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PART 1 FLAMMABILITY TEST REPORT

Quality Control Testing Fiber Protector America, LLC

FT.TP.111 REV: IR Date: 11-14-15

Supports comparison testing of leather with and without application of Fiber Protector

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Revisions

Rev	Prepared By	Document Approval Signature	Date	Revision Summary
IR	Brad Shelton	12/12	11-14-15	Initial Release

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1.0 Purpose

This testing is in supports comparison testing of CL-1048 Castle Rock leather with and without application of Firber Protector. Leather test specimens were supplied by the company listed below.

Fiber Protector America, LLC 1100 Jones Street Little Rock, AR 72202 501-374-4402

This plan includes following:

- · Complete identification of materials.
- · Test method to be used.
- A numerical test list of items to be tested.

Upon completion of testing Test Set-Up Checklist and Test Results will be added to section 8.

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2.0 Reference Documents

General Documents

FT.WI.01, Rev. NC (dated 06-13-13)	Flammability Test Procedures for FAA
	Certification

Part 23 Regulations

14 CFR 25.853 AMDT(25-116)	Compartment Interiors
Appendix F (Sec. F25.1) AMDT (25-111)	Test Criteria and Procedures

3.0 Discussion of Testing

A coupon test list is presented in section 6.0. Upon completion of testing Flammability Result Sheets will be included in section 7.0.

Note: Two Sets of 3 specimens were tested for both configurations (With Fiber Protector and Without). Testing on this leather does not appear to show any negative flammability effects when Fiber Protector is applied.

4.0 Test Requirements

For Comparison Testing the Leather/Fiber Protector combinations will be tested to the 12 second vertical test.

Compliance Requirements

14 CFR Part 25.853, AMDT Level 25-116

(a) Materials (including finishes or decorative surfaces applied to the materials) must meet the applicable test criteria prescribed in part I of appendix F of this part, or other approved equivalent methods, regardless of the passenger capacity of the airplane.

Testing Requirements

Part I (a)(1)(ii) Floor covering, textiles (including draperies and upholstery), seat cushions, padding, decorative and nondecorative coated fabrics, leather, trays and galley furnishings, electrical conduit, air ducting, joint and edge covering, liners of Class B and E cargo or baggage compartments, floor panels of Class B, C, D, or E cargo or baggage compartments, cargo covers and transparencies, molded and thermoformed parts, air ducting joints, and trim strips (decorative and chafing), that are constructed of materials not covered in subparagraph (iv) below, must be self-extinguishing when tested vertically in accordance with the applicable portions of Part I of this Appendix or other approved equivalent means. The average burn length may not exceed 8 inches, and the average flame time after removal of the flame source may not exceed 15 seconds. Drippings from the test specimen may not continue to flame for more than an average of 5 seconds after falling.

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5.0 Test Procedures and Equipment

Testing will take place at FLAME-TEK LLC. Laboratory contact information listed below.

FLAME-TEK 1515 North Center, Suite 1 Lonoke, AR 72086

Testing will follow procedures outlined in FT.WI.01 (Flammability Test Procedures for FAA Certification). Prior to testing, the lab will be set-up per FT.FR.03 (Test Set-Up Checklist).

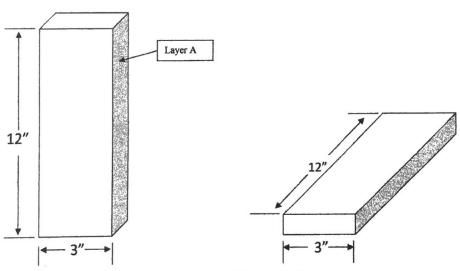
6.0 Test List

The test list below provides a numerical list of the item(s) to be tested. Vertical test samples measure 3" X 12". Flame is to be applied per FT.WI.01.

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Test Plan Item Number	Specimens 1 and 2 (Treated)
Component Location	Quality Control Testing
Test Method	CFR 25.853, 12 sec Vertical Test

TEST SPECIMEN ISOMETRIC SKETCH



Layer Identification Table

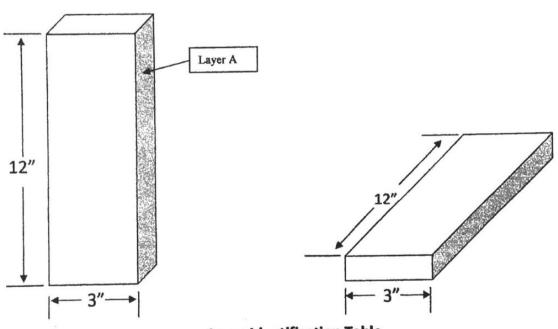
Layer	Material PN	Manufacturer	Lot/Batch	Comments
A	CL-1048 CASTLEROCK	N/A	N/A	Leather

Fiber Protector is applied to Specimens 1 and 2.

