Claims

1. A method for producing high-quality feedstock for a steam cracking process, said method comprising the following steps:

i) providing an aromatics and naphthenes containing hydrocarbon feedstock;

ii) contacting said hydrocarbon feedstock with a solvent at a dosage effective to remove aromatics and naphthenes from said feedstock forming a refined feedstock and one or more aromatics and naphthenes containing streams;

iii) processing said refined feedstock in a steam cracking process;

wherein step ii) comprises two sub steps, namely a step iia) comprising separation of aromatics and naphthenes from said hydrocarbon feedstock of step i) thereby forming a naphthenes containing intermediate stream and an aromatics containing stream, and a step iib) comprising separation of naphthenes from said intermediate stream thereby forming a naphthenes containing stream and said refined feedstock;

wherein the concentration of naphthenes in said refined feedstock is in a range of 0-25 %wt; and

wherein said hydrocarbon feedstock has a boiling range in a range of 300-550 °C.

2. The method according to claim 1, wherein step ii) is carried out at within a temperature range of 85 to 125 °C.

3. The method according to claim 1, wherein step ii) comprises simultaneously removal of aromatics and naphthenes from said feedstock forming a refined feedstock.

4. The method according to claim 2, wherein step ii) comprises simultaneously removal of aromatics and naphthenes from said feedstock forming a refined feedstock.

5. The method according to any one of the claims 3-4, wherein step ii) is carried out at within a temperature range of 85 to 125 °C.

6. The method according to claim 1, wherein said hydrocarbon feedstock originates from a naphthenic crude oil.

7. The method according to claims 3 and 6, wherein step ii) is carried out at within a temperature range of 65 to 95 °C.

8. The method according to claims 1-2 and 4, wherein step iia) comprises a temperature range of 50 to 125 °C, preferably within a range of 60 to 85 °C.

9. The method according to claims 1-2 and 6, wherein step iia) comprises a temperature range of 10 to 95 °C, preferably 20 to 65 °C, and a solvent dosage within a range of 50 to 300 percent, preferably 75 to 200 percent.

10. The method according to any one of the preceding claims, wherein step iii) further comprises applying a step of removing traces of solvent from said refined feedstock before processing said refined feedstock in a steam cracking process.

11. The method according to any one of the preceding claims, further comprising recovering solvent from said one or more aromatics and naphthenes containing streams forming a recovered solvent stream and one or more streams rich in aromatics and naphthenes.

12. The method according to claim 11, wherein said one or more streams rich in aromatics and naphthenes are further processed in refinery process units, such as hydrocracking processes, carbon black production processes, or direct blending into fuels or as a quench oil material in liquid steam crackers.

13. The method according to any one of the preceding claims, wherein said solvent is chosen from the group of n-methyl-2-pyrrolidone, furfural and phenol and mixtures thereof, including the presence of cosolvents.

14. The method according to any one of the preceding claims, wherein the concentration of aromatics in said refined feedstock to be processed in a steam cracking

process is in a range of 0-5 %wt, preferably 0-2 %wt, on basis of the weight of said refined feedstock.

15. The method according to any one of the preceding claims, wherein the concentration of naphthenes in said refined feedstock to be processed in a steam cracking process is in a range of 0-25 %wt, preferably 0-10 %wt, on basis of the weight of said refined feedstock.