Claims

1. A method for producing biohydrocarbons, the method comprising:

a step of providing an isomeric raw material obtained from a bio-renewable feedstock and containing at least 75 wt.-% iso-paraffins, and

a cracking step of thermally cracking the isomeric raw material to produce biohydrocarbons,

wherein the thermal cracking in the cracking step is conducted at a temperature (coil outlet temperature COT) of at most 825°C.

2. The method according to claim 1, wherein the isomeric raw material contains at least 80 wt.-%, more preferably at least 85 wt.-%, more preferably at least 90 wt.-% iso-paraffins.

3. The method according to claim 1 or 2, wherein the thermal cracking in the cracking step is conducted at a temperature (coil outlet temperature COT) of at most 820°C, preferably at most 810°C, preferably at most 800°C, at most 790°C, or at most 780°C.

4. The method according to any one of the preceding claims, wherein the thermal cracking in the cracking step is conducted at a temperature (coil outlet temperature COT) of at least 740°C, at least 750°C, at least 760°C, or at least 780°C.

5. The method for producing biohydrocarbons according to any one of the preceding claims, wherein the step of providing the isomeric raw material comprises a preparation step of preparing a hydrocarbon raw material from the bio-renewable feedstock, and optionally an isomerization step of subjecting at least straight chain hydrocarbons in the hydrocarbon raw material to an isomerization treatment to prepare the isomeric raw material.

6. The method according to claim 5, wherein the preparation step comprises a step of deoxygenating the bio-renewable feedstock,

wherein the step of deoxygenating the bio-renewable feedstock preferably is a hydrotreatment step, preferably a hydrodeoxygenation step.

7. The method according to claim 5 or 6, wherein the preparation step comprises a step of hydrocracking hydrocarbons in the hydrocarbon raw material.

8. The method according to any one of the preceding claims, wherein the isomeric raw material comprises at least one of a diesel range fraction and a naphtha range fraction and at least the diesel range fraction and/or the naphtha range fraction is subjected to thermal cracking.

9. The method according to any one of the preceding claims, wherein the isomeric raw material is selected from one of fractions A and B, wherein.

Fraction A comprises more than 50 wt.-%, preferably 75 wt.-% or more, more preferably 90 wt.-% or more of C10-C20 hydrocarbons, the content of even-numbered hydrocarbons in the C10-C20 range being preferably more than 50 wt.-%, and the fraction A containing 1.0 wt.-% or less, preferably 0.5 wt.-% or less, more preferably 0.2 wt.-% or less aromatics, and less than 2.0, preferably 1.0 wt.-% or less, more preferably 0.5 wt.-% or less of olefins, and

Fraction B comprises more than 50 wt.-%, preferably 75 wt.-% or more, more preferably 90 wt.-% or more of C5-C10 hydrocarbons, and the fraction B containing 1.0 wt.-% or less, preferably 0.5 wt.-% or less, more preferably 0.2 wt.-% or less aromatics, and less than 2.0, preferably 1.0 wt.-% or less, more preferably 0.5 wt.-% or less of olefins.

10. The method according to any one of the preceding claims, wherein the thermal cracking in the cracking step comprises steam cracking, and

wherein the steam cracking is preferably performed at a flow rate ratio between water and the isomeric raw material (H_2O flow rate [kg/h] / iso-HC flow rate [kg/h]) of 0.05 to 1.20, and

wherein the flow rate ratio between water and the isomeric raw material is preferably at least 0.10, further preferably at least 0.20, more preferably at least 0.25, or at least 0.30, and

wherein the flow rate ratio between water and the isomeric raw material is preferably at most 1.00, further preferably at most 0.80, more preferably at most 0.70, at most 0.60, or at most 0.50.

11. The method according to any one of the preceding claims, wherein the biohydrocarbons comprise at least 15 wt.-%, preferably at least 16 wt.-%, preferably at least 17 wt.-%, preferably at least 18 wt.-%, preferably at least 19 wt.-%, at least 20 wt.-%, or at least 21 wt.-% propene.

12. A method of producing a polymer, comprising producing biohydrocarbons according to the method of any one of claims 1 to 11, optionally purifying and/or chemically modifying at least a part of the biohydrocarbons to provide biomonomers, and polymerizing the biomonomers to obtain a polymer.

13. The method according to claim 12, wherein the polymer is a polyolefin, such as polypropylene and polyethylene, or a copolymer comprising propylene units and/or polyethylene units, such as polyethylene terephthalate, or a derivative thereof, and/or

wherein the method employs at least 50 wt.-%, preferably at least 80 wt.-%, more preferably at least 90 wt.-%, more preferably at least 95 wt.-%, more preferably more than 99 wt.-%, even more preferably 100 wt.-% of monomers derived from bio-renewable raw materials, relative to all monomers constituting the polymer.

14. The method according to claims 12 or 13, wherein the method further comprises forming an article, such as a film, beads, or a molded article from the polymer.

15. A mixture of biohydrocarbons obtainable by the method according to any one of claims 1 to 11.