CLAIMS

1 Process for treatment of feedstocks obtained from a renewable source and comprising the following stages.

a) Hydrotreatment of said feedstock in the presence of a fixed-bed catalyst that comprises a hydro-dehydrogenating function comprising at least one metal of group VIII and/or group VIB, taken by itself or in a mixture, and a substrate that is selected from the group that is formed by alumina, silica, silica-aluminas, magnesia, clays and mixtures of at least two of these minerals, whereby said hydrotreatment stage operates at a temperature of between 200 and 450°C, at a pressure of between 1 MPa and 10 MPa, at an hourly volumetric flow rate of between 0.1 h^{-1} and 10 h^{-1}, and in the presence of a total quantity of hydrogen mixed with the feedstock such that the hydrogen/feedstock ratio is between 70 and 1,000 Nm^3 of hydrogen/m^3 of feedstock,

b) Separation, starting from the effluent that is obtained from stage a), of hydrogen, gases, and at least one hydrocarbon base,

c) Hydroisomerization of at least a portion of said hydrocarbon base that is obtained from stage b) in the presence of a fixed-bed hydroisomerization catalyst, whereby said catalyst comprises at least one hydro-dehydrogenating metal that is selected from the group that is formed by the metals of group VIB and group VIII of the periodic table and a substrate that comprises at least one dealuminified Y zeolite that has an initial overall atomic ratio of silicon to aluminum of between 2.5 and 20, an initial extra-network aluminum atom fraction by weight that is greater than 10%, relative to the total mass of the aluminum that is present in the zeolite, an initial mesospore volume that is measured by nitrogen porosimetry that is greater than 0.07 $ml.g^{-1}$, and an initial crystalline parameter a0 of the elementary mesh that is between 24.38 Å and 24.30 Å, whereby said zeolite is modified by a') a basic treatment stage that consists in the mixing of said dealuminified Y zeolite with a basic aqueous solution, whereby said basic aqueous solution is a solution of basic compounds that are selected from among the alkaline bases and the strong non-alkaline bases, and at least one heat treatment stage c') that is implemented at a temperature of between 200 and 700°C, whereby said hydroisomerization stage is carried out at a temperature of between 150 and 500°C, at a

pressure of between 1 MPa and 10 MPa, at an hourly volumetric flow rate of between 0 1 and 10 h^{-1}, and in the presence of a total quantity of hydrogen mixed with the feedstock such that the hydrogen/feedstock ratio is between 70 and 1,000 Nm^3/m^3 of feedstock,

d) Separation, starting from the effluent that is obtained from stage c), of hydrogen, gases, and at least one gas oil base and one kerosene base

2 Process according to Claim 1, in which the metals of group VIII of said catalyst that is used in the hydroisomerization stage c) are selected from among the noble metals of group VIII and are selected from among platinum and palladium, taken by themselves or in a mixture

3 Process according to one of Claims 1 or 2, in which the content of noble metal of said catalyst that is used in the hydroisomerization stage c) is between 0 01 and 10% by weight relative to the total mass of said catalyst.

4. Process according to Claim 1, in which said catalyst that is used in the hydroisomerization stage c) comprises at least one metal of group VIB in combination with at least one non-noble metal of group VIII, whereby the metal content of group VIB encompasses, in oxide equivalent, between 5 and 40% by weight relative to the total mass of said catalyst, and the non-noble metal content of group VIII encompasses, in oxide equivalent, between 0 5 and 10% by weight relative to the total mass of said catalyst.

5 Process according to one of Claims 1 to 4, in which the initial dealuminified Y zeolite has, before being modified, an initial overall atomic ratio of silicon to aluminum of between 2.7 and 10.0.

6. Process according to one of Claims 1 to 5, in which the initial dealuminified Y zeolite, before being modified, has a fraction by weight of initial extra-network aluminum atoms that is greater than 30% by weight relative to the total mass of aluminum that is present in the zeolite

7 Process according to one of Claims 1 to 6, in which the alkaline bases that are used in the basic aqueous solution of stage a') are selected from among the alkaline carbonates and the alkaline hydroxides, and the non-alkaline bases are selected from among the quaternary ammonium compounds, taken by themselves or in a mixture.

8 Process according to Claim 7, in which the aqueous solution is a sodium carbonate or sodium hydroxide solution

9 Process according to one of Claims 1 to 8, in which in the case where the basic treatment stage a') consists of the mixing of said initial dealuminified Y zeolite with a basic aqueous solution of compounds that are selected from among the alkaline bases, the process for modification of said zeolite comprises a stage b') of at least one partial or total exchange of said alkaline cations that belong to the groups IA and IIA of the periodic table, introduced during stage a), by NH_4^+ cations.

10. Process according to one of Claims 1 to 8, in which in the case where the basic treatment stage a') consists in mixing said initial dealuminified Y zeolite with a basic aqueous solution of compounds that are selected from among the non-alkaline bases that are selected from among the quaternary ammonium compounds, taken by themselves or in a mixture, the process for modification of said initial dealuminified Y zeolite does not comprise stage b') of at least one intermediate partial or total exchange.

11 Process according to one of Claims 1 to 10, in which the feedstocks that are obtained from renewable sources are selected from among the oils and fats of plant or animal origin, or mixtures of such feedstocks, containing triglycerides and/or free fatty acids and/or esters and said vegetable oils being able to be raw or refined, totally or partially, and obtained from the following plants: canola, sunflower, soybean, palm, palm-kernel, olive, coconut, jatropha, and the animal fats being selected from among lard or fats composed of waste from the food industry or obtained from catering industries.

