



# REPORT



3933 US ROUTE 11 CORTLAND, NEW YORK 13045



Accredited by the National Voluntary  
Laboratory Accreditation Program for  
the Specific Accreditation under Lab  
Code 100402-0.

Order No. 3114942

March 20, 2007

REPORT NO. 3114942CRT-001e

## IMPACT SOUND TRANSMISSION TESTS AND CLASSIFICATION OF FLOORING PRODUCTS ON A WOOD JOIST FLOOR/CEILING ASSEMBLY

RENDERED TO

KEENE BUILDING PRODUCTS  
P.O. BOX 241353  
MAYFIELD HEIGHTS, OH 44124

### INTRODUCTION

This report gives the results of Impact Sound Transmission tests and the determination of the Impact Insulation Class of flooring products over a wood joist floor/ceiling assembly. The floor/ceiling assembly was supplied and installed by Intertek. The gypsum topping and the acoustical mat underlayment was selected, supplied and installed were selected and supplied by the client and received at the laboratories on February 26, 2007. The samples appeared to be in a new, unused condition.

### AUTHORIZATION

Signed Quote No. 500018084.

### TEST METHOD

The specimens were tested in accordance with the American Society for Testing and Materials designation ASTM E492-04, "Standard Test Method for Laboratory Measurement of Impact Sound Transmission through Floor-Ceiling Assemblies Using the Tapping Machine". They were classified in accordance with ASTM E989-89 (Re-approved 1999), entitled, "Standard Classification for Determination of Impact Insulation Class (IIC)".

An Independent organization testing for safety, performance, and certification.

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program. Measurement uncertainty budgets have been determined for applicable test methods and are available upon request.

**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 (Bruel & Kjaer Type 3207) 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 materials used in the assembly from top to bottom are:

- Nominal 1 ½ inch thick Firm Fill gypsum concrete (poured February 26, 2007)
- Quiet Qurl 65 075 MC acoustical mat
- 1 ¼ inch thick plywood
- 18 inch high Open Web joists spaced 24 inches on center
- 6 inch thick batt fiberglass insulation installed directly below the plywood
- Two layers of 5/8 inch thick Type X gypsum board (taped and finished with compound)

## DESCRIPTION OF TESTS/FLOORING SPECIMEN

Test #1 – Ceramic Tiles (16 inch square by 5/16 inch thick) installed with Latex Modified Thin Set and grouted (48 hour curing time)  
RSIC-1 Resilient Clips attached between the joists and 0.875 inch hat channels spaced 16 inches on center

Test #2 – Ceramic Tiles (16 inch square by 5/16 inch thick) installed with Latex Modified Thin Set and grouted (48 hour curing time)  
Dietrich RC Deluxe resilient channels spaced 16 inches on center (RC Assurance Clips were installed between the joists and the RC Deluxe Channels)

