



**D6771.07-113-11-R0**  
**ACOUSTICAL PERFORMANCE TEST REPORT**  
**ASTM E 90 AND ASTM E 492**

**Rendered to**

**PROFLEX PRODUCTS INC.**

**Series/Model: RCU 200 Rubber Underlayment**

**Specimen Type: Floor/Ceiling Assembly**

**Overall Size: 3023 mm by 3632 mm**

**STC     57**  
**IIC     51**

**Test Sample Identification:**

Floor Topping: 7.2 mm Porcelain Tile

Floor Underlayment: 5 mm Proflex Products Inc. RCU 200 Rubber Underlayment

Floor Slab: 203 mm Concrete Slab

Reference should be made to Architectural Testing, Inc. Report D6771.07-113-11 for complete test specimen description.



## Acoustical Performance Test Report

PROFLEX PRODUCTS INC.  
2826 Broadway Center Boulevard  
Brandon, Florida 33510

<b>Report</b>	D6771.07-113-11
<b>Test Date</b>	04/15/14
<b>Report Date</b>	03/06/15
<b>Record Retention End Date</b>	04/15/18

### Project Scope

This report is a reissue of D6771.02-113-11 and is rendered to Proflex Products Inc. through written authorization. A summary of the results is listed in the Test Results section, and the complete test data is included as attachments to this report. The client provided the test specimen.

### Test Methods

The acoustical tests were conducted in accordance with the following standards. The equipment listed in the attachments meets the requirements of the following standards.

ASTM E 90-09, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions

ASTM E 413-10, Classification for Rating Sound Insulation

ASTM E 492-09, Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine

ASTM E 989-06 (2012), Classification for Determination of Impact Insulation Class (IIC)

ASTM E 2235-04 (2012) Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods

### Test Procedure

All testing was conducted in the VT test chambers at Architectural Testing, Inc. located in York, Pennsylvania. The microphones were calibrated before conducting the tests.

The sound transmission loss test was conducted in accordance with the ASTM E 90 test method using a single direction of measurement. Two background noise sound pressure level and twenty-five sound absorption measurements were conducted at each of five microphone positions. Four sound pressure level measurements were made simultaneously in both rooms, at each of five microphone positions.

**Test Procedure (Continued)**

The impact sound transmission test was conducted in accordance with the ASTM E 492 test method. Two background noise sound pressure level, two sound pressure level measurements with the tapping machine operating at each position specified by ASTM E 492, and twenty-five sound absorption measurements were conducted at each of five microphone positions.

The air temperature and relative humidity conditions were monitored and recorded during all measurements.

**Test Conditions**

Source Room		Receive Room	
Maximum Temperature	25.0 °C	Maximum Temperature	21.4 °C
Minimum Temperature	24.0 °C	Minimum Temperature	21.2 °C
Average Temperature	24.6 °C	Average Temperature	21.4 °C
Maximum Relative Humidity	72%	Maximum Relative Humidity	69%
Minimum Relative Humidity	69%	Minimum Relative Humidity	67%
Average Relative Humidity	70%	Average Relative Humidity	68%

**Test Calculations**

The STC (Sound Transmission Class) rating was calculated in accordance with ASTM E 413. The IIC (Impact Insulation Class) rating was calculated in accordance with ASTM E 989.

**Test Specimen Construction**

The test specimen was constructed in the 3023 mm long by 3632 mm wide by 457 mm high opening.

The porcelain tiles were set into the bed of mortar and separated by 6.35 mm spacers. Latex modified mortar was mixed as per manufacturer's specifications and troweled on top of the underlayment using a 9.53 mm by 9.53 mm square notch trowel. The mortar was allowed to cure according to the manufacturer's specifications. Sanded grout was mixed as per manufacturer's specifications and troweled into the 6.35 mm spaces between the ceramic tiles using a grout float. All excess grout was cleaned using a damp sponge. The grout was allowed to cure according to the manufacturer's specifications before testing. The perimeter of the porcelain tile floor was sealed to the test frame with duct seal.

A single layer of 5 mm RCU 200 was placed on top of the flooring adhesive within 30 minutes of application. The flooring adhesive was troweled over a protective layer using a 1.5 mm by 1.5 mm square notch trowel. A single layer of 0.05 mm polyethylene sheet was adhered to the concrete slab as a protective layer.

**Test Specimen Construction (Continued)**

The concrete slab was installed into a test frame flush to the source room. The concrete slab was isolated from the test frame. The perimeter of the concrete slab was sealed with duct seal. Cure time for the concrete slab exceeded 28 days.

