



Trojan SilentWalk Underlay Acoustic Test Results

Floor Impact Noise Insulation Field Test Report - 19 Thorn Street, Kangaroo Point

Reference Number:	QA120-01F02 (rev0).dox		
Date of Test:	Thursday 16 th October 2014 at 4:30pm		
Address of Test Premises:	19 Thorn Street, Kangaroo Point (Builder: Tom Dooley Developments)		
Test Instrumentation	<ul style="list-style-type: none"> Tapping machine, 01dB S/N 25131 Precision sound level meter, Norsosonic Nor140 S/N 1402770 Acoustical Calibrator: B&K 4230 (S/N 1206747). 		
Form of Construction:	<p>Tested floor in Unit 712 consisted of nominally 1m x 1m timber sample (14.5mm thick engineered floor), loose-laid over 3mm Black EVA Foam underlay treatment on the bare concrete.</p> <p>Tom Dooley Developments (Kris Nielsen) provided a description of the substrate:</p> <ul style="list-style-type: none"> 200mm thick reinforced concrete slab; 100mm ceiling space (no insulation therein); and 10mm suspended plasterboard ceiling in Unit 612 <p>Other specific construction details such as the distances between columns and the partition head details are unknown.</p>		
Source Room:	Apartment No: Unit 712	Occupancy Type: Living/Dining/Kitchen Area	
Receiver Room:	Apartment No: Unit 612	Occupancy Type: Living/Dining/Kitchen Area	
Floor Sample:	Apparent Weight Normalised Impact Sound Pressure Level and Spectrum Adaptation Term	Apparent Weighted Standardised Impact Sound Pressure Level and Spectrum Adaptation Term	Normalised Field Impact Isolation Class, FIIC
Bare Concrete:	62 (-10) dB	59 (-10) dB	42
Timber Sample on 3mm Black EVA Foam Underlay	47 (2) dB	44 (2) dB	59
Measured Weighted Normalised Impact Sound Pressure Level and Spectrum Adaptation Term	$L_{r,n,w} + C_I$	Bare concrete: 54	
		Timber sample on 3mm thick Trojan Timber IQ latex underlay: 46	
Measured Weighted Standardised Impact Sound Pressure Level and Spectrum Adaptation Term	$L_{r,nT,w}$	Bare Concrete: 66	
		Timber sample on 3mm thick Trojan Timber IQ latex underlay: 47	

Please Note: the test result provided is not a guarantee that your site would automatically achieve the same results. Trojan in no way warrant that our vinyl floor will meet your building's requirements for acoustics as all buildings are constructed differently and have different body corporate requirements. If acoustics are critical to your project we would strongly recommend you engage an acoustic consultant.

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The test results are presented in Appendix A.

The test methodology and associated test Standards are shown in Appendix B.

Measurements conducted in accordance with International Standard ISO 140-7 "Field measurements of impact sound insulation of floors"; International Standard ISO 717-2 "Impact sound insulation"; ASTM E492-90 "Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine" and, ASTM E989-89 "Determination of Impact Insulation Class (IIC)". Measurements and procedures documented in this report have been carried out in accordance with the Renzo Tonin & Associates Quality Assurance System. This quality system is based on AS/NZS ISO 9001:1994.

Please Note: the test result provided is not a guarantee that your site would automatically achieve the same results. Trojan in no way warrant that our vinyl floor will meet your building's requirements for acoustics as all buildings are constructed differently and have different body corporate requirements. If acoustics are critical to your project we would strongly recommend you engage an acoustic consultant.

