CLAIMS

1. A diesel fuel blend comprising a blend of a renewable fuel and a mineral middle distillate fuel in which the renewable fuel and mineral middle distillate fuel are present in a volume ratio of amounts by volume of from 10:90 to 90:10 and the diesel fuel blend contains 10-25 wt% n-paraffins in the C14-C20 range and an amount of isoparaffins in the C14-C20 range such that a weight ratio of a sum of wt% amounts of isoparaffins in the C14-C20 range to a sum of wt% amounts of n-paraffins in the C14-C20 range is less than 2.2.

2. The diesel fuel blend according to claim 1, wherein the renewable fuel and mineral middle distillate fuel have cloud points that differ by no more than 17 °C.

3. The diesel fuel blend according to any one of claims 1 to 2, wherein the weight ratio of the sum of wt% amounts of isoparaffins in the C14-C20 range to the sum of wt% amounts of n-paraffins in the C14-C20 range is from 1.1 to 2.2.

4. The diesel fuel blend according to any one of claims 1 to 3, wherein the diesel fuel blend has from 22 wt% to 55 wt% isoparaffins in the C14-C20 range.

5. The diesel fuel blend according to any one of claims 1 to 4, wherein the mineral middle distillate fuel is derived from sources selected from crude petroleum oil, shale oil, and combinations thereof.

6. The diesel fuel blend according to any one of claims 1 to 5, wherein the mineral middle distillate fuel is a diesel fuel.

7. The diesel fuel blend according to any one of claims 1 to 6, wherein the fresh feed for renewable fuel component is selected from plant oils/fats, animal fats/oils, fish fats/oils, fats contained in plants bred by means of gene manipulation, recycled fats of food industry and combinations thereof.

8. The diesel fuel blend according to any one of claims 1 to 7, wherein the renewable fuel component and mineral middle distillate fuel are present in a ratio of amounts by volume of from 20:80 to 80:20.

9. The diesel fuel blend according to any one of claims 1 to 8, comprising an isomerization ratio of the renewable fuel of at least 50%.

10. The diesel fuel blend according to claim 9, wherein the isomerization ratio of the renewable fuel is from 50 to 69%.

11. The diesel fuel blend according to claim 9, wherein the isomerization ratio of the renewable fuel is at least 60 %.

12. The diesel fuel blend according to claim 9, wherein the isomerization ratio of the renewable fuel is from 60 to 69 %.

13. The diesel fuel blend according to any one of claims 1 to 12 wherein the renewable fuel is a hydrotreated renewable middle distillate.

14. The diesel fuel blend according to claim 13, wherein the hydrotreated renewable middle distillate comprises at least one of hydrotreated vegetable oils, hydrotreated animal fats, hydrotreated fish fat, hydrotreated fish oil, hydrotreated algae oil, hydrotreated microbial oil, hydrotreated wood, hydrotreated plant based oils, hydrotreated recyclable waste and hydrotreated recyclable residue.

15. The diesel fuel blend according to claim 13 or 14 comprising a blend of the hydrotreated renewable middle distillate and the mineral middle distillate fuel in which

a sum volume of the hydrotreated renewable middle distillate and the mineral middle distillate components is at least 90 vol %, and

said blend further contains fatty acid methyl esters (FAME) up to 10 vol %.

16. The diesel fuel blend according to claim 15, wherein said blend contains FAME up to 7 vol %.

17. The diesel fuel blend according to claim 15 or 16, wherein the sum volume of the hydrotreated renewable middle distillate and the mineral middle distillate components is at least 93 vol %.

18. A method of making a diesel fuel blend having enhanced cold properties comprising:

(a) selecting a renewable fuel component and a mineral middle distillate fuel
having cloud points that differ by no more than 17 °C,

(b) blending the renewable fuel component and mineral middle distillate fuel in a ratio of amounts by volume of from 10:90 to 90:10 to form a diesel fuel blend,

wherein the diesel fuel blend contains 10-25 wt% n-paraffins in the C14-C20 range and an amount of isoparaffins in the C14-C20 range such that the ratio of the sum of wt% amounts of isoparaffins in the C14-C20 range to the sum of wt% amounts of n-paraffins in the C14-C20 range is less than 2.2; and the diesel fuel blend has a cloud point that is lower than the weighted mean of the cloud points of the mineral middle distillate and the renewable fuel.

19. The method according to claim 18, wherein the diesel fuel blend has a ratio of the sum of wt% amounts of isoparaffins in the C14-C20 range to the sum of wt% amounts of n-paraffins in the C14-C20 range that is from 1.1 to 2.2.

20. The method according to any of claims 18 or 19, wherein the diesel fuel blend has from 22 wt% to 55 wt% isoparaffins in the C14-C20 range.

21. The method according to any of claims 18 to 20, wherein the fresh feed of renewable fuel is selected from plant oils/fats, animal fats/oils, fish fats/oils, fats contained in plants bred by means of gene manipulation, recycled fats of food industry and combinations thereof.

