

C L A I M S

1. A process for producing paraffinic hydrocarbons from a feedstock comprising triglycerides, diglycerides, monoglycerides and/or fatty acids, the process comprising the following steps:

- 5 (a) hydrodeoxygenating the triglycerides, diglycerides, monoglycerides and/or fatty acids in the feedstock by contacting hydrogen and the feedstock with a hydrogenation catalyst at a temperature in the range of from 250 to 380 °C and a total pressure in the range of
10 from 20 to 160 bar (absolute), to obtain an effluent comprising paraffinic hydrocarbons and water;
- (b) separating a liquid stream rich in paraffinic hydrocarbons from the effluent obtained in step (a); and
- 15 (c) hydroisomerising the paraffinic hydrocarbons in the liquid stream rich in paraffinic hydrocarbons by contacting hydrogen and the liquid stream with a hydroprocessing catalyst comprising sulphided Ni and sulphided W or Mo as hydrogenation components on a carrier comprising amorphous silica-alumina and/or a
20 zeolitic compound at a temperature in the range of from 280 to 450 °C and a total pressure in the range of from 20 to 160 bar (absolute).

2. A process according to claim 1, wherein in step (b) a gaseous stream depleted in water, a liquid water-rich
25 stream and the liquid stream rich in paraffinic hydrocarbons are separated from the effluent obtained in step (a) in a low temperature, high pressure separator.

3. A process according to claim 2, wherein in step (b) the effluent is first cooled to a temperature in the
30 range of from 10 to 150 °C and the cooled effluent is

then separated, in a separation vessel, at a pressure that is in the range of from 0.5 to 10 bar lower than the total pressure in step (a), into the gaseous stream depleted in water, the liquid water-rich stream and the liquid stream rich in paraffinic hydrocarbons.

4. A process according to claim 1, wherein in step (b) a gaseous stream rich in water and the liquid stream rich in paraffinic hydrocarbons are separated from the effluent obtained in step (a) in a high temperature, high pressure separator.

5. A process according to claim 4, wherein water is removed from the gaseous stream rich in water, preferably in a low temperature, high pressure separator, to obtain a gaseous stream depleted in water.

6. A process according to any one of claims 2, 3 and 5, wherein the gaseous stream depleted in water is recycled to step (a) and/or step (c).

7. A process according to claim 6, wherein at least part of the gaseous stream depleted in water is purified in a purification unit before being recycled to step (a) and/or step (c), preferably in a pressure swing absorber or an amine scrubber.

8. A process according to claim 7, wherein the purification unit is a pressure swing absorber and part of the gaseous stream depleted in water is bypassing the pressure swing absorber.

9. A process according to any one of the preceding claims, wherein the hydrogenation catalyst of step (a) is a sulphided catalyst.

10. A process according to claim 9, wherein a sulphur source is supplied to the hydrogenation catalyst and the effluent of step (a) further comprises hydrogen sulphide.

11. A process according to any one of the preceding claims, wherein the feedstock comprises vegetable oil, animal fat, or a combination of one or more thereof, preferably is vegetable oil and/or animal fat.

5 12. A process according to claim 11, wherein the feedstock comprises one or more vegetable oils, preferably rape seed oil and/or palm oil, more preferably is palm oil.

10 13. A process according to any one of the preceding claims, wherein the effluent of step (c) is separated into a gaseous effluent and a liquid effluent comprising paraffinic hydrocarbons boiling in the diesel range.

CLAIMS:

1. A process for producing paraffinic hydrocarbons from a feedstock comprising triglycerides, diglycerides, monoglycerides and/or fatty acids, the process comprising the following steps:

(a) hydrodeoxygenating the triglycerides, diglycerides, monoglycerides and/or fatty acids in the feedstock by contacting hydrogen and the feedstock with a sulphided hydrogenation catalyst at a temperature in the range of from 250 to 380 °C and a total pressure in the range of from 20 to 160 bar (absolute), wherein the sulphided hydrogenation catalyst is kept in a sulphided form by supplying a sulphur source to the catalyst during operation of the process, to obtain an effluent comprising paraffinic hydrocarbons, hydrogen sulphide and water;

(b) separating a liquid stream rich in paraffinic hydrocarbons from the effluent obtained in step (a), without completely removing hydrogen sulphide from the liquid stream before it is contacted with the hydro-isomerisation catalyst in step (c), to obtain a liquid stream rich in paraffinic hydrocarbons and comprising dissolved hydrogen sulphide; and

(c) hydroisomerising the paraffinic hydrocarbons in the liquid stream rich in paraffinic hydrocarbons and comprising dissolved hydrogen sulphide by contacting hydrogen and the liquid stream with a hydroprocessing catalyst comprising sulphided Ni and sulphided W or Mo as hydrogenation components on a carrier comprising amorphous silica-alumina and/or a zeolitic compound at a temperature in the range of from 280 to 450 °C and a total pressure in the range of from 20 to 160 bar (absolute).

2. The process according to claim 1, wherein in step (b) a gaseous stream depleted in water, a liquid water-rich stream and the liquid stream rich in paraffinic hydrocarbons and comprising dissolved hydrogen sulphide are separated from the effluent obtained in step (a) in a low temperature, high pressure separator.

3. The process according to claim 2, wherein in step (b) the effluent is first cooled to a temperature in the range of from 10 to 150 °C and the cooled effluent is then separated, in a separation vessel, at a pressure that is in the range of from 0.5 to 10 bar lower than the total pressure in step (a), into the gaseous stream depleted in water, the liquid water-rich stream and the liquid stream rich in paraffinic hydrocarbons and comprising dissolved hydrogen sulphide.

4. The process according to claim 1, wherein in step (b) a gaseous stream rich in water and the liquid stream rich in paraffinic hydrocarbons and comprising dissolved hydrogen sulphide are separated from the effluent obtained in step (a) in a high temperature, high pressure separator.

5. The process according to claim 4, wherein water is removed from the gaseous stream rich in water, preferably in a low temperature, high pressure separator, to obtain a gaseous stream depleted in water.

6. The process according to any one of claims 2, 3 and 5, wherein the gaseous stream depleted in water is recycled to step (a) and/or step (c).

7. The process according to claim 6, wherein at least part of the gaseous stream depleted in water is purified in a purification unit before being recycled to step (a) and/or step (c), preferably in a pressure swing absorber or an amine scrubber.

8. The process according to claim 7, wherein the purification unit is a pressure swing absorber and part of the gaseous stream depleted in water is bypassing the pressure swing absorber.

9. The process according to any one of the preceding claims, wherein the feedstock comprises vegetable oil, animal fat, fish oil, or a combination of one or more thereof, preferably is vegetable oil, animal fat, and/or fish oil.

10. The process according to claim 9, wherein the feedstock comprises one or more vegetable oils, preferably rape seed oil and/or palm oil, more preferably is palm oil.

11. The process according to any one of the preceding claims, wherein the effluent of step (c) is separated into a gaseous effluent and a liquid effluent comprising paraffinic hydrocarbons boiling in the diesel range.