IATA Baku 2025

SAF blending considerations & awareness

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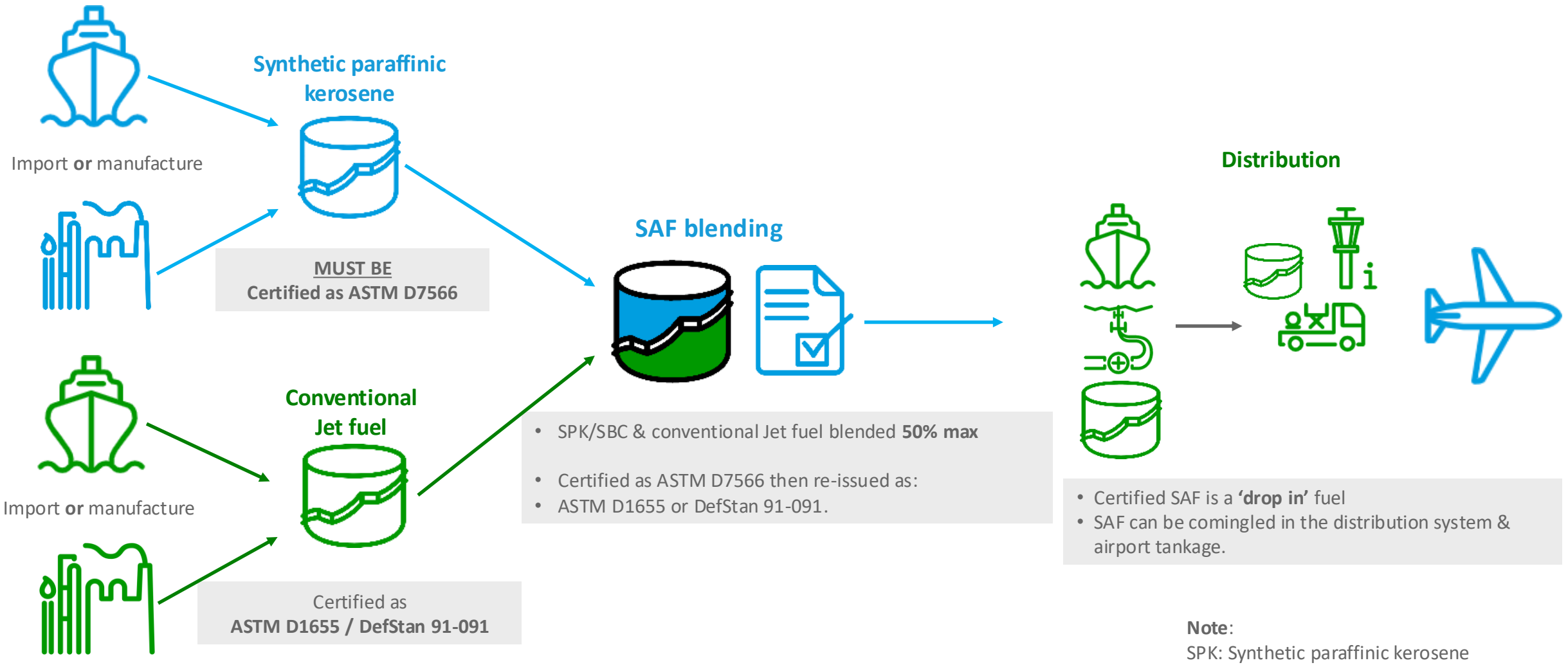
May 2025

SAF Blending Considerations

Sustainable Aviation Fuel blending

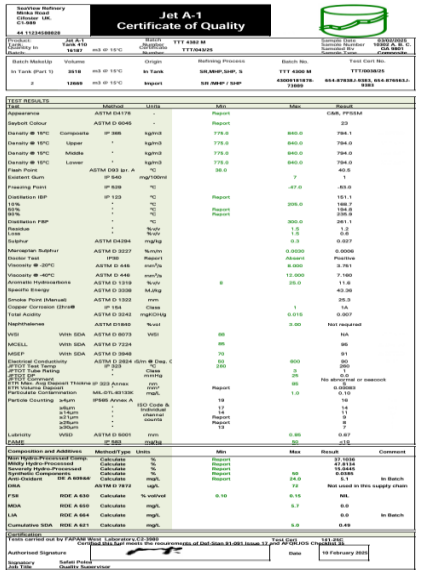


Note:
SPK: Synthetic paraffinic kerosene
SBC: Synthetic blending component
SAF: Sustainable aviation fuel

SAF specifications

- SAF specifications are more stringent than conventional Jet fuel
- These differences require consideration

Specifications		JetA1	SAF (D7566)
Aromatics min	Vol %	N/A	**8**
Aromatics max	Vol %	25	25
Dist T50 – T10 (min)	Deg C	N/A	15
Dist T90 - T10 (min)	Deg C	N/A	22
Density	kg/m3	775.0 - 840.0	775.0 - 840.0
Freezing point (max)	Deg C	-47.0	- 47 Jet A1
Viscosity @ -20	mm^2/s	8	8
Viscosity @ -40	mm^2/s	N/A	**12**
Lubricity (max)	mm	Process dependent	Mandatory


Jet A-1
Certificate of Quality

Blending components

Blending component specification

- Conventional Jet A-1 (Def Stan 91-091) & Jet A (ASTM D1655).
- SPK/SBC (ASTM D7566).

Differences in specification can create blending constraints

- Density, flash point, freeze point, thermal stability, aromatics & viscosity.

Specification		Jet A1	Jet A	FT Annex 1	HEFA Annex 2
Flash point (min)	Deg C	38.0	38.0	38*	38*
Density	kg/m3	**775.0 - 840.0**	**775.0 - 840.0**	**730.0 – 770.0**	**730 – 772.0**
Freezing point (max)	Deg C	**-47.0**	-40.0	-40	-40
Existent gum (max)	mg/100ml	7	7	**N/A**	7
FAME (max)	mg/kg	50	50	**N/A**	**<5**
Thermal stability temp	Deg C	260	260	**325**	**325**
Antioxidants	mg/L	Optional	Optional	**17 - 24**	**17 - 24**
Aromatics (max)	Vol %	**25**	**25**	0.5	0.5
Viscosity @ -40	mm^2/s	N/A	N/A	N/A	N/A

Blending considerations

Product quality blending constraints will require consideration:

The maximum 50% blend may not always be achievable

- Product quality of ‘each’ blending component must be considered

Quality of the component

- Aromatic minimum specification may not be the limiting constraint
- Viscosity requirement at -40°C could be a limiting factor
- Density difference (can also impact finished tank homogeneity)

Non-liner specifications

- This will make it harder to blend on spec first time

Additive addition

- Do you have the infrastructure available?

