E9991.01-113-11-R0
ACOUSTICAL PERFORMANCE TEST REPORT
ASTM E 90 AND ASTM E 492

Rendered to

UNITED PLASTICS CORPORATION

Series/Model: Bare Assembly

Specimen Type: Open Web Truss - 406 mm

Overall Size: 3023 mm by 3632 mm

STC	**63**
IIC	**41**

Test Specimen Identification:

Subfloor Topping: 19.05 mm USG LEVELROCK® CSD® Early Exposure™ FR Gypsum Concrete
Subfloor: 18.8 mm Oriented Strand Board Sheathing
Insulation: 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation
Truss: 406.4 mm York PB Truss L/360 Open Web Truss
Ceiling Isolation: 12.7 mm ClarkDietrich RC Deluxe™ Resilient Channel
Ceiling: 15.9 mm USG SHEETROCK® Brand FIRECODE® C Core Gypsum Board

Reference should be made to Intertek-ATI Report E9991.01-113-11 for complete test specimen description. This page alone is not a complete report.

Acoustical Performance Test Report

UNITED PLASTICS CORPORATION
511 Hay Street
Mount Airy , North Carolina 27030

Report	E9991.01-113-11
Test Date	08/04/15
Report Date	08/28/15

Project Scope

Architectural Testing, Inc., a subsidiary of Intertek (Intertek-ATI), was contracted to conduct airborne sound transmission loss and impact sound transmission tests. The complete test data is included as attachments to this report. The client provided the test specimen. The specimen was constructed on the date of testing.

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 Intertek-ATI located in York, Pennsylvania. The microphones were calibrated before conducting the tests.

The airborne transmission loss test was conducted in accordance with the ASTM E 90 test method using the single direction method. Two background noise sound pressure level and 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 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	
Average Temperature	23°C	Average Temperature	22.4°C
Average Relative Humidity	44%	Average Relative Humidity	43%

Test Calculations
The STC (Sound Transmission Class) and IIC (Impact Insulation Class) ratings were calculated in accordance with ASTM E 413 and ASTM E 989, respectively.

Test Specimen Materials and Installation Details

Material	Dimensions (mm)	Thickness (mm)	Manufacturer and Series	Quantity	Average Weight
Gypsum Concrete	3023 by 3632	19.1	USG LEVELROCK® CSD® Early Exposure™ FR	10.98 m²	66.35 kg/m²
	Note: Poured directly on top of the OSB sheathing, cured a minimum of 14 days.				
Oriented Strand Board Sheathing	1219 by 2438	18.8	N/A	10.98 m²	11.65 kg/m²
	Note: The OSB was adhered to the trusses with Loctite PL 400 Subfloor adhesive. It was attached with 9D nails on 203.2 mm centers along perimeter and 304.8 mm centers along trusses.				
Fiberglass Insulation	520.7 by 3023	88.9	Johns Manville Unfaced R-13	10.98 m²	1.32 kg/m²
	Note: Installed in the cavity between trusses flush with the OSB. Hanger wire was used to keep insulation secure on 304.8mm				
Open Web Truss	88.9 by 2933.7	406.4	York PB Truss L/360	7 ea.	19.05 kg/m²
	Note: Installed on 609.6 centers using JUS414 hanger brackets.				
Resilient Channel	68.6 by 2902	12.7	ClarkDietrich RC Deluxe™	23.2 lin m	0.03 kg/m
	Note: Installed on 406.4 centers perpendicular to the trusses. The measured thickness of the metal was 0.7 mm.				
Gypsum Board	1219 by 3023	15.9	USG SHEETROCK® Brand FIRECODE® C Core	10.35 m²	11.9 kg/m²
	Note: Fastened to resilient channels with 25.4 mm type S screws. Seams finished with joint compound. Perimeter sealed with acoustical caulk.				

Comments

The total weight of the floor/ceiling assembly was 1128.2 kg. Intertek-ATI will store samples of the test specimen for four years. Photographs of the test specimen are included in the attachments. A drawing of the test specimen is included in the attachments.

