



NGC

Testing Services"

Acoustical Testing Laboratory



Accredited by the National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code 200291

TEST REPORT

For

Trademark International Marketing

20665 93rd Avenue Langley, B.C.
Canada V1M 2W8

Impact Sound Transmission Test

ASTM E 492 - 04 / ASTM E 989 - 06

On

**5/8 Oak Engineered Wood Flooring floated over
Trademark International Solid Sound Plus 0.08 Inch Denim Blue Underlayment on
Frame construction floor with Suspended Gypsum Board Ceiling**

Report Number: NGC 7007138

Assignment Number: G-357

Test Date: 11/23/2010

Report Date: 12/11/2010

Submitted by:

Craig G. Cooper
Test Engineer

Reviewed by:

The results reported above apply to specific samples submitted for measurement.

No responsibility is assumed for performance of any other specimen.

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Report Number: NGC 7007138

Test Method: This test method is in accordance with American Society for Testing and Materials Standard Test Method for Laboratory Measurement of Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine - Designation: E 492 - 04 / E 989 - 89. The uncertainty limits of each tapping machine location met the precision requirements of section 11.3 of ASTM E 492-04.

Specimen Description: 5/8 Oak Engineered Wood Flooring over Trademark International! Solid Sound Plus Underlayment, with suspended grid ceiling system and 5/8 in. gypsum board ceiling. The test specimen was a floor-ceiling assembly consisting of the following:

- 1 layer of 1860mm x 189mm x 14mm (73-1/4 in. x 6 in. x 5/8 in.) Oak Engineered wood flooring.
 - 1 layer of 1.9mm (0.075 in.) Trademark International Solid Sound Plus 0.08 in. Denim Blue underlayment The sample weight was measured to be 0.097kg/m² (0.02 PSF). The sample was blue foam-like material. The seams were butted together with overlap.
 - 32mm (1-1/4 in.) thick gypsum cement leveling compound
 - 5/8 in OSB standard subfloor grade decking, overlaying Engineered truss on 18 in centers
 - 88.9mm (3-1/2 in.) fiberglass unfaced batt insulation. Sample weight was 0.68 kg/m² (0.23 PSF). The insulation was laid over the suspended grid system parallel with the Main Tee's.
 - Gypsum board ceiling grid suspension system is comprised of Main Tee's and Cross Tee's. The Main Tee's were placed 1218mm (48 in.) on center and the Cross tee's were placed 609mm (24 in.) on center. 16 gauge galvanized tie wire was used to attach the Main Tee's to anchors, located 1219mm (48 in.) o.c. along the longitudinal axis, suspending the grid 305mm (12 in.) below the trusses.
 - 1 layer of 15.9mm (5/8 in.) Type X gypsum board. Sample was observed to be 15.7mm (0.632 in.) thick and weighed 11.2 kg/m² (2.3 PSF). The board was attached 304.8mm (12 in.) o.c. perpendicular to suspended grid suspension system mains, using 31.8mm (1-1/4 in.) type S bugle head drywall screws. The board joints were taped.
- The overall weight of the test assembly is 186.0 kg/m²

The perimeter of the construction was sealed with rubber gasketing and a sand filled trough. The test assembly is structurally isolated from the receiving room. Specimen size: 3658mm x 4877mm (12 ft x 16 ft.)

Conditioning: Gypsum slab cured for a minimum of 28 days.

Test Results: The results of the tests are given on pages 3 and 4.

