CLAIMS:

What is claimed is:

1. A process to re-refine used oil, comprising:

introducing a used oil comprising an oil additive and a solvent to a separation unit under separation conditions selected to produce a purified oil product, the separation unit comprising a porous membrane, a semiporous membrane, or both; and

separating the used oil to obtain an effluent comprising the purified oil product and a retentate comprising the oil additive,

wherein the porous membrane or semiporous membrane has a molecular weight cut-off of 2,000 Daltons or less, and

wherein the solvent is selected from the group consisting of pentane, hexane, heptane, benzene, toluene, xylene, methanol, ethanol, 1-propanol, methyl ethyl ketone, methyl isobutyl ketone, and combinations thereof.

2. The process of claim 1, further comprising removing the solvent by distillation, extraction, fractionation, decanting, or a combination thereof.

3. The process of claim 1, wherein the separation conditions comprise a residence time of the used oil in the separation unit, wherein the residence time is 72 hours or less.

4. The process of claim 1, wherein the separation conditions comprise an operating temperature of from 15°C to 150°C.

5. The process of claim 1, wherein the used oil is a used crankcase oil, used engine oil, used hydraulic oil, used transformer oil, used refrigerator oil, used white oil, used compressor oil, used gas engine oils, used marine engine oils, or a combination thereof.

6. The process of claim 1, wherein the porous membrane or semiporous membrane is a latex containing material, a polyamide containing material, a cellulose containing material, a polycarbonate containing material, a polysulfone containing material, or a combination thereof.

7. The process of claim 1, wherein the purified oil product has a soot content of about 0.05% or less as determined by ASTM D5967-A4.

8. The process of claim 1, wherein the purified oil product has an amount of Zn, Mg, Ca, Mo, Fe, or a combination thereof of 100 ppm or less as determined by ASTM 5185.

9. The process of claim 1 further comprising removing water from the used oil prior to introducing the used oil to the separation unit.

10. The process of claim 1 further comprising removing the solvent from the effluent.

11. The process of claim 1 further comprising:

hydrotreating the effluent comprising the purified oil product;

separating the effluent comprising the purified oil product into one or more base oil fractions; or

a combination thereof.

12. The process of claim 1, wherein the separation conditions comprise a residence time of the used oil in the separation unit, wherein the residence time is from 16 hours to 48 hours.

13. The process of claim 1, wherein the separation conditions comprise an operating temperature of from 15°C to 60°C.

14. The process of claim 1, wherein the separation conditions comprise an operating temperature of from 15°C to 30°C.

15. The method of claim 1 wherein the purified oil product comprises a soot content of 0.01% to 2% as determined by ASTM D5967-A4.

16. The method of claim 1 wherein the oil additive comprises at least one additive selected from the group consisting of a dispersant, a detergent, a corrosion inhibitor, a rust inhibitor, a metal deactivator, an anti-wear agent, an extreme pressure additives, an anti-seizure agent, a wax modifier, a viscosity index improver, a viscosity modifier, a fluid-loss additive, a seal compatibility agent, a friction modifier, a lubricity agent, an anti-staining agent, a chromophoric agent, a defoamant, a demulsifier, an emulsifier, a densifier, a wetting agent, a gelling agent, a tackiness agent, a colorant, and a combinations thereof.