FLAME-TEK LLC.		
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Test Plan Item Number	Specimens 3 and 4 (Not Treated)
Component Location	Quality Control Testing
Test Method	CFR 25.853, 12 sec Vertical Test

TEST SPECIMEN ISOMETRIC SKETCH



Layer Identification Table

Laver	Material PN	Manufacturer	Lot/Batch	Comments
-	CL-1048 CASTLEROCK	N/A	N/A	Leather

No Fiber Protector is applied to Specimens 3 and 4.

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7.0 Test Results

Attachments: Flammability Test Set-Up Checklist Flammability Test Results

FLAMMABILITY TEST SET-UP CHECKLIST

FT.FR.03

Flammability Test Set-Up Checklist

Aircraft Mo	odel and Serial Number:	Fiber Protector Quality Control Testing
Technicia	n: Brad Shelton	BLAT
Date: _	11/14/15	
each test.	During the daily period of	e test set-up sections. Section 1 items must be checked prior to f testing, if at any time the burner is shut off to stop testing, the again prior to start up. Section 3 items must be checked at least
Section 1	t .	
1.1 Fla	me Height	
b.	the top of the burner barn If using methane it is des prong to measure inner of methane it has been det flame is at least 1.5 inch, exceed 1.6 inches. A 1.5 desired height for test s For 60-Degree wire test	sirable to have two prongs for measuring the flame height with one cone height and the other prong to measure tip of the flame. For ermined when the inner cone is at least 7/8 inch and the tip of the proper flame profile is achieved. Flame height should not 5 inch flame height is considered nominal and should be the
1.2 Te	st Specimen	
b. c. d.	Vertical burn: Specimer 45-Degree burn: Specimer	plicable), r each separate set of specimens, n Sizes of at least 3" x 12" inches unless actual size is smaller, nen size of 10" x 10". Must have exposed area of at least 8" x 8" ill be the same as that used in the airplane with the

- If multiple thickness, the minimum will be tested.
- ii. Foam parts thicker than ½ inch will be tested in ½ inch thickness.
- iii. Parts that are smaller than the size of a specimen and cannot have specimens cut from them may be tested using a flat sheet of the material used to fabricate the part in the actual thickness used on the aircraft.
- g. 60-Degree wire test: Specimen size of at least 30 inches. Specimen span between lower clamp and upper pully or rod will be at least 24 inches.

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following exceptions:

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a. Methane gas (99% minimum purity) or other acceptable to FAA,

3.5 Timer



 Stopwatch or other device calibrated to the nearest 0.1 second to measure flame application, flame time, and drip flame time,

3.6 Ruler



a. A ruler or scale graduated to the nearest 0.1 inch required to measure burn length,

