IATA Baku 2025

SAF blending considerations & awareness

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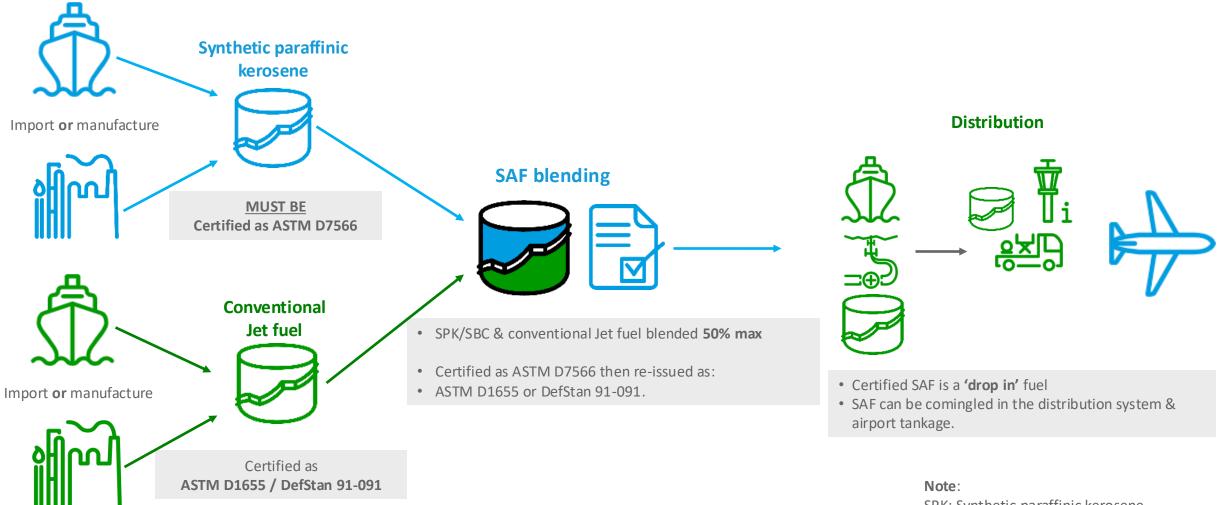
May 2025



SAF Blending Considerations



Sustainable Aviation Fuel blending

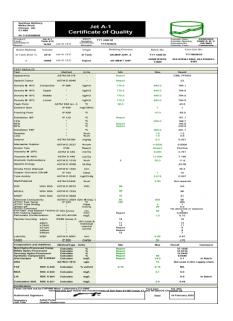


SPK: Synthetic paraffinic kerosene SBC: Synthetic blending component SAF: Sustainable aviation fuel

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	mm²/s	8	8
Viscosity @ -40	mm²/s	N/A	12
Lubricity (max)	mm	Process dependent	Mandatory



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.

