

# REPORT

3933 US ROUTE 11 CORTLAND, NEW YORK 13045

Order No. 100201196

Date: September 16, 2010

REPORT NO. 100201196CRT-001a

**IMPACT SOUND TRANSMISSION TEST AND CLASSIFICATION  
OF CERAMIC TILE OVER  
DB-4LOORING PRO UNDERLAYMENT  
OVER SIX INCH CONCRETE SLAB WITH A DROP CEILING**

**RENDERED TO**

**UNITED PLASTICS CORP.  
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511 HAY STREET  
MOUNT AIRY, NC 27030**

## INTRODUCTION

This report gives the results of an Impact Sound Transmission test on ceramic tile over dB-4LOORING PRO. The sample was selected and supplied by the client and received at the laboratories on August 26, 2010. The sample appeared to be in new, unused condition upon arrival.

## AUTHORIZATION

Intertek Quote No. 500253738.

## TEST METHOD

The floor system was tested in general accordance with the American Society for Testing and Materials designation ASTM E492-09, "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 E989-06, entitled, "Standard Classification for Determination of Impact Insulation Class (IIC)".

## **GENERAL**

The test method is designed to measure the impact sound transmission performance of a floor-ceiling assembly, in a controlled laboratory environment. A standard tapping machine (Bruel & Kjaer Type 3207) was placed at four positions on the 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.

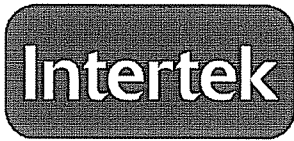
The IIC is obtained by matching a standard reference contour to the plotted normalized one-third octave band sound pressure levels at each test frequency. The greater the IIC rating, the lower the impact sound transmission through the floor-ceiling assembly.

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

The floor/ceiling assembly system consisted of a 6 inch thick concrete floor with a drop ceiling below forming the horizontal separation between two rooms, one directly above the other. The drop ceiling consisted of 14 inch deep steel bar joists spaced 38 inches on center. The ceiling construction consisted of 2 x 4 inch wood bolted to the bar joists. The 2 x 4 inch wood was spaced 24 inches on center. Resilient channels (1/2 inch single leaf) were positioned on 16 inch centers between the furring strips and the 1/2 inch gypsum board. Sound attenuation batts (U.S.G. Thermofiber), four (4) inches in thickness were placed between the joists in the formed cavity. The receiving room below measured 1440 cubic feet.

## **DESCRIPTION OF TEST SPECIMEN**

The test specimen consisted of ceramic tile over dB-4LOORING PRO underlayment. The underlayment was a composition of EVA and needle fiber (recycled). The underlayment was 0.28 inches thick and weighed 1.04 lbs/sq. ft. The underlayment was installed with the rubber side facing down and the flooring installed onto the fiber side. The tile was thin set to the underlayment and grouted.



**RESULTS OF TEST**

The data obtained in the room below the panel normalized to  $A_0 = 10$  square meters, is as follows:

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<u>1/3 Octave Band Center Frequency Hertz</u>	<u>1/3 Octave Band Sound Pressure Level dB re 0.0002 Microbar</u>
100	64
125	62
160	57
200	58
250	59
315	61
400	61
500	62
630	61
800	57
1000	47
1250	48
1600	45
2000	44
2500	42
3150	38
Impact Insulation Class (IIC)	53

