

CLAIMS

What is claimed is:

1. A waste plastic separation method comprising:
 - (a) introducing mixed plastic waste (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 centrifugal separation stage and the other of said first and second density separation stages is a sink-float density separation stage.
2. The method of claim 1, wherein said first density separation stage has a separation efficiency with respect to PET of at least 90 percent.
3. The method of any of claims 1 or 2, wherein said second density separation stage has a separation efficiency with respect to PET of at least 90 percent.
4. The method of claims 1 or 2, wherein said first density separation stage is said high-density separation stage and said second density separation stage is said low-density separation stage.
5. The method of claim 4, wherein said first density separation stage produces a first PET-enriched stream as said output stream and a heavies-enriched stream that is depleted of PET.
6. The method of claim 5, wherein said second density separation stage separates said first PET-enriched stream into a second PET-enriched stream and a polyolefins-enriched stream.
7. The method of claim 5, wherein said second PET-enriched stream is PVC-enriched.

8. The method of claim 5, wherein said heavies-enriched stream comprises non-plastic solids and/or heavy plastics having densities greater than 1.41 g/cc.
9. The method of claims 1 or 2, further comprising recovering a first PET-enriched stream as said output stream from said first separation stage and recovering a second PET-enriched stream from said second separation stage, wherein said second PET-enriched has a greater concentration of PET than said first PET-enriched stream on a dry plastic basis.
10. The method of claims 6 or 9, wherein said first PET-enriched stream comprises at least 55 weight percent PET on a dry plastic basis, and/pr wherein said second PET-enriched stream comprises at least 90 weight percent PET on a dry plastic basis.
11. The method of claims 1 or 2, 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.
12. The method of claim 12, wherein said concentrated salt and/or saccharide solution comprises potassium carbonate.
13. 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,
- wherein said high-density separation stage has a target separation density that is greater than 1.35 g/cc and/or less than 1.45 g/cc,

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

14. The method of claim 13, wherein said high-density sink-float density separation stage has a separation efficiency with respect to PET of at least 90 percent.

15. The method of claims 13 or 14, wherein said high-density sink-float density separation stage produces a first PET-enriched stream as said output stream and a heavies-enriched stream that is depleted of PET, and said low-density centrifugal density separation stage separates said first PET-enriched stream into a second PET-enriched stream and a polyolefins-enriched stream, and said first PET-enriched stream comprises at least 75 weight percent PET on a dry plastic basis, and/or wherein said second PET-enriched stream comprises at least 90 weight percent PET on a dry plastic basis.

16. A waste plastic separation method comprising:

- (a) introducing MPW particulates into a high-density sink-float 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 output stream, and
- (b) feeding at least a portion of said particulate plastic solids output stream into a centrifugal 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 said high density particulate plastic solids stream is greater than the average particulate plastic solids density of said medium density particulate plastic solids stream, and wherein said medium density particulate plastic solids stream has an average particulate plastic solids density that is greater than the average

particulate plastic solids density of said low density particulate plastic solids stream.

17. The method of claim 16, wherein said output stream comprises at least 75 weight percent PET on a dry plastic basis, and/or wherein said medium density particulate plastic solids stream comprises at least 90 weight percent PET on a dry plastic basis.

18. The method of claims 16 or 17, wherein said medium density particulate plastic solids stream further comprises PVC in an amount of at least 0.1 weight percent and not more than 10 weight percent on a dry plastic basis.

19. The method of claims 16 or 17, wherein said medium density particulate plastic solids stream is enriched in PET relative to said low density particulate plastic solids stream.

20. The method of 16 or 17, wherein said low density particulate plastic solids stream and said high density particulate plastic solids stream are combined into a single stream.