**Test Specimen Materials**

<b>Material</b>	<b>Dimensions (mm)</b>	<b>Thickness (mm)</b>	<b>Manufacturer and Series</b>	<b>Quantity</b>	<b>Average Weight</b>	<b>Total Weight</b>
Porcelain Tile	304.8 by 304.8	7.20	N/A	10.98 m <sup>2</sup>	15 kg/m <sup>2</sup>	164.6 kg
Rubber Underlayment	3023 by 1219	5.00	Proflex Products, Inc. RCU 200	10.98 m <sup>2</sup>	3.7 kg/m <sup>2</sup>	40.5 kg
Concrete Slab	3023 by 3632	203.00	N/A	10.98 m <sup>2</sup>	488.2 kg/m <sup>2</sup>	5360.9 kg

**Comments**

The total weight of the floor/ceiling assembly was 5566 kg. Architectural Testing will store samples of the test specimen for four years. Photographs of the test specimen are included in the attachments. Installation drawings are included in the attachments.

This report is reissued in the name of Proflex Products Inc. through written authorization from the original report holder.

Architectural Testing will service this report for the entire test record retention period. Test records, such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation, will be retained by Architectural Testing for the entire test record retention period.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing.

For ARCHITECTURAL TESTING, INC:

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Daniel B. Mohler  
Technician II - Acoustical Testing

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Bradlay D. Hunt  
Project Manager - Acoustical Testing

Attachments (7)

*\* Stated by Client/Manufacturer*

*N/A - Non Applicable*



### Revision Log

<u>Revision</u>	<u>Date</u>	<u>Page(s)</u>	<u>Description</u>
R0	03/06/15	N/A	Original Report Issue

## Attachments

### Instrumentation

Instrument	Manufacturer	Model	ATI Number	Date of Calibration
Data Acquisition Unit	National Instruments	PXI-1033	63763	06/12 *
Source Room Microphone	PCB Piezotronics	378B20	64902	11/13
Source Room Microphone	PCB Piezotronics	378B20	64903	11/13
Source Room Microphone	PCB Piezotronics	378B20	64904	11/13
Source Room Microphone	PCB Piezotronics	378B20	64905	11/13
Source Room Microphone	PCB Piezotronics	378B20	64906	11/13
Receive Room Microphone	PBC Piezotronics	378B20	64907	11/13
Receive Room Microphone	PCB Piezotronics	378B20	64908	11/13
Receive Room Microphone	PCB Piezotronics	378B20	64909	11/13
Receive Room Microphone	PCB Piezotronics	378B20	64910	11/13
Receive Room Microphone	PCB Piezotronics	378B20	64911	11/13
Receive Room Environmental Indicator	Comet	T7510	63810	09/13
Receive Room Environmental Indicator	Comet	T7510	63811	09/13
Source Room Environmental Indicator	Comet	T7510	63812	09/13
Microphone Calibrator	Norsonic	1251	C002919	07/13
Tapping Machine	Norsonic	N-211	Y003242	03/14

\* The calibration frequency for this equipment is every two years per the manufacturer's recommendation.

### Test Chambers

VT Receive Room Volume	158.3 m <sup>3</sup>
VT Source Room Volume	190 m <sup>3</sup>



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**SOUND TRANSMISSION LOSS**  
ASTM E 90

<b>Test Date</b>	04/15/14
<b>Data File No.</b>	D6771.07
<b>Client</b>	Proflex Products Inc.
<b>Description</b>	7.2 mm Porcelain Tile, 5 mm Proflex Products, Inc. RCU 200 Rubber Underlayment, 203 mm Concrete Slab
<b>Specimen Area</b>	10.98 m <sup>2</sup>
<b>Technician</b>	Daniel B. Mohler

Freq (Hz)	Background SPL (dB)	Absorption (m <sup>2</sup> )	Source SPL (dB)	Receive SPL (dB)	Specimen TL (dB)	95% Confidence Limit	Number of Deficiencies
80	67.9	13.8	99	63	36	9.03	-
100	45.3	9.9	97	58	41	5.11	-
125	37.9	8.2	95	56	41	2.60	0
160	33.2	8.0	95	60	37	5.03	7
200	30.6	10.4	94	53	42	2.71	5
250	28.8	8.9	95	50	48	1.86	2
315	27.7	8.4	96	49	49	1.12	4
400	25.7	7.3	93	46	49	1.00	7
500	26.0	6.4	93	42	54	1.06	3
630	26.1	6.4	96	41	59	1.37	0
800	25.1	6.5	94	37	61	0.74	0
1000	26.7	6.5	95	35	63	0.78	0
1250	27.7	6.4	95	33	65	1.24	0
1600	23.3	6.5	95	32	66	0.81	0
2000	17.4	7.3	95	31	68	0.97	0
2500	13.8	8.1	94	30	67	0.75	0
3150	13.4	8.6	95	27	69	0.73	0
4000	11.5	9.9	95	25	71	0.69	0
5000	10.3	11.5	95	21	74	0.61	-
6300	10.0	14.2	89	11	78	0.87	-
8000	9.3	18.9	88	8	78	0.73	-
10000	8.8	23.7	83	7	74	0.73	-