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FIELD TEST REPORT - IMPACT INSULATION CLASS and IMPACT SOUND PRESSURE LEVEL

File:	1S01 (REV0) - TEST IN LIVING ROOM BARE SLAB TAPPO IN UNIT7	
Receiver Room: Apt 612- Living Area/Kitchen		
Volume	61.98	m ³
Surface Area	101.58	m ²
Test Area	24.79	m ²
Humidity	70	%
Temperature	25	°C

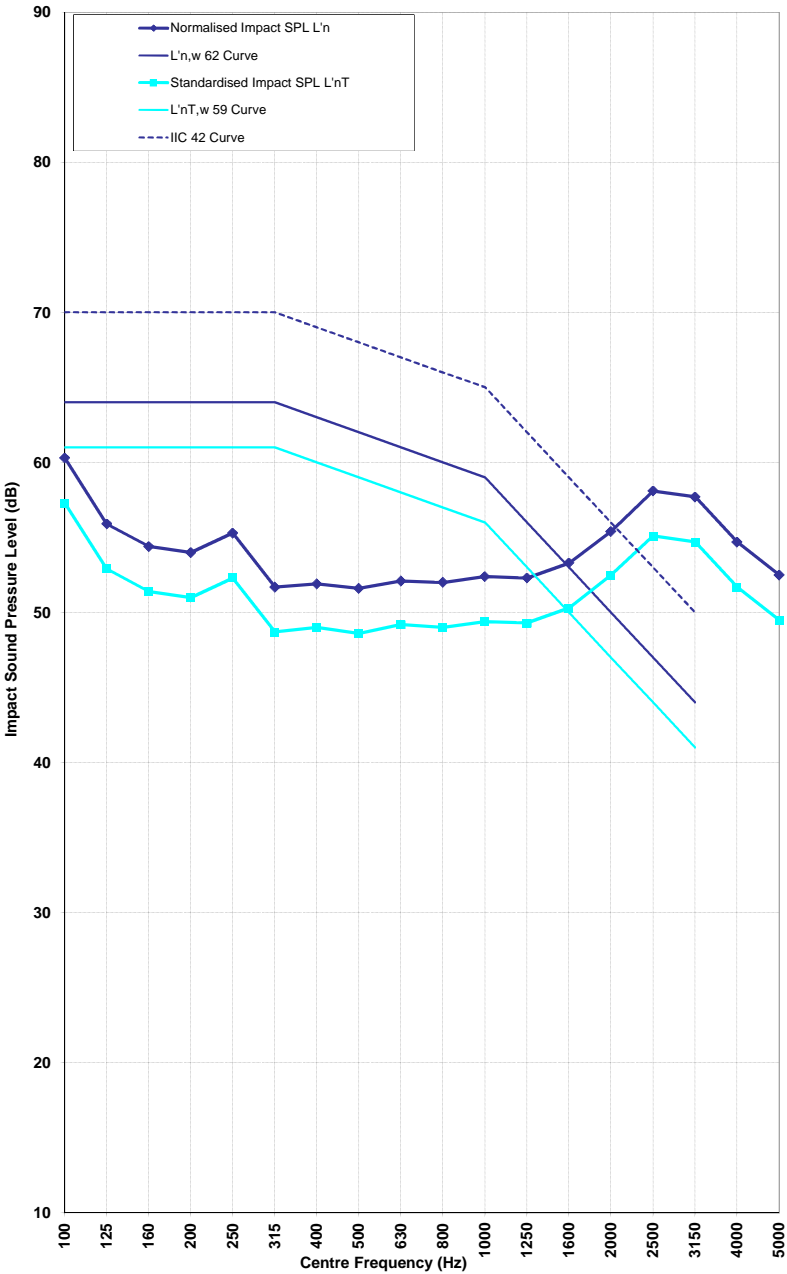
Test Date:	16/10/2014
Test Eng:	DR
Chk Eng:	PJ
No. tapper posn:	4
Tapper Location:	Apt 712- Living Area/Kitchen
Test Location:	Apt 612- Living Area/Kitchen
Revision:	FIIC Ver 23

Measurements & calculations done in accordance with	ISO 140-7 1998, ISO 717-2 1996
Where no conflict, compliance also with	ASTM E492-90, ASTM E989-89, ASTM E1007-97

