



**Intertek Testing Services**  
**ETL SEMKO**

**REPORT OF**

**PRODUCT EVALUATION**

**CONDUCTED ON**

**ECO-BLOCK INSULATED CONCRETE FORMWORK**

**Manufactured by:**  
**POLYMOS INC.**  
**TERRASSE-VAUDREUIL**  
**QUEBEC, CANADA**

**FOR**

**ECO-BLOCK, LLC**  
**FT. LAUDERDALE**  
**FLORIDA**  
**33302**

**REPORT PREPARED BY**

**INTERTEK TESTING SERVICES NA LTD.**  
**WARNOCK HERSEY**  
**211 SCHOOLHOUSE STREET**  
**COQUITLAM, BC**  
**V3K 4X9**

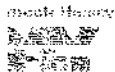
**REPORT NUMBER: 484-1876**

**DATE: JUNE 20, 2001**

**REVISED DATE: FEBRUARY 22, 2002**



**Intertek Testing Services NA Ltd.**  
211 Schoolhouse Street, Coquitlam, BC V3K 4X9 Canada



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February 21, 2002	Page 1	Commercial form height is 24 inches.

## PREFACE

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Revised Date: February 22, 2002

## INTRODUCTION

Intertek Testing Services NA Ltd./Warnock Hersey has conducted testing on the ECO-Block Expanded Polystyrene Insulated Concrete Formwork in accordance with ICBO ES AC12, "*Acceptance Criteria for Foam Plastic Insulation*" in conjunction with ASTM C578-95 "*Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation*." Ron Graves of R & D Services Inc. sampled the product on February 9, 2001 at the Polymos Inc. manufacturing facility in Terrasse-Vaudreuil, Quebec, Canada.

## PRODUCT DESCRIPTION

### ECO -Block Concrete Forming Units

<b>Foam Description:</b>	Interlocking stackable expanded polystyrene (EPS) foam form units for concrete forming.
Height:	24 in. (standard unit)
Length:	48 in. (standard unit)
Thickness:	2 in. (standard unit)
Material:	Expanded polystyrene foam manufactured from BASF Series, BF-422 beads
Color:	Grey

## TEST PROGRAM

### Expanded Polystyrene Testing

Test requirements for ICBO Evaluation Service AC12 August 2000, Acceptance Criteria for Foam Plastic Insulation, for one bead supplier.

Requirements as per ASTM C578-95 Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.

**Density** (ASTM D1622-98 Test Method for Apparent Density of Rigid Cellular Plastics)

**Compressive Strength** (ASTM D 1621-94 Test Method for Compressive Properties of Rigid Cellular Plastics)

**Flexural Strength Testing** (ASTM C203-99 Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation)

**Water Vapour Permeance** (ASTM E 96-94 Test Method for Water Vapor Transmission of Materials)

**Water Absorption Determination** (ASTM D2842-97 Test Method for Water Absorption of Rigid Cellular Plastics)

**Dimensional Stability** (ASTM D2126-94 Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging)

**Limiting Oxygen Index** (ASTM D2863-97 Test Method for Measuring the Minimum Oxygen Concentration to Support Candle-Like Combustion of Plastics (Oxygen Index))

**Thermal Resistance** (ASTM C 518-98 Standard Test Method for Steady State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus)

Note: Thermal Resistance testing was conducted by R & D Services Inc. Cookeville, Tennessee.  
NVLAP Laboratory Code: 200265-0  
Limiting Oxygen Index Testing was conducted by SGS US Testing in Los Angeles CA.  
NERTL-498

**TEST RESULTS**

Expanded – Polystyrene Testing

Density (ASTM D 1622-98)

TEST RESULT	REQUIREMENT	STATUS
1.626 lbs/ft <sup>3</sup>	1.35 lbs/ft <sup>3</sup> , min	Complied

Thermal Resistance (ASTM C 177-97)

TEST RESULT	REQUIREMENT	STATUS
4.114 F•ft <sup>2</sup> •h/Btu.in	4.0 F•ft <sup>2</sup> •h/Btu in, min.	Complied

Compressive Strength (ASTM D 1621-94)

TEST RESULT	REQUIREMENT	STATUS
21.15 psi	15.0 psi, min.	Complied

Flexural Strength (ASTM C 203-99)

TEST RESULT	REQUIREMENT	STATUS
43.50 psi	40.0 psi, min.	Complied

Water Vapour Permeance (ASTM E 96-94)

TEST RESULT	REQUIREMENT	STATUS
50.34 ng/Pa•s•m <sup>2</sup>	200 ng/Pa•s•m <sup>2</sup> , max.	Complied

Water Absorption (ASTM C 272-91)

TEST RESULT	REQUIREMENT	STATUS
2.10 %	3.0 % by vol, max.	Complied

Dimensional Stability (ASTM D 2126-94)

TEST RESULT	REQUIREMENT	STATUS
0.003 %	2.0 %, max.	Complied

Limiting Oxygen Index (ASTM D 2863-97)

TEST RESULT	REQUIREMENT	STATUS
31 %	24 % min.	Complied

## CONCLUSIONS

### Expanded Polystyrene Testing


The expanded polystyrene system identified as "ECO-Block Insulated Concrete Formwork" described in this report has met the requirements of the ICBO Evaluation Service AC12 *Acceptance Criteria for Foam Plastic Insulation* (July 2000) in conjunction with the ASTM C578-95 "*Standard Specification for Rigid Cellular Polystyrene Thermal Insulation for a Type II rigid Cellular Polystyrene.*"

**INTERTEK TESTING SERVICES NA LTD.**  
Warnock Hersey

Tested/Reported by:

  
Gavin Campbell, A.Sc.T.  
Technologist, Building Materials

Reviewed by:

  
Sheldon Warman, P.Eng.  
Manager, Building Materials

GC/lrh



Date: August 19, 2002

Project No. 3026044

Report No. 1

Client No. 28622

Description: Testing of Plastic Foam Insulation for ECO Block High Performance Wall System,

Client ECO Block, LLC  
4100 North Powerline Road  
Building 1, Suite 1 & 2  
Pompano Beach, Florida. U.S.A. 33073 Attention: Mr. Travis Mills

## **Introduction**

This report covers testing for the physical properties of a Type 2 expanded polystyrene (EPS) plastic foam insulation used in ECO Block high performance wall system manufactured by Tuscarora, Wilsonville Oregon Facility from one (1) bead type identified as Nova M97C. Tests were performed in accordance with CAN/ULC-S701-01 "Standard for Thermal Insulation Polystyrene, Boards and Pipe Covering". The samples were tested for thermal resistance, flexural strength, compressive strength, limiting oxygen index, dimensional stability and water absorption.

The samples for testing were randomly sampled by Sheldon Warman, P.Eng. of Intertek Testing Services NA Ltd. on April 23, 2002. The products were sampled from facility. Samples were received for testing May 9, 2002. Testing was performed between the dates of May 13, 2002 and August 10, 2002.

The thermal resistance tests were performed by R & D Services as per Report No. RD02247 dated July 24, 2002. The limiting oxygen index tests were performed by Bodycote Ortech Inc. as per Report No. 02-02-361 dated August 2, 2002.

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**Intertek Testing Services NA Ltd.**  
3210 American Drive, Mississauga, Ontario Canada L4V 1B3  
Telephone 905-678-7820 Fax 905-678-7131



## **Description**

<u>Foam Description:</u>	ECO Block High Performance Wall System Insulating Concrete Forms manufactured at Tuscarora Wilsonville, Oregon facility.
<u>Material:</u>	Expanded polystyrene foam manufactured from one (1) bead type identified as Nova M97C.
<u>Foam Panel Dimensions:</u>	406 mm high by 1219 mm long by 63.5 mm thick each side (16" by 48" by 2-1/2")
<u>Color:</u>	Gray
<u>Web Description:</u>	Polypropylene reinforcing webs are cast into EPS foam to create a positive connection between interior and exterior EPS walls and to serve as an anchor point for surface finishing materials.
<u>Web Material:</u>	Injection Molded Polypropylene
<u>Web Spacing:</u>	Every 203 mm (8") horizontally
<u>Web Color:</u>	Black

**Summary of Test Results**

**Nova M97C**

Property	CAN/ULC-S701-01 Requirement Number	Result	Requirement (Type 2)	Comment
1. Thermal Resistance for 25 mm (0.98") thickness	5.1.1 table 1	0.727 K.m <sup>2</sup> /W (4.127°F.ft <sup>2</sup> .h/Btu)	Min. 0.70 m <sup>2</sup> .C°/W (3.69°F.ft <sup>2</sup> .h/Btu)	Met requirement
2. Water Vapour Permanence	5.1.1 table 1	100 ng/Pa.s.m <sup>2</sup> (1.61 perms)	≤200ng/Pa.s.m <sup>2</sup> (≤3.48 perms) for 25 mm (0.98") thickness	Met requirement
3. Dimensional Stability	5.1.1 table 1	Max. -0.4% change	Max. 1.5%	Met requirement
4. Flexural Strength	5.1.1 table 1	345 kPa (50.1 psi)	Min 240 kPa (34.8 psi)	Met requirement
5. Water Absorption	5.1.1 table 1	0.91%	Max. 4.0%	Met requirement
6. Compressive Strength	5.1.1 table 1	182 kPa (26.3 psi)	Min. 110 kPa (16.0 psi)	Met requirement
7. Limiting Oxygen Index	5.1.1 table 1 & 5.2.1	30.5%	Min. 24%	Met requirement

**Test Results**

1. Thermal Resistance: ASTM C518-98

(a) Nova M97C

See R. & D. Services Report No. RD02247, Test No. RD021978TR, Specimen No. 1193020531-7

Property	Result	Requirement
Thickness	59.0 mm (2.322in.)	
Upper surface temperature	10.40°C (50.72°F)	
Lower surface temperature	37.41°C (99.34°F)	
Temperature differential	27.01 C° (48.62 F°)	
Mean temperature	23.91°C (75.03°F)	
Thermal resistance of specimen	1.71 K.m <sup>2</sup> /W (9.73°F.ft <sup>2</sup> .h/Btu)	
Thermal conductivity	0.0344 W/m.K (0.2385 Btu.in./h.ft <sup>2</sup> . °F)	
Thermal resistivity	0.605 K.m/W (4.193°F.ft <sup>2</sup> .h/Btu.in.)	
Thermal resistance @ 25 mm	0.727 m <sup>2</sup> .C°/W (4.127°F.ft <sup>2</sup> .h/Btu)	Min. 0.70 m <sup>2</sup> .C°/W (3.69°F.ft <sup>2</sup> .h/Btu) <sup>2</sup> .C°/W

