Claims

1. A method for producing renewable component(s), the method comprising:

a provision step of providing an isomeric raw material originating from a renewable source, wherein the isomeric raw material contains at least 60 wt.-% iso-paraffins and the iso-paraffins of the isomeric raw material contain more than 30 wt.-% multi-branched iso-paraffins, wherein the amounts of iso-paraffins and multi-branched iso-paraffins are determined relative to the total paraffin content in the isomeric raw material,

a cracking step of thermally cracking the isomeric raw material to produce a biohydrocarbon mixture containing C4 olefins, and

a reaction step of reacting at least a part of the C4 olefins to produce the renewable component(s).

2. The method according to claim 1, wherein said renewable component(s) are drop-in gasoline component(s) having a high octane number.

3. The method according to claim 2, wherein the drop-in gasoline component(s) have a research octane number (RON) of at least 90.

~~3~~4. The method according to claim 1, wherein said renewable component(s) are bio-monomer(s) or bio-polymer(s), preferably at least one selected from the group consisting of butyl rubber, methyl methacrylate, polymethyl methacrylate, polyisobutylene, substituted phenol, and polybutene.

~~4~~5. The method according to any one of the preceding claims, wherein the mixture containing C4 olefins contains at least isobutene and the reaction step of reacting at least a part of the C4 olefins is a step of reacting at least a part of the isobutene to produce the renewable component(s).

~~5~~6. The method according to any one of the preceding claims, wherein the isomeric raw material contains at least 70 wt.-%, preferably at least 75 wt.-%, at least 80 wt.-%, at least 83 wt.-%, at least 85 wt.-%, at least 90 wt.-%, or at least 95 wt.-% iso-paraffins.

~~6. The method according to any one of the preceding claims, wherein the iso-paraffins comprise multi-branched iso-paraffins.~~

7. The method according to any one of the preceding claims, wherein the iso-paraffins contain more than ~~30~~ 40 wt.-% multi-branched iso-paraffins, ~~preferably more than 40 wt.-%, more~~ preferably more than 50 wt.-%, even more preferably more than 55 wt.-%, or more than 60 wt.-% multi-branched iso-paraffins.

8. The method according to any one of the preceding ~~items~~claims, wherein the isomeric raw material is a fraction comprising 50 wt.-% or more of C10-C20 hydrocarbons, preferably 75 wt.-% or more, more preferably 90 wt.-% or more of C10-C20 hydrocarbons.

9. The method according to any one of the preceding claims, wherein the provision step comprises an isomerization step of subjecting at least straight chain alkanes in a hydrocarbon material originating from the renewable source to an isomerization treatment to prepare the isomeric raw material; and/or

wherein the provision step comprises a deoxygenation step of deoxygenating a renewable feedstock originating from the renewable source and optionally a subsequent isomerization step to prepare the isomeric raw material.

10. The method according to any one of the preceding claims, wherein the renewable source comprises at least one of vegetable oil, vegetable fat, animal oil and animal fat and is subjected to hydrotreatment and optionally to isomerization to prepare the isomeric raw material.

11. The method according to any one of the preceding claims, wherein the thermal cracking in the cracking step comprises steam cracking and 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 1.10.

12. The method according to any one of the preceding claims, wherein the biohydrocarbon mixture comprises at least 8.0 wt.-% C4 olefins, relative to all organic components, preferably at least 10.0 wt.-%, preferably at least 12.0 wt.-%, at least 14.0 wt.-%, or at least 15.0 wt.-% C4 olefins, relative to all organic components.

13. The method according to any one of the preceding claims, wherein the reaction step comprises a step of subjecting at least one of the C4 olefins, preferably at least one of 1-butene, (Z)-2-butene and (E)-2-butene, to an alkylation reaction.

14. The method according to claim 13, wherein the alkylation reaction comprises a reaction between the at least one C4 olefin and a C4 or C5 alkane, preferably an isoalkane.

15. The method according to claim 13 or 14, wherein the alkylation reaction comprises a reaction between the at least one of C4 olefin and isobutane to produce isooctane.

16. The method according to any one of claims 13 to 15, wherein the reaction step further comprises a step of subjecting at least butadiene contained in the C4 olefins to selective hydrogenation to produce a butene ~~(monoene)~~ and employing the thus produced butene as the at least one C4-olefin alone or in admixture with one or more of the other C4 olefins ~~(excluding butadiene)~~.

17. The method according to any one of the preceding claims, wherein the reaction step comprises a step of subjecting at least a part of isobutene contained in the C4 olefins to ~~a~~ an etherification with a C1 to C3 alcohol to produce a C1 to C3 alkyl *tert*-butyl ether.

18. The method according to any one of the preceding claims, wherein the reaction step comprises a step of subjecting at least a part of isobutene contained in the C4 olefins to a etherification with methanol and/or ethanol to produce methyl *t*-butyl ether (MTBE) and/or ethyl *t*-butyl ether (ETBE).