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CERTIFICATE OF PERFORMANCE

IMPACT SOUND INSULATION

HYBRID FLOORING

QUALIMAX FLOORING

Date: 23 October 2024

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Qualimax Flooring

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The information contained herein should not be reproduced except in full. The information provided in this report relates to acoustic matters only. Supplementary advice should be sought for other matters relating to construction, design, structural, fire-rating, waterproofing, and the like.



ACOUSTICAL REPORT
IMPACT SOUND INSULATION OF HYBRID FLOORING
QUALIMAX FLOORING

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1.0 CONSULTANT'S BRIEF

Qualimax Flooring commissioned Koikas Acoustics to perform acoustic testing of the following products and systems (listed below) to establish their performance in terms of impact sound insulation.

1. 9 mm Hybrid Flooring
2. 9 mm Hybrid Flooring + 3 mm Rubber Underlay
3. 9 mm Hybrid Flooring + 5 mm Rubber Underlay
4. 12 mm Hybrid Flooring
5. 12 mm Hybrid Flooring + 3 mm Rubber Underlay
6. 12 mm Hybrid Flooring + 5 mm Rubber Underlay

All tests were conducted above a base floor system consisting of a 200 mm thick concrete slab with a suspended plasterboard ceiling of unknown depth. An additional test was conducted on this base floor substrate in addition to the sample tests with the floor cover products.

Test results are presented against the following acoustic standards and guidelines:

- *National Construction Code 2022 (Vol. 1 Building Code of Australia - Part F7).*
- *Association of Australasian Acoustical Consultants (AAAC) guideline for apartment and townhouse acoustic rating (v1.0, 2017).*

All measurements were carried out as per the guidelines and procedures outlined in:

- *ISO 16283-2:2020 Acoustics - Field measurement of sound insulation in buildings and of building elements - Part 2: Impact sound insulation.*

The rating was determined as per:

- *AS ISO 717.2-2004 "Rating of sound insulation in buildings and of building elements".*



2.0 IMPACT NOISE TESTING

2.1 PARTITION SYSTEM

The acoustic tests were completed at 207/27 Hill Road Wentworth Point NSW 2127. According to a previous test performed at this site the structural floor above which the floor coverings and underlay products were placed is constructed of 200 mm concrete + a suspended plasterboard ceiling with an unknown cavity size.

The following floor coverings and underlay samples were tested. Each sample tested was approximately 1 m².

- Test 0: Bare concrete floor – *for comparison purposes only*
- Test 1: 12 mm hybrid flooring
- Test 2: 12 mm hybrid flooring + 3 mm rubber underlay
- Test 3: 12 mm hybrid flooring + 5 mm rubber underlay
- Test 4: 9 mm hybrid flooring
- Test 5: 9 mm hybrid flooring + 3 mm rubber underlay
- Test 6: 9 mm hybrid flooring + 5 mm rubber underlay



2.2 IMPACT NOISE REQUIREMENTS

2.2.1 BCA REQUIREMENT

The BCA 2022 requires a floor in a Class 2 or Class 3 building to have a weighted standardised impact sound pressure level (L'_{nTw}), not more than 62 determined under AS/ISO 717.2 if it separates sole-occupancy units.

2.2.2 AAAC STAR RATING PERFORMANCE REQUIREMENTS

Reproduced from the Association of Australasian Acoustical Consultants (AAAC) Guideline for Apartment and Townhouse Acoustic Ratings, the following Table (Section C) describes the acoustic ratings regarding the Star Rating System.

Table 1. Star Rating requirements for inter-tenancy activities – Published by the AAAC					
INTER-TENANCY ACTIVITIES	2 Star	3 Star	4 Star	5 Star	6 Star
(c) Impact isolation of floors					
- Between tenancies $L_{nTw} \leq$	65	55	50	45	40
- Between all other spaces & tenancies $L_{nTw} \leq$	65	55	50	45	40



3.0 ASSESSMENT/TESTING PROCEDURES

3.1 PARTITION TESTING

3.1.1 Generation of the sound field in the source room

The sound field was generated by a Cesva MI006 Tapping Machine situated in the source room on the specific floor under test. Several measurement positions on each floor were tested as required by the standard.

3.1.2 Receiving space measurement

Impact noise levels were recorded in the receiving space with an NTi Audio XL2 spectrum analyser sound level meter. The spatial-averaging method of measurement was employed for impact noise tests with relevant traverse durations and minimum distances to reflectors and boundary walls observed.

3.1.3 Reverberation time and background noise

Additional measurements were taken of the background noise (L_b) and reverberation time (T). The background noise measurement was used to ensure that existing ambient noise did not influence the internal noise measurement. The reverberation time was used to calculate the amount of absorption (A) in the receiving room so that the measurement can be standardised to a reference reverberation time of 0.5 seconds.



4.0 MEASURED RESULTS AND ANALYSIS

The results of the acoustic tests are tabulated below. Comprehensive measurement and analysis data are presented as an Appendix to this report. The ratings provided below indicate the performance of the floor and floor coverings in this specific test environment. The results are not transferable between test environments or buildings.

Table 2. Summary of impact noise test results				
Flooring Sample	L'_{nT,w}	ΔL	AAAC Star Rating	FIIC
Test 00: Bare concrete floor – for comparison purposes only	54	-	3	52
Test 01: 12 mm hybrid flooring	36	18	6	74
Test 02: 12 mm hybrid flooring + 3 mm rubber underlay	37	17	6	73
Test 03: 12 mm hybrid flooring + 5 mm rubber underlay	38	16	6	72
Test 04: 9 mm hybrid flooring	36	18	6	74
Test 05: 9 mm hybrid flooring + 3 mm rubber underlay	37	17	6	73
Test 06: 9 mm hybrid flooring + 5 mm rubber underlay	36	18	6	74
Definitions				
L' _{nT,w}	Weighted standardised impact sound pressure level (dB).			
ΔL	Improvement in impact sound level for a floating floor relative to a base floor (dB).			
FIIC	Field Impact Insulation Class.			

Definitions

1. L'_{nT,w} is defined as the weighted impact sound pressure level standardised to a reference reverberation time of 0.5 seconds. As the value represents a noise level, the lower the value the better the acoustic performance.
2. The Star Rating is a performance metric derived by the AAAC and is directly related to the measured L'_{nT,w}. A higher Star Rating indicates improved acoustic performance.
3. ΔL is the improvement in impact sound insulation resulting from a floating floor when assessed against a base floor. The greater the value (improvement) the better the performance.
4. FIIC is the Field Impact Insulation Classification and is a measure of sound insulation thus the higher the value the better the performance.



Performance

5. BCA 2022 compliance is achieved for all tested floor coverings/systems as well as the bare substrate.
6. AAAC Star Rating 6 is achieved for all tested floor coverings and underlays.
7. AAAC Star Rating 3 is achieved for the tested substrate with no floor covering.

General installation advice:

8. During installation, and to achieve the maximum acoustic performance, it is expected and recommended that hard floor coverings shall not contact walls or joinery (kitchen benches, cupboards etc). Temporary spacers of 5~10 mm should be used to isolate the floor covering from walls and/or joineries and the resulting gaps should be filled with a suitable mastic type sealant or off-cut of underlay or the equivalent where available. The acoustic integrity could be degraded if the above precautions and treatments are not implemented. Refer to Figures 1 and 2 below for details of the proper installation of flooring materials.
9. Product installation details and methodologies must be sought from the product supplier, installer or other experts. Koikas Acoustics is not liable for any product defects.

