Claims

1. A system of biodegrading a biopolymer packaging having a composition of polylactic acid, polyhydroxyalkanoates and polybutylene succinct starch blends, the system comprising:

a crusher adapted to crush and compact the biopolymer packaging into one or more portions;

a chamber configured to receive the one or more portions from the crusher, the chamber having a heat source;

an air source arranged to supply oxygen into the chamber;

a first inlet arranged to supply water into the chamber;

a second inlet arranged to feed one or more microorganisms into the chamber; and

one or more mixing members disposed within the chamber,

wherein the heat source is configured to maintain the temperature in the chamber at a range of 40^{o}C to 60^{o}C and more preferably, at a range of 43^{o}C to 57^{o}C for a first predetermined period, at a range of 50^{o}C to 70^{o}C and more preferably, at a range of 53^{o}C to 62^{o}C for a second predetermined period, and at a range of 50^{o}C to 70^{o}C and more preferably, at a range of 53^{o}C to 68^{o}C for a third predetermined period,

wherein the first inlet is configured to maintain the humidity in the chamber at a range of 43 to 58 %,

wherein the air source and the first inlet are configured to maintain a pH level of the chamber at a range of 5 to 8, and

wherein the one or more mixing members is adapted to mix the one or more portions continuously with the oxygen, water and the one or more microorganisms such that the one or more portions undergoes a combination of thermal, chemical and biotic degradation in the chamber to form an output matter.

2. The system of claim 1, further comprising a tank arranged to receive the output matter from the chamber.

3. The system of any of the preceding claims, wherein the chamber comprises a first section and a second section adjacent to the first section, the first section and the second section each having a mixing member.

4. The system of claim 3, wherein the air source, the first and the second inlets are arranged to supply oxygen, water and one or more microorganisms respectively into the first section and wherein the mixing member in the first section is configured to mix the one or more portions continuously with the oxygen, water and the one or more microorganisms for the duration of the first predetermined period to form a first section mixture before directing the first section mixture to the second section.

5. The system of claim 3 or 4, wherein the heat source is configured to maintain the temperature in the first section at a range of 40^{o}C to 60^{o}C and more preferably, at a range of 43^{o}C to 57^{o}C.

6. The system of any one of claims 3 to 5, wherein the chamber comprises a third section adjacent to the second section, and wherein the mixing member of the second section is configured to mix the first section mixture for the duration of the second predetermined period to form a second section mixture before directing the second section mixture to the third section.

7. The system of claim 6, wherein the heat source is configured to maintain the temperature in the second section at a range of 50^{o}C to 70^{o}C and more preferably, at a range of 53^{o}C to 62^{o}C.

8. The system of claim 6, wherein the third section comprises a mixing member configured to mix the second section mixture for the duration of the third predetermined period to form the output matter.

9. The system of claim 8, wherein the heat source is configured to maintain the temperature in the third section at a range of 50^{o}C to 70^{o}C and more preferably, at a range of 53^{o}C to 68^{o}C.

10. The system of any of the preceding claims, wherein the chamber comprises an actuator operable to open a door to transmit the output matter to the tank.

11. The system of any of claims 6 to 10, wherein each of the first, second and the third sections has a window.

12. The system of any of the preceding claims, wherein the chamber has at least one of a pH sensor, a humidity sensor or a temperature sensor.

13. The system of any of the preceding claims, wherein the tank has an outlet adapted to allow one or more gases in the output matter to be released.

14. The system of any of the preceding claims, wherein the chamber has an Ultraviolet (UV) light source configured to direct UV radiation to the one or more portions.

15. A method of degrading a biopolymer packaging having a composition of polylactic acid, polyhydroxyalkanoates and polybutylene succinct starch blends, the method comprising the steps of:

crushing and compacting the biopolymer packaging into one or more portions by a crusher;

mixing the one or more portions in a chamber having a heat source;

adding one or more microorganism adapted for biotic degradation of the one or more portions to the chamber to form a mixture; and

supplying water and oxygen to the chamber via one or more inlets,

wherein the mixture undergoes a combination of thermal, chemical and biotic degradation in the chamber at a humidity at a range of 40-60%, a pH level at a range of 5-8 and at a temperature at a range of 43^{o}C to 57^{o}C for a first predetermined period, at a temperature at a range of 53^{o}C to 62^{o}C for a second predetermined period, and at a temperature range of 53^{o}C to 68^{o}C for a third predetermined period to form an output matter.

16. The method of claim 15, further comprising supplying a composition of 1-5% urea to the mixture.

17. The method of claim 15 or 16, further comprising the step of cooling the output matter in a tank for a period of 1 to 12 months.

18. The method of any one of claims 15 to 17, wherein the first, second and third predetermined period each has a range of 8 to 12 days, more preferably a range of 18 to 22 days, and most preferably a range of 28 to 32 days.