**STC Rating**      **57**      (*Sound Transmission Class*)  
**Deficiencies**      **28**      (*Sum of Deficiencies*)

**Notes:**      1) Receive Room levels less than 5 dB above the Background levels are highlighted in yellow.  
2) Specimen TL levels listed in red indicate the lower limit of the transmission loss.  
3) Specimen TL levels listed in green indicate that there has been a filler wall correction applied



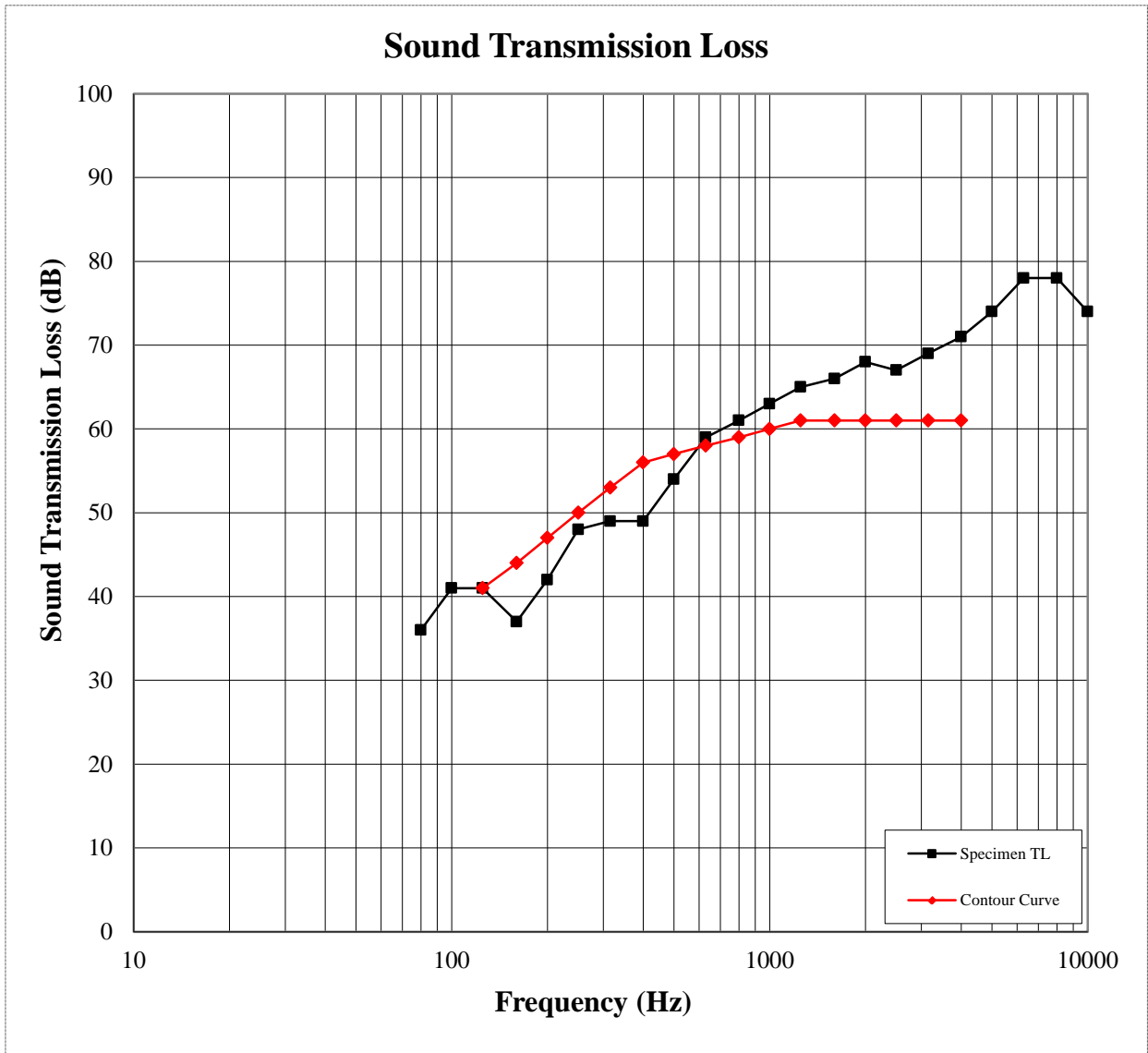


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### SOUND TRANSMISSION LOSS ASTM E 90