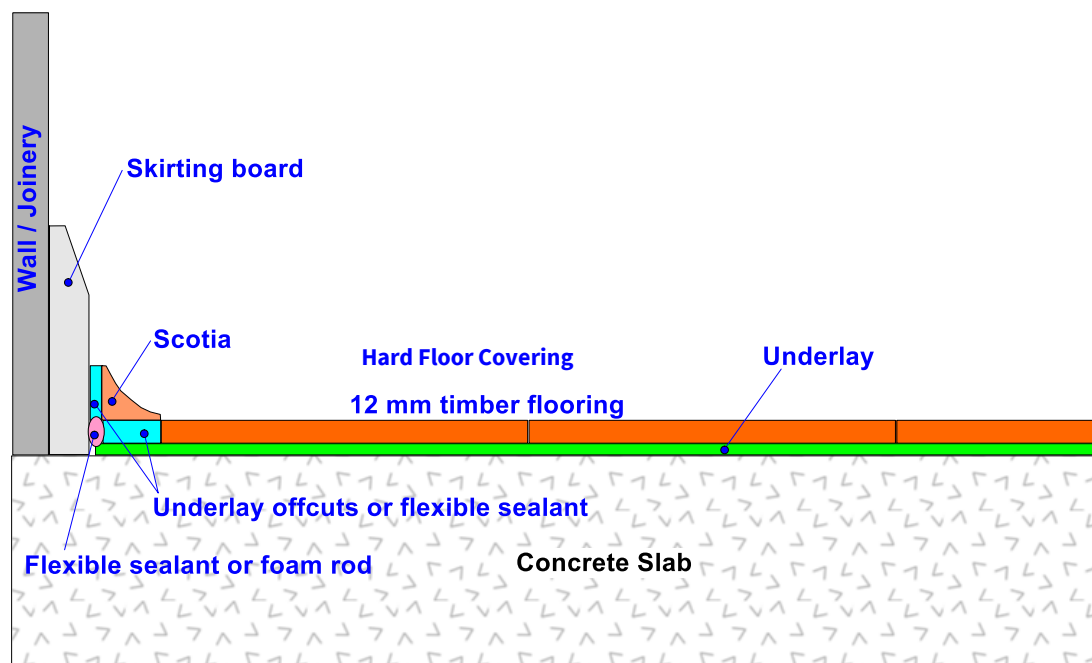


Figure 1. Wall / Joinery details (skirting board & scotia)

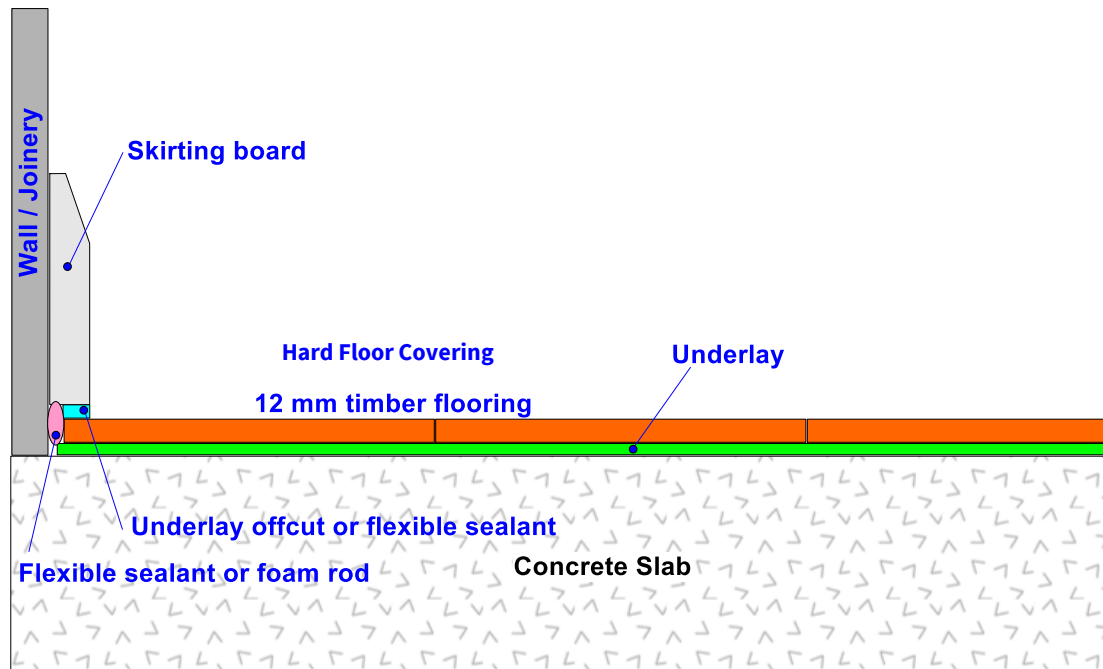


Figure 2. Wall / Joinery details (skirting board)

Limitations/disclaimer

10. The information contained herein should not be reproduced except in full.
11. The information provided in this report relates to acoustic matters only. Supplementary advice should be sought for other matters relating to flooring installation, construction, design, structural, fire-rating, waterproofing and the like.
12. The acoustic ratings provided in this report are indicative of a 1 m² sample and should be used for comparative purposes only. A fully laid floor is expected to yield a lesser performance (higher impact sound level).
13. Acoustic ratings will vary depending on:
 - the testing environment/conditions,
 - materials/structures of the existing ceiling/floor system,
 - room volume,
 - internal layout and
 - workmanship.

5.0 CONCLUSION

Koikas Acoustics conducted acoustic testing for a range of hybrid flooring products and systems for Qualimax Flooring. The objective was to determine the impact sound insulation performance of various flooring configurations, including hybrid flooring with and without rubber underlay, installed over a 200 mm concrete slab with a suspended plasterboard ceiling.

The testing results indicated that all flooring systems, including both 9 mm and 12 mm hybrid flooring options (with or without underlay), complied with the acoustic performance requirements of the BCA 2022 and achieved a 6-star rating under the AAAC guidelines. These flooring systems demonstrated excellent impact sound insulation, with $L'nTw$ values of 36-38 dB and FIIC ratings of 72-74, confirming their suitability for high-performance acoustic environments. In comparison, the bare concrete floor achieved a lower performance level with a 3-star rating.

To ensure maximum acoustic performance during installation, it is recommended that hard flooring coverings be isolated from walls and joinery, with appropriate spacers and sealants used to maintain acoustic integrity. Failure to follow these installation guidelines may degrade the overall performance of the flooring system.

This assessment provides reliable guidance for selecting hybrid flooring systems that meet both regulatory and high-performance acoustic standards, making them suitable for residential or commercial applications subject to the required acoustic performance standards and any underlying limitations of the base building.



