

**C8707.01-113-11-R0**  
**ACOUSTICAL PERFORMANCE TEST REPORT**  
**ASTM E 90 AND ASTM E 492**

**Rendered to**

**ECORE International**

**Series/Model: Forest rx**

**Specimen Type: Floor/Ceiling System**

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

<b>Summary of Test Results</b>		
<b>Data File</b>	<b>Result</b>	<b>Description (Nominal Dimensions)</b>
C8707.01A	STC 56 IIC 52	7 mm Ecore International Forest rx Rubber Back Sheet Vinyl, 150 mm Concrete Slab

Reference should be made to Architectural Testing, Inc. Report C8707.01-113-11 for complete test specimen description.

## Acoustical Performance Test Report

ECORE International  
715 Fountain Avenue  
Lancaster, Pennsylvania 17601

<b>Report</b>	C8707.01-113-11
<b>Test Date</b>	06/11/13
<b>Report Date</b>	07/11/13
<b>Record Retention End Date</b>	07/11/17

### Project Scope

ECORE International contracted Architectural Testing to conduct airborne sound transmission loss and impact sound transmission tests. 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 Vertical Transmission (VT) test chambers 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 fifty sound absorption measurements were conducted at each of the five microphone positions in the receiving (lower) room. Sound was generated in the source (upper) room, and two sound pressure level measurements were made simultaneously in both rooms, at each of the 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 and fifty sound absorption measurements were conducted at each of the five microphone positions in the receiving (lower) room. While the tapping machine was operating at each of the four locations on the floor surface, two sound pressure level measurements were made at each of five microphone positions in the receiving (lower) room.

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

### Test Conditions

Source Room		Receive Room	
Maximum Temperature	24.1 °C	Maximum Temperature	21.8 °C
Minimum Temperature	24.0 °C	Minimum Temperature	21.0 °C
Maximum Relative Humidity	64.1 %	Maximum Relative Humidity	55.3 %
Minimum Relative Humidity	63.8 %	Minimum Relative Humidity	52.2 %

### 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 drawing of the installation details is included in the attachments.

A single layer of 0.05 mm polyethylene sheet was adhered to the concrete. The EGRIP III flooring adhesive was troweled over the protective layer using a 1.5 mm by 1.5 mm by 1.5 mm square notch trowel. A single layer of the Forest RX rubber back sheet vinyl placed on top of the EGRIP III flooring adhesive within 30 minutes of application. A 100-pound roller was used to evenly compress the flooring into the adhesive. The perimeter of the flooring was sealed with duct seal.

### Test Specimen Materials

Material	Dimensions	Thickness	Manufacturer and Series	Quantity	Average Weight	Total Weight
Rubber Back Sheet Vinyl	3023 mm by 1829 mm	6.91 mm	Ecore International Forest rx	10.98 m <sup>2</sup>	6.6 kg/m <sup>2</sup>	72.5 kg
Concrete Slab	3023 mm by 3632 mm	150 mm	N/A	10.98 m <sup>2</sup>	366.2 kg/m <sup>2</sup>	4020.9 kg

## Comments

The total weight of the floor/ceiling assembly was 4093.4 kg. Architectural Testing will store samples of the test specimen for four years. Photographs of the test specimen are included in the attachments. The design drawings, included in the attachments, accurately describe the test specimen.

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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Bradley D. Hunt  
Project Manager - Acoustical Testing

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Todd D. Kister  
Laboratory Supervisor - 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	07/11/13	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	63738	04/13
Source Room Microphone	PCB Piezotronics	378B20	63739	04/13
Source Room Microphone	PCB Piezotronics	378B20	63740	04/13
Source Room Microphone	PCB Piezotronics	378B20	63741	04/13
Source Room Microphone	PCB Piezotronics	378B20	63742	04/13
Receive Room Microphone	PCB Piezotronics	378B20	63748	04/13
Receive Room Microphone	PCB Piezotronics	378B20	63744	04/13
Receive Room Microphone	PCB Piezotronics	378B20	63745	04/13
Receive Room Microphone	PCB Piezotronics	378B20	63746	04/13
Receive Room Microphone	PCB Piezotronics	378B20	63747	04/13
Receive Room Environmental Indicator	Comet	T7510	63810	09/12
Receive Room Environmental Indicator	Comet	T7510	63811	09/12
Source Room Environmental Indicator	Comet	T7510	63812	09/12
Microphone Calibrator	Cirrus Research (HP)	CRL 511E	Y001777	06/13
Tapping Machine	Norsonic	N-211	Y003242	03/13

### Test Chambers

VT Receive Room Volume	158.9 m <sup>3</sup>
VT Source Room Volume	190 m <sup>3</sup>

