Claims

1. A polymeric laminate comprising:

a layer comprising a thermoplastic polymeric material, said thermoplastic polymeric material defining a plurality of air-containing bubbles forming spaces further containing one or more powdered pesticides or insecticides, so as to be capable of releasing one or more said pesticides or insecticides only upon penetration of said thermoplastic polymeric material.

2. A polymeric laminate comprising:

a) an active ingredient layer comprising a thermoplastic polymeric material, said thermoplastic polymeric material defining a plurality of air-containing bubbles forming spaces further containing ~~an~~ a powdered active ingredient so as to be capable of releasing said active ingredient only upon penetration of said thermoplastic polymeric material; and

b) a first exterior layer comprising a food grade polymer.

3. A polymeric laminate according to claim 2, wherein said active ingredient is selected from the group consisting of pesticides and insecticides.

4. A polymeric laminate according to claim 2, wherein said thermoplastic polymeric material contains one or more rodent repellent materials.

5. A polymeric laminate according to claim 3 adapted to penetration by an insect, wherein said thermoplastic polymeric material is in the form of a bubble plastic comprising air-containing bubbles wherein the burst strength of said bubbles allows said insect to burst said thermoplastic bubbles so as to expose said insect to said one or more powdered pesticides or insecticides.

6. A polymeric laminate according to claim 5 adapted to resist the movement of an insect, wherein said thermoplastic polymeric material is in the form of a bubble plastic comprising air-containing bubbles further containing one or more said powdered insecticides or pesticides, said bubbles having a shape and an inter-bubble distance adapted to resist the movement of said insect thereabout.

7. A polymeric laminate according to claim 3, wherein:

a) said first exterior layer comprising a food grade polymer;

b) a second exterior layer comprises a thermoplastic polymeric material containing at least one rodent repellent material and an ultraviolet blocking material, and said active ingredient layer.

8. A polymeric laminate according to claim 7 wherein, additionally interposed between said first exterior layer and second exterior layer, is a mesh layer.

9. A polymeric laminate according to claim 7 wherein, additionally interposed between said first exterior layer and second exterior layer, is a non-woven layer.

10. A polymeric laminate according to claim 3, wherein said laminate comprises:

a) said first exterior layer comprising a food grade polymer;

b) a second exterior layer comprising said powdered active ingredient layer, wherein thermoplastic polymeric material contains one or more rodent repellent materials and an ultraviolet blocking material; and, interposed between said first exterior layer and second exterior layer, the following additional layers:

16. A polymeric laminate sheet material comprising:

a. a first exterior layer comprising a thermoplastic polymeric material containing at least one rodent repellent material and an ultraviolet blocking material, and said thermoplastic polymeric material defining a plurality of spaces encapsulating one or more pesticide or insecticide;

b. a second exterior layer comprising a food grade polymer and an adhesive; and, interposed between said first exterior layer and said second exterior layer, the following layers:

c. an oxygen barrier intermediate layer comprising a thermoplastic polymeric material containing at least one additive that functions as a desiccant, a free radical scavenger or an oxygen barrier; and

d. a bio-composite absorbent/compatibilizer layer comprising a thermoplastic polymeric material containing at least one super-absorbent polymer and activated carbon.

17. A polymeric laminate sheet material according to claim 16 wherein said bio-composite absorbent/compatibilizer layer comprises a first layer comprising at least one super-absorbent polymer; and a second layer comprising activated bamboo carbon.

18. A polymeric laminate sheet material according to claim 16 wherein said first exterior layer comprises a rodent repellent selected from the group consisting of synthetic pyrethroids.

19. A polymeric laminate sheet material comprising:

a. a first exterior layer comprising a polyolefin, a rodent repellent and an ultraviolet blocking material;

b. a second exterior layer comprising a food grade polymer and an adhesive; and, interposed between said first exterior layer and said second exterior layer, the following layers:

c. an insecticide/pesticide intermediate layer comprising a thermoplastic polymeric material defining a plurality of spaces encapsulating one or more pesticide or insecticide;

d. an oxygen barrier intermediate layer comprising a thermoplastic material selected from the group consisting of ethylene vinyl alcohol and ethylene methyl acrylic co-polymer, and containing at least one oxygen barrier additive;

e. a bio-composite absorbent layer comprising super-absorbent polymers; and

f. a bio-composite compatibilizer layer comprising activated bamboo carbon and a compatibilizer.

