## H.P. WHITE LABORATORY, INC.

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9 February 2006 (HPWLI 10035-01A)

#### Gentlemen:

In accordance with your instructions, H.P. White Laboratory, Inc. conducted forced entry resistance testing of one rigid fiberglass sample, identified as Model ArmorCore UL Level 3 (see enclosed data record for construction description), received 9 January 2006 via United Parcel Service.

Testing was conducted in accordance with your instructions, and the modified forced entry resistance provisions of ASTM F1233-98. Forced entry resistance testing was to begin with Sequence 1, and was to be terminated at body passage. Ballistic resistance testing was not conducted. Table I presents a summary of the enclosed data records.

TABLE I. SUMMARY OF FORCED ENTRY RESULTS

Class	Sequence	Description	Results
I	01	Ball Peen Hammer	1. Abrading of surface fibers.
II	02-07	Ball Peen Hammer, Sledge Hammer & 1-1/2 inch Pipe, CO2 Extinguisher & Sledgehammer, Propane Torch & Ripping Bar	1. Abrading of surface fibers.
III	08-16	120 lb Ram, Sledgehammer & 4 inch Pipe, Sledgehammer, Propane Torch & Ripping Bar, Hammer & Chisel, Gasoline, Sledgehammer & Angle Iron, Sledgehammer	<ol> <li>1. 1.5 x 1 inch through-hole.</li> <li>2. Contraband passage. (a)</li> </ol>
IV	17-27	120 lb Ram, Sledgehammer & 4 inch Pipe, Sledgehammer, Propane Torch & Wood Maul, Sledgehammer, Ripping Bar, Fire Axe, Hammer & Chisel, Acetone, Sledgehammer	<ol> <li>2.5 x l inch through-hole.</li> <li>6 inch extended through slice.</li> </ol>
V	28-32	120 lb Ram, Sledgehammer & 4 inch Pipe, Sledgehammer, Propane Torch & Fire Axe	<ol> <li>9 x 6 inch through-hole.</li> <li>Body passage. (b)</li> </ol>
		F1233-98, Paragraph 9.2.4.1. F1233-98, Paragraph 9.2.4.2.	-

Based upon the data presented in Table I, the Model ArmorCore UL Level 3 rigid fiberglass sample submitted for testing SATISFIED the contraband passage requirement of ASTM F1233-98, Class II, Paragraph 9.2.4.1.

Based upon the data presented in Table I, the Model ArmorCore UL Level 3 rigid fiberglass sample submitted for testing SATISFIED the body passage requirement of ASTM F1233-98, Class IV, Paragraph 9.2.4.2.

This conclusion is based on data obtained from having tested only the sample submitted, and should NOT be interpreted as an endorsement by H.P. White Laboratory, Inc. of the continuing quality, or performance, of any other items of the same, or similar, design.

Please find photographs and videotape coverage (VHS format) of the testing enclosed herein.

In accordance with your instructions, the test sample is being returned via United Parcel Service. Should you have any questions regarding this matter, or if we may be of any further service, please do not hesitate to contact us.

Very truly yours,

H. P. WHITE LABORATORY, INC.

Craig B. Dunn

CBD/mw Enclosures



HPWLI Job: 10035-01

#### **DATA RECORD**

-Forced Entry Testing of Transparent Materials/Assemblies-(ASTM F1233-98) (MODIFIED)

Make, Model or Sample Number:

ArmorCore UL Level 3

Sample Description:

Fiberglass cloth impregnated with thermoset polyester resin

Four corner thicknesses: 0.490 inch, 0.504 inch, 0.491 inch, 0.483 inch (Avg: 0.492 inch)

Weight 32.1 lbs.

Submitted By:

Waco Composites I, Ltd.

						Pass/Fail	
Test Sequence	Threat	Description	Procedure	Results	Ballistic	Contra Entry	Body Entry
Ballistic	NA	NA	NA	NA	NA	NA	NA
01	Blunt	Ball Peen (16", 32 oz.)	10 Impacts	Abrading of surface fibers.	NA	Pass	Pass
			Ballistic:			NA	
			F.E. Class I (Seq. 01):		(Contra Entry) Pas (Body Entry) Pas		

Remarks:



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Make, Model or Sample Number: ArmorCore UL Level 3

T4					Pass	Pass/Fail	
Test Sequence	Threat	Description	Procedure	Results	Contra Entry	Body Entry	
02	Blunt	Ball Peen (16", 32 oz.)	10 Impacts	Abrading of surface fibers.	Pass	Pass	
03	Sharp	Sledgehammer and 1-1/2" pipe	25 impacts	Abrading of surface fibers.	Pass	Pass	
04-05	Therm Blunt	Fire Extinguisher, CO <sup>2</sup> Sledgehammer (36", 12 lbs.)	1 minute 25 impacts	No apparent damage.	Pass	Pass	
06-07	Therm Sharp	Propane Torch (Gen'l. purpose tip) Ripping bar (24" claw/chisel ends)	5 minutes 10 impacts	No apparent damage.	Pass	Pass	
			F.E. Class II (	Seq. 02-07) : (Contra Entry)	Pass		
				: (Body Entry)	Pass		