Specificatio	n	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	mm²/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 Refine Minka Road Cifoster UK. C1-989 44 11234588828		Ce		et A-1 te of Quality		
Product: Tank: Quantity In Batch:	Jet A-1 Tank 410 16187	m3 @ 15°C	Batch Number Certificate Number	TTT 4382 M TTT/043/25		Sample Date 03/02/2025 Sample Number 10302 A. B. Sampled By QA 9801 Sample Type Composite
Batch MakeUp In Tank (Part 1)	Volume 3518	m3 @ 15°C	Origin In Tank	Refining Process SR,MHP,SHP, S	Batch No. TTT 4300 M	Test Cert No. TTT/0038/25
2	12669	m3 @ 15°C	Import	SR /MHP / SHP	43009181878- 73889	654-87838J-9383, 654-876563. 9383
TEST RESULTS						
Test		Method	Units	Min	Max	Result
Appearance Saybolt Colour		ASTM D4176 ASTM D 6045		Report		C&B, FFSSM 23
Density @ 15°C	Composite	IP 365	kg/m3	775,0	840.0	794,1
Density @ 15°C		11 300	kg/m3	775.0	840.0	794.0
Density @ 15°C	Upper Middle		ka/m3 ka/m3	775.0	840.0	794.0 794.0
Density @ 15°C	Lower		kg/m3	775.0	840.0	794.0
Flash Point Existent Gum		ASTM D93 (pr. A IP 540	°C mg/100ml	38.0	7	40.5
Freezing Point		IP 529	°C		-47.0	-53.0
Distillation IBP		IP 123	°C	Report		151.1
10% 50%			°C °C	Beport	205.0	168.7 194.8
90%			°C	Report		235.9
Distillation FBP			°C		300.0	261.1
Residue Loss			%v/v %v/v		1.5	1.2
Sulphur		ASTM D4294	mg/kg		0.3	0.027
Mercaptan Sulphu		ASTM D 3227	%m/m		0.0030	0.0006
Doctor Test		IP30	Report		Absent	Positive
Viscosity @ -20°C		ASTM D 445	mm ² /s		8.000	3.751
Viscosity @ -40°C		ASTM D 446	mm²/s		12.000	7.160
Aromatic Hydrocar	bons	ASTM D 1319	%v/v	8	25.0	11.6
Specific Energy		ASTM D 3338	MJ/kg			43.36
Smoke Point (Man	ual)	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 D 3242	mgKOH/g %vol		3.00	
				88	3.00	Not required
WSI	With SDA	ASTM D 8073	WSI			NA
MCELL	With SDA	ASTM D 7224		85		95
MSEP	With SDA	ASTM D 3948		70		91
Electrical Conducti	vity	ASTM D 2624	S/m @ Deg. (50	600	90
JFTOT Test Temp		IP 323	°C	260	200	260
JFTOT Tube Rating	2		Class		3 25	1
JFTOT DP JFTOT Comment ETR Max. Avg Dep			mmHg			0.0 No abnormal or peacock
ETR Max. Avg Dep ETR Volume Depor	osit Thickne	IP 323 Annex E	nm mm*	Report	85	5 0.00083
Particulate Contam	DIE	MIL-DTL-83133K	mg/L	neport	1.0	0.10
Particle Counting		IP565 Annex A		19		16
and a sounding	≥6µm		ISO Code &	17		14
	≥6µm ≥14µm		Individual	14		14
	≥21µm		channel counts	Report		9
	≥25µm ≥30µm	1		Report 13		8 7
Lubricity	WSD	ASTM D 5001	mm	15	0.85	0.67
FAME	**50	IP 583			0.85	<10
	Additions		mg/kg	8.8 Jan	10	6 M . B.
Composition and Non Hydro-Proces	sed Comp.	Method/Type Calculate	Units %	Min Report	Max	Result Comment 37.1036
Mildly Hydro-Proc	essed	Calculate	%	Report		47.8134
Severely Hydro-Pr Synthetic Compor	ocessed	Calculate Calculate	%	Report	50	15.0445 Not used in this supply chair
Anti-Oxidant	DE A 609&6	Calculate	mg/L	Report	24.0	5.1 In Batch
DRA		ASTM D 7872	uq/L		72	Not used in this supply chair
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	Cert	Vest Laboratory	C2-3980 ets the requir	ements of Def-Stan 91-091 Issue	Test Cert 17 and AFQRJOS CI	141-25C hecklist 35
Authorised Signat				×.	Date	10 February 2025
Signatory	Safati Polo	045.50	1			And the second second second second second

