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EASA DOA No. EASA.21J.575

TR-0022-001
REVISION A
Sheet 1 of 7

TECHNICAL REPORT

TITLE	Flammability Test Report - 60 sec Vertical Burn		
AIRCRAFT TYPE	VARIANT	REGISTRATION	SERIAL No.
Various	Various	Refer to Master Data List	Refer to Master Data List
MASTER DOCUMENT LIST:		MDL-0022	
DOCUMENT APPROVAL			
COMPILED BY:	M. Hills	CHECKED BY:	D. Jackson
SIGNATURE:	<i>M Hills</i>	SIGNATURE:	<i>D Jackson</i>
DATE:	02 Mar 15	DATE:	04 Mar 15
COMPLIANCE VERIFICATION APPROVAL	NAME	POSITION	DATE
<i>N Chettleburgh</i>	N Chettleburgh	CVE Cabin Safety	04 Mar 15
<p style="text-align: center;">PROPRIETARY NOTICE</p> <p>This document contains proprietary designs, specifications, data, information, and technical material that are the sole property of 365 Aerospace Ltd. The information contained shall be held and treated by its recipient on a confidential basis and must not be shown or disclosed to any unauthorised organisation or persons.</p>			



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TECHNICAL REPORT ISSUE SHEET

Issue	Classification	Compiled By	Checked By	Revision Approved By	Date
A	MINOR	See Sheet 1	See Sheet 1	See Sheet 1	See Sheet 1
	Initial Revision.				
B	MINOR				19 Mar 15
	Section 3.0 Certificate of Conformity Revised AIM Flammability Test Certificates added, Issue 2.0 replaces Issue 1.0				



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TECHNICAL REPORT

1.0 INTRODUCTION

1.1. Purpose

This Flammability Test Report has been raised in support of substantiation of the requirements as set out by the European Aviation Safety Agency (EASA) Certification Specifications for Large Aeroplanes specifically; Subpart D: CS 25.853(a) - Compartment Interiors.

The test samples of various combinations of SATTO, Kydex T5200 and GRN 10001175 Mankiewicz 346-65U736 paint have been tested according to the methods laid down in 365 Aerospace Ltd - Flammability Test Plan FTP-0022-001 to meet the requirements of CS 25.853(a), Appendix F, Part I (a)(1)(i) and (b)(4) 60s Vertical.

1.2. Conclusion

The samples submitted for the test under 365 Aerospace Ltd Test Plan no. TP-0022-001 satisfies the requirement of the specification detailed in Section 1.1 of this report.

2.0 REFERENCES

- a) 365 Aerospace Flammability Test Plan TP-0022-001.
- b) AIM Composite Flammability Test Report FST28819 Iss 2.0 dated 28 Feb 2015 showing PASS / ~~FAIL~~ - see Appendix A
- c) AIM Composite Flammability Test Report FST28820 Iss 2.0 dated 28 Feb 2015 showing PASS / ~~FAIL~~ - see Appendix A
- d) AIM Composite Flammability Test Report FST28821 Iss 2.0 dated 28 Feb 2015 showing PASS / ~~FAIL~~ - see Appendix A

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3.0 CONCLUSION - CERTIFICATE OF CONFORMITY

