

## CLAIMS

What is claimed is:

1. A waste plastic separation method comprising separating a mixed plastic waste (MPW) into a polyethylene terephthalate (PET)-enriched stream and a PET-depleted stream, wherein said PET-enriched stream comprises at least 70 weight percent PET on a dry basis and at least 0.1 weight percent and not more than 10 weight percent halogens on a dry basis.

2. The method of claim 1, wherein said separating comprises a first density separation stage and a second density separation stage, wherein said first density separation stage is a high-density sink-float density separation stage, and wherein said second density separation stages is a low-density centrifugal density separation stage.

3. The method of claim 1, wherein at least 50 weight percent of the PVC content in said MPW is separated from said MPW together with the PET into said PET-enriched stream.

4. A waste plastic separation method comprising:  
(a) introducing mixed waste plastic (MPW) particulates into a first density separation stage; and  
(b) feeding an output stream from said first density separation stage into a second density separation stage,  
wherein one of said first and second density separation stages is a low-density separation stage and the other of said first and second density separation stages is a high-density separation stage,  
wherein said low-density separation stage has a target separation density that is less than 1.35 g/cc and/or at least 1.25 g/cc,

wherein said high-density separation stage has a target separation density that is at least 0.01 g/cc greater than the target separation density of said low-density separation stage.

5. The method of claim 4, wherein said first density separation stage has a separation efficiency with respect to PET of at least 90 percent, and/or wherein said second density separation stage has a separation efficiency with respect to PET of at least 90 percent.

6. The method of claim 4, wherein said first density separation stage is a high-density sink-float density separation stage, and wherein said second density separation stage is a low-density centrifugal density separation stage.

7. A waste plastic separation method comprising:

- a) introducing MPW particulates into a first density separation stage to form a particulate plastic solids output stream and a high-density particulate plastic solids stream having a higher average particulate plastic solids density than said particulate plastic solids output stream, and
- b) feeding at least a portion of said particulate plastic solids output stream into a second density separation stage to form a medium density particulate plastic solids stream and a low-density particulate plastic solids stream,

wherein the average particulate plastic solids density of the high-density particulate plastic solids stream is higher than the average particulate plastic solids density of the medium density particulate plastic solids stream, and wherein the medium density particulate plastic solids stream has an average particulate plastic solids density that is higher than the average particulate plastic solids density of low density particulate plastic solids stream.

8. The method of claim 7, wherein said second density separation stage separates said first PET-enriched stream into a second PET-enriched stream as said medium density particulate plastic solids stream and a polyolefins-enriched stream as said low-density particulate plastic solids stream.

9. The method of claim 7, wherein said low density plastic stream comprises less than 10 weight percent PET, wherein said high density plastic stream comprises non-plastic solids and/or heavy plastics having densities greater than 1.41 g/cc, wherein said non-plastic solids comprise sand, metal, and/or glass.

10. The method of claim 7, wherein said medium density particulate plastic solids stream is enriched in PET relative to said low density particulate plastic solids stream and/or said high density particulate plastic solids stream.

11. The method of claim 7, wherein said low density particulate plastic solids stream and said high density particulate plastic solids stream are combined into a single stream.

12. The method of claim 7, further comprising mixing a salt and/or saccharide with water to form a concentrated salt and/or saccharide solution and feeding said concentrated salt and/or saccharide solution to at least one of said first or second density separation stages.

13. A waste plastic separation method comprising:

(a) mixing a salt and/or saccharide with water to form a concentrated salt and/or saccharide solution and feeding said concentrated salt and/or saccharide solution to at least one of a first or second density separation stages;

(b) introducing mixed waste plastic (MPW) particulates into said first density separation stage; and

(c) feeding an output stream from said first density separation stage into the second density separation stage, wherein one of said first and second density separation stages is a low-density separation stage and the other of said first and second density separation stages is a high-density separation stage, wherein no separate caustic component is introduced into said first density separation stage and/or said second density separation stage, and/or wherein said MPW particulates are not subjected to a separate antimicrobial processing stage before being introduced into said first density separation stage.

14. The method of claim 13, wherein said first density separation stage is a high-density sink-float separation stage, and wherein said second density separation stage is a low-density centrifugal density separation stage.

15. The method of claim 13, wherein said concentrated salt and/or saccharide solution is fed into said first density separation stage.

16. A waste plastic separation method comprising:

(a) introducing mixed plastic waste (MPW) particulates into a high-density sink-float density separation stage; and

(b) feeding an output stream from said high-density sink-float density separation stage into a low-density centrifugal density separation stage.

17. A waste plastic separation method comprising separating a mixed plastic waste (MPW) into a polyethylene terephthalate (PET)-enriched stream and a PET-depleted stream, wherein said PET-enriched stream is depleted in nylons.

18. The method of claim 17, wherein said separating comprises a first density separation stage and a second density separation stage, wherein said first density separation stage is a high-density sink-float density separation

stage, and wherein said second density separation stages is a low-density centrifugal density separation stage.

19. A waste plastic separation method comprising separating a mixed plastic waste (MPW) into a polyethylene terephthalate (PET)-enriched stream and a PET-depleted stream, wherein said PET-enriched stream is depleted in multi-layer polymers.

20. A waste plastic separation method comprising separating a mixed plastic waste (MPW) into a polyethylene terephthalate (PET)-enriched stream and a PET-depleted stream, wherein said PET-enriched stream is depleted in multi-component polymers.