<b>Test Date</b>	04/15/14
<b>Data File No.</b>	D6771.07
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<b>Description</b>	7.2 mm Porcelain Tile, 5 mm Proflex Products, Inc. RCU 200 Rubber Underlayment, 203 mm Concrete Slab
<b>Specimen Area</b>	10.98 m <sup>2</sup>
<b>Technician</b>	Daniel B. Mohler





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**IMPACT TRANSMISSION**  
ASTM E 492

<b>Test Date</b>	04/15/14
<b>Data File No.</b>	D6771.07
<b>Client</b>	Proflex Products Inc.
<b>Description</b>	7.2 mm Porcelain Tile, 5 mm Proflex Products, Inc. RCU 200 Rubber Underlayment, 203 mm Concrete Slab
<b>Specimen Area</b>	10.98 m <sup>2</sup>
<b>Technician</b>	Daniel B. Mohler

<b>Freq</b> (Hz)	<b>Background SPL</b> (dB)	<b>Absorption</b> (m <sup>2</sup> )	<b>Normalized Impact SPL</b> (dB)	<b>95% Confidence Limit</b>	<b>Number of Deficiencies</b>
80	66.9	14.7	66	4.3	-
100	46.9	10.5	51	1.7	0
125	40.5	8.6	58	4.8	0
160	37.8	8.0	58	4.8	0
200	34.9	10.5	61	6.5	0
250	32.9	9.2	65	2.9	4
315	32.4	8.5	64	3.4	3
400	31.4	7.2	65	2.4	5
500	29.7	6.4	62	1.9	3
630	29.0	6.3	59	2.9	1
800	27.4	6.5	59	1.0	2
1000	28.1	6.5	58	1.1	2
1250	29.1	6.4	55	1.3	2
1600	26.4	6.5	51	1.2	1
2000	20.6	7.3	44	2.0	0
2500	16.7	8.2	39	2.9	0
3150	17.0	8.7	34	2.9	0
4000	14.6	9.8	29	3.5	-
5000	12.6	11.6	25	2.5	-
6300	11.6	14.3	24	2.2	-
8000	10.4	18.6	20	1.8	-
10000	9.1	23.7	24	3.7	-