3.1. Appendix A - AIM Test Report FST28819

AIM ALTITUDE

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2795

FIRE TEST REPORT

Lab. Ref. No.:	FST28819 Iss 2	S.O No.:	L15248			
Material:	DRW: FTP-0022-001 REV A - MATERIALS UTILISED. SATTO: 012342/010914 - KYDEX: T5200, GRN 10001175 - PAINT, MANKIEWICZ 346-65U736, BATCH; 0004555213. HARDENER 345-19, BATCH; 0004621868					
Customer:	SATTO SOLUTIONS	P.O. No.:	50000020			
Date of Test:	28/02/2015	Rel. Note No.:				
Specimen Conditioning:	24hr. min. at 22.5 +/- 1.5°C and 50 +/- 5% RH					
TEST METHOD / SPECIFICATION	TEST RESULT			MEAN	CRITERIA (max. average)	PASS/FAIL
	1	2	3			
FLAMMABILITY						
F1 CS 25.853(a) Amdt.15 App.F PLI(a)(1)(i) & (b)(4) 60s. Vert.	Afterflame (sec)	0.0	0.0	0.0	15sec.	PASS
	Burn Length (in)	3.4	3.3	3.2	6in.	
	Drip Exting Time (sec)	0.0	0.0	0.0	3sec.	
F2 CS 25.853(a) Amdt.15 App.F PLI(a)(1)(ii) & (b)(4) 12s. Vert.	Afterflame (sec)				15sec.	
	Burn Length (in)				8in.	
	Drip Exting Time (sec)				5sec.	
F3 CS 25.853(a) Amdt.15 App.F PLI(a)(1)(iv) & (b)(5) 15s. Horiz.	Burn Rate (in/min)				2.5in/min.	
F4 CS 25.853(a) Amdt.15 App.F PLI(a)(1)(v) & (b)(5) 15s Horiz.	Burn Rate (in/min)				4.0in/min.	
F5 CS 25.855(d) Amdt.15 App.F PLI(a)(2)(ii) & (b)(6) 30sec/45°	Afterflame (sec)				15sec.	
	Afterglow (sec)				10sec.	
	Flame Penetration				NONE	
F6 CS 25.1713(c) Amdt.15 App.F PLI(a)(3) (b)(7) 30sec/60°	Afterflame (sec)				30sec.	
	Burn Length (in)				3in.	
	Drip Exting Time (sec)				3sec.	
HEAT RELEASE *						
F7 CS 25.853(d) Amdt.15 App.F PLIV (e) & (g)	2 min. Total HR (kW/min/m ²)				65(kW/min/m ²)	
	Peak HR (kW/m ²)				65(kW/m ²)	
SMOKE EMISSION *						
F8 CS 25.853(d) Amdt.15 App.F PLV(a) & (b)	Ds Max in 4 min. (Flaming)				200	
	Ds Max in 4 min. (Non-Flaming)				150/200	
F9 ABD0031 IssG / D6-51377 Rev F ABD0031 IssG	CO (Flaming)				1000 / 3500	
	CO (Non-Flaming)				1000 / 3500	
	HCN (Flaming)				150 / 150	
	HCN (Non-Flaming)				150 / 150	
	HF (Flaming)				100 / 200	
	HF (Non-Flaming)				100 / 200	
	HCl (Flaming)				150 / 500	
	HCl (Non-Flaming)				150 / 500	
	SO ₂ (Flaming)				100 / 100	
	SO ₂ (Non-Flaming)				100 / 100	
	NO _x (Flaming)				100 / 100	
	NO _x (Non-Flaming)				100 / 100	
TOXIC GAS EMISSION (ppm)						
F10 ABD0031 IssG / D6-51377 Rev F	HCl (Flaming)				150 / 500	
	HCl (Non-Flaming)				150 / 500	
	SO ₂ (Flaming)				100 / 100	
	SO ₂ (Non-Flaming)				100 / 100	
	NO _x (Flaming)				100 / 100	
	NO _x (Non-Flaming)				100 / 100	

* SEE ATTACHED GRAPHS

FILENAMES:

The results detailed above relate only to the items tested.

COMMENTS

This report is an up-issue of report FST28819 Issue 1, due to a typographical error within the material description.

Flammability: Flame Temp. (Min. 843C (1550F)):

849 °C

Heat Release:

Calibration Factor: 0.2736 kW/mV

Smoke Emission: Heat Flux (25 +/- 0.5kW/m²):

Heat Flux(35 +/- 0.5kW/m²):

COMPILED BY:

N.Orpwood
 Test Engineer
 10 March 2015

TESTED BY:

N.Orpwood
 Test Engineer
 10 March 2015

DATE:

DATE:

UNCERTAINTY OF MEASUREMENT

Flammability - Afterflame/Drip Exting Time +/- 0.7sec, Burnlength +/- 0.1in, Burn Rate +/- 0.1in/min Heat Release +/- 1.5% Smoke Emission +/- 4% Toxic Gas Emission +/- 15%

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3.2. Appendix A - AIM Test Report FST28820



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 EMAIL: labs@aimaltitude.com



