Claims

1. A pack for aerial distribution of one or more items to persons on the ground, comprising:

an outer package comprising two superimposed sheets of material coupled together;

the at least one item disposed between the superimposed sheets of material of the outer package;

at least one rigid element disposed between the superimposed sheets of material of the outer package; and

at least one aerodynamic component extending from the outer package, wherein the aerodynamic element reduces descent rate of the pack in comparison to freefall by increasing turbulent flow during decent.

2. The pack of claim 1, wherein the superposed sheets are comprised of opposing faces that are joined together.

3. The pack of claim 2, wherein the superposed sheets are comprised of a plurality of layers.

4. The pack of claim 1, wherein at least one inner package is confined within the outer package.

5. The pack of claim 4, wherein the at least one inner package allows the at least one item to move freely or in a specified range within the inner package.

6. The pack of claim 4, wherein the at least one item is fixed within the inner package.

7. The pack of claim 4, wherein the at least one inner package is coupled to the outer package.

8. The pack of claim 1, wherein the at least one aerodynamic component extends from an edge of the outer package.

9. The pack of claim 1, wherein the outer package and the aerodynamic component are manufactured of the same material and as a single unit.

10. The pack of claim 1, wherein the at least one aerodynamic component includes a pair of wings configured to unfurl during an aerial delivery of the pack.

11. The pack of claim 10, wherein each of the pair of wings is formed by folding corresponding side edges of the sheets and sealing the folded edges to form wing seals.

12. The pack of claim 1, wherein the at least one aerodynamic component is one or more of a tail, a fin, an airfoil, a parasail, a parachute, rotary blades, streamers, a tail, tunnels, dimples, vent slits, scalloped edges, or serrated edges.

13. The pack of claim 4, wherein the at least one rigid element is disposed between the outer package and the inner package.

14. The pack of claim 13, wherein the at least one rigid element includes instructions related to the item for aerial delivery.

15. The pack of claim 1, wherein the pack contains no moving parts or electronics.

16. The pack of claim 1, wherein the outer package includes a perforation to facilitate opening of the outer package.

17. The pack of claim 16, wherein the perforation extends inwardly from an edge of the pack and permits access to the item.

18. The pack of claim 1, wherein the at least one item is chosen from the group consisting of one or more of mosquito netting, a tent, a blanket, one or more tools, one or more communication, navigation, heating, location or illumination devices, one or more batteries, a shelter, clothing, foot protection, rain gear, one or more hygienic supplies, one or more first aid

supplies, ammunition or weapons, one or more parts for vehicles or equipment, one or more water purification supplies, one or more filters to remove contaminants from water, and video or paper information.

19. The pack of claim 1, wherein the at least one item is a chosen from the group consisting of food, water, a medication, a fire-starting kit, and a fuel.

20. The pack of claim 1, further comprising at least one alerting device.

21. The pack of claim 20, wherein the at least one alerting device is chosen from the group consisting of a whistle, a buzzer, a beeper, a light, and a glowing film.

22. The pack of claim 1, further comprising a tracking device.

23. The pack of claim 1, further comprising perforations within the outer package, wherein the perforations create a handle when separated.

24. The pack of claim 1, wherein the outer package is vacuum sealed.

25. The pack of claim 1, wherein the rigid element is one or more of cardboard, paper, plastic, ribs, metal, embossed surfaces, vacuum sealed portions, pressurized chambers and chambers filled with gas.

26. The pack of claim 1, wherein at least a portion of the outer package is filled with one or more of helium and hydrogen.

27. A method for manufacturing a pack, the method comprising the steps of:
providing a first sheet;
depositing at least one item for aerial delivery to persons on the first sheet;
disposing a second sheet over the at least one item and the first sheet;

sealing the first sheet and the second sheet to form an outer package housing the at least one item; and

forming at least one aerodynamic component on the outer package from at least one of the first sheet and the second sheet, wherein the aerodynamic component causes turbulent air flow across the outer package and reduces freefall descent rate of the pack in operation.

28. The method of claim 27, wherein the step of sealing the first sheet and the second sheet includes forming a top edge seal, a bottom edge seal, and spaced apart side edge seals.

29. The method of claim 28, wherein the step of sealing the first sheet and the second sheet includes forming a pair of mid-pack seals, the at least one item confined within the outer package by the pair of mid-pack seals, the top edge seal, and the bottom edge seal.

30. The method of claim 27, wherein the step of forming the at least one aerodynamic component includes folding corresponding side edges of the first sheet and the second sheet to form folded edges.

31. The method of claim 30, wherein the folded edges are sealed to form one or more wing seals.

32. The method of claim 31, wherein the one or more wing seals are formed between one of the side edge seals and one of the mid-pack seals.

33. The method of claim 27, further comprising a step of coupling an inner package to the outer package, the inner package containing the at least one item.

34. The method of claim 33, wherein a top edge and a bottom edge of the inner package is sealed between the first sheet and the second sheet with a top transverse seal and a bottom transverse seal to couple the inner package to the outer package.

35. The method of claim 27, further comprising creating perforations within the first layer that facilitate opening of the pack.

