CLAIMS

What is claimed is –

1. A method of recycling a plastic waste comprising:

(a) feeding to a chemical recycling facility at least a portion of one or more PET-containing materials comprising:

(i) PET-containing reclaimer co-products selected from the group consisting of wet fines, colored plastic, eddy current eject, flake sorter eject, dry fines, PET purge materials and polyolefin streams,

which are separated from said plastic waste; and

(b) depolymerizing in said chemical recycling facility said at least a portion of said PET-containing materials.

2. A method of recycling a plastic waste comprising:

(a) feeding to a solvolysis facility at least a portion of one or more PET-containing materials comprising:

(i) PET-containing reclaimer co-products selected from the group consisting of wet fines, colored plastic, eddy current eject, flake sorter eject, dry fines, PET purge materials and polyolefin streams,

which are separated from said plastic waste; and

(b) depolymerizing in said solvolysis facility at least a portion of said PET-containing materials

3. The method of claims 1 or 2, wherein said at least a portion of said PET-containing materials comprise at least two PET-containing reclaimer co-products.

4. The method of claims 1 or 2, wherein:

(i) said at least a portion of said PET-containing materials comprises at least 10 weight percent PET on a dry basis;

(ii) said at least a portion of said PET-containing materials comprises not more than 10 weight percent halogens on a dry basis; and/or

(iii) said at least a portion of said PET-containing materials comprises not more than 90 weight percent polyolefins on a dry basis.

5. The method of claim 2, wherein said at least a portion of said PET-containing materials is fed directly into a dissolver within said solvolysis facility.

6. The method of claim 5, wherein said at least a portion of said PET-containing materials fed into said dissolver comprise less than 10 weight percent nylon, polycarbonate, crosslinking agents, carpet glue, high filler content materials, acetates, spandex, latex, styrene butadiene rubber, non-reactive materials including non-reactive metal oxides (such as titanium dioxide, silicon dioxide, and alumina), calcium carbonate, talc, silica, glass, glass beads, reactive metal oxides, and/or materials that form azeotropes with water, methanol, and/or ethylene glycol.

7. The method of any one of claims 2, 5, or 6, wherein said at least a portion of said PET-containing materials is the only plastic-containing feed to said solvolysis facility.

8. The method of any one of claims 2, 5, or 6, wherein said at least a portion of said PET-containing materials comprise at least 5 weight percent of the feed to said solvolysis facility.

9. The method of any one of claims 2, 5, or 6, further comprising preprocessing said at least a portion of said PET-containing materials prior to feeding into said solvolysis facility.

10. The method of claim 9, wherein said preprocessing comprises any one or more of the following:

(i) separating at least a portion of the PET content of said at least a portion of said PET-containing materials using one or more density separation processes; and/or

(ii) drying said at least a portion of said one or more PET-containing materials; and/or

(iii) densifying said at least a portion of said one or more PET-containing materials.

11. The method of claim 1, wherein said plastic waste is provided to said chemical recycling facility directly from a reclaimer and/or municipal recycling facility using a conveyance system interconnecting said chemical recycling facility to said reclaimer and/or municipal recycling facility.

12. The method of any one of claims 2, 5, or 6, wherein said plastic waste is provided to said solvolysis facility directly from a reclaimer and/or municipal recycling facility using a conveyance system interconnecting said solvolysis facility to said reclaimer and/or municipal recycling facility.

13. A method of recycling a plastic waste comprising:

(a) feeding a quantity of PET-containing reclaimer wet fines separated from said plastic waste to a chemical recycling facility; and

(b) depolymerizing in said chemical recycling facility at least a portion of said PET-containing reclaimer wet fines.

14. The method of claim 13, wherein at least a portion of the plastic particles from said PET-containing reclaimer wet fines are densified to form a quantity of densified PET-containing particles having an average particle size of 0.32 cm (1/8 inch) to 2.54 cm (1 inch) before said depolymerizing (b).

15. The method of claim 14, wherein said quantity of densified PET-containing particles is liquified to form a liquified plastic material before said depolymerizing (b).

16. The method of any one of claims 13 to 15, wherein:

(i) said quantity of PET-containing reclaimer wet fines comprises at least 90 weight percent PET on a dry basis;

(ii) said quantity of PET-containing reclaimer wet fines comprise not more than 10 weight percent halogens on a dry basis; and/or

(iii) said quantity of PET-containing reclaimer wet fines comprise not more than 50 weight percent polyolefins on a dry basis.

17. The method of any one of claims 13 to 15, wherein at least 40 weight percent of the water content from said quantity of PET-containing reclaimer wet fines is removed before said depolymerizing (b).

18. The method of any one of claims 13 to 15, wherein said quantity of PET-containing reclaimer wet fines are fed to a solvolysis facility within said chemical recycling facility wherein said depolymerizing (b) occurs.

19. The use of one or more PET-containing materials as a feedstock to a chemical recycling facility and/or solvolysis facility, said one or more PET-containing materials comprising:

(i) PET-containing reclaimer co-products selected from the group consisting of wet fines, colored plastic, eddy current eject, flake sorter eject, dry fines, PET purge materials and polyolefin streams.

20. The use of PET-containing reclaimer wet fines as a feedstock to a chemical recycling facility.