

MILLENNIUM FORMS, LLC TEST REPORT

SCOPE OF WORK

ANSI/FM 4473 IMPACT RESISTANCE TESTING OF 304 STAINLESS STEEL FLAT, WALL TILES

REPORT NUMBER

L5745.01-109-44

TEST DATE(S)

11/24/20

ISSUE DATE

01/14/21

RECORD RETENTION END DATE

11/24/24

PAGES

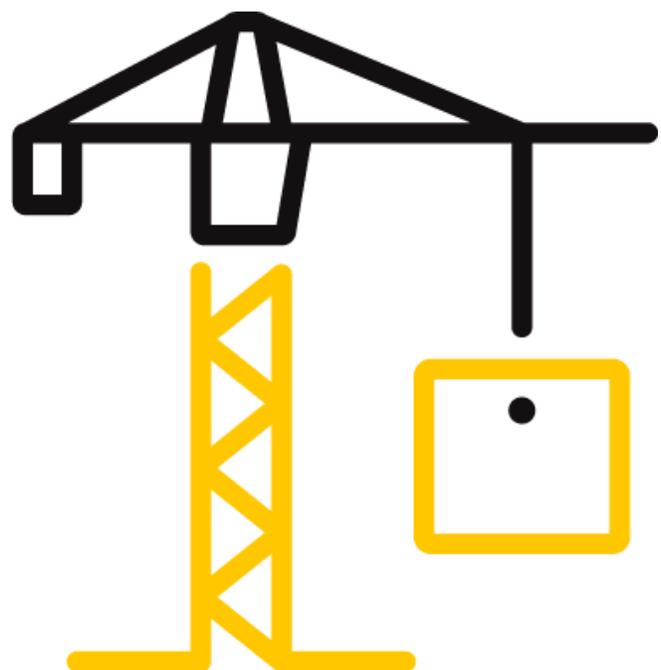
13

DOCUMENT CONTROL NUMBER

ATI 00371 (08/24/17)

RT-R-AMER-Test-2957

© 2017 INTERTEK



TEST REPORT FOR MILLENNIUM FORMS, LLC

Report No.: L5745.01-109-44

Date: 01/14/21

REPORT ISSUED TO

MILLENNIUM FORMS, LLC

550 East Centralia Street
Elkhorn, Wisconsin 53121

SECTION 1

SCOPE

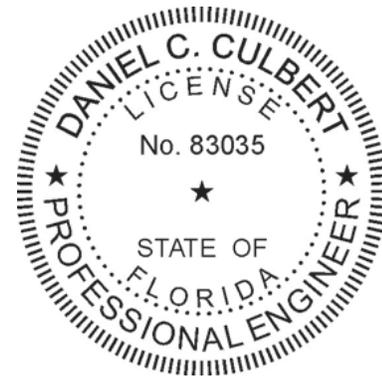
Intertek Building & Construction (B&C) was contracted by Millennium Forms, LLC to perform impact resistance testing in accordance with ANSI/FM 4473 on their 304 Stainless Steel Flat, wall tiles. Results obtained are tested values and were secured by using the designated test method(s). Testing was conducted at Intertek B&C test facility in York, Pennsylvania.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

SECTION 2

SUMMARY OF TEST RESULTS

Product Classification Achieved: Class 4



For INTERTEK B&C:

COMPLETED BY:	Robert J. Beatty
TITLE:	Technician – Product Testing
SIGNATURE:	 <small>Digitally Signed by: Robert Beatty</small>
DATE:	01/14/21

REVIEWED BY:	Daniel C. Culbert, P.E.
TITLE:	Senior Project Engineer
SIGNATURE:	 <small>Digitally Signed by: Daniel Craig Culbert</small>
DATE:	01/14/21

RJB:nls

2021.01.14 13:13:05 -05'00'

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 permit copying or distribution of 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(s) tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

TEST REPORT FOR MILLENNIUM FORMS, LLC

Report No.: L5745.01-109-44

Date: 01/14/21

SECTION 3

TEST METHOD(S)

The specimen was evaluated in accordance with the following:

ANSI/FM 4473 (2011), *Specification Test Standard for Impact Resistance Testing of Rigid Roofing Materials by Impacting with Freezer Ice Balls*. American National Standard, FM Approvals (January 2011)

SECTION 4

MATERIAL SOURCE/INSTALLATION

Test specimen was provided by the client. Representative samples of the test specimen(s) will be retained by Intertek B&C for a minimum of four years from the test completion date.

Installation of the tested product was performed by Intertek B&C personnel.