20. A polymeric laminate sheet material according to claim 19 wherein said first exterior layer comprises a polyolefin selected from the group consisting of polypropylene, HDPE, LDPE, LLDPE, VLDPE and copolymers and homopolymers thereof.

21. A polymeric laminate sheet material according to claim 19 wherein said first exterior layer comprises a rodent repellent selected from the group consisting of synthetic pyrethroids.

22. A polymeric laminate sheet material according to claim 19 wherein said bio-composite compatibilizer layer comprises a compatibilizer selected from the group consisting of chitin and citric acid.

23. A polymeric laminate sheet material comprising:

a. a first exterior layer comprising a polyolefin and an ultraviolet blocking material, said polyolefin defining a plurality of spaces encapsulating (a) at least one insecticide or pesticide material and (b) a cuticle desiccant;

b. a second exterior layer comprising a food grade polymer and an adhesive; and,

interposed between said first exterior layer and said second exterior layer, the following layers:

c. a rodent repellent intermediate layer comprising ethyl vinyl acetate and a thermoplastic polymeric material, said thermoplastic polymeric material defining a plurality of spaces encapsulating a rodent repellent material;

d. an oxygen barrier intermediate layer comprising a thermoplastic material selected from the group consisting of ethylene vinyl alcohol and ethylene methyl acrylic co-polymer, and containing at least one oxygen barrier additive;

e. a bio-composite absorbent layer comprising super-absorbent polymers; and

f. a bio-composite compatibilizer layer comprising activated bamboo carbon and a compatibilizer.

24. A polymeric laminate sheet material according to claim 16 wherein said first exterior layer comprises a rodent repellent comprising permethrin.

25. A polymeric laminate sheet material according to claim 19 wherein said first exterior layer comprises a rodent repellent comprising permethrin.

26. A polymeric laminate sheet material comprising:

a. a first exterior layer comprising a first layer comprising a polyolefin, said polyolefin comprising a rodent repellent and an ultraviolet blocking material; and a second layer comprising a thermoplastic polymeric material said thermoplastic polymeric material defining a plurality of spaces encapsulating at least one pesticide or insecticide;

b. a second exterior layer comprising a food grade polymer and an adhesive; and, interposed between said first exterior layer and said second exterior layers, the following layers:

c. an oxygen barrier intermediate layer comprising a thermoplastic polymeric material containing at least one additive that functions as a desiccant, a free radical scavenger or an

oxygen barrier; and

d. a bio-composite absorbent/compatibilizer layer comprising a thermoplastic polymeric material containing at least one super-absorbent polymer and activated carbon.

27. A polymeric laminate sheet material according to claim 26 wherein said first exterior layer comprises a polyolefin selected from the group consisting of polypropylene, HDPE, LDPE, LLDPE, VLDPE and copolymers and homopolymers thereof.

28. A polymeric laminate sheet material according to claim 26 wherein said bio-composite absorbent/compatibilizer layer comprises a first layer comprising at least one super-absorbent polymer; and a second layer comprising activated bamboo carbon.

29. A polymeric laminate sheet material according to claim 26 wherein said first exterior layer comprises a rodent repellent selected from the group consisting of synthetic pyrethroids.

30. An agricultural product storage container having an inner surface and formed from a polymeric laminate sheet material according to claim 16, and wherein said inner surface comprises said second exterior layer.

31. An agricultural product storage container having an inner surface and formed from a polymeric laminate sheet material according to claim 19, and wherein said inner surface comprises said second exterior layer.

32. An agricultural product storage container having an inner surface and formed from a polymeric laminate sheet material according to claim 23 and wherein said inner surface comprises said second exterior layer.

33. An agricultural product storage container having an inner surface and formed from a polymeric laminate sheet material according to claim 26, and wherein said inner surface comprises said second exterior layer.