

WHAT IS CLAIMED IS:

1. A composition comprising
at least about 98 wt% C₇-C₁₂ n-paraffins, wherein at least about 10 wt% of
composition comprises n-decane, at least about 20 wt% of the composition
comprises n-dodecane, and at least about 75 wt% of composition comprises
even carbon number paraffins.
less about 0.1 wt% oxygenates;
less than about 0.1 wt % aromatics.
2. The composition of claim 1, wherein at least about 75 wt% of composition comprises even
carbon number n-paraffins.
3. The composition of claim 1 or claim 2, wherein the composition comprises at least about
99 wt% C₇-C₁₂ n-paraffins.
4. The composition of claim 1 or claim 2, wherein the composition comprises at least about
99.5 wt% C₇-C₁₂ n-paraffins.
5. The composition of claim 1 or claim 2, wherein the composition comprises less than about
0.01 wt% oxygenates.
6. The composition of claim 1 or claim 2, wherein at least about 20 wt% of the composition
comprises n-octane.
7. The composition of claim 1 or claim 2, wherein the weight ratio of C₁₂ paraffins to C₇
paraffins is about 150:1 or greater.
8. The composition of claim 1 or claim 2, wherein the weight ratio of C₁₂ paraffins to C₉
paraffins is about 10:1 or greater.
9. The composition of claim 1 or claim 2, the weight ratio of C₁₂ paraffins to C₁₁ paraffins is
from about 3.0:1 to about 1.2:1.
10. The composition of claim 1 or claim 2, wherein the weight ratio of C₁₀ paraffins to C₇
paraffins is about 150:1 or greater.

11. The composition of claim 1 or claim 2, wherein the weight ratio of C₁₀ paraffins to C₉ paraffins is about 10:1 or greater.
12. The composition of claim 1 or claim 2, the weight ratio of C₁₀ paraffins to C₁₁ paraffins is from about 2.0:1 to about 0.5:1.
13. The composition of claim 1 or claim 2, the weight ratio of C₁₂ paraffins to C₁₀ paraffins is from about 2.0:1 to about 0.5:1.
14. The composition of claim 1 or claim 2, wherein the composition is produced by hydrotreating a biorenewable feedstock comprising at least one of palm kernel oil, coconut oil, babassu oil, microbial oil, or algal oil.
15. The composition of claim 1 or claim 2, wherein the composition is suitable as a diesel fuel, a diesel fuel additive, a diesel fuel blendstock, a turbine fuel, a turbine fuel additive, a turbine fuel blendstock, an aviation fuel, an aviation fuel additive, an aviation fuel blendstock, a fuel for portable heaters, a fuel for portable generators, a charcoal lighter fluid, or a combination of any two or more thereof.
16. A charcoal heating material comprising
a charcoal comprising
 wood char;
 a binder;
 an exterior surface of the charcoal; and
 optionally a plurality of pores within the charcoal; and
a composition of claim 1 or claim 2 disposed on at least the exterior surface of the charcoal.
17. The charcoal heating material of claim 16, wherein the composition is further disposed within at least a portion of the plurality of pores.
18. The charcoal heating material of claim 16, wherein the charcoal further comprises one or more of sawdust and fines resulting from char production.
19. The charcoal heating material of claim 16, wherein the charcoal heating material is a charcoal briquette or a charcoal log.

20. A method of producing the composition of claim 1, the method comprising
contacting a feed stream comprising a biorenewable feedstock with a hydrotreatment
catalyst in a fixed bed hydrotreatment reactor to produce a hydrotreated
product; and
fractionating the hydrotreated product to produce the composition;
wherein
the biorenewable feedstock comprises at least one of palm kernel oil, coconut
oil, babassu oil, microbial oil, or algal oil;
the fixed bed hydrotreatment reactor
is at a temperature less than about 750 °F; and
is at a pressure from about 200 psig to about 4,000 psig.
21. The method of claim 20, wherein the liquid hourly space velocity of the biorenewable
feedstock through the fixed bed hydrotreatment reactor is from about 0.2 hr⁻¹ to about
10.0 hr⁻¹.
22. The method of claim 20, wherein the biorenewable feedstock further comprises animal
fats, animal oils, plant fats, plant oils, vegetable fats, vegetable oils, or greases.
23. The method of claim 20, wherein the biorenewable feedstock further comprises one or
more of animal fats, poultry oil, soybean oil, canola oil, carinata oil, rapeseed oils,
palm oil, jatropha oil, castor oil, camelina oil, seaweed oil, halophile oils, rendered
fats, restaurant greases, brown grease, yellow grease, waste industrial frying oils, fish
oils, tall oil, and tall oil fatty acids.
24. The method of claim 20, wherein the biorenewable feedstock further comprises one or
more of carinata oil, animal fats, restaurant greases, brown grease, yellow grease, and
waste industrial frying oils.
25. The method of claim 20, wherein the feed stream further comprises a diluent and the
volume ratio of diluent to biorenewable feedstock falls within the range from about
0.5:1 to about 20:1.
26. The method of claim 20, wherein the method comprises fractionating the hydrotreated
product to produce the composition and one or more C₁₄-C₂₂ n-paraffin fractions
comprising at least about 90 wt% C₁₄-C₂₂ n-paraffins.