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FLAMMABILITY TEST RESULTS

				FAIL		PASS 🛛			6:20 P.M.	Test Time:
35 °F	Flame Temp: 1565 °F	Flarr		DER	3rad Shelton FAA	Witnessed by: Brad Shelton FAA DER			11-14-15	Test Date:
						0	.30	0		Average
					12	0	.3	0	Part 1 (a)(1)(ii)	ω
ν.	501-374-4402	501-3			12	0	.3	0	Part 1 (a)(1)(ll)	2
, a, LLC	1100 Jones Street	1100			12	0	.3	0	Part 1 (a)(1)(ii)	_
۲ : :	Comment: Testing Conducted for	Com	AFTER GLOW (SECS)	BURN RATE (IN/MIN)	BURN TIME (SEC)	DRIP EXTINGUISH TIME (SEC)	BURN LENGTH (INCHES)	EXTINGUISH TIME (SECS)	TEST METHOD	SAMPLE NO.
									JLTS	TEST RESULTS
			3 SEC (AVG)	3 IN. (AVG)	30 SEC (AVG)	FAR 25.853(a)	ξĒ	30 SECOND IGNITION - 60 DEGREE	6. 30 SECONI	Part 1 (a)(3)
10 SEC (AVG)	NONE				15 SEC (AVG)	FAR 25.853(a)	ŒE	30 SECOND IGNITION - 45 DEGREE	5. 30 SECON	Part 1 (a)(2)(ii)
		4 IN. MIN	4			FAR 25.863(a)	NTAL	15 SECOND IGNITION - HORIZONTAL	4. 15 SECONI	Part 1 (a)(1)(v)
		2.5 IN. MIN	2.5			FAR 25.853(a)	NTAL	15 SECOND IGNITION - HORIZONTAL	3. 15 SECON	Part 1 (a)(1)(iv)
			5 SEC (AVG)	8 IN. (AVG)	15 SEC (AVG)	FAR 25.853(a)	ή.	12 SECOND IGNITION - VERTICAL	2. 12 SECONI	Part 1 (a)(1)(ii)
			3 SEC (AVG)	6 IN. (AVG)	15 SEC (AVG)	FAR 25.853(a)	۴.	60 SECOND IGNITION - VERTICAL	1. 60 SECONI	Part 1 (a)(1)(l)
AFTER GLOW	FLAME PENETRATION	BURN RATE AVG.	DRIP BUF	BURN LENGTH	EXTINGUISH	FEDERAL AVIATION REGULATION	POSITION	IGNITION TIME - MATERIAL TEST POSITION	IGNITION TIM	Appendix F
	e)	(Average	Pass/Fail Criteria (Max Average)	Pass/		53	FAR 25.853	METHOD F	TEST	
	Conditioning Hrs. 24	Conditi				LEROCK Leather.	CL-1048 CASTI	MATERIAL DESCRIPTION: Fiber Protector applied to CL-1048 CASTLEROCK Leather	RIPTION: Fiber F	MATERIAL DESC
	NA		Leather		.10"					N/A
	DIRECTION		Material:		THICKNESS:	HI.				MANUFACTURER:
ted)	1 (Treated)		N/A		N/A	N/A	z	~	STLEROCI	CL-1048 CASTLEROCK
¥E	Test Specimen #		PO#		Aircraft Model:	Airc	#	Lot#:		PART NUMBER:
	N/A	zation:	Authorization: N/A		AME-TEK	Test Lab: FLAME-TEK		ata Sheet	rner Test D	Bunsen Burner Test Data Sheet
			CATE	CERTIFIC	RIAL TEST	FLAMMABILITY MATERIAL TEST CERTIFICATE	FLAMM/			

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				FAIL		PASS 🛛			6:25 P.M.	Test Time:
95 °F	Flame Temp: 1565 °F	Flam		DER A	3rad Shelton FAA	Witnessed by: Brad Shelton FAA DER			11-14-15	Test Date:
						0	.33	0		Average
					12	0	:3	0	Part 1 (a)(1)(ii)	သ
ಸ	Little Rock, AR 72202 501-374-4402	501-3			12	0	.4	0	Part 1 (a)(1)(il)	2
rica, LLC	Fiber Protector Amer 1100 Jones Street	Fiber 1100			12	0	ω	0	Part 1 (a)(1)(ii)	1
or	Comment: Testing Conducted for		AFTER GLOW (SECS)	BURN RATE (IN/MIN)	BURN TIME (SEC)	DRIP EXTINGUISH TIME (SEC)	BURN LENGTH (INCHES)	EXTINGUISH TIME (SECS)	TEST METHOD	SAMPLE NO.
									ULTS	TEST RESULTS
			3 SEC (AVG)	3 IN. (AVG)	30 SEC (AVG)	FAR 25.853(a)	EFF	30 SECOND IGNITION - 60 DEGREE	6. 30 SECON	Part 1 (a)(3)
10 SEC (AVG)	NONE				15 SEC (AVG)	FAR 25.853(a)	H	30 SECOND IGNITION - 45 DEGREE	5, 30 SECON	Part 1 (a)(2)(ii)
		4 IN. MIN				FAR 25,853(a)	TAL	15 SECOND IGNITION - HORIZONTAL	4. 15 SECON	Part 1 (a)(1)(v)
		2.5 IN. MIN				FAR 25.853(a)	TAL	15 SECOND IGNITION - HORIZONTAL	3, 15 SECON	Part 1 (a)(1)(iv)
			5 SEC (AVG)	8 IN. (AVG)	15 SEC (AVG)	FAR 25.853(a)		12 SECOND IGNITION - VERTICAL	2. 12 SECON	Part 1 (a)(1)(li)
			3 SEC (AVG)	8 IN. (AVG)	15 SEC (AVG)	FAR 25.853(a)		60 SECOND IGNITION - VERTICAL	1. 60 SECON	Part 1 (a)(1)(i)
AFTER GLOW	FLAME PENETRATION	BURN RATE AVG.	DRIP B	BURN LENGTH	EXTINGUISH TIME	FEDERAL AVIATION REGULATION	OSITION	IGNITION TIME - MATERIAL TEST POSITION	IGNITION TIN	Appendix F
	e)	Criteria (Max Average)		Pass/Fail		3	FAR 25.853	METHOD F	TEST	
	Conditioning Hrs. 24	Conditi				EROCK Leather.	CL-1048 CASTLE	MATERIAL DESCRIPTION: Fiber Protector applied to CL-1048 CASTLEROCK Leather.	CRIPTION: Fiber F	MATERIAL DES
A	NA	er er	Leather		.10"					N/A
	DIRECTION:		Material:		THICKNESS:	тни .			;;	MANUFACTURER:
ated)	2 (Treated)		N/A		NA	A	N/A	×	CL-1048 CASTLEROCK	CL-1048 C
74:	Test Specimen #		PO#:		Aircraft Model:	Airc	*	Lot#:		PART NUMBER
	N/A	Authorization: N/A	Autho		FLAME-TEK	Test Lab: FL		ata Sheet	Bunsen Burner Test Data Sheet	Bunsen Bu
			CATE	CERTIFI	RIAL TEST	FLAMMABILITY MATERIAL TEST CERTIFICAT	LAMMAI			