APPENDIX A

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APPENDIX A

FIELD MEASUREMENTS OF IMPACT SOUND INSULATION OF FLOORS

Date of Test : Tuesday, 22 October 2024
 Project No. : 6327
 Testing Company : Koikas Acoustics
 Checked by : Adam Semple
 Place of Test : Residential Unit in Wentworth Point
 Client : Qualimax Flooring
 Client Address : -

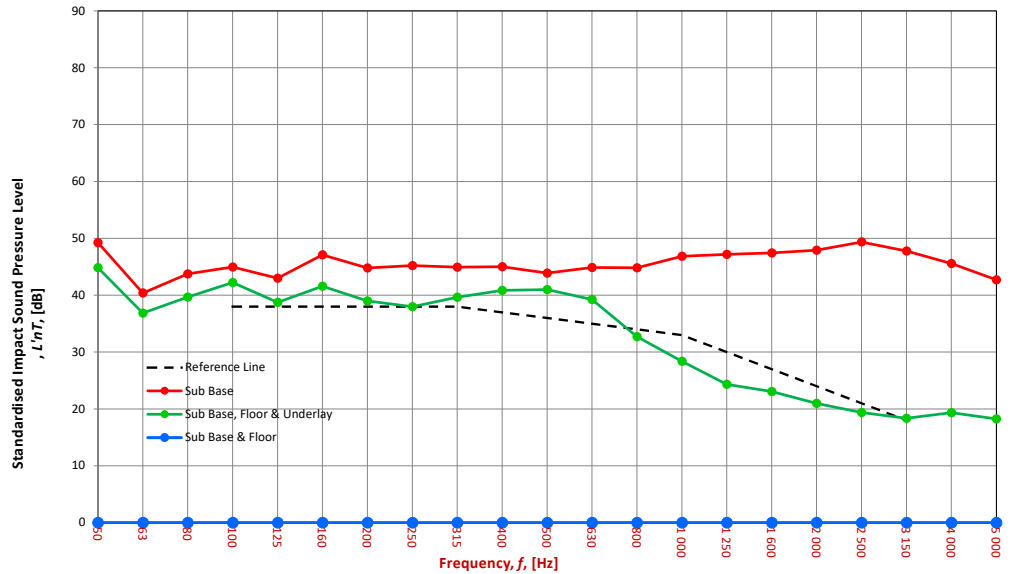
Description of Floor System	Name	Thickness (mm)	Density (SI)
12 mm Hybrid Flooring		12	--
Concrete Slab		200	--
Suspended Plasterboard Ceiling		0	--
0		--	--

Room Floor Dimensions
 Width : 3.5 m
 Length : 9.7 m
 Area : 34 m²

Sample Dimensions
 Width : 1 m
 Length : 1 m
 Area : 1 m²

Receiver Rm	Room Surfaces					
	Location	Width	Length	Area	Height	Volume
Unit directly below		3.5	9.7	33.95	2.6	88.27

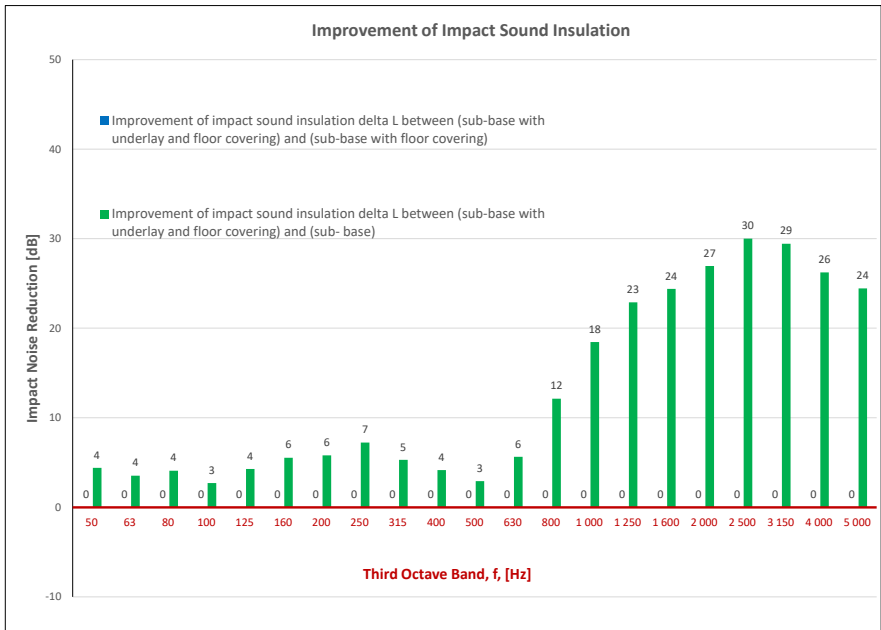
Frequency f Hz	L'nT (one-third octave) dB		
	Sub Base	Sub Base Floor	Sub Base Floor Underlay
50	49.2	#NUM!	44.8
63	40.4	#NUM!	36.9
80	43.8	#NUM!	39.7
100	44.9	#NUM!	42.2
125	43.0	#NUM!	38.7
160	47.1	#NUM!	41.6
200	44.8	#NUM!	39.0
250	45.2	#NUM!	38.0
315	44.9	#NUM!	39.6
400	45.0	#NUM!	40.9
500	43.9	#NUM!	41.0
630	44.9	#NUM!	39.2
800	44.8	#NUM!	32.7
1000	46.8	#NUM!	28.4
1250	47.2	#NUM!	24.3
1600	47.4	#NUM!	23.1
2000	47.9	#NUM!	21.0
2500	49.4	#NUM!	19.4
3150	47.8	#NUM!	18.3
4000	45.6	#NUM!	19.4
5000	42.7	#NUM!	18.3



Sub Base		
L'nT,w	54	AS ISO 717.2 - 2004
Ci	-11	AS ISO 717.2 - 2004
Ci(50-2500)	-10	AS ISO 717.2 - 2004
Ci(63-2000)	-11	AS ISO 717.2 - 2004
AAAC★	3 Star	AAAC Guideline
FIC	52	ASTM E1007-14

Sub Base, Hybrid flooring		
L'nT,w	#NUM!	AS ISO 717.2 - 2004
Ci	#NUM!	AS ISO 717.2 - 2004
Ci(50-2500)	#NUM!	AS ISO 717.2 - 2004
Ci(63-2000)	#NUM!	AS ISO 717.2 - 2004
AAAC★	#NUM!	AAAC Guideline
FIC	#NUM!	ASTM E1007-14

Sub Base, Hybrid flooring		
L'nT,w	36	AS ISO 717.2 - 2004
Ci	-1	AS ISO 717.2 - 2004
Ci(50-2500)	1	AS ISO 717.2 - 2004
Ci(63-2000)	0	AS ISO 717.2 - 2004
AAAC★	6 Star	AAAC Guideline
FIC	74	ASTM E1007-14



Definitions of Noise Metrics

FIC:
Field Impact Insulation Class is a single-number rating of how well a floor system attenuates impact type sounds, such as footsteps. Calculated from third-octave band normalised impact sound pressure level data and referenced to 10 m² as described in ASTM E989. The higher the single-number rating, the better its impact insulation performance.

L'nT,w:
The Weighted Standardised Impact Sound Pressure Level when measured in situ referenced to a reverberation time (RT60) of 0.5 seconds. Used by the AAAC to determine their respective Star Rating.

Ci:
Spectrum adaption term is a low frequency correction factor. Typically for massive floors such as concrete, the values are about zero while for timber joist floors Ci is positive because of the low resonant frequencies. Considers frequency range between 100 -and 2500 Hz.

Ci(50-2500):
Same as above, but for the frequency range 50 -2500 Hz.

Ci(125-2000):
Same as above, but for the frequency range 125 -2000 Hz.

