



**SUBJ:** Engine Fuel and Control - Semi-Synthetic Jet Fuel

*This is information only. Recommendations aren't mandatory.*

## **Introduction**

This Revised Special Airworthiness Information Bulletin (SAIB) advises aircraft operators, fixed base operators, certificated repair facilities, Flight Standard District Offices, Certificate Management Offices, and Foreign Civil Aviation Authorities that jet fuel made from the following 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 jet fuel if they are re-identified as D1655 fuel:

- Fischer Tropsch hydroprocessed synthesized isoparaffinic kerosene (FT-SPK),
- hydroprocessed esters and fatty acids (HEFA),
- synthesized isoparaffins (SIP) from hydroprocessed fermented sugars,
- Synthesized kerosene with aromatics derived by alkylation of light aromatics from non-petroleum sources, identified as Fischer Tropsch synthesized paraffinic kerosene with aromatics (FT-SPK/A),
- alcohol to jet synthetic paraffinic kerosene (ATJ-SPK),
- Synthesized kerosene from hydrothermal conversion of fatty acid esters and fatty acids, identified as catalytic hydrothermolysis jet (CHJ), and
- hydroprocessed hydrocarbons, esters and fatty acids (HC-HEFA)

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. We are revising this SAIB to add HC-HEFA as a synthetic blending component that conforms to ASTM International Standard D7566.

## **Background**

The FAA relies on ASTM International to develop fuel specifications that applicants may designate as operating limitations for their approved products. These aviation fuel operating limitations may be listed in the product's type certificate data sheet (TCDS), installation manual, service instructions, or as limitations associated with a supplemental type certificate.

ASTM International issued ASTM Standard Specification D7566, "Standard Specification for Aviation Turbine Fuel Containing Synthesized Hydrocarbons," for drop-in jet fuel from alternative feedstocks in September 2009. This specification defines properties for semi-synthetic jet fuel made from blending conventional jet fuel with synthetic blending components that are specified in individual annexes. These semi-synthetic jet fuels, specified in D7566, possess essentially identical composition, properties, and performance to conventional jet fuels. This specification currently includes seven annexes describing synthetic blending components:

- Annex A1, issued in September 2009, specifies properties for synthetic fuel from coal, biomass, and natural gas produced using the FT-SPK process.

- Annex A2, issued in July 2011, specifies properties for synthetic fuel from organic oils using the HEFA process.
- Annex A3, issued in June 2014, specifies properties for synthetic fuel from fermentable sugars using the SIP process.
- Annex A4, issued in November 2015, specifies properties for synthetic fuel with aromatics from coal, biomass, and natural gas produced using the FT-SPK/A process.
- Annex A5, issued in April 2016, specifies properties for synthetic fuel from alcohol using the ATJ process.
- Annex A6, issued in December 2019, specifies properties for synthetic fuel from organic oils using the CHJ process.
- Annex A7, issued in May 2020, specifies properties for synthetic fuel from organic oils derived from the *Botryococcus Braunii* species of algae using the HC-HEFA process.

Both D7566 and the existing specification for conventional jet fuel, ASTM International Standard D1655, “Standard Specification for Aviation Turbine Fuels,” are cross-referenced to allow D7566 fuels to be re-identified as D1655 fuels when they enter the distribution system. When re-identified, D7566 fuels made with FT-SPK, HEFA, SIP, FT-SPK/A, ATJ, CHJ, or HC-HEFA blending components meet existing FAA-approved operating limitations, unless otherwise prohibited by the engine or aircraft TC holder.

Note that the United Kingdom (UK) Ministry of Defence (MOD) DEF STAN 91-091 jet fuel specification includes a provision that accepts all ASTM D7566 fuels.

## **Recommendations**

The following recommendations apply to FT-SPK, HEFA, SIP, FT-SPK/A, ATJ, CHJ, or HC-HEFA fuels that meet ASTM specification D7566 and are re-identified to ASTM D1655 Jet A or Jet A-1 fuels (unless otherwise prohibited by the engine or aircraft TC holder):

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 TCDSs 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.

## **For Further Information Contact**

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