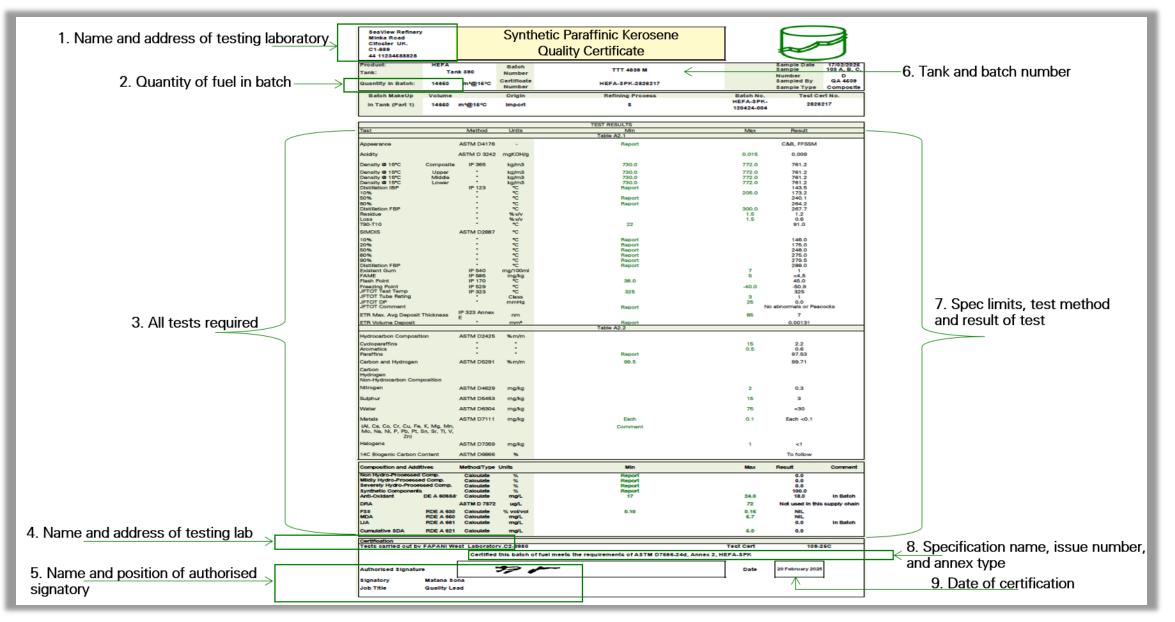
SPK / SBC Certification

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 Cifoster UK. C1-989				Paraffinic Kerosene ity Certificate		
44 11234588828 Product:	HEFA		Batch	Multi Southers To Design 71		Sample 17/02/2025
Tank: Quantity In Batch:		mk 390 m%P15°C	Number Certificate	TTT 4839 M HEFA-SPK-2826217		Sample 103 A, B, C, Number
	0.00055	new ra G	Number			Sample Composite
Batch MakeUp In Tank (Part 1)	Volume 14650	m*₽15°C	Origin	Refining Process S	Batch No. HEFA-SPK-120424- 004	Test Cert No. 2826217
	2002/2012	30130400	2822/01/20	2750	1/8715	5.555.23597
Test		Method	Units	TEST RESULTS Min	Max	Result
				Table A2.1		
Appearance		ASTM D4176		Report	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	CAB, FFSSM
Acidity		ASTM D 3242	mgKOH/g		0,015	0,009
	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 Density @ 15*C	Middle		kg/m3 kg/m3	730.0	772.0	761.2
Distillation IBP		IP 123	*C	Report		143.5
10%			*C *C	Report	205.0	173.2
90%			2	Report		264.2
Distillation FBP			*C *C	a second a	300.0	267.7
Residue Loss		100	Water P		1.6	1.2
T90-T10		and the second	%w/v *C	22	1.5	91.0
SIMDIS		ASTM D2887	*C			
10%		100 C	6666	Report		146.0 175.0
50%			*0	Report		248.0
80%			*0	Report		275.0
90%		220	*C	Report		279.5
Distillation FBP			*C	Report		288.0
Existent Gum		IP 540	mg/100ml		7	
FAME		IP 685	marka		6	<4.5
Resh Point Freezing Point		IP 170 IP 529	*C	38.0	-40.0	45.0
JFTOT Test Temp		IP 323	°C	325	40.0	325
JFTOT Tube Rating			Class		2	1
JFTOT DP JFTOT Comment		1000	mmHg	Report	25	0.0 bnormals or Peacocks
ETR Max. Avg Deposit Thickne	22 10	IP 323 Annex E	10000	Conference of	85	7
	**	and and the second s	om		-85	
ETR Volume Deposit			*mm	Report		0.00131
Hydrocarbon Composition		ASTM D2425	%-m/m	Table A2.2		
Cycloperaffine			Contraction of the		15	2.2
Aromatics Paraffins			10 C	Report	0.5	0.6 97.53
Carbon and Hydrogen		ASTM D6291	%-m/m	90.6		99.71
Cerbon						
Hydrogen Non-Hydrocarbon Composition						
Nitrogen		ASTM D4629	malka		2	0.3
Suinhur		ASTM D6453	maika		15	3
Water Metals		ASTM D6304 ASTM D7111	maike maike	Each	75	<30 Each <0.1
(Al, Ca, Co, Cr, Cu, Fe, K, Mg,	Mo Mo	Addim Double	1100 Mg	Comment		Carlos altr. 1
Na, Ni, P. Pb, Pt, Sn, Sr, Ti	V, Zn)					
Halogens		ASTM D7359	marka		1	<1
14C Biogenic Carbon Content	_	ASTM D6866	8		20	To follow
Composition and Additives		Method/Type	Units	Min	Max	Result Comment
Non Hydro-Processed Comp.		Calculate	*	Report		0.0
Mildly Hydro-Processed Comp Severely Hydro-Processed Co	mp.	Calculate Calculate	**	Report		0.0
Synthetic Components		Calculate	*	Report		100.0
Anti-Oxidant 0 DRA	E A 60986	Calculate ASTM D 7872	mg/L	17	24.0	18.0 In Batch Not used in this supply chu
			ugit	1220		
	RDE A 630	Calculate	% volivel	0.10	0.15	NIL.
MDA	RDE A 650	Calculate	mgit.		5.7	NIL.
LIA	RDE A 661	Calculate	mgA.			0.0 In Batch
	RDE A 621	Calculate	mg1.		5.0	0.0
Certification						
Tests carried out by FAPANI V	Vest Labor	atory,C2-3980			Test Cert Number	109-25C
		- 100 CO CO CO CO CO	batch of fuel meet	s the requirements of ASTM D7566-24d, An		
					Date	38 Falewary 2025
Authorised Signature						
Authorised Signature Signatory	Matana Sor	72			Cate	a nursity see