## SOUND TRANSMISSION LOSS

ASTM E 90

<b>Test Date</b>	06/11/13
<b>Data File No.</b>	C8707.01A
<b>Client</b>	ECORE International
<b>Description</b>	7 mm Ecore International Forest rx Rubber Back Sheet Vinyl, 150 mm Concrete Slab
<b>Specimen Area</b>	10.98 m <sup>2</sup>
<b>Technician</b>	Bradlay D. Hunt

<b>Test Chamber</b>	VT Source Room	VT Receive Room
<b>Temperature</b>	24.1 °C	21.4 °C
<b>Humidity</b>	63.95 %	53.75 %

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
50	39.9	25.6	101.5	60	39	7.1	-
63	45.0	30.3	105.2	66	36	8.7	-
80	46.8	15.9	111.2	69	42	6.9	-
100	41.4	11.5	107.3	70	39	5.4	-
125	37.4	9.2	105.7	67	40	3.0	0
160	29.7	8.7	103.2	67	39	3.9	4
200	27.7	10.2	104.8	67	40	4.2	6
250	27.8	9.4	106.5	64	44	2.9	5
315	23.1	8.6	104.9	60	47	2.2	5
400	20.4	7.3	106.1	59	50	2.3	5
500	24.2	6.8	105.4	55	54	1.6	2
630	20.5	7.0	105.0	54	55	1.0	2
800	18.7	6.8	106.0	52	57	2.1	1
1000	21.9	6.9	106.1	50	59	2.0	0
1250	23.5	7.2	105.8	48	61	1.6	0
1600	19.2	7.2	106.2	47	63	2.0	0
2000	12.8	7.9	105.8	44	65	1.6	0
2500	10.1	8.8	104.1	40	67	1.8	0
3150	8.3	9.4	103.6	38	68	1.7	0
4000	6.6	10.8	102.4	36	68	1.5	0
5000	6.1	12.6	99.2	29	70	1.5	-
6300	6.1	16.4	95.2	19	75	1.5	-
8000	6.4	21.2	92.0	10	80	1.3	-
10000	6.4	27.5	86.8	5	79	0.5	-

**STC Rating**      **56**      (*Sound Transmission Class*)

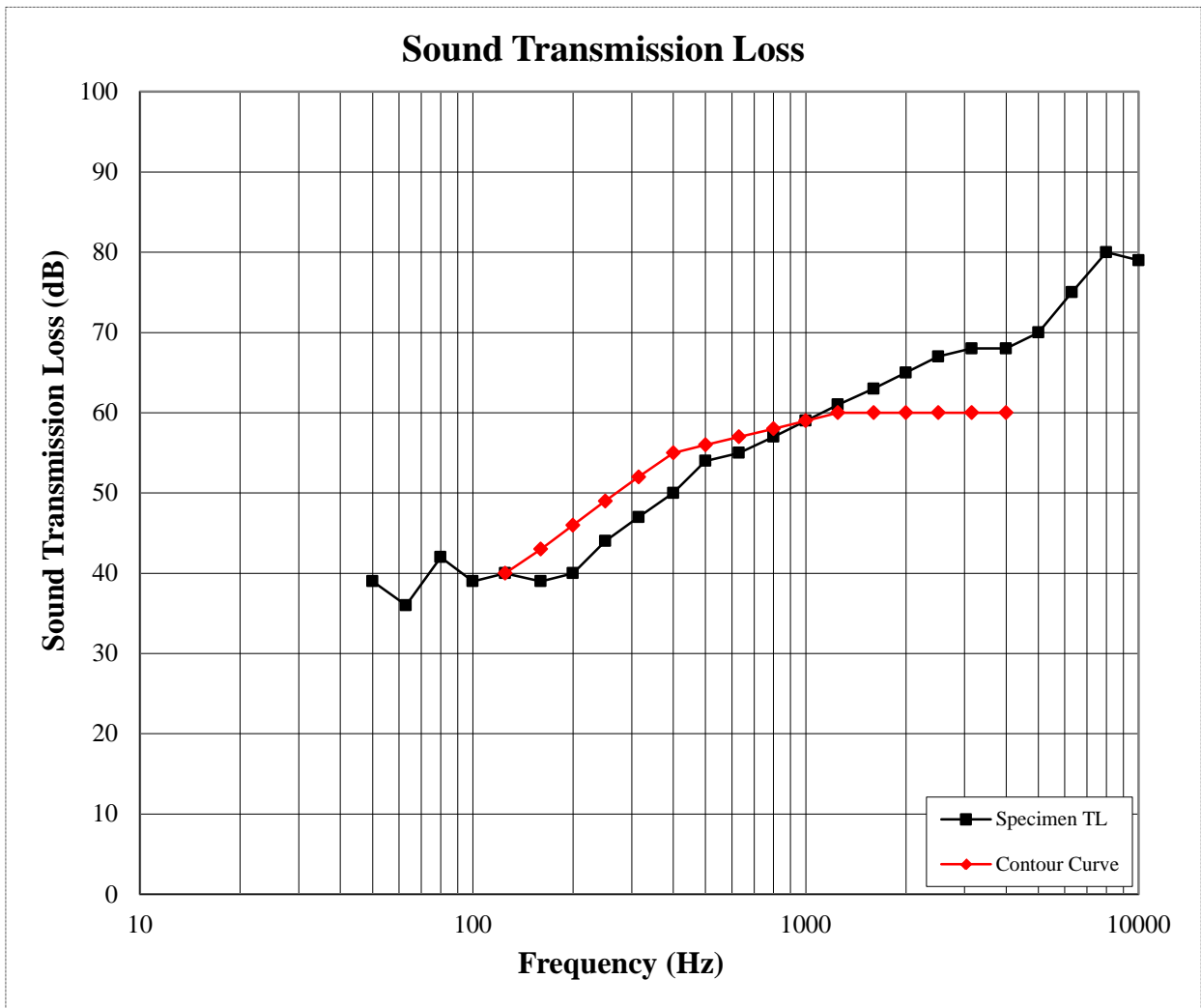
**Deficiencies**      **30**      (*Sum of Deficiencies*)

