

# TFI Report 471940-01

## Impact Sound Insulation

### Customer

Unifloor BV  
Munsterstraat 24  
7418 EV Deventer  
NETHERLANDS

### Product

floor underlay with floor covering  
Jumpax Basic + HeatFoil, Linoleum 2mm

This report includes 2 pages and 1 annex(es)

### Responsible at TFI

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Aachen, 25.01.2018

### Dr. Alexander Siebel

- Head of the testing laboratory -

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This report only applies to the tested samples and has been established to the best of our knowledge. Only the entire report shall be reproduced. Under no circumstances, extracts shall be used. Furthermore, we apply the "General Terms and Conditions for the Execution of Contracts" of the TFI Aachen GmbH, also with regard to the order execution.

## 1 Transaction

Test order	Sound insulation according to EN ISO 10140:2010
Order date	1.11.2017
Your reference	F. Vousten
Product designation	Jumpax Basic + HeatFoil, Linoleum 2mm, Schönox ifloor Rollklebstoff
TFI sample number	17-11-0181 + 17-11-0180, 17-11-0179, 17-11-0182

## 2 Product Specification / Construction

### Thickness\*: Material (bottom to top):

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2 mm Linoleum 2mm (17-11-0179)

7+1,2 mm glued with Jumpax Basic + HeatFoil (17-011-0181, 17-11-0180, 17-11-0182)

\* customer information

View



Linoleum 2mm (17-11-0179)

HeatFoil (17-11-0180)

Jumpax Basic (17-11-0181)

## 3 Results

Impact sound insulation [ $\Delta L_w$ ] 21 dB ( $\Delta L_{in} = 10$  dB)

## 4 Annexes

Impact sound insulation TS 471940-01<sup>a</sup>

The annexes marked <sup>a</sup> are based on tests accredited in accordance with EN ISO/IEC 17025.

# Annex TS - Impact Sound Insulation

## 1 Transaction

Product designation	Jumpax Basic + HeatFoil, Linoleum 2mm, Schönox ifloor Rollklebstoff
TFI sample number	17-11-0181 + 17-11-0180, 17-11-0179, 17-11-0182
Testing period	24.11.2017

## 2 Test Method / Requirements

EN ISO 10140-1:2014	Acoustics - Laboratory measurement of sound insulation of building elements - Part 1: Application rules for certain products
EN ISO 10140-2:2010	Acoustics - Laboratory measurement of sound insulation of building elements - Part 2: Measurement of airborne sound insulation
EN ISO 10140-3:2015	Acoustics - Laboratory measurement of sound insulation of building elements - Part 3: Measurement of impact sound reduction
EN ISO 10140-4:2010	Acoustics - Laboratory measurement of sound insulation of building elements - Part 4: Measurement procedures and requirements
EN ISO 10140-5:2014	Acoustics - Laboratory measurement of sound insulation of building elements - Part 5: Requirements for test facilities and equipment
EN ISO 717-1:2013	Acoustics - Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation
EN ISO 717-2:2013	Acoustics - Rating of sound insulation in buildings and of building elements - Part 2: Impact sound reduction

## 3 Remarks

None

## 4 Measuring Operation

Measurement of the impact sound pressure level:	Using with 4 tapping machine position. (The single results of the one-third-octave-bands were averaged on an energy basis)
Test surface:	~10m <sup>2</sup>
Category:	II
Connection with the floor:	loose laid
Damage to the sample:	None

## 5 Laboratories

Test rooms:	Laboratories of the TFI Aachen GmbH, Hauptstrasse 133, 52477 Alsdorf, Germany
Sending room (1.04):	$V = 52.4 \text{ m}^3$ (with diffusers)
Receiving room (0.01):	$4.05 \text{ m} \times 3.95 \text{ m} \times 3.33 \text{ m} + 2.00 \text{ m} \times 0.98 \text{ m} \times 0.18 \text{ m}$ ; $V = 53.6 \text{ m}^3$ (cuboid room, with diffusers)
Reference floor:	$4.27 \text{ m} \times 4.46 \text{ m}$ ; $S = 19.04 \text{ m}^2$ 14 cm concrete slab floor with an area-related mass of $m' \sim 322 \text{ kg/m}^2$
Flanking walls:	Lime sand brick walls with light wall facings (facing shell $d = 12 \text{ cm}$ ) with an average area-related mass of $m' \sim 330 \text{ kg/m}^2$