22. The method according to any one of claims 18 to 21, comprising an isomerization ratio of the renewable fuel of at least 50%.

23. The method according to claim 22, wherein the isomerization ratio of the renewable fuel is from 50 to 69%.

24. The method according to claim 22, wherein the isomerization ratio of the renewable fuel is at least 60 %.

25. The method according to claim 22, wherein the isomerization ratio of the renewable fuel is from 60 to 69 %.

26. The method according to any one of claims 18 to 25 wherein the renewable fuel is a hydrotreated renewable middle distillate.

27. The method according to claim 26, wherein the hydrotreated renewable middle distillate comprises at least one of hydrotreated vegetable oils, hydrotreated animal fats, hydrotreated fish fat, hydrotreated fish oil, hydrotreated algae oil, hydrotreated microbial oil, hydrotreated wood, hydrotreated plant based oils, hydrotreated recyclable waste and hydrotreated recyclable residue.

28. The method according to any one of claims 18 to 27 wherein a sum volume of the hydrotreated renewable middle distillate fuel and the mineral middle distillate fuel components is at least 90 vol %, and said blend further contains fatty acid methyl esters (FAME) up to 10 vol % of the total blend fuel volume.

29. The method according to claim 28, wherein the sum volume of the hydrotreated renewable middle distillate fuel and the mineral middle distillate fuel components is at least 93 vol %.

30. The method according to claim 28 or 29, wherein said blend contains FAME up to 7 vol %.

31. A use of a renewable fuel for lowering the cloud point of a mineral middle distillate fuel comprising:

(a) determining the cloud point of a mineral middle distillate fuel;

(b) selecting a renewable fuel having the following properties:

(i) a cloud point that differs by no more than 17 °C from the cloud point of the mineral middle distillate fuel;

(ii) an amount of n-paraffins sufficient to provide a diesel fuel blend containing 10-25 wt% n-paraffins in the C14-C20 range when the renewable fuel is blended with the mineral middle distillate fuel; and

(iii) an amount of isoparaffins in the C14-C20 range sufficient to provide a diesel fuel blend having a weight ratio of a sum of wt% amounts of isoparaffins in the C14-C20 range to a sum of wt% amounts of n-paraffins in the C14-C20 range of from 1.1 to 2.2 when the renewable fuel is blended with the mineral middle distillate fuel; and

(c) blending the renewable fuel with the mineral middle distillate fuel in a volume ratio of amounts by volume of from 10:90 to 90:10 to form a diesel fuel blend having a cloud point that is lower than the cloud point of the mineral middle distillate fuel.

32. A use of a mineral middle distillate fuel for lowering the cloud point of a renewable fuel comprising:

(a) determining the cloud point of the renewable fuel;

(b) selecting a mineral middle distillate having the following properties:

(i) a cloud point that differs by no more than 17 °C from the cloud point of the renewable fuel;

(ii) an amount of n-paraffins sufficient to provide a diesel fuel blend containing 10-25 wt% n-paraffins in the C14-C20 range when the renewable fuel is blended with the mineral middle distillate fuel; and

(iii) an amount of isoparaffins in the C14-C20 range sufficient to provide a diesel fuel blend having a weight ratio of a sum of wt% amounts of isoparaffins in the C14-C20 range to a sum of wt% amounts of n-paraffins in the C14-C20 range of from 1.1 to 2.2 when the renewable fuel is blended with the mineral middle distillate fuel; and

(c) blending the renewable fuel with the mineral middle distillate fuel in a volume ratio of amounts by volume of from 10:90 to 90:10 to form a diesel fuel blend having a cloud point that is lower than the cloud point of the renewable fuel.

33. The use according to claim 31 or 32, wherein the renewable fuel is hydrotreated renewable middle distillate.

34. The use according to claim 33, wherein the hydrotreated renewable middle distillate comprises at least one of hydrotreated vegetable oils, hydrotreated animal fats, hydrotreated fish fat, hydrotreated fish oil, hydrotreated algae oil, hydrotreated microbial oil, hydrotreated wood, hydrotreated plant based oils, hydrotreated recyclable waste and hydrotreated recyclable residue.

35. The use according to claim 33 or 34, wherein a sum volume of the hydrotreated renewable middle distillate fuel and the mineral middle distillate fuel components is at least 90 vol %, and said blend further contains fatty acid methyl esters (FAME) up to 10 vol % of the total blend fuel volume.

36. The use according to claim 35, wherein the sum volume of the hydrotreated renewable middle distillate fuel and the mineral middle distillate fuel components is at least 93 vol %.

37. The use according to any one of claims 31 to 36, wherein said blend contains FAME up to 7 vol %.

38. The use according to any one of claims 31 to 37, comprising an isomerization ratio of the renewable fuel of at least 50%.

39. The use according to claim 38, wherein the isomerization ratio of the renewable fuel is from 50 to 69%.

40. The use according to claim 38, wherein the isomerization ratio of the renewable fuel is at least 60 %.

41. The use according to claim 38, wherein the isomerization ratio of the renewable fuel is from 60 to 69 %.