 48,9                     |
| 3150                   | 73,3                                   | 46,7                     |
| 4000                   | 72,0                                   | 48,6                     |
| 5000                   | 68,2                                   | 51,2                     |



Rating according to ISO 717-2

$\Delta L_w = 34$  dB

$C_{l,\Delta} = -12$  dB

$C_{l,r} = 1$  dB

These results are based on test made with an artificial source under laboratory conditions obtained in one-third-octave bands by an engineering method.

## Reduction of impact sound pressure level according to ISO 10140

Laboratory measurements of the reduction of transmitted impact noise by floor coverings on a heavyweight standard floor

No. of test report: 4068-M21  
Date of report: 2025-02-05  
Date of test: 2025-01-24  
Name: Staffan Andersson

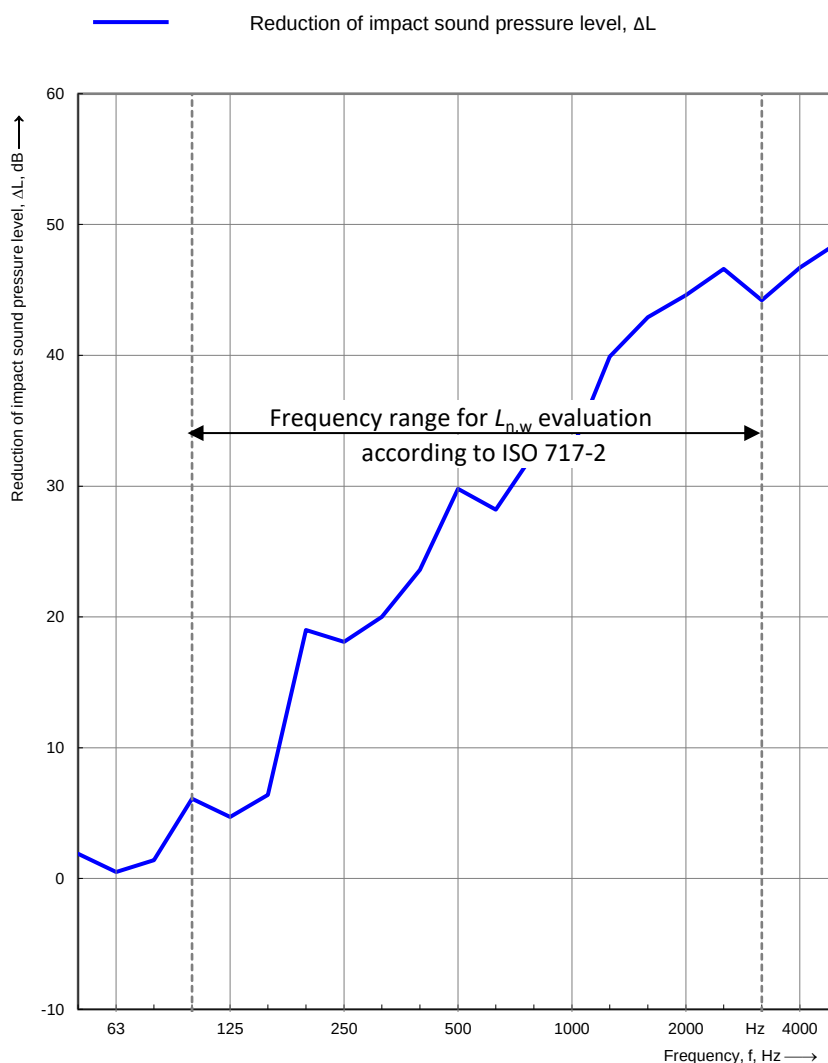
**Client:** Nivell System  
**Manufacturer:** Nivell System  
**Test specimen mounted by:** Nivell System  
**Test room identification:** Testrum 3 (sändarrum) till testrum 2 (mottagarrum)

**Product identification:** Referensbjälklag betong, Ljudfot "blå" 12,5 mm med 150 mm plastskruv, PAROC eXtra, Forestia Golvspånskiva P6

**Description of the specimen:** Referensbjälklag betong 160 mm, Ljudfot "blå" 12,5 mm, plastskruv 150 mm, golvspån 22 mm, aerolen, parkett med stenullsisolering 70 mm. Provytan var 130 x 180 cm och avviker från mätstandard, mätresultat besitter en högre osäkerhet.

**Mass per unit area:** 404 kg/m<sup>2</sup>  
**Curing time:** - days  
**Barometric pressure:** 99,3 kPa  
**Temperature - source room:** 18,0 °C  
**- receiving room:** 18,0 °C  
**Air humidity - source room:** 35 %  
**- receiving room:** 35 %  
**Source room volume:** 101,0 m<sup>3</sup>  
**Receiving room volume:** 123,0 m<sup>3</sup>

| Frequency<br>f<br>[Hz] | L <sub>n,0</sub><br>1/3 octave<br>[dB] | ΔL<br>1/3 octave<br>[dB] |
|------------------------|----------------------------------------|--------------------------|
| 50                     | 50,7                                   | 1,9                      |
| 63                     | 44,1                                   | 0,5                      |
| 80                     | 53,3                                   | 1,4                      |
| 100                    | 63,4                                   | 6,1                      |
| 125                    | 57,4                                   | 4,7                      |
| 160                    | 62,6                                   | 6,4                      |
| 200                    | 74,8                                   | 19,0                     |
| 250                    | 71,6                                   | 18,1                     |
| 315                    | 72,1                                   | 20,0                     |
| 400                    | 71,3                                   | 23,6                     |
| 500                    | 75,3                                   | 29,8                     |
| 630                    | 72,6                                   | 28,2                     |
| 800                    | 75,1                                   | 32,5                     |
| 1000                   | 74,3                                   | 32,8                     |
| 1250                   | 75,9                                   | 39,9                     |
| 1600                   | 74,3                                   | 42,9                     |
| 2000                   | 74,1                                   | 44,6                     |
| 2500                   | 74,3                                   | 46,6                     |
| 3150                   | 73,3                                   | 44,2                     |
| 4000                   | 72,0                                   | 46,7                     |
| 5000                   | 68,2                                   | 48,6                     |



Rating according to ISO 717-2

ΔL<sub>w</sub> = 28 dB

C<sub>i,Δ</sub> = -13 dB

C<sub>i,r</sub> = 2 dB

These results are based on test made with an artificial source under laboratory conditions obtained in one-third-octave bands by an engineering method.