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		Sus		Jet A-1 ble Aviation Fuel			A
44 11234588828				cate of Quality			J
Product:	Jet A-1		Batch Number	TTT 4841 M		Sample Date	23/02/202
Tank: Quantity In Batch:	Tank 410 16151	m3@15℃	Certificate Number	TTT/087/25		Sample Number Sampled By Sample Type	1012 A,B,0 QA 4808 Composite
Batch MakeUp	Volume		Origin	Refining Process	Batch No.	Test Ce	rt No.
In Tank (Part 1)	3522	m3 @ 15°C	In Tank	SR,MHP,SHP, S	TTT 4382 M	TTT/00	43/25
3	7379	m3 @ 15°C	Transfer	SR,MHP,SHP,S	TTT 4801 M	TTT/00	
4	5250	m3 @ 15°C	Transfer	HEFA SPK	TTT 4839 M	2826	217
				TEST RESULTS			
Test		Method	Units	Min	Max	Result	
Appearance Savbolt Colour		ASTM ASTM D	-	Report Report		C&B. FFSSM 29	
Density @ 15°C Density @ 15°C Density @ 15°C	Composite Upper	IP 365	ka/m3 kg/m3	775.0 775.0	840.0 840.0	777.3 777.4	
Density @ 15°C	Middle	:	ka/m3	775.0	840.0	778.1	
Elash Point	Lower	IP 170	kg/m3	775.0 38.0	840.0	778.0 41.0	
Existent Gum Freezing Point		IP 170 IP 540 IP 529	mg/100ml		-47.0	-51.7	
Distillation IBP		IP 123	°Č	Report		147.4	
10% 50%			ပံ့ပံ့	Report	205.0	165.6 212.2	
65%				Penert		233.0	
90% Distillation FBP			°C	Report	300.0	262.3 274.4	
Residue		:	%v/v %v/v		1.5	1.2	
Distillation		T50-T10 T90-T10	°C °C	15	1.0	46.6	
Sulphur		ASTM	%m/m	40	0.30	96.7 0.044	
Sulphur Mercaptan Sulphur Doctor Test		ASTM ASTM D IP30	%m/m Report		0.0030 Absent	0.0006 Positive	
Viscosity @ -20°C		ASTM D			8.000	4.654	
viscosity @ -20 C		445	mm*/s		0.000	4.004	
Viscosity @ -40°C		ASTM D 446	mm²/s		12.000	9.587	
Aromatic Hydrocart	ons		%v/v MJ/kg	8	25.0	11.6 43.727	
Aromatic Hydrocart Specific Energy Smoke Point (Manu	ali	ASTM D ASTM D ASTM D	MJ/kg	42.8 25 (or 18 + naphthalenes)		43.727 33.0	
Copper Corrosion (2	2 hrs at 100 c)	IP 154	Class	, , ,	1	1A	
Total Acidity Naphthalenes		ASTM D ASTM	mgKOH/g %vol		0.015 3.00	0.003 Not required	
WŚI	Alithout SDA	ASTM D		88		100	
MCELL \ MSEP \	Without SDA With SDA	ASTM D ASTM D ASTM D		85		90 85	
Electrical Conductiv JFTOT Test Temp	nty	ASTM D IP 323	pS/m @ ℃	50 260	600	121 260	
JFTOT Tube Rating			Class		3	<1	
JFTOT DP JFTOT Comment			mmHa		25	0.1 No Abnormals	or Peacoc
ETR Max. Ava Dep ETR Volume Depos	osit Thickness	IP 323	nm mm3	Report	85	0.00094	
Particulate Contami	ination	MIL-DTL-83133K	ma/L ISU Code	nepore	1.0	0.16	
Particle Counting	≥4um ≥6µm	IP565	ISU Code &		19 17	15 13 7	
	≥14µm ≥21µm		Individual	Report	14	7 5	
	≥25µm	:	channel	Report	40	3	
Lubricity 1	≥30um WSD	ASTM D	counts		13 0.85	3 0.79	
FAME		IP 583 Method/Ty	ma/ka		50	<10	
Composition and A		De	Units	Min	Max	Result	Commer
Non Hydro-Proces Mildly Hydro-Proce	sed essed Comp.	Calculate Calculate	%	Report		46.415 3.014	
Severely Hydro-Pro	cessed Comp.	Calculate	%	Report		1.321	
Synthetic Compon Synthetic Commen	ents It	Calculate	%	Report	50 HEFA-3	49.250 SPK ASTM D7566	6 Annex 2
	RDE A 609&610	Calculate	mg/L		24.0	18.4	In Batcl
		ASTM D	-		72	Not used in	this supply
DRA		7872	ug/L			cha	
FSII	RDE A 630	Calculate	% vol/vol	0.10	0.15	NIL	
MDA	RDE A 650 RDE A 661 RDE A 621	Calculate Calculate	mg/L mg/L		5.7	NIL 0.0	In Batch
Cumulative SDA	RDE A 621	Calculate	mg/L		5.0	1.2	Datci
Certification		aboreter.				114 412	
Tests carried out b Certifie	ed this fuel meet	s the require	ments of De	f-Stan 91-091 Issue 17 and AFORJOS CI	est Cert hecklist 35 &	156-25C ASTM D7566-24	ь
		7					1
					Date	26 February 2025	
Authorised Signati Signatory I Job Title (ure watana Sona		•		Dute		