## 6 Measuring Devices

Real time analyser:	Norsonic Nor140, SN: 1406926
Microphone:	Norsonic Type 1209/21134
Tapping machine:	NORSONIC, Type 211, SN: 502 (standard tapping machine with 3 feet and 5 hammers according to ISO 10140)

## 7 Evaluation

The impact sound pressure level generated by the standard tapping machine is measured in the receiving room under a bare heavy floor with and without a floor covering. The impact sound reduction is determined on the basis of the measured values as follows:

$$\Delta L = L_{n,0} - L_n \text{ (dB)}$$

$L_{n,0}$  Impact sound pressure level without a floor covering (dB)

$L_n$  Impact sound pressure level with a floor covering (dB)

For the evaluation of the weighted reduction in impact sound pressure level  $\Delta L_w$ , the relevant reference curve is shifted in increments of 1 dB towards the measured curve until the sum of unfavourable deviations is as large as possible, but not more than 32 dB.

The linear impact sound level  $\Delta L_{lin}$  is determined according to the following equation:

$$\Delta L_{lin} = L_{n,r,0,w} + C_{l,r,0} - (L_{n,r,w} + C_{l,r}) = \Delta L_w + C_{l,\Delta}$$

$L_{n,r,w}$  is the calculated weighted normalized impact sound pressure level of the reference floor with the

	floor covering under test
$L_{n,r,0,w}$	78 dB, calculated from $L_{n,r,0}$ according to Section 4.3.1 of DIN EN ISO 717-2: 2013
$C_{l,r}$	Spectrum adaptation term for the reference floor with the floor covering to be tested
$C_{l,r,0}$	-11 dB, spectrum adaptation term for the reference floor with $L_{n,r,0}$ determined according to Annex A, Section A.2.1 of DIN EN ISO 717-2:2013

## 8 Note

The results are based on measurements performed under laboratory conditions with artificial excitation (standard procedure). The test results are applicable in due consideration of the national provisions and the local circumstances and/or constructions.

# Impact sound insulation according ISO 10140-1

TS 471940-01

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

Annex TS – Impact sound insulation

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TFI sample number: 17-11-0181 + 17-11-0180, 17-11-0179, 17-11-0182      Testing period: 24.11.2017  
 Product name: Jumpax Basic + HeatFoil, Linoleum 2mm, Schönox ifloor Rollklebstoff