## Reduction of impact sound pressure level according to ISO 10140

Laboratory measurements of the reduction of transmitted impact noise by floor coverings on a heavyweight standard floor

No. of test report: 4068-M22  
Date of report: 2025-02-05  
Date of test: 2025-01-24  
Name: Staffan Andersson

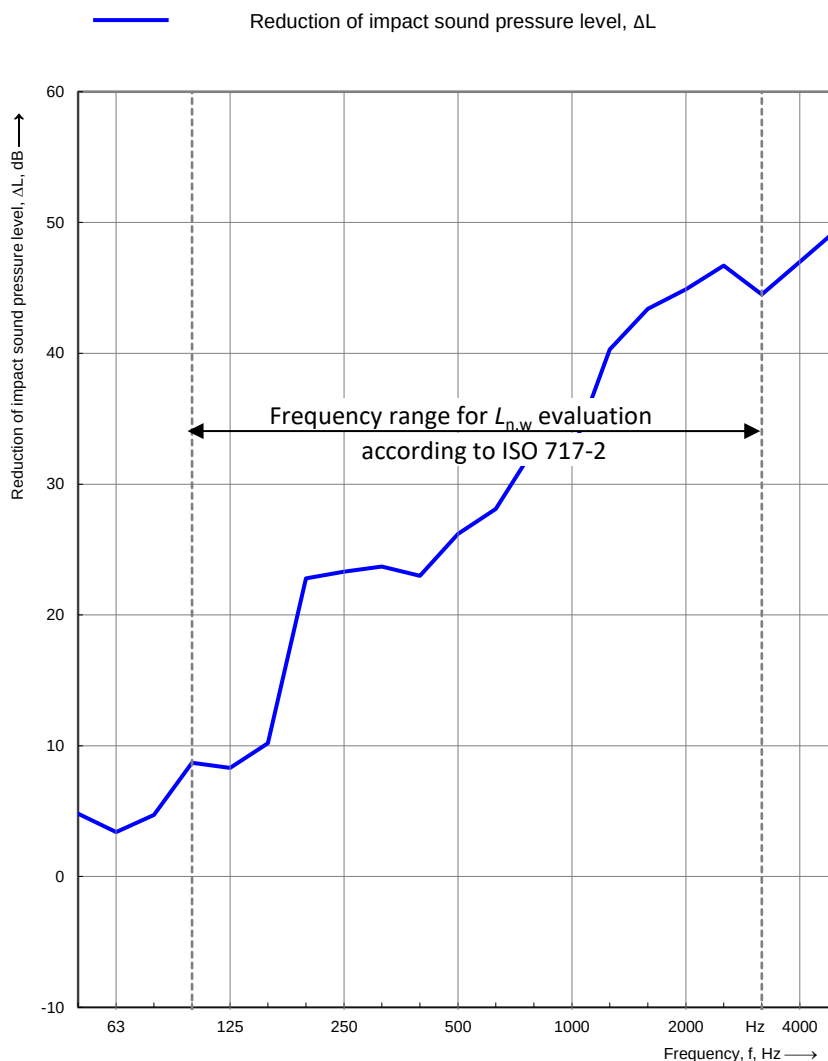
**Client:** Nivell System  
**Manufacturer:** Nivell System  
**Test specimen mounted by:** Nivell System  
**Test room identification:** Testrum 3 (sändarrum) till testrum 2 (mottagarrum)

**Product identification:**  
Referensbjälklag betong, Ljudfot "blå" 12,5 mm med 150 mm plastskruv, PAROC eXtra, Forestia Golvspånskiva P6, Norgips golv

**Description of the specimen:**  
Referensbjälklag betong 160 mm, Ljudfot "blå" 12,5 mm, plastskruv 150 mm, golvspån 22 mm, golvgips 12,5 mm, aerolen, parkett med stenullsisolering 70 mm. Provytan var 130 x 180 cm och avviker från mätstandard, mätresultat besitter en högre osäkerhet.

**Mass per unit area:** 418 kg/m<sup>2</sup>  
**Curing time:** - days  
**Barometric pressure:** 99,3 kPa  
**Temperature - source room:** 17,0 °C  
**- receiving room:** 17,0 °C  
**Air humidity - source room:** 35 %  
**- receiving room:** 35 %  
**Source room volume:** 101,0 m<sup>3</sup>  
**Receiving room volume:** 123,0 m<sup>3</sup>

| Frequency<br>f<br>[Hz] | L <sub>n,0</sub><br>1/3 octave<br>[dB] | ΔL<br>1/3 octave<br>[dB] |
|------------------------|----------------------------------------|--------------------------|
| 50                     | 50,7                                   | 4,8                      |
| 63                     | 44,1                                   | 3,4                      |
| 80                     | 53,3                                   | 4,7                      |
| 100                    | 63,4                                   | 8,7                      |
| 125                    | 57,4                                   | 8,3                      |
| 160                    | 62,6                                   | 10,2                     |
| 200                    | 74,8                                   | 22,8                     |
| 250                    | 71,6                                   | 23,3                     |
| 315                    | 72,1                                   | 23,7                     |
| 400                    | 71,3                                   | 23,0                     |
| 500                    | 75,3                                   | 26,2                     |
| 630                    | 72,6                                   | 28,1                     |
| 800                    | 75,1                                   | 32,7                     |
| 1000                   | 74,3                                   | 32,4                     |
| 1250                   | 75,9                                   | 40,3                     |
| 1600                   | 74,3                                   | 43,4                     |
| 2000                   | 74,1                                   | 44,9                     |
| 2500                   | 74,3                                   | 46,7                     |
| 3150                   | 73,3                                   | 44,5                     |
| 4000                   | 72,0                                   | 47,0                     |
| 5000                   | 68,2                                   | 49,5                     |



Rating according to ISO 717-2

$\Delta L_w = 32$  dB

$C_{l,\Delta} = -14$  dB

$C_{l,r} = 3$  dB

These results are based on test made with an artificial source under laboratory conditions obtained in one-third-octave bands by an engineering method.

