CLAIMS

WHAT IS CLAIMED IS:

1. A process for preparing a low particulate liquid hydrocarbon product comprising:

blending a hydrocarbon feed comprising particles with a fluid to produce a fluid-feed mixture comprising tar, the particles, and the fluid; wherein the fluid-feed mixture has a solubility blending number of 70 to 130; and

centrifuging the fluid-feed mixture at a temperature of greater than 60°C to produce a higher density portion and a lower density portion, wherein at least 75% by weight of the particles are transferred from the fluid-feed mixture to the higher density portion, based on the weight of the particles in the fluid-feed mixture, and wherein the higher density portion contains ≤ 5 wt% of the total weight of the hydrocarbon feed present in the fluid-feed mixture.

2. The process of claim 1, wherein at least 90% by weight of the particles are transferred from the fluid-feed mixture to the higher density portion.

3. The process of claim 1, wherein the lower density portion comprises about 100 ppmw or less of the particles having a size of greater than 25 μm, based on the weight of the lower density portion.

4. The process of claim 1, wherein the lower density portion is substantially free of particles of size greater than 25 μm.

5. The process of claim 1, wherein the particles have a specific gravity from about 1.04 to about 1.5.

6. The process of claim 1, wherein the particles comprise polymeric coke particles and non-polymeric coke particles selected from the group consisting of polymeric asphaltene particles, pyrolytic coke particles, and inorganic fines, wherein the hydrocarbon feed comprises the tar, and wherein the tar comprises steam cracker tar.

7. The process of claim 6, wherein the polymeric coke particles have a specific gravity of 1.04.

8. The process of claim 1, further comprising hydroprocessing at least a portion of the lower density portion.

9. A process for preparing a low particulate liquid hydrocarbon product comprising:

blending a tar stream comprising particles with a fluid to produce a fluid-feed mixture comprising tar, the particles, and the fluid, wherein the fluid-feed mixture comprises greater than 500 ppmw of the particles having a size of greater than 25 μm, based on the weight of the fluid-feed mixture, and wherein the fluid-feed mixture has a solubility number of 70 to 130; and

centrifuging the fluid-feed mixture at a temperature of greater than 60°C to produce a higher density portion and a lower density portion,

wherein:

the higher density portion contains ≤ 5 wt% of the total weight of the hydrocarbon feed present in the fluid-feed mixture, and

the lower density portion comprises ≤ 25% of the particles in the fluid-feed mixture, based on the weight of particles in the feed-fluid mixture, or

the lower density portion comprises ≤ 500 ppmw of particles having a size of greater than 25 μm, based on the weight of the lower density portion.

10. The process of claim 9, wherein the lower density portion comprises about 250 ppmw or less of particles having a size > 25 μm, based on the weight of the lower density portion.

11. The process of claim 9, wherein the fluid comprises a solvent selected from the group consisting of benzene, ethylbenzene, trimethylbenzene, xylenes, toluene, naphthalenes, alkylnaphthalenes, tetralins, alkyltetralins, and any combination thereof.

12. The process of claim 9, wherein the fluid-feed mixture is centrifuged at a temperature of greater than 60°C to about 200°C.

13. The process of claim 9, wherein the particles of the fluid-feed mixture have a specific

gravity from about 1.04 to about 1.5.

14. A process for preparing a low particulate liquid hydrocarbon product comprising:

blending an SCT comprising particles with a fluid to produce a fluid-feed mixture comprising tar, the particles, and the fluid, wherein the fluid-feed mixture comprises greater than 500 ppm of the particles having a size of greater than 25 μm, wherein the particles have a specific gravity from about 1.04 to about 1.5, and wherein the fluid-feed mixture has a solubility bending number of 70 to 130; and

centrifuging the fluid-feed mixture at a temperature of greater than 60°C to produce a higher density portion and a lower density portion, wherein the lower density portion comprises 500 ppmw or less of the particles having a size of greater than 25 μm, based on the weight of the lower density portion, and wherein the higher density portion contains ≤ 5 wt% of the total weight of the hydrocarbon feed present in the fluid-feed mixture.

15. The process of claim 14, wherein the fluid-feed mixture is centrifuged at a temperature of greater than 60°C to about 200°C.

16. The process of claim 14, wherein the lower density portion comprises no more than 2 wt% of the particles in the fluid-feed mixture, based on the weight of the particles in the fluid-feed mixture.

17. The process of claim 14, wherein the lower density portion is substantially free of particles having a size greater than 25 μm.

18. The process of claim 14, wherein the lower density portion comprises about 250 ppmw or less of the particles having a size of greater than 25 μm, based on the weight of the lower density portion.

19. The process of claim 1, wherein the fluid-feed mixture is centrifuged at a temperature of greater than 100°C to about 220°C.

20. The process of claim 1, wherein the fluid-feed mixture is centrifuged at a temperature of 110°C to about 220°C.

21. The process of claim 1, wherein the fluid-feed mixture is centrifuged at a temperature of 120°C to about 220°C.

22. The process of claim 1, wherein the solubility blending number of the fluid-feed mixture is 70 to 120.

23. The process of claim 1, wherein the higher density portion contains ≤ 2 wt% of the total weight of the hydrocarbon feed present in the fluid-feed mixture.

24. The process of claim 1, wherein:

the fluid-feed mixture is centrifuged at a temperature of greater than 100°C to about 220°C, and

the higher density portion contains ≤ 2 wt% of the total weight of the hydrocarbon feed present in the fluid-feed mixture.

25. The process of claim 1, wherein:

the particles in the hydrocarbon feed comprise polymeric coke particles and non-polymeric coke particles,

the non-polymeric coke particles are selected from the group consisting of polymeric asphaltene particles, pyrolytic coke particles, and inorganic fines, and

the process further comprises subjecting a mixture comprising a stream cracker tar comprising olefinic molecules and a quench oil comprising olefinic molecules to conditions sufficient to cause the olefinic molecules in the mixture to oligomerize and/or polymerize to produce the polymeric coke particles in the hydrocarbon feed.