

AVIATION CO₂ REDUCTIONS



STOCKTAKING SEMINAR
TECHNOLOGY · OPERATIONS · SUSTAINABLE AVIATION FUELS



Sustainable Aviation Fuels (SAF) – Introduction and Frequently Asked Questions

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Nuseed

ICAO CAEP Observer representing
Advanced Biofuels Association (ABFA)



Advanced Biofuels Association

Who we are



**Advanced
Biofuels**
Association

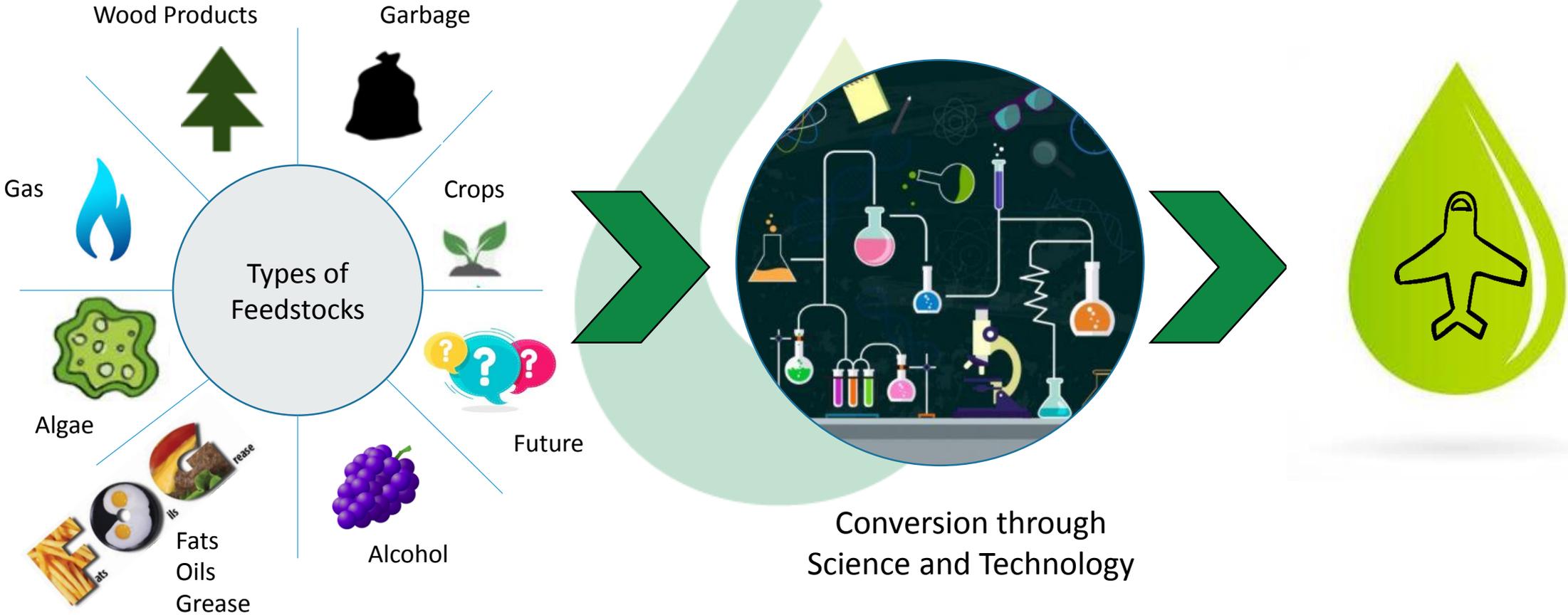
- The Advanced Biofuels Association (ABFA) represents 39 companies around the world in the business of producing, distributing, and marketing renewable fuels including Sustainable Aviation Fuels.
- ABFA was formed in 2007.
- Our mission is to advance the commercialization and distribution of advanced biofuels with significant GHG reductions.
- Our membership currently produces over 4 billion gallons every calendar year of renewable fuels world wide.
- ABFA created a technical expert committee to allow sustainable aviation fuel (SAF) producers, including non-ABFA members, to participate in the ICAO Committee on Aviation Environmental Protection (CAEP) Fuels Task Group (FTG).

Advanced Biofuels Association

Who we are



SAF (Sustainable Aviation Fuel)



