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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		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, R	ev. 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).

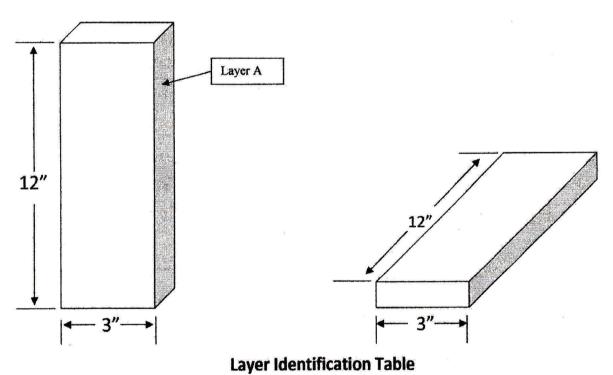
6.0 Test List

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.

FLAME-TEK LLC.		
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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



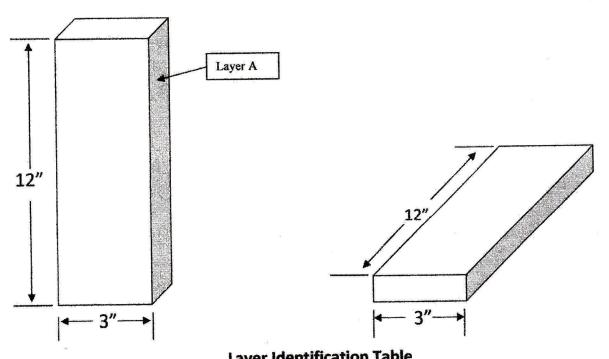
Layer	Material PN	Manufacturer	Lot/Batch	Comments
Α	CL-1048 CASTLEROCK	N/A	N/A	Leather

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	Idelitiiidation	IUNIC		
				95 77

Layer	Material PN	Manufacturer	Lot/Batch	Comments
Á.	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 C	Control Testing
Techniciar	n: Brad Shelton	BIA	managada atte
Date:	11/14/15	-	
each test.	During the daily period of	of testing, if at any time the l	tion 1 items must be checked prior to burner is shut off to stop testing, the ction 3 items must be checked at least
Section 1			
to any management			
1.1 Flai	me Height		
a.	For Vertical, Horizontal a		e extends at least 1.5 inches above
b.	If using methane it is desprong to measure inner of methane it has been det flame is at least 1.5 inch,	sirable to have two prongs for cone height and the other p termined when the inner co the proper flame profile is inch flame height is cons	for measuring the flame height with one brong to measure tip of the flame. For one is at least 7/8 inch and the tip of achieved. Flame height should not sidered nominal and should be the
C.	For 60-Degree wire test	ting outer cone of the flam	ne must be at least 3 inches in ch in length. Flame Height should
1.2 Tes	st Specimen		V
a.	Specimen Selection,		
702.5	Warp and Fill (when ap	plicable)	
		r each separate set of spec	cimens.
			inches unless actual size is smaller,
e.	45-Degree burn: Specir	nen size of 10" x 10". Mus	t have exposed area of at least 8" x 8"
f.	Specimen thickness w	ill be the same as that use	ed in the airplane with the
	following exceptions:		
		ickness, the minimum will I	
		thicker than 1/2 inch will be t	
			a specimen and cannot have ed 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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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