Normalised Impact Insulation Class IIC	42
Weighted Normalised Impact Sound Pressure Level L'n,w (Ci)	62 (-10)
Weighted Standardised Impact Sound Pressure Level L'nT,w (Ci)	59 (-10)
Ball Drop Lav max	

Specimen description
Test in Living/Kitchen:
200mm thick Bare slab
Approximately 100mm ceiling air gap (without insulation)
10mm suspended plasterboard ceiling

Centre Frequency (Hz)	Test Specimen	Normalised Impact SPL L'n	IIC 42 Curve	Deficiencies	L'n,w 62 Curve	Deficiencies	Standardised Impact SPL L'nT	L'nT,w 59 Curve	Deficiencies	95% uncertainty Limit for L _n , ΔL _n (ASTM E492)	Criterion	Exceed
100	58.9	60.3	70		64		57.3	61			3	
125	55.5	55.9	70		64		52.9	61			3	
160	53.4	54.4	70		64		51.4	61			3	
200	54.1	54.0	70		64		51.0	61			3	
250	54.1	55.3	70		64		52.3	61			3	
315	50.3	51.7	70		64		48.7	61			3	
400	50.3	51.9	69		63		49.0	60			3	
500	49.5	51.6	68		62		48.6	59			2.5	
630	50.3	52.1	67		61		49.2	58			2.5	
800	50.4	52.0	66		60		49.0	57			2.5	
1000	51.0	52.4	65		59		49.4	56			2.5	
1250	51.0	52.3	62		56		49.3	53			2.5	
1600	52.0	53.3	59		53	0.3	50.3	50	0.3		2.5	
2000	54.0	55.4	56		50	5.4	52.5	47	5.5		2.5	
2500	56.4	58.1	53	5	47	11.1	55.1	44	11.1		2.5	
3150	56.1	57.7	50	8	44	13.7	54.7	41	13.7		2.5	
4000	53.3	54.7					51.7					
5000	51.1	52.5					49.5					
		Total	13		Total	30.5		Total	30.6			
		IIC	42		L'n,w	62		L'nT,w	59			
					Ci =	-10		Ci =	-10			



FIELD TEST REPORT - IMPACT INSULATION CLASS and IMPACT SOUND PRESSURE LEVEL

File:	TEST IN LIVING ROOM ENGINEERED TIMBER WITH UNDERLAY TA	
Receiver Room: Apt 612- Living Area/Kitchen		
Volume	61.98	m ³
Surface Area	101.58	m ²
Test Area	1.00	m ²
Humidity	70	%
Temperature	25	°C

Test Date:	16/10/2014
Test Eng:	DR
Chk Eng:	PJ
No. tapper posn:	4
Tapper Location:	Apt 712- Living Area/Kitchen
Test Location:	Apt 612- Living Area/Kitchen
Revision:	FIIC Ver 23