Intertek-ATI 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 Intertek-ATI for the entire test record retention period. The test record retention period ends four years after the test date.

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 is intended to help in the client's quality assurance program, but it does not represent a continuous or exhaustive evaluation of the specimen tested or of other products or materials that were not evaluated. The statements and data provided herein do not constitute approval, disapproval, certification, or acceptance of performance or materials.

FOR INTERTEK-ATI:

Digitally Signed by: Leeland Hoover

Leeland S. Hoover
Technician II - Acoustical Testing

Digitally Signed by: Jordan Strybos

Jordan Strybos
Project Manager - Acoustical Testing

Attachments (7 Pages): This report is complete only when all attachments are included.

** Stated by Client/Manufacturer*
N/A - Non Applicable

Revision Log

Revision	Date	Page(s)	Description
R0	08/28/15	N/A	Original Report Issue

Attachments

Instrumentation

Instrument	Manufacturer	Model	ATI Number	Date of Calibration
Data Acquisition Unit	National Instruments	PXI-1033	63763	06/14 *
Microphone Calibrator	Norsonic	1251	65105	04/15
Receive Room Microphone	PCB Piezotronics	378B20	63748	05/15
Receive Room Microphone	PCB Piezotronics	378B20	63744	05/15
Receive Room Microphone	PCB Piezotronics	378B20	63745	05/15
Receive Room Microphone	PCB Piezotronics	378B20	63746	05/15
Receive Room Microphone	PCB Piezotronics	378B20	63747	05/15
Receive Room Environmental Indicator	Comet	T7510	63810 63811	09/14
Source Room Microphone	PCB Piezotronics	378B20	63738	04/15
Source Room Microphone	PCB Piezotronics	378B20	63739	04/15
Source Room Microphone	PCB Piezotronics	378B20	63740	04/15
Source Room Microphone	PCB Piezotronics	378B20	63742	04/15
Source Room Microphone	PCB Piezotronics	378B20	63741	04/15
Source Room Environmental Indicator	Comet	T7510	63812	09/14
Tapping Machine	Look Line s.r.l.	EM50 (TM50)	65351	11/14

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

Test Chambers

VT Receive Room Volume	156.28 m³
VT Source Room Volume	190 m³

AIRBORNE SOUND TRANSMISSION LOSS

ASTM E 90

Test Date	08/04/15
Data File No.	E9991.01
Client	United Plastics Corporation
Description	19.05 mm USG LEVELROCK® CSD® Early Exposure™ FR Gypsum Concrete, 18.8 mm Oriented Strand Board Sheathing, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 406.4 mm York PB Truss L/360 Open Web Truss, 12.7 mm ClarkDietrich RC Deluxe™ Resilient Channel, 15.9 mm USG SHEETROCK® Brand FIRECODE® C Core Gypsum Board
Specimen Area	10.98 m²
Technician	Leeland S. Hoover

Freq (Hz)	**Background SPL** (dB)	**Absorption** (m²)	**Source SPL** (dB)	**Receive SPL** (dB)	**Specimen TL** (dB)	**95% Confidence Limit**	**Number of Deficiencies**
80	64.7	14.8	108	68	40	3.70	-
100	45.6	13.3	106	70	36	1.70	-
125	38.4	9.8	105	64	42	1.00	5
160	36.0	9.6	106	63	45	1.30	5
200	30.5	9.7	104	56	50	1.50	3
250	28.5	9.5	103	51	54	1.00	2
315	29.5	9.2	105	51	56	0.80	3
400	27.3	7.5	103	45	60	0.50	2
500	25.8	7.2	103	45	62	0.50	1
630	26.3	7.1	104	43	64	0.50	0
800	27.9	7.1	104	42	64	0.40	1
1000	27.8	6.9	103	42	64	0.50	2
1250	29.3	6.9	104	42	64	0.60	3
1600	28.4	7.1	103	40	66	0.20	1
2000	20.2	7.9	103	40	66	0.30	1
2500	16.0	9.0	102	36	67	0.40	0
3150	15.4	10.2	103	33	71	0.40	0
4000	13.0	11.7	104	31	73	0.50	0
5000	11.8	14.0	103	27	75	0.50	-
6300	9.2	18.1	97	18	78	0.70	-
8000	8.2	24.4	96	13	81	0.80	-
10000	7.3	30.9	91	7	80	0.40	-

