

CLAIMS

1. A method for preparing an aviation fuel composition, the method comprising
subjecting a feedstock (101) of biological and/or recycled origin to
5 cracking in a cracking unit (102) and to fractionation in a fractionation unit (104)
to obtain a kerosene fraction (105);
subjecting the obtained kerosene fraction (105) to hydrotreatment in a
hydrotreatment unit (106) to form a first jet fuel component (107);
mixing the formed first jet fuel component (107) with a further jet fuel
10 component (109) to form a fuel composition (110) having a wear scar diameter of
0.78 mm or less, as measured with BOCLE lubricity test method according to ASTM
D5001;
wherein the feedstock (101) contains one or more of:
- tall oil pitch (TOP),
15 - a mixture of sludge palm oil, palm fatty acid distillate and animal fat
(FATS), and
- used lubricant oil (ULO).
2. The method as claimed in claim 1, wherein the further jet fuel component (109) comprises renewable jet fuel (RJF).
- 20 3. The method as claimed in claim 1, wherein the wear scar diameter of
the fuel composition (110) is lowered compared to the wear scar diameter of the
first jet fuel component (107) of the fuel composition (110) and/or compared to
the wear scar diameter of the further jet fuel component (109), as measured according to an ASTM D5001 standard.
- 25 4. The method as claimed in claim 1, 2 or 3 wherein the formed fuel
composition (110) contains from 85 wt-% to 95 wt-% of further jet fuel component
(109).
5. The method as claimed in claim 1, 2, 3 or 4, wherein the formed fuel
composition (110) contains from 5 wt-% to 15 wt-% of first jet fuel component
30 (107) obtained from a kerosene fraction (TOP PE, 105) derived from tall oil pitch
(TOP).
6. The method as claimed in claim 5, wherein the formed fuel composition (110) has a wear scar diameter of 0.75 mm or less, preferably 0.73 mm, as measured according to ASTM D5001.
- 35 7. The method as claimed in claim 1, 2, 3 or 4, wherein the formed fuel
composition (110) contains from 5 wt-% to 15 wt-% of first jet fuel component

(107) obtained from a kerosene fraction (FATS PE, 105) derived from a mixture of sludge palm oil, palm fatty acid distillate and animal fat (FATS).

8. The method as claimed in claim 7, wherein the formed fuel composition (110) has a wear scar diameter of 0.78 mm or less, preferably 0.74 mm, as measured according to ASTM D5001.

9. The method as claimed in claim 1, 2, 3 or 4 wherein the formed fuel composition (110) contains from 5 wt-% to 15 wt-% of first jet fuel component (107) obtained from a kerosene fraction (ULO PE, 105) derived from used lubricant oil (ULO).

10. The method as claimed in claim 9, wherein the formed fuel composition (110) has a wear scar diameter of 0.76 mm or less, preferably 0.74 mm, as measured according to ASTM D5001.

11. The method as claimed in any one of the preceding claims, wherein the kerosene fraction (105) has a distillation range from 145°C to 300°C, preferably from 150°C to 270°C, more preferably from 170°C to 240°C.

12. The method as claimed in any one of the preceding claims, wherein the cracking comprises catalytic cracking such as thermofor catalytic cracking (TCC), or fluid catalytic cracking (FCC).

13. The method as claimed in any one of the preceding claims, wherein the hydrotreatment is performed at a temperature from 200°C to 400°C and at a pressure from 20 bar to 150 bar in the presence of a hydrotreatment catalyst.

14. The method as claimed in any one of the preceding claims, wherein the method comprises subjecting cracked feedstock (103) to fractionation by distillation.

15. The method as claimed in any one of the preceding claims, wherein the method further comprises subjecting the kerosene fraction (105) to isomerization.

16. The method as claimed in any one of the preceding claims, wherein the catalyst in the catalytic cracking comprises aluminium based catalyst, lanthanum based catalyst, titanium based catalyst, silicon based catalyst and/or zeolite based catalyst.

17. The method as claimed in any one of the preceding claims, wherein the temperature in the catalytic cracking is from 480°C to 580°C, preferably from 510°C to 550°C.

18. The method as claimed in any one of the preceding claims, wherein the method further comprises subjecting the feedstock to pretreatment before the

cracking (102) by at least one of adsorption, treatment with an ion exchange resin, washing, heat treatment, or distillation.

19. An aviation fuel composition (110) produced by the method of any one of the preceding claims, comprising

5 85-95 wt-% of further jet fuel component, preferably renewable jet fuel component (RJF); and

5-15 wt-% of first jet fuel component originating from one or more of:

- kerosene fraction (TOP PE, 105) derived from tall oil pitch (TOP),
- kerosene fraction (FATS PE, 105) derived from a mixture of sludge
- 10 palm oil, palm fatty acid distillate and animal fat (FATS), and
- kerosene fraction (ULO PE, 105) derived from used lubricant oil (ULO);

wherein the fuel composition (110) has a wear scar diameter of 0.78 mm or less, as measured with Bocle lubricity test method according to ASTM

15 D5001.

20. The aviation fuel composition (110) as claimed in claim 19, wherein the wear scar diameter of the fuel composition (110) is lower compared to the wear scar diameter of the first jet fuel component (107) of the fuel composition (110) and/or compared to the wear scar diameter of the further jet fuel component

20 (109), as measured according to ASTM D5001.

21. Use of a fuel component for decreasing the wear scar diameter of further jet fuel component, comprising blending further jet fuel component with a first jet fuel component (107) originating from at least one of:

- kerosene fraction (TOP PE, 105) derived from tall oil pitch (TOP),
- 25 - kerosene fraction (FATS PE, 105) derived from a mixture of sludge palm oil, palm fatty acid distillate and animal fat (FATS), and
- kerosene fraction (ULO PE, 105) derived from used lubricant oil (ULO).

22. The use according to claim 21, wherein a fuel blend is formed, containing from 85 to 95 wt-% of further jet fuel component.

30 23. The use according to claim 21, wherein the further jet fuel component is renewable jet fuel component (RJF).

24. The use according to claim 22, wherein the formed fuel blend contains from 5 to 15 wt-% of the first jet fuel component (107).

25. Use of the aviation fuel composition of claim 19 or 20 for decreasing

35 the wear scar diameter of fossil fuel, comprising blending fossil fuel with the fuel composition (110).