AAAC Star R.	2	3	4	5	6
L'nT,w	65	55	50	45	40
FIC	45	55	60	65	70
Comments	Below BCA 62	Clearly Audible	Audible	Barely Audible	Normally Inaudible

FIELD MEASUREMENTS OF IMPACT SOUND INSULATION OF FLOORS

Date of Test : Tuesday, 22 October 2024
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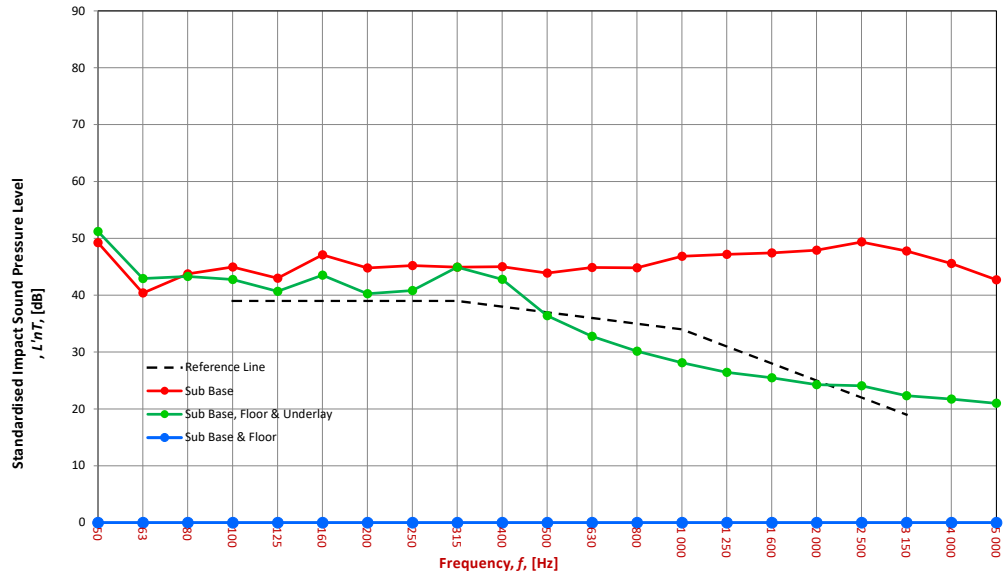
Description of Floor System	Name	Thickness (mm)	Density (SI)
12 mm Hybrid Flooring		12	--
3 mm Rubber Underlay		3	--
Concrete Slab		200	--
Suspended Plasterboard Ceiling		--	--

Room Dimensions
 Width : 3.5 m
 Length : 9.7 m
 Area : 34 m²

Sample Dimensions
 Width : 1 m
 Length : 1 m
 Area : 1 m²

Receiver Rm	Location					Room Surfaces			
	Unit directly below	Width	Length	Area	Height	Volume	Walls	Floor	Ceiling
		3.5	9.7	33.95	2.6	88.27	Plasterboard	Timber	Plasterboard

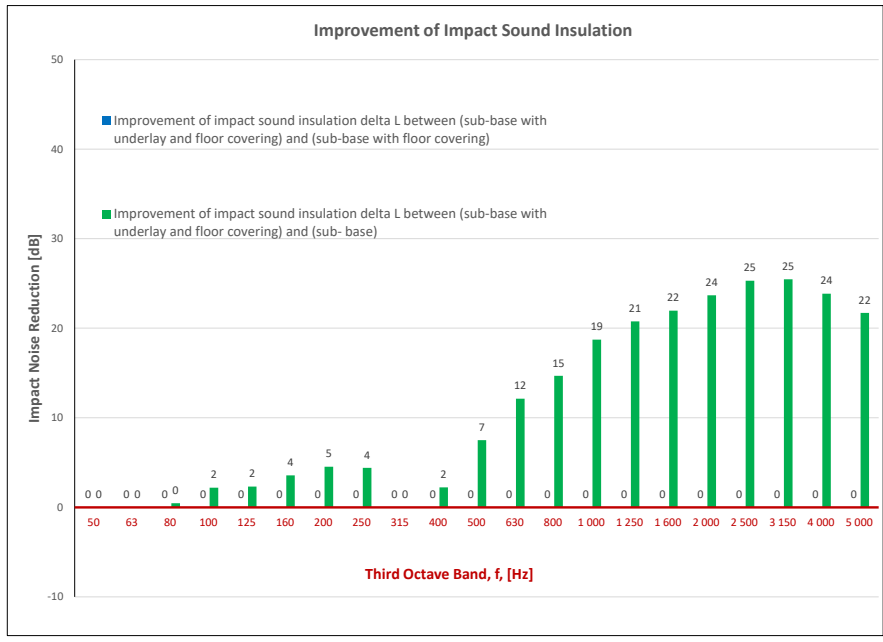
Frequency f Hz	L'nT (one-third octave) dB		
	Sub Base	Sub Base Floor	Sub Base Floor Underlay
50	49.2	#NUM!	51.2
63	40.4	#NUM!	42.9
80	43.8	#NUM!	43.3
100	44.9	#NUM!	42.8
125	43.0	#NUM!	40.7
160	47.1	#NUM!	43.5
200	44.8	#NUM!	40.3
250	45.2	#NUM!	40.8
315	44.9	#NUM!	44.9
400	45.0	#NUM!	42.8
500	43.9	#NUM!	36.4
630	44.9	#NUM!	32.8
800	44.8	#NUM!	30.1
1000	46.8	#NUM!	28.1
1250	47.2	#NUM!	26.4
1600	47.4	#NUM!	25.5
2000	47.9	#NUM!	24.3
2500	49.4	#NUM!	24.1
3150	47.8	#NUM!	22.3
4000	45.6	#NUM!	21.7
5000	42.7	#NUM!	21.0



Sub Base		
L'nT,w	54	AS ISO 717.2 - 2004
Ci	-11	AS ISO 717.2 - 2004
Ci(50-2500)	-10	AS ISO 717.2 - 2004
Ci(63-2000)	-11	AS ISO 717.2 - 2004
AAAC★	3 Star	AAAC Guideline
FIC	52	ASTM E1007-14

Sub Base, Hybrid flooring + 3 mm rubber		
L'nT,w	#NUM!	AS ISO 717.2 - 2004
Ci	#NUM!	AS ISO 717.2 - 2004
Ci(50-2500)	#NUM!	AS ISO 717.2 - 2004
Ci(63-2000)	#NUM!	AS ISO 717.2 - 2004
AAAC★	#NUM!	AAAC Guideline
FIC	#NUM!	ASTM E1007-14

Sub Base, Hybrid flooring + 3 mm rubber		
L'nT,w	37	AS ISO 717.2 - 2004
Ci	-1	AS ISO 717.2 - 2004
Ci(50-2500)	3	AS ISO 717.2 - 2004
Ci(63-2000)	0	AS ISO 717.2 - 2004
AAAC★	6 Star	AAAC Guideline
FIC	73	ASTM E1007-14



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FIC:
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L'nT,w:
The Weighted Standardised Impact Sound Pressure Level when measured in situ referenced to a reverberation time (RT60) of 0.5 seconds. Used by the AAAC to determine their respective Star Rating.

Ci:
Spectrum adaption term is a low frequency correction factor. Typically for massive floors such as concrete, the values are about zero while for timber joist floors Ci is positive because of the low resonant frequencies. Considers frequency range between 100 -and 2500 Hz.

Ci(50-2500):
Same as above, but for the frequency range 50 -2500 Hz.

Ci(125-2000):
Same as above, but for the frequency range 125 -2000 Hz.