STC Rating **63** *(Sound Transmission Class)*

Deficiencies 29 *(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

Architectural Testing

ACCREDITED TL-144

AIRBORNE SOUND TRANSMISSION LOSS

ASTM E 90

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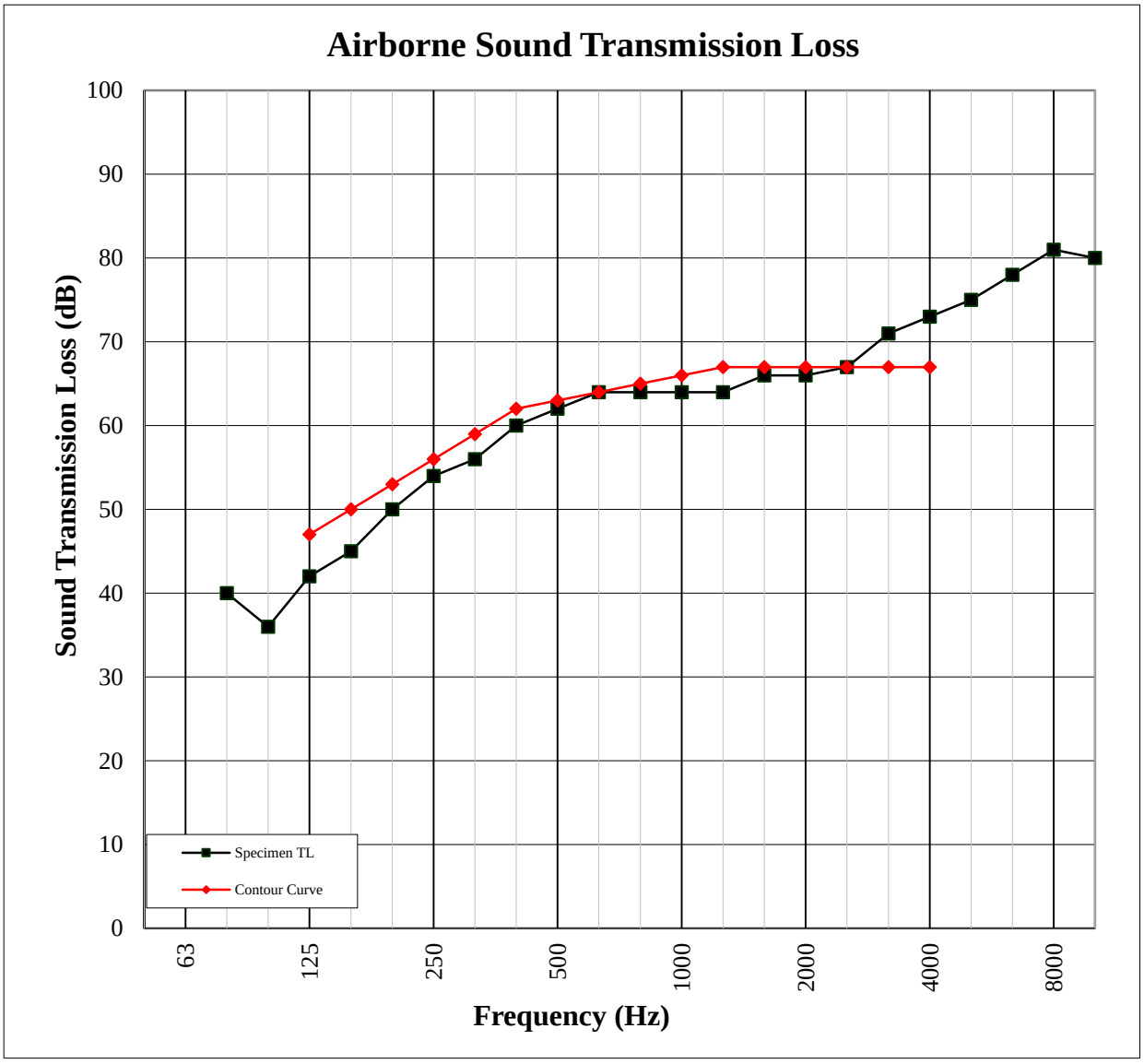
Description	19.05 mm USG LEVELROCK® CSD® Early Exposure™ FR Gypsum Concrete, 18.8 mm Oriented Strand Board Sheathing, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 406.4 mm York PB Truss L/360 Open Web Truss, 12.7 mm ClarkDietrich RC Deluxe™ Resilient Channel, 15.9 mm USG SHEETROCK® Brand FIRECODE® C Core Gypsum Board
Specimen Area	10.98 m²
Technician	Leeland S. Hoover