36. The method of claim 35, wherein the perforations extend inwardly from an edge of the pack and permits access to the inner package.

37. The method of claim 27, wherein the at least one item is selected from the group consisting of a mosquito netting, tent or shelter, a blanket, one or more tools, illumination, communication, heating or navigation devices, one or more batteries, rain gear, clothing, foot protection, hygienic supplies, ammunition or weapons, one or more parts for a vehicle or equipment, one or more first aid supplies, one or more water purification supplies, a filter, and video or paper informational instructions.

38. The method of claim 27, wherein the at least one is selected from the group consisting of food, water, medication, combustion materials, and fuel.

39. A system for manufacturing a pack, comprising:

a product loading unit for depositing at least one item for aerial delivery between a first sheet and a second sheet;

a longitudinal mid-pack and edge sealing unit;

a transverse heat sealing unit, the longitudinal mid-pack and edge sealing unit and the transverse heat sealing unit configured to seal the first sheet and the second sheet to form an outer package housing the at least one item;

a wing folding unit; and

a wing band sealing unit, wherein:

the wing folding unit and the wing band sealing unit are configured to form one or more wings on the outer package, wherein:

the one or more wings reduce the freefall descent rate of the pack during operation.

40. The system of claim 39, further comprising a perforator unit disposed between the transverse heat sealing unit and the wing folding unit.

41. The system of claim 40, wherein the perforator unit forms a perforation to facilitate an opening of the pack.

42. The system of claim 40, wherein the perforator unit includes a perforation roll with a perforation blade disposed opposite an anvil roller.

43. The system of claim 39, further comprising a guillotine package separator unit disposed adjacent the wing band sealing unit.

44. The system of claim 43, wherein the guillotine package separator unit cuts along at least a portion of the perforation to form individual ones of the pack.

45. The system of claim 39, further comprising at least one vacuum plenum for securing the first sheet to a conveyor for movement through the system.

46. A pack for distribution by an aircraft to persons on the ground, comprising:

an outer package comprised of two superimposed sheets of material configured to house at least one item disposed between the superimposed sheets of material of the outer package; and

at least one aerodynamic element attached to the outer package and comprised of at least one of the two superimposed sheets of material, wherein the aerodynamic element:

has no moving parts; and

reduces freefall impact force of the pack by increasing turbulent flow during decent so that the at least one item disposed in the outer package is not damaged upon contact with the ground and the pack poses a minimal risk of harm to the persons on the ground.

47. A pack for aerial distribution of one or more items to persons on the ground, comprising:

an outer package comprised of two superimposed sheets of material configured to house the at least one item disposed between the superimposed sheets of material of the outer package; and

a pair of wings fashioned from the two superimposed sheets of material and extending from opposite edges of the outer package configured to unfurl during an aerial delivery of the pack, wherein the pair of wings reduce the descent rate of the pack in comparison to freefall.

48. The pack of claim 1, wherein two superimposed sheets of material are comprised of a polymeric material.

49. The pack of claim 1, wherein the body of the pack contains no moving parts or electronics.

50. A pack for aerial distribution of one or more items to persons on the ground, comprising:

an outer package comprising two superimposed sheets of polymeric material coupled together to form a housing for the at least one item;

at least one rigid element disposed between the superimposed sheets of material of the outer package; and

at least one aerodynamic component extending from the outer package, wherein the aerodynamic element reduces descent rate of the pack in comparison to freefall by increasing turbulent flow during decent.

CLAIMS

1. A pack for aerial distribution of at least one item to persons on the ground, comprising:

an outer package comprising two superimposed sheets of material coupled together;

the at least one item disposed between the superimposed sheets of material of the outer package;

at least one rigid element disposed between the superimposed sheets of material of the outer package; and

at least one aerodynamic component extending from the outer package, the aerodynamic component comprising a pair of wings that unfurl during an aerial delivery of the pack, wherein the aerodynamic element reduces descent rate of the pack in comparison to freefall by increasing turbulent flow during descent and each of the pair of wings is formed by folding corresponding side edges of the sheets and sealing the folded edges to form wing seals.

2. The pack of claim 1, wherein the superposed sheets are comprised of opposing faces that are joined together.

3. The pack of claim 2, wherein the superposed sheets are comprised of a plurality of layers.

4. The pack of claim 1, wherein at least one inner package is confined within the outer package.

5. The pack of claim 4, wherein the at least one inner package allows the at least one item to move freely or in a specified range within the inner package.

6. The pack of claim 4, wherein the at least one item is fixed within the inner package.

7. The pack of claim 4, wherein the at least one inner package is coupled to the outer package.

8. The pack of claim 1, wherein the at least one aerodynamic component extends from an edge of the outer package.

9. The pack of claim 1, wherein the outer package and the aerodynamic component are manufactured of the same material and as a single unit.

10. The pack of claim 1, wherein the at least one aerodynamic component is one or more of a tail, a fin, an airfoil, a parasail, a parachute, rotary blades, streamers, a tail, tunnels, dimples, vent slits, scalloped edges, or serrated edges.

11. The pack of claim 4, wherein the at least one rigid element is disposed