**Test Results** (cont'd)

2. Water Vapour Permeance: ASTM E96-95

(a) Nova M97C

	Sample 1	Sample 2	Sample 3	Average
Thickness mm (ins.)	24.4 (0.961)	24.3 (0.955)	24.5 (0.963)	
Surface area m <sup>2</sup> (ft <sup>2</sup> )	0.0317 (0.389)	0.0317 (0.389)	0.0317 (0.389)	
Duration (h)	312	312	312	
Test Temperature °C (°F)	23 (73.4)	23 (73.4)	23 (73.4)	
Relative Humidity (R1-R2) (%)	50	50	50	
Saturation Pressure Pa ("Hg)	2810.4 (0.83)	2810.4 (0.83)	2810.4 (0.83)	
Moisture Gain g (grains)	4.68 (72.20)	5.76 (88.90)	4.53 (69.91)	
WVT g/h.m <sup>2</sup> (grain/h.ft <sup>2</sup> )	0.473 (0.594)	0.583 (0.733)	0.458 (0.681)	
Permeability ng/Pa.s.m (perm in)	2.29 (1.38)	2.79 (1.69)	2.23 (1.58)	
Water vapour Permeance ng/Pa.s.m <sup>2</sup> (perms)	94 (1.43)	115 (1.77)	91 (1.64)	100 (1.61)
Requirement				≤200ng/Pa.s.m <sup>2</sup> (≤3.48 perms) @ a thickness of 25 mm (0.98")

**Test Results** (cont'd)

3. Dimensional Stability: ASTM D2126: 7d @ 70°C (158°F)

(a) Nova M97C

	Sample 1	Sample 2	Sample 3	Average
Initial Length mm (in)	102.4 (4.032)	102.4 (4.033)	102.5 (4.034)	
Final Length mm (in)	102.0 (4.017)	102.1 (4.020)	102.1 (4.018)	
% Change in Length	-0.4	-0.3	-0.4	-0.4
Initial Width mm (in)	101.2 (3.984)	100.8 (3.969)	101.0 (3.975)	
Final Width mm (in)	100.8 (3.970)	100.4 (3.953)	100.6 (3.961)	
% Change in Width	-0.3	-0.4	-0.4	-0.4
Initial Thickness mm (in)	59.4 (2.340)	59.5 (2.344)	59.7 (2.350)	
Final Thickness mm (in)	59.3 (2.333)	59.3 (2.334)	59.5 (2.344)	
% Change in Thickness	-0.3	-0.4	-0.3	-0.3
Requirement (% Change)				Max 1.5%

4. Flexural Strength: ASTM C203 Method 1, Procedure B

(a) Nova M97C

Sample/ Specimen No.	Span mm (in.)	Thickness mm (in)	Width mm (in)	Break Load N (lb.)	Maximum Fiber Stress kPa (psi)	Requirement kPa (psi)
1/1	254 (10)	24.7 (0.972)	100.6 (3.962)	57.5 (12.92)	356 (51.7)	
1/2	254 (10)	24.5 (0.966)	100.6 (3.961)	50.5 (11.36)	318 (46.1)	
1/3	254 (10)	24.6 (0.969)	100.9 (3.971)	56.4 (12.69)	352 (51.1)	
2/1	254 (10)	24.8 (0.976)	101.7 (4.004)	54.0 (12.13)	330 (47.8)	
2/2	254 (10)	25.0 (0.984)	101.3 (3.988)	57.1 (12.84)	344 (49.9)	
2/3	254 (10)	25.1 (0.988)	101.6 (3.999)	54.7 (12.30)	326 (47.3)	
3/1	254 (10)	24.8 (0.978)	101.2 (3.986)	60.1 (13.51)	367 (53.2)	
3/2	254 (10)	24.8 (0.977)	101.3 (3.987)	57.7 (12.98)	353 (51.2)	
3/3	254 (10)	25.2 (0.992)	101.0 (3.976)	61.2 (13.75)	363 (52.7)	
Average					345 (50.1)	240 (34.8)

**Test Results** (cont'd)

5. Water Absorption: ASTM D 2842: 96h Immersion in Water @ a Depth of 51mm (2 in)

(a) Nova M97C

Sample No.	Dry Mass of Spec. g (lbs)	Initial Mass of Jig in Water g (lbs)	Initial Mass of Jig & Spec. in Water g (lbs)	Final Mass of Jig in Water g (lbs)	Final Mass of Jig & Spec. in Water g (lbs)	True Spec. Volume cm <sup>3</sup> (in <sup>3</sup> )	% by Volume Water Absorption	Requirement % by Volume Water Absorption
1	32.71 (0.072)	2190.92 (4.829)	1089.26 (2.401)	2191.04 (4.829)	1095.69 (2.415)	1128.06 (72.20)	0.56	
2	32.57 (0.072)	2189.07 (4.825)	1069.47 (2.357)	2189.47 (4.826)	1073.77 (2.367)	1148.27 (73.49)	0.34	
3	31.18 (0.069)	2190.15 (4.827)	1073.30 (2.366)	2190.57 (4.828)	1094.32 (2.412)	1127.43 (72.16)	1.83	
Mean							0.91	Max. 4.0

6. Compressive Strength ASTM D1621

(a) Nova M97C

Sample/ Specimen No.	Thickness mm (in.)	Area cm <sup>2</sup> (in <sup>2</sup> )	Load @ 10% Core Deformation N (lb.)	Compressive Strength kPa (psi)	Requirement kPa (psi)
1/1	50.8 (2.001)	227.0 (35.19)	4190 (941)	184 (26.7)	
1/2	51.4 (2.024)	228.6 (35.43)	4090 (919)	179 (25.9)	
2/1	49.8 (1.962)	228.2 (35.38)	4150 (932)	182 (26.3)	
2/2	50.9 (2.005)	229.0 (35.50)	4150 (932)	181 (26.3)	
3/1	50.9 (2.005)	228.4 (35.40)	4200 (945)	184 (26.7)	
3/2	50.9 (2.003)	229.3 (35.54)	4130 (928)	180 (26.1)	
Average				182 (26.3)	110 (16.0)

**Test Results** (cont'd)

7. Limiting Oxygen Index: ASTM D2863

(a) Nova M97C

See Bodycote Report No. 02-02-361

Ignition % Oxygen	Non-Ignition % Oxygen	Oxygen Index	Requirement
-	20.9		
-	29.7		
-	30.0		
30.5	-		
-	30.4		
30.5	-		
-	30.4		
30.5	-		
		30.5%	Min. 24%

**Conclusions**

**Physical Properties of Expanded Polystyrene**

The one (1) bead type of expandable polystyrene plastic foam insulation identified as Nova M97C in this report has met the requirements of CAN/ULC-S701-01 "Standard for Thermal Insulation, Polystyrene Boards and Pipe Covering," for the compressive resistance, dimensional stability, water vapour permeance, thermal resistance, water absorption, limiting oxygen resistance and flexural strength requirements for a type 2 classified material.

Tested and reported by Paul Roberts

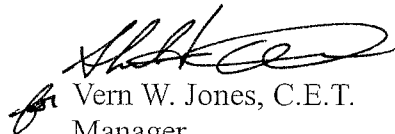
**Respectfully submitted,**

INTERTEK TESTING SERVICES NA LTD.

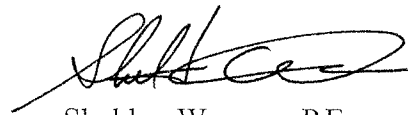
**REVIEWED BY:**



Paul Roberts  
Physical Testing Services



Vern W. Jones, C.E.T.  
Manager  
Physical Testing Services



Sheldon Warman, P.Eng.  
Manager  
Construction Products

PR/VWJ/SW/pr  
2 cc: client

cc: ITS, Coquitlam, B.C.

Appendix Page Attached

## APPENDIX

### TEST EQUIPMENT

1. Specimens were weighed using an Ohaus model GT4100 balance.
2. Compressive resistance properties were measured using a Baldwin/UTS Universal Testing machine.
3. Flexural strength properties were measured using an Instron model 1000 tester with a 100 pound capacity serial number 1926 weight beam.
4. Dimensions were measured using a Starrett vernier.
5. Specimens were conditioned using a Hot Pack, 175 Series Environmental Chamber, model No. 47532, serial No. 74571.
6. A Blue M model no. OV-490A-3, serial no. OV8995 oven was used for the dimensional stability tests.



SINCE 1896

# REPORT

**Intertek** ETL SEMKO

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. 3075784

Date: July 25, 2005

**REPORT NO. 3075784-001**

## **SOUND TRANSMISSION LOSS TESTS AND CLASSIFICATION OF CONCRETE FILLED ECO-BLOCK INSULATING CONCRETE FORMS**

**RENDERED TO**

**ECO-BLOCK, LLC  
11220 GRADER STREET, SUITE 700  
DALLAS, TX 75238**

### **INTRODUCTION**

This report gives the results of Sound Transmission Loss tests and the determination of the Sound Transmission Class on concrete filled ECO-Block Insulating Concrete Forms. The test samples were constructed and poured by the client at Intertek on April 13, 2005

### **AUTHORIZATION**

Signed Quote No. 16547799.

### **TEST METHOD**

The specimens were tested in accordance with the American Society for Testing and Materials designation ASTM E90-2004, "Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions", and classified in accordance with the American Society for Testing and Materials designation ASTM E413-2004, "Classification for Rating Sound Insulation" and ASTM Standard E1332-90 (Re-Approved 2003) entitled, "Standard Classification for Determination of Outdoor-Indoor Transmission Class".

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## GENERAL

The sound-insulating property of a partition element is expressed in terms of the sound transmission loss. The procedure for determining this quantity is to mount (and perimeter seal) the test specimen as a partition between two reverberation rooms. Sound is introduced in one of the rooms (the source room) and measurements are made of the noise reduction between source room (10,000 cu .ft.) and receiving room (16,640 cu. ft.). The rooms are so arranged and constructed that the only significant sound transmission between them is through the test specimen.

The test opening is constructed such that it is approximately one inch larger in size than the test specimen. The specimen is placed in the test opening an a half-inch bead of "DUX-SEAL", a dense, non-hardening, clay-like material, to isolate it from the supporting base. The space between the test specimen and the wall opening is sealed on both sides employing the same sealing material.

The purpose of the Sound Transmission Class (STC) is to provide a single figure rating that can be used for comparing the sound-insulating properties of partition elements used for general building design purposes. The higher the rating (STC) the greater the sound insulating properties of the partition.

The purpose of the Outdoor-Indoor Transmission (OITC) is to provide a single number rating that can be used for comparing building façade designs, including walls, doors, windows and combinations thereof. This rating is designed to correlate with subjective impressions of the ability of building elements to reduce the overall loudness of ground and air transportation noise. It is intended to be used as a rank ordering device.