## Reduction of impact sound pressure level according to ISO 10140

Laboratory measurements of the reduction of transmitted impact noise by floor coverings on a heavyweight standard floor

No. of test report: 4068-M23  
Date of report: 2025-02-05  
Date of test: 2025-01-24  
Name: Staffan Andersson

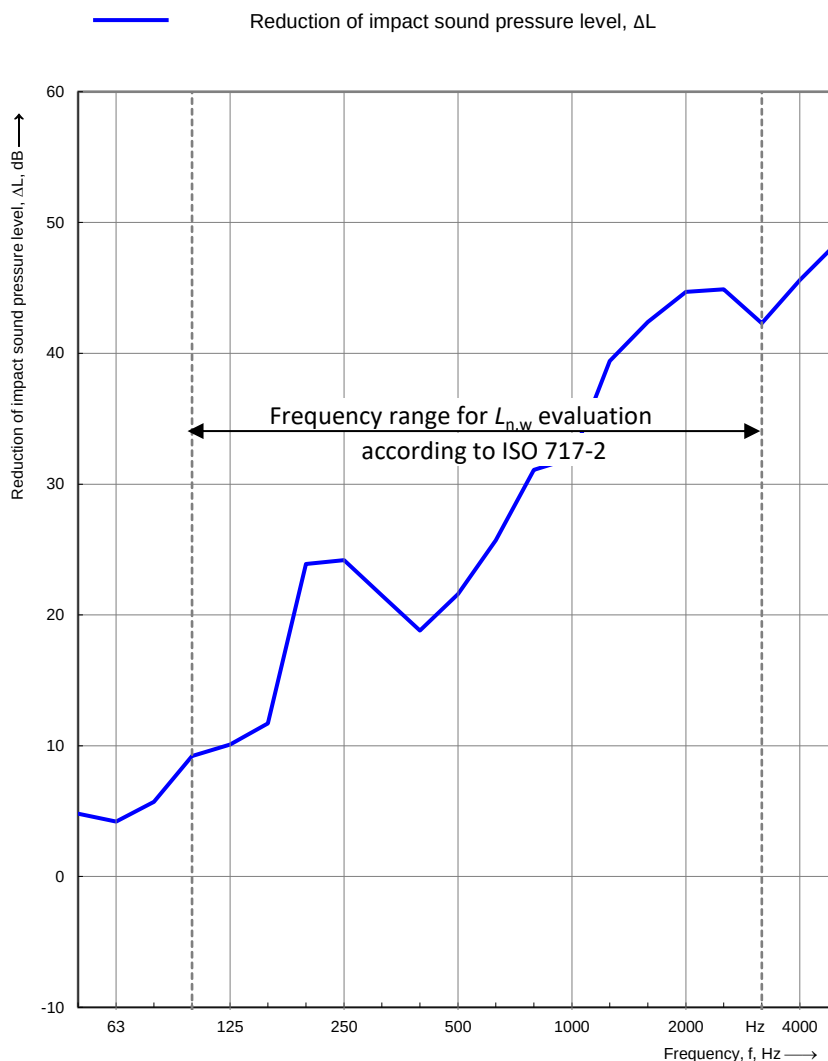
**Client:** Nivell System  
**Manufacturer:** Nivell System  
**Test specimen mounted by:** Nivell System  
**Test room identification:** Testrum 3 (sändarrum) till testrum 2 (mottagarrum)

**Product identification:** Referensbjälklag betong, Ljudfot "blå" 12,5 mm med 150 mm plastskruv, PAROC eXtra, Forestia Golvspånskiva P6, Norgips golv

**Description of the specimen:** Referensbjälklag betong 160 mm, Ljudfot "blå" 12,5 mm, plastskruv 150 mm, golvspån 22 mm, golvgips 2x12,5 mm, aerolen, parkett med stenullsisolering 70 mm. Provytan var 130 x 180 cm och avviker från mätstandard, mätresultat besitter en högre osäkerhet.

**Mass per unit area:** 433 kg/m<sup>2</sup>  
**Curing time:** - days  
**Barometric pressure:** 99,3 kPa  
**Temperature - source room:** 17,0 °C  
**- receiving room:** 17,0 °C  
**Air humidity - source room:** 37 %  
**- receiving room:** 37 %  
**Source room volume:** 101,0 m<sup>3</sup>  
**Receiving room volume:** 123,0 m<sup>3</sup>

| Frequency<br>f<br>[Hz] | L <sub>n,0</sub><br>1/3 octave<br>[dB] | ΔL<br>1/3 octave<br>[dB] |
|------------------------|----------------------------------------|--------------------------|
| 50                     | 50,7                                   | 4,8                      |
| 63                     | 44,1                                   | 4,2                      |
| 80                     | 53,3                                   | 5,7                      |
| 100                    | 63,4                                   | 9,2                      |
| 125                    | 57,4                                   | 10,1                     |
| 160                    | 62,6                                   | 11,7                     |
| 200                    | 74,8                                   | 23,9                     |
| 250                    | 71,6                                   | 24,2                     |
| 315                    | 72,1                                   | 21,5                     |
| 400                    | 71,3                                   | 18,8                     |
| 500                    | 75,3                                   | 21,6                     |
| 630                    | 72,6                                   | 25,7                     |
| 800                    | 75,1                                   | 31,1                     |
| 1000                   | 74,3                                   | 32,0                     |
| 1250                   | 75,9                                   | 39,4                     |
| 1600                   | 74,3                                   | 42,4                     |
| 2000                   | 74,1                                   | 44,7                     |
| 2500                   | 74,3                                   | 44,9                     |
| 3150                   | 73,3                                   | 42,3                     |
| 4000                   | 72,0                                   | 45,6                     |
| 5000                   | 68,2                                   | 48,5                     |