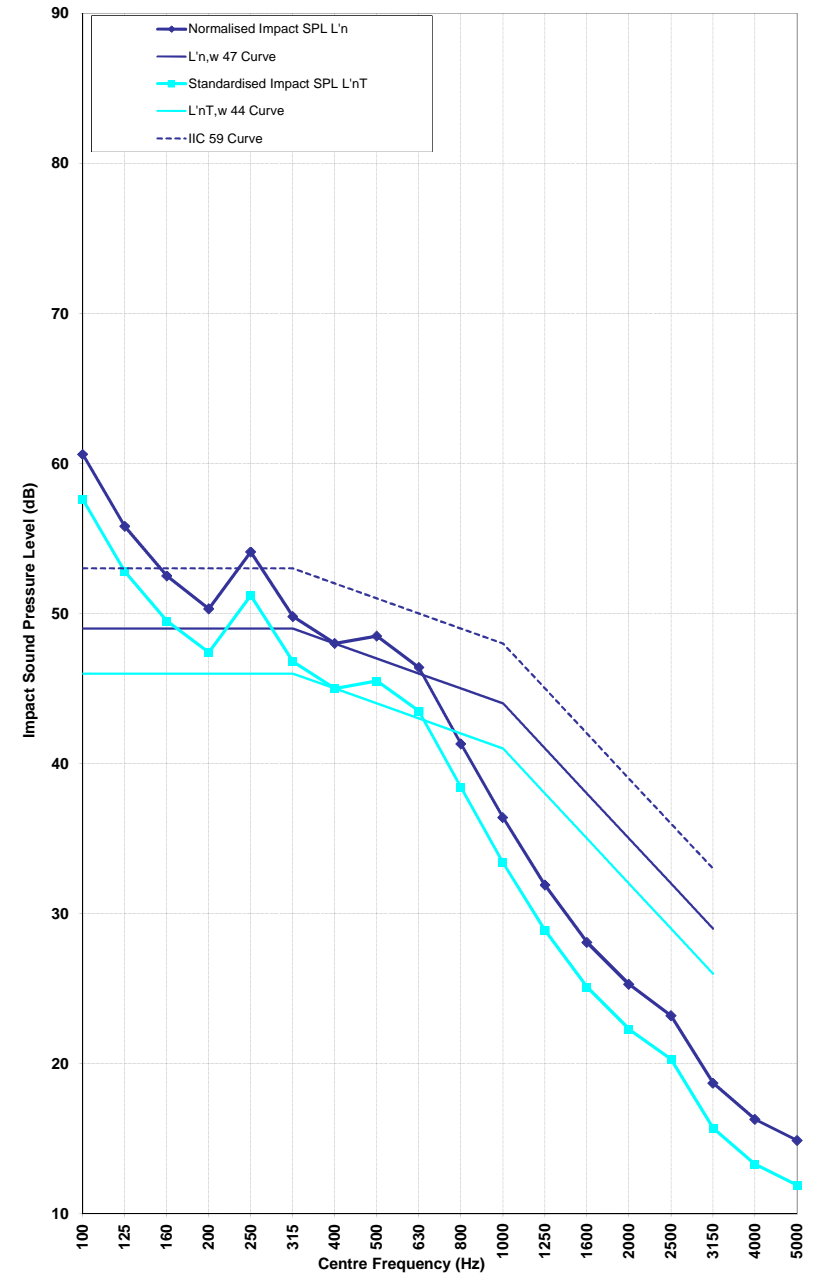
Measurements & calculations done in accordance with ISO 140-7 1998, ISO 717-2 1996
Where no conflict, compliance also with ASTM E492-90, ASTM E989-89, ASTM E1007-97

Normalised Impact Insulation Class IIC	59
Weighted Normalised Impact Sound Pressure Level L'n,w (Ci)	47 (2)
Weighted Standardised Impact Sound Pressure Level L'nT,w (Ci)	44 (2)
Ball Drop Lav max	

Specimen description

Test in Living/Kitchen:
Sample engineered floor loose-laid over 3mm Black EVA Foam underlay
200mm thick slab
Approximately 100mm ceiling air gap (without insulation)
10mm suspended plasterboard ceiling