SPK must be on specification before blending

- This is not like blending uncertified component to produce fuels

SAF Documentation Awareness

Documentation Awareness

Documents required to produce SAF

When blending the following certificates shall be available

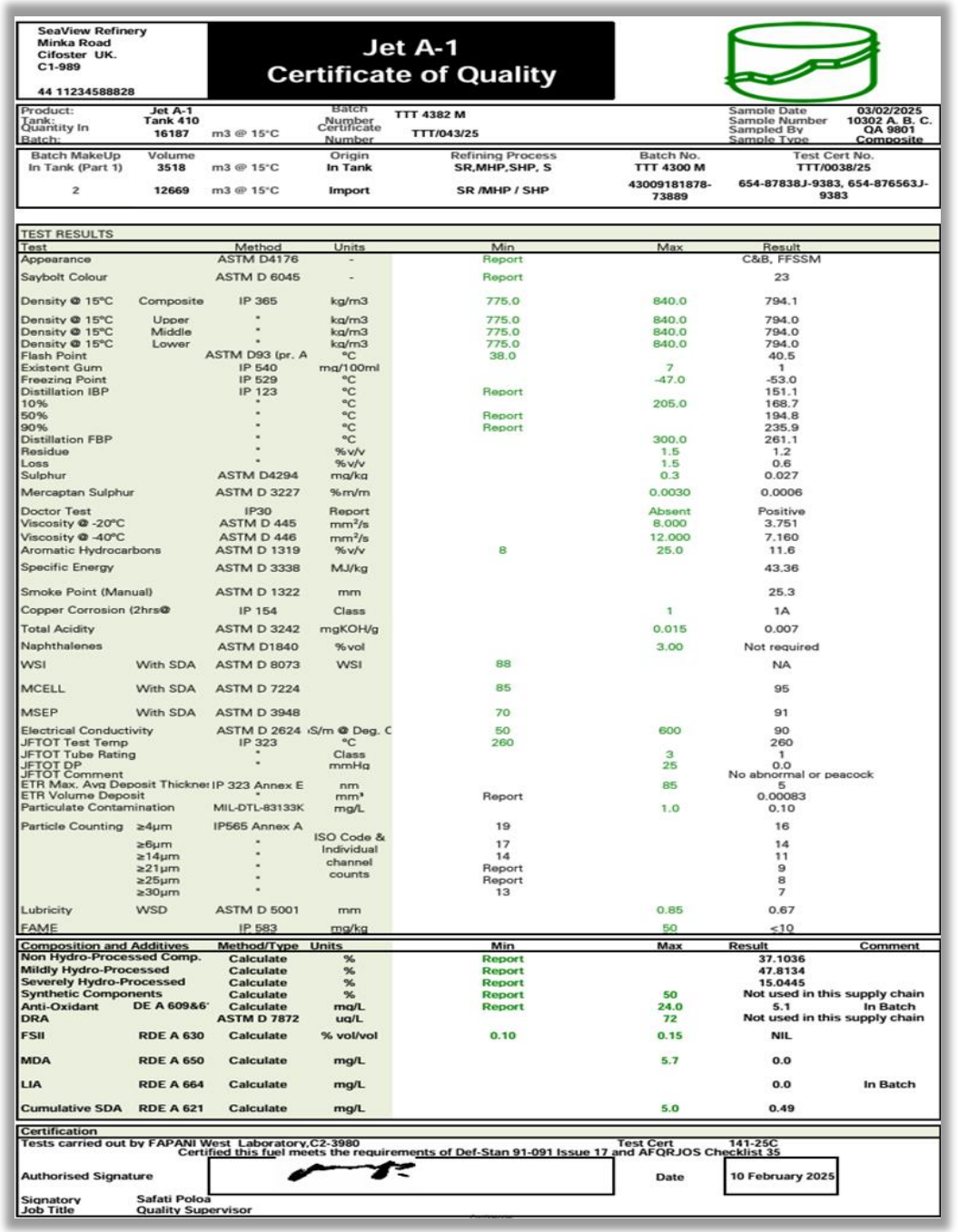
- Conventional Jet A-1 (Def Stan 91-091)
- Jet A (ASTM D1655)
- SPK/SBC ASTM D7566

Conventional Jet fuel Certification

Review key constraining specifications to determine blend ratio

Defence Standard 91-091 requires

- Processing data at the point of manufacture
- If anti oxidant added, you must state quantity



SeaView Refinery
Minka Road
Cifoster UK.
C1-989

44 11234588828

Jet A-1
Certificate of Quality

Product:	Jet A-1		Batch Number	TTT 4382 M	Sample Date	03/02/2025
Tank:	Tank 410		Certificate Number		Sample Number	10302 A. B. C.
Quantity In	16187	m3 @ 15°C		TTT/043/25	Sampled By	QA 9801
Batch:					Sample Type	Composite

Batch MakeUp	Volume		Origin	Refining Process	Batch No.	Test Cert No.
In Tank (Part 1)	3518	m3 @ 15°C	In Tank	SR,MHP,SHP, S	TTT 4300 M	TTT/0038/25
2	12669	m3 @ 15°C	Import	SR /MHP / SHP	43009181878-73889	654-87838J-9383, 654-876563J-9383

TEST RESULTS

Test		Method	Units	Min	Max	Result
Appearance		ASTM D4176	-	Report		C&B, FFSSM
Saybolt Colour		ASTM D 6045	-	Report		23
Density @ 15°C	Composite	IP 365	kg/m3	775.0	840.0	794.1
Density @ 15°C	Upper	"	kg/m3	775.0	840.0	794.0
Density @ 15°C	Middle	"	kg/m3	775.0	840.0	794.0
Density @ 15°C	Lower	"	kg/m3	775.0	840.0	794.0
Flash Point		ASTM D93 (pr. A	°C	38.0		40.5
Existent Gum		IP 540	mg/100ml		7	1
Freezing Point		IP 529	°C		-47.0	-53.0
Distillation IBP		IP 123	°C	Report		151.1
10%		"	°C		205.0	168.7
50%		"	°C	Report		194.8
90%		"	°C	Report		235.9
Distillation FBP		"	°C		300.0	261.1
Residue		"	%v/v		1.5	1.2
Loss		"	%v/v		1.5	0.6
Sulphur		ASTM D4294	mg/kg		0.3	0.027
Mercaptan Sulphur		ASTM D 3227	%m/m		0.0030	0.0006
Doctor Test		IP30	Report		Absent	Positive
Viscosity @ -20°C		ASTM D 445	mm²/s		8.000	3.751
Viscosity @ -40°C		ASTM D 446	mm²/s		12.000	7.160
Aromatic Hydrocarbons		ASTM D 1319	%v/v	8	25.0	11.6
Specific Energy		ASTM D 3338	MJ/kg			43.36
Smoke Point (Manual)		ASTM D 1322	mm			25.3
Copper Corrosion (2hrs@		IP 154	Class		1	1A
Total Acidity		ASTM D 3242	mgKOH/g		0.015	0.007
Naphthalenes		ASTM D1840	%vol		3.00	Not required
WSI	With SDA	ASTM D 8073	WSI	88		NA
MCELL	With SDA	ASTM D 7224		85		95
MSEP	With SDA	ASTM D 3948		70		91
Electrical Conductivity		ASTM D 2624	pS/m @ Deg. C	50	600	90
JFTOT Test Temp		IP 323	°C	260		260
JFTOT Tube Rating		"	Class		3	1
JFTOT DP		"	mmHg		25	0.0
JFTOT Comment						No abnormal or peacock
ETR Max. Avg Deposit Thickne		IP 323 Annex E	nm		85	5
ETR Volume Deposit		"	mm³	Report		0.00083
Particulate Contamination		MIL-DTL-83133K	mg/L		1.0	0.10
Particle Counting	≥4µm	IP565 Annex A	ISO Code & Individual channel counts	19		16
	≥6µm	"		17		14
	≥14µm	"		14		11
	≥21µm	"		Report		9
	≥25µm	"		Report		8
	≥30µm	"		13		7
Lubricity	WSD	ASTM D 5001	mm		0.85	0.67
FAME		IP 583	mg/kg		50	<10