Rating according to ISO 717-2

$\Delta L_w = 31$  dB

$C_{l,\Delta} = -12$  dB

$C_{l,r} = 1$  dB

These results are based on test made with an artificial source under laboratory conditions obtained in one-third-octave bands by an engineering method.

## Reduction of impact sound pressure level according to ISO 10140

Laboratory measurements of the reduction of transmitted impact noise by floor coverings on a heavyweight standard floor

No. of test report: 4068-M24  
Date of report: 2025-02-05  
Date of test: 2025-01-24  
Name: Staffan Andersson

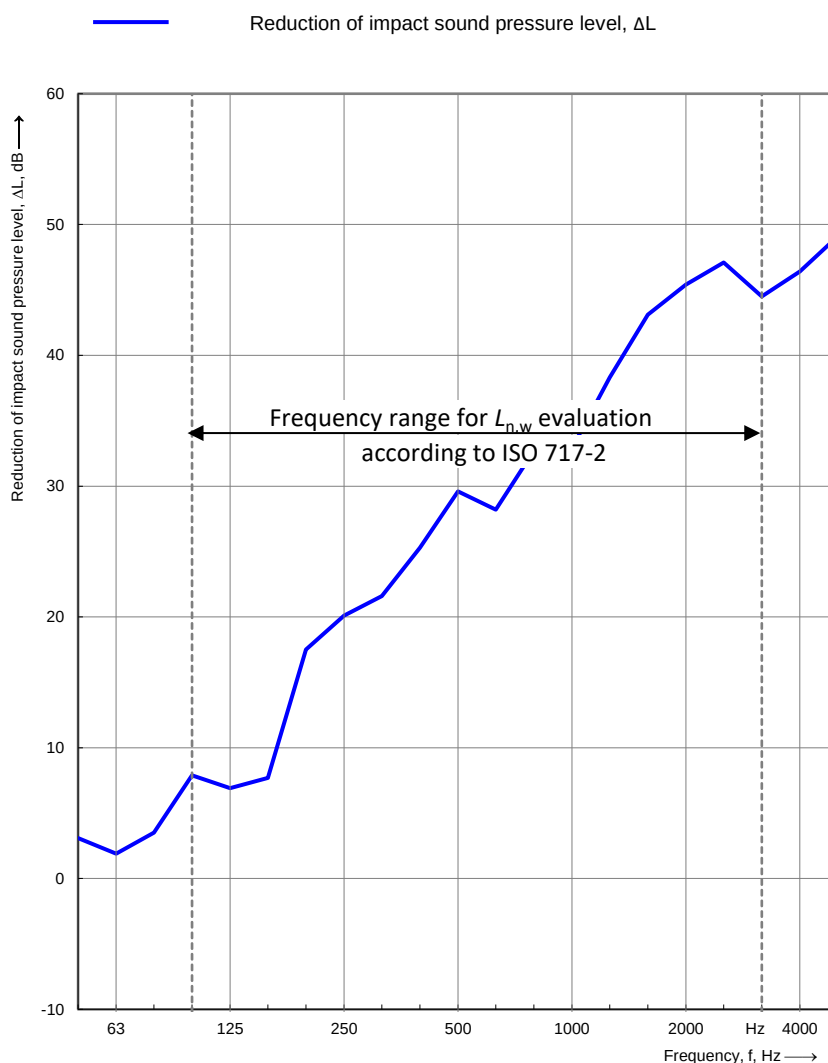
**Client:** Nivell System  
**Manufacturer:** Nivell System  
**Test specimen mounted by:** Nivell System  
**Test room identification:** Testrum 3 (sändarrum) till testrum 2 (mottagarrum)

**Product identification:** Referensbjälklag betong, Ljudfot "grön" 12,5 mm med 150 mm plastskruv, PAROC eXtra, Forestia Golvspånskiva P6

**Description of the specimen:** Referensbjälklag betong 160 mm, Ljudfot "grön" 12,5 mm, plastskruv 150 mm, golvspån 22 mm, aerolen, parkett med stenullsisolering 70 mm. Provytan var 130 x 180 cm och avviker från mätstandard, mätresultat besitter en högre osäkerhet.

**Mass per unit area:** 404 kg/m<sup>2</sup>  
**Curing time:** - days  
**Barometric pressure:** 99,3 kPa  
**Temperature - source room:** 17,0 °C  
**- receiving room:** 17,0 °C  
**Air humidity - source room:** 35 %  
**- receiving room:** 35 %  
**Source room volume:** 101,0 m<sup>3</sup>  
**Receiving room volume:** 123,0 m<sup>3</sup>