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				FAIL		PASS 🛛			6:30 P.M.	Test Time:
565 °F	Flame Temp: 1565 °F	Flan		DER	Brad Shelton FAA DER	Witnessed by:			11-14-15	Test Date:
						0	.33	0		Average
					12	0	ω	0	Part 1 (a)(1)(ii)	ω
.02	501-374-4402	501-3			12	0	ω	0	Part 1 (a)(1)(ii)	2
3 4 1	1100 Jones Street	1100			12	0	4	0	Part 1 (a)(1)(ii)	_
ਰ ਹ	Comment: Testing Conducted for	l	AFTER GLOW (SECS)	BURN RATE (IN/MIN)	BURN TIME (SEC)	DRIP EXTINGUISH TIME (SEC)	BURN LENGTH (INCHES)	EXTINGUISH TIME (SECS)	TEST METHOD	SAMPLE NO.
									ULTS	TEST RESULTS
			3 SEC (AVG)	3 IN. (AVG)	30 SEC (AVG)	FAR 25.853(a)	E	30 SECOND IGNITION - 60 DEGREE	6. 30 SECON	Part 1 (a)(3)
10 SEC (AVG)	NONE				15 SEC (AVG)	FAR 25.853(a)	E	30 SECOND IGNITION - 45 DEGREE	5. 30 SECON	Part 1 (a)(2)(ii)
		4 IN. MIN	4			FAR 25.853(a)	VTAL	15 SECOND IGNITION - HORIZONTAL	4. 15 SECONI	Part 1 (a)(1)(v)
		2.5 IN. MIN	2.1			FAR 25.853(a)	ATAL .	15 SECOND IGNITION - HORIZONTAL	3. 15 SECONI	Part 1 (a)(1)(iv)
			5 SEC (AVG)	8 IN. (AVG)	15 SEC (AVG)	FAR 25.853(a)	-	12 SECOND IGNITION - VERTICAL	2. 12 SECONI	Part 1 (a)(1)(ii)
			3 SEC (AVG)	6 IN. (AVG)	15 SEC (AVG)	FAR 25.853(a)	_	80 SECOND IGNITION - VERTICAL	1. 80 SECONE	Part 1 (a)(1)(i)
AFTER GLOW	FLAME PENETRATION	BURN RATE AVG.	DRIP BU	BURN LENGTH	EXTINGUISH TIME	FEDERAL AVIATION REGULATION	OSITION	IGNITION TIME - MATERIAL TEST POSITION	IGNITION TIM	Appendix F
	e)	x Averag	Fail Criteria (Max Average)	Pass/Fa		ຜ	FAR 25.853	METHOD F	TEST	
	Conditioning Hrs. 24	Condit				tector NOT applied.	ather, Fiber Pro	MATERIAL DESCRIPTION: CL-1048 CASTLEROCK Leather, Fiber Protector NOT applied	CRIPTION: CL-104	MATERIAL DES
À	N/A		Leather		.10"					N/A
	DIRECTION:		Material:		THICKNESS:	IHI			77	MANUFACTURER:
reated)	3 (Not Treated)		NA		N/A	A	N/A	^	CL-1048 CASTLEROCK	CL-1048 C
*	Test Specimen #		PO#:		Aircraft Model:	Airc	*	Lot#:		PART NUMBER:
	NA	zation:	Authorization: N/A		AME-TEK	Test Lab: FLAME-TEK		ata Sheet	Bunsen Burner Test Data Sheet	Bunsen Bu
			ATE	CERTIFIC	RIAL TEST	FLAMMABILITY MATERIAL TEST CERTIFICA	-LAMMA			