Documentation Traceability

SeaView Refinery Mirka Road Cifoster UK. C1-989 44 11234558828 44 11234558828 Ide A-1 ank: Jaf A-1 Tark 410		stainab	Jet A-1 Ile Aviation Fuel ate of Quality		Sample Date Sample Number 1012 A	SeaView Refinery Minka Road Cifoster UK. C1-989		Certi	Jet /	A-1 of Qualit
Batch MakeUp Volume	m3@15°C	Certificate Number Origin	TTT/087/25 Refining Process	Batch No.	Sampled By QA 48 Sample Type Compo Test Cert No.	44 11234588828	Jet A-1	E	atch	4382 M
In Tank (Part 1) 3522 3 7379 4 5250	m3 @ 15*C m3 @ 15*C m3 @ 15*C	In Tank Transfer Transfer	SR,MHP,SHP,S SR,MHP,SHP,S HEFA SPK	TTT 4382 M TTT 4801 M TTT 4839 M	TTT/0043/25 TTT/0054/25 2826217	Quantity In	ank 410 16187 m3		tificolo	4382 M T/043/25
4 5250	m3 @ 15°C	Transfer	TEST RESULTS	TTT 4839 M	2826217		Volume		rigin	Refining Proce
t	Method ASTM	Units	Min Report	Max	Result C&B. FFSSM	Batch Makeop	volume		ngin	Renning Proce
bearance vbolt Colour insity @ 15°C Composite insity @ 15°C Upper insity @ 15°C Middle	ASTM D IP 365	ka/m3 kg/m3 kg/m3	Report 775.0 775.0 775.0	840.0 840.0 840.0	29 777.3 777.4 778.1 778.0	In Tank (Part 1)	3518 m3	3@15°C In	Tank	SR,MHP,SHP
ensity @ 15°C Lower ash Point distent Gum eezing Point	IP 170 IP 540 IP 529 IP 123	kg/m3 C mg/100ml	775.0 38.0	840.0 -47.0	41.0	2	12669 m3	3 @ 15°C II	nport	SR /MHP / SH
istillation IBP 0% 5%	IP 123	mg/100ml °C °C °C	Report	205.0	1 -51.7 147.4 165.6 212.2 233.0 262.3 274.4 1.2 0.5					
% tillation FBP sidue	1	°C ℃ %∨/v	Report	300.0 1.5	262.3 274.4					
sique ss stillation	150-110	%v/v %v/v %C	15 40	1.5	0.5 46.6					
lphur ercaptan Sulphur octor Test	ASTM ASTM D IP30	°C %m/m %m/m Report	40	0.30 0.0030 Absent	46.6 96.7 0.044 0.0006 Positive	SeaView Refinery Minka Road			Jet	A-1
scosity @ -20°C	ASTM D 445	mm²/s		8.000	4.654	Cifoster UK. C1-989		Sustai	nable /	Aviation F
cosity @ -40°C matic_Hydrocarbons	ASTM D 446	mm²/s		12.000 25.0	9.587 11.6	44 11234588828				
ecific Energy oke Point (Manual)	ASTM D ASTM D ASTM D	%v/v MJ/kg mm	42.8 25 (or 18 + naphthalenes)		43.727 33.0			Cer	incate	of Qualit
oper Corrosion (2 hrs at 100 c) al Acidity phthalenes	IP 154 ASTM D ASTM	Class mgKOH/g %vol		1 0.015 3.00	1A 0.003 Not required	Product: Jet A-1 Tank: Tank 430		Batch Number		TTT 4801 N
ELL Without SDA EP With SDA	ASTM D ASTM D ASTM D ASTM D ASTM D	10101	88 85 70 50	0.00	100 90	Quantity In Batch: 16010	m3@15°C	Certificate Number		• TTT/0054/2
