CLAIMS

1. A method for producing hydrocarbon solvents having a sulfur content of less than 10 ppm, aromatic hydrocarbon content of less than 500 ppm, an initial boiling point higher than or equal to 300 °C and final boiling point lower than or equal to 500 °C, as determined according to the standard ASTM D86, for a fraction interval of a maximum of 100 °C, and pour point lower than -25 °C according to the standard ASTM D5950, comprising the following steps of:

- dewaxing (2) of a hydrocarbon fraction having initial boiling point higher than 300 °C derived from the distillation of a gas oil fraction obtained by any crude oil refining process, and recovery of all or part of the dewaxed effluent (14), the step of dewaxing comprising at least one first section for mild cracking in the presence of a silicalite based catalyst, having silica / alumina ratio greater than 130, comprising 0% to 10% by weight of at least one metal from group VIII, and possibly 0% to 10% by weight of a metal from Group VI ;

- hydrodearomatisation (3) of all or part of the dewaxed effluent, in the presence of a catalyst comprising nickel on an alumina base, at a pressure ranging from 60 to 200 bar and a temperature ranging from 80 °C to 250 °C, and said dewaxed effluent being possibly previously desulphurised in advance if its sulfur content is greater than 15 ppm,

- recovery of the dewaxed fraction, possibly desulphurised, and dearomatised,

- distillation (DA1) in fractions of the said dewaxed and dearomatised fraction,

- and finally recovery of at least one 300 °C+ fraction having pour point lower than -25 °C that is usable as solvent, this fraction having a distillation interval lower than 100 °C.

2. A method according to claim 1 characterised in that the gas oil fraction obtained by any refining process, is selected from among the atmospheric distillation gas oils, vacuum distillation gas oils, hydrocracked gas oils, gas oils from catalytic cracking, gas oils from visbreaking, coking gas oils, deasphalted gas oils, gas oils with a sulfur content greater than 15 ppm being necessarily desulphurised by hydrotreating and / or hydrocracking.

3. A method according to one of claims 1 to 2, characterised in that the hydrocarbon fraction having a boiling point higher than or equal to 300 °C is obtained by separation (DF) of the gas oil fraction into two fractions, one light fraction (Cl) having the final boiling point below 300 °C and at least one heavy fraction (CL) having the initial boiling point higher than or equal to 300 °C.

4. A method according to one of claims 1 to 3, characterised in that the step of dewaxing comprises ~~at least one first section for mild cracking in the presence of a silicalite based catalyst, having silica / alumina ratio greater than 130, comprising 0% to 10% by weight of at least one metal from group VIII, and possibly 0% to 10% by weight of a metal from Group VI, and preferably~~ a second section for hydrogenation of olefins in the presence of a silica based catalyst,

alumina and / or silica / alumina comprising from 0.1% to 10% by weight of a metal from Group VIII and from 0.1% to 20% of a metal from group VI.

5. A method according to claim 4 characterised in that the step of dewaxing comprises at least two sections for mild cracking (S1) preferably alternating with two sections for hydrogenation (S2) of the olefins.

6. A method according to claims 4 and 5 characterised in that the dewaxing catalyst is selected from among silicalites having a silica / alumina ratio greater than 200, these silicalites being able to support nickel alone or a nickel / tungsten combination and in that the catalyst for hydrogenation of olefins is an alumina supporting a metal combination selected from among the cobalt / molybdenum, nickel / tungsten, cobalt / tungsten and nickel / molybdenum combinations.

7. A method according to one of claims 4 to 6 characterised in that the step of dewaxing is carried out under hydrogen pressure, at a temperature ranging from 150 °C to 450 °C under a total pressure ranging from 10 to 400 bar, preferably at a temperature ranging from 280 °C to 380 °C and a pressure ranging from 20 to 200 bar.

8. A method according to one of the preceding claims characterised in that the dewaxed effluent sent to ~~the~~ an additional separation step (DA2) before reaching the step of hydrodearomatisation, is separated into at least two effluents, one hydrocarbon fraction of C1 to C4 (21), and at least one dewaxed fraction (15) of which at least one part distills above 300 °C and has a pour point lower than or equal to -25 °C.

9. A method according to one of the preceding claims characterised in that the dewaxed effluent may be separated into two dewaxed fractions, three dewaxed fractions or four dewaxed fractions:

- one hydrocarbon fraction of C1 to C4 (21) and one hydrocarbon fraction of more than 5 carbon atoms (or C5+) (15) ;
- or one hydrocarbon fraction of C1 to C4 (21) and two hydrocarbon fractions, one of C5 distilling at 150 °C (or C5-150) (22) and the other distilling above 150 °C (or 150 °C+) (15) ;
- or one hydrocarbon fraction of C1 to C4 (21) and three hydrocarbon fractions, the first one of C5 distilling at 150 °C (or C5-150) (22), the second distilling from 150 °C to 300 °C (or 150-300) (23) and the third distilling above 300 °C (or 300 °C+) (15).

