



Sample Tag No.: F212878115
Labware Project No.: 1001344013
File No.: BP8910
Vol No.: 1
Issued Date: 2021-10-29

Follow-Up Sample Test Report

Applicant: WACO COMPOSITES, A DIV OF SPECIALTY COMPOSITES GROUP LTD
Address: 302 S 27TH ST
WACO
TX 76710
United States

Party Site Number: 816002

Manufacturer: WACO COMPOSITES, A DIV OF SPECIALTY COMPOSITES GROUP LTD
Address: 302 S 27TH ST
WACO
TX 76710
United States

Party Site Number: 816002

Product Category: CNLW
Category Name: Bullet-Resisting Metals and Plastics
Model Number(s): ArmorCore Level 4
Sample Selection Date: 2021-10-14

UL Contact: JANET CROWDER via email at Janet.A.Crowder@ul.com

Number of pages in this package 8 [including additional pages]
 (Fill in when using printed copy as record)

CLIENT INFORMATION (Optional)	
Manufacturer Name	Waco Composites, A Div Of Specialty Composites Group Ltd
Manufacturer Subscriber No. /Party Site No.	816002

AUDIT INFORMATION:	
Description of Tests	<input checked="" type="checkbox"/> Per Standard No. <u>UL 752</u> Edition <u>11</u>
	<input type="checkbox"/> Per Procedure Appendix Vol. <u> </u> Sec Letter <u> </u>
	Issued or Revised Date for the referenced Appendix <u> </u>
<input checked="" type="checkbox"/> Tests Conducted by ¹ <u>ALLAN CONRAD 02820</u>	
<input type="checkbox"/> UL Staff conducting or witnessing testing (WTDP only)	
<input checked="" type="checkbox"/> UL Staff supervising UL Staff in training <u>DEREK GARDNER L2</u>	
<input type="checkbox"/> Authorized Signatory (TPTDP)	
	Printed Name
	Signature. Include date for TPTDP

TESTS TO BE CONDUCTED:		
Test No.	Test Name	<input type="checkbox"/> Comments/Parameters <input type="checkbox"/> Tests Conducted by ² <input checked="" type="checkbox"/> Comply/Does Not Comply ³ <input type="checkbox"/> Link to separate data files ⁴
	BALLISTICS TEST - BULLET RESISTING MATERIALS	RESULTS COMPLY

Instructions -
 1 - When all tests are conducted by one person, name can be inserted here instead of including name on each page containing data.
 2 - When test conducted by more than one person, name of person conducting the test can be inserted next to the test name instead of including name on each page containing data. Test dates may be recorded here instead of entering test dates on the individual datasheet pages.
 3 - Indication of compliance is optional. See the datasheet for each test for compliance.
 4 - Link to separate data files for a test can be inserted here. The link must be to a server that is accessible to UL staff, that provides for backup, required retention periods and a path, including file name that does not change and result in a broken link. Not applicable to DAP.

If noncompliant test results are obtained, provide this data to a qualified project handler for further processing.

Special Instructions -

Unless specified otherwise in the individual Methods, the tests shall be conducted under the following ambient conditions. Confirmation of these conditions shall be recorded at the time the test is conducted.

Ambient Temperature, C ± Relative Humidity, % ± Barometric Pressure, mBar ±

TEST LOCATION: (To be completed by Staff Conducting the Testing)
<input checked="" type="checkbox"/> UL or Affiliate <input type="checkbox"/> WTDP <input type="checkbox"/> TPTDP
Company Name: UL LLC INC.
Address: 333 PFINGSTEN RD., NORTHBROOK, ILLINOIS, 60062

TEST EQUIPMENT INFORMATION

UL test equipment information is recorded on Meter Use.

UL test equipment information is recorded on <<insert location and local laboratory equipment system identification.>>

Inst. ID No.	Instrument Type	Test Number +, Test Title or Conditioning	Function /Range	Last Cal. Date	Next Cal. Date

+ - If Test Number is used, the Test Number must be identified on the data sheet pages or on the Data Sheet Package cover page.

The following additional information is required when using client's or rented equipment. The Inst. ID No. below corresponds to the Inst. ID No. above.

Inst. ID No.	Make/Model/Serial Number/Asset No.

TEST SAMPLE IDENTIFICATION:

The table below is provided to establish correlation of sample numbers to specific product related information. Refer to this table when a test identifies a test sample by "Sample No." only.

Sample Card No.	Date Received	<input type="checkbox"/> Test No.+	Sample No.	Manufacturer, Product Identification and Ratings
4309621	10-25-21	1	1	ARMORCORE LEVEL 4

+ - If Test Number is used, the Test Number or Numbers the sample was used in must be identified on the data sheet pages or on the Data Sheet Package cover page.
 ++ - If the samples are from a manufacturer or location other than the testing location.

This document contains data or information using color and if printed, should be printed in color to retain legibility and the information represented by the color.