AAAC Star R.	2	3	4	5	6
L'nT,w	65	55	50	45	40
FIC	45	55	60	65	70
Comments	Below BCA 62	Clearly Audible	Audible	Barely Audible	Normally Inaudible

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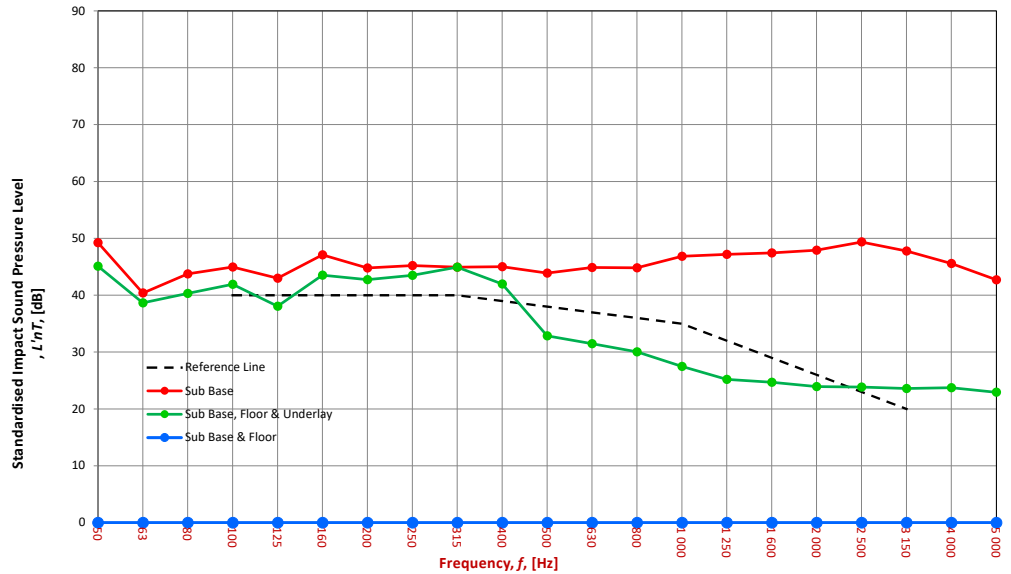
Description of Floor System	Name	Thickness (mm)	Density (SI)
12 mm Hybrid Flooring		12	--
5 mm Rubber Underlay		5	--
Concrete Slab		200	--
Suspended Plasterboard Ceiling		--	--

Room Dimensions
 Width : 3.5 m
 Length : 9.7 m
 Area : 34 m²

Sample Dimensions
 Width : 1 m
 Length : 1 m
 Area : 1 m²

Receiver Rm	Location					Room Surfaces			
	Unit directly below	Width	Length	Area	Height	Volume	Walls	Floor	Ceiling
		3.5	9.7	33.95	2.6	88.27	Plasterboard	Timber	Plasterboard

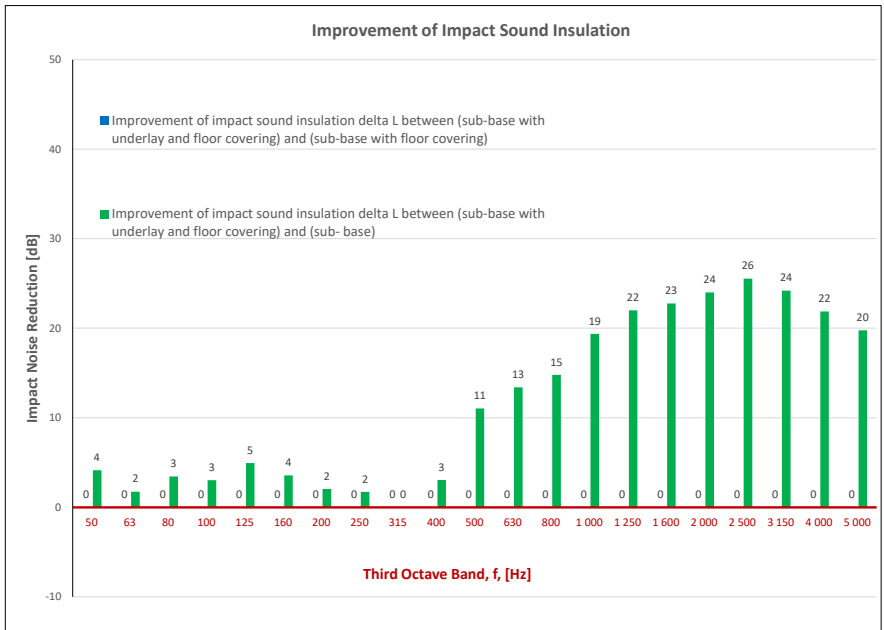
Frequency f Hz	L'nT (one-third octave) dB		
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50	49.2	#NUM!	45.1
63	40.4	#NUM!	38.7
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100	44.9	#NUM!	41.9
125	43.0	#NUM!	38.1
160	47.1	#NUM!	43.5
200	44.8	#NUM!	42.7
250	45.2	#NUM!	43.5
315	44.9	#NUM!	44.9
400	45.0	#NUM!	42.0
500	43.9	#NUM!	32.9
630	44.9	#NUM!	31.5
800	44.8	#NUM!	30.0
1000	46.8	#NUM!	27.5
1250	47.2	#NUM!	25.2
1600	47.4	#NUM!	24.7
2000	47.9	#NUM!	23.9
2500	49.4	#NUM!	23.8
3150	47.8	#NUM!	23.6
4000	45.6	#NUM!	23.7
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Sub Base		
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Ci(63-2000)	-11	AS ISO 717.2 - 2004
AAAC★	3 Star	AAAC Guideline
FIC	52	ASTM E1007-14

L'nT,w	#NUM!	AS ISO 717.2 - 2004
Ci	#NUM!	AS ISO 717.2 - 2004
Ci(50-2500)	#NUM!	AS ISO 717.2 - 2004
Ci(63-2000)	#NUM!	AS ISO 717.2 - 2004
AAAC★	#NUM!	AAAC Guideline
FIC	#NUM!	ASTM E1007-14

Sub Base, Hybrid flooring + 5 mm rubber		
L'nT,w	38	AS ISO 717.2 - 2004
Ci	-2	AS ISO 717.2 - 2004
Ci(50-2500)	0	AS ISO 717.2 - 2004
Ci(63-2000)	-1	AS ISO 717.2 - 2004
AAAC★	6 Star	AAAC Guideline
FIC	72	ASTM E1007-14