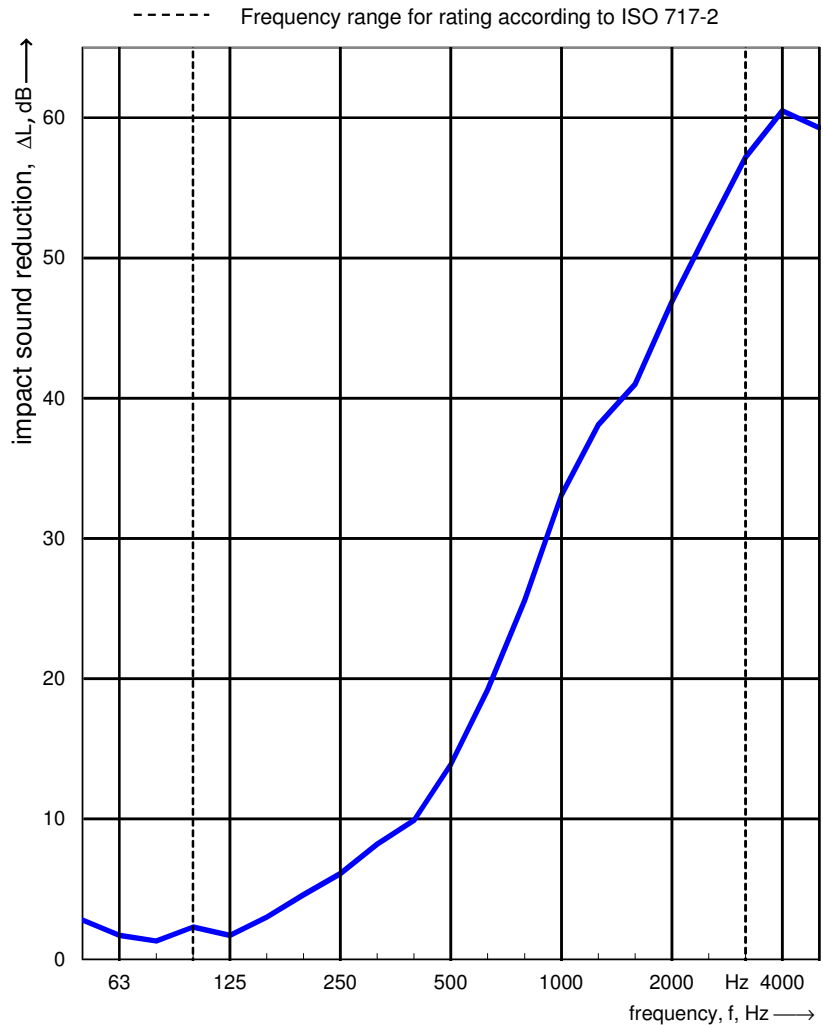
Installed by: customer

Construction: Linoleum 2,0 mm  
 (from top to bottom) glued with Schönox ifloor Rollklebstoff  
 jumpax basic 7,0 mm  
 Heatfoil 1,2 mm

Receiving room:		Source room:	
Volume:	53,6 m <sup>3</sup>	Volume:	52,1 m <sup>3</sup>
Air temperature:	20,4 °C	Air temperature:	21,4 °C
Relative air humidity:	64,1 %	Relative air humidity:	45,8 %
Static pressure:	99,1 kPa	Type of reference floor:	Heavyweight

Frequency f [Hz]	L <sub>n,0</sub> 1/3 oct. [dB]	ΔL 1/3 oct. [dB]
50	61,0	2,8
63	60,6	1,7
80	58,7	1,3
100	58,6	2,3
125	64,4	1,7
160	61,6	3,0
200	63,2	4,6
250	67,3	6,1
315	64,5	8,2
400	65,1	9,9
500	64,3	13,9
630	65,2	19,2
800	65,4	25,6
1000	66,8	33,1
1250	67,1	38,1
1600	67,4	41,0
2000	67,9	46,9
2500	67,2	52,1
3150	67,9	57,2
4000	66,8	60,5 <sup>1</sup>
5000	63,7	59,3 <sup>1</sup>

<sup>1</sup> to high



Evaluation according to ISO 717-2

ΔL<sub>w</sub> = 21 dB

C<sub>l,Δ</sub> = -11 dB

C<sub>l,r</sub> = 0 dB

ΔL<sub>lin</sub> = # 10 dB

The results are based on measurements, which were performed under laboratory conditions with artificial excitation (standard procedure).



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

Annex TS – Impact sound insulation

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Evaluation according to ISO 717-2

$$\Delta L_w = 21 \text{ dB}$$

$$C_{i,\Delta} = -11 \text{ dB}$$

$$C_{i,r} = 0 \text{ dB}$$

The results are based on measurements, which were performed under laboratory conditions with artificial excitation (standard procedure).

Weighted normalized impact sound pressure level  $L_{n,0,w} = 74 \text{ dB}$

Weighted normalized impact sound pressure level  $L_{n,w} = 52 \text{ dB}$

Weighted normalized impact sound pressure level  $L_{n,r,w} = 57 \text{ dB}$

Frequency [Hz]	$\Delta L$ [dB]	$L_{n,0}$ [dB]	$L_n$ [dB]	$L_{n,r}$ [dB]
50	2,8	61,0	58,2	
63	1,7	60,6	58,9	
80	1,3	58,7	57,4	
100	2,3	58,6	56,3	64,7
125	1,7	64,4	62,7	65,8
160	3,0	61,6	58,6	65,0
200	4,6	63,2	58,6	63,9
250	6,1	67,3	61,2	62,9
315	8,2	64,5	56,3	61,3
400	9,9	65,1	55,2	60,1
500	13,9	64,3	50,4	56,6
630	19,2	65,2	46,0	51,8
800	25,6	65,4	39,8	45,9
1000	33,1	66,8	33,7	38,9
1250	38,1	67,1	29,0	33,9
1600	41,0	67,4	26,4	31,0
2000	46,9	67,9	21,0	25,1
2500	52,1	67,2	15,1	19,9
3150	57,2	67,9	10,7	14,8
4000	60,5	66,8	6,3	
5000	59,3	63,7	4,4	

Receiving room:

Volume: 53,6 m<sup>3</sup>

Air temperature: 52,1 m<sup>3</sup>

Relative air humidity: 64,10 %

Static pressure: 99,1 kPa

Senderaum:

Volume: 52,1 m<sup>3</sup>

Air temperature: 21,4 °C

Relative air humidity: 45,8 %

Type of reference floor: Heavyweight