Composition and Additives		Method/Type	Units	Min	Max	Result	Comment
Non Hydro-Processed Comp.		Calculate	%	Report		37.1036	
Mildly Hydro-Processed		Calculate	%	Report		47.8134	
Severely Hydro-Processed		Calculate	%	Report		15.0445	
Synthetic Components		Calculate	%	Report	50	Not used in this supply chain	
Anti-Oxidant	DE A 609&6	Calculate	mg/L	Report	24.0	5.1	In Batch
DRA		ASTM D 7872	ug/L		72	Not used in this supply chain	
FSII	RDE A 630	Calculate	% vol/vol	0.10	0.15	NIL	
MDA	RDE A 650	Calculate	mg/L		5.7	0.0	
LIA	RDE A 664	Calculate	mg/L			0.0	In Batch
Cumulative SDA	RDE A 621	Calculate	mg/L		5.0	0.49	

Certification

Tests carried out by FAPANI West Laboratory,C2-3980 Test Cert 141-25C

Certified this fuel meets the requirements of Def-Stan 91-091 Issue 17 and AFQRJOS Checklist 35

Authorised Signature [redacted] Date 10 February 2025

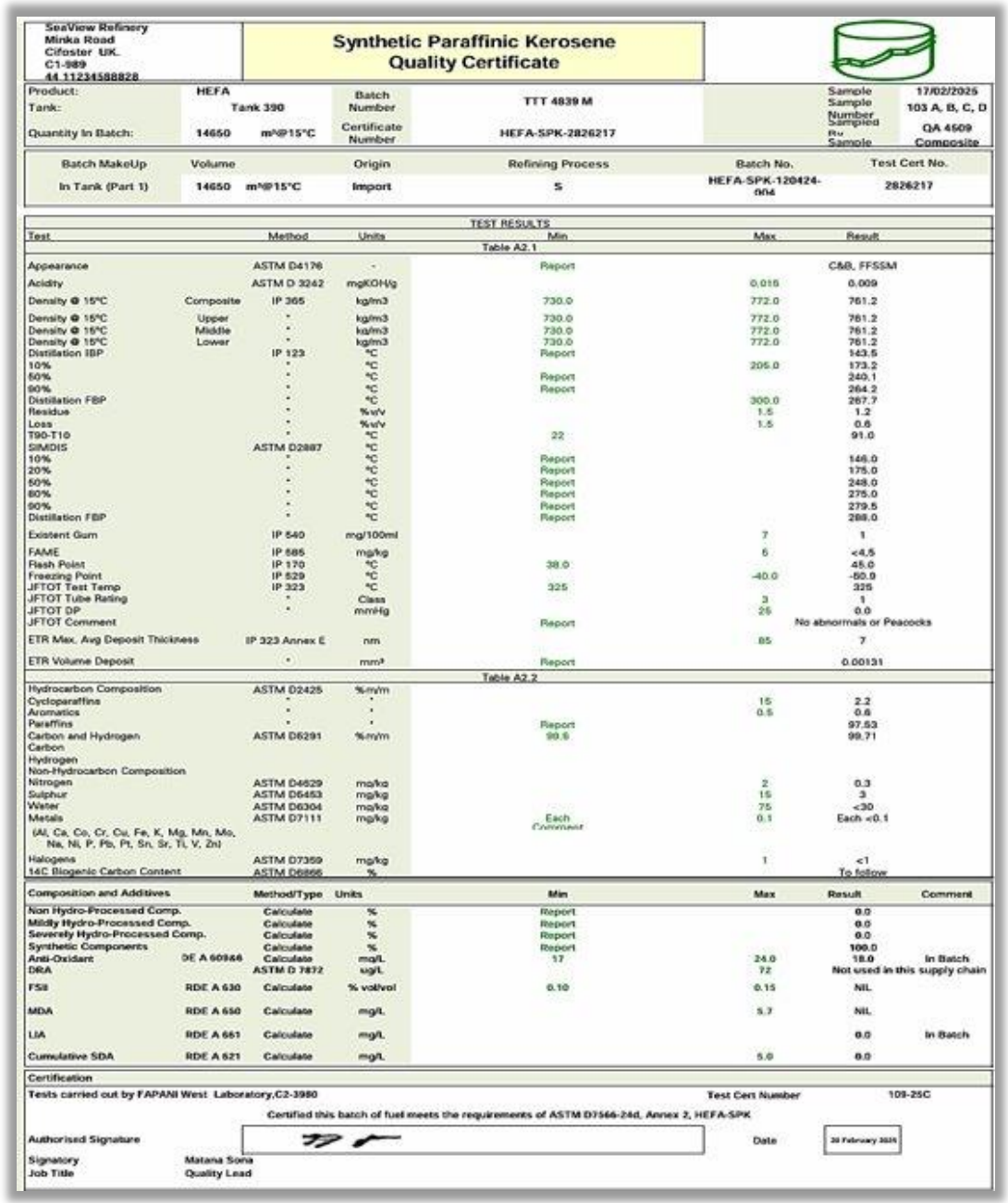
Signatory Safati Poloa
Job Title Quality Supervisor

Hypothetical Certificate

SPK / SBC Certification

The purchaser shall identify

- Specification name, version issue and amendment number
- Properties tested, spec limits, test method and result of test
- Batch number or unique identifier number
- Tank number& Quantity of fuel in batch
- Name and address of testing laboratory
- Name and position of authorised signatory
- Date of certification
- Which Annex is the SBC certified to?
  - Annex 1 to 8
  - Confirm that all tests required are available for each Annex
  - For Annex 1 & 2 once the process has been established it is then not mandatory to carry out the Table 2 requirements
  - This can be identified during pre-supply audit and/or discussion with producer



SeaView Refinery
Minka Road
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44 11234588828

Synthetic Paraffinic Kerosene Quality Certificate

Product:	HEFA	Batch Number	TTT 4839 M	Sample Number	17/02/2025
Tank:	Tank 390			Sampled	103 A, B, C, D
Quantity In Batch:	14650 m^@15°C	Certificate Number	HEFA-SPK-2826217	By Sample	QA 4609 Composite

Batch MakeUp	Volume	Origin	Refining Process	Batch No.	Test Cert No.
In Tank (Part 1)	14650 m^@15°C	Import	5	HEFA-SPK-120424-004	2826217