| Frequency<br>f<br>[Hz] | L <sub>n,0</sub><br>1/3 octave<br>[dB] | ΔL<br>1/3 octave<br>[dB] |
|------------------------|----------------------------------------|--------------------------|
| 50                     | 51,9                                   | 3,1                      |
| 63                     | 45,5                                   | 1,9                      |
| 80                     | 54,0                                   | 3,5                      |
| 100                    | 63,7                                   | 7,9                      |
| 125                    | 58,1                                   | 6,9                      |
| 160                    | 63,1                                   | 7,7                      |
| 200                    | 73,6                                   | 17,5                     |
| 250                    | 73,5                                   | 20,1                     |
| 315                    | 71,8                                   | 21,6                     |
| 400                    | 71,6                                   | 25,3                     |
| 500                    | 75,6                                   | 29,6                     |
| 630                    | 73,0                                   | 28,2                     |
| 800                    | 75,7                                   | 32,7                     |
| 1000                   | 74,7                                   | 32,9                     |
| 1250                   | 74,4                                   | 38,3                     |
| 1600                   | 74,5                                   | 43,1                     |
| 2000                   | 74,3                                   | 45,4                     |
| 2500                   | 73,9                                   | 47,1                     |
| 3150                   | 73,1                                   | 44,5                     |
| 4000                   | 71,3                                   | 46,4                     |
| 5000                   | 67,7                                   | 49,1                     |



Rating according to ISO 717-2

ΔL<sub>w</sub> = 30 dB

C<sub>l,Δ</sub> = -13 dB

C<sub>l,r</sub> = 2 dB

These results are based on test made with an artificial source under laboratory conditions obtained in one-third-octave bands by an engineering method.

## Reduction of impact sound pressure level according to ISO 10140

Laboratory measurements of the reduction of transmitted impact noise by floor coverings on a heavyweight standard floor

No. of test report: 4068-M25  
Date of report: 2025-02-05  
Date of test: 2025-01-24  
Name: Staffan Andersson

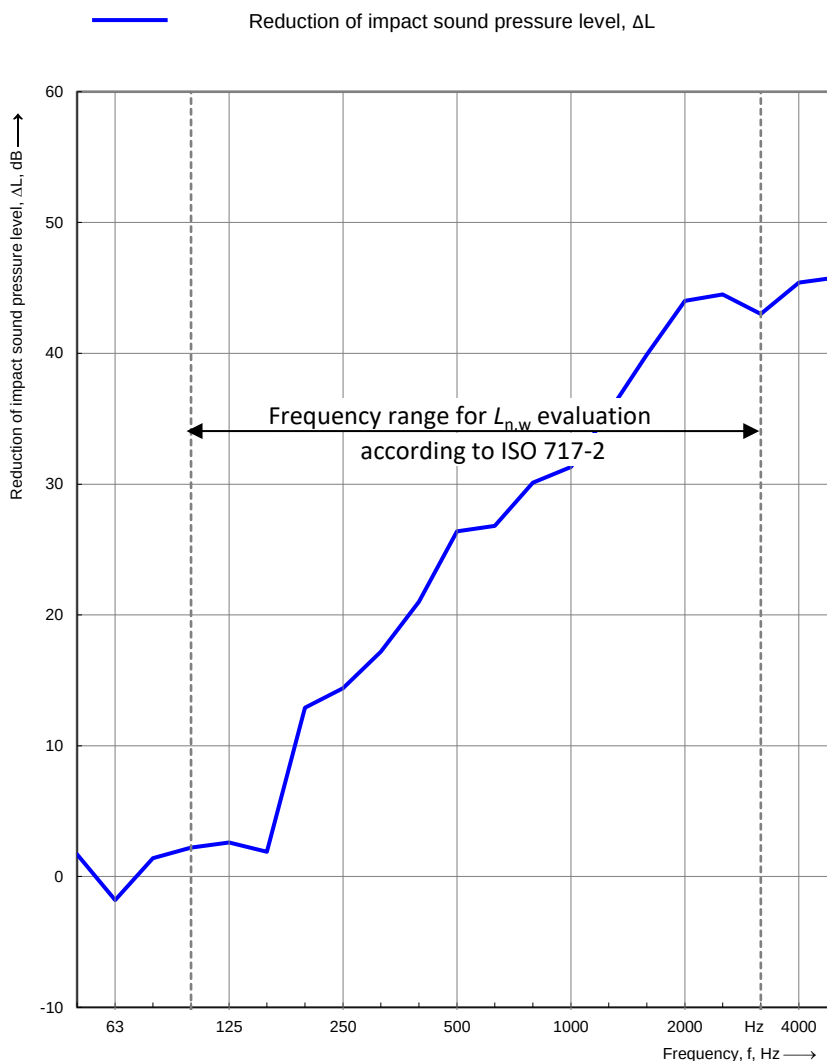
**Client:** Nivell System  
**Manufacturer:** Nivell System  
**Test specimen mounted by:** Nivell System  
**Test room identification:** Testrum 3 (sändarrum) till testrum 2 (mottagarrum)

**Product identification:** Referensbjälklag betong, Ljudskruv Original med stödplatta 150 mm, PAROC eXtra, Forestia Golvspånskiva P6

**Description of the specimen:** Referensbjälklag betong 160 mm, Ljudskruv Original med stödplatta 150 mm, golvspån 22 mm, aerolen, parkett med stenullsisolering 70 mm. Provytan var 130 x 180 cm och avviker från mätstandard, mätresultat besitter en högre osäkerhet.

