CLAIMS

1. A process for purifying a feedstock, the process comprising the steps of:

a) providing a feedstock comprising lipids of plant, animal and/or microbial origin,

b) treating the feedstock with a mineral acid at elevated temperature,

c) removing or neutralizing the mineral acid after treatment in step b) to obtain an acid treated feedstock,

d) subjecting the acid treated feedstock to a bleaching step including a filtration step to obtain a purified feedstock, wherein the bleaching step including a filtration step comprises adding a bleaching acid and an adsorbent to the acid treated feedstock, wherein the bleaching acid is a carboxylic acid, such as citric acid, phosphoric acid (H_3PO_4) or any combination thereof.

2. The process according to claim 1, wherein the mineral acid is an aqueous solution of the mineral acid.

3. The process according to claim 1 , wherein the mineral acid is sulphuric acid (H_2SO_4), hydrochloric acid (HCl), nitric acid (HNO_3), phosphoric acid (H_3PO_4), boric acid (H_3BO_3), hydrofluoric acid (HF), hydrobromic acid (HBr), perchloric acid ($HClO_4$), hydroiodic acid (HI) or any combination or mixture thereof.

4. The process according to claim 1, wherein the mineral acid is sulphuric acid (H_2SO_4), hydrochloric acid (HCl), nitric acid (HNO_3), hydrobromic acid (HBr), perchloric acid ($HClO_4$), hydroiodic acid (HI) or any combination or mixture thereof.

5. The process according to claim 1, wherein the amount of mineral acid in step b) is up to about 10 wt.%, such as from about 0.1 wt.% to about 10 wt.%, specifically from about 1 wt.% to about 8 wt.%; based on the weight of the feedstock.

6. The process according to claim 1, wherein the elevated temperature in step b) is at least 50 °C, such as from about 50 °C to about 150 °C, specifically from 60 °C to 140 °C, more specifically from 80 °C to 120 °C.

7. The process according to claim 1, wherein an adsorbing material is further added to the feedstock before step b) or in step b) together with the mineral acid.

8. The process according to claim 7, wherein the adsorbing material is a mineral based adsorbent, a silica-based adsorbent, an amorphous silica adsorbent, such as silica gel, silica hydrogel or silica xerogel, or any combination thereof.

9. The process according to claim 7, wherein the amount of adsorbing material is about 0.5 wt.% to about 5 wt.% based on the weight of the feedstock.

10. The process according to claim 1, wherein the removal of the mineral acid from the acid treated feedstock in step c) is performed using a water wash step, wherein water is added to the acid treated feedstock and aqueous phase is separated from oil and/or fat phase.

11. The process according to claim 1, wherein the bleaching step including a filtration step comprises treating the acid treated feedstock at a temperature from about 50 °C to about 120 °C, prior to the filtration step, optionally water is also added to the acid treated feedstock.

12. The process according to claim 1, wherein the process comprises one or more drying step(s), such as a drying step after step b) and/or a drying step before the filtration step.

13. The process according to claim 1, wherein the feedstock comprising lipids of plant, animal and/or microbial origin is selected from plant oils, plant fats, fish oils, fish fats, animal fats, animal oils, waste fats, waste oils, residue fats, residue oils, mould oils and microbial oils; specifically oils or fats are selected from rapeseed oil, canola oil, colza oil, tall oil, sunflower oil, corn oil, technical/distillers corn oil, soybean oil, hemp oil, olive oil, linseed oil, cottonseed oil, mustard oil, pongamia oil, palm oil, palm oil mill effluent oil (POME), sludge originating from any type of plant oil production, arachis oil, castor oil, coconut oil, suet, tallow, blubber, recycled alimentary fats, used cooking oil (UCO), trap grease, brown grease, gutter oil, fatty acid distillates (FAD) from rice bran oil or palm oil (palm oil fatty acid distillate PFAD), archaeal oil, bacterial oil, fungal oil, protozoal oil, algal oil, fraction of tall oil, crude tall oil, tall oil pitch, peanut oil, crude palm oil, palm seed oil, palm kernel oil, carinata oil, coconut butter, muscat butter oil, sesame oil, maize oil, babassu oil, poppy seed oil, soy oil, laurel seed oil, jatropha oil, camelina oil, seaweed oil, oils from halophiles, poultry fat, dry rendered poultry fat, lard, train oil or any combinations or mixtures thereof.

14. The process according to claim 1, wherein the feedstock is a feedstock containing high amounts of impurities, such as nitrogen in an amount of more than 100 ppm; phosphorus in an amount of more than 50 ppm; metals and/or solids in an amount of more than 100 ppm.

15. The process according to claim 1, wherein the feedstock comprises at least 10 wt.% triglycerides, such as at least 20 wt.% triglycerides or at least 30 wt.% triglycerides or at least 80 wt.% triglycerides.

16. The process according to claim 1, wherein the feedstock is free from soapstock.

17. The process according to claim 1, wherein the process is performed as follows:

a) providing a feedstock comprising lipids of animal origin,

b) treating the feedstock with an aqueous sulphuric acid solution in a temperature from about 70 °C to about 120 °C,

c) removing the aqueous sulphuric acid solution after treatment in step b) by washing the acid treated feedstock with water to obtain an acid treated feedstock,

d) subjecting the acid treated feedstock to a bleaching step, where the bleaching step comprises treating the acid treated feedstock with citric acid and an adsorbent in a temperature of about 80 °C to 100 °C and filtrating to obtain a purified feedstock.

18. The process according to claim 1, wherein the process further comprises hydrotreating the obtained purified feedstock, and optionally followed by isomerising the hydrotreated feedstock.

19. The process according to claim 18, wherein hydrotreating the obtained purified feedstock is performed in the presence of hydrogen and a hydrotreating catalyst, and the hydrotreating catalyst is supported or unsupported Ni, Mo or Co, and hydrotreatment conditions are the following:

- a H2 to oil ratio is 150 – 400 $Nm^3/stdm^3$, preferably 180 – 250 $Nm^3/stdm^3$;
- a LHSV of 0.5 – 2.0 h^{-1}, preferably 1.0 – 1.5 h^{-1};
- a temperature of 300-400 °C, preferably 350-390 °C
- a pressure of 4000-6000 kPa(a), preferably 4800-5500 kPa(a).

20. The process according to claim 18, wherein the process is followed by isomerising the hydrotreated feedstock, and the isomerisation is performed in the presence of an isomerisation catalyst, and the isomerisation catalyst contains SAPO-11, or SAPO-41, or ZSM-22, or ZSM-23, or fernerite, and Pt, Pd, or Ni, and AI_2O_3, or $Si0_2$, and the conditions in the isomerisation are a temperature of 200-500 °C, such as 280-400 °C, such as 280-370 °C and at a pressure of 1 MPa to 15 MPa (absolute), such as 2 MPa to 10 MPa (absolute).