TEST RESULTS

Test		Method	Units	Min	Max	Result
Table A2.1						
Appearance		ASTM D4176	-	Report		C&B, FFSSM
Acidity		ASTM D 3242	mgKOH/g		0.015	0.009
Density @ 15°C	Composite	IP 365	kg/m3	730.0	772.0	761.2
Density @ 15°C	Upper	"	kg/m3	730.0	772.0	761.2
Density @ 15°C	Middle	"	kg/m3	730.0	772.0	761.2
Density @ 15°C	Lower	"	kg/m3	730.0	772.0	761.2
Distillation IBP		IP 123	°C	Report		143.5
10%		"	°C		205.0	173.2
50%		"	°C	Report		240.1
90%		"	°C	Report		264.2
Distillation FBP		"	°C		300.0	287.7
Residue		"	%v/v		1.5	1.2
Loss		"	%v/v		1.5	0.6
T90-T10		"	°C	22		91.0
SIMDIS		ASTM D2887	°C			
10%		"	°C	Report		146.0
20%		"	°C	Report		175.0
50%		"	°C	Report		248.0
80%		"	°C	Report		275.0
90%		"	°C	Report		279.5
Distillation FBP		"	°C	Report		288.0
Existent Gum		IP 540	mg/100ml		7	1
FAME		IP 585	mg/kg		6	<4.5
Flash Point		IP 170	°C	38.0		45.0
Freezing Point		IP 529	°C		-40.0	-50.0
JFTOT Test Temp		IP 323	°C	325		325
JFTOT Tube Rating		"	Class		3	1
JFTOT DP		"	mmHg		25	0.0
JFTOT Comment				Report		No abnormals or Peacocks
ETR Max. Avg Deposit Thickness		IP 323 Annex E	nm		85	7
ETR Volume Deposit		"	mm³	Report		0.00131
Table A2.2						
Hydrocarbon Composition		ASTM D2425	%m/m			
Cycloparaffins		"	"		15	2.2
Aromatics		"	"		0.5	0.6
Paraffins		"	"	Report		97.53
Carbon and Hydrogen		ASTM D6291	%m/m	99.5		99.71
Carbon						
Hydrogen						
Non-Hydrocarbon Composition						
Nitrogen		ASTM D4629	mg/kg		2	0.3
Sulphur		ASTM D5453	mg/kg		15	3
Water		ASTM D6304	mg/kg		75	<30
Metals		ASTM D7111	mg/kg	Each Comment	0.1	Each <0.1
(Al, Ca, Co, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, P, Pb, Pt, Sn, Sr, Ti, V, Zn)						
Halogens		ASTM D7359	mg/kg		1	<1
14C Biogenic Carbon Content		ASTM D6866	%			To follow

Composition and Additives		Method/Type	Units	Min	Max	Result	Comment
Non Hydro-Processed Comp.		Calculate	%	Report		0.0	
Mildly Hydro-Processed Comp.		Calculate	%	Report		0.0	
Severely Hydro-Processed Comp.		Calculate	%	Report		0.0	
Synthetic Components		Calculate	%	Report		100.0	
Anti-Oxidant	DE A 60946	Calculate	mg/L	17	24.0	18.0	In Batch
DRA		ASTM D 7872	ug/L		72	Not used in this supply chain	
FSII	RDE A 630	Calculate	% vol/vol	0.10	0.15	NIL	
MDA	RDE A 650	Calculate	mg/L		5.7	NIL	
LIA	RDE A 661	Calculate	mg/L			0.0	In Batch
Cumulative SDA	RDE A 621	Calculate	mg/L		5.0	0.0	

Certification

Tests carried out by FAPANI West Laboratory,C2-3980 — Test Cert Number 109-25C

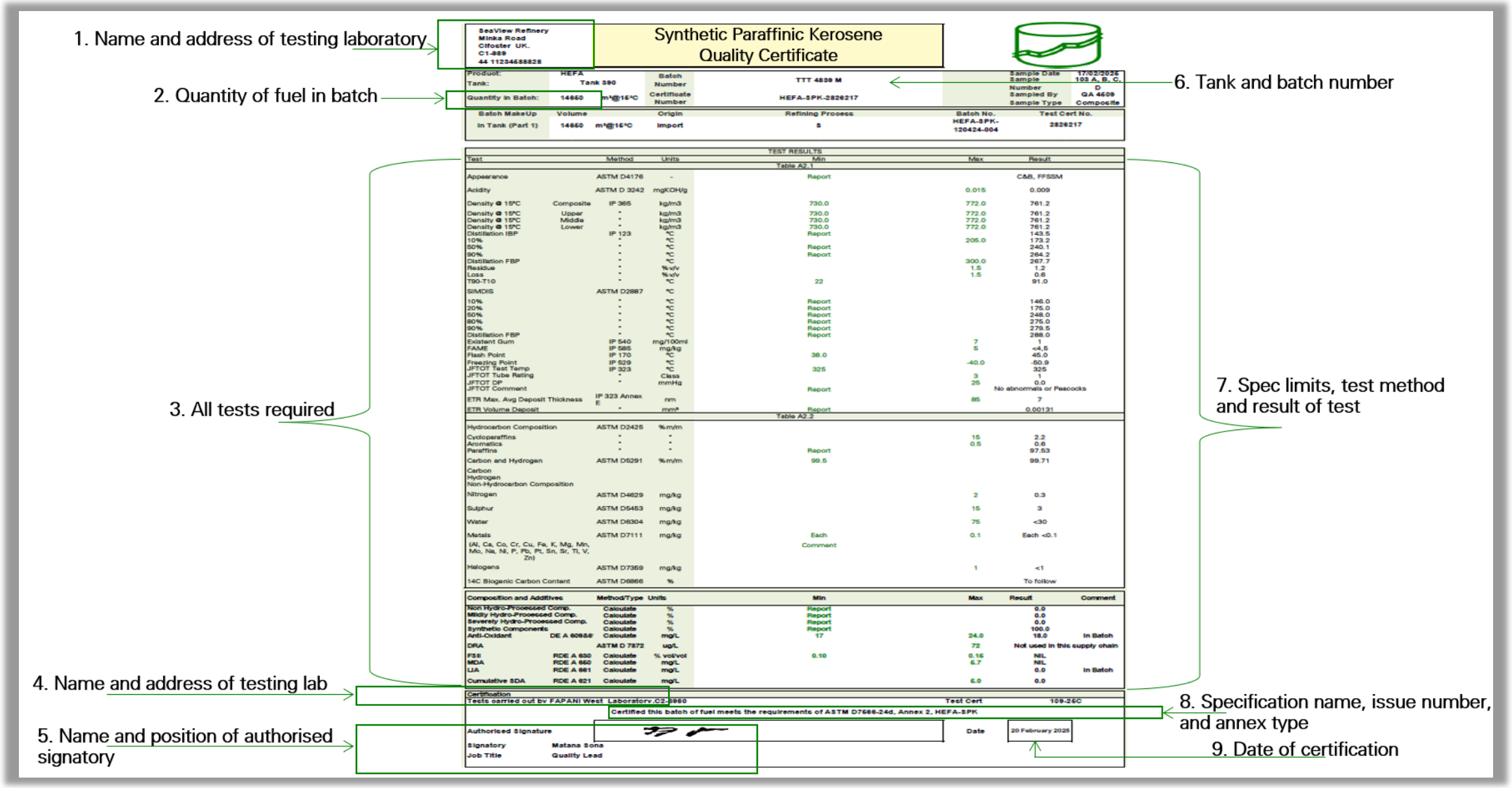
Certified this batch of fuel meets the requirements of ASTM D7566-24d, Annex 2, HEFA-SPK

Authorised Signature — Date 28 February 2025

Signatory: Matana Sona
Job Title: Quality Lead

Hypothetical Certificate

SPK / SBC Certification



SAF Certification

Things to look for:

Has the SBC been certified to ASTM D7566

Has traceability for the Jet & SBC been recorded

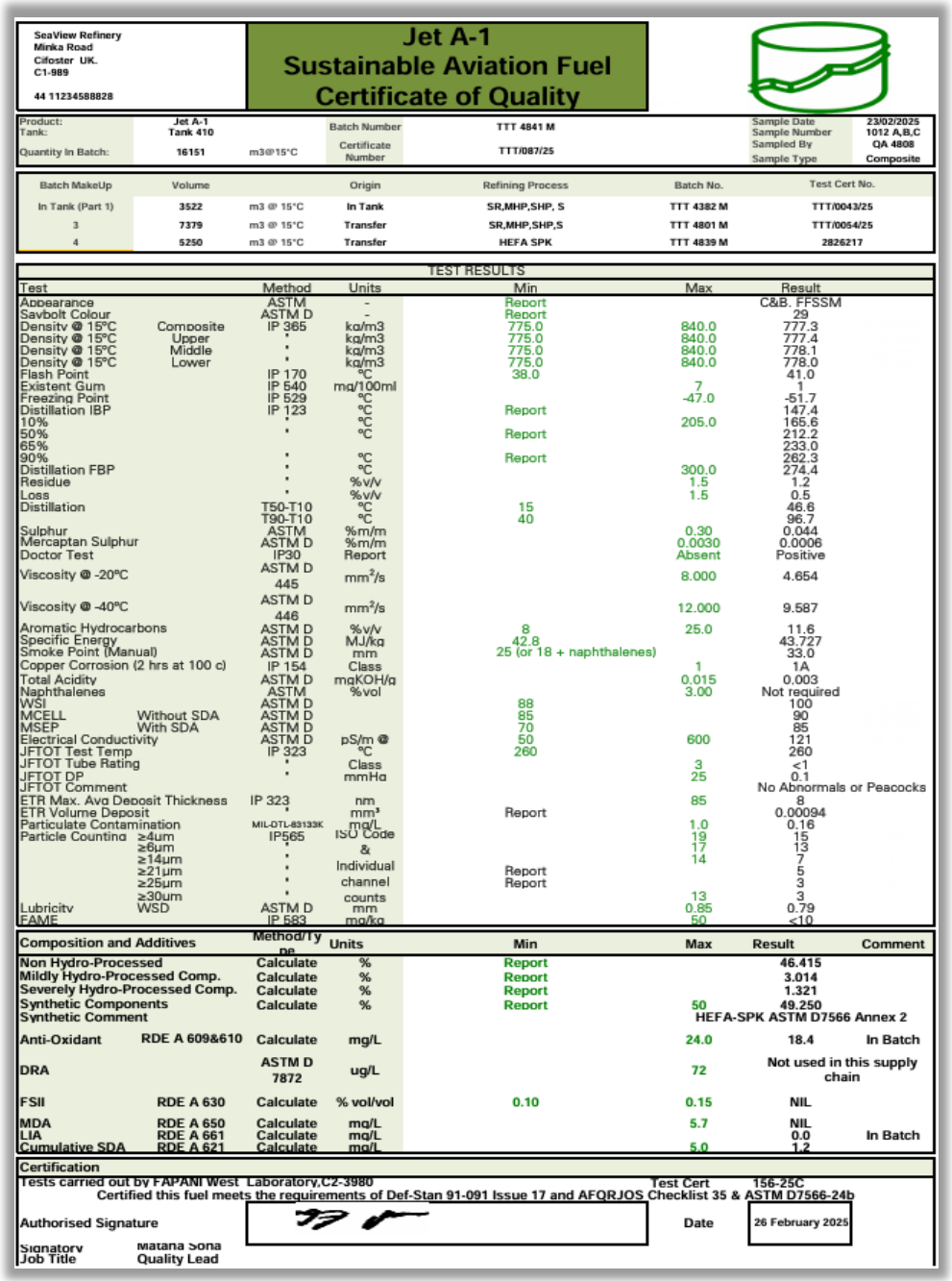
- The batch make up will be recorded on the certificate of quality, which means the fuel receiver does not require the right to see all the certificates, but they can be traced.

Confirm additional D7566 Table 1 tests & requirements:

- Aromatics (min spec)
- Distillation (T50 -T10 & T90 -T10)
- Lubricity Wear Scar Diameter
- Viscosity at -40°C

Defence Standard requirement:

- Synthetic component %
- Synthetic comment – SPK type and Annex reference



SeaView Refinery
Minka Road
Cifoster UK.
C1-989

44 11234588828

Jet A-1
Sustainable Aviation Fuel
Certificate of Quality

Product:	Jet A-1		Batch Number	TTT 4841 M	Sample Date: 23/02/2025
Tank:	Tank 410		Certificate Number		Sample Number: 1012 A,B,C
Quantity In Batch:	16151	m3@15°C		TTT/087/25	Sampled By: QA 4808
					Sample Type: Composite

Batch MakeUp	Volume		Origin	Refining Process	Batch No.	Test Cert No.
In Tank (Part 1)	3522	m3 @ 15°C	In Tank	SR,MHP,SHP, S	TTT 4382 M	TTT/0043/25
3	7379	m3 @ 15°C	Transfer	SR,MHP,SHP,S	TTT 4801 M	TTT/0054/25
4	5250	m3 @ 15°C	Transfer	HEFA SPK	TTT 4839 M	2826217

TEST RESULTS

Test		Method	Units	Min	Max	Result
Appearance		ASTM	-	Report		C&B. FFSSM
Savbolt Colour		ASTM D	-	Report		29
Density @ 15°C	Composite	IP 365	kg/m3	775.0	840.0	777.3
Density @ 15°C	Upper	"	kg/m3	775.0	840.0	777.4
Density @ 15°C	Middle	"	kg/m3	775.0	840.0	778.1
Density @ 15°C	Lower	"	kg/m3	775.0	840.0	778.0
Flash Point		IP 170	°C	38.0		41.0
Existent Gum		IP 540	mg/100ml		7	1
Freezing Point		IP 529	°C		-47.0	-51.7
Distillation IBP		IP 123	°C	Report		147.4
10%		"	°C		205.0	165.6
50%		"	°C	Report		212.2
65%						233.0
90%		"	°C	Report		262.3
Distillation FBP		"	°C		300.0	274.4
Residue		"	%v/v		1.5	1.2
Loss		"	%v/v		1.5	0.5
Distillation		T50-T10	°C	15		46.6
		T90-T10	°C	40		96.7
Sulphur		ASTM	%m/m		0.30	0.044
Mercaptan Sulphur		ASTM D	%m/m		0.0030	0.0006
Doctor Test		IP30	Report		Absent	Positive
Viscosity @ -20°C		ASTM D 445	mm^2/s		8.000	4.654
Viscosity @ -40°C		ASTM D 446	mm^2/s		12.000	9.587
Aromatic Hydrocarbons		ASTM D	%v/v	8	25.0	11.6
Specific Energy		ASTM D	MJ/kg	42.8		43.727
Smoke Point (Manual)		ASTM D	mm	25 (or 18 + naphthalenes)		33.0
Copper Corrosion (2 hrs at 100 c)		IP 154	Class		1	1A
Total Acidity		ASTM D	mgKOH/g		0.015	0.003
Naphthalenes		ASTM	%vol		3.00	Not required
WSI		ASTM D		88		100
MCELL	Without SDA	ASTM D		85		90
MSEP	With SDA	ASTM D		70		85
Electrical Conductivity		ASTM D	pS/m @	50	600	121
JFTOT Test Temp		IP 323	°C	260		260
JFTOT Tube Rating		"	Class		3	<1
JFTOT DP		"	mmHg		25	0.1
JFTOT Comment						No Abnormals or Peacocks
ETR Max. Avg Deposit Thickness		IP 323	nm		85	8
ETR Volume Deposit		"	mm^3	Report		0.00094
Particulate Contamination		MIL-DTL-83133K	mg/L		1.0	0.16
Particle Counting	≥4um	IP565	ISO Code		19	15
	≥6um		&		17	13
	≥14um	"			14	7
	≥21um	"	Individual	Report		5
	≥25um	"	channel	Report		3
	≥30um	"	counts		13	3
Lubricity	WSD	ASTM D	mm		0.85	0.79
FAME		IP 583	mg/kg		50	<10