**Mass per unit area:** 404 kg/m<sup>2</sup>  
**Curing time:** - days  
**Barometric pressure:** 99,3 kPa  
**Temperature - source room:** 16,0 °C  
**- receiving room:** 16,0 °C  
**Air humidity - source room:** 38 %  
**- receiving room:** 38 %  
**Source room volume:** 101,0 m<sup>3</sup>  
**Receiving room volume:** 123,0 m<sup>3</sup>

| Frequency<br>f<br>[Hz] | L <sub>n,0</sub><br>1/3 octave<br>[dB] | ΔL<br>1/3 octave<br>[dB] |
|------------------------|----------------------------------------|--------------------------|
| 50                     | 51,9                                   | 1,7                      |
| 63                     | 45,5                                   | -1,8                     |
| 80                     | 54,0                                   | 1,4                      |
| 100                    | 63,7                                   | 2,2                      |
| 125                    | 58,1                                   | 2,6                      |
| 160                    | 63,1                                   | 1,9                      |
| 200                    | 73,6                                   | 12,9                     |
| 250                    | 73,5                                   | 14,4                     |
| 315                    | 71,8                                   | 17,2                     |
| 400                    | 71,6                                   | 21,0                     |
| 500                    | 75,6                                   | 26,4                     |
| 630                    | 73,0                                   | 26,8                     |
| 800                    | 75,7                                   | 30,1                     |
| 1000                   | 74,7                                   | 31,3                     |
| 1250                   | 74,4                                   | 35,5                     |
| 1600                   | 74,5                                   | 39,9                     |
| 2000                   | 74,3                                   | 44,0                     |
| 2500                   | 73,9                                   | 44,5                     |
| 3150                   | 73,1                                   | 43,0                     |
| 4000                   | 71,3                                   | 45,4                     |
| 5000                   | 67,7                                   | 45,8                     |



Rating according to ISO 717-2

$\Delta L_w = 25$  dB

$C_{l,\Delta} = -13$  dB

$C_{l,r} = 2$  dB

These results are based on test made with an artificial source under laboratory conditions obtained in one-third-octave bands by an engineering method.

## Reduction of impact sound pressure level according to ISO 10140

Laboratory measurements of the reduction of transmitted impact noise by floor coverings on a heavyweight standard floor

No. of test report: 4068-M26  
Date of report: 2025-02-19  
Date of test: 2025-01-24  
Name: Staffan Andersson

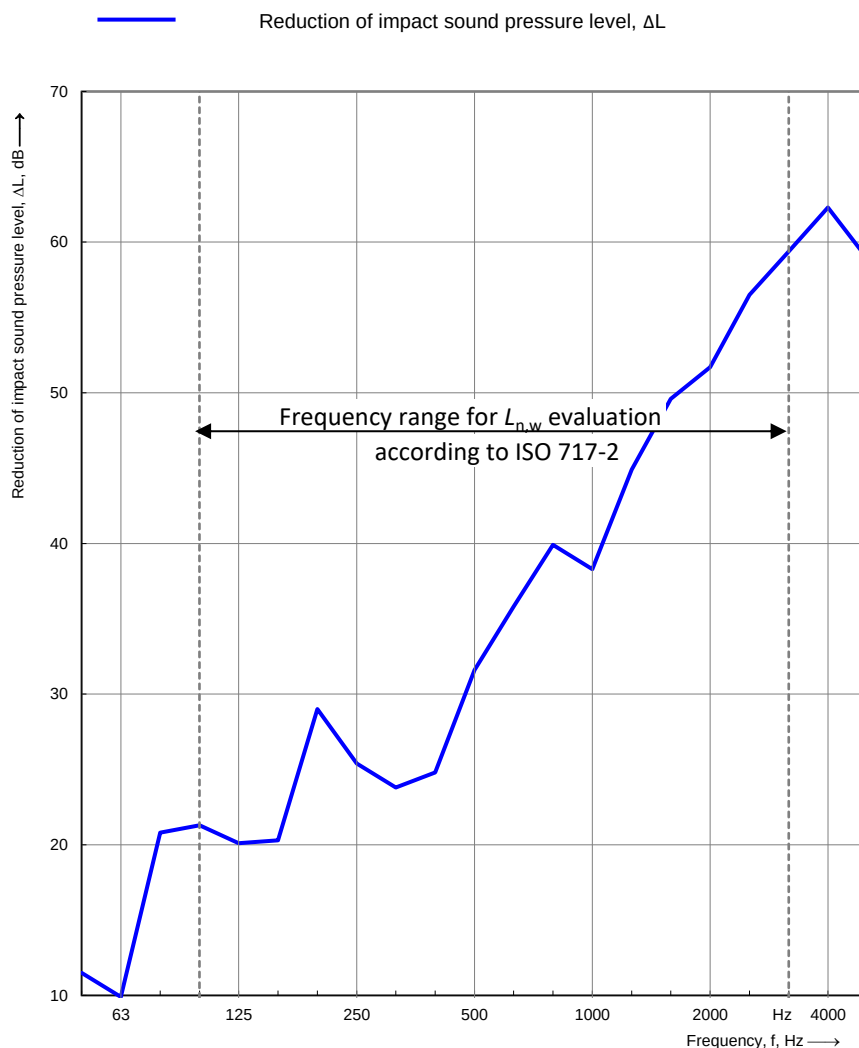
**Client:** Nivell System  
**Manufacturer:** Nivell System  
**Test specimen mounted by:** Nivell System  
**Test room identification:** Testrum 3 (sändarrum) till testrum 2 (mottagarrum)

**Product identification:** Referensbjälklag betong, Ljudfot "blå" 50 mm med 150 mm plastskruv och 70mm träregel cc400, PAROC eXtra, Forestia Golvspånskiva P6, betong 50 mm

**Description of the specimen:** Referensbjälklag betong 160 mm, Ljudskruv Original med stödplatta 150 mm, golvspån 22 mm, betong 50 mm, golvspån 22 mm, aerolen, parkett med stenullsisolering 70 mm. Provytan var 130 x 180 cm och avviker från mätstandard, mätresultat besitter en högre osäkerhet.

