

TEST REPORT

for

PINA S.A.

Carretera de Teruel km 98
Fuentes – CUENCA, Spain 16193
Jose Luis Pineda / 34 926 569 710

Impact Sound Transmission Test

ASTM E 492 – 09 (2016)e1 / ASTM E 989 – 18

On

**6 Inch (152 mm) Concrete Slab Floor- Ceiling Assembly
Overlaid with 8 mm Laminate Flooring and DMX 1-Step 2.0 Underlayment
With a Suspended-Gypsum Board Ceiling
With 3-1/2 Inch Fiberglass Insulation**

Report Number: NGC 7020015

Assignment Number: G-1668

Test Date: 01/21/2020

Report Date: 02/03/2020

Submitted by:


Anthony J. Rivers
Test Technician

Reviewed by:


Robert J. Menchetti
Director

The results reported above apply to specific samples submitted for measurement. No responsibility is assumed for performance of any other specimen. The laboratory's accreditation or any of its test reports in no way constitute or imply product certification, approval, or endorsement by NVLAP, NIST or any agency of the Federal Government. This report may not be reproduced except in full, without written approval of the laboratory.

Revision Summary:

| Date | SUMMARY |
|---------------------------|---|
| Approval Date: 02/03/2020 | Original issue date: 02/03/2020 Original NGCTS report: NGC 7020015 |

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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 492-09 (2016)e1 / E 989-18.

The uncertainty limits of each tapping machine location met the precision requirements of section A1.4 of ASTM E 492-09 (2016).

Specimen Description: 6 inch concrete slab floor suspended ceiling assembly overlaid with, according to client, Step & Wall Natural Superior Oak Flooring.

The test specimen was a floor assembly and was observed to consist of the following:
All weights and dimension are averaged:

- 1 layer of, according to the client, Step & Wall Natural Superior Oak Flooring. The flooring was floating on the concrete slab. Measured average thickness: 11.68 mm (0.46 in.). Measured average weight: 8.97 kg/m² (1.84 PSF)
- 152.4 mm (6 in.) thick reinforced concrete slab, weighing: 366.2 kg/m² (75.00 PSF)
- 1 layer of, 88.9 mm (3-1/2 in.) unfaced fiberglass batt insulation which was laid over the suspended grid system parallel to the main tees. Sample weight: 0.78 kg/m² (0.16 PSF)
- Gypsum wallboard ceiling grid suspension system. System is comprised of main tees and cross tees. The main tees were placed 1219.2 mm (48 in.) o.c. and the cross tees were placed 609.6 mm (24 in.) o.c. 16 gauge galvanized tie wire was used to attach the main tees to concrete anchors, located 1219.2 mm (48 in.) o.c. along the longitudinal axis, suspending the grid 304.8 mm (12 in.) below the concrete slab.
- 1 layer of, 15.9 mm (5/8 in.) Type X gypsum wallboard. The wallboard was attached parallel to the suspended grid suspension system mains, using 28.6 mm (1-1/8 in.) Type S drywall screws spaced 304.8 mm (12 in.) o.c. The wallboard joints were taped. Suspended gypsum wallboard grid ceiling weighed: 11.23 kg/m² (2.30 PSF)

The overall weight of the test assembly is: 387.14 kg/m² (79.30 PSF)

The perimeter of the test frame was sealed with a rubber gasket and a sand filled trough.

The test frame was structurally isolated from the receiving room.

Specimen size: 3657.6 mm x 4876.8 mm (12 ft. x 16 ft.)

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

Test Results: The results of the tests are given on pages 4 and 5 of the report.