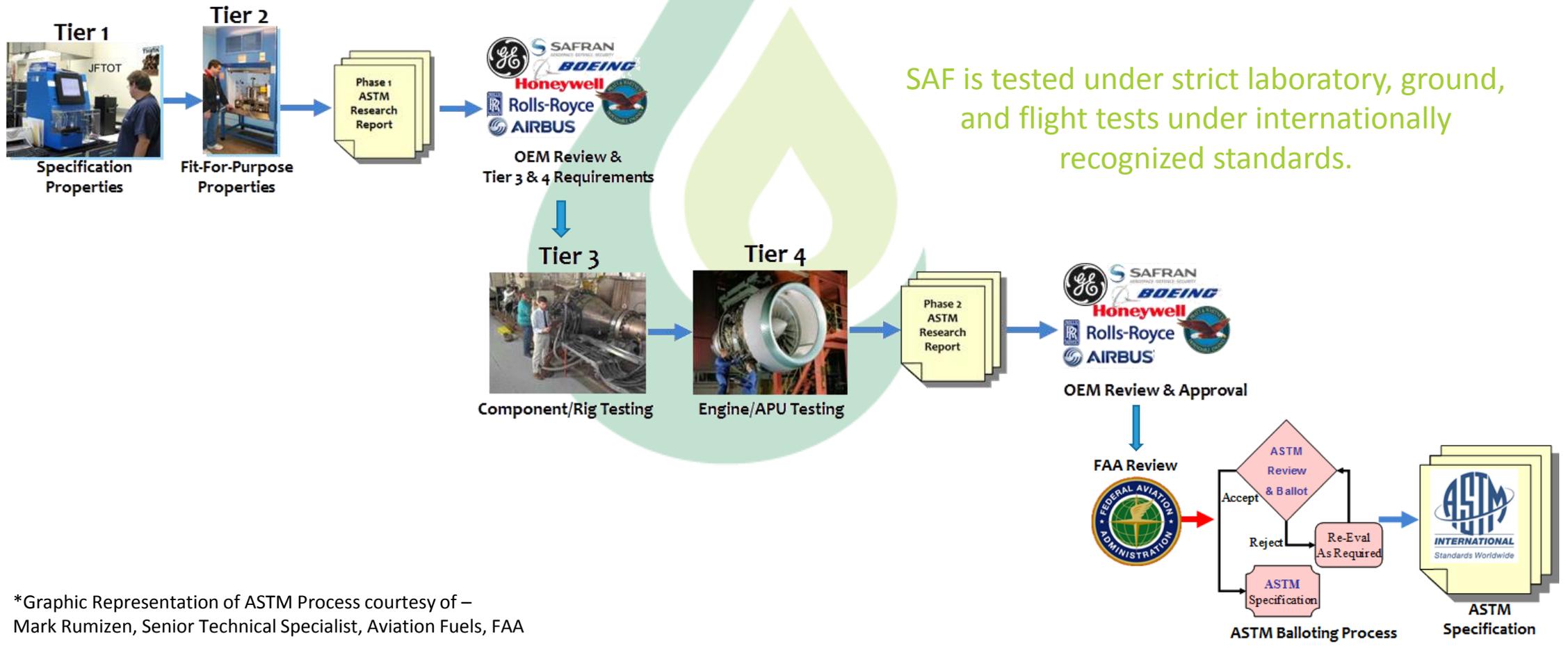


ASTM International

international standards organization that develops and publishes voluntary consensus technical standards

ASTM INTERNATIONAL

How is Sustainable Aviation Fuel (SAF) Incorporated into ASTM Specifications?



STOCKTAKING 2020

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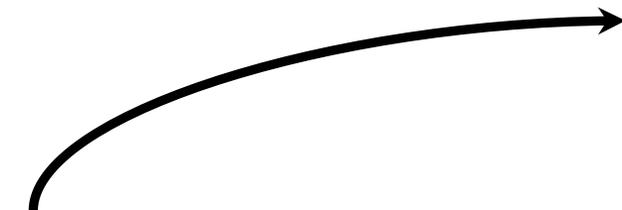
*Graphic Representation of ASTM Process courtesy of – Mark Rumizen, Senior Technical Specialist, Aviation Fuels, FAA

Blending Requirements

Sustainable Aviation Fuel (SAF)
ASTM D7566



Fossil Jet Fuel
ASTM D1655



Blending

Blend limits are according to current standards and allow the industry to learn and grow. It is likely that in the future higher blend limits will be approved.



Retested to show compliance and recertified.

Can now be used, transported, pipelined, stored just like traditional fossil jet fuel.



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Seven standalone conversion processes for SAF production have been approved under ASTM D7566:

| Technology | Abbreviation | Blending | Year |
|--|--------------|----------|------|
| Fischer-Tropsch Synthesized Paraffinic Kerosene | FT-SPK | Max 50% | 2009 |
| Hydroprocessed Esters and Fatty Acids | HEFA-SPK | Max 50% | 2011 |
| Synthesized Iso-Paraffins | SIP-SPK | Max 10% | 2014 |
| Fischer-Tropsch Synthesized Paraffinic Kerosene with Aromatics | FT-SKA | Max 50% | 2015 |
| Alcohol to Jet Synthesized Paraffinic Kerosene | ATJ-SPK | Max 50% | 2016 |
| Catalytic Hydrothermolysis | CHJ-SPK | Max 50% | 2020 |
| Synthesized Paraffinic Kerosene from Hydroprocessed Esters and Fatty Acids | HC-HEFA SPK | Max 10% | 2020 |

Notes:

- Conversion Process are at different stages of commercialization.
- Multiple feedstocks exist for each conversion process which are different stages of commercialization.
- Co-processing of renewable feedstocks with crude oil middle distillates in current petroleum refineries (max 5% feedstock stream) ASTM D1655
- Additional conversion processes are working their way through the ASTM process.



Thank You



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