Composition and Additives		Method/Type	Units	Min	Max	Result	Comment
Non Hydro-Processed		Calculate	%	Report		46.415	
Mildly Hydro-Processed Comp.		Calculate	%	Report		3.014	
Severely Hydro-Processed Comp.		Calculate	%	Report		1.321	
Synthetic Components		Calculate	%	Report	50	49.250	
Synthetic Comment						HEFA-SPK ASTM D7566 Annex 2	
Anti-Oxidant	RDE A 609&610	Calculate	mg/L		24.0	18.4	In Batch
DRA		ASTM D 7872	ug/L		72	Not used in this supply chain	
FSII	RDE A 630	Calculate	% vol/vol	0.10	0.15	NIL	
MDA	RDE A 650	Calculate	mg/L		5.7	NIL	
LIA	RDE A 661	Calculate	mg/L			0.0	In Batch
Cumulative SDA	RDE A 621	Calculate	mg/L		5.0	1.2	

Certification

Tests carried out by FAPANI West Laboratory,C2-3980 — Test Cert 156-25C

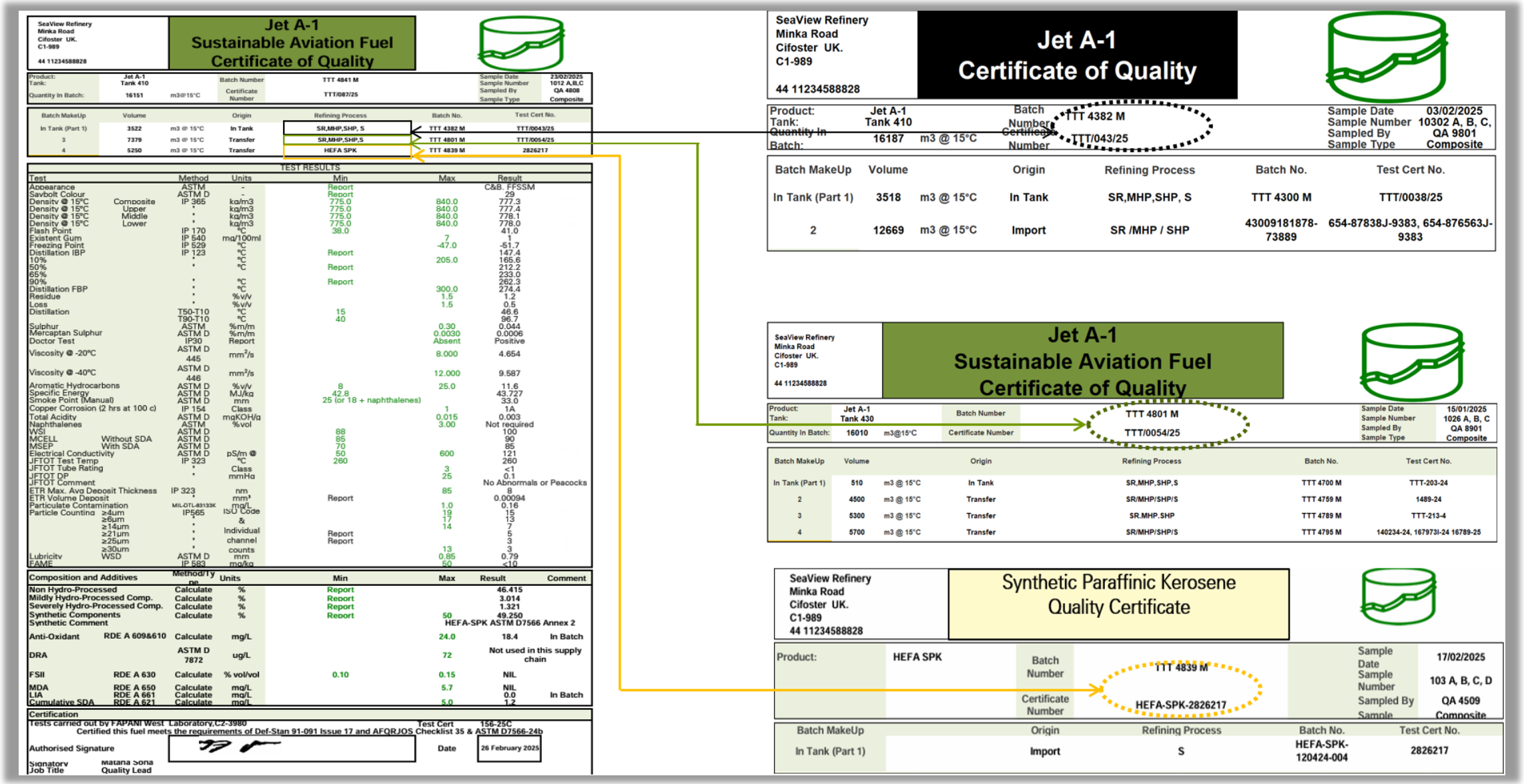
Certified this fuel meets the requirements of Def-Stan 91-091 Issue 17 and AFQRJOS Checklist 35 & ASTM D7566-24b

Authorised Signature — Date: 26 February 2025

Signatory Job Title: Matana Sona, Quality Lead

Hypothetical Certificate

Documentation Traceability



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Jet A-1
Sustainable Aviation Fuel
Certificate of Quality

Product:	Jet A-1		Batch Number	TTT 4841 M	
Tank:	Tank 410		Certificate Number	TTT/087/25	
Quantity In Batch:	16151	m3@15°C			
				Sample Date	23/02/2025
				Sample Number	1012 A,B,C
				Sampled By	QA 4808
				Sample Type	Composite

Batch MakeUp	Volume		Origin	Refining Process	Batch No.	Test Cert No.
In Tank (Part 1)	3522	m3 @ 15°C	In Tank	SR,MHP,SHP, S	TTT 4382 M	TTT/0043/25
3	7379	m3 @ 15°C	Transfer	SR,MHP,SHP,S	TTT 4801 M	TTT/0054/25
4	5250	m3 @ 15°C	Transfer	HEFA SPK	TTT 4839 M	2826217