## DESCRIPTION OF TEST SPECIMENS

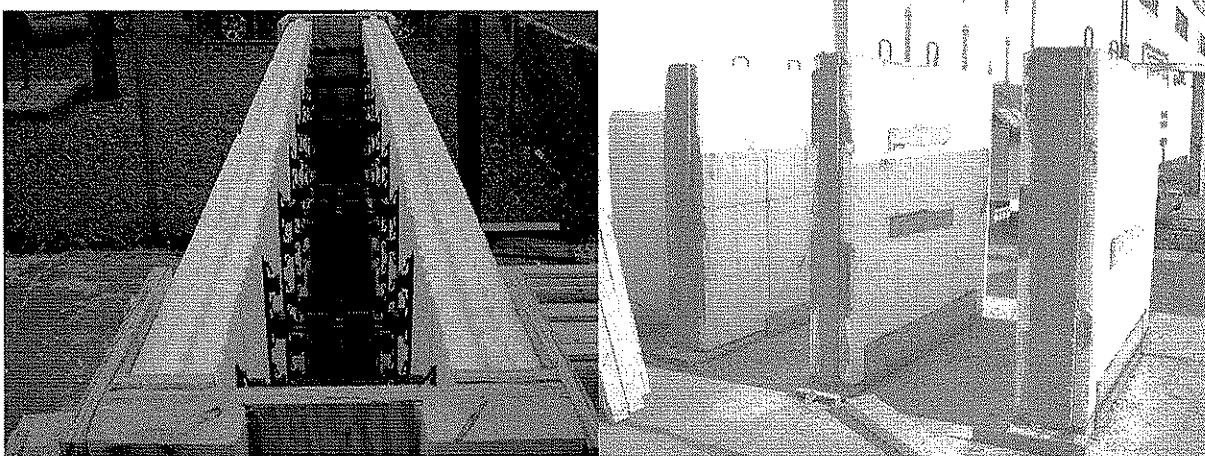
The test specimens consisted of 73 inch wide by 65 inch high concrete filled ECO-Block Insulating Concrete Forms. The walls of the forms were 2 ½ inch thick expanded polystyrene panels. Plastic webbing bridged and supported the forms. The forms were filled with 2500 Fine Mix Concrete and allowed to cure for over 60 days prior to testing.

A 4 inch thick concrete wall assembly and an 8 inch thick concrete wall assembly were tested alone and with gypsum board applications.

Checked by: *JK*



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

**DESCRIPTION OF TEST SPECIMENS** cont'd4 inch thick specimenTest #1 – Insulating concrete wall section aloneTest #2 – Wall section with ½ inch gypsum board screwed to the source side.8 inch thick specimenTest #1 – Insulating concrete wall section aloneTest #2 – Wall section with ½ inch gypsum board screwed to the source side.Checked by: *JK***Intertek****ETL SEMKO****NVLAQ**Accredited by the National  
Voluntary Laboratory Accreditation  
Program for the Specific  
Accreditation under Lab Code  
100402-0.

**RESULTS OF TESTS**4 inch thick specimen

1/3 Octave Band Center Frequency Hz	Sound Transmission Loss in dB	
	Test #1	Test #2
80	28	29
100	32	33
125	36	37
160	36	39
200	41	41
250	41	41
315	41	40
400	42	41
500	46	43
630	49	46
800	51	50
1000	53	55
1250	54	57
1600	55	59
2000	52	60
2500	48	61
3150	40	58
4000	46	62
5000	53	64
Sound Transmission Class	44	50
Outdoor-Indoor Transmission Class	42	42

**PRECISION**

For any pair of rooms and microphone system, the 95% confidence interval  $\Delta$ TL, for transmission loss must be less than the following.

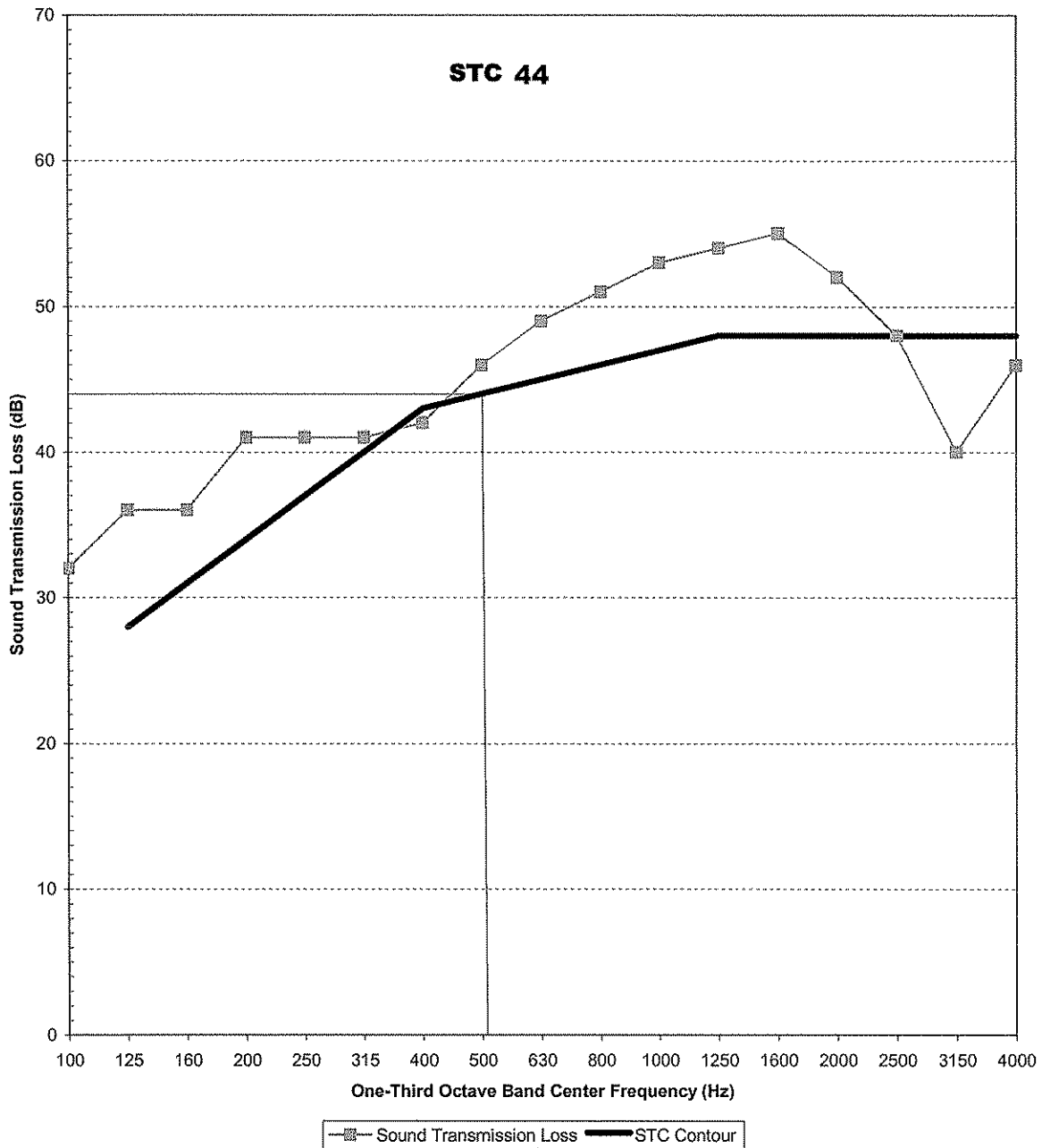
Range of One-Third Octave Bands	Transmission Loss Uncertainty, dB	
	Required	Actual
125 and 160	3	<1.5
200 and 250	2	<1.5
315 - 4000	1	<1

Checked by: *JK***Intertek****ETL SEMKO****NVLAQ**

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Laboratory Accreditation Program for  
the Specific Accreditation under Lab  
Code 100402-0.

**Sample #1**

**Sound Transmission Loss**



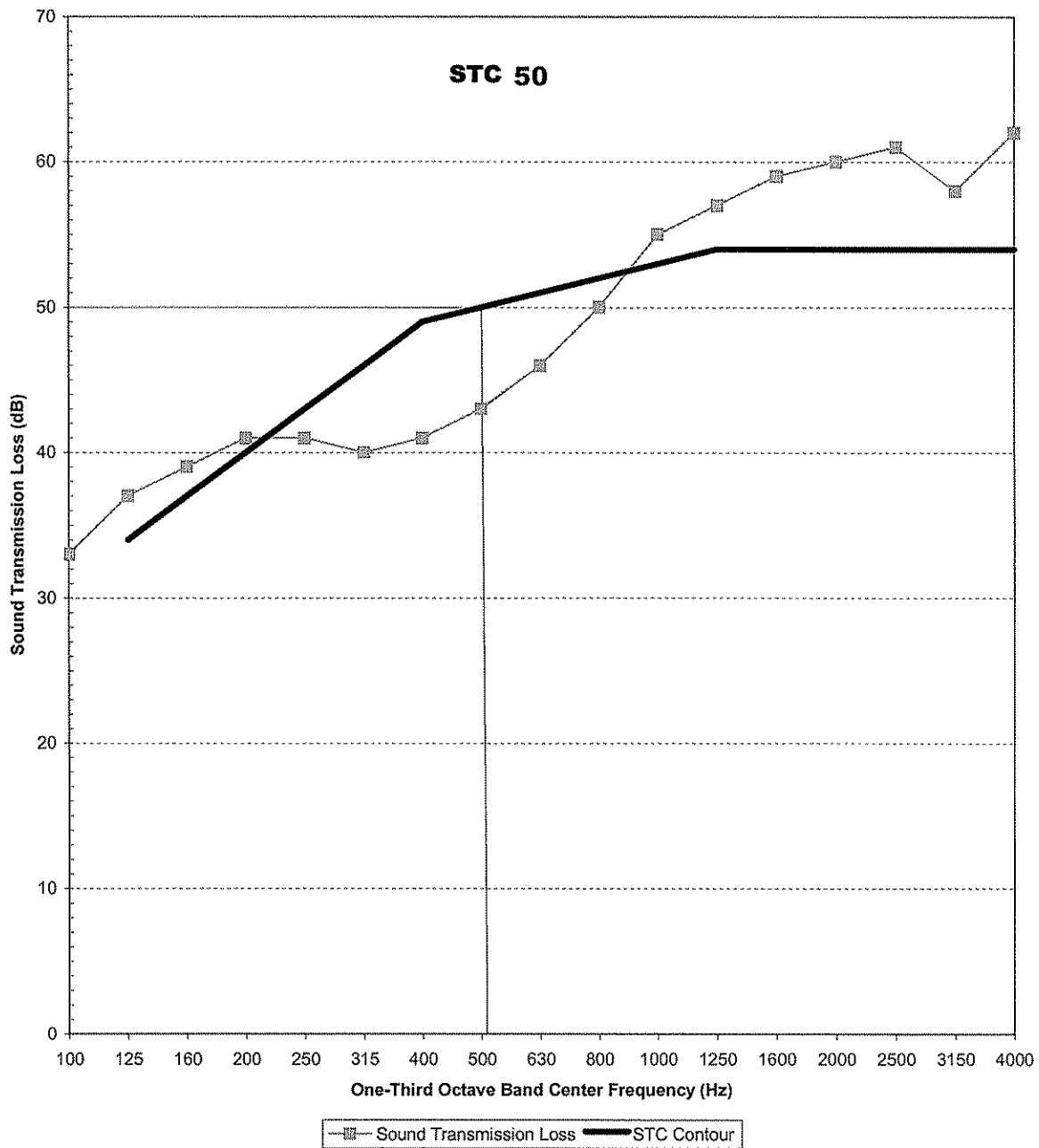
Checked by: *JK*



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

**Sample #2**

**Sound Transmission Loss**



Checked by: *CF*



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

**RESULTS OF TESTS**

8 inch thick specimen

1/3 Octave Band Center Frequency Hz	Sound Transmission Loss in dB	
	Test #1	Test #2
80	32	32
100	34	34
125	37	36
160	39	39
200	42	42
250	44	43
315	47	45
400	50	48
500	53	50
630	56	51
800	59	56
1000	61	60
1250	60	60
1600	62	59
2000	59	62
2500	53	63
3150	45	62
4000	52	65
5000	58	65
Sound Transmission Class	49	54
Outdoor-Indoor Transmission Class	45	44

**PRECISION**

For any pair of rooms and microphone system, the 95% confidence interval  $\Delta TL$ , for transmission loss must be less than the following.