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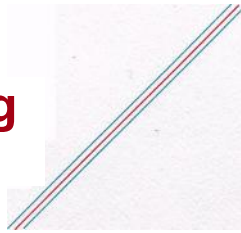
Normalized impact sound pressure level						
Test: ASTM E 492 - 04 / ASTM E 989 - 89						
Page 3 of 4 Test Number: NGC70071 38				Date: 11/23/2010		
Size: 17.84 m ²						
Source room Volume V = 60.0 m ³ Temperature [°C]: 21 .6 Humidity [%]: 56			Receiving room Temperature [°C]: 21.0 Humidity [%]: 53			
Impact Insulation Class IIC = 75 dB Sum of unfavorable deviations: 27.0 dB Max. unfavorable deviation: 7.0 dB at 250 Hz						
Frequency	L _n	L ₂	T	Corr.	u.Dev.	AL _n
[Hz]	[dB]	[dB]	[s]	[dB]	[dB]	
100 125 160	50.0 44.0 46.0	53.7 48.4 51.5	2.03 2.40 3.07	-3.7 , -4.4 - 5.5	5.0 1.0	0.134 0.188 0.155
200 250 315	45.0 52.0 50.0	49.6 57.3 55.0	3.03 3.20 3.17	-4.6 -5.3 -5.0	7.0 5.0	0.113 0.126 0.083
400 500 630	45.0 41.0 39.0	49.8 45.8 43.5	3.05 2.84 2.65	-4.8 -4.8 -4.5	1.0	0.077 0.067 0.061
800 1000 1250	36.0 34.0 35.0	40.6 38.4 38.4	2.69 2.54 2.29	-4.6 -4.4 -3.4	-.	0.051 0.044 0.051
1600 2000 2500	34.0 33.0 31.0	37.0 35.4 33.6	2.14 1.88 1.73	-3.0 -2.4 -2.6	2.0 3.0	0.043 0.037 0.044
3150 4000 5000	28.0 25.0 20.0	30.7 26.4 21.3	1.63 1.46 1.30	-2.7 -1.4 -1.3	3.0	0.036 0.040 0.038
L _n = Normalized Sound Pressure Level, dB L ₂ = Receiving Room Level, dB T = Reverberation Time, seconds AL _n = Uncertainty for 95% Confidence Level						

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TEST REPORT

For

Trademark International Marketing
20665 93rd Avenue Langley, B.C.
Canada V1M 2W8

Sound Transmission Loss Test
ASTME90-04/E413-04
On

**5/8" Oak Engineered Wood Flooring Float installed over
Trademark International Solid Sound Plus Denim Blue Underlayment on
Frame construction floor with Suspended Gypsum Board Ceiling**


Report Number: NGC 5007075

Assignment Number: G-357

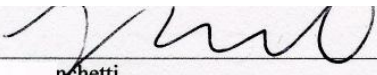
Test Date: 11/24/2010

Report Date: 12/11/2010

Submitted by:



Reviewed by:



pchetti

The results reported above apply to specific samples submitted for measurement.
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Test Method: This test method conforms explicitly with the American Society for Testing and Materials
Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of
Specimen Description: Building Partitions and Elements - Designation: E 90 - 04 / E 413 - 04.

5/8" Oak Engineered Wood Flooring over Trademark International Solid Sound Plus Underlayment, with suspended grid ceiling system and 5/8 in. gypsum board ceiling.

The test specimen was a floor-ceiling assembly consisting of the following:

- 1 layer 5/8" Oak Engineered wood flooring. The sample thickness was measured to be 14.3mm (0.562 in.) The sample weight was 7.37 kg/m² (1.51 PSF).
- 1 layer of 2.0mm (0.08 in.) Trademark International Solid Sound Plus Denim Blue underlayment The sample weight was measured to be 0.097kg/m² (0.02 PSF). The sample was a blue foam-like material. The seams were butted together with overlay.
- 1-1/8" Gypcrete leveling compound layer, over 5/8" OSB sub-flooring
- 88.9mm (3-1/2 in.) fiberglass unfaced batt insulation. Sample weight was 0.68 kg/m² (0.23 PSF). The insulation was laid over the suspended grid system parallel with the Main Tee's.
- Gypsum board ceiling grid suspension system . The Main Tee's were placed 1218mm (48 in.) on center and the Cross tee's were placed 609mm (24 in.) on center. 16 gauge galvanized tie wire was used to attach the Main Tee's , located 1219mm (48 in.) o.c. along the longitudinal axis, suspending the grid 305mm (12 in.) below the trusses.
- 1 layer of 15.9mm (5/8 in.) Type X gypsum board.. The board was attached 304.8mm (12 in.) o.c. perpendicular to suspended grid suspension system mains, using 31.8mm (1-1/4 in.) type S bugle head drywall screws. The board joints were taped.

The overall weight of the test assembly is 186.0 kg/m² .

The perimeter of the concrete slab was sealed with rubber gasketing and a sand filled trough. The test assembly is structurally isolated from the receiving room. 3658mm x 4877mm (12 ft x 16 ft.) Gypsum slab cured for a minimum of 28 days. The results of the tests are given on pages 3 and 4.