__1/

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

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FLAMMABILITY TEST RESULTS

distribuid distribuid de de la constant de la const	er former en	чейе тетриплине портине порт		FLAMMABILITY MATERIAL	ERIAL TEST	CERTE	S A A			***************************************
Bunsen Burner Test Data	mer TestD	ata Sheet		Test Lab:	FLAME-TEK		Ž	Authorization: N/A	\$	
PART NUMBER:			Lo#:	>	Aircraft Model:		PO#		Test Specimen#	***
CL-1048 CASTLEROCK	ASTLEROC	_	-7	\$	NA		NA	<i>P</i>	1 (Treated)	lted)
MANUFACTURER:	χņ			-	THICKNESS:		Material:		DIRECTION:	
N/A			a.		.10"		Leather	her	N/A	
MATERIAL DESC	RIPTION: Fiber F	MATERIAL DESCRIPTION: Fiber Protector applied to CL-1048 CASTLEROCK Leather	o CL-1048 CAST	LEROCK Leather.				Condi	Conditioning Hrs. 24	
**************************************	TEST	METHOD	FAR 25.853	53		Pass	s/Fail Criteria (Max Average)	Max Averag	e)	
Appendix F	GNITION TIM	IGNITION TIME - MATERIAL TEST POSITION	POSITION	FEDERAL AVIATION REGULATION	EXTINGUISH	BURNLENGTH	DRIP	BURN RATE AVG.	FLAME PENETRATION	AFTER GLOW
Part 1 (a)(1)(i)	1. 60 SECONE	60 SECOND IGNITION - VERTICAL	Ж	FAR 25.853(a)	15 SEC (AVG)	6 IN. (AVG)	3 SEC (AVG)			
Part 1 (a)(1)(ii)	2. 12 SECONE	12 SECOND IGNITION - VERTICAL	ÄL	FAR 25.853(a)	15 SEC (AVG)	8 IN. (AVG)	5 SEC (AVG)			
Part 1 (a)(1)(iv)	3. 15 SECON	15 SECOND IGNITION - HORIZONTAI	JATAC	FAR 25.853(a)				2.5 IN. MIN		
Part 1 (a)(1)(v)	4. 15 SECONE	15 SECOND IGNITION - HORIZONTAL	DNTAL	FAR 25.853(a)				A IN. MIN		
Part 1 (a)(2)(ii)	5, 30 SECONI	30 SECOND IGNITION - 45 DEGREE	REE	FAR 25.853(a)	15 SEC (AVG)				NONE	10 SEC (AVG)
Part 1 (a)(3)	6. 30 SECONI	30 SECOND IGNITION - 60 DEGREE	REE	FAR 25.853(a)	30 SEC (AVG)	3 IN. (AVG)	3 SEC (AVG)			
TEST RESULTS	SLTC									
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	; ·
	Part 1 (a)(1)(ii)	0	ယ်	0	12			1100	1100 Jones Street) ida, reco
2	Part 1 (a)(1)(ii)	0	.ω	0	12			501-3	Little Rock, AR /2202 501-374-4402	
ω	Part 1 (a)(1)(ii)	0	ယ	0	12					
Average		0	.30	0						
Test Date:	11-14-15			Witnessed by	Witnessed by: Brad Shelton FAA DER	DER			Flame Temp: 1565 °F	ъ́ т
Test Time:	6:20 P.M.			PASS 🛛		FAIL D				