Range of One-Third Octave Bands	Transmission Loss Uncertainty, dB	
	Required	Actual
125 and 160	3	<1.5
200 and 250	2	<1.5
315 - 4000	1	<1

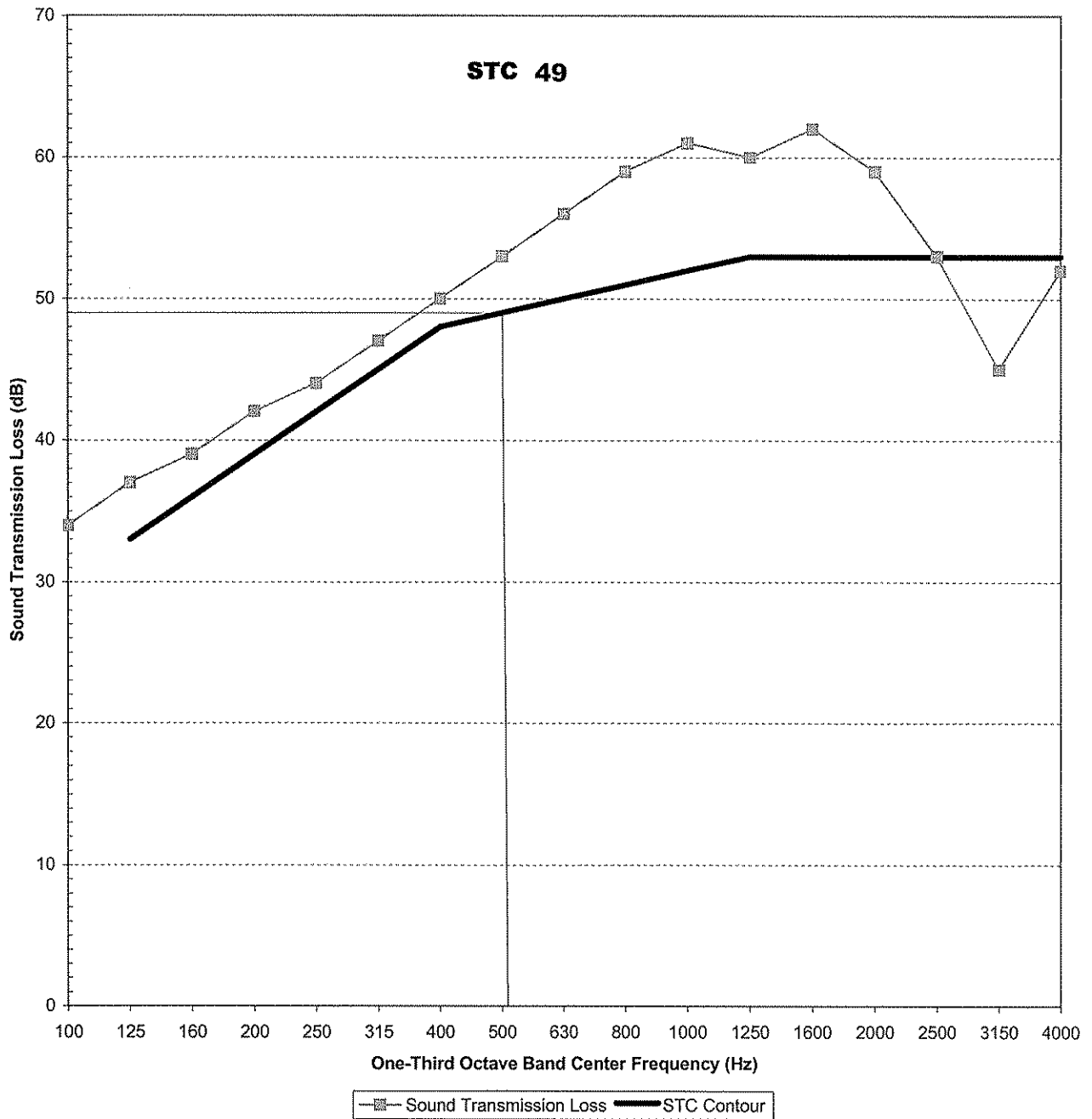
Checked by: *4/LL*



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

**Sample #1**

**Sound Transmission Loss**



Checked by: *FL*



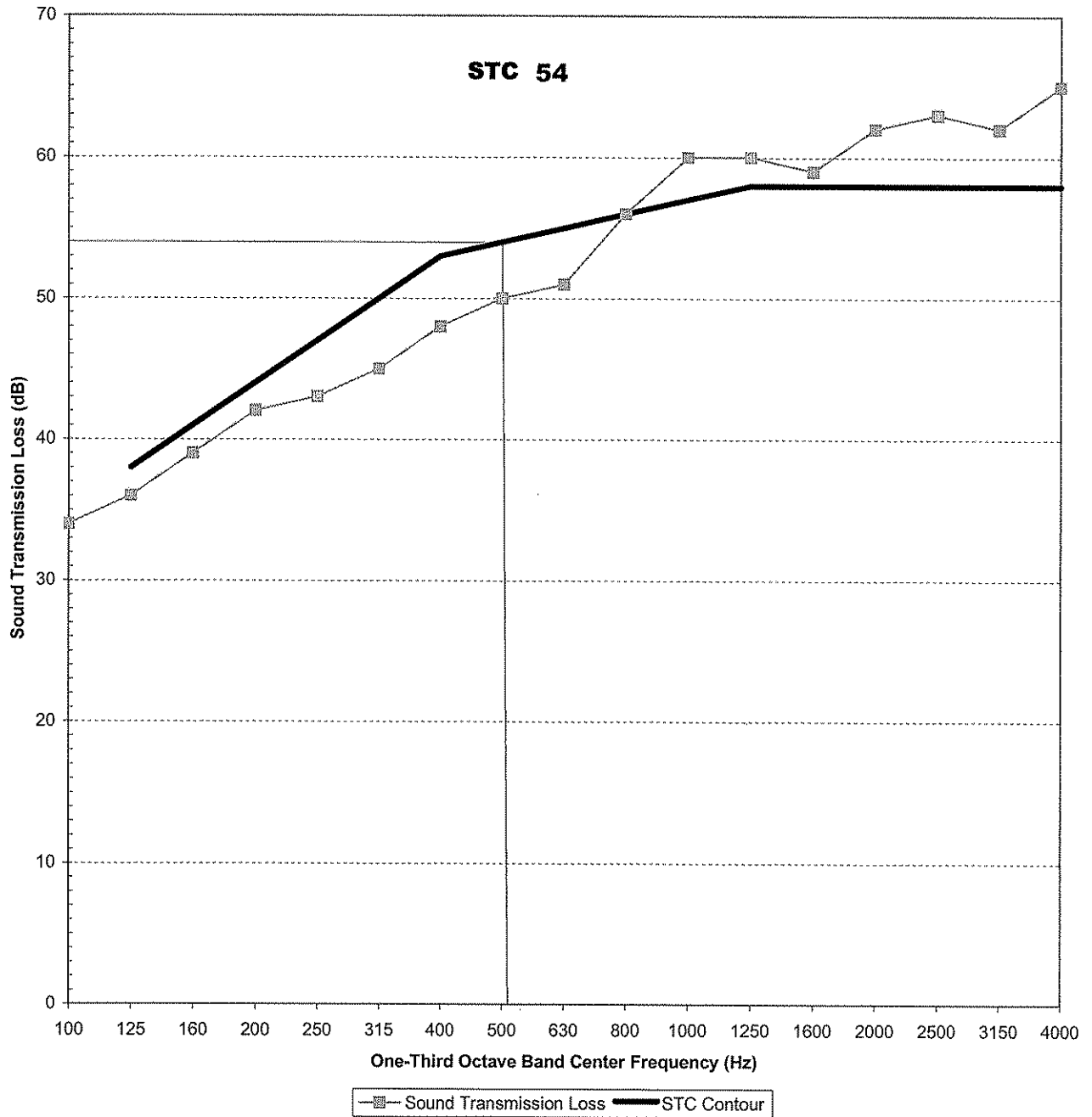
**ETL SEMKO**



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**Sample #2**

**Sound Transmission Loss**



Checked by: *Q/L*



**ETL SEMKO**



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

**REMARKS**

1. Curing Period: Over 60 days
2. Ambient Temperature: 72-78°F
3. Relative Humidity: 55-75%

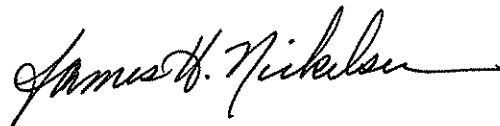
**CONCLUSION**

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.

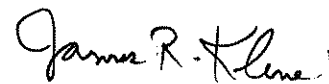
Date of Test: June 27, 2005 through June 29, 2005

Report Approved by:



James H. Nickelsen  
Senior Project Engineer  
Acoustical Testing

Report Reviewed By:



James R. Kline  
Associate Engineer  
Acoustical Testing

Attachments: None



**Architectural Testing**

**ACOUSTICAL PERFORMANCE TEST REPORT**

**Rendered to:**

**ECO-BLOCK, LLC**

**SERIES/MODEL: ECO-Block Insulating  
Concrete Forming System  
with Gypsum Board**

**Report No: 01-46689.02**  
**Test Date: 08/14/03**  
**Report Date: 09/02/03**  
**Expiration Date: 08/14/07**

130 Derry Court  
York, PA 17402-9405  
phone: 717.764.7700  
fax: 717.764.4129  
[www.archtest.com](http://www.archtest.com)

**ACOUSTICAL PERFORMANCE TEST REPORT**

Rendered to:

ECO-BLOCK, LLC  
4100 North Powerline Road  
Building 1, Suite 1 & 2  
Pompano Beach, Florida 33073

Report No: 01-46689.02  
Test Date: 08/14/03  
Report Date: 09/02/03  
Expiration Date: 08/14/07

**Test Sample Identification:**

**Type:** The ECO-Block Insulating Concrete Forming System with Gypsum Board

**Overall Size:** 96" x 96"

**Project Scope:** Architectural Testing, Inc. (ATI) was contracted by ECO-Block, LLC to conduct a sound transmission loss test and a sound absorption test on an insulating concrete forming (ICF) system. A summary of the results is listed in the Test Results section and the complete test data is included as Appendix B of this report.

