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Under NVLAP Lab Code 100402-0.

Intertek  
3933 U.S. Rt. 11  
Cortland, NY 13045  
Phone: 607-753-6711  
Fax: 607-758-6506

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**REPORT NO. 3058029-006**

**IMPACT SOUND TRANSMISSION TEST  
AND CLASSIFICATION OF CERAMIC TILES OVER  
CERA SILENCE UNDERLAYMENT  
ON A FLOOR/CEILING ASSEMBLY**

**RENDERED TO**

**SOUND SEAL  
PO BOX 545  
AGAWAM, MA 01001**

**INTRODUCTION**

This report gives the results of an Impact Sound Transmission test on Ceramic Tiles over Cera Silence underlayment. The underlayment was selected and supplied by the client and received at the laboratories on April 9, 2004. The sample appeared to be in new, unused condition upon arrival.

**AUTHORIZATION**

Purchase Order No. 8611 from Sound Seal.

**TEST METHOD**

The specimen was tested in accordance with the American Society for Testing and Materials designations ASTM E492-90 (Reapproved 1996), "Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine". It was classified in accordance with ASTM E989-89 (Re-approved 1999), entitled, "Standard Classification for Determination of Impact Insulation Class (IIC)".

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## **GENERAL**

The method is designed to measure the impact sound transmission performance of a floor-ceiling assembly, in a controlled laboratory environment. A standard tapping machine (B & K Type 3204) was placed at four positions on a test floor that forms the horizontal separation between two rooms, one directly above the other. The data obtained was normalized to a reference room absorption of 10 square meters in accordance with the test method.

The standard also prescribes a single-figure classification rating called “Impact Insulation Class, IIC” which can be used by architects, builders and code authorities for acoustical design purposes in building construction.

The IIC is obtained by matching a standard reference contour to the plotted normalized one-third octave band sound pressure levels at each test frequency. The greater the IIC rating, the lower the impact sound transmission through the floor-ceiling assembly.

## **DESCRIPTION OF THE FLOOR/CEILING ASSEMBLY**

The test floor is a 100 sq. ft. opening that forms the horizontal separation of the two rooms, one directly above the other. The structural members are open webbed wood floor trusses, 16 inches deep installed 24 inches on center. The sub flooring is 5/8 inch thick tongue and groove plywood. The bridging is a continuous 2 x 4 nailed to the bottom chord and the sides of the diagonals with 2 inch long nails. Single leaf RC-1 resilient channels (2 ½ inch x ½ inch) were spaced 16 inches on center and attached to the bottom chord by screws. The insulation is 5 1/2 inches cellulose with a density of 1.6 pcf. The ceiling is gypsum board, 5/8 inches thick, with the long edges located between the joists perpendicular to the resilient channels. Short edges are staggered by 4ft. Sheets are fastened to the resilient channels by means of 1 1/2 inch screws located 1/2 inch away from the edge and 3 inches from the long edges; screws are spaced 6 inches on center. Joints are taped and finished with two layers of compound.

The topping over the tongue and groove plywood sub-floor is 1 ½ inches of lightweight concrete.



**DESCRIPTION OF TEST SPECIMEN****Cera Silence over wood construction**

Specimen Description: Floating Engineered Hardwood floor covering over Impacta Cera Silence underlayment installed over wood construction.

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

1 layer of 12" x 12" x ¼" thick ceramic tiles

1 layer of Latex Modified Thin Set mortar

1 layer of 25m (0.99") thick Cera Silence pressed fibrous bottom board wood fiber cement top board underlayment panels composite underlayment.

1 layer of 4 mil plastic sheeting

Specimen Size: 8' x 8'

The description of the test specimen was supplied by the client.

**RESULTS OF TEST**

The data obtained in the room below the panel normalized to  $A_o = 10$  square meters, is as follows:

1/3 Octave Band Center Frequency Hz	<u>1/3 Octave Band Sound Pressure Level dB re 0.0002 Microbar</u>
100	61
125	60
160	60
200	60
250	60
315	59
400	58
500	55
630	51
800	46
1000	43
1250	41
1600	38
2000	37
2500	35
3150	29
Impact Insulation Class (IIC)	56