TEST RESULTS

Test		Method	Units	Min	Max	Result
Appearance		ASTM	-	Report		C&B. FFSSM
Saybolt Colour		ASTM D	-	Report		29
Density @ 15°C	Composite	IP 365	kg/m3	775.0	840.0	777.3
Density @ 15°C	Upper	"	kg/m3	775.0	840.0	777.4
Density @ 15°C	Middle	"	kg/m3	775.0	840.0	778.1
Density @ 15°C	Lower	"	kg/m3	775.0	840.0	778.0
Flash Point		IP 170	°C	38.0		41.0
Existent Gum		IP 540	mg/100ml		7	1
Freezing Point		IP 529	°C		-47.0	-51.7
Distillation IBP		IP 123	°C	Report		147.4
10%		"	°C		205.0	165.6
50%		"	°C	Report		212.2
65%						233.0
90%		"	°C	Report		262.3
Distillation FBP		"	°C		300.0	274.4
Residue		"	%v/v		1.5	1.2
Loss		"	%v/v		1.5	0.5
Distillation		T50-T10	°C	15		46.6
		T90-T10	°C	40		96.7
Sulphur		ASTM	%m/m		0.30	0.044
Mercaptan Sulphur		ASTM D	%m/m		0.0030	0.0006
Doctor Test		IP30	Report		Absent	Positive
Viscosity @ -20°C		ASTM D 445	mm^2/s		8.000	4.654
Viscosity @ -40°C		ASTM D 446	mm^2/s		12.000	9.587
Aromatic Hydrocarbons		ASTM D	%v/v	8	25.0	11.6
Specific Energy		ASTM D	MJ/kg	42.8		43.727
Smoke Point (Manual)		ASTM D	mm	25 (or 18 + naphthalenes)		33.0
Copper Corrosion (2 hrs at 100 c)		IP 154	Class		1	1A
Total Acidity		ASTM D	mgKOH/g		0.015	0.003
Naphthalenes		ASTM	%vol		3.00	Not required
WSI		ASTM D		88		100
MCELL	Without SDA	ASTM D		85		90
MSEP	With SDA	ASTM D		70		85
Electrical Conductivity		ASTM D	pS/m @	50	600	121
JFTOT Test Temp		IP 323	°C	260		260
JFTOT Tube Rating		"	Class		3	<1
JFTOT DP		"	mmHg		25	0.1
JFTOT Comment						No Abnormals or Peacocks
ETR Max. Avg Deposit Thickness		IP 323	nm		85	8
ETR Volume Deposit		"	mm^3	Report		0.00094
Particulate Contamination		MIL-DTL-83133K	mg/L		1.0	0.16
Particle Counting	≥4um	IP565	ISO Code		19	15
	≥6um	"	&		17	13
	≥14um	"	"		14	7
	≥21um	"	Individual	Report		5
	≥25um	"	channel	Report		3
	≥30um	"	counts		13	3
Lubricity	WSD	ASTM D	mm		0.85	0.79
FAME		IP 583	mg/kg		50	<10

Composition and Additives		Method/Type	Units	Min	Max	Result	Comment
Non Hydro-Processed		Calculate	%	Report		46.415	
Mildly Hydro-Processed Comp.		Calculate	%	Report		3.014	
Severely Hydro-Processed Comp.		Calculate	%	Report		1.321	
Synthetic Components		Calculate	%	Report	50	49.250	
Synthetic Comment						HEFA-SPK ASTM D7566 Annex 2	
Anti-Oxidant	RDE A 609&610	Calculate	mg/L		24.0	18.4	In Batch
DRA		ASTM D 7872	ug/L		72	Not used in this supply chain	
FSII	RDE A 630	Calculate	% vol/vol	0.10	0.15	NIL	
MDA	RDE A 650	Calculate	mg/L		5.7	NIL	
LIA	RDE A 661	Calculate	mg/L			0.0	In Batch
Cumulative SDA	RDE A 621	Calculate	mg/L		5.0	1.2	

Certification

Tests carried out by FAPANI West Laboratory,C2-3980 Test Cert 156-25C

Certified this fuel meets the requirements of Def-Stan 91-091 Issue 17 and AFQRJOS Checklist 35 & ASTM D7566-24b

Authorised Signature Date 26 February 2025

Signatory Job Title: Matana Sona, Quality Lead

SeaView Refinery
Minka Road
Cifoster UK.
C1-989

44 11234588828

Jet A-1
Certificate of Quality

Product:	Jet A-1		Batch Number	TTT 4382 M	
Tank:	Tank 410		Certificate Number	TTT/043/25	
Quantity In Batch:	16187	m3 @ 15°C			
				Sample Date	03/02/2025
				Sample Number	10302 A, B, C,
				Sampled By	QA 9801
				Sample Type	Composite

Batch MakeUp	Volume		Origin	Refining Process	Batch No.	Test Cert No.
In Tank (Part 1)	3518	m3 @ 15°C	In Tank	SR,MHP,SHP, S	TTT 4300 M	TTT/0038/25
2	12669	m3 @ 15°C	Import	SR /MHP / SHP	43009181878-73889	654-87838J-9383, 654-876563J-9383

SeaView Refinery
Minka Road
Cifoster UK.
C1-989

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Jet A-1
Sustainable Aviation Fuel
Certificate of Quality

Product:	Jet A-1		Batch Number	TTT 4801 M	
Tank:	Tank 430		Certificate Number	TTT/0054/25	
Quantity In Batch:	16010	m3@15°C			
				Sample Date	15/01/2025
				Sample Number	1026 A, B, C
				Sampled By	QA 8901
				Sample Type	Composite

Batch MakeUp	Volume		Origin	Refining Process	Batch No.	Test Cert No.
In Tank (Part 1)	510	m3 @ 15°C	In Tank	SR,MHP,SHP,S	TTT 4700 M	TTT-203-24
2	4500	m3 @ 15°C	Transfer	SR/MHP/SHP/S	TTT 4759 M	1489-24
3	5300	m3 @ 15°C	Transfer	SR.MHP.SHP	TTT 4789 M	TTT-213-4
4	5700	m3 @ 15°C	Transfer	SR/MHP/SHP/S	TTT 4795 M	140234-24, 167973I-24 16789-25

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Cifoster UK.
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Synthetic Paraffinic Kerosene
Quality Certificate

Product:	HEFA SPK		Batch Number	TTT 4839 M	
			Certificate Number	HEFA-SPK-2826217	
				Sample Date	17/02/2025
				Sample Number	103 A, B, C, D
				Sampled By	QA 4509
				Sample	Composite

Batch MakeUp	Origin	Refining Process	Batch No.	Test Cert No.
In Tank (Part 1)	Import	S	HEFA-SPK-120424-004	2826217

Hypothetical Certificate

Compliance Requirements

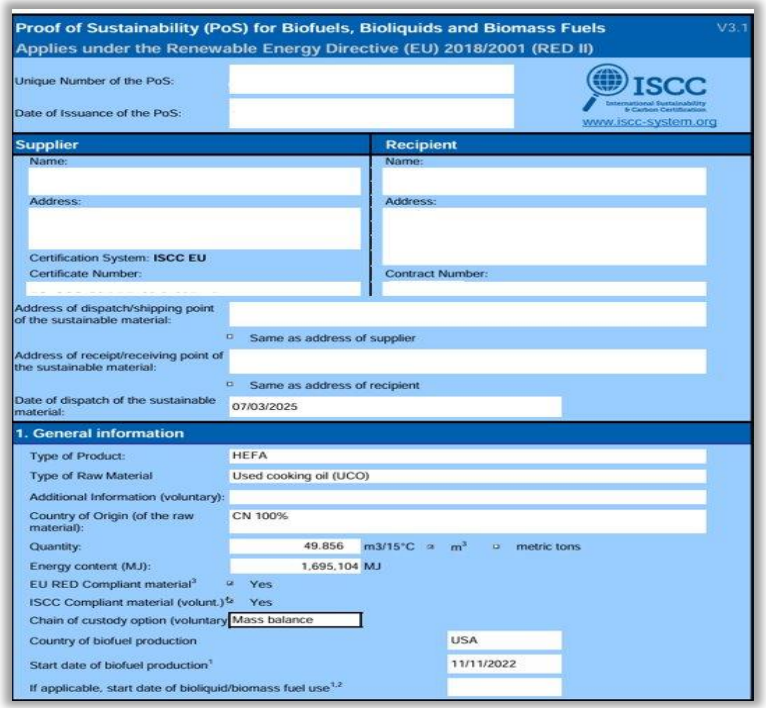
Adequate traceability and chain of custody measures are required for supplying sustainable fuel to the market