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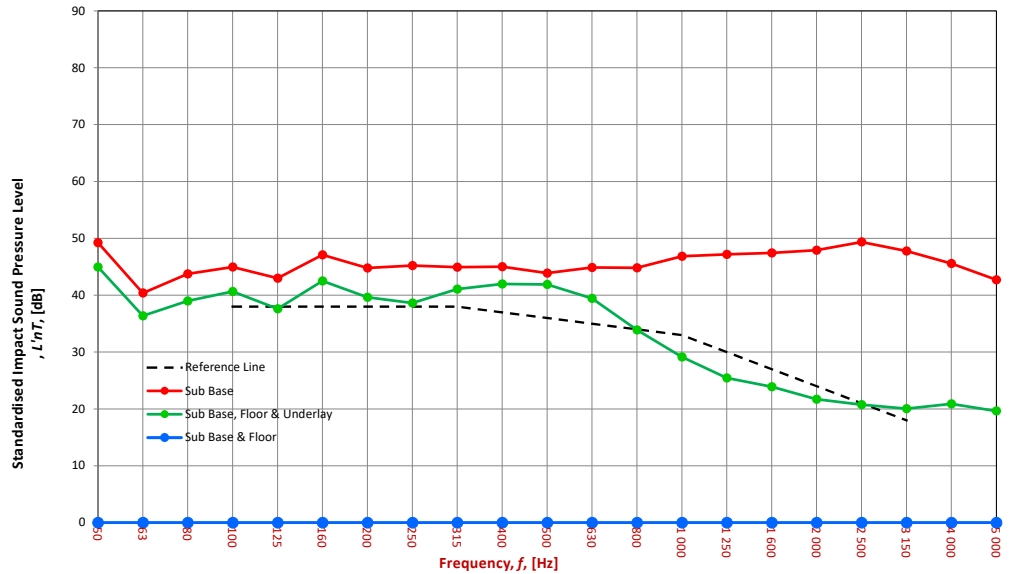
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Concrete Slab		200	--
Suspended Plasterboard Ceiling		--	--
0		--	--

Room Floor Dimensions
 Width : 3.5 m
 Length : 9.7 m
 Area : 34 m²

Sample Dimensions
 Width : 1 m
 Length : 1 m
 Area : 1 m²

Receiver Rm	Location	Width	Length	Area	Height	Volume	Room Surfaces		
							Walls	Floor	Ceiling
	Unit directly below	3.5	9.7	33.95	2.6	88.27	Plasterboard	Timber	Plasterboard

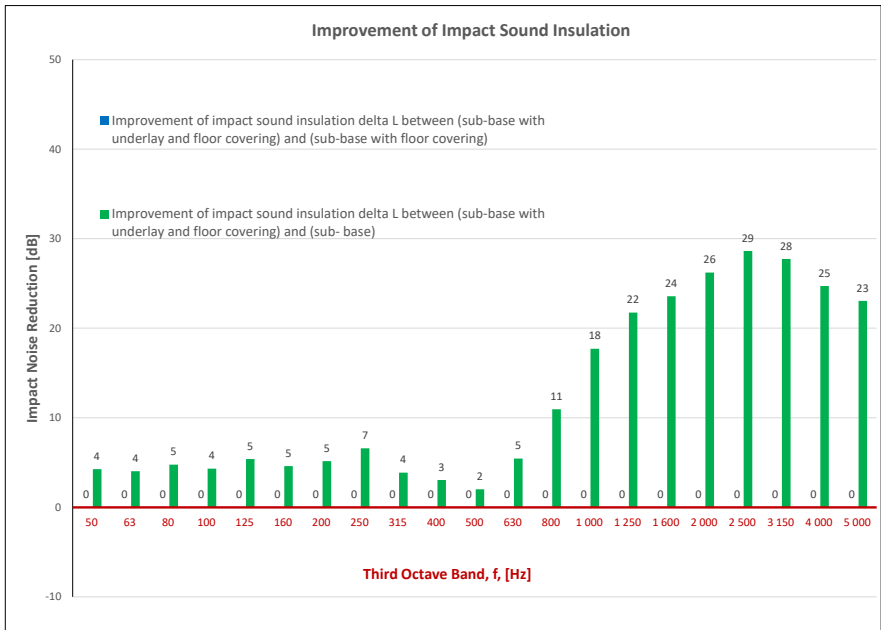
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63	40.4	#NUM!	36.4
80	43.8	#NUM!	39.0
100	44.9	#NUM!	40.6
125	43.0	#NUM!	37.6
160	47.1	#NUM!	42.5
200	44.8	#NUM!	39.6
250	45.2	#NUM!	38.6
315	44.9	#NUM!	41.1
400	45.0	#NUM!	42.0
500	43.9	#NUM!	41.9
630	44.9	#NUM!	39.4
800	44.8	#NUM!	33.9
1000	46.8	#NUM!	29.1
1250	47.2	#NUM!	25.5
1600	47.4	#NUM!	23.9
2000	47.9	#NUM!	21.7
2500	49.4	#NUM!	20.7
3150	47.8	#NUM!	20.0
4000	45.6	#NUM!	20.9
5000	42.7	#NUM!	19.6



Sub Base		
L'nT,w	54	AS ISO 717.2 - 2004
Ci	-11	AS ISO 717.2 - 2004
Ci(50-2500)	-10	AS ISO 717.2 - 2004
Ci(63-2000)	-11	AS ISO 717.2 - 2004
AAAC★	3 Star	AAAC Guideline
FIC	52	ASTM E1007-14

Sub Base, Hybrid flooring		
L'nT,w	#NUM!	AS ISO 717.2 - 2004
Ci	#NUM!	AS ISO 717.2 - 2004
Ci(50-2500)	#NUM!	AS ISO 717.2 - 2004
Ci(63-2000)	#NUM!	AS ISO 717.2 - 2004
AAAC★	#NUM!	AAAC Guideline
FIC	#NUM!	ASTM E1007-14

Sub Base, Hybrid flooring		
L'nT,w	36	AS ISO 717.2 - 2004
Ci	-1	AS ISO 717.2 - 2004
Ci(50-2500)	1	AS ISO 717.2 - 2004
Ci(63-2000)	0	AS ISO 717.2 - 2004
AAAC★	6 Star	AAAC Guideline
FIC	74	ASTM E1007-14



Definitions of Noise Metrics

FIC:
Field Impact Insulation Class is a single-number rating of how well a floor system attenuates impact type sounds, such as footsteps. Calculated from third-octave band normalised impact sound pressure level data and referenced to 10 m² as described in ASTM E989. The higher the single-number rating, the better its impact insulation performance.

L'nT,w:
The Weighted Standardised Impact Sound Pressure Level when measured in situ referenced to a reverberation time (RT60) of 0.5 seconds. Used by the AAAC to determine their respective Star Rating.

Ci:
Spectrum adaption term is a low frequency correction factor. Typically for massive floors such as concrete, the values are about zero while for timber joist floors Ci is positive because of the low resonant frequencies. Considers frequency range between 100 -and 2500 Hz.

Ci(50-2500):
Same as above, but for the frequency range 50 -2500 Hz.

Ci(125-2000):
Same as above, but for the frequency range 125 -2000 Hz.

AAAC Star R.	2	3	4	5	6
L'nT,w	65	55	50	45	40
FIC	45	55	60	65	70
Comments	Below BCA 62	Clearly Audible	Audible	Barely Audible	Normally Inaudible

FIELD MEASUREMENTS OF IMPACT SOUND INSULATION OF FLOORS

Date of Test : Tuesday, 22 October 2024
 Project No. : 6327
 Testing Company : Koikas Acoustics
 Checked by : Adam Semple
 Place of Test : Residential Unit in Wentworth Point
 Client : Qualimax Flooring
 Client Address : -