SECTION 5

EQUIPMENT

Cannon: Constructed from steel piping utilizing compressed air to propel the missile

Missile: 2.0 in (50.8 mm) diameter ice balls

Cannon Identification Number: A1207

Timing Device: Electronic Beam Type

Weather Station: 63316

Tape Measure Verification: 63788

SECTION 6

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
John A. Shanabrook	Intertek B&C
Timothy J. McGill	Intertek B&C
Daniel C. Culbert, P.E.	Intertek B&C
Robert J. Beatty	Intertek B&C

TEST REPORT FOR MILLENNIUM FORMS, LLC

Report No.: L5745.01-109-44

Date: 01/14/21

SECTION 7

TEST SPECIMEN DESCRIPTION

Product Type: Wall Tiles

Series/Model: 304 Stainless Steel Flat

Color: Metallic

Finish: Flat

Overall Assembly Size: 36 in (914 mm) width by 36 in (914 mm) length

Nominal Thickness: 0.020 in (0.5 mm)

Tile Description:

Individual Tile Weight: 0.832 lb (377 g)

Individual Tile Size: 14-3/4 in (375) width by 9-3/4 in (248 mm) length

Exposed Tile Size: 14-1/2 in (368 mm) width by 8-1/2 in (216 mm) length

Number of Tiles: 12

Deck Construction:

The wood test deck was 3' wide by 3' high and constructed with 2x4 Southern-Yellow Pine construction lumber at the perimeter with one stud located at midspan. The test deck was covered with 15/32" thick plywood decking secured to the test deck with #8 x 1-5/8" screws located 2" from each end and on 6" centers.

Tile Construction:

The tiles were constructed from formed stainless steel. A male interlock was utilized on the bottom and right side of the tile and a female interlock on the top and left side of the tile. The tiles were secured with #10 x 1" pan head screws located 3/4" from the ends at the top of each tile.

TEST REPORT FOR MILLENNIUM FORMS, LLC

Report No.: L5745.01-109-44

Date: 01/14/21

SECTION 8

TEST RESULTS

ANSI/FM 4473, Ice Ball Impact Resistance

Sample Conditioning Temperature: 64°F (18°C) for at least 4 hours

Sample Conditioning Relative Humidity: 23% for at least 4 hours

Ice Ball Conditioning Temperature: -7°F (-22°C) for at least 48 hours

Muzzle Distance from Test Specimen: 36 in (914 mm)

The ambient temperature during testing was 64°F (18°C). The results are tabulated as follows.

Test Unit #1

IMPACT	MISSILE VELOCITY fps (m/s)	ORIENTATION	WEIGHT lbs (g)	DIAMETER In. (mm)	ENERGY ft-lb (j)	IMPACT AREA	OBSERVATIONS	RESULTS
1-1	110.0 (33.5)	15° of vertical	0.139 (63)	50.8 (2.0)	26.12 (35.4)	Center of tile	Dented tile, no visible cracking or breakage	Pass
1-2	107.9 (32.9)	15° of vertical	0.139 (63)	50.8 (2.0)	25.13 (34.1)	Center of tile	Dented tile, no visible cracking or breakage	Pass
2-1	109.9 (33.5)	15° of vertical	0.139 (63)	50.8 (2.0)	26.07 (35.3)	Right interlock at the center of the panel	Dented tile, no visible cracking or breakage	Pass
2-2	110.0 (33.5)	15° of vertical	0.139 (63)	50.8 (2.0)	26.12 (35.4)	Right interlock at the center of the panel	Dented tile, no visible cracking or breakage	Pass
3-1	110.0 (33.5)	15° of vertical	0.139 (63)	50.8 (2.0)	26.12 (35.4)	Bottom left corner	Dented tile, no visible cracking or breakage	Pass

TEST REPORT FOR MILLENNIUM FORMS, LLC

Report No.: L5745.01-109-44

Date: 01/14/21

IMPACT	MISSILE VELOCITY fps (m/s)	ORIENTATION	WEIGHT lbs (g)	DIAMETER In. (mm)	ENERGY ft-lb (j)	IMPACT AREA	OBSERVATIONS	RESULTS
3-2	108.9 (33.2)	15° of vertical	0.139 (63)	50.8 (2.0)	25.60 (34.7)	Bottom left corner	Dented tile, no visible cracking or breakage	Pass