**Mass per unit area:** 586 kg/m<sup>2</sup>  
**Curing time:** - days  
**Barometric pressure:** 99,3 kPa  
**Temperature** - source room: 16,0 °C  
- receiving room: 16,0 °C  
**Air humidity** - source room: 38 %  
- receiving room: 38 %  
**Source room volume:** 101,0 m<sup>3</sup>  
**Receiving room volume:** 123,0 m<sup>3</sup>

| Frequency<br>f<br>[Hz] | L <sub>n,0</sub><br>1/3 octave<br>[dB] | ΔL<br>1/3 octave<br>[dB] |
|------------------------|----------------------------------------|--------------------------|
| 50                     | 50,7                                   | 11,5                     |
| 63                     | 44,1                                   | 9,9                      |
| 80                     | 53,3                                   | 20,8                     |
| 100                    | 63,4                                   | 21,3                     |
| 125                    | 57,4                                   | 20,1                     |
| 160                    | 62,6                                   | 20,3                     |
| 200                    | 74,8                                   | 29,0                     |
| 250                    | 71,6                                   | 25,4                     |
| 315                    | 72,1                                   | 23,8                     |
| 400                    | 71,3                                   | 24,8                     |
| 500                    | 75,3                                   | 31,6                     |
| 630                    | 72,6                                   | 35,8                     |
| 800                    | 75,1                                   | 39,9                     |
| 1000                   | 74,3                                   | 38,3                     |
| 1250                   | 75,9                                   | 44,9                     |
| 1600                   | 74,3                                   | 49,6                     |
| 2000                   | 74,1                                   | 51,7                     |
| 2500                   | 74,3                                   | 56,5                     |
| 3150                   | 73,3                                   | 59,4                     |
| 4000                   | 72,0                                   | 62,3                     |
| 5000                   | 68,2                                   | 58,9                     |



Rating according to ISO 717-2

$\Delta L_w = 39$  dB

$C_{l,\Delta} = -11$  dB

$C_{l,r} = 0$  dB

These results are based on test made with an artificial source under laboratory conditions obtained in one-third-octave bands by an engineering method.

# Normalized impact sound pressure levels according to ISO 10140-3

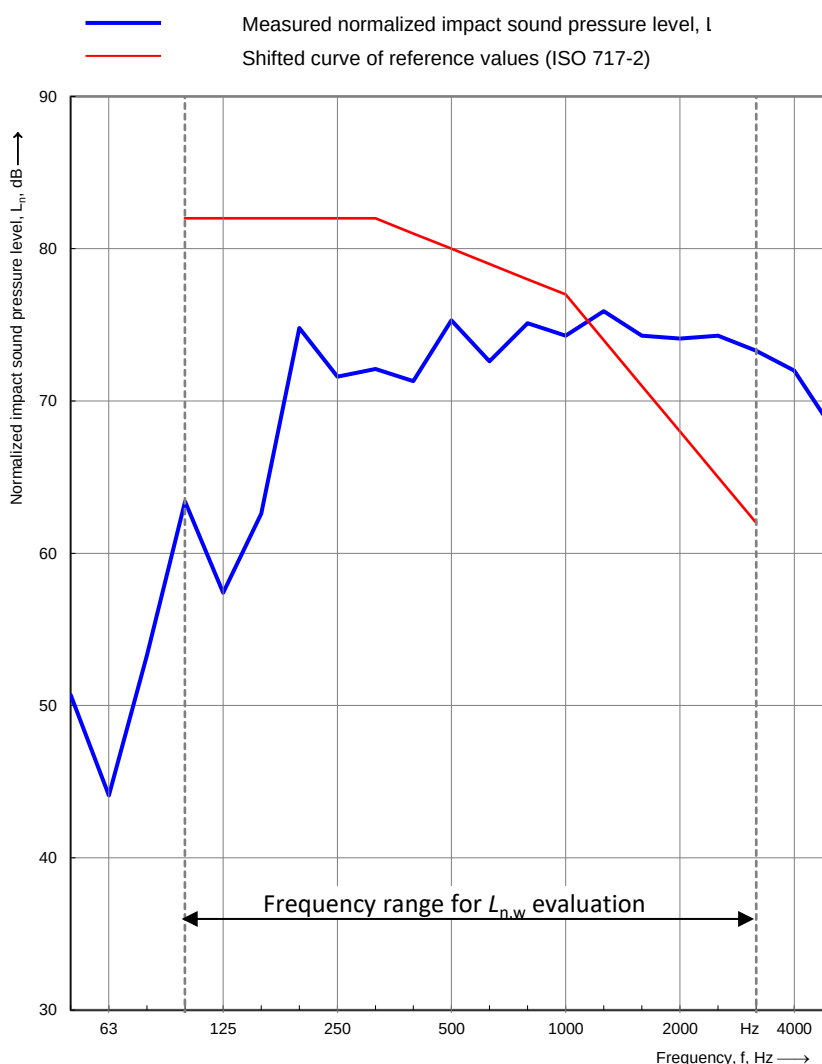
No. of test report: 4068-M27  
Date of report: 2025-02-06  
Date of test: 2025-01-27  
Name: Staffan Andersson

Laboratory measurements of impact sound insulation of floors

**Client:** Nivell System  
**Manufacturer:** Akustikverkstan  
**Test specimen mounted by:** Akustikverkstan  
**Test room identification:** Testrum 3 (sändarrum) till testrum 2 (mottagarum)  
**Product identification:** Referensbjällklag, Provyta 3  
**Description of the specimen:** Referensbjällklag 160 mm betong.