**Test Methods:** The tests were conducted in accordance with the following:

ASTM E 90-02, *Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.*

ASTM E 413-87 (Re-approved 1999), *Classification for Rating Sound Insulation.*

ASTM E 1332-90 (Re-approved 1998), *Standard Classification for Determination of Outdoor-Indoor Transmission Class.*

ASTM C 423-02, *Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.*

ASTM E 795-00, *Standard Practices for Mounting Test Specimens During Sound Absorption Tests.*

ASTM C 39, *Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.*

**Test Equipment:** The equipment, used to conduct these tests, meets the requirements of ASTM E 90-02. The microphones were calibrated before conducting sound transmission loss tests. The test equipment and test chamber descriptions are listed in Appendix A.

**Sound Transmission Loss Test Procedure:**

A double stud filler wall was constructed with 2" x 4" wood studs spaced 16" on center. Three layers of 5/8" type "X" Gypsum board were fastened to the source side of the filler wall. Three layers of 5/8" type "X" Gypsum board were fastened to the receive side of the filler wall. The cavity was filled with R-19 fiberglass insulation. The perimeter and seams were sealed with acoustical sealant. A sound transmission loss test was then conducted on the filler wall. The filler wall achieved an STC rating of 63. The filler wall plug was removed. The test specimen was assembled in the opening. The interior face of the sample, when installed, was approximately 1/4" from being flush with the receiving room side of the filler wall. A stethoscope was used to check for any abnormal air leaks before the test.

One background noise sound pressure level, and five sound absorption measurements were conducted at each of the five microphone positions. Two sound pressure level measurements were made simultaneously in both rooms, at each of the five microphone positions. The air temperature and relative humidity conditions were monitored and recorded during the background, absorption, source, and receive room measurements.

**Sound Absorption Test Procedure:**

The sound absorption of the reverberation chamber was measured before the test specimen was installed. This measurement shall be referred to as the empty room test. For the type "A" mounting, the test specimen was mounted in the same opening in which the sound transmission loss test was performed with the absorptive side exposed to the sound field. The sound absorption test was then re-run. The absorption measurement with the specimen inside the chamber shall be referred to as the full room test.

For the empty and full room tests, ten decay measurements were conducted at each of the five microphone positions. The sound absorption test was conducted at 1/3 octave band frequencies ranging from 80 to 5000 hertz. The air temperature and relative humidity conditions were monitored and recorded during the empty and full room measurements.

## Sample Descriptions:

### Sample Construction:

The test sample dimensions were 8' x 8' x 11" consisting of ECO-Block Insulating Concrete Forming System on each side of a 6" thick concrete core.

The ECO-Block Insulating Concrete Forming System consists of 2-1/2" thick, 1.5 pcf expanded polystyrene (EPS) panels on each side of the concrete core. The ECO-Block ICF System has polypropylene webs embedded into the EPS with connectors that attach to embedded webs to maintain the desired concrete core thickness\*. The ECO-Block ICF System was sampled by Jacques St. Denis of Intertek Testing Services at Polymos Inc. in Terrasse Vaudreuil, Quebec, Canada on May 28, 2003 as required by ICCES AC85. The sampled materials were sent to Architectural Testing, Inc. and used in the construction of the ECO-Block ICF System. Architectural Testing Inc. witnessed and verified the construction of the wall system. The EPS resin used to manufacture the ECO-Block ICF System was Nova 35MB. The concrete was a 3500 psi compressive strength concrete mix with 1/2" aggregate and a water/cement ratio of 0.5. The compressive strength cylinder tests are included in Appendix B. Photographs of the sample construction and setup are included in Appendix C.

*\* - No other reinforcement was used on the exterior of the EPS panels prior to pouring the concrete. As a result, the midspan of the sample bowed outward on each side a maximum of 7" overall concrete thickness at the bottom of the sample.*

**For Test A:** 1/2" Gypsum board and 0.027" thick resilient channel was applied to the receive side (interior) of the wall construction. The resilient channel was placed horizontally every 16" spanning the entire 8 feet. The Gypsum board was screwed to the resilient channel using self-tapping drywall screws. The screws were placed 12" on center going across each channel.

**For Test B:** 1/2" Gypsum board was adhered and screwed to the receive side of the specimen. The Gypsum board was adhered using panel and foam board adhesive. The Gypsum board was fastened to the wall construction using 2" drywall screws placed 12" on center vertically and every 16" horizontally.

**Comments:** The weight of the sample was approximately 5203 lbs for Sample A, and 5195 lbs for Sample B. The client did not supply drawings on the insulating concrete forming system. The ECO-Block Insulating Concrete Forming System was disassembled, and the components will be retained by ATI for four years.

**Test Results:**

**ASTM E 90 Test Results:** The STC (Sound Transmission Class) rating was calculated in accordance with ASTM E 413-87. The OITC (Outdoor-Indoor Transmission Class) was calculated in accordance with ASTM E 1332-90. A summary of the sound transmission loss test results on the ECO-Block Insulating Concrete Forming System is listed below.

ATI Job File No.	Sample Description	STC	OITC
01-46689.01A	ECO-Block Insulating Concrete Forming System with resilient channel and 1/2" Gypsum board on the receive side.	50	43
01-46689.01B	ECO-Block Insulating Concrete Forming System with 1/2" Gypsum board adhered and screwed to the receive side.	51	44

**ASTM C 423 Test Results:** The absorption testing was performed without any drywall or resilient channel. A summary of the sound absorption tests is listed below:

Sample ID Number and Sample Description	1/3 Octave Band Absorption Coefficients						NRC	SAA
	125	250	500	1000	2000	4000		
01-45829.01B ECO-Block Insulating Concrete Forming System	0.04	0.01	0.08	0.07	0.08	0.18	0.05	0.05

The complete test results are listed in Appendix B.

This report is prepared for the convenience of our customer and endeavors to provide accurate and timely project information. It contains a summary of observations made by a qualified representative of Architectural Testing, Inc. The results of this report apply only to the specimen that was tested. The statements made herein do not constitute approval, disapproval, certification or acceptance of performance or materials.

A copy of this report will be retained by ATI for a period of four years. This report is the exclusive property of the client so named herein. This report shall not be reproduced, except in full, without written approval by Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC:

  
Digitally Signed by: Brandon Ward

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Brandon C. Ward  
Technician - Acoustical Testing

  
Digitally Signed by: Todd D. Kister

---

Todd D. Kister  
Senior Technician - Acoustical Testing

BCW:vlm  
01-46689.02



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**DOCUMENT CONTROL ADDENDUM #01-46689.00**

**Current Issue Date: 09/02/03**

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**Report No.: 01-46689.01**

**Requested by:** Sheldon Warman, P.E., ECO-Block, LLC

**Purpose:** Sound transmission loss test report on a concrete wall panel with two different options: Option 1: Gypsum board and resilient channel on the receive side.  
Option 2: Gypsum board with adhesive and screws on the receive side.

**Issued Date:** 08/29/03

**Comments:**

**Report No.: 01-46689.02**

**Requested by:** Sheldon Warman, P.E., ECO-Block, LLC

**Purpose:** Revise Report Number 01-46689.01

**Issued Date:** 09/02/03

**Comments:** Sound absorption data was added to the report.

## Appendix A

### Instrumentation:

Instrument	Manufacturer	Model	Description	ATI Number
Analyzer	Agilent Technologies	35670A	Dynamic signal analyzer	Y002929
Receive Room Microphone	ACO Pacific	7047	1/2", pressure type, condenser microphone	Y002822
Source Room Microphone	ACO Pacific	7047	1/2", pressure type, condenser microphone	Y002818
Receive Room Preamp	ACO Pacific	4012	1/2" preamplifier	Y002807
Source Room Preamp	ACO Pacific	4012	1/2" preamplifier	Y002752
Microphone Calibrator	Bruel & Kjaer	4228	Pistonphone calibrator	Y002186
Noise Source	Delta Electronics	SNG-1	Two, non-coherelated "Pink" noise signals	Y002181
Equalizer	Rane	RPE228	Programmable EQ	Y002180
Power Amplifiers	Renkus-Heinz	P2000	2 - Amplifiers	Y002179 Y001779
Receive Room Loudspeakers	Renkus-Heinz	Trap Jr/9"	2 - Loudspeakers	Y001784 Y001785
Source Room Loudspeakers	Renkus-Heinz	Trap Jr/9"	2 - Loudspeakers	Y002649 Y002650

### Test Chamber:

	Volume	Description
Receiving Room	8291.3 ft <sup>3</sup> (234m <sup>3</sup> )	Rotating vane and stationary diffusers. Temperature and humidity controlled. Isolation pads under the floor.
Source Room	7296.3 ft <sup>3</sup> (206.6m <sup>3</sup> )	Stationary diffusers only. Temperature and humidity controlled.

	Maximum Size	Description
TL Test Opening	14 ft wide by 10 ft high	Vibration break between source and receive rooms.

## **Appendix B**

### **Complete Sound Transmission Loss and Crush Test Results**

## SOUND TRANSMISSION LOSS

ASTM E90


### Architectural Testing

<b>ATI No.</b>	01-46689.01A	<b>Date</b>	08/13/03
<b>Client</b>	ECO-Block, LLC		
<b>Specimen</b>	Concrete wall panels with resilient channel and 1 layer 1/2" Gypsum board on receive side		
<b>Specimen Area</b>	64.00 Sq Ft		
<b>Filler Area</b>	76.00 Sq Ft		
<b>Operator</b>	Brandon C. Ward		

	Bkgrd	Absorp	Source	Receive	Filler	Specimen
Temp F	78.1	79.0	80.1	79.8	69.8	79.3
RH %	58.9	57.6	56.0	56.6	67.2	57.3