**RESULTS OF TESTS**

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

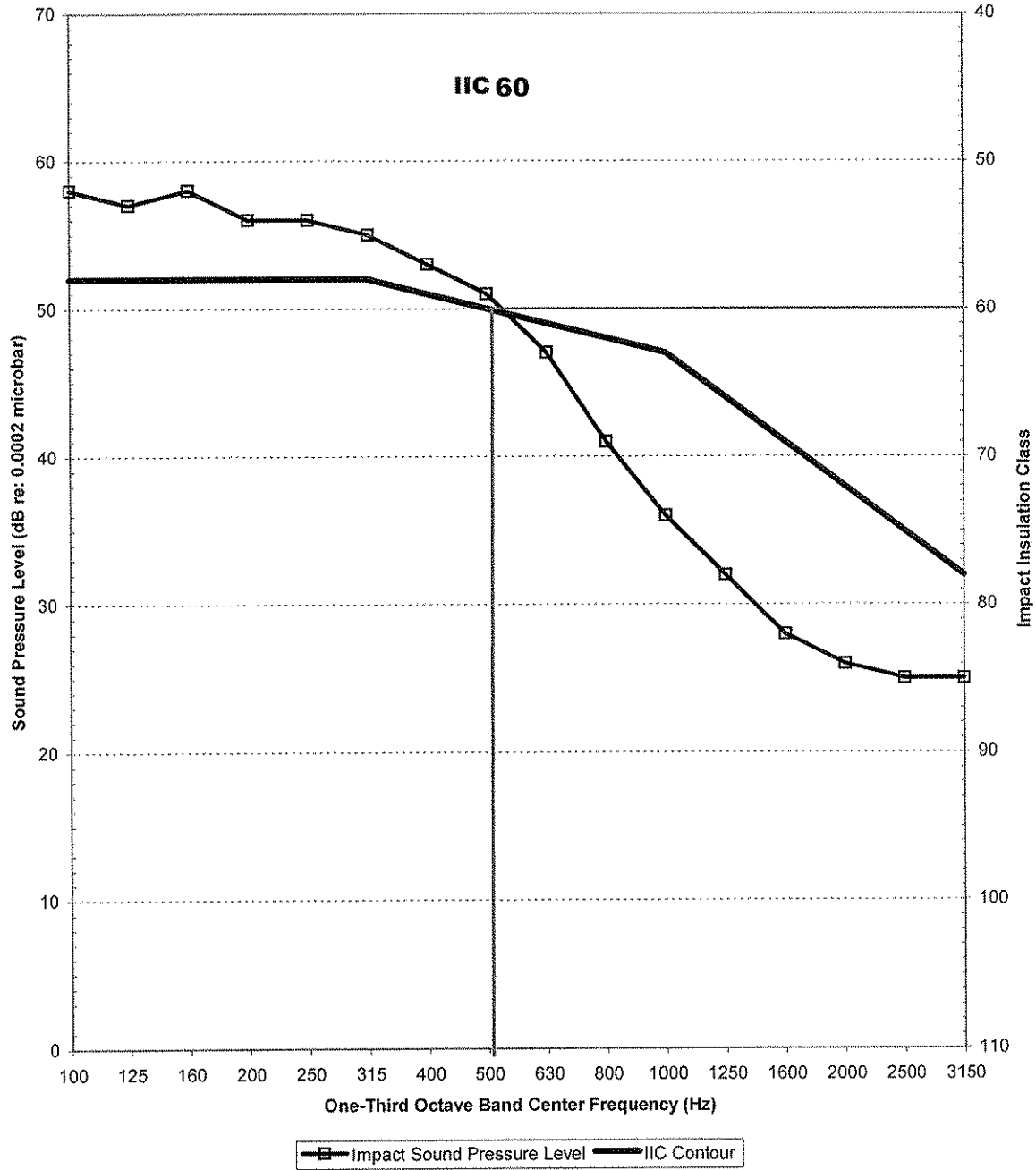
1/3 Octave Band Center Frequency <u>Hz</u>	1/3 Octave Band Sound Pressure Level dB re 0.0002 Microbar	
	<u>Test #1</u>	<u>Test #2</u>
	100	58
125	57	56
160	58	57
200	56	52
250	56	53
315	55	53
400	53	54
500	51	52
630	47	48
800	41	42
1000	36	37
1250	32	33
1600	28	29
2000	26	29
2500	25	26
3150	25	25
Impact Insulation Class (IIC)	60	61

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 3500.