Architectural Testing

ACCREDITED TL-144

IMPACT SOUND TRANSMISSION

ASTM E 492

Test Date	08/04/15
Data File No.	E9991.01
Client	United Plastics Corporation
Description	19.05 mm USG LEVELROCK® CSD® Early Exposure™ FR Gypsum Concrete, 18.8 mm Oriented Strand Board Sheathing, 88.9 mm Johns Manville Unfaced R-13 Fiberglass Insulation, 406.4 mm York PB Truss L/360 Open Web Truss, 12.7 mm ClarkDietrich RC Deluxe™ Resilient Channel, 15.9 mm USG SHEETROCK® Brand FIRECODE® C Core Gypsum Board
Specimen Area	10.98 m²
Technician	Leeland S. Hoover

Freq (Hz)	**Background SPL** (dB)	**Absorption** (m²)	**Normalized Impact SPL** (dB)	**95% Confidence Limit**	**Number of Deficiencies**
80	64.4	15.2	64	3.7	-
100	46.0	11.7	66	3.1	0
125	37.9	9.8	63	2.0	0
160	36.1	9.3	61	1.8	0
200	30.4	10.4	61	1.5	0
250	28.8	9.4	62	1.1	0
315	29.7	9.6	62	0.9	0
400	27.5	7.8	58	0.8	0
500	25.1	7.2	59	0.6	0
630	24.9	6.9	59	0.3	0
800	26.7	7.2	59	0.6	0
1000	26.1	6.8	58	0.2	0
1250	28.8	6.9	60	0.3	0
1600	25.1	7.1	63	0.3	3
2000	19.6	8.0	64	0.4	7
2500	16.8	9.0	62	0.4	8
3150	16.1	10.1	59	0.3	8
4000	14.1	11.8	55	0.6	-
5000	13.2	14.0	51	0.6	-
6300	10.3	18.1	46	1.2	-
8000	9.2	24.3	40	1.3	-
10000	7.8	31.3	34	1.8	-

