

# Sustainable Aviation Fuel (SAF)

FREQUENTLY ASKED QUESTIONS



*Prepared by*

THE BUSINESS AVIATION COALITION FOR SUSTAINABLE AVIATION FUEL



# WHO WE ARE

The Business Aviation Coalition for Sustainable Aviation Fuel is represented by the **Commercial Aviation Alternative Fuels Initiative (CAAFI)**, **Canadian Business Aviation Association (CBAA)**, **European Business Aviation Association (EBAA)**, **General Aviation Manufacturers Association (GAMA)**, **Helicopter Association International (HAI)**, **International Business Aviation Council (IBAC)**, **National Air Transportation Association (NATA)** and the **National Business Aviation Association (NBAA)**.

The Business Aviation Coalition for Sustainable Aviation Fuel is supported by a Steering Committee comprised of international aviation organizations at all the logical touchpoints: SAF fuel producers and suppliers, aircraft and engine manufacturers, ground handlers and operators at the regional, national and international levels.

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These FAQs come directly from the Business Aviation Coalition for Sustainable Aviation Fuel's *Fueling the Future: Sustainable Aviation Fuel Guide*, Edition 2, 2020 and have been supplemented.

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### Why is this important?

Awareness and concern continue to grow about the harmful effects of greenhouse gas (GHG) emissions from industrial installations, power plants, surface vehicles, ocean-going vessels, and aircraft.



Through advances in new technology, improvements in operations and infrastructure and an energy transition away from fossil fuels, civil aviation is working to respond to the climate challenge. The industry became one of the first to set global goals for reducing its emissions in 2009. Indeed, a key component to achieving our aspirational goals is a broad adoption of sustainable aviation fuel, commonly known as SAF.



### What is SAF and how is it made?

SAF is a blended fuel that is comprised of conventional Jet A/A-1 fuels mixed with a non-conventional sustainable blending agent (“neat SAF”) produced via one of seven following ASTM-approved pathways:

1. **Fischer Tropsch Synthetic Paraffinic Kerosene (FT-SPK)**
2. **Hydro-processed Esters and Fatty Acids (HEFA)**
3. **Synthesized Iso-paraffin from Hydro-processed Fermented Sugar (HFS-SIP)**
4. **Fischer Tropsch Synthetic Kerosene with Aromatics (FT-SKA)**
5. **Alcohol to Jet SPK (ATJ-SPK)**
6. **Catalytic Hydrothermolysis Synthesized Kerosene (CH-SK or CHJ)**
7. **Hydroprocessed Hydrocarbons (HHC-SPK or HC-HEFA)**



### Do I need special approval for my aircraft to fly with SAF and are helicopters treated any differently than fixed wing aircraft regarding SAF?

No, not if the SAF is produced to the requirements of ASTM D7566 and re-identified as ASTM D1655 jet fuel. FAA Special Airworthiness Information Bulletin (SAIB) NE-11-56R4 summarizes: “...jet fuel made from...synthetic blending components that meet the requirements of ASTM International Standard D7566 are acceptable for use on aircraft and engines certificated for operation with D1655 Jet-A or Jet A-1 fuel if they are re-identified as D1655 fuel... When D7566 jet fuels are re-identified as D1655 fuel, they meet all the specification requirements of D1655 fuel and, therefore, meet the approved operating limitations for aircraft and engines certificated to operate with D1655 fuel, unless otherwise prohibited by the engine or aircraft type certificate (TC) holder.”

The same bulletin states the following in its recommendations:

1. **“These fuels are acceptable for use on those aircraft and engines that are approved to operate with Jet-A or Jet A-1 fuels that meet the D1655 standard.**
2. **Aircraft Flight Manuals, Pilot Operating Instructions, or TCDs that specify ASTM D1655 Jet-A or Jet A-1 fuel as an operating limitation do not require revision to use these fuels.**
3. **Current aircraft placards that specify Jet-A or Jet A-1 fuels do not require revision and are acceptable for use with these fuels.**
4. **Operating, maintenance, or other service documents for aircraft and engines that are approved to operate with ASTM D1655 Jet-A or Jet A-1 fuel do not require revision and are acceptable for use when operating with these fuels.**
5. **There are no additional or revised maintenance actions, inspections or service requirements necessary when operating with these fuels.”**

The Federal Aviation Administration (FAA), European Union Aviation Safety Agency (EASA), Transport Canada Civil Aviation (TCCA), National Civil Aviation Agency of Brazil (ANAC) and other national regulators also approve and insert this stipulation in the Aircraft Flight Manual (AFM) of every aircraft delivered by OEMs in their jurisdictions. Please check your AFM.