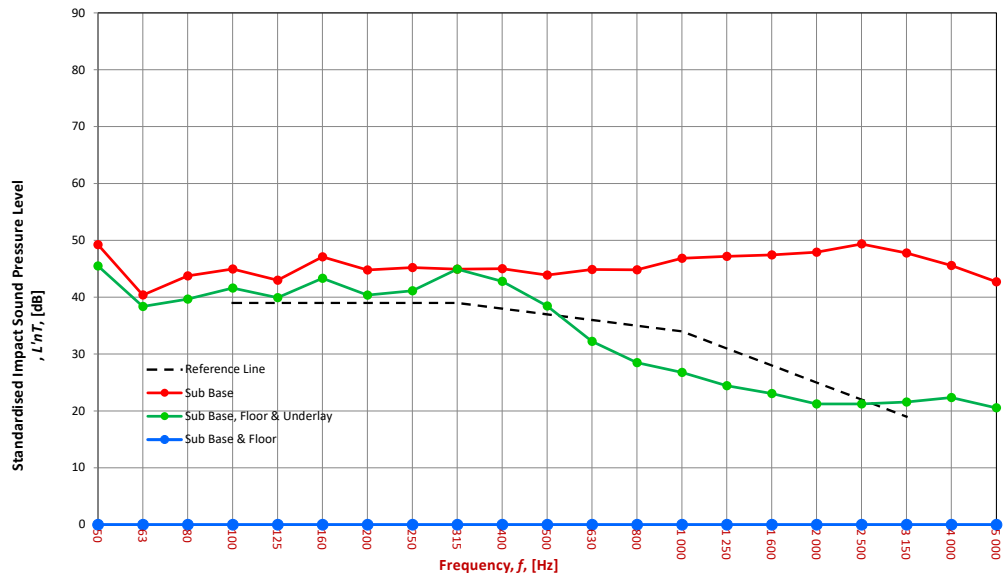
Description of Floor System	Name	Thickness (mm)	Density (SI)
9 mm Hybrid Flooring		9	--
3 mm Rubber Underlay		3	--
Concrete Slab		--	--
Suspended Plasterboard Ceiling		--	--

Room Dimensions
 Width : 3.5 m
 Length : 9.7 m
 Area : 34 m²

Sample Dimensions
 Width : 1 m
 Length : 1 m
 Area : 1 m²

Receiver Rm	Room Surfaces					
	Location	Width	Length	Area	Height	Volume
Unit directly below		3.5	9.7	33.95	2.6	88.27

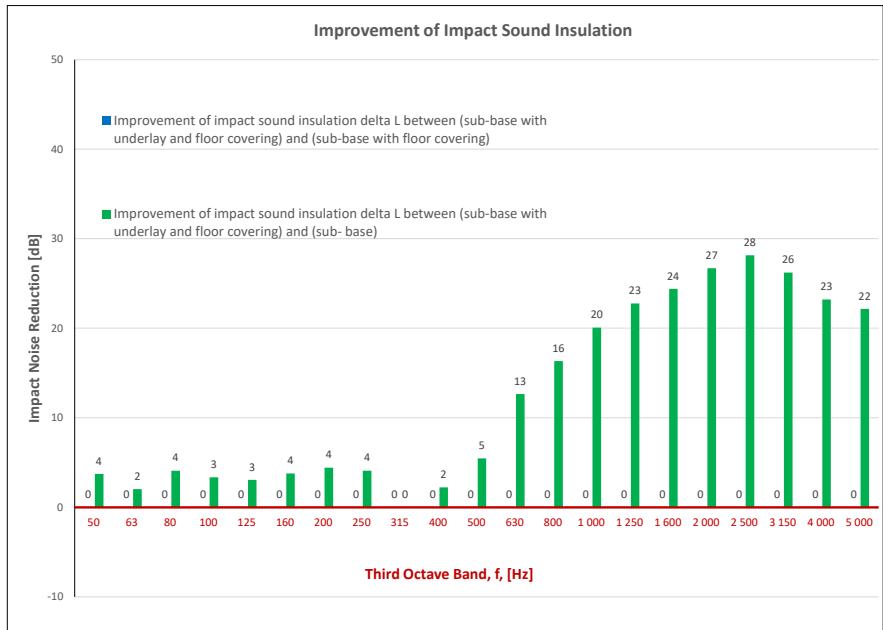
Frequency f Hz	L'nT (one-third octave) dB		
	Sub Base	Sub Base Floor	Sub Base Floor Underlay
50	49.2	#NUM!	45.5
63	40.4	#NUM!	38.4
80	43.8	#NUM!	39.7
100	44.9	#NUM!	41.6
125	43.0	#NUM!	39.9
160	47.1	#NUM!	43.3
200	44.8	#NUM!	40.4
250	45.2	#NUM!	41.1
315	44.9	#NUM!	44.9
400	45.0	#NUM!	42.8
500	43.9	#NUM!	38.4
630	44.9	#NUM!	32.2
800	44.8	#NUM!	28.5
1000	46.8	#NUM!	26.8
1250	47.2	#NUM!	24.4
1600	47.4	#NUM!	23.1
2000	47.9	#NUM!	21.2
2500	49.4	#NUM!	21.2
3150	47.8	#NUM!	21.6
4000	45.6	#NUM!	22.4
5000	42.7	#NUM!	20.5



Sub Base		
L'nT,w	54	AS ISO 717.2 - 2004
Ci	-11	AS ISO 717.2 - 2004
Ci(50-2500)	-10	AS ISO 717.2 - 2004
Ci(63-2000)	-11	AS ISO 717.2 - 2004
AAAC★	3 Star	AAAC Guideline
FIC	52	ASTM E1007-14

L'nT,w	#NUM!	AS ISO 717.2 - 2004
Ci	#NUM!	AS ISO 717.2 - 2004
Ci(50-2500)	#NUM!	AS ISO 717.2 - 2004
Ci(63-2000)	#NUM!	AS ISO 717.2 - 2004
AAAC★	#NUM!	AAAC Guideline
FIC	#NUM!	ASTM E1007-14

Sub Base, Hybrid flooring + 3 mm rubber		
L'nT,w	37	AS ISO 717.2 - 2004
Ci	-1	AS ISO 717.2 - 2004
Ci(50-2500)	1	AS ISO 717.2 - 2004
Ci(63-2000)	0	AS ISO 717.2 - 2004
AAAC★	6 Star	AAAC Guideline
FIC	73	ASTM E1007-14



Definitions of Noise Metrics

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 Field Impact Insulation Class is a single-number rating of how well a floor system attenuates impact type sounds, such as footsteps. Calculated from third-octave band normalised impact sound pressure level data and referenced to 10 m² as described in ASTM E989. The higher the single-number rating, the better its impact insulation performance.

L'nT,w:
 The Weighted Standardised Impact Sound Pressure Level when measured in situ referenced to a reverberation time (RT60) of 0.5 seconds. Used by the AAAC to determine their respective Star Rating.

Ci:
 Spectrum adaption term is a low frequency correction factor. Typically for massive floors such as concrete, the values are about zero while for timber joist floors Ci is positive because of the low resonant frequencies. Considers frequency range between 100 -and 2500 Hz.

Ci(50-2500):
 Same as above, but for the frequency range 50 -2500 Hz.

Ci(125-2000):
 Same as above, but for the frequency range 125 -2000 Hz.