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			FLAMM.	FLAMMABILITY MATERIAL	RIAL TEST	CERTIFICATE	CATE			
Bunsen Bu	Bunsen Burner Test Data Sheet	ata Sheet		Test Lab: F	Test Lab: FLAME-TEK		Auth	Authorization: N/A	NA	
PART NUMBER:			Log#:	>	Aircraft Model:		PO#:		Test Specimen #	*
CL-1048 C/	CL-1048 CASTLEROCK	_	7	N/A	NA		NA	D	4 (Not Treated)	eated)
MANUFACTURER:	Z.			п	THICKNESS:		Material:		DIRECTION:	
N/A					.10"		Leather	her	NA	<i>y</i>
MATERIAL DES	CRIPTION: CL-104	18 CASTLEROCK	Leather, Fiber P	MATERIAL DESCRIPTION: CL-1048 CASTLEROCK Leather, Fiber Protector NOT applied.					Conditioning Hrs. 24	
е	TEST	METHOD	FAR 25.853	53		Pass	Pass/Fail Criteria (Criteria (Max Average)	Θ)	
Appendix F	IGNITION TIN	IGNITION TIME - MATERIAL TEST POSITION	T POSITION	FEDERAL AVIATION REGULATION	EXTINGUISH TIME	BURN LENGTH	DRIP	BURN RATE AVG.	FLAME PENETRATION	AFTER GLOW
Part 1 (a)(1)(i)	1. 80 SECON	1. 80 SECOND IGNITION - VERTICAL	CAL	FAR 25.853(a)	15 SEC (AVG)	6 IN. (AVG)	3 SEC (AVG)			
Part 1 (a)(1)(ii)	2. 12 SECONI	12 SECOND IGNITION - VERTICAL	CAL	FAR 25.853(a)	15 SEC (AVG)	8 IN. (AVG)	5 SEC (AVG)			
Part 1 (a)(1)(v)	3. 15 SECON	15 SECOND IGNITION - HORIZONTAL	ONTAL	FAR 25.853(a)				2.5 IN. NIN		
Part 1 (a)(1)(v)	4. 15 SECONI	15 SECOND IGNITION - HORIZONTAL	ONTAL	FAR 25.853(a)				4 IN. MIN		
Part 1 (a)(2)(ii)	5. 30 SECONI	30 SECOND IGNITION - 45 DEGREE	SREE	FAR 25.853(a)	15 SEC (AVG)				NONE	10 SEC (AVG)
Part 1 (a)(3)	6. 30 SECONI	30 SECOND IGNITION - 80 DEGREE	SREE	FAR 25.853(a)	30 SEC (AVG)	3 IN. (AVG)	3 SEC (AVG)			
TEST RESULTS	JLTS									
SAMPLE NO.	TEST METHOD	EXTINGUISH TIME (SECS)	BURN LENGTH (INCHES)	DRIP EXTINGUISH TIME (SEC)	BURN TIME (SEC)	BURN RATE (IN/MIN)	AFTER GLOW (SECS)		Comment: Testing Conducted for	4
1	Part 1 (a)(1)(ii)	0	.3	0	12			Fiber 1100	Fiber Protector America, LLC 1100 Jones Street	rica, LLC
2	Part 1 (a)(1)(ii)	0	.4	0	12			Little 501-3	Little Rock, AR 72202 501-374-4402	Ñ
သ	Part 1 (a)(1)(ii)	0	·ω	0	12					
Average		0	.33	0						
Test Date:	11-14-15			Witnessed by: Brad Shelton FAA DER	Brad Shelton FAA	DER &	M	Flan	Flame Temp: 1565 °F	35 °F
Test Time:	6:34 P.M.			PASS 🛛		FAIL []				

Document	REV	DATE
FT.FR.01	NO	06-13-13