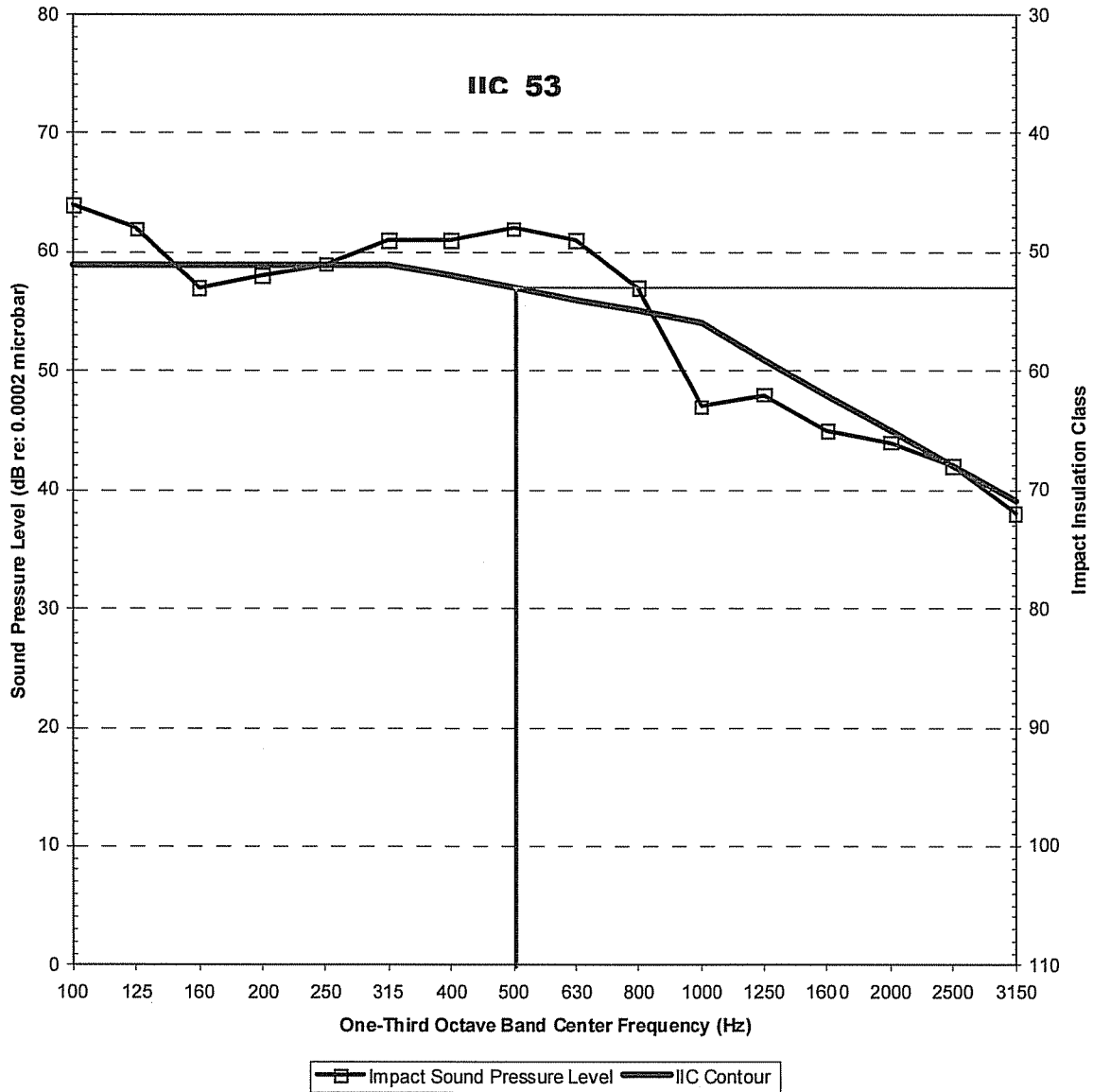
**PRECISION**

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.

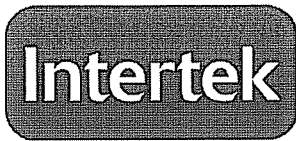
For the floor/ceiling construction, the 95% uncertainty limits ( $\Delta L_n$ ) for the normalized sound pressure levels were determined to be less than 2 dB for the 1/3 octave bands centered in the range from 100 to 3150 Hz.

**CERAMIC TILE OVER  
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Impact Insulation Class



**UNITED PLASTICS CORP.**



**REMARKS**

1. Ambient Temperature: 70°F
2. Relative Humidity: 59%

**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.

Date of Test: September 15, 2010

Report Approved by:

A handwritten signature in black ink, appearing to read "Brian Cyr", is written over a light grey grid background.

Brian Cyr  
Engineer  
Acoustical Testing

Report Reviewed By:

A handwritten signature in black ink, appearing to read "James R. Kline", is written over a light grey grid background.

James R. Kline  
Engineer/Quality Supervisor  
Acoustical Testing

Attachments: None