ב מח הם	5	8000
7.0	Ž	- 00-00

r Test D	ata Sheet	***************************************	Test Lab			È	orization	\$	
		o#:		Aircraft Model:		PO#:		Test Specimer	*
LEROCI		~	\$	N/A		2	A	2 (Tre	ated)
				THICKNESS:		Material:		DIRECTION:	***************************************
contract of the State of the St	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	10 - 10-10-10-10-10-10-10-10-10-10-10-10-10-1			-	Lea	ħer	Z	A
TION: Fiber P	rotector applied i	o CL-1048 CAST	LEROCK Leather.	O ANTHE PER PER PER PER PER PER PER PER PER PE	reporter, and design a	ос Винесентовом положения предоставления выпользования выстрания выпользования выстрания выпользования выстрания выпользования выпользования выпользования выпользования в		N	
TEST N	- 1		53		Pass	s/Fail Criteria	Max Avera	ge)	
IGNITION TIM	E - MATERIAL TES	r POSITION	FEDERAL AVIATION REGULATION	EXTINGUISH	BURN LENGTH	DRIP	BURN RATE AVG.	FLAME PENETRATION	AFTER
1. 60 SECOND	IGNITION - VERTIC	ž	FAR 25.853(a)	15 SEC (AVG)	6 IN. (AVG)	3 SEC (AVG)			
2. 12 SECOND	IGNITION - VERTIC	XL	FAR 25.853(a)	15 SEC (AVG)	8 IN. (AVG)	5 SEC (AVG)			
3, 15 SECOND	IGNITION - HORIZ	ONTAL	FAR 25.853(a)				2.5 IN. MIN		
4. 15 SECOND	IGNITION - HORIZO	ONTAL	FAR 25.853(a)				4 IN. MIN		
5, 30 SECOND	IGNITION - 45 DEG	Ž	FAR 25.853(a)	15 SEC (AVG)				NONE	10 SEC (AVG)
6. 30 SECOND	IGNITION - 60 DEC	REE	FAR 25.853(a)	30 SEC (AVG)	3 IN. (AVG)	3 SEC (AVG)			
RESULTS									
TEST METHOD	EXTINGUISH TIME (SECS)	BURN LENGTH (INCHES)	DRIP EXTINGUISH TIME (SEC)	BURN TIME (SEC)	BURN RATE (IN/MIN)	AFTER GLO		nment: ing Conducted I	0
Part 1 (a)(1)(ii)	0	.3	0	12			1100	Protector Ame Jones Street	rica, LLC
Part 1 (a)(1)(ii)	0	.4	0	12			201- E	Rock, AR 7220 374-4402	N
Part 1 (a)(1)(ii)	0	:3	0	12					
	0	.33	0						
			Witnessed by:	y; Brad Shelton FAA DER	DER /		Far	Flame Temp: 1565 °F	35 °F
11-14-15	anticones entropy (Anticones ent	in the second	DASS X]				
	TEST D: ION: Fiber P TON: Fiber P TEST A TEST A 15 SECOND 12 SECOND 15 SECOND 30 SECOND 30 SECOND 30 SECOND 30 SECOND 30 SECOND 30 SECOND (a)(1)(ii) (a)(1)(iii)	Bunsen Burner Test Data Sheet PART NUMBER: CL-1048 CASTLEROCK MANUFACTURER: N/A MATERIAL DESCRIPTION: Fiber Protector applied to TEST METHOD Part 1 (a)(1)(ii) Part 1 (a)(1)(iii) Part 1 (a)(1)(iv) Part 1 (a)(2)(iii) Part 1 (a)(2)(iii) Part 1 (a)(2)(iii) Part 1 (a)(2)(iii) SAMPLE TEST NO. Part 1 (a)(1)(iii) O Part 1 (a)(1)(iii) O Part 1 (a)(1)(iii) O Part 1 (a)(1)(iii) O Part 1 (a)(1)(iiii) O Part 1 (a)(1)(iiii) O Part 1 (a)(1)(iiii) O Part 1 (a)(1)(iiii) O Part 1 (a)(1)(iiiii) O Part 1 (a)(1)(iiiiiii) O Part 1 (a)(1)(iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii	TEST METHOD FAR 25.8: ICANITION TIME - MATERIAL TEST POSITION BO SECOND IGNITION - VERTICAL 12 SECOND IGNITION - HORIZONTAL 15 SECOND IGNITION - 45 DEGREE 30 SECOND IGNITION - 45 DEGREE 30 SECOND IGNITION - 60 DEGREE	S) H GGR RIZOY RIZOY TI TI TI TI TI TI TI T	Aircraft Mod Aircraft Mod N THICKNESS 15 SE	ATERIAL TEST CERTIAB: FLAME-TEK Aircraft Model: N/A THICKNESS: .10" .10" .15 SEC (AVG) .5 SEC	ATERIAL TEST CERTIFICATE ab: FLAME-TEK Aircraft Model: N/A THICKNESS: 10" Pass/Fail Cri Pass/Fail Cri	ATTERIAL TEST CERTIFICATE Abb: FLAME-TEK Authorizat Aircraft model: N/A THICKNESS: Po#: N/A THICKNESS: Material: Leather 10" EXTINGUISH BURN LENGTH EXTINGUISH AVC 15 SEC (AVG) 8 IN. (AVG) 3 SEC (AVG) 15 SEC (AVG) 8 IN. (AVG) 5 SEC (AVG) 15 SEC (AVG) 3 IN. (AVG) 3 SEC (AVG) 15 SEC (AVG) 3 IN. (AVG) 3 SEC (AVG) 16 SEC (AVG) 3 IN. (AVG) 3 SEC (AVG) 17	ATERIAL TEST CERTIFICATE ab: FLAME-TEK Aircraft Model: N/A THICKNESS: Pass/Fail Criteria (Max Average Material: Leather Condition: AFTER GLOW Sin. (AVG) 15 SEC (AVG) 3 SEC (AVG) 3 SEC (AVG) 3 SEC (AVG) 3 SEC (AVG) Testing Fiber F