- 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

**SOUND TRANSMISSION LOSS**  
ASTM E 90

<b>Test Date</b>	06/11/13
<b>Data File No.</b>	C8707.01A
<b>Client</b>	ECORE International
<b>Description</b>	7 mm Ecore International Forest rx Rubber Back Sheet Vinyl, 150 mm Concrete Slab
<b>Specimen Area</b>	10.98 m <sup>2</sup>
<b>Technician</b>	Bradlay D. Hunt

<b>Test Chamber</b>	VT Source Room	VT Receive Room
<b>Temperature</b>	24.1 °C	21.4 °C
<b>Humidity</b>	63.95 %	53.75 %





**IMPACT TRANSMISSION**  
ASTM E 492

<b>Test Date</b>	06/11/13
<b>Data File No.</b>	C8707.01A
<b>Client</b>	ECORE International
<b>Description</b>	7 mm Ecore International Forest rx Rubber Back Sheet Vinyl, 150 mm Concrete Slab
<b>Specimen Area</b>	10.98 m <sup>2</sup>
<b>Technician</b>	Bradlay D. Hunt

<b>Test Chamber</b>	VT Receive Room
<b>Temperature</b>	21.4 °C
<b>Humidity</b>	53.75 %

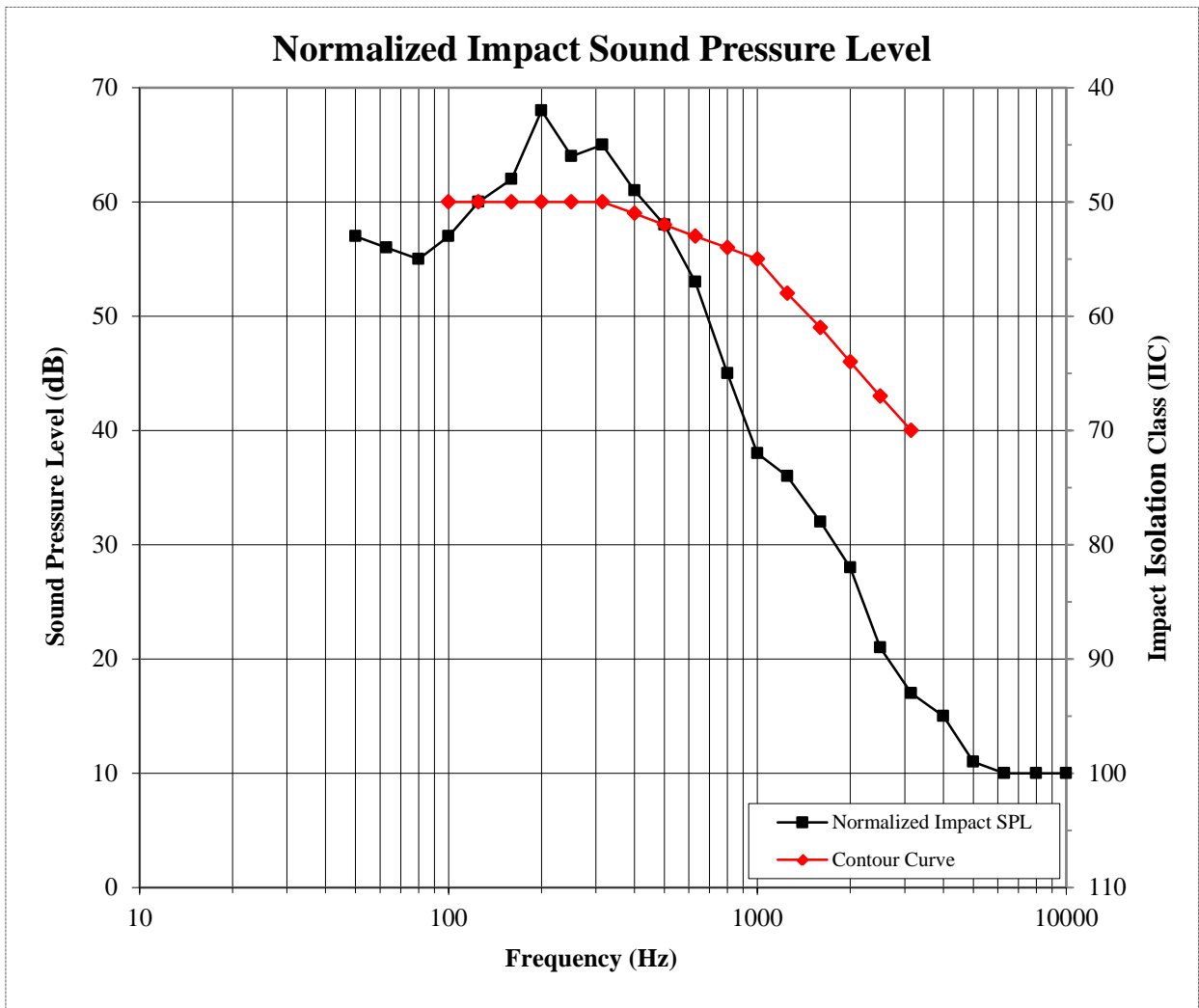
Freq (Hz)	Background SPL (dB)	Absorption (m <sup>2</sup> )	Normalized Impact SPL (dB)	95% Confidence Limit	Number of Deficiencies
50	47.1	25.6	57	3.4	-
63	49.9	30.6	56	4.4	-
80	54.9	15.9	55	3.2	-
100	45.2	11.3	57	2.3	0
125	38.5	9.2	60	1.7	0
160	31.9	8.6	62	1.7	2
200	29.9	10.2	68	2.9	8