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| Normalized impact sound pressure level | | | | | | |
|--|----------------|------|-------------------------------|-------|-----------------|-----------------|
| Test: ASTM E 492 - 09 (2016) / ASTM E 989 - 18 | | | | | | |
| Test Report: NGC7020015 | | | | | Date: 1/21/2020 | |
| Specimen Size [m ²]: 17.8 | | | | | Page 4 of 5 | |
| Source room | | | Receiving room | | | |
| Rm Temp [°C]: 25 | | | Volume [m ³]: 124 | | | |
| Humidity [%]: 50 | | | Rm Temp [°C]: 22 | | | |
| | | | Humidity [%]: 53 | | | |
| Impact Insulation Class IIC [dB]: 65 | | | | | | |
| Sum of Unfavorable Deviations [dB]: 14 | | | | | | |
| Max. Unfavorable Deviation [dB]: 8 | | | at 125 Hz | | | |
| Frequency | L _n | L2 | d | Corr. | u.Dev. | ΔL _n |
| [Hz] | [dB] | [dB] | [dB/s] | [dB] | [dB] | |
| 80 | 53 | 53.5 | 28.79 | -0.5 | | 3.30 |
| 100 | 46 | 46.6 | 24.73 | -0.6 | | 1.56 |
| 125 | 55 | 57.2 | 20.71 | -2.2 | 8 | 2.26 |
| 160 | 52 | 53.9 | 18.46 | -1.9 | 5 | 0.79 |
| 200 | 48 | 51.1 | 15.69 | -3.1 | 1 | 0.70 |
| 250 | 47 | 50.3 | 15.85 | -3.3 | | 1.13 |
| 315 | 45 | 47.9 | 15.61 | -2.9 | | 0.56 |
| 400 | 43 | 45.7 | 16.38 | -2.7 | | 0.35 |
| 500 | 41 | 43.5 | 17.17 | -2.5 | | 0.34 |
| 630 | 37 | 39.6 | 17.55 | -2.6 | | 0.30 |
| 800 | 29 | 31.6 | 18.56 | -2.6 | | 0.22 |
| 1000 | 24 | 27.1 | 17.97 | -3.1 | | 0.28 |
| 1250 | 19 | 22.6 | 18.80 | -3.6 | | 0.19 |
| 1600 | 16 | 19.5 | 20.32 | -3.5 | | 0.20 |
| 2000 | 15 | 17.6 | 23.75 | -2.6 | | 0.26 |
| 2500 | 15 | 17.2 | 25.99 | -2.2 | | 0.35 |
| 3150 | 11 | 13.1 | 27.57 | -2.1 | | 0.36 |
| 4000 | 10 | 11.7 | 30.93 | -1.7 | | 0.34 |
| 5000 | 9 | 10.4 | 34.86 | -1.4 | | 0.31 |
| L _n = Normalized Sound Pressure Level, dB L2 = Receiving Room Level, dB d = Decay Rate, dB/second ΔL _n = Uncertainty for 95% Confidence Level | | | | | | |

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Normalized impact sound pressure level

Test: ASTM E 492 - 09 (2016) / ASTM E 989 - 18

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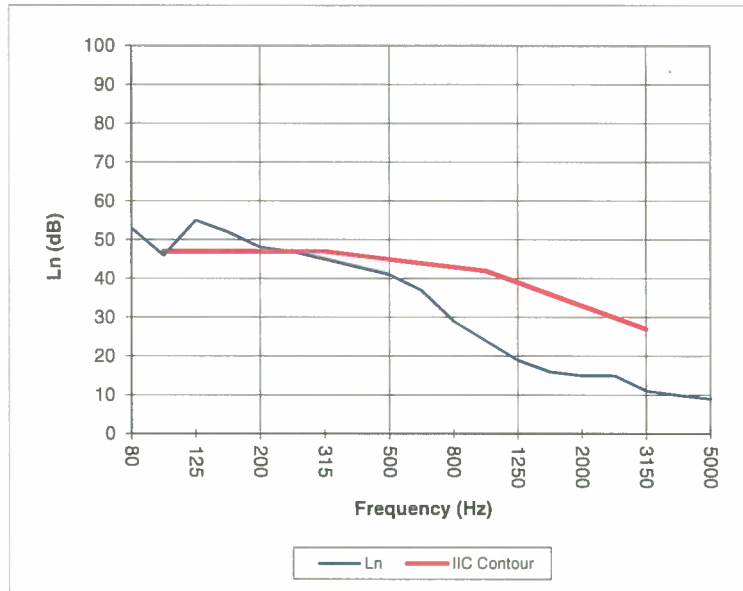
Test Report: NGC7020015

Test Date: 1/21/2020

Specimen Size [m²]: 17.8

Impact Insulation Class IIC [dB]: 65

| Frequency [Hz] | L _n [dB] |
|-------------------|------------------------|
| 80 | 53 |
| 100 | 46 |
| 125 | 55 |
| 160 | 52 |
| 200 | 48 |
| 250 | 47 |
| 315 | 45 |
| 400 | 43 |
| 500 | 41 |
| 630 | 37 |
| 800 | 29 |
| 1000 | 24 |
| 1250 | 19 |
| 1600 | 16 |
| 2000 | 15 |
| 2500 | 15 |
| 3150 | 11 |
| 4000 | 10 |
| 5000 | 9 |



* Due to high insulating value of specimen, background levels limit results at these frequencies.

L_n = Normalized Sound Pressure Level, dB

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