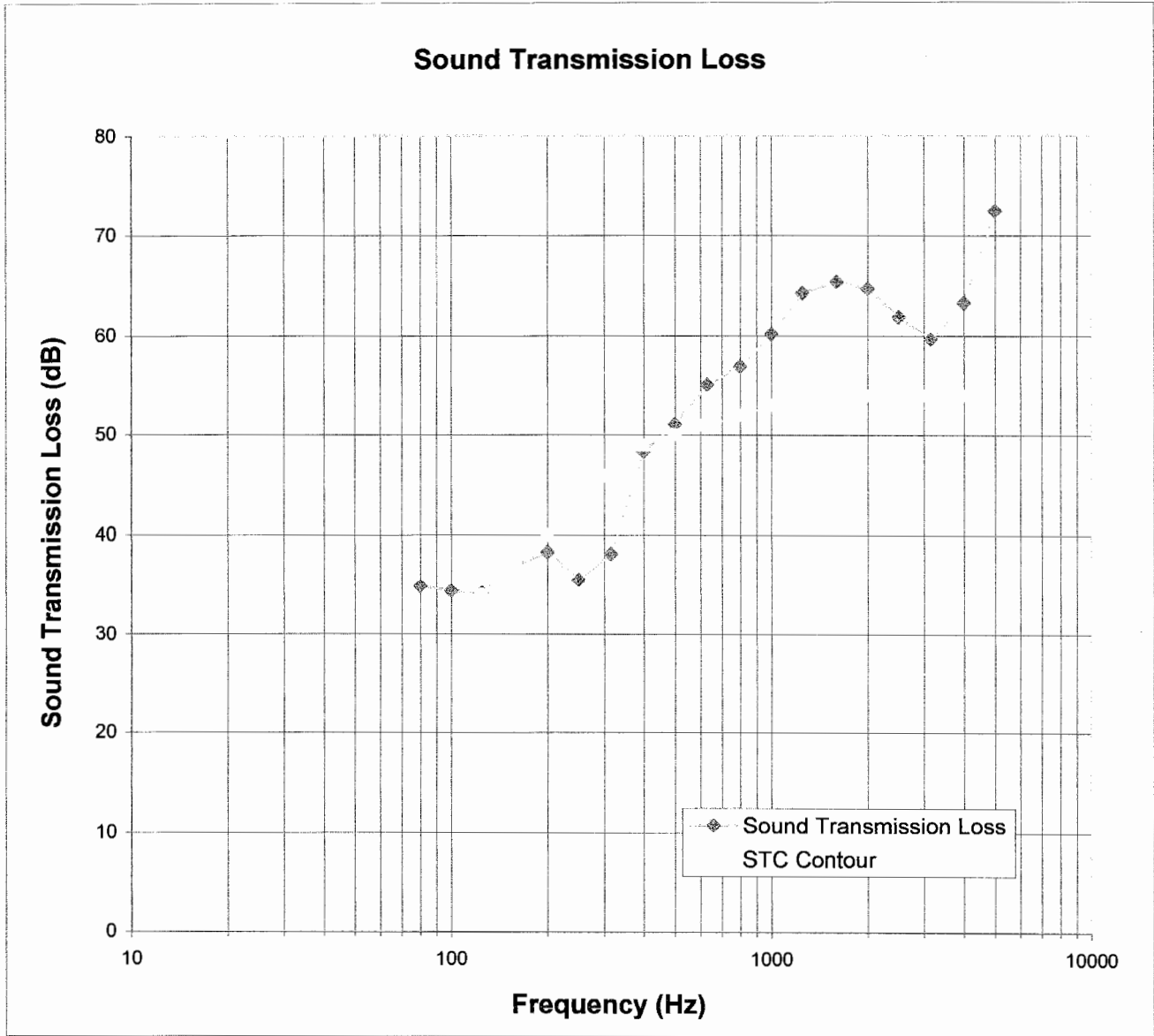
Freq (Hz)	Bkgrd SPL (dB)	Absorp (Sabines /Sq Ft)	Source SPL (dB)	Receive SPL (dB)	Filler TL (dB)	Specimen TL (dB)	95% Conf Limit	No. of Deficiencies	Trans Coef Diff
80	44.0	41.8	99.0	67.2	36.4	35	3.12	0	2.0
100	43.7	50.4	98.7	66.5	40.3	34	2.97	0	6.3
125	42.2	52.5	102.2	69.0	47.4	34	2.49	0	12.7
160	43.3	53.7	105.4	69.6	47.7	37	1.12	0	10.3
200	43.5	70.4	109.2	70.7	53.2	38	0.60	2	14.3
250	39.4	62.8	111.1	75.6	57.9	36	1.29	7	21.6
315	37.9	57.2	108.7	71.1	63.2	38	0.84	8	24.3
400	34.9	57.5	108.3	60.4	67.6	48	0.87	1	18.5
500	30.6	53.5	106.5	56.2	69.6	51	0.40	0	17.7
630	21.9	55.1	109.3	54.8	71.7	55	0.50	0	15.8
800	21.5	59.9	111.1	54.6	70.3	57	0.52	0	12.9
1000	20.8	61.4	110.7	50.7	77.4	60	0.35	0	16.4
1250	21.1	67.3	111.7	47.3	83.6	64	0.38	0	18.7
1600	15.8	73.4	115.8	49.9	86.5	65	0.35	0	20.5
2000	11.5	77.1	107.8	42.4	87.0	65	0.26	0	21.7
2500	8.1	90.7	104.5	41.1	85.7	62	0.19	0	23.1
3150	7.1	112.0	104.4	42.2	86.5	60	0.26	0	26.1
4000	7.4	135.5	102.2	35.7	85.6	63	0.28	0	21.7
5000	8.3	178.0	99.3	22.8	83.0	73	0.59	0	10.2

**STC Rating**                    50 *(Sound Transmission Class)*  
**Deficiencies**                18 *(Number of deficiencies versus contour curve)*  
**OITC Rating**                43 *(Outdoor/Indoor Transmission Class)*

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**Architectural Testing**

**ATI No.** 01-46689.01A **Date** 08/13/03  
**Client** ECO-Block, LLC  
**Specimen** Concrete wall panels with resilient channel and 1 layer 1/2" Gypsum board on receive side  
**Specimen Area** 64.00 Sq Ft  
**Filler Area** 76.00 Sq Ft  
**Operator** Brandon C. Ward



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## SOUND TRANSMISSION LOSS

ASTM E90


### Architectural Testing

<b>ATI No.</b>	01-46689.01B	<b>Date</b>	08/14/03
<b>Client</b>	ECO-Block, LLC		
<b>Specimen</b>	Concrete wall panels with 1 layer 1/2" Gypsum board with adhesive and screws fastening it to the receive side		
<b>Specimen Area</b>	64.00 Sq Ft		
<b>Filler Area</b>	76.00 Sq Ft		
<b>Operator</b>	Brandon C. Ward		

	Bkgrd	Absorp	Source	Receive	Filler	Specimen
Temp F	81.4	81.7	81.6	82.0	69.8	81.7
RH %	60.0	59.6	58.4	59.5	67.2	59.3

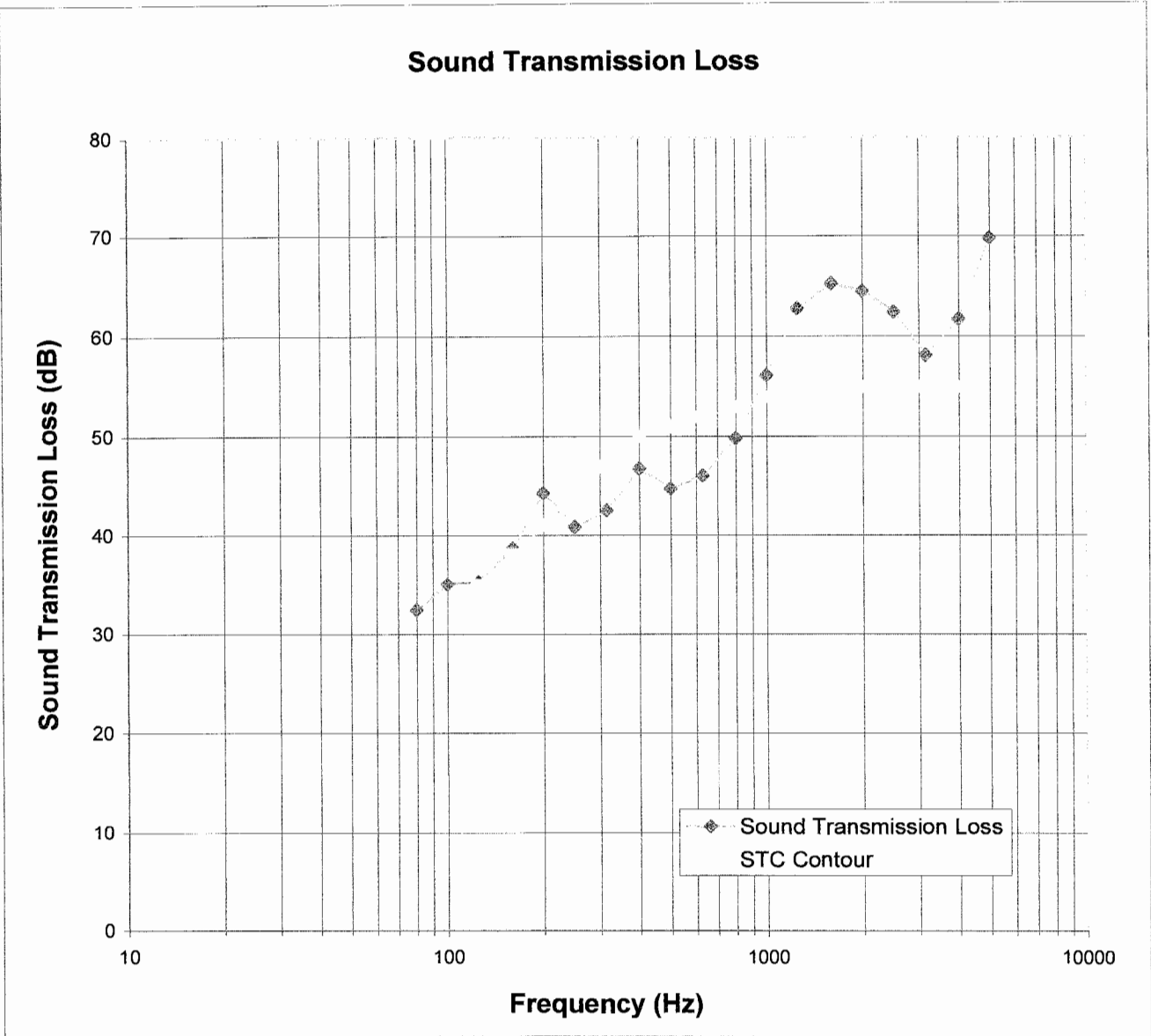
Freq (Hz)	Bkgrd SPL (dB)	Absorp (Sabines /Sq Ft)	Source SPL (dB)	Receive SPL (dB)	Filler TL (dB)	Specimen TL (dB)	95% Conf Limit	No. of Deficiencies	Trans Coef Diff
80	44.6	41.8	92.3	63.0	36.4	32	2.86	0	4.5
100	39.4	45.8	98.5	66.2	40.3	35	2.90	0	5.7
125	38.9	45.5	103.9	70.3	47.4	35	2.43	0	11.7
160	41.5	49.5	107.5	70.6	47.7	39	0.75	0	8.9
200	43.1	49.4	112.6	70.2	53.2	44	0.66	0	8.9
250	37.8	47.3	113.7	74.2	57.9	41	0.97	3	16.3
315	35.6	47.7	112.0	70.8	63.2	42	0.58	5	20.0
400	30.7	53.2	110.9	65.0	67.6	47	0.63	3	20.1
500	28.5	57.3	108.8	64.6	69.6	45	0.25	6	24.2
630	21.1	66.2	112.0	65.8	71.7	46	0.28	6	24.9
800	22.1	66.5	113.8	63.8	70.3	50	0.26	3	19.7
1000	20.8	68.1	112.9	56.4	77.4	56	0.30	0	20.4
1250	21.3	70.2	112.7	49.6	83.6	63	0.37	0	20.1
1600	16.2	73.1	116.2	50.5	86.5	65	0.43	0	20.6
2000	11.1	78.1	110.0	44.8	87.0	64	0.17	0	21.8
2500	6.4	91.3	107.3	43.3	85.7	62	0.18	0	22.6
3150	6.7	110.7	106.8	46.2	86.5	58	0.18	0	27.7
4000	6.2	130.6	104.6	39.8	85.6	62	0.28	0	23.2
5000	7.1	168.1	100.9	27.2	83.0	70	0.37	0	12.8

