VIRENT BioForm® SK Jet Fuel

Overview

The BioForming® process for producing BioForm® Synthesized Kerosene (SK) Jet Fuel converts plant-derived feedstocks into renewable jet range hydrocarbons. The product is a mixture of clean burning paraffins, isoparaffins and naphthenes that lead to desirable physical properties, including superior freeze point and thermal stability, and a very similar density compared to petroleum derived jet fuel. Virent BioForm SK Jet Fuel meets all ASTM D7566 requirements for aviation turbine fuel at 50% blend. Combining Virent BioForm SK with Virent BioForm Synthesized Aromatic Kerosene (SAK) creates the potential for a 100% renewable, bio-based jet fuel.

Advantages

Feedstock Flexibility

A wide variety of cellulosic and conventional plant sugars can be converted in the BioForming process to produce consistent final products.

Drop-In Fuels

BioForm SK Jet Fuel is fully fungible, containing the same hydrocarbon types as petroleum derived jet fuel. Other benefits include excellent freeze point, improved thermal stability, and compatibility with current infrastructure.

Key Properties

Aromatics

The low aromatic content makes SK an excellent renewable base stock. Blending SK with Virent's BioForm SAK creates the potential for a 100% bio based jet fuel.

Sulfur

The BioForming Process removes sulfur and other ash contaminants to below detectable levels, which reduces emissions and fuel systems wear.

Boiling Point Distribution

Flash point and end point are controlled by distillation, similar to conventional petroleum refinery processing. The fuel has a broad boiling point range containing C_8-C_{16} hydrocarbons, comparable to conventional jet fuel.

Thermal Stability Breakpoint

A high breakpoint greatly reduces fouling potential.

Freeze Point

A superior freeze point allows expanded operational boundaries on flight pattern and altitude.

Acid Number

A low acid number ensures reactive oxygenated species have been removed to prevent corrosion.

Density and Heating Value

Density within specification and heating value similar to conventional jet fuel results in >4% increased volumetric fuel economy compared to FT and HEFA alternative fuels.

Spec Test	ASTM D1655 Jet A	VIRENT	FT(1)	Conventional Jet A(2)
Aromatics, Vol%	<25	**<1**	<1	18.8
Sulfur, Mass%	<0.30	**0.00**	0.00	0.08
Distillation, 10%V, °C	<205	**177**	165	182
Distillation, End Pt, °C	<300	**284**	275	265
Flash point, °C	≥38	**53**	>130	51
Thermal Stab Break	>260	**>355**	>325	280
Freeze Point, °C	<-40	**<-80**	-51	-50
Acid #, mgKOH/g	<0.10	**0.003**	Not tested	Not tested
Density @ 15°C, kg/m³	775-840	**812**	756	804
LHV, MJ/kg	>42.8	**43.3**	44.3	43.3

(1) Commercial Fischer-Tropsch analyzed for comparison purposes
(2) Commercial Jet A analyzed for comparison purposes