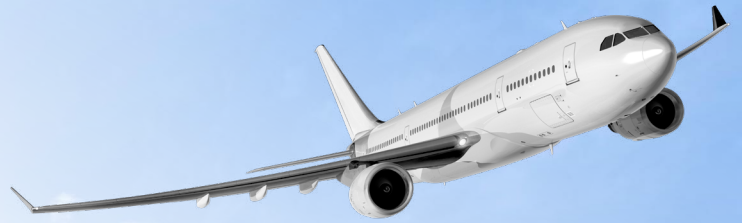


SAF SUSTAINABLE AVIATION FUEL



What is SAF?

Sustainable Aviation Fuel (SAF) is a second-generation biofuel produced from organic waste, such as used cooking oil and agricultural waste.

Sustainability



Cepsa is certified under the voluntary ISCC EU scheme. The supplied product meets the sustainability criteria of the European Renewable Energy Directive (EU RED).

Product specifications

Based on DEF STAN 91-091 [current revision] and ASTM D1655

TEST	PROPERTY	UNITS	LIMITS	METHOD
1	Appearance			
1.1	Visual Appearance	-	Clear, bright and visually free from solid matter and undissolved water at ambient fuel temperature	Visual (see Annex F.1)
1.2	Colour	-	Report	ASTM D156 or ASTM D6045 ⁽¹⁾
1.3	Particulate at point of manufacture (one of the following requirements shall be met)			
1.3.1 or	Contamination	mg/l	Max 1.0	IP423 / ASTM D5452 ⁽²⁾
1.3.2	Cumulative channel particle counts	Individual channel counts & ISO code	Channel Counts ISO Code	IP565 or IP577 ⁽²⁾⁽³⁾
	≥ 4 µm(c)	-	Report Max 19	
	≥ 6 µm(c)	-	Report Max 17	
	≥ 14 µm(c)	-	Report Max 14	
	≥ 21 µm(c)	-	Report Report	
	≥ 25 µm(c)	-	Report Report	
	≥ 30 µm(c)	-	Report Max 13	
2	Composition			
2.1	Total Acidity	mg KOH/g	Max 0.015	IP354 / ASTM D3242
2.2	Aromatics Hydrocarbon Types (one of the following requirements shall be met)			
2.2.1 or	Aromatics	% v/v	Max 25.0	IP156 / ASTM D1319 ⁽⁴⁾
2.2.2	Total Aromatics	% v/v	Max 26.5	IP436 / ASTM D6379 ⁽⁵⁾
2.3	Sulfur, Total	% m/m	Max 0.30	IP336
2.4	Mercaptans (one of the following requirements shall be met)			
2.4.1 or	Sulfur, Mercaptan	% m/m	Max 0.0030	IP436 / ASTM D3227 ⁽⁶⁾
2.4.2	Doctor Test	-	Doctor Negative	IP30
2.5	Refining Components, at point of manufacture ⁽⁷⁾			
2.5.1	Non-Hydroprocessed Components	% v/v	Report	
2.5.2	Severely Hydroprocessed Components	% v/v	Report	
2.5.3	Synthetic Components	% v/v	Report, for limits see Annex B	⁽⁸⁾ (see Annex B)
3	Volatility			
3.1	Distillation			IP123 / ASTM D86 ⁽⁹⁾
3.1.1	Initial Boiling Point	°C	Report	
3.1.2	10% Recovery	°C	Max 205,0	
3.1.3	50% Recovery	°C	Report	

Quality and legislation

Complies with:

- Regulation DEF STAN 91-091 [current revision].
- AFQRJOS Checklist (Aviation Fuel Quality Requirements for Jointly Operated Systems) [current revision].
- ASTM D1655 standard for aviation turbine fuels [current revision].

Health and Safety

A Safety Data Sheet is available to those interested (<https://www.cepsa.es/en/safety-sheets>).

TEST	PROPERTY	UNITS	LIMITS	METHOD
3.1.4	90% Recovery	°C	Report	
3.1.5	End Point	°C	Max 300.0	
3.1.6	Residue	% v/v	Max 1.5	
3.1.7	Loss	% v/v	Max 1.5	
3.2	Flash Point	°C	Max 38.0	IP170
3.3	Density at 15°C	kg/m ³	Min 775.0; Max 840.0	IP365 / ASTM D4052
4	Fluidity			
4.1	Freezing Point	°C	Max minus 47.0	IP16 / ASTM D2386 ⁽¹⁰⁾
4.2	Viscosity at minut 20°C	mm ² /s	Max 8.000	IP71 / ASTM D445
5	Combustion			
5.1	Smoke Point (one of the following requirements shall be met)			
5.1.1 or	Smoke Point	mm	Min 25.0	IP598 / ASTM D1322 ⁽¹¹⁾
5.1.2	Smoke Point and Naphthalenes	mm % v/v	Min 18.0 Max 3.00	IP598 / ASTM D1322 ASTM D1840
5.2	Specific Energy	MJ/kg	Min 42.80	⁽¹²⁾
6	Corrosion			
6.1	Copper Strip	Class	Max 1	IP154 / ASTM D130 ⁽¹³⁾
7	Thermal Statability			
7.1	Test Temperature	°C	Min 260	IP323/ ASTM D3241 ⁽¹⁴⁾
7.2	Tube Rating (one of the following requirements shall be met) ⁽¹⁵⁾			
7.2.1 or	Annex B VTR	-	Less than 3. No Peacock (P) or Abnormal (A)	
7.2.2	Annex C ITR or Annex D ETR, average over area of 2.5 mm ²	mm	Max 85	
7.3	Pressure Differential	mm Hg	Max 25	
8	Contaminants			
8.1	Existent Gum	mg/100ml	Max 7	IP540
9	Water separation Characteristics			
9.1	Microseparometer at Point of Manufacture (one of the following requirements shall be met)			ASTM D3948 ⁽¹⁶⁾
9.1.1 or	MSEP Without SDA	Rating	Min 85	
9.1.2	MSEP With SDA	Rating	Min 70	
10	Conductivity			
10.1	Electrical Conductivity	pS/m	Min 50; Max 600	IP274/ ASTM D2624 ⁽¹⁷⁾
11	Lubricity			
11.1	Wear Scar Diameter	mm	Max 0.85	ASTM D5001 ⁽¹⁸⁾

¹ The presence of DRA is not allowed in any concentration. When its value is not known, it will be assumed that there is no content in DRA if the analyzed concentration is less than or equal to 72 µg/L, using the ASTM D7872 method.