BALLISTICS TEST - BULLET RESISTING MATERIALS

UL752 Section 17

METHOD

Material type	Material Manufacturer	Ballistics Rating (Level)
ArmorCore	WACO COMPOSITES, A DIV OF SPECIALTY COMPOSITES GROUP LTD	4

The tests were conducted at a range of 15 feet (4.6 m) using a test barrel or weapon and the ammunition specified in Table 3.1 of UL 752. Each test sample of material was mounted in a rigidly fixed frame. During testing room ambient was maintained at 22 ± 3°C (72 ± 5°F). Corrugated cardboard indicators, approximately 1/8 inch (3.2 mm) thick, were placed a distance of approximately 18 inches (457 mm) behind the protected side of the test sample.

Sample	Material Type	Shot Pattern
<input type="checkbox"/> 1	Metallic or Non-metallic Material -	Room Temperature 22 ± 3°C (72 ± 5°F) <input type="checkbox"/> Five shot pattern (Level 6, 7 or 8) <input type="checkbox"/> Three shot pattern (Level 1,2 or 3) <input type="checkbox"/> One shot pattern (Level 4 or 5)
<input type="checkbox"/> 2	Non-metallic Material - indoor use	Prior to testing one sample was conditioned at 13°C (55°F) for 3 hours. <input type="checkbox"/> Three shot pattern (Level 1,2 or 3) <input type="checkbox"/> One shot pattern (Level 4 or 5)
<input type="checkbox"/> 3	Non-metallic material - outdoor use	Prior to testing the attack side of the sample was conditioned at minus 32 ± 3°C (minus 26 ± 5°F) for 3 hours while the other side was conditioned at 22 ± 3°C (72 ± 5°F). <input type="checkbox"/> Three shot pattern (Level 1,2 or 3) <input type="checkbox"/> One shot pattern (Level 4 or 5)
<input type="checkbox"/> 4	Non-metallic Material - indoor use	Prior to testing sample was conditioned at 35°C (95°F) for 3 hours. <input type="checkbox"/> Three shot pattern (Level 1,2 or 3) <input type="checkbox"/> One shot pattern (Level 4 or 5)
<input checked="" type="checkbox"/> 5	Non-metallic Material - outdoor use	Prior to testing the entire sample was conditioned at 49 ± 3°C (120 ± 5°F) for 3 hours. <input type="checkbox"/> Three Shot Pattern (Level 1,2 or 3) <input checked="" type="checkbox"/> One Shot Pattern (Level 4 or 5)

One Shot Pattern	One shot was fired at the approximate center of the test sample.
Three Shot Pattern	Three shots were fired at the approximate center of the test sample with the shots spaced 4 ± 1/2 inch (102 ± 12.7 mm) apart in a triangular pattern The measurement between each shot was made from the center of the impact of each shot on the test sample.
Five Shot Pattern	Five shots were fired in a square pattern that was 4-1/2 by 4-1/2 inches (114 by 114 mm) located in the center of the sample. The first of the five shots was placed in the upper left hand corner; the second shot was placed in the upper right hand corner; the third shot was placed in the lower right hand corner; the fourth shot was placed in the lower left hand corner; the fifth shot was placed at the center of the square. A tolerance of +/- 1/2 inch (12.7 mm) was allowed.

BALLISTICS TEST - BULLET RESISTING MATERIALS (CONT'D) UL752 Section 17

RESULTS

Room Ambient Temperature, °C	23
Distance between Corrugated cardboard indicators and protected side of the test sample, in.	18

Sample No	Shot number	Measured Bullet Velocity (ft/s)	Distance between shots, in (1-2)	Distance between shots, in (2-3)	Distance between shots, in (3-4)	Distance between shots, in (4-1)
1	1					
1	2					
1	3					
1	4					
1	5					

Sample No	Shot number	Measured Bullet Velocity (ft/s)	Distance between shots, in (1-2)	Distance between shots, in (2-3)	Distance between shots, in (3-1)
2	1				
2	2				
2	3				
3	1				
3	2				
3	3				
4	1				
4	2				
4	3				
5	1	2736		-	-
5	2				
5	3				

Sample No.	Location of pattern / shot	Was pattern acceptable? Y=yes, N=no	Observations (penetration, embedded fragments, openings)
1			
2			
3			
4			
5	DEAD CENTER	YES	NS, NP

BALLISTICS TEST - BULLET RESISTING MATERIALS (CONT'D) UL752 Section 17

Conditioning temperature, °C	Sample No	Conditioning Start Time, (hr:min)	Conditioning End Time, (hr:min)
49	4309621	8:10 AM	11:10 AM

Notes:

NP - No penetration of the projectile through the test sample

NS - No spalling of material on the protected side of the test sample to the extent that fragments of the projectile or assembly embedded into or damaged the cardboard indicators.

Note 1 - For unsupported edge test, spalling of bullet-resisting material is acceptable

Note 2 - For two shot pattern, spalling of bullet-resisting material from the protected side of the test sample is acceptable under this test condition.

[X] REQUIREMENTS		
there shall be 1) no penetration of the projectile through the test sample, and 2) no spalling of material on the protected side of the test sample to the extent that fragments embed into or damage the cardboard indicators, and 3) no opening of sufficient size to permit insertion of the muzzle of a standard weapon designed to use the ammunition used for the test completely through the sample.		[Complies] {Does Not Comply}

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Tested by: _____

Date 2021-10-29

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