Sustainability schemes and directives

- EU RED: Renewable Energy Directive
- ISCC: International Sustainability and Carbon Certification
- CORSIA: Carbon Offsetting Reduction Scheme for International Aviation
- RTFO: Renewable Transport Fuel Obligation

Considerations for ensuring regulatory adherence

- To ensure compliance with sustainability criteria, ISCC audit is adopted in a harmonised manner to prevent fraud and verify reliability and transparency
- Chain of custody as described in ISCC provides credibility that a given batch with sustainable characteristics can be adequately transferred, controlled and monitored via product segregation or mass balance.
- Suppliers must provide a proof of sustainability declaration form to accompany any sustainable product being delivered.



Proof of Sustainability (PoS) for Biofuels, Bioliquids and Biomass Fuels V3.1
Applies under the Renewable Energy Directive (EU) 2018/2001 (RED II)

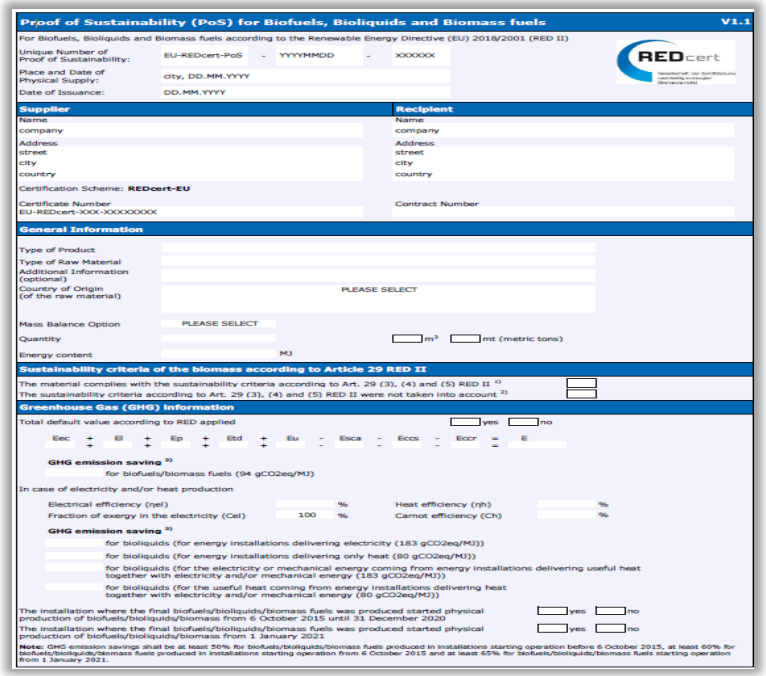
Unique Number of the PoS:
Date of Issuance of the PoS:
ISCC International Sustainability & Carbon Certification
www.iscc-system.org

Supplier	Recipient
Name:	Name:
Address:	Address:
Certification System: ISCC EU	
Certificate Number:	Contract Number:

Address of dispatch/shipping point of the sustainable material:
☐ Same as address of supplier
Address of receipt/receiving point of the sustainable material:
☐ Same as address of recipient
Date of dispatch of the sustainable material: 07/03/2025

1. General information

Type of Product:	HEFA
Type of Raw Material	Used cooking oil (UCO)
Additional Information (voluntary):	
Country of Origin (of the raw material):	CN 100%
Quantity:	49.856 m3/15°C ☐ m³ ☐ metric tons
Energy content (MJ):	1,695,104 MJ
EU RED Compliant material	☐ Yes
ISCC Compliant material (volunt.)	☐ Yes
Chain of custody option (voluntary	Mass balance
Country of biofuel production	USA
Start date of biofuel production	11/11/2022
If applicable, start date of bioliquid/biomass fuel use	



Proof of Sustainability (PoS) for Biofuels, Bioliquids and Biomass fuels V1.1
For Biofuels, Bioliquids and Biomass fuels according to the Renewable Energy Directive (EU) 2018/2001 (RED II)
REDcert

Unique Number of Proof of Sustainability: EU-REDcert-PoS - YYYYMMDD - XXXXXX
Place and Date of Physical Supply: city, DD.MM.YYYY
Date of Issuance: DD.MM.YYYY

Supplier	Recipient
Name	Name
company	company
Address	Address
street	street
city	city
country	country

Certification Scheme: REDcert-EU
Certificate Number EU-REDcert-XXX-XXXXXXXX
Contract Number

General Information

Type of Product
Type of Raw Material
Additional Information (optional)
Country of Origin (of the raw material) PLEASE SELECT
Mass Balance Option PLEASE SELECT
Quantity ☐ m³ ☐ mt (metric tons)
Energy content MJ

Sustainability criteria of the biomass according to Article 29 RED II
The material complies with the sustainability criteria according to Art. 29 (3), (4) and (5) RED II ☐
The sustainability criteria according to Art. 29 (3), (4) and (5) RED II were not taken into account ☐

Greenhouse Gas (GHG) information
Total default value according to RED applied ☐ yes ☐ no
Eec + El + Ep + Etd + Eu - Esca - Eccs - Eccr = E
GHG emission saving
for biofuels/biomass fuels (94 gCO2eq/MJ)
In case of electricity and/or heat production
Electrical efficiency (ηel) % Heat efficiency (ηh) %
Fraction of exergy in the electricity (Cel) 100 % Carnot efficiency (Ch) %
GHG emission saving
for bioliquids (for energy installations delivering electricity (183 gCO2eq/MJ))
for bioliquids (for energy installations delivering only heat (80 gCO2eq/MJ))
for bioliquids (for the electricity or mechanical energy coming from energy installations delivering useful heat together with electricity and/or mechanical energy (183 gCO2eq/MJ))
for bioliquids (for the useful heat coming from energy installations delivering heat together with electricity and/or mechanical energy (80 gCO2eq/MJ))
The installation where the final biofuels/bioliquids/biomass fuels was produced started physical production of biofuels/bioliquids/biomass from 6 October 2015 until 31 December 2020 ☐ yes ☐ no
The installation where the final biofuels/bioliquids/biomass fuels was produced started physical production of biofuels/bioliquids/biomass from 1 January 2021 ☐ yes ☐ no
Note: GHG emission savings shall be at least 50% for biofuels/bioliquids/biomass fuels produced in installations starting operation before 6 October 2015, at least 60% for biofuels/bioliquids/biomass fuels produced in installations starting operation from 6 October 2015 and at least 65% for biofuels/bioliquids/biomass fuels starting operation from 1 January 2021.