CLAIMS

1. A method for processing liquefied waste plastic (LWP), the method comprising the following steps:

   a) providing an LWP stream comprising diolefins and naphtha,

   b) subjecting the LWP stream to a steam stripper to obtain a distillate comprising diolefins and naphtha, and a distillate bottom,

   c) subjecting the distillate to hydrotreatment reaction conditions comprising temperature 120-210 °C and pressure 1-50 barg in the presence of hydrogen and one or more hydrotreatment catalysts to produce diolefin depleted distillate and

   d) separating the diolefin depleted distillate to
      - one or more fractions comprising
        - at least a naphtha fraction boiling below 180 °C at atmospheric pressure,
        - an optional middle fraction boiling between 180 °C and 360 °C at atmospheric pressure and
      - a bottom fraction.

2. The method according to claim 1 comprising

   e) subjecting the naphtha fraction of step d) to hydroprocessing reaction conditions comprising temperature 280-350 °C and pressure 20-100 barg, preferably 20-50 barg in the presence of hydrogen and one or more hydroprocessing catalysts to produce hydrogenated naphtha.

3. The method according to claim 1 wherein the hydrotreatment reaction conditions comprise LHSV 1-5 h^{-1}, preferably 4-4.5 h^{-1}.

4. The method according to any one of claims 1-3 wherein the one or more hydrotreatment catalysts are selected from CoMo and NiMo.

5. The method according to any one of claims 2-4 wherein the hydroprocessing reaction conditions comprise LHSV 1–5 h^{-1}, and hydrogen/hydrocarbon ratio 100–900 Nm^3/m^3.

6. The method according to any one of claims 2-5 wherein the one or more hydroprocessing catalysts are selected from CoMo and NiMo.

7. The method according to any one of claims 2-6 comprising feeding the hydrogenated naphtha to a steam cracker.

8. The method according to any one of claims 1-7 comprising admixing the bottom fraction of step d) and crude oil to form an admixture.

9. The method according to claim 8 comprising feeding the admixture to a crude oil distillation unit.

10. The method according to any one of claims 1-9 wherein the one or more fractions of step d) comprise a middle fraction boiling between 180 °C and 360 °C at atmospheric pressure.

11. The method according to claim 10 comprising feeding the middle fraction to a crude oil distillation unit.

12. The method according to any one of claims 1-11 wherein the LWP is selected from waste plastic pyrolysis oil and hydrothermally liquefied waste plastic oil or mixtures thereof.

13. The method according to any one of claims 1-12 wherein the LWP comprises waste plastic pyrolysis oil.

14. The method according to claim 2 comprising feeding the hydrogenated naphtha produced to a steam cracker.

15. The method according to claim 1 comprising feeding a mixture of crude oil and the bottom fraction of step d) to oil refinery.

16. The method according to claim 1 comprising feeding a mixture of crude oil and the middle fraction of step d) to oil refinery.

17. The method according to claim 1 comprising feeding a mixture of crude oil and distillation bottom of step b) to oil refinery.