**IIC Rating**      **51**      *(Impact Insulation Class)*

**Deficiencies**      **23**      *(Sum of Deficiencies)*

**Note:**      *Receive Room levels less than 5 dB above the Background levels are highlighted in yellow.*

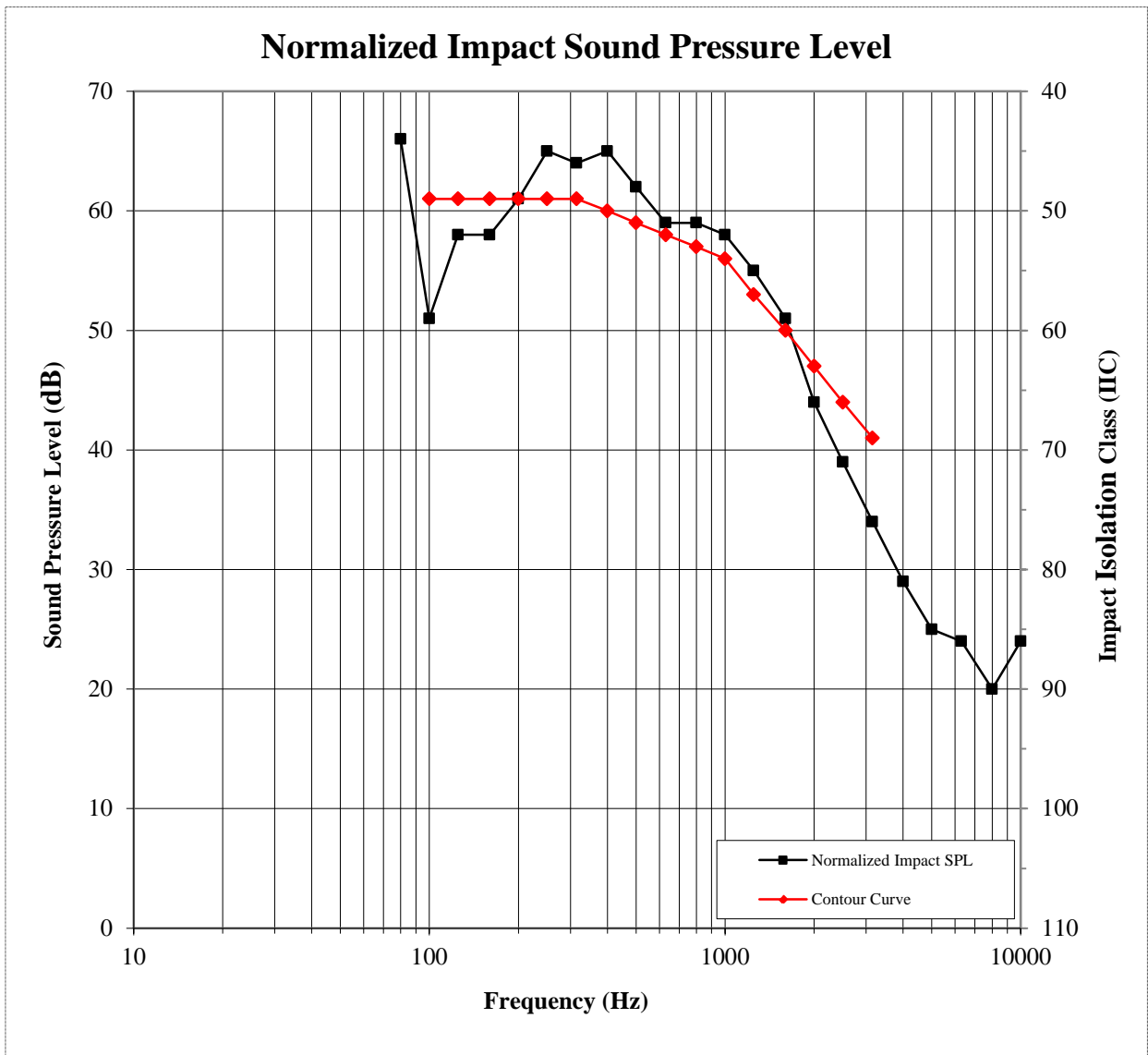


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### IMPACT TRANSMISSION ASTM E 492

<b>Test Date</b>	04/15/14
<b>Data File No.</b>	D6771.07
<b>Client</b>	Proflex Products Inc.
<b>Description</b>	7.2 mm Porcelain Tile, 5 mm Proflex Products, Inc. RCU 200 Rubber Underlayment, 203 mm Concrete Slab
<b>Specimen Area</b>	10.98 m <sup>2</sup>
<b>Technician</b>	Daniel B. Mohler



**Photographs**

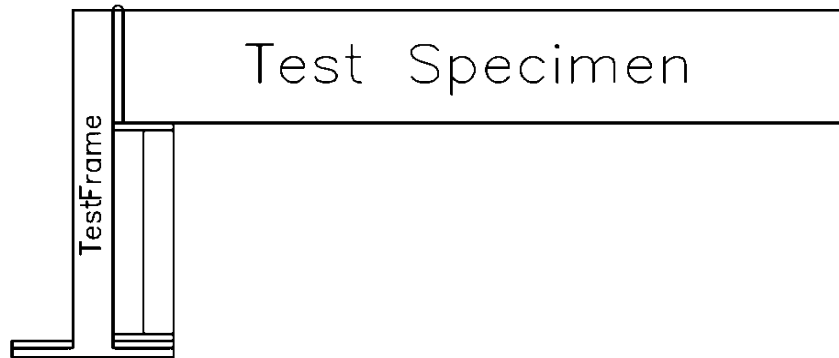


**Source Room View of Test Specimen Installation**

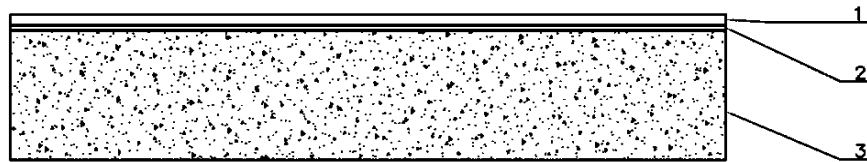


**Receive Room View of Test Specimen Installation**

### Drawings



### Test Specimen Installation



### Cross Section View of Test Specimen

- 1 - Floor Topping
- 2 - Underlayment
- 3 - Concrete Slab