CLAIMS

1. Process for treatment of feedstocks obtained from a renewable source and comprising the following stages:

a) Hydrotreatment of said feedstock in the presence of a fixed-bed catalyst that comprises a hydro-dehydrogenating function comprising at least one metal of groups 8-10 and/or group 6, taken by itself or in a mixture, and a substrate that is selected from the group that is formed by alumina, silica, silica-aluminas, magnesia, clays and mixtures of at least two of these minerals, whereby said hydrotreatment stage operates at a temperature of between 200 and 450°C, at a pressure of between 1 MPa and 10 MPa, at an hourly volumetric space velocity of between 0.1 h^{-1} and 10 h^{-1}, and in the presence of a total quantity of hydrogen mixed with the feedstock such that the hydrogen/feedstock ratio is between 70 and 1,000 Nm^3 of hydrogen/m^3 of feedstock,

b) Separation, starting from the effluent that is obtained from stage a), of hydrogen, gases, and at least one hydrocarbon base,

c) Hydroisomerization of at least a portion of said hydrocarbon base that is obtained from stage b) in the presence of a fixed-bed hydroisomerization catalyst, whereby said catalyst comprises at least one hydro-dehydrogenating metal that is selected from the group that is formed by the metals of group 6 and groups 8-10 of the periodic table and a substrate that comprises at least one dealuminified Y zeolite that has an initial overall atomic ratio of silicon to aluminum of between 2.5 and 20, an initial extra-network aluminum atom fraction by weight that is greater than 10%, relative to the total mass of the aluminum that is present in the zeolite, an initial mesopore volume that is measured by nitrogen porosimetry that is greater than 0.07 $ml.g^{-1}$, and an initial crystalline parameter a0 of the elementary mesh that is between 24.38 Å and 24.30 Å, whereby said zeolite is modified by a') a basic treatment stage that consists in the mixing of said dealuminified Y zeolite with a basic aqueous solution, whereby said basic aqueous solution is a solution of basic compounds that are selected from among the alkaline bases and the strong non-alkaline bases, and at least one heat treatment stage c') that is implemented at a temperature of between 200 and 700°C, whereby said hydroisomerization stage is carried out at a temperature of between 150 and 500°C, at a

pressure of between 1 MPa and 10 MPa, at an hourly volumetric space velocity of between 0.1 and 10 h^{-1}, and in the presence of a total quantity of hydrogen mixed with the feedstock such that the hydrogen/feedstock ratio is between 70 and 1,000 Nm^3/m^3 of feedstock,

d) Separation, starting from the effluent that is obtained from stage c), of hydrogen, gases, and at least one gas oil base and one kerosene base.

2. Process according to Claim 1, in which the metals of groups 8-10 of said catalyst that is used in the hydroisomerization stage c) are selected from among the noble metals of groups 8-10 and are selected from among platinum and palladium, taken by themselves or in a mixture.

3. Process according to one of Claims 1 or 2, in which the content of noble metal of said catalyst that is used in the hydroisomerization stage c) is between 0.01 and 10% by weight relative to the total mass of said catalyst.

4. Process according to Claim 1, in which said catalyst that is used in the hydroisomerization stage c) comprises at least one metal of group 6 in combination with at least one non-noble metal of groups 8-10, whereby the metal content of group 6 encompasses, in oxide equivalent, between 5 and 40% by weight relative to the total mass of said catalyst, and the non-noble metal content of groups 8-10 encompasses, in oxide equivalent, between 0.5 and 10% by weight relative to the total mass of said catalyst.

5. Process according to one of Claims 1 to 4, in which the initial dealuminified Y zeolite has, before being modified, an initial overall atomic ratio of silicon to aluminum of between 2.7 and 10.0.

6. Process according to one of Claims 1 to 5, in which the initial dealuminified Y zeolite, before being modified, has a fraction by weight of initial extra-network aluminum atoms that is greater than 30% by weight relative to the total mass of aluminum that is present in the zeolite.

7. Process according to one of Claims 1 to 6, in which the alkaline bases that are used in the basic aqueous solution of stage a') are selected from among the alkaline carbonates and the alkaline hydroxides, and the non-alkaline bases are selected from among the quaternary ammonium compounds, taken by themselves or in a mixture.

8. Process according to Claim 7, in which the aqueous solution is a sodium carbonate or sodium hydroxide solution.

9. Process according to one of Claims 1 to 8, in which in the case where the basic treatment stage a') consists of the mixing of said initial dealuminified Y zeolite with a basic aqueous solution of compounds that are selected from among the alkaline bases, the process for modification of said zeolite comprises a stage b') of at least one partial or total exchange of said alkaline cations that belong to the groups 1 and 2 of the periodic table, introduced during stage a), by NH_4^+ cations.

10. Process according to one of Claims 1 to 8, in which in the case where the basic treatment stage a') consists in mixing said initial dealuminified Y zeolite with a basic aqueous solution of compounds that are selected from among the non-alkaline bases that are selected from among the quaternary ammonium compounds, taken by themselves or in a mixture, the process for modification of said initial dealuminified Y zeolite does not comprise stage b') of at least one intermediate partial or total exchange.

11. Process according to one of Claims 1 to 10, in which the feedstocks that are obtained from renewable sources are selected from among the oils and fats of plant or animal origin, or mixtures of such feedstocks, containing triglycerides and/or free fatty acids and/or esters and said vegetable oils being able to be raw or refined, totally or partially, and obtained from the following plants: canola, sunflower, soybean, palm, palm-kernel, olive, coconut, jatropha, and the animal fats being selected from among lard or fats composed of waste from the food industry or obtained from catering industries.