Centre Frequency (Hz)	Test Specimen	Normalised Impact SPL L'n	IIC 59 Curve	Deficiencies	L'n,w 47 Curve	Deficiencies	Standardised Impact SPL L'nT	L'nT,w 44 Curve	Deficiencies	95% uncertainty Limit for L _n , ΔL _n (ASTM E492)	Criterion	Exceed
100	59.2	60.6	53	8	49	11.6	57.6	46	11.6		3	
125	55.3	55.8	53	3	49	6.8	52.8	46	6.8		3	
160	51.4	52.5	53		49	3.5	49.5	46	3.5		3	
200	50.5	50.3	53		49	1.3	47.4	46	1.4		3	
250	53.0	54.1	53	1	49	5.1	51.2	46	5.2		3	
315	48.4	49.8	53		49	0.8	46.8	46	0.8		3	
400	46.4	48.0	52		48	0.0	45.0	45	0.0		3	
500	46.4	48.5	51		47	1.5	45.5	44	1.5		2.5	
630	44.6	46.4	50		46	0.4	43.5	43	0.5		2.5	
800	39.7	41.3	49		45		38.4	42			2.5	
1000	35.0	36.4	48		44		33.4	41			2.5	
1250	30.6	31.9	45		41		28.9	38			2.5	
1600	26.9	28.1	42		38		25.1	35			2.5	
2000	23.8	25.3	39		35		22.3	32			2.5	
2500	21.5	23.2	36		32		20.3	29			2.5	
3150	17.1	18.7	33		29		15.7	26			2.5	
4000	14.9	16.3					13.3					
5000	13.5	14.9					11.9					
Total				12	Total	31.0		Total	31.3			
				IIC		59		L'n,w	47			
								Ci=	2			
								L'nT,w	44			
								Ci=	2			



APPENDIX B Glossary of Terminology

A1 Introduction

There is no procedure specified in the BCA or in Australian Standards for the testing of floor and ceiling systems. In the absence of such provisions the testing procedure adopted is derived from the following standards;

- International Standard ISO 140-7 "Field measurements of impact sound insulation of floors";
- International Standard ISO 717-2 "Impact sound insulation";

A2 Test Procedure

Tests were conducted according to the following procedure;

1. Before impact testing, it was established that there were no significant airborne flanking paths between the source and receiver rooms.
2. A standard tapping machine generating impact sound was placed in four different positions on the floor in accordance with ISO Standards indicated above.
3. While the tapping machine was operating, space and time averaged noise levels were recorded over a one minute period in the receiving room for each of the four tapping machine positions using the Nor140 sound level meter. The measured noise level was filtered simultaneously in all one-third octave frequency bands in real time. These values were recorded and subsequently statistically analysed to determine the average sound pressure levels for each room and to indicate the precision of the measurements.
4. The reverberation time of the receiving room was measured using the in-built software in the Nor140 instrument, using a balloon burst as the noise source and recording the decays in each one-third octave band.
5. The volume of the receiving room was measured and used along with the reverberation times to calculate the equivalent sound absorption area in accordance with the Code.

A3 Instrumentation and Analysis

The sound level meter has been calibrated to Australian Standards by a certified NATA laboratory. Further to this, a calibration was conducted prior to and subsequent to the measurements using a Bruel & Kjaer Type 4230 Acoustic calibrator. The sound level meter conforms to a Type 1 instrument as defined in AS 1259 - 1990 "Sound Level Meters".

The impact isolation of the specimen was then calculated using the following relationship;

$$L'_n = L_i + 10 \log (A/A_o)$$

$$L'_n T = L_i - 10 \log (T/T_o)$$

Where;

L_i = Impact Sound Pressure Level receiver room dB

A = Measured equivalent absorption area of the receiving room metric Sabines (m^2)

A_o = Reference equivalent absorption area ($10 m^2$) metric Sabines (m^2)

T = Measured reverberation time of the receiving room (sec)

T_o = Reference reverberation time (0.5 sec)

The Weighted Normalised Impact Sound Pressure Level $L'_{n,w}$, the Weighted Standardised Impact Sound Pressure Level $L'_{nT,w}$ and the adaptation term CI were determined in accordance with ISO 717-2.

Document Control

Date	Revision History	Non-Issued Revision	Issued Revision	Prepared	Instructed	Authorised
24/10/2014	Final	-	0	DR	PJ	PJ

The work presented in this document was carried out in accordance with the Renzo Tonin & Associates Quality Assurance System, which is based on Australian Standard / NZS ISO 9001.

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