FIRE TEST REPORT

2795

Lab. Ref. No.:	FST28820 Iss 2	S.O No.:	L15248			
Material:	PART NO 365-25-0020-002/A DRW: FTP-0022-001 REV A - MATERIALS UTILISED, SATTO: 012342/010914 - KYDEX: T5200, GRN 10001175 - PAINT, MANKIEWICZ 346-65U736, BATCH; 0004555213. HARDENER 345-19, BATCH; 0004621868					
Customer:	SATTO SOLUTIONS	P.O. No.:	50000020			
Date of Test:	28/02/2015	Rel. Note No.:				
Specimen Conditioning:	24hr. min. at 22.5 +/- 1.5°C and 50 +/- 5% RH					
TEST METHOD / SPECIFICATION	TEST RESULT			MEAN	CRITERIA (max. average)	PASS/FAIL
	1	2	3			
FLAMMABILITY						
F1 CS 25.853(a) Amdt.15 App.F Pl.I(a)(1)(i) & (b)(4) 60s. Vert.	Afterflame (sec)	0.0	0.0	0.0	15sec.	PASS
	Burn Length (in)	2.6	2.5	2.3	6in.	
	Drip Exting Time (sec)	0.0	0.0	0.0	3sec.	
F2 CS 25.853(a) Amdt.15 App.F Pl.I(a)(1)(ii) & (b)(4) 12s. Vert.	Afterflame (sec)				15sec.	
	Burn Length (in)				8in.	
	Drip Exting Time (sec)				5sec.	
F3 CS 25.853(a) Amdt.15 App.F Pl.I(a)(1)(iv) & (b)(5) 15s. Horiz.	Burn Rate (in/min)				2.5in/min.	
F4 CS 25.853(a) Amdt.15 App.F Pl.I(a)(1)(v) & (b)(5) 15s Horiz.	Burn Rate (in/min)				4.0in/min.	
F5 CS 25.855(d) Amdt.15 App.F Pl.I(a)(2)(ii) & (b)(6) 30sec/45°	Afterflame (sec)				15sec.	
	Afterglow (sec)				10sec.	
	Flame Penetration				NONE	
F6 CS 25.1713(c) Amdt.15 App.F Pl.I(a)(3) (b)(7) 30sec/60°	Afterflame (sec)				30sec.	
	Burn Length (in)				3in.	
	Drip Exting Time (sec)				3sec.	
HEAT RELEASE *						
F7 CS 25.853(d) Amdt 15 App.F Pl.IV (e) & (g)	2 min. Total HR (kWmin/m ²)				65(kWmin/m ²)	
	Peak HR (kW/m ²)				65(kW/m ²)	
SMOKE EMISSION *						
F8 CS 25.853(d) Amdt 15 App.F Pl.V(a) & (b)	Ds Max in 4 min. (Flaming)				200	
	Ds Max in 4 min. (Non-Flaming)				150/200	
F9 ABD0031 IssG / D6-51377 Rev F ABD0031 IssG	Ds Max in 4 min. (Flaming)				200	
	Ds Max in 4 min. (Non-Flaming)				150/200	
TOXIC GAS EMISSION (ppm)						
F10 ABD0031 IssG / D6-51377 Rev F	CO (Flaming)				1000 / 3500	
	CO (Non-Flaming)				150 / 150	
	HCN (Flaming)				100 / 200	
	HCN (Non-Flaming)				150 / 500	
	HF (Flaming)				100 / 100	
	HF (Non-Flaming)				100 / 100	
	HCl (Flaming)				100 / 100	
	HCl (Non-Flaming)				100 / 100	
	SO ₂ (Flaming)				100 / 100	
	SO ₂ (Non-Flaming)				100 / 100	
	NO _x (Flaming)				100 / 100	
	NO _x (Non-Flaming)				100 / 100	

* SEE ATTACHED GRAPHS

FILENAMES:

The results detailed above relate only to the items tested.

COMMENTS

This report is an up-issue of report FST28820 Issue 1, due to a typographical error within the material description.

Flammability: Flame Temp. (Min. 843C (1550F)):

849 °C

Heat Release:

Calibration Factor: 0.2736 kW/mV

Smoke Emission: Heat Flux (25 +/- 0.5kW/m²):

Heat Flux (35 +/- 0.5kW/m²):

COMPILED BY:

N.Orpwood
 Test Engineer
 19 March 2015

TESTED BY:

N.Orpwood
 Test Engineer
 19 March 2015

DATE:

19 March 2015

DATE:

19 March 2015

UNCERTAINTY OF MEASUREMENT

Flammability - Afterflame/Drip Exting Time +/- 0.7sec, Burnlength +/- 0.1in, Burn Rate +/- 0.1in/min Heat Release - +/- 1.5% Smoke Emission - +/- 4% Toxic Gas Emission - +/- 15%