250	29.9	9.5	64	1.7	4
315	25.6	8.6	65	2.5	5
400	24.7	7.4	61	1.3	2
500	27.5	6.8	58	0.7	0
630	23.2	7.0	53	1.9	0
800	22.2	6.8	45	3.9	0
1000	24.1	6.8	38	4.2	0
1250	24.7	7.2	36	2.0	0
1600	22.8	7.2	32	2.9	0
2000	16.5	7.9	28	0.7	0
2500	13.6	8.8	21	2.6	0
3150	12.6	9.4	17	3.8	0
4000	8.7	10.6	15	3.8	-
5000	7.2	12.5	11	3.7	-
6300	6.5	16.2	10	2.4	-
8000	6.5	20.8	10	1.3	-
10000	6.5	27.4	10	0.7	-

**IIC Rating**      **52**      (*Impact Insulation Class*)  
**Deficiencies**      **21**      (*Sum of Deficiencies*)

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

**IMPACT TRANSMISSION**  
 ASTM E 492

<b>Test Date</b>	06/11/13
<b>Data File No.</b>	C8707.01A
<b>Client</b>	ECORE International
<b>Description</b>	7 mm Ecore International Forest rx Rubber Back Sheet Vinyl, 150 mm Concrete Slab
<b>Specimen Area</b>	10.98 m <sup>2</sup>
<b>Technician</b>	Bradlay D. Hunt
<b>Test Chamber</b>	VT Receive Room
<b>Temperature</b>	21.4 °C
<b>Humidity</b>	53.75 %



**Photographs**



**Source Room View of Test Specimen Installation**

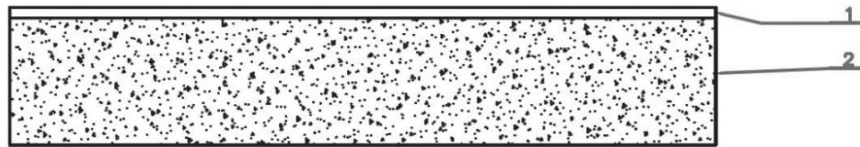


**Receive Room View of Test Specimen Installation**

### Drawings



### Test Specimen Installation



### Cross Section View of Test Specimen