**Q:**  
What sort of actual emissions reductions can I expect to achieve by using SAF?

The use of neat SAF results in a reduction in carbon dioxide (CO<sub>2</sub>) emissions across its entire lifecycle—not what is being pushed out the exhaust nozzle. That is, even when considering the emissions produced in growing, transporting, harvesting, processing and refining a particular feedstock, SAF has been shown to provide significant reductions in overall CO<sub>2</sub> lifecycle emissions compared to conventional fuels. For example: a large-cabin modern business jet on a 1,000 nautical-mile mission might burn enough fuel to produce ~22,787 lbs. of CO<sub>2</sub>. If such a flight were to use SAF (HEFA-SPK pathway) at a blend of 30% neat SAF to 70% conventional Jet-A fuel, the same mission would result in a net reduction of CO<sub>2</sub> emissions of ~4,100 lbs. on a lifecycle basis.

**Q:**  
Is SAF more expensive than traditional jet fuel?

Today, the cost of SAF is typically higher than the price of conventional petroleum-based Jet-A or Jet A-1. Additionally, transportation and blending costs for the fuel will vary and can add to the overall cost of the fuel. Several federal, state and regional policy incentives targeting the reduction of carbon emissions may also impact the price of fuel for certain purchasers and at certain locations. Please contact your fuel supplier for cost specifics.

**Q:**  
Will my aircraft perform the same under all conditions (e.g., extreme hot and cold temperatures)?

Yes, SAF is fully approved to meet the specifications of conventional jet fuel. This means that it performs just like conventional jet fuel, as it meets the specifications contained in ASTM D1655.

**Q:**  
Does the use of SAF have any negative impact on APU and main power plant performance, other components—including fuel tanks and fuel systems—airframe, maintenance procedures/requirements, and/or product warranties?

No. Selected aircraft OEMs, engine and APU manufacturers, as well as manufacturers of other components, participated in the testing process, and that testing found that SAF is compatible for use in their products with no modifications required, and with no need for recertification or additional validation.





**Is SAF the same as bio jet fuel, synthetic jet fuel or renewable jet fuel?**

No, there are differences. While there are various terms to describe non-fossil-based hydrocarbon fuel and often the term “biofuel” is used as a “catch-all” description, the aviation industry avoids this terminology. A “biofuel” tagline is not sufficiently broad to cover all envisioned feedstocks, nor does it specify the sustainability aspect of these fuels (which aviation highlights). Some biofuels, if produced from non-sustainable feedstocks, such as unsustainably produced crops that foster significant land-use change, can cause additional environmental damage, making them unsustainable for aviation’s purposes.



**Are there special procedures required for storage and delivery of SAF?**

There is no difference between SAF blends and conventional jet fuel regarding their delivery, storage and quality control procedures. A key factor to consider is whether the SAF is purchased for a single client (who may desire sequestration of the fuel for fueling specific aircraft), or for general use. SAF blends are fully fungible; thus, they can be commingled in airport storage tanks with existing ASTM D1655 Jet-A/A1 fuels.



**If an FBO is interested in purchasing and selling SAF, what should it do?**

It is important for an FBO desiring to sell SAF to:

- **Contact their fuel supplier for information on SAF.**
- **Become well acquainted in advance with the relevant ASTM D7566 standard to ensure that only qualified fuels are involved in any supply transactions.**
- **Understand how, if at all, the FBO could participate in the acquisition and handling of fuel to facilitate the introduction of SAF (e.g., taking SAF from multiple producers or suppliers).**



**How should an FBO handle client concerns regarding compatibility of SAF with aircraft components?**

Aircraft OEMs, engine and APU manufacturers—as well as manufacturers of other components—regularly participate in the testing process to ensure that SAF is compatible for use in their products with no modifications required, and no need for recertification or additional validation. FBOs can provide a certificate of analysis for the SAF, which is available from the FBO’s fuel supplier. If aircraft operators still have concerns, the FBO should direct them to contact their OEM regarding any compatibility issues.

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