10. A method according to one of the preceding claims characterised in that the dewaxed fraction with the highest initial distillation boiling point derived from the dewaxed effluent is sent to the step of hydrodearomatisation, the latter comprising of one or more hydrodearomatisation sections.

11. A method according to one of claims 3 to 10 characterised in that the light fraction (Cl) resulting from the separation of the gas oil fraction into two fractions is mixed (24) in whole or part with the dewaxed fraction (CDP) sent to the step of hydrodearomatisation.

12. A method according to one of claims 3 to 10, characterised in that at least a part of the the heavy fraction (CL) resulting from the separation of the gas oil fraction into at least two fractions is sent to the step of dewaxing, the other part is mixed (20) with the dewaxed fraction recovered upon being output from the step of separating the dewaxed effluent and sent to the step of hydrodearomatisation.

13. A method according to one of the preceding claims, characterised in that the 300 °C+ fraction with pour point lower than -25 °C recovered after the last step of atmospheric distillation is recovered in its entirety or partially, by recycling (28) at least a part in the dewaxed fraction sent to the step of hydrodearomatisation.

14. A method according to one of claims 1 to 7 characterised in that the steps of dewaxing and hydrodearomatisation are carried out at the same pressure ranging from 60 to 200 bar in a hydrogen atmosphere, at a temperature ranging from 150 °C to 450 °C, preferably ranging from 280 °C to 380 °C for the dewaxing step and at a temperature ranging from 80 °C to 250 °C for the hydrodearomatisation step, the temperature of the dewaxed effluent being adjusted before the step of hydrodearomatisation by injection (33) of at least one liquid or gaseous compound with a temperature lower by at least 50 °C than that of the dewaxed effluent.

15. A method according to claim 14 characterised in that the liquid or gaseous compound is selected from among hydrogen, the light fraction (Cl) resulting from a boiling point below 300 °C and the 300 °C+ fraction with pour point lower than -25 °C recovered after distillation of the dewaxed effluents, possibly desulphurised and dearomatised.

16. A method according to one of claims 1 to 15, characterised in that the steps of hydrodearomatisation and dewaxing are conducted in the same reactor, the catalyst beds being separated by a cavity (30) allowing for the mixing of the dewaxed efffluent with the liquid or gaseous compounds, hydrogen or the recycle of the Cl (24) and / or 300 °C+ fractions with pour point lower than -25 °C (28) recovered after the atmospheric distillation tower (DA1).

17. A system for implementing the method according to one of claims 1 to 16 comprising the following:

- a separation unit (DF) in communication with a dewaxing reactor (R1) ;
- a dewaxing reactor (R1) including at least two catalyst beds for the section for mild cracking (S1) and for the section for hydrogenation of olefins (S2), the said dewaxing reactor being fed by a hydrocarbon fraction having a boiling point higher than 300 °C (or 300 °C+) derived from the separation unit (DF) in two 150 °C -300 °C (or 150-300) and 300 °C+ fractions by distillation of a gas oil fraction derived from any process for refining crude oil ; the section for

mild cracking comprising a silicalite based catalyst, having silica / alumina ratio greater than 130, comprising 0% to 10% by weight of at least one metal from group VIII, and possibly 0% to 10% by weight of a metal from Group VI ;

- at least one hydrodearomatisation reactor (R2) in communication, on the one hand, with the dewaxing reactor (R1) and on the other hand, with at least one atmospheric distillation tower (DA1),

- at least one atmospheric distillation tower (DA1).

18. A system according to claim 17 characterised in that it comprises a separation unit for separating into two or more fractions (DA2) disposed on the outlet pipe line for the dewaxed effluents derived from the dewaxing reactor (R1).

19. A (300 °C+) fraction having pour point lower than - 25 °C, initial boiling point higher than 300 °C and final boiling point lower than or equal to 500 °C, with fraction interval lower than 100°C, having a sulfur content of less than 10 ppm and with content of aromatic hydrocarbons less than 500 ppm, obtained by the method according one of claims 1 to 16, characterised in that it contains more than ~~30~~40% by weight of naphthenic compounds, and less than 10% by weight of normal paraffins, and the mono naphthenic compounds represent more than 20% by weight of the naphthenic compounds.

20. A fraction according to claim 19, containing less than 5% by weight of normal paraffins.

21. A fraction according to claim 19 or 20 characterised in that it has a pour point that is lower than -30 °C, a kinematic viscosity at 40 °C less than or equal to 15 mm2/g, preferably ranging from 5 mm2/g to 10 mm2/g and an aniline point below 120 °C.

22. A fraction according to one of claims 19 to 21, characterised in it comprises less than 35% by weight of hydrocarbons having a chain length of more than 22 carbon atoms, and more than 65% by weight of hydrocarbons having a chain length of less than 22 carbon atoms.

23. Use of the fraction according to one of claims 19 to 22, as a solvent in applications related to phytosanitary products, inks and sealant putty or even as a fluid for metal working.