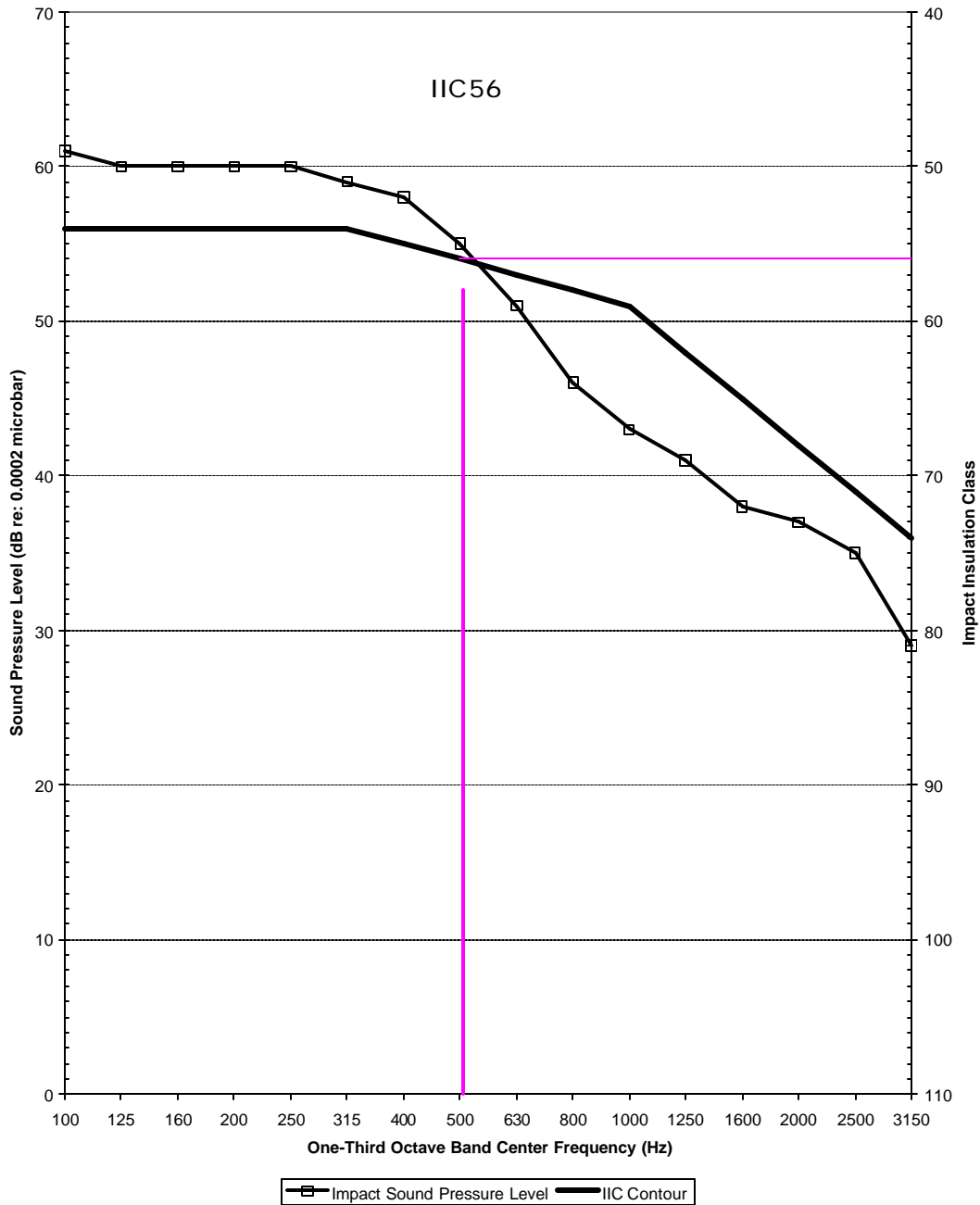
**PRECISION**

The 95% uncertainty level for each tapping machine location is less than 3 dB for the 1/3 octave bands centered in the range from 100 to 400 Hz and less than 2.5 dB for the bands centered in the range from 500 to 3150 Hz.



**CERAMIC TILE OVER CERA SILENCE UNDERLAYMENT**

Impact Insulation Class



**SOUND SEAL**



**REMARKS**

1. Curing Period: 24 hour for mortar
2. Ambient Temperature: 70 °F
3. Relative Humidity: 33%

**CONCLUSION**

The test method employed for this test has no pass-fail criteria, therefore, the evaluation of the test results is left to the discretion of the client.

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

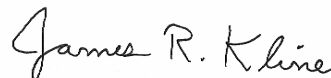
Date of Test: April 15, 2004

Report Approved By:



James H. Nickelsen  
Senior Project Engineer  
Acoustical Testing

Report Reviewed By:



James R. Kline  
Associate Engineer  
Acoustical Testing