AAAC Star R.	2	3	4	5	6
L'nT,w	65	55	50	45	40
FIC	45	55	60	65	70
Comments	Below BCA 62	Clearly Audible	Audible	Barely Audible	Normally Inaudible

FIELD MEASUREMENTS OF IMPACT SOUND INSULATION OF FLOORS

Date of Test : Tuesday, 22 October 2024
 Project No. : 6327
 Testing Company : Koikas Acoustics
 Checked by : Adam Semple
 Place of Test : Residential Unit in Wentworth Point
 Client : Qualimax Flooring
 Client Address : -

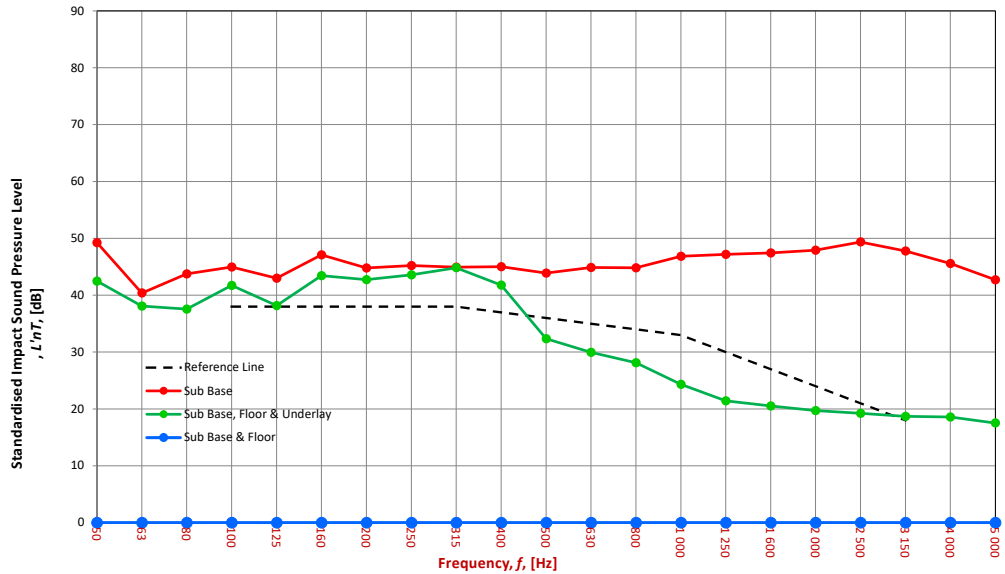
Description of Floor System	Name	Thickness (mm)	Density (SI)
Description of Floor System	9 mm Hybrid Flooring	9	--
	5 mm Rubber Underlay	5	--
	Concrete Slab	--	--
	Suspended Plasterboard Ceiling	--	--

Room Dimensions
 Width : 3.5 m
 Length : 9.7 m
 Area : 34 m²

Sample Dimensions
 Width : 1 m
 Length : 1 m
 Area : 1 m²

Receiver Rm	Location						Room Surfaces		
	Unit directly below	Width	Length	Area	Height	Volume	Walls	Floor	Ceiling
		3.5	9.7	33.95	2.6	88.27	Plasterboard	Timber	Plasterboard

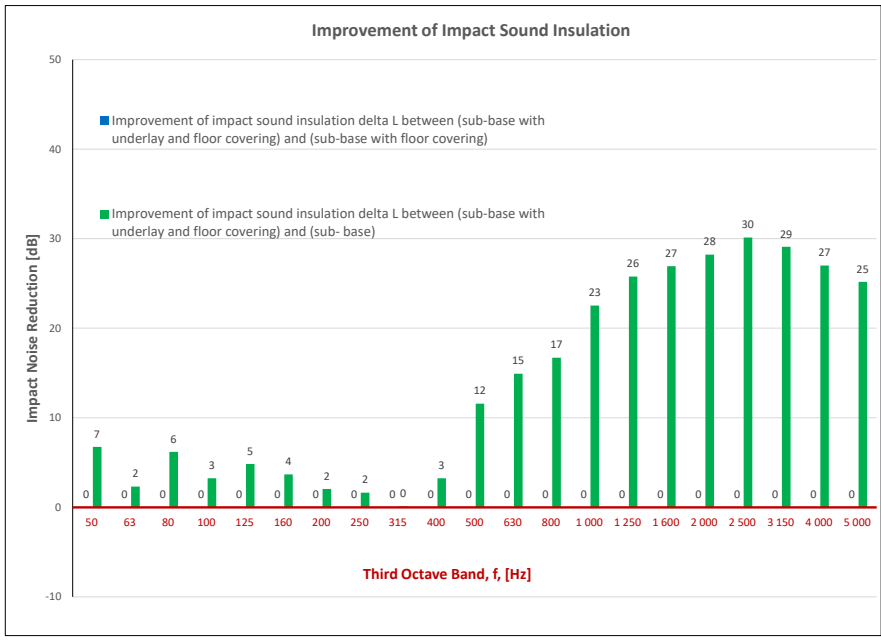
Frequency f Hz	L'nT (one-third octave) dB		
	Sub Base	Sub Base Floor	Sub Base Floor Underlay
50	49.2	#NUM!	42.5
63	40.4	#NUM!	38.1
80	43.8	#NUM!	37.6
100	44.9	#NUM!	41.7
125	43.0	#NUM!	38.2
160	47.1	#NUM!	43.4
200	44.8	#NUM!	42.7
250	45.2	#NUM!	43.6
315	44.9	#NUM!	44.8
400	45.0	#NUM!	41.8
500	43.9	#NUM!	32.3
630	44.9	#NUM!	30.0
800	44.8	#NUM!	28.1
1000	46.8	#NUM!	24.3
1250	47.2	#NUM!	21.4
1600	47.4	#NUM!	20.5
2000	47.9	#NUM!	19.7
2500	49.4	#NUM!	19.2
3150	47.8	#NUM!	18.7
4000	45.6	#NUM!	18.6
5000	42.7	#NUM!	17.5



Sub Base		
L'nT,w	54	AS ISO 717.2 - 2004
Ci	-11	AS ISO 717.2 - 2004
Ci(50-2500)	-10	AS ISO 717.2 - 2004
Ci(63-2000)	-11	AS ISO 717.2 - 2004
AAAC★	3 Star	AAAC Guideline
FIC	52	ASTM E1007-14

L'nT,w	#NUM!	AS ISO 717.2 - 2004
Ci	#NUM!	AS ISO 717.2 - 2004
Ci(50-2500)	#NUM!	AS ISO 717.2 - 2004
Ci(63-2000)	#NUM!	AS ISO 717.2 - 2004
AAAC★	#NUM!	AAAC Guideline
FIC	#NUM!	ASTM E1007-14

Sub Base, Hybrid flooring + 5 mm rubber		
L'nT,w	36	AS ISO 717.2 - 2004
Ci	0	AS ISO 717.2 - 2004
Ci(50-2500)	1	AS ISO 717.2 - 2004
Ci(63-2000)	1	AS ISO 717.2 - 2004
AAAC★	6 Star	AAAC Guideline
FIC	74	ASTM E1007-14



Definitions of Noise Metrics

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Field Impact Insulation Class is a single-number rating of how well a floor system attenuates impact type sounds, such as footsteps. Calculated from third-octave band normalised impact sound pressure level data and referenced to 10 m² as described in ASTM E989. The higher the single-number rating, the better its impact insulation performance.

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Spectrum adaption term is a low frequency correction factor. Typically for massive floors such as concrete, the values are about zero while for timber joist floors Ci is positive because of the low resonant frequencies. Considers frequency range between 100 -and 2500 Hz.

Ci(50-2500):
Same as above, but for the frequency range 50 -2500 Hz.

Ci(125-2000):
Same as above, but for the frequency range 125 -2000 Hz.

AAAC Star R.	2	3	4	5	6
L'nT,w	65	55	50	45	40
FIC	45	55	60	65	70
Comments	Below BCA 62	Clearly Audible	Audible	Barely Audible	Normally Inaudible