**STC Rating**                      51 *(Sound Transmission Class)*  
**Deficiencies**                    26 *(Number of deficiencies versus contour curve)*  
**OITC Rating**                    44 *(Outdoor/Indoor Transmission Class)*

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**Architectural Testing**

**ATI No.** 01-46689.01B **Date** 08/14/03  
**Client** ECO-Block, LLC  
**Specimen** Concrete wall panels with 1 layer 1/2" Gypsum board with adhesive and screws fastening it to the receive side  
**Specimen Area** 64.00 Sq Ft  
**Filler Area** 76.00 Sq Ft  
**Operator** Brandon C. Ward



	Accredited by the National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program. The laboratory's accreditation or test report in no way constitutes or implies product certification, approval, or endorsement by NIST. This test report applies only to the specimen that was tested.
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**SOUND ABSORPTION**  
**ASTM C423**

**Architectural Testing**

<b>ATI No.</b>		01-45829.01				
<b>Client</b>		ECO-Block, LLC				
<b>Specimen</b>		ECO-Block Insulating Concrete Forming System				
<b>Specimen Area</b>		64.00 Sq Ft		<b>Mounting</b> Type A		
<b>Operator</b>		Brandon C. Ward				
<b>Date</b>		<b>Empty Room</b>		<b>Full Room</b>		
		18-Jul-03		18-Jul-03		
<b>Temp F</b>		83.0		83.3		
<b>RH %</b>		60.2		60.7		
<b>Freq</b> (Hz)	<b>Empty Room</b> <b>Absorption</b> (Sabines)	<b>Uncert</b>	<b>Full Room</b> <b>Absorption</b> (Sabines)	<b>Uncert</b>	<b>Absorption</b> <b>Coefficient</b> (Sabines/Sq.Ft.)	<b>Uncertainty</b>
50	36.62	0.076	38.79	0.132	0.03	0.002
63	37.39	0.277	38.23	0.206	0.01	0.005
80	44.83	0.133	35.87	0.341	0.00	0.006
100	45.90	0.089	43.44	0.334	0.00	0.005
125	42.25	0.372	45.08	0.003	0.04	0.006
160	42.98	0.098	45.06	0.509	0.03	0.008
200	46.11	0.118	45.90	0.234	0.00	0.004
250	44.07	0.280	44.47	0.049	0.01	0.004
315	42.10	0.135	44.79	0.030	0.04	0.002
400	46.55	0.143	48.23	0.009	0.03	0.002
500	47.68	0.188	52.63	0.182	0.08	0.004
630	49.08	0.094	52.95	0.107	0.06	0.002
800	54.72	0.030	57.57	0.066	0.04	0.001
1000	58.57	0.003	62.83	0.090	0.07	0.001
1250	63.84	0.100	68.60	0.019	0.07	0.002
1600	69.46	0.207	72.04	0.165	0.04	0.004
2000	73.35	0.029	78.21	0.063	0.08	0.001
2500	83.14	0.054	92.03	0.105	0.14	0.002
3150	101.12	0.099	107.92	0.165	0.11	0.003
4000	122.34	0.021	134.16	0.100	0.18	0.002
5000	159.23	0.067	169.36	0.093	0.16	0.002
6300	206.78	0.325	215.37	0.070	0.13	0.005
8000	275.02	0.363	284.34	0.118	0.15	0.006
10000						
<b>Exact NRC Rating</b>		0.057				
<b>Exact SAA Rating</b>		0.054				
<b>NRC Rating</b>		0.05				
<b>SAA Rating</b>		0.05				



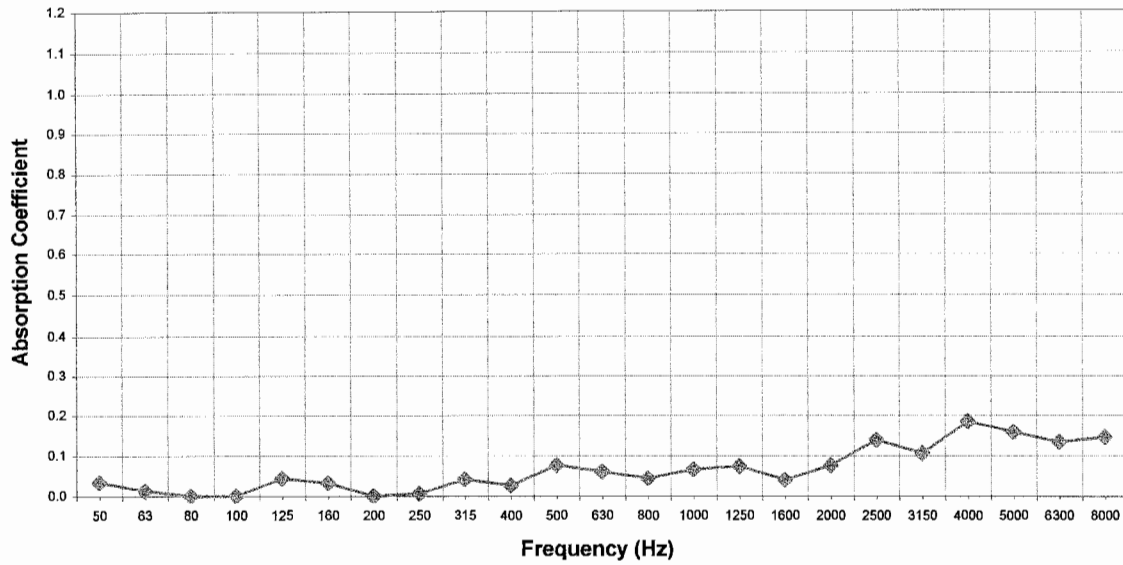
Accredited by the National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program for the specific test methods under lab code 200361. The laboratory's accreditation or test report in no way constitutes or implies product certification, approval, or endorsement by NIST. This test report applies only to the specimen that was tested.

**Architectural Testing**

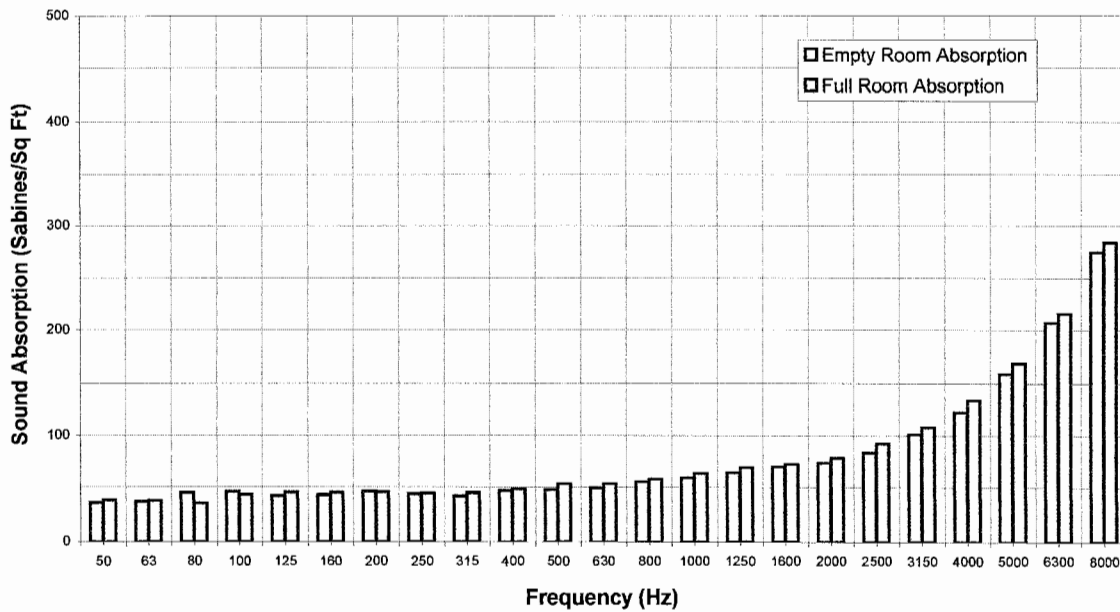
ATI No. 01-45829.01  
 Client ECO-Block, LLC  
 Specimen ECO-Block Insulating Concrete Forming System  
 Specimen Area 64.00 Sq Ft  
 Operator Brandon C. Ward

Date 37820.58

**Sound Absorption Coefficients**



**Sound Absorption - Empty vs. Full**



## ASTM C 39

### Crush Test

**Test Procedure:** Samples were prepared on site during the pouring process and cured for a period of 28 days at laboratory ambient conditions. The individual units were removed from the molds by piercing the bottom of the mold and injecting high pressure air into the mold, thus creating a piston action and forcing the mold off of the sample.

Each sample was then identified and the diameter measured at the mid-height in two directions orthogonal to each other. These values were recorded and the average was used to calculate the peak stress.

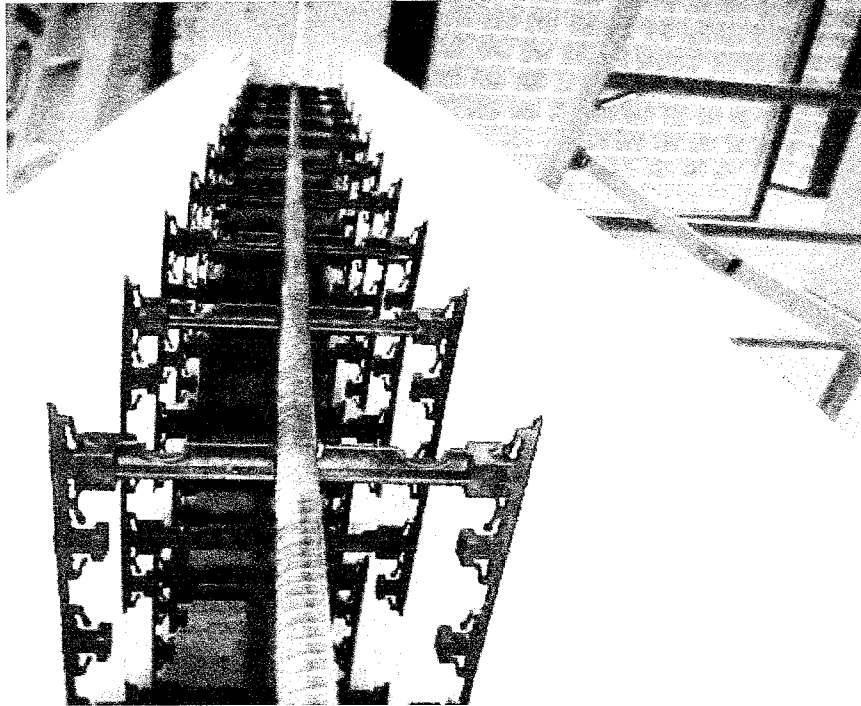
The samples were then capped utilizing a metal form and molten high strength sulfur compound. Once the capping compound had cooled to ambient conditions, each sample was individually placed between the platens of the compression device (Forney Concrete Cylinder Compression Machine, ATI #Y000143). The hydraulic ram system was activated and controlled to cause a load on the samples at a rate of 1000 pounds per second (approximately 35 psi per second). Upon achieving the peak load and failure of the sample, the system was reversed and the sample removed from the compression machine. The peak load was recorded and the peak stress calculated.

