CLAIMS

1. A method of making a preconditioned resin aggregate, the method comprising:

obtaining a supply of granulated mixed plastic waste treated with a preconditioning agent that comprises at least one of calcium oxide and calcium hydroxide to improve sanitation of the granulated mixed plastic waste in a dry cleaning manner;

mixing the supply of granulated mixed plastic waste treated with the preconditioning agent with one or more additives to form a plastic waste mixture, the one or more additives comprising pozzolans;

hot extruding the plastic waste mixture to form an extruded product comprising waste plastic material; and

processing the extruded product to form an aggregate in which the waste plastic material is exposed at exterior surfaces thereof.

2. The method of claim 1 wherein the supply of granulated mixed plastic waste includes a variety of plastic materials including at least one of high density polyethylene, polypropylene, PVC, ABS, polyurethane, polyamide, and PET.

3. The method of one of the preceding clams wherein the supply of granulated mixed plastic waste comprises non-plastic material in the form of food residue, cellulosic material and/or metallic foil material.

4. The method of one of the preceding claims wherein the supply of granulated mixed plastic waste is characterized by waste plastic having a granule size less than 25mm obtained by shredding and/or pulverizing mixed plastic waste products.

5. The method of one of the preceding claims wherein the supply of granulated mixed plastic waste has a bulk density that is at least five times greater than a bulk density of mixed plastic waste products from which the granulated mixed plastic waste is derived.

6. The method of one of the preceding claims wherein the supply of granulated mixed plastic waste treated by the preconditioning agent includes 4% to 22% calcium compounds by weight.

7. The method of one of the preceding claims wherein the supply of granulated mixed plastic waste treated by the preconditioning agent includes at least 50% waste plastic material by weight.

8. The method of one of the preceding claims wherein, prior to the mixing the supply of granulated mixed plastic waste treated with the preconditioning agent with the one or more additives, at least some calcium oxide of the preconditioning agent in the supply of granulated mixed plastic waste is converted to calcium hydroxide through exposure to moisture.

9. The method of one of the preceding clams, further comprising:

prior to the mixing the supply of granulated mixed plastic waste treated with the preconditioning agent with the one or more additives, blending the supply of granulated mixed plastic waste treated with the preconditioning agent with a supplemental supply of granulated mixed plastic waste from a different source.

10. The method of one of the preceding claims wherein the pozzolans mixed with the granulated mixed plastic waste treated with the preconditioning agent comprises burned organic matter residues.

11. The method of one of the preceding claims wherein the plastic waste mixture to be hot extruded includes 2% to 14% of pozzolans by weight.

12. The method of one of the preceding claims wherein the plastic waste mixture to be hot extruded includes 6% to 18% of calcium compounds by weight.

13. The method of one of the preceding claims wherein the plastic waste mixture to be hot extruded includes at least 50% plastic material by weight.

14. The method of one of the preceding claims wherein the one or more additives of the plastic waste mixture further comprises at least of an essence, a fire retardant, and an anti-bacterial agent.

15. The method of one of the preceding claims wherein the plastic waste mixture is hot extruded at a processing temperature between 165°C and 230°C.

16. The method of one of the preceding claims wherein the plastic waste mixture has a moisture content sufficient to assist in forming cavities within the extruded product during the hot extruding of the plastic waste mixture.

17. The method of one of the preceding claims wherein the plastic waste mixture to be hot extruded consists essentially of the granulated mixed plastic waste treated with the preconditioning agent and the pozzolans.

18. The method of one of the preceding claims wherein processing the extruded product to form the aggregate includes crushing and screening the extruded product to meet industry standard sizing requirements for aggregate.

19. The method of one of the preceding claims wherein processing the extruded product to form the aggregate includes forming the aggregate to include fibrous extensions.

20. A preconditioned resin aggregate formed by the process of:

obtaining a supply of granulated mixed plastic waste treated with a preconditioning agent that comprises at least one of calcium oxide and calcium hydroxide;

mixing the supply of granulated mixed plastic waste treated with the preconditioning agent with one or more additives to form a plastic waste mixture, the one or more additives comprising pozzolans;

hot extruding the plastic waste mixture to form an extruded product comprising waste plastic material; and

processing the extruded product to form an aggregate in which the waste plastic material is exposed at exterior surfaces thereof.

21. A lightweight concrete construction product comprising aggregate formed by the process of:

obtaining a supply of granulated mixed plastic waste treated with a preconditioning agent that comprises at least one of calcium oxide and calcium hydroxide;

mixing the supply of granulated mixed plastic waste treated with the preconditioning agent with one or more additives to form a plastic waste mixture, the one or more additives comprising pozzolans;

hot extruding the plastic waste mixture to form an extruded product comprising waste plastic material; and

processing the extruded product to form an aggregate in which the waste plastic material is exposed at exterior surfaces thereof.

22. A method of making a lightweight concrete construction product, the method comprising:

obtaining an aggregate formed by hot extruding a plastic waste mixture comprising comingled mixed plastics, a preconditioning agent that comprises at least one of calcium oxide and calcium hydroxide, and pozzolans, cooling the extruded product, and processing the extruded product to a desired aggregate size;

mixing the aggregate with a sand-cement mixture to form a lightweight concrete mixture;

mixing the lightweight concrete mixture with water to generate a lightweight concrete slurry; and

forming the lightweight concrete slurry into the lightweight concrete construction product.

23. The method of claim 22 wherein forming the lightweight concrete slurry into the lightweight concrete construction product includes forming the lightweight concrete slurry into a construction block.

24. A method of producing fuel oil, the method comprising:

obtaining an aggregate formed by hot extruding a plastic waste mixture comprising comingled mixed plastics, a preconditioning agent that comprises at least one of calcium oxide and calcium hydroxide, and pozzolans, cooling the extruded product, and crushing the extruded to a desired aggregate size; and

introducing the aggregate into a pyrolizer to recover fuel oil therefrom.

25. A method of forming a waste plastics feedstock, the method comprising:

obtaining a supply of mixed waste plastics;

granulating the supply of mixed waste plastics;

treating the supply of mixed waste plastics with a conditioning agent that comprises at least one of calcium oxide and calcium hydroxide to at least partially disinfect the supply of mixed waste plastics; and

thereafter, packaging the granulated supply of mixed waste plastic treated with the conditioning agent.

26. The method of claim 25 wherein the packaging occurs without washing the supply of mixed waste plastics beforehand.

27. The method of claim 25 or 26 wherein the packaging occurs without sorting the supply of mixed waste plastics beforehand.