ctrical Conductivity	ASTM D IP 323	pS/m @	50 260	600	85 121 260	Batch MakeUp Volume		Origin		Refining Proces
OT Tube Rating OT DP OT Comment	:	Class mmHa		3 25	<1 0.1 No Abnormals or Peace	In Tank (Part 1) 510	m3 @ 15°C	In Tank		SR,MHP,SHP,S
R Max. Avg Deposit Thickness R Volume Deposit ticulate Contamination	IP 323 MIL-0TL-83133K	nm mm³	Report	85 1.0	0.00094	2 4500	m3 @ 15°C	Transfer		SR/MHP/SHP/S
ticle Countina ≥4um >6um	IP565	ISU Code		19	0.16 15 13	3 5300	m3 @ 15°C	Transfer		SR.MHP.SHP
≥14µm ≥21µm ≥25µm		Individual	Report Report	14	7 5	4 5700	m3 @ 15°C	Transfer		SR/MHP/SHP/S
≥30um bricity WSD	ASTM D	counts	napor	13 0.85	3 0.79					
ME mposition and Additives	IP 583 Method/Ty	ma/ka	Min	50 Max	<10 Result Comm	SeaView Refinery		C.	mth atia	Dereffinie K
on Hydro-Processed ildly Hydro-Processed Comp.	Calculate Calculate	%	Report		46.415 3.014	Minka Road		5)		Paraffinic Ke
verely Hydro-Processed Comp. nthetic Components nthetic Comment	Calculate Calculate	% %	Report	50 HEFA-:	1.321	Cifoster UK. C1-989 44 11234588828			Qual	ity Certifica
nti-Oxidant RDE A 609&610		mg/L		24.0	18.4 In Bat	44 11234300020	_			
A	ASTM D 7872	ug/L		72	Not used in this supp chain	Product:	HEFA SP	к	Batch	111
SII RDE A 630	Calculate	% vol/vol	0.10	0.15	NIL				Number	
DA RDE A 650 A RDE A 661 umulative SDA RDE A 621	Calculate Calculate Calculate	mg/L mg/L mg/L		5.7 5.0	NIL 0.0 In Bat 1.2				Certificate Number	HEFA-SI
ertification ests carried out by FAPANI West	Laboratory,	2-3980	-Stan 91-091 Issue 17 and AFQRJOS C	lest Cert	156-25C ASTM D7566-24b	Batch MakeUp			Origin	Definin
	s the require	ments of Def	-Stan 91-091 Issue 17 and AFQRJOS C	necklist 35 &	ASTM D7566-24b	batch wakeUp			Ungin	Refinin
thorised Signature		> /~	-	Date	26 February 2025	In Tank (Part 1)			Import	

Sample Date 03/02/2025 Sample Number 10302 A, B, C, Sampled By QA 9801 Sample Type Composite Batch No. Test Cert No. TTT 4300 M TTT/0038/25 43009181878- 654-87838J-9383, 654-876563J-73889 9383 · · · · · Sample Date Sample Number 15/01/2025 1026 A, B, C Sampled By QA 8901 Sample Type Composite Batch No. Test Cert No. TTT 4700 M TTT-203-24 TTT 4759 M 1489-24 TTT 4789 M TTT-213-4 TTT 4795 M 140234-24, 1679731-24 16789-25 ene

Sample 17/02/2025 Date Sample 103 A, B, C, D Number Sampled By QA 4509 Sample Composite Batch No. Test Cert No. HEFA-SPK-2826217 120424-004

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.