Note: See Intertek B&C Sketch No. 1 for Impact Locations

SECTION 9

CONCLUSION

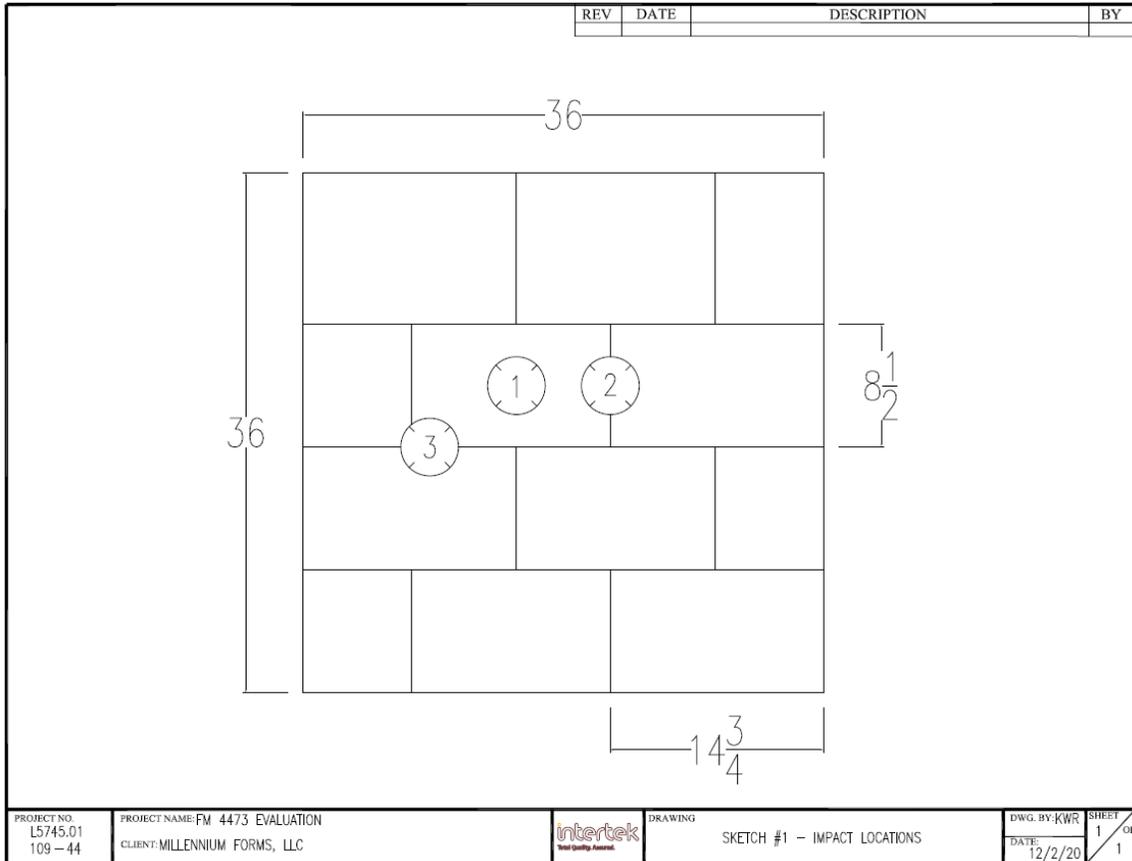
The sample tested met the performance requirements set forth in the referenced test procedures for a Class 4.

TEST REPORT FOR MILLENNIUM FORMS, LLC

Report No.: L5745.01-109-44

Date: 01/14/21

SECTION 10 SKETCH(ES)



**Sketch No. 1
Impact Locations**



Total Quality. Assured.

TEST REPORT FOR MILLENNIUM FORMS, LLC

Report No.: L5745.01-109-44

Date: 01/14/21

SECTION 11

BILL OF MATERIALS

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700

Facsimile: 717-764-4129

www.intertek.com/building

Millennium Forms, LLC

550 E Centralia St
 Elkhorn, WI 53121
 p: 262.723.7778
 f: 262.922.4275
 www.millenniumforms.com



PACKING SLIP

Estimate #	# of Pallets
Intertek	

Bill To
Intertek Tim McGill 130 Derry Court York, PA 17406-8405

Ship To
Intertek Vicki McElwain 130 Derry Court York, PA 17406-8405

Customer PO No.	Ship Date	Ship Via	FOB	Project Name
241310R0/24...	11/13/2020			Intertek Tile testing 2020

Item	Description	Ordered	U/M	Shipped
SS Tiles	304 SS, Mill finish, Flat tiles, 26ga, 480 tiles/8boxes	8		
SS Tiles	304 SS, Bright finish, Cupped tiles, 26ga, 480 tiles/8boxes	8		
SS Flashing	FLASHING - 304 Stainless steel, mill finish, 24ga, False Starters/Starter strips	6		
SS Flashing	FLASHING -304 Stainless steel, mill finish, 24ga, J-channels from the scrap pile	24		
Other Tiles	1 roll of Grace of Ice/Water shield barrier WI State/County Sales Tax at 5.5%	1		

If error is found in shipment please notify us within 48 hours.

Shipper/Packager: _____ Driver Signature: _____
 Date Packaged: _____ Date Picked Up: _____

TEST REPORT FOR MILLENNIUM FORMS, LLC

Report No.: L5745.01-109-44

Date: 01/14/21

SECTION 12

PHOTOGRAPH



Photo No. 1
304 Stainless Steel Flat, Wall Tiles



Total Quality. Assured.

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

TEST REPORT FOR MILLENNIUM FORMS, LLC

Report No.: L5745.01-109-44

Date: 01/14/21

SECTION 13

DRAWINGS

The test specimen drawings have been reviewed by Intertek B&C and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Intertek B&C per the drawings included in this report. Any deviations are documented herein or on the drawings.



Total Quality. Assured.

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

TEST REPORT FOR MILLENNIUM FORMS, LLC

Report No.: L5745.01-109-44

Date: 01/14/21

SECTION 14

REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	01/14/21	N/A	Original Report Issue