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			T A MINU	FLAMMABILITY MATERIAL	RIAL TEST	CERTIF	CATE			
Bunsen Burner Test Data	rner Test D	ata Sheet		Test Lab: F	Test Lab: FLAME-TEK		Autho	Authorization: N/A	¥	
PART NUMBER:			Fo##	A	Aircraft Model:		PO#:		Test Specimen #	*
CL-1048 CASTLEROCK	\STLEROCI	^	7	NA	N/A	***************************************	NA		3 (Not Treated)	eated)
MANUFACTURER:	יק.				THICKNESS:		Material:		DIRECTION:	
N					.10"		Leather	Ter	N/A	
MATERIAL DESC	RIPTION: CL-104	8 CASTLEROCK	eather, Fiber Pr	MATERIAL DESCRIPTION: CL-1048 CASTLEROCK Leather, Fiber Protector NOT applied.				Condi	Conditioning Hrs. 24	
	TEST	METHOD	FAR 25.853	53		Pass	s/Fail Criteria (Max Average)	Max Averag	je)	
Appendix F	IGNITION TIM	IGNITION TIME - MATERIAL TEST POSITION	POSITION	FEDERAL AVIATION REGULATION	EXTINGUISH TIME	BURN LENGTH	DRIP	BURN RATE AVG.	FLAME PENETRATION	AFTER GLOW
Part 1 (a)(1)(l)	1. 60 SECONI	60 SECOND IGNITION - VERTICAL	AL.	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	AL	FAR 25.853(a)	15 SEC (AVG)	8 IN. (AVG)	5 SEC (AVG)			
Part 1 (a)(1)(iv)	3. 15 SECONI	15 SECOND IGNITION - HORIZONTAL	ONTAL	FAR 25.853(a)				2.5 IN. MIN		
Part 1 (a)(1)(v)	4. 15 SECONI	15 SECOND IGNITION - HORIZONTAL	UNTAL	FAR 25.863(a)				4 N. MIN		
Part 1 (a)(2)(ii)	5. 30 SECON	30 SECOND IGNITION - 45 DEGREE	REE	FAR 25.863(a)	15 SEC (AVG)	Consideration of the Considera			NONE	10 SEC (AVG)
Part 1 (a)(3)	6. 30 SECONI	30 SECOND IGNITION - 60 DEGREE	REE	FAR 25.853(a)	30 SEC (AVG)	3 IN. (AVG)	3 SEC (AVG)			
TEST RESULTS	JLTS		deconnections of the control of the							
SAMPLE NO.	TEST METHOD	EXTINGUISH TIME (SECS)	BURN LENGTH (INCHES)	DRIP EXTINGUISH TIME (SEC)	BURN TIME (SEC)	BURN RATE (IN/MIN)	AFTER GLOW (SECS)	<u></u>	Comment: Testing Conducted for Elber Protector America 1110	5 4 = 5
-	Part 1 (a)(1)(ii)	0	A	0	12			1100	1100 Jones Street	י קיי קיי
2	Part 1 (a)(1)(ii)	0	မ	0	12			501-:	501-374-4402	Ñ
3	Part 1 (a)(1)(ii)	0	ည	0	12					
Average		0	.33	0						
Test Date:	11-14-15			Witnessed by	Witnessed by: Brad Shelton FAA DER	DER		Flar	Flame Temp: 1565 °F	% °F
Test Time:	6:30 P.M.			PASS 🛛		FAIL				