Applies under the Renew	able Energy Dire	ctive (EU) 2018/2	001 (RED II)
Jnique Number of the PoS:			ISCC
Date of Issuance of the PoS:	-		toternational Sustainability & Carbon Certification WWWW.ISCC-System.org
Supplier		Recipient	
Name:		Name:	10
Address:		Address:	
Certification System: ISCC EU			
Certificate Number:		Contract Number:	
ddress of dispatch/shipping point f the sustainable material:			
	Same as address of a standard standa	of supplier	
ddress of receipt/receiving point of e sustainable material:			
	Same as address of a state of the state o	of recipient	
ate of dispatch of the sustainable naterial:	07/03/2025		
. General information			
Type of Product:	HEFA		
Type of Raw Material	Used cooking oil (UC	C)	
Additional Information (voluntary)			
Country of Origin (of the raw material):	CN 100%		
Quantity:	49.856	m3/15°C a m ³	metric tons
Energy content (MJ):	1,695,104	Ш	
EU RED Compliant material ³	9 Yes		
ISCC Compliant material (volunt.) Chain of custody option (voluntary	2	т	
Country of biofuel production	Those Dalarice	I USA	
restored and the standard states the second states			
Start date of biofuel production ¹		11/11/20	100
If applicable, start date of bioliquie	d/biomass fuel use ^{1,2}		

	ility (PoS) for B	orders, Bioriq	ulds and Biomass i		
For Biofuels, Bioliquids and	Biomass fuels according	to the Renewable En	ergy Directive (EU) 2018/200	1 (RED II)	_
Unique Number of Proof of Sustainability:	EU-REDcert-PoS -	YYYYMMDD -	x00000X	RE	Dcert
Place and Date of Physical Supply:	dty, DD.MM.YYYY				enturnet: per 2047/82004.mc Phattig entreugter Pranse mittal
Date of Issuance:	DD.MM.YYYY				
Supplier			Recipient		
Name			Name		
company Address			Address		
street			street		
city			city		
country			country		
Certification Scheme: REDo	ert-EU				
Certificate Number IU-REDcert-XXX-XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX			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			m ² mt (me	tric tons)	
		MD			
Energy content					
Sustainability criteria	of the biomass accor		9 RED II		
Sustainability criteria of the material complies with t	the sustainability criteria	according to Article 2	(3), (4) and (5) RED II 1)		
Sustainability criteria (The material complies with the sustainability criteria ac	the sustainability criteria cording to Art. 29 (3), (4	according to Article 2	(3), (4) and (5) RED II 1)		
Sustainability criteria o The material complies with 1 The sustainability criteria ac Greenhouse Gas (GHG)	the sustainability criteria cording to Art. 29 (3), (4) Information	according to Article 2	(3), (4) and (5) RED II ¹) re not taken into account ²)		
Sustainability criteria (The material complies with the sustainability criteria ac	the sustainability criteria cording to Art. 29 (3), (4) Information	according to Article 2	(3), (4) and (5) RED II 1)	no	
Sustainability criteria of The material complies with the sustainability criteria ac Greenhouse Gas (GHG) Total default value according Eec + E + +	the sustainability criteria cording to Art. 29 (3), (4) Information g to RED applied Ep + Etd + + +	rding to Article 2 according to Art. 29 and (5) RED II we	(3), (4) and (5) RED II ³ re not taken into account ² yes		
Sustainability criteria of The material complies with the sustainability criteria ac Greenhouse Gas (GHG Total default value according Eec + E + + GHG emission saving	the sustainability criteria cording to Art. 29 (3), (4) Information g to RED applied Ep + Etd + + +	ding to Article 2 according to Art. 25 b) and (5) RED II we Eu - Esca	(3), (4) and (5) RED II ³ re not taken into account ² yes	no	
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