

Supplementary Materials

From Sweet Sorghum to Sesquiterpene and Bio-Aviation Fuel: Production and EIA Analysis

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Table S1. Sesquiterpene fermentation energy consumption (aspen simulation results).

Stage	No.	Type	Utility	Value	Unit
100 L fermentation (Figure 3)	A100.H101	Heater	LP steam	0.006	kg/h
	A100.C101	Cooler	Cooling water	35.3	kg/h
	A100.H102	Heater	LP steam	0.07	kg/h
	A100.H103	Heater	LP steam	0.64	kg/h
5000 L fermentation (Figure 4)	A200.H201	Heater	LP steam	2.1	kg/h
	A200.C201	Cooler	Cooling water	101.6	kg/h
	A200.P201	Pump	Electricity	0.001	kW
40 m ³ fermentation (Figure 5)	A300.H301	Heater	LP steam	6.3	kg/h
	A300.C301	Cooler	Cooling water	426.0	kg/h
	A300.C302	Cooler	Cooling water	0.33	kg/h
	A300.P301	Pump	Electricity	0.001	kW
	A300.P302	Pump	Electricity	0.001	kW
	A300.P303	Pump	Electricity	0.008	kW
	A300.CO301	Compressor	Electricity	0.05	kW
40 m ³ fermentation replenishment (Figure 6)	A400.H401	Heater	LP steam	17.3	kg/h
	A400.C401	Cooler	Cooling water	840.0	kg/h
	A400.P401	Pump	Electricity	0.004	kW
	A400.P402	Pump	Electricity	0.004	kW
Stripping (Figure 7)	A500.H501	Heater	HP Steam	5.27	kg/h
	A500.H502	Heater	HP Steam	0.10	kg/h
	A500.H503	Heater	LP steam	0.49	kg/h
	A500.H504	Heater	HP Steam	0.09	kg/h
	A500.C501	Cooler	Chilled brine	113	kg/h
	A500.C502	Cooler	Chilled brine	15.7	kg/h
	A500.P501	Pump	Electricity	0.002	kW
	A500.P502	Pump	Electricity	0.001	kW
	A500.CO501	Compressor	Electricity	0.17	kW
	A500.CO502	Compressor	Electricity	0.17	kW

Table S2. Aspen-derived materials and Energy consumption during the conversion of sesquiterpenoids into aviation fuel.

Stage	Input Raw Materials/ Energy Consumption	Value	Output Product	Value
S5 Sesquiterpenes are converted into aviation fuel stage	α-longipinene	14.2kg/h	Alkyl diamondanes	12.2kg/h
	Hydrogen	0.15kg/h	By-products	1.4kg/h
	1,2-dichloroethane	2.7kg/h	Exhaust Gas	0.8kg/h
	Total electric energy	0.5MJ	1,2-dichloroethane	2.7kg/h
	Steam thermal energy	4.25MJ		
	Sodium chloride	0.7kg/h		
	Sodium hydroxide	0.7kg/h		