IIC Rating **41** *(Impact Insulation Class)*

Deficiencies 26 *(Sum of Deficiencies)*

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

Architectural Testing

ACCREDITED TL-144

IMPACT SOUND TRANSMISSION

ASTM E 492

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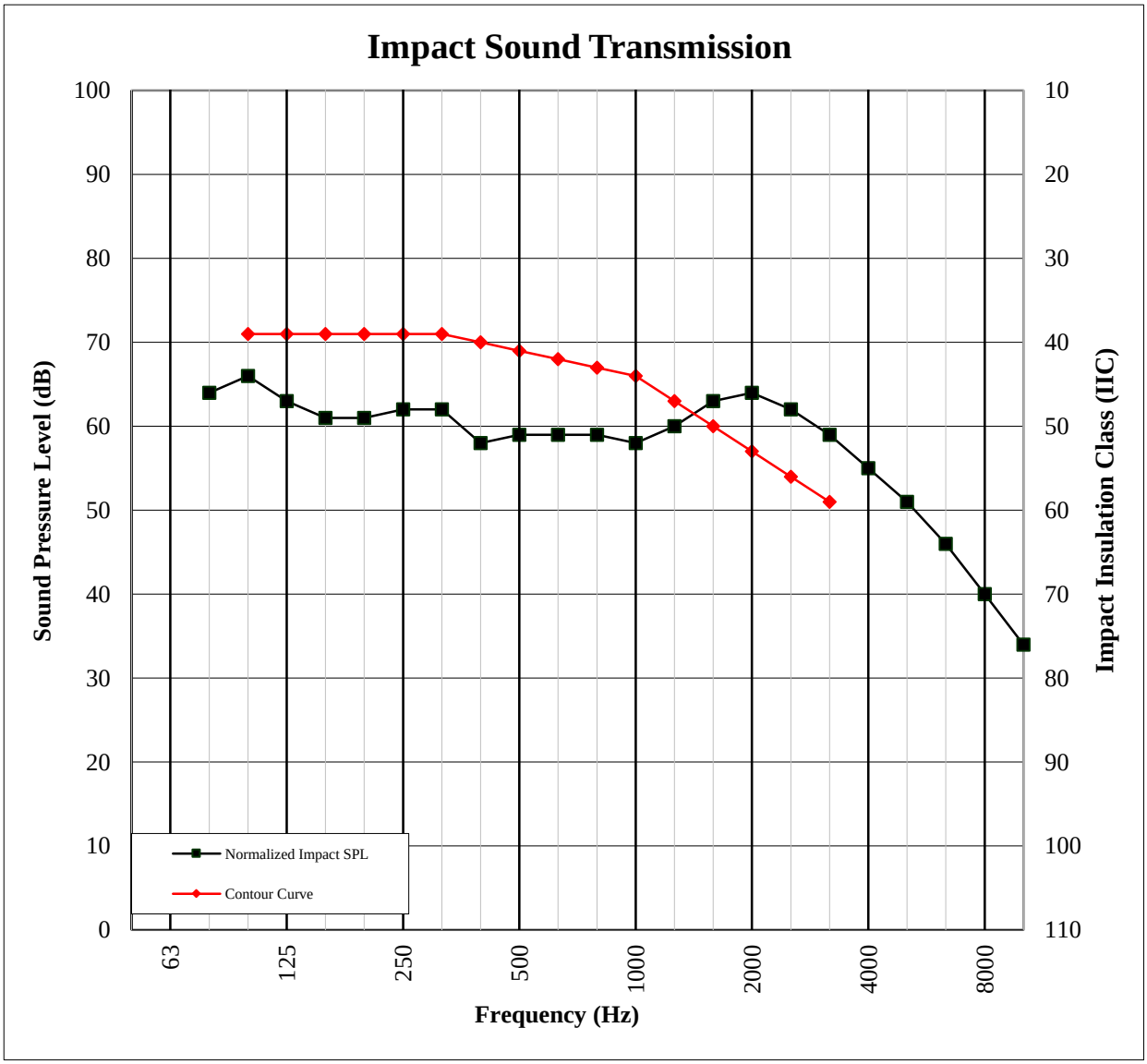
Specimen Area	10.98 m²
Technician	Leeland S. Hoover

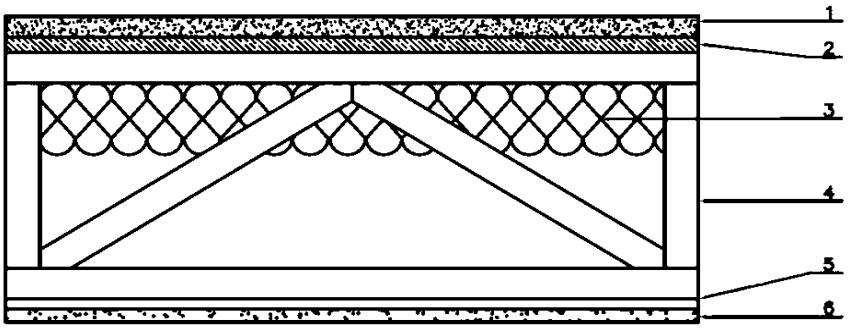


Photographs

Source Room View of Test Specimen

Receive Room View of Test Specimen

Drawings



1-Subfloor Topping
2-Subfloor
3-Insulation
4-Truss
5-Ceiling Isolation
6-Ceiling