What is claimed is:

1. A blend of a petroleum feedstock and 1-20 wt. % of plastic, based on the weight of the blend, with the plastic comprising polyethylene and/or polypropylene, and the plastic in the blend comprising finely dispersed micron-size particles having an average particle size of 10 micron to less than 100 microns.

2. The blend of claim 1, wherein the amount of plastic in the blend comprises from 1-10 wt. % of the blend.

3. The blend of claim 1, wherein the plastic comprises low density polyethylene.

4. The blend of claim 1, wherein the plastic comprises high density polyethylene.

5. The blend of claim 4, wherein the blend comprises from 1-10 wt. % of the high density polyethylene.

6. The blend of claim 1, wherein the plastic comprises polypropylene having an average molecular weight, M_w, in the range of 5,000 to 150,000.

7. The blend of claim 1, wherein the plastic comprises polypropylene having an average molecular weight, M_w, in the range of 150,000 to 400,000.

8. The blend of claim 7, wherein the blend comprises from 1-10 wt. % of the polypropylene.

9. The blend of claim 1, wherein the plastic comprises a mixture of polyethylene and polypropylene.

10. The blend of claim 1, wherein the finely dispersed particles have an average particle size in the range of 10-50 microns.

11. The blend of claim 1, wherein the petroleum feedstock in the blend comprises vacuum gas oil, atmospheric gas oil, reformate, light cycle oil, heavy fuel oil, refinery hydrocarbon streams containing toluene, xylene, heptane or benzene, coker naphtha, C5-C6 isomerized paraffinic naphtha, FCC naphtha, hydrocracker bottom, gasoline, jet fuel, diesel or mixtures thereof.

12. The blend of claim 1, wherein the petroleum feedstock in the blend comprises gas oil or heavy reformate.

13. The blend of claim 11 or 12, wherein the blend further comprises light cycle oil, gasoline, or diesel.

14. The blend of claim 11 or 12, wherein the blend comprises benzene, toluene, xylene or heptane.

15. The blend of claim 1, wherein the blend is at a temperature above the melting point of the plastic and is a hot, homogenous liquid blend.

16. A process for preparing a blend of plastic and petroleum comprising:

(a) mixing a petroleum feed and a plastic comprising polyethylene and/or polypropylene together and heating the mixture above the melting point of the plastic, but less than 500° F, while mixing; and

(b) cooling the plastic melt and petroleum feedstock liquid blend to a temperature below the melting point of the plastic.

17. The process of claim 16, wherein the cooling in (b) is conducted together with continuous stirring.

18. The process of claim 16, wherein the heating is conducted at a temperature of 250-450° F with a residence time of 5-240 minutes at a final heating temperature.

19. The process of claim 16, wherein the cooling is continued until ambient temperature is reached.

20. The process of claim 16, wherein the plastic is waste plastic mixture comprises polyethylene and polypropylene.