Remarks:



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Make, Model or Sample Number: ArmorCore UL Level 3

Tool					Pass/Fail	
Test Sequence	Threat	Description	Procedure	Results	Contra Entry	Body Entry
08	Blunt	120-pound Ram (2 man)	10 impacts	No apparent damage.	Pass	Pass
09	Blunt	Sledgehammer & 4" Pipe (36", 12 lbs.)	25 impacts	No apparent damage.	Pass	Pass
10	Blunt	Sledgehammer (36", 12 lbs.)	25 impacts	No apparent damage.	Pass	Pass
11-12	Therm. Sharp	Propane Torch (Gen'l. purpose tip) Ripping bar (24" claw/chisel ends)	5 minutes 10 impacts	1. ¼ x ¼ inch through-hole. 2. Contraband Passage. (a)	FAIL	Pass
13	Sharp	Hammer & Chisel (16 oz.)	25 impacts	Abrading of surface fibers.	NA	Pass
14	Chem.	Gasoline	½ pint (Chemical NOT Therm.)	No apparent damage.	NA	Pass
15	Sharp	Sledgehammer and Angle Iron (12 lbs., 2" x 2" x 1/4")	25 impacts	1. 1-1/2 x 1 inch through-hole.	NA	Pass
16	Blunt	Sledgehammer (36", 12 lbs.)	25 impacts	No apparent damage.	NA	Pass
			F.E. Class III (Se	q. 08-16) : (Contra Entry)	FAIL	
				: (Body Entry)	Pass	

Remarks: (a) Pursuant to Paragraph 9.2.4.1.



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Make, Model or Sample Number: ArmorCore UL Level 3

Toot					Pass/Fail	
Test Sequence	Threat	Description	Procedure	Results	Contra Entry	Body Entry
17	Blunt	120-pound Ram (2 man)	10 impacts	1. No apparent damage.	NA	Pass
18	Blunt	Sledgehammer & 4" Pipe (36", 12 lbs.)	25 impacts	Abrading of surface fibers.	NA	Pass
19	Blunt	Sledgehammer (36", 12lbs.)	25 impacts	1. No apparent damage.	NA	Pass
20-21	Therm Sharp	Propane (Gen'l. purpose tip) Wood maul (36", 8 lbs.)	5 minutes 25 impacts	1. 2-1/2 x 1 inch through-hole.	NA	Pass
22	Blunt	Sledgehammer (36", 12 lbs.)	25 impacts	1. No apparent damage.	NA	Pass
23	Sharp	Ripping bar (24", claw/chisel ends)	10 impacts	1. No apparent damage.	NA	Pass
24	Sharp	Fire axe (36", 6 lbs., axe/pick head)	25 impacts	1. 6 inch extended through-slice.	NA	Pass
25	Sharp	Hammer/Chisel (16 oz.)	25 impacts	Abrading of surface fibers.	NA	Pass
26	Chem.	Acetone	½ pint	1. No apparent damage.	NA	Pass
27	Blunt	Sledgehammer (36", 12 lbs.)	25 impacts	No apparent damage.	NA	Pass
			F.E. Class IV	(Seq. 17-27) : (Contra Entry)	NA	
				: (Body Entry)	Pass	

Remarks:

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### **DATA RECORD**

-Forced Entry Testing of Transparent Materials/Assemblies-(ASTM F1233-98) (MODIFIED)

Make, Model or Sample Number: ArmorCore UL Level 3

Test	Threat	Description	Procedure		Pass/Fail	
Sequence				Results	Contra Entry	Body Entry
28	Blunt	120-pound Ram (2 man)	10 impacts	No apparent damage.	NA	Pass
29	Blunt	Sledgehammer & 4" Pipe (36", 12 lbs.)	25 impacts	No apparent damage.	NA	Pass
30	Blunt	Sledgehammer (36", 12lbs.)	25 impacts	No apparent damage.	NA	Pass
31-32	Chem. Sharp	Propane (Gen'l. purpose tip) Fire axe (36", 6 lbs., axe/pick head)	5 minutes 25 impacts	<ol> <li>Two 5 inch extended slices.</li> <li>9 x 6 inch through-hole.</li> <li>Body Passage. (a)</li> </ol>	NA	FAIL
i			F.E. Class V	(Seq. 28-32) : (Contra Entry)	NA	
		14 to Donor-only 0.2.4.2		: (Body Entry)	FAIL	

Remarks: (a) Pursuant to Paragraph 9.2.4.2.

05-01A (Sheet 5 of 5) - Forced Entry ASTM