Claims:

1. A sheet material formed of a degradable composition, the composition comprising:

30 to 80wt% calcium carbonate by weight of the composition;

an additive; and

the balance a polymer selected from polyethylene, polypropylene and copolymers and blends thereof,

wherein the additive comprises, by combined weight of the additive and the polymer:

(a) two or more transition metal compounds in a total amount of from 0.15 to 0.6wt%;

(b) a mono- or poly-unsaturated C_{14}-C_{24} carboxylic acid, or an ester, anhydride or amide thereof, in an amount of from 0.04 to 0.08wt%;

(c) a synthetic rubber in an amount of from 0.04 to 0.2wt%;

and, optionally:

(d) dry starch in an amount of from 0 to 20wt%; and/or

(e) calcium oxide in an amount of from 0 to 1 wt%; and/or

(f) a phenolic antioxidant stabilizer in an amount of from 0 to 0.2 wt%;

wherein the two or more transition metal compounds are selected from iron, manganese, copper, zinc, titanium, cobalt and cerium compounds and wherein the transition metals in the two or more transition metal compounds are different.

2. The sheet material according to claim 1, wherein the composition comprises from 60 to 70wt% calcium carbonate, or the composition comprises from 60 to 70wt% calcium carbonate with a mean longest diameter of from 1 to 30 microns.

3. The sheet material according to any one of the preceding claims having a mean thickness of from 100 to 500 microns, or from 200 to 400 microns.

4. The sheet material according to claim 1 or 2, wherein the composition has an expanded gas-containing structure.

5. The sheet material according to any one of the preceding claims, wherein the transition metal compounds comprise moieties selected from stearate, carboxylate, carbonate, acetylacetonate, triazacyclononane or combinations of two or more thereof.

6. The sheet material according to any one of the preceding claims, wherein the transition metal in the two or more transition metal compounds comprise:

(i) iron, manganese and copper; or

(ii) manganese and copper; or

(iii) iron and manganese.

7. The sheet material according to any one of the preceding claims, wherein the composition comprises an oxidising additive.

8. The sheet material according to claim 7, wherein the oxidising additive is calcium nitrate.

9. The sheet material according to any one of the preceding claims, wherein the mono- or poly-unsaturated C_{14}-C_{24} carboxylic acid is a C_{16}-C_{20} linear carboxylic acid, preferably oleic acid; and/or

wherein the synthetic rubber comprises an unsaturated polymer,; and/or

wherein the polymer is HDPE.

10. The sheet material according to claim 9, wherein:

the synthetic rubber is styrene-isoprene-styrene, optionally a blend of a styrene-isoprene-styrene and a styrene-isoprene copolymer; and/or

the polymer is HDPE with a melt-flow index of from 10 to 20.

11. The sheet material according to any one of the preceding claims, wherein the composition comprises, by combined weight of the additive and the polymer:

(b) two or more transition metal stearates in a total amount of from 0.2 to 0.3wt%; and/or

(c) a mono-unsaturated C_{16}-C_{20} linear carboxylic acid in an amount of from 0.04 to 0.06wt%; and/or

(d) a synthetic rubber in an amount of from 0.08 to 0.12wt%; and/or

(e) dry starch in an amount of from 0.1 to 0.4wt%; and/or

(f) calcium oxide in an amount of from 0.1 to 0.3wt%; and/or

(g) calcium nitrate in an amount from 0.1 to 1.0wt%.

12. Packaging or a container formed of the sheet material according to any one of the preceding claims.

13. A disposable coffee cup formed of the sheet material according to any one of the preceding claims, optionally further comprising a component selected from the group consisting of a lid, a handle and a sleeve, wherein said component is also formed of the degradable composition.

14. A method of forming a container, which is optionally in the form of a coffee cup, the method comprising:

forming a composition comprising 30 to 80wt% calcium carbonate by weight of the composition, a polymer and an additive,

shaping the composition to form a container,

wherein the polymer is selected from polyethylene, polypropylene and copolymers and blends thereof, and

wherein the additive comprises, by combined weight of the additive and the polymer:

(a) two or more transition metal compounds in a total amount of from 0.15 to 0.6wt%;

(b) a mono- or poly-unsaturated C_{14}-C_{24} carboxylic acid, or an ester, anhydride or amide thereof, in an amount of from 0.04 to 0.08wt%;

(c) a synthetic rubber in an amount of from 0.04 to 0.2wt%;

and, optionally:

(d) dry starch in an amount of from 0 to 20wt%; and/or

(e) calcium oxide in an amount of from 0 to 1 wt%; and/or

(f) a phenolic antioxidant stabilizer in an amount of from 0 to 0.2 wt%;

wherein the two or more transition metal compounds are selected from ferric, manganese, copper, zinc, titanium, cobalt and cerium compounds and wherein the transition metals in the two or more transition metal compounds are different.

15. The method according to claim 14, wherein the step of shaping the composition to form a container comprises:

(a) moulding the composition into a container configuration, optionally by thermoforming, injection moulding, injection blow-moulding, or compression moulding; or

(b) forming and shaping one or more sheets of the composition into a container configuration and, optionally, fixing the configuration with heat-sealing or gluing; or

(c) 3D printing.

16. The method according to claim 13 or claim 14, wherein the method is for making the container according to claim 11 or the disposable coffee cup according to claim 12.

17. A method of initiating the chemical degradation of the packaging or container according to claim 11 or the disposable coffee cup according to claim 12, wherein the method comprises exposing the sheet material to temperatures in excess of 50°C, optionally by loading the container with a hot beverage or foodstuff, or by exposing the container to microwave heating.

18. The method according to claim 17, wherein primary disintegration occurs substantially within 6 weeks and secondary microbial digestion occurs substantially within 1 year.

19. Use of an additive to initiate degradation of a sheet material following exposure to temperatures in excess of 50°C,

wherein the sheet material is formed from a composition comprising:

30 to 80wt% calcium carbonate by weight of the composition;

an additive; and

the balance a polymer selected from polyethylene, polypropylene and copolymers and blends thereof,

wherein the additive comprises, by combined weight of the additive and the polymer:

(a) two or more transition metal compounds in a total amount of from 0.15 to 0.6wt%;

(b) a mono- or poly-unsaturated C_{14}-C_{24} carboxylic acid, or an ester, anhydride or amide thereof, in an amount of from 0.04 to 0.08wt%;

(c) a synthetic rubber in an amount of from 0.04 to 0.2wt%;

and, optionally:

(d) dry starch in an amount of from 0 to 20wt%; and/or

(e) calcium oxide in an amount of from 0 to 1 wt%; and/or

(f) a phenolic antioxidant stabilizer in an amount of from 0 to 0.2 wt%;

wherein the two or more transition metal compounds are selected from iron, manganese, copper, zinc, titanium, cobalt and cerium compounds and wherein the transition metals in the two or more transition metal compounds are different.

20. The use of claim 19, wherein the sheet material is in the form of a coffee cup, and/or the exposure to temperatures in excess of 50°C comprises contacting the sheet material with a hot beverage or foodstuff, or exposing the sheet material to microwave heating.