#### Test Results:

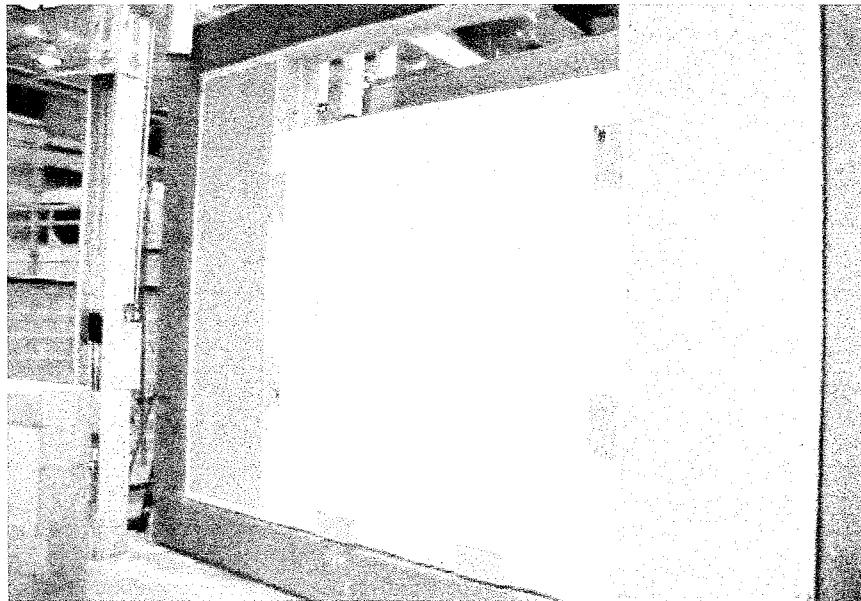
Sample Number	Diameter 1 / 2	Peak Load	PSI
1	6.055" / 5.945"	54,000	1909.8
2	5.985" / 6.030"	52,500	1852.5
3	5.985" / 6.025"	50,000	1765.4

## Appendix C

### Photographs

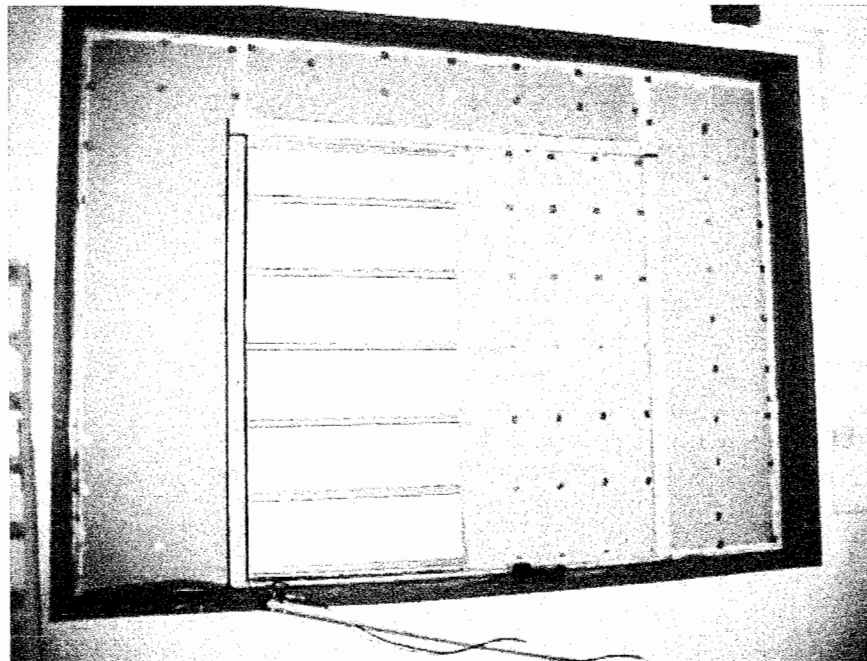


**Sample Cross - Section (Before Concrete)**

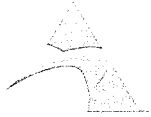


**Sample Installed in Test Opening**

**Close-Up View of the Bottom of the Panel  
Bowed Outward After the Concrete was Poured**



**View of Sample in Chamber During Installation  
of Resilient Channel and 1/2" Drywall**



**Architectural Testing**

**ASTM E 283-99, ASTM E 331-00  
TEST REPORT**

**Rendered to:**

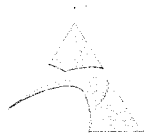
**ECO-BLOCK, LLC**

**SERIES/MODEL: ECO-Block Insulating  
Concrete Forming System**

<b>Title</b>	<b>Summary of Results</b>
Air Infiltration	<0.01 cfm/ft <sup>2</sup>
Water Resistance Test Pressure	15.0 psf

Reference should be made to ATI Report No. 01-46236.01 for complete test specimen description and data.

130 Derry Court  
York, PA 17402-9405  
phone: 717.764.7700  
fax: 717.764.4129  
[www.archtest.com](http://www.archtest.com)



Architectural Testing

**ASTM E 283-99, ASTM E 331-00 TEST REPORT**

Rendered to:

ECO-BLOCK, LLC  
4100 North Powerline Road  
Pompano Beach, Florida 33073

Report No: 01-46236.01  
Test Date: 07/21/03  
Report Date: 08/06/03  
Expiration Date: 07/21/07

**Project Summary:** Architectural Testing, Inc. (ATI) was contracted by ECO-Block, LLC to perform tests on ECO-Blocks Insulating Concrete Forming System. The sample tested successfully met the performance requirements for the following test methods.

**Test Specifications:** The test specimen was evaluated in accordance with the following:

*ASTM E 283-91(99), Standard Test Method for Determining Rate of Air Leakage through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.*

*ASTM E 331-00, Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.*

**Test Specimen Description:**

**Type:** The ECO-Block Insulating Concrete Forming System

**Overall Size:** 4' 0" wide by 4' 0" high

**Sample Construction:** The test sample consisted of concrete poured between two walls of 1.5 pcf styrofoam. The styrofoam was connected with latching webs and fasteners and reinforced with rebar. The size of the test sample was 4' x 4' x 1'. A Photograph of the sample construction and setup are included in Appendix A.

**Reinforcement:** 1/2" steel rebar was utilized horizontally.

**Installation:** The concrete was poured in a 2 x 12 Spruce-Pine-Fir #2 grade wood buck. The interior and exterior styrofoam panel's edges were cut back and the perimeter of the concrete was sealed to the wood buck with silicone.

130 Derry Court  
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fax: 717.764.4129  
www.archtest.com

**Test Results:**

The results are tabulated as follows:

<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>
2.1.2	Air Infiltration (ASTM E 283-99) @ 1.57 psf (25 mph) @ 6.24 psf (50 mph)	<0.01 cfm/ft <sup>2</sup> <0.01 cfm/ft <sup>2</sup>
2.1.3	Water Resistance (ASTM E 331-00 modified two hours long) (Water flow rate = 8" of rain per hour) WTP = 15.0 psf	No leakage visible through wall system

A copy of this report will be retained by ATI for a period of four years. This report is the exclusive property of the client so named herein and is applicable to the sample tested. Results obtained are tested values and do not constitute an opinion or endorsement by this laboratory. This report may not be reproduced, except in full, without approval of Architectural Testing, Inc.

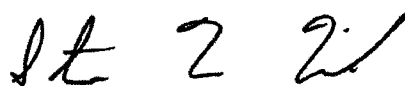
For ARCHITECTURAL TESTING, INC:



Digitally Signed by: Scott Gill

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Scott Gill  
Technician



Digitally Signed by: Steven M. Urich

---

Steven M. Urich, P.E.  
Senior Project Engineer

SG:vim  
01-46236.01

**DOCUMENT CONTROL ADDENDUM #01-46236.00**

**Current Issue Date: 08/06/03**

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**Report No.: 01-46236.01**

**Requested by:** Sheldon Warman P.E., ECO-Block, LLC

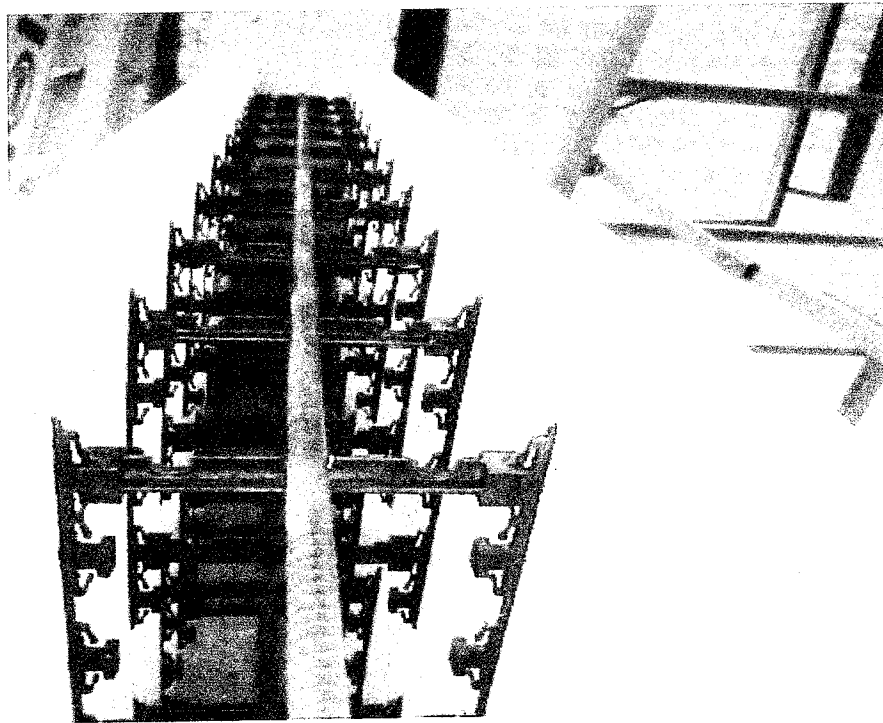
**Purpose:** ASTM E 283 and ASTM E 331 testing on ECO-Blocks Insulating Concrete Forming System.

**Issued Date:** 08/06/03

**Comments:**

**Appendix A**

**Photograph**



**Sample Cross-Section (Before Concrete)**