505 W 43rd Street

FIIC Testing and Analysis

Prepared For: Rony Attia
El Ad US Holding, Inc.
575 Madison Avenue

New York NY 10022

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404 Fifth Avenue New York NY 10018 212 370 1776 ceramiassociates.com

We conducted acoustical testing in the afternoon of August 10th, 2018 at 505 West 43rd Street, New York, NY to determine the level of acoustic isolation provided by a new flooring between vertically adjacent residential units.

1.0 ACOUSTICAL TERMINOLOGY AND CRITERIA

The following summarizes the acoustical terminology and criteria applicable to this project:

1.1 Impact Insulation Class, IIC

The ability of a building floor/ceiling construction to control impact sound (sound due to footsteps, dragged furniture, dropped objects, etc.) is typically measured using a standardized "tapping machine" to generate impact noise in the test sample. By tapping on the floor surface and measuring the resultant noise levels in the space below, a single number performance rating called Impact Insulation Class (IIC) can be derived. An IIC rating, by definition, is calculated from laboratory data. Results of testing conducted outside of a laboratory are denoted as Field Impact Insulation Class (FIIC). A higher rating corresponds to more sound separation.

Applicable Test Standards

Airborne and Impact noise testing and analysis were conducted in general accordance with the following standards:

- **ASTM E1007**: Standard Test Method for Field Measurement of Tapping Machine Impact Sound Transmission Through Floor-Ceiling Assemblies and Associated Support Structures,
- **ASTM E989**: Standard Classification for Determination of Impact Insulation Class (IIC),
- **ASTM E2235**: Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods.

The measurements were conducted using a NTI XL2 type 1 sound level meter and a Norsonic Nor277 Tapping machine.

1.2 New York City Building Code

Section 1207.3 of the New York City Building Code requires that demising floor/ceiling assemblies between dwelling units or between a dwelling unit and a public or service area stair, exterior mechanical equipment, or other mechanical equipment space, including boiler rooms, shall be constructed of assemblies having an impact insulation class (IIC) rating of not less than 50 based upon laboratory measurements made in accordance with ASTM E 492, or an field impact insulation class (FIIC) not less than 45 when field tested in accordance with ASTM E 1007 in completed construction.

2.0 MEASUREMENT RESULTS AND DISCUSSION

Field IIC testing took place at 505 West 43rd Street on August 10th, 2018. The goal of this test was to quantify the impact performance of a rubber underlayment which may be incorporated into the 'Smartwood Engineered' flooring system of the residential units in the building. Testing of the bare slab was included for reference.

Two 48"x48" sections of new 'Smartwood Engineered' flooring were constructed on the third floor for the purposes of this test as a mock-up. The first is 'Smartwood Engineered' system with a 3mm Oak veneer over a 12mm Stone composite core for a total thickness of 15mm. This is installed over Smart-step adhesive using a B-12 Trowel. The second is 'Smartwood Engineered' system with a 3mm Oak veneer over a 12mm Stone

composite core with a pre-attached 3mm acoustical sound layer for a total thickness of 18mm. This is also installed over Smart-step adhesive using a B-12 Trowel.

These floor samples were placed on the floor directly above the field office, located on the second floor. The slab thickness between the second and 3rd floors is 8" with no suspended ceiling in the 2nd floor Field Office. The field office was chosen to control the environment for the measurement location.

Results from the FIIC testing are provided in Table 1:

Table 1: FIIC Test Results

Sample Construction	***FIIC Rating***	***FIIC Criteria***
Bare Slab	FIIC-40	FIIC-45
'Smartwood Engineered' Flooring without underlayment	FIIC-54	
'Smartwood Engineered' Flooring with underlayment	FIIC-55	

Measurements confirm that the vertical noise isolation in areas containing 'Smartwood Engineered' flooring are within New York City Building Code requirements for IIC for the 'Smartwood Engineered' flooring both with and without the rubber underlayment. This underlayment improves the performance of the floor system by 1 point.

This concludes our report at this time. Should you have any questions, comments, or concerns please do not hesitate to contact us.

Best Regards,

Michael K Sands
Associate

cc: Justin Lau / Cerami
Shawn Alderson / Cerami

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