**Mass per unit area:** 375 kg/m<sup>2</sup>  
**Curing time:** - days  
**Barometric pressure:** 99,3 kPa  
**Temperature - source room:** 17,0 °C  
**- receiving room:** 17,0 °C  
**Air humidity - source room:** 39 %  
**- receiving room:** 39 %  
**Source room volume:** 101,0 m<sup>3</sup>  
**Receiving room volume:** 123,0 m<sup>3</sup>

| Frequency<br>f<br>[Hz] | L <sub>n</sub><br>1/3 octave<br>[dB] |
|------------------------|--------------------------------------|
| 50                     | 50,7                                 |
| 63                     | 44,1                                 |
| 80                     | 53,3                                 |
| 100                    | 63,4                                 |
| 125                    | 57,4                                 |
| 160                    | 62,6                                 |
| 200                    | 74,8                                 |
| 250                    | 71,6                                 |
| 315                    | 72,1                                 |
| 400                    | 71,3                                 |
| 500                    | 75,3                                 |
| 630                    | 72,6                                 |
| 800                    | 75,1                                 |
| 1000                   | 74,3                                 |
| 1250                   | 75,9                                 |
| 1600                   | 74,3                                 |
| 2000                   | 74,1                                 |
| 2500                   | 74,3                                 |
| 3150                   | 73,3                                 |
| 4000                   | 72,0                                 |
| 5000                   | 68,2                                 |



Rating according to ISO 717-2

$$L_{n,w}(C_i) = 80 \text{ ( -10 ) dB}$$

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

$$C_{1,50-2500} = -10 \text{ dB}$$

# Normalized impact sound pressure levels according to ISO 10140-3

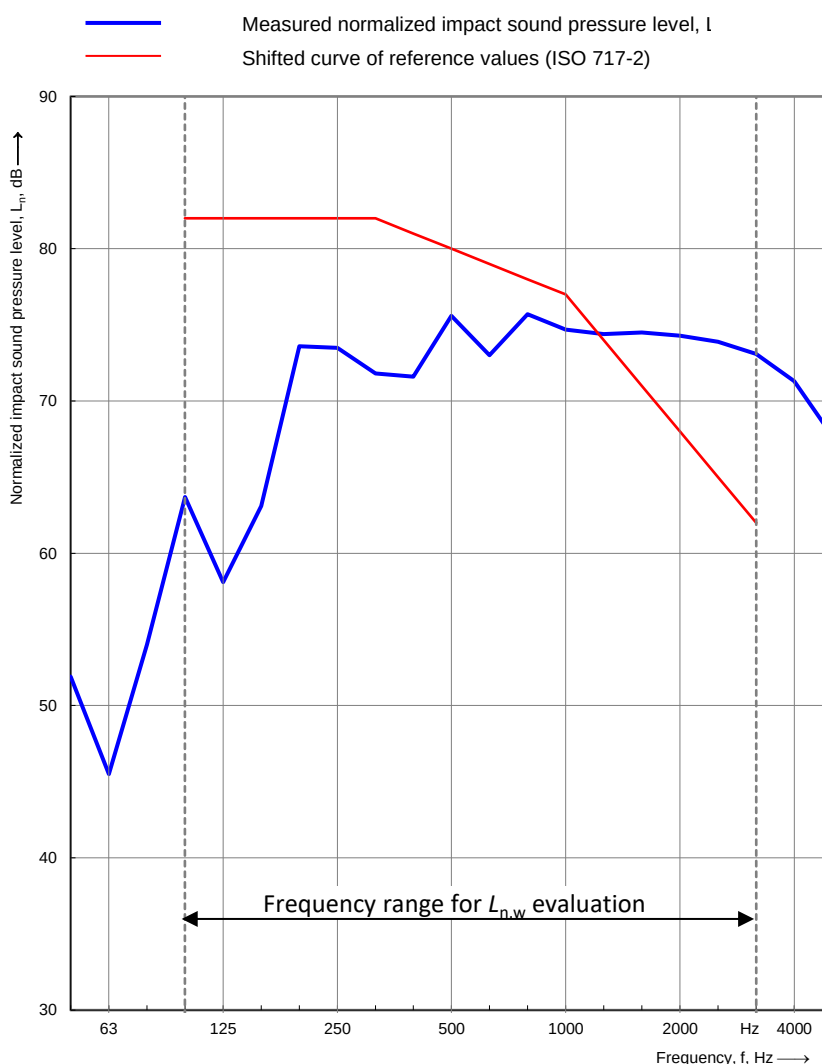
No. of test report: 4068-M28  
Date of report: 2025-02-06  
Date of test: 2025-01-27  
Name: Staffan Andersson

Laboratory measurements of impact sound insulation of floors

**Client:** Nivell System  
**Manufacturer:** Akustikverkstan  
**Test specimen mounted by:** Akustikverkstan  
**Test room identification:** Testrum 3 (sändarrum) till testrum 2 (mottagarum)  
**Product identification:** Referensbjälklag, Provyta 4  
**Description of the specimen:** Referensbjälklag 160 mm betong.

**Mass per unit area:** 375 kg/m<sup>2</sup>  
**Curing time:** - days  
**Barometric pressure:** 99,3 kPa  
**Temperature - source room:** 17,0 °C  
**- receiving room:** 17,0 °C  
**Air humidity - source room:** 39 %  
**- receiving room:** 39 %  
**Source room volume:** 101,0 m<sup>3</sup>  
**Receiving room volume:** 123,0 m<sup>3</sup>

| Frequency<br>f<br>[Hz] | L <sub>n</sub><br>1/3 octave<br>[dB] |
|------------------------|--------------------------------------|
| 50                     | 51,9                                 |
| 63                     | 45,5                                 |
| 80                     | 54,0                                 |
| 100                    | 63,7                                 |
| 125                    | 58,1                                 |
| 160                    | 63,1                                 |
| 200                    | 73,6                                 |
| 250                    | 73,5                                 |
| 315                    | 71,8                                 |
| 400                    | 71,6                                 |
| 500                    | 75,6                                 |
| 630                    | 73,0                                 |
| 800                    | 75,7                                 |
| 1000                   | 74,7                                 |
| 1250                   | 74,4                                 |
| 1600                   | 74,5                                 |
| 2000                   | 74,3                                 |
| 2500                   | 73,9                                 |
| 3150                   | 73,1                                 |
| 4000                   | 71,3                                 |
| 5000                   | 67,7                                 |



Rating according to ISO 717-2

$$L_{n,w}(C_i) = 80 \text{ ( -10 ) dB}$$

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

$$C_{1,50-2500} = -10 \text{ dB}$$