The results reported above apply to specific samples submitted for measurement.

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Sound Transmission Loss Test Data

Test: ASTM E 90-04 1 ASTM E 413 - 04

No. of test report: NGC5007075
Size: 17.8m²

Date: 11/24/2010

Source room

Volume V = 53.2 m³
Temperature [°C]: 21.1
Humidity [%]: 56

Receiving room

Volume V = 60.0 m³
Temperature [°C]: 21.7
Humidity [%]: 53

Sound Transmission Class STC = 73 dB

Sum of unfavorable deviations: 28.0 dB

Max. unfavorable deviation: 6.0 dB at 200 Hz

<u>Frequency</u> <u>[Hz]</u>	<u>STL</u> <u>[dB]</u>	<u>L1</u> <u>[dB]</u>	<u>L2</u> <u>MBI</u>	<u>[s]</u>	<u>Corr.</u> <u>[dB]</u>	<u>u.Dev.</u> <u>[dB]</u>	<u>ASTL</u>
100	47.	101.4	60.1	2.0	5.7		1.19
125	0	98.5	55.	3	6.5	1.	6
160	49.	106.	5	2.4	7.5	0	0.74
200	50.	99.4	57.	3.0	7.5	6.0	0.70
250	0	103.2	0	3	7.7	6.0	7
315	53.	102.	57.	3.2	7.7	5.0	0.40
400	59.	101.3	49.	3.0	7.5	6.0	0.66
500	0	100.6	8	5	7.2	2.0	3
630	64.	98.5	43.	2.8	6.9	1.0	0.458
800	69.	97.	35.	2.6	7.0		0.30
1000	0	5	3	9	6.7		0
1250	73.	98.	31.	2.5	6.3		0.60
1600	77.	99.1	27.	2.1	6.0		0.20
2000	0	98.	9	4	5.4		0
2500	77.	8	26.	1.88	5.0		0.17
3150	79.	98.	24.	1.63	4.8		0.200
4000	0	8	5	1.4	4.3		0.24
5000	82.	99.	22.	6	3.8		5

STL = Sound Transmission Loss, dB

L1 = Source Room Level, dB

L2 = Receiving Room Level, dB

T = Reverberation Time, seconds

STL = Uncertainty for 95% Confidence Level

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STC & IIC - “What they mean”

IIC - ‘Impact Insulation Class’ STC - ‘Sound Transfer Class’

Test Descriptions:

1. IIC - Lab tests used to measure sound absorption of whole floor systems
2. STC – test used to measure sound absorption primarily of Partition systems .

Both are quoted in marketing claims related to Sound Suppression membranes despite neither test relates to a single component of the system but rather, the entire system - wall or floor structure. These are therefore useful as a guide, however should not be expected to be met in every instance of service.

Technique: - Flooring structures are built between two reverberation rooms, acoustically isolated from each other by all but the test section and isolated from outside ambient noise by acoustically engineered walls. A “tapping machine” is used to create sound in the ‘source room’ directly on the floor’s surface (IIC) and above the floor’s surface (STC). Sound transfer through the floor system is then measured (db) in a ‘receiving room’ beneath the floor system.

Results: - Vary considerably depending on how well the structure and components work together to limit sound transfer.

How well does *Solid Sound Plus* work ?

- IIC/STC 75 / 73 were reported in tests of floor systems constructed similarly to those in use where these measurements are critical or part of code requirements. These involved the use of Engineered all wood flooring, *Solid Sound Plus* , Gypcrete leveling material, OSB Sub-floor, wood truss joists, insulation between framing, resilient channels (hanging system), vapor barrier, and 5/8”drywall ceiling. This cross section is common in several parts of Canada, in construction of 2 – 5 Floor frame construction buildings, where the product is often installed.

In practice – where builders construct in the above manner test validity results.

What is truly important considering *Solid Sound Plus* ?

Most people use *SS+* to reduce the hollow, ‘reflected’ sound commonly experienced with lower quality foams used beneath ‘floated’ floors.

This is particularly noticeable with HDF core products (commonly plastic laminate flooring)

Solid Sound test data is available for other common construction configurations. Call our sales team for data applicable to your floor structure / configuration, flooring type and installation technique.