CLAIMS:

1. A composite material comprising a homogenous blend of:

a. at least 40%w/w of non-plastic organic matter out of a total weight of the composite material, said non-plastic organic matter comprising at least cellulose; and

b. between 10%w/w and 60%w/w plastic matter out of a total weight of said composite material, said plastic matter comprising a plurality of synthetic thermoplastic polymers;

c. up to 15%w/w inorganic matter;

wherein said composite material comprises aryl containing synthetic polymers in an amount of less than 10% out of the total weight of said composite material; and

wherein said plastic matter comprises a heterogenous blend of plastics, including more than two polyolefins and more than two non-polyolefins;

wherein said composite material is characterized by at least one of the following properties:

- it has a notched izod impact of at least 15 J/m, determined in accordance with ASTM D256; and
- a sample of said composite material that has been subjected to injection molding has at least one of

tensile strength of at least 8MPa; and

flexural strength of at least 15MPa.

2. The composite material of claim 1, comprise PET in an amount of less than 5% out of the total weight of said composite material.

3. The composite material of claim 1 or 2, being characterized by at least one of the following features:

- said composite material has a density of equal to or less than 1.2gr/cm^3;
- said composite material has a thermal gravimetry analysis (TGA) temperature above 200°C;

- a sample of said composite material that has been subjected to injection molding, has at least one of:
    - tensile strength the of at least 10MPa;
    - tensile modulus of at least 1,500MPa;
    - flexural modulus of at least 1,500MPa; and
    - flexural strength of at least 20MPa; and
- said composite material comprises less than 5 mg/g silicates.

4. The composite material of claim 1 or 3, comprising halogenated polymers in an amount of less than 1%w/w out of the total weight of said composite material.

5. The composite material of any one of claims 1 to 4, having a density of equal to or less than 1.2gr/cm^3.

6. The composite material of any one of claims 1 to 5, having a thermal gravimetry analysis (TGA) temperature above 200°C.

7. The composite material of any one of claims 1 to 6, wherein in a sample of said composite material that has been subjected to injection molding, the sample has

- tensile strength the of at least 10Mpa;
- tensile modulus of at least 1,500MPa;
- flexural modulus of at least 1,500MPa; and
- flexural strength of at least 20MPa.

8. The composite material of any one of claims 1 to 7, comprising less than 5 mg/g silicates.

9. The composite material of any one of claims 1 to 8, in a form of refined particles having a size distribution of d90 equal or below 1,500µm as measured by sieving through 1,500µm sieves.

10. The composite material of any one of claims 1 to 9, in a form of refined particles having a size distribution of d90 being equal or below 900µm, as measured by sieving through 900µm sieves.

11. A method of preparing a composite material, the method comprises:

a. subjecting particulate heterogenous intake material to at least one extrusion process within the extruder, at a temperature maintained within a range of 150°C and 200°C, to thereby obtain said composite material;

wherein said particulate heterogenous intake material comprises

i. at least 40%w/w of non-plastic organic matter out of a total weight of the heterogenous intake material, said non-plastic organic matter comprising at least cellulose; and

ii. between 10%w/w and 60%w/w plastic matter out of a total weight of said composite material, said plastic matter comprising a plurality of synthetic thermoplastic polymers, including more than two polyolefins and more than two non-polyolefins;

iii. up to 15%w/w inorganic matter out of a total weight of the composite material; and

wherein said heterogenous intake material comprises aryl-containing synthetic polymers in an amount of less than 10% out of the total weight of said composite material.

12. The method of claim 11, wherein said intake material comprises halogenated polymers in an amount of less than 1%w/w out of the total weigh of said composite material.

13. The method of claim 11 or 12, wherein said aryl-containing synthetic polymers comprises PET.

14. The method of claim 13, wherein said intake material comprises PET in an amount of less than 5% out of the total weight of said composite material.

15. The method of any one of claims 11 to 14, comprising subjecting the particulate heterogenous waste to at least one separation step prior to said extrusion process, the separation step comprises removal of one or both of halogenated polymers and aryl-synthetic polymers from said particulate heterogenous waste based on Near Infra-Red (NIR) absorbance, to obtain a sorted heterogenous waste.

16. The method of any one of claims 11 to 15, wherein said particulate heterogenous intake material is obtained by subjecting heterogenous waste to two or more particulating and sieving stages.

17. The method of any one of claims 11 to 16, comprising controlled gradual cooling of extrudate expelled from the extruder.

18. The method of any one of claims 11 to 17, wherein said composite material is subjected to at least one refining stage comprising size reduction of the composite material.

19. The method of claim 18, wherein said size reduction is to a size defined by d90 of not more than 1,500mm.

20. An article of manufacture comprising a homogenous blend of a composite material as claimed in any one of claims of 1 to 10 and at least one polyolefin.

21. A method of producing an article of manufacture, the method comprises processing a composite material of any one of claims 1 to 10 together with at least one polyolefin, wherein said processing comprises at least one of extrusion and molding, and wherein said processing provides homogenous blending of the composite material with the at least one polyolefin.