27. The method of claim 26, wherein the one or more C₁₄-C₂₂ n-paraffin fractions comprises a fraction comprising at least about 90 wt% C₁₄-C₁₆ n-paraffins.
28. The method of claim 26, wherein the one or more C₁₄-C₂₂ n-paraffin fractions comprises a fraction comprising at least about 90 wt% C₁₄-C₁₈ n-paraffins
29. The method of claim 26, wherein the one or more C₁₄-C₂₂ n-paraffin fractions comprises a fraction comprising at least about 90 wt% C₁₆-C₁₈ n-paraffins
30. The method of claim 26, wherein the one or more C₁₄-C₂₂ n-paraffin fractions comprises a fraction comprising at least about 90 wt% C₁₈-C₂₀ n-paraffins
31. The method of claim 26, wherein the one or more C₁₄-C₂₂ n-paraffin fractions comprises a fraction comprising at least about 90 wt% n-tetradecane.
32. The method of claim 26 or claim 31, wherein the one or more C₁₄-C₂₂ n-paraffin fractions comprises a fraction comprising at least about 90 wt% n-hexadecane.
33. The method of claim 26 or claim 31, wherein the one or more C₁₄-C₂₂ n-paraffin fractions comprises a fraction comprising at least about 90 wt% n-octadecane.
34. The method of claim 26 or claim 31, wherein the one or more C₁₄-C₂₂ n-paraffin fractions comprises a fraction comprising at least about 90 wt% n-icosane.
35. The method of claim 26 or claim 31, wherein the one or more C₁₄-C₂₂ n-paraffin fractions comprises a fraction comprising at least about 90 wt% n-docosane.
36. The method of claim 20, wherein the method comprises fractionating the hydrotreated product to produce the composition and two or more C₁₄-C₂₂ n-paraffin fractions, wherein each C₁₄-C₂₂ n-paraffin fraction independently comprises at least about 90 wt% C₁₄-C₂₂ n-paraffins.
37. The method of claim 36, wherein the two or more C₁₄-C₂₂ n-paraffin fractions comprise a fraction comprising at least about 90 wt% n-tetradecane;
a fraction comprising at least about 90 wt% n-hexadecane; and
a fraction comprising at least about 90 wt% n-octadecane.

38. The method of any one of claims 20-30 and 36-37, wherein the one or more C₁₄-C₂₂ n-paraffin fractions is suitable as a phase change material.
39. A phase change material comprising a C₁₄-C₂₂ n-paraffin fraction of any one of claims 20-30 and 36-37.
40. A blended fuel comprising
a composition of claim 1 or claim 2; and
a petroleum-based fuel and/or a synthetic fuel.
41. The blended fuel of claim 40, wherein the blended fuel comprises about 1 wt% to about 80 wt% of the composition.
42. The blended fuel of claim 40, wherein the petroleum-based fuel and/or synthetic fuel may each independently be a diesel fuel, a turbine fuel, an aviation fuel, or a combination of any two or more thereof.
43. The blended fuel of claim 40, wherein the blended fuel comprises a cloud point less than about -10 °C.
44. The blended fuel of claim 40, wherein the blended fuel comprises a freeze point less than about -40 °C.
45. The blended fuel of claim 40, wherein the blended fuel is a diesel fuel, an aviation fuel, or a combination thereof.
46. The blended fuel of claim 40, wherein the blended fuel is suitable for use as a winter diesel and/or an arctic diesel fuel.
47. The blended fuel of claim 40, wherein the blended fuel is suitable for use as a jet fuel.
48. A method for producing a blended fuel, the method comprising combining a composition of claim 1 or claim 2 with a petroleum-based fuel and/or a synthetic fuel to produce the blended fuel.
49. The method of claim 48, wherein the blended fuel comprises about 1 wt% to about 80 wt% of the composition.

50. The method of claim 48, wherein the blended fuel comprises about 1 vol% to about 80 vol% of the composition.
51. The method of claim 48, wherein the petroleum-based fuel and/or synthetic fuel may each independently be a diesel fuel, a turbine fuel, an aviation fuel, or a combination of any two or more thereof.
52. The method of claim 48, wherein the blended fuel comprises a cloud point less than about -10 °C.
53. The method of claim 48, wherein the blended fuel comprises a freeze point less than about -40 °C.
54. The method of claim 48, wherein the blended fuel is a diesel fuel, an aviation fuel, or a combination thereof.
55. The method of claim 48, wherein the blended fuel is suitable for use as a winter diesel and/or an arctic diesel fuel.
56. The method of claim 48, wherein the blended fuel is suitable for use as a jet fuel.