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TECHNICAL REPORT

3.3. Appendix A - AIM Test Report FST28821

AIM ALTITUDE

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2795

FIRE TEST REPORT

Lab. Ref. No.:	FST28821 Iss 2	S.O No.:	L15248				
Material:	PART NO 365-25-0021-001/A DRW: FTP-0022-001 REV A - MATERIALS UTILISED. SATTO: KYDEX: T5200, GRN 10001175 - PAINT, MANKIEWICZ 346-65U736, BATCH: 0004555213. HARDENER 345-19, BATCH: 0004621868						
Customer:	SATTO SOLUTIONS	P.O. No.:	50000020				
Date of Test:	28/02/2015	Ref. Note No.:					
Specimen Conditioning:	24hr. min. at 22.5 +/- 1.5°C and 50 +/- 5% RH						
TEST METHOD / SPECIFICATION	TEST RESULT			MEAN	CRITERIA (max. average)	PASS/FAIL	
	1	2	3				
FLAMMABILITY							
F1 CS 25.853(a) Amdt 15 App.F Pl.I(a)(1)(i) & (b)(4) 60s. Vert.	Afterflame (sec)	0.0	8.8	0.0	2.9	15sec.	
	Burn Length (in)	4.4	4.3	4.0	4.2	6in.	
	Drip Exting Time (sec)	0.0	0.0	0.0	0.0	3sec.	
F2 CS 25.853(a) Amdt 15 App.F Pl.I(a)(1)(ii) & (b)(4) 12s. Vert.	Afterflame (sec)					15sec.	
	Burn Length (in)					6in.	
	Drip Exting Time (sec)					5sec.	
F3 CS 25.853(a) Amdt 15 App.F Pl.I(a)(1)(iv) & (b)(5) 15s. Horiz.	Burn Rate (in/min)					2.5in/min.	
F4 CS 25.853(a) Amdt 15 App.F Pl.I(a)(1)(v) & (b)(5) 15s Horiz.	Burn Rate (in/min)					4.0in/min.	
F5 CS 25.855(d) Amdt 15 App.F Pl.I(a)(2)(ii) & (b)(6) 30sec/45°	Afterflame (sec)					15sec.	
	Afterglow (sec)					10sec.	
	Flame Penetration					NONE	
F6 CS 25.1713(c) Amdt 15 App.F Pl.I(a)(3) (b)(7) 30sec/60°	Afterflame (sec)					30sec.	
	Burn Length (in)					3in.	
	Drip Exting Time (sec)					3sec.	
F7 CS 25.853(d) Amdt 15 App.F Pl.IV (e) & (g)	2 min. Total HR (kWmin/m ²)					65(kWmin/m ²)	
	Peak HR (kW/m ²)					65(kW/m ²)	
F8 CS 25.853(d) Amdt 15 App.F Pl.V(a) & (b)	Ds Max in 4 min. (Flaming)					200	
F9 ABD0031 IssG / D6-51377 Rev F ABD0031 IssG	Ds Max in 4 min. (Flaming)					150/200	
	(Non-Flaming)					200	
TOXIC GAS EMISSION (ppm) F10 ABD0031 IssG / D6-51377 Rev F	CO (Flaming)					1000 / 3500	
	CO (Non-Flaming)						
	HCN (Flaming)					150 / 150	
	HCN (Non-Flaming)						
	HF (Flaming)					100 / 200	
	HF (Non-Flaming)						
	HCl (Flaming)					150 / 500	
	HCl (Non-Flaming)						
	SO ₂ (Flaming)					100 / 100	
	SO ₂ (Non-Flaming)						
NO _x (Flaming)					100 / 100		
NO _x (Non-Flaming)							

* SEE ATTACHED GRAPHS

FILENAMES:

The results detailed above relate only to the items tested.

COMMENTS

This report is an up-issue of report FST28821 Issue 1, due to a typographical error within the material description.

Flammability: Flame Temp. (Min. 843C (1550F)): 849 °C

Heat Release: Calibration Factor: 0.2736 kW/mV

Smoke Emission: Heat Flux (25 +/- 0.5kW/m²):

Heat Flux (35 +/- 0.5kW/m²):

COMPILED BY:

TESTED BY:

N. Orpwood
 Test Engineer
 19 March 2015

N. Orpwood
 Test Engineer
 19 March 2015

DATE:

DATE:

UNCERTAINTY OF MEASUREMENT

Flammability - Afterflame/Drip Exting Time +/- 0.7sec, Burnlength +/- 0.1in, Burn Rate +/- 0.1in/min Heat Release +/- 1.5% Smoke Emission +/- 4% Toxic Gas Emission +/- 15%

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