### Test #1

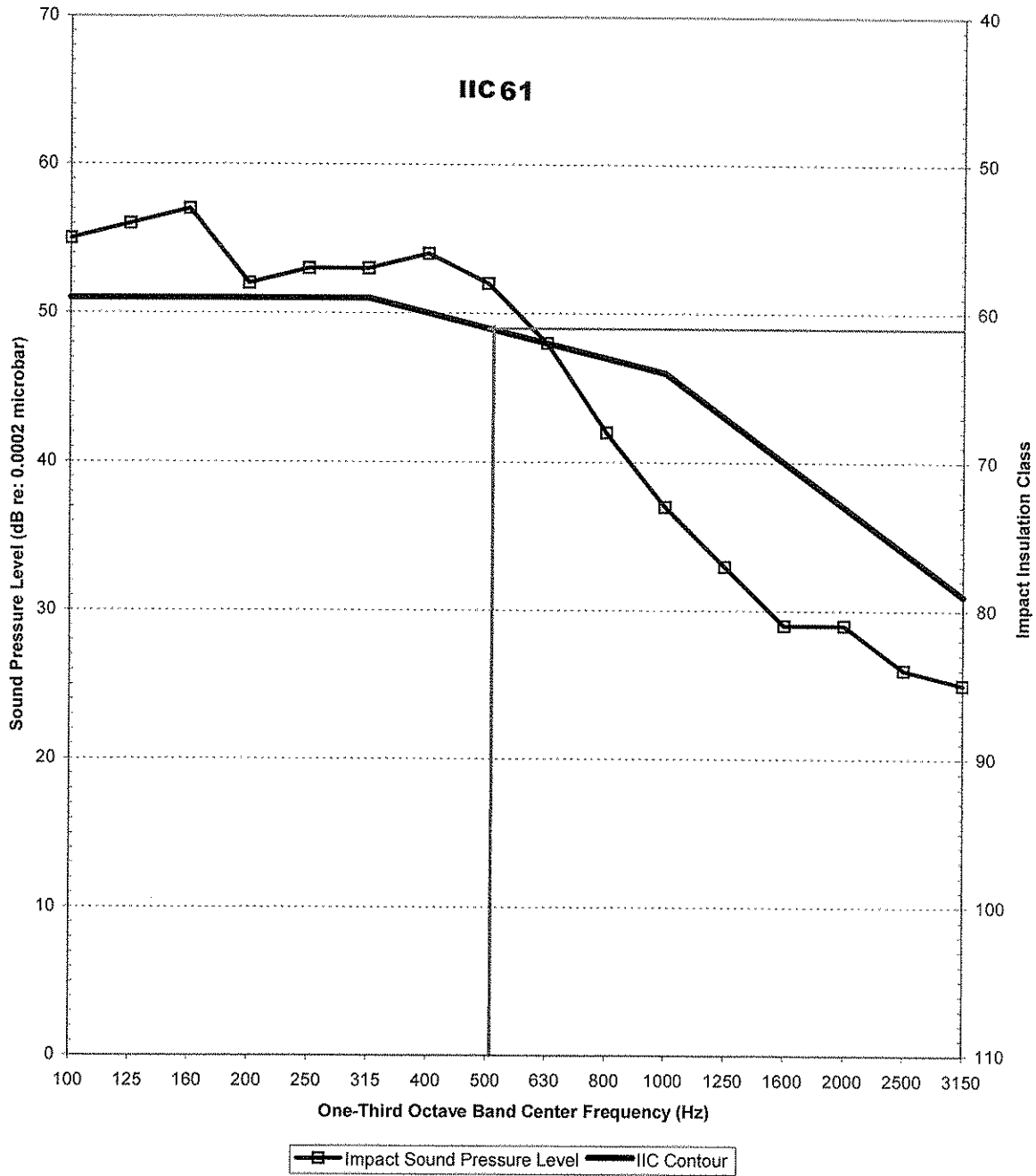
Impact Insulation Class



KEENE BUILDING PRODUCTS

### Test #2

#### Impact Insulation Class



KEENE BUILDING PRODUCTS

**REMARKS**

- 1. Aging Period: 8 – 9 days (gypsum concrete)
- 2. Ambient Temperature: 69°F
- 3. Relative Humidity: 38 - 39%

**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.

Dates of Tests: March 6 -7, 2007

Report Approved by:



James H. Nickelsen  
Senior Project Engineer  
Acoustical Testing

Report Reviewed By:



James R. Kline  
Engineer/Quality Supervisor  
Acoustical Testing

Attachments: None