

CLAIMS

The invention claimed is:

1. A method comprising:
removing silicon from a plastic-derived pyrolysis oil to yield a purified plastic-derived pyrolysis oil comprising 5 wppm or less of silicon; and
steam cracking the plastic-derived pyrolysis oil in the presence of steam to produce a product.
2. The method of claim 1, wherein steam cracking the plastic-derived pyrolysis oil is further in the presence of a steam cracker feed.
3. The method of claim 2 further comprising:
admixing the purified plastic-derived pyrolysis oil with the steam cracker feed to yield a mixed feed; and
steam cracking the mixed feed.
4. The method of claim 3, wherein the mixed feed comprises the plastic-derived pyrolysis oil at 1 wt% to 80 wt% based on the weight of the mixed feed.
5. The method of any preceding claim, wherein removing the silicon from the plastic-derived pyrolysis oil comprises:
contacting the plastic-derived pyrolysis oil with an adsorbent.
6. The method of claim 5, wherein contacting the plastic-derived pyrolysis oil with the adsorbent is in the presence of hydrogen.
7. A method comprising:
removing mercury from a plastic-derived pyrolysis oil to yield a purified plastic-derived pyrolysis oil comprising 1 wppb or less of mercury; and
steam cracking the plastic-derived pyrolysis oil in the presence of a steam to produce a product.
8. The method of claim 7, wherein steam cracking the plastic-derived pyrolysis oil is further in the presence of a steam cracker feed.
9. The method of claim 8 further comprising:

admixing the purified plastic-derived pyrolysis oil with the steam cracker feed to yield a mixed feed; and

steam cracking the mixed feed.

10. The method of claim 9, wherein the mixed feed comprises the plastic-derived pyrolysis oil at 1 wt% to 80 wt% based on the weight of the mixed feed.

11. The method of one of claims 7-10, wherein removing the mercury from the plastic-derived pyrolysis oil comprises:

contacting the plastic-derived pyrolysis oil with an adsorbent in the presence of hydrogen.

12. The method of claim 11 further comprising:

regenerating the adsorbent.

13. The method of one of claims 7-12, wherein removing the mercury from the plastic-derived pyrolysis oil comprises:

passing the plastic-derived pyrolysis oil through a mercury trap.

14. A method comprising:

removing silicon and mercury from a plastic-derived pyrolysis oil to yield a purified plastic-derived pyrolysis oil comprising 5 wppm or less of silicon and 1 wppb or less of mercury;

steam cracking the plastic-derived pyrolysis oil in the presence of a steam to produce a product.

15. The method of claim 14, wherein steam cracking the plastic-derived pyrolysis oil is further in the presence of a steam cracker feed.

16. The method of claim 15 further comprising:

admixing the purified plastic-derived pyrolysis oil with the steam cracker feed to yield a mixed feed; and

steam cracking the mixed feed.

17. The method of claim 16, wherein the mixed feed comprises the plastic-derived pyrolysis oil at 1 wt% to 80 wt% based on the weight of the mixed feed.

18. The method of one of claims 14-17, wherein removing the silicon from the plastic-derived pyrolysis oil comprises:

contacting the plastic-derived pyrolysis oil with an adsorbent.

19. The method of claims 18, wherein contacting the plastic-derived pyrolysis oil with the adsorbent is in the presence of hydrogen.

20. The method of one of claims 14-19, wherein removing the mercury from the plastic-derived pyrolysis oil comprises:

contacting the plastic-derived pyrolysis oil with an adsorbent in the presence of hydrogen.

21. The method of claim 20 further comprising:

regenerating the adsorbent.

22. The method of one of claims 14-21, wherein removing the mercury from the plastic-derived pyrolysis oil comprises:

passing the plastic-derived pyrolysis oil through a mercury trap.