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The second secon	a ngian ngawa pamangahi da ana pamanga kanangapara mangarana na ngawa na ngawa na ngawa na ngawa na ngawa na n		FLAMM	FLAMMABILITY MATERIAL	ERIAL TEST	CERTE	CATE		referenteren er en	
Bunsen Burner Test Data Sheet	mer Test D	ata Sheet		Test Lab:	Test Lab: FLAME-TEK		Auth:	Authorization: N/A	NS.	
PART NUMBER:			₩		Aircraft Model:		PO#		Test Specimen #	*
CL-1048 CASTLEROCK	STLEROC	_		NA	NA		S	,	4 (Not Treated)	eated)
MANUFACTURER:	70				THICKNESS:		Material:		DIRECTION:	
N/A	***************************************	**************************************	**************************************		.10"		Leather	rer	N N	
MATERIAL DESC	RIPTION: CL-10	8 CASTLEROCK	Leather, Fiber Pr	MATERIAL DESCRIPTION: CL-1048 CASTLEROCK Leather, Fiber Protector NOT applied.				Condit	Conditioning Hrs. 24	
٧	TEST	METHOD	FAR 25.853	53		Pass	Pass/Fail Criteria (Max Average)	fax Averag	e)	
Appendix F	IGNITION TIM	IGNITION TIME - MATERIAL TEST POSITION	T POSITION	FEDERAL AVIATION REGULATION	EXTINGUISH TIME	BURN LENGTH	DRIP EXTINGUISH	BURN RATE AVG.	FLAME PENETRATION	AFTER GLOW
Part 1 (a)(1)(i)	1. 60 SECONI	80 SECOND IGNITION - VERTICAL	¥	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	DAL	FAR 25.853(a)	16 SEC (AVG)	8 IN. (AVG)	5 SEC (AVG)			
Part 1 (a)(1)(iv)	3. 15 SECON	15 SECOND IGNITION - HORIZONTAL	ONTAL	FAR 25.853(a)				2.5 IN. MIN		
Part 1 (a)(1)(v)	4. 15 SECONI	15 SECOND IGNITION - HORIZONTAL	ONTAL	FAR 25.853(a)				N N N		
Part 1 (a)(2)(ii)	5. 30 SECOND	30 SECOND IGNITION - 45 DEGREE	HEE .	FAR 25,853(a)	15 SEC (AVG)				NONE	10 SEC (AVG)
Part 1 (a)(3)	6. 30 SECONI	30 SECOND IGNITION - 60 DEGREE	PE I	FAR 25.853(a)	30 SEC (AVG)	3 IN. (AVG)	3 SEC (AVG)			
TEST RESULTS	ILTS									
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	
	Part 1 (a)(1)(ii)	0	.نى	0	7			1100	1100 Jones Street	ca, LLC
2	Part 1 (a)(1)(ii)	0	4	0	7			501-3	Little Rock, AR 72202 501-374-4402	
ω	Part 1 (a)(1)(li)	0	အ	0	12					
Average		0	.33	0						
Test Date: 1	11-14-15			Witnessed by:	by: Brad Shelton FAA DER	DER		Flam	Flame Temp: 1565 °F	5°F
Test Time: 6	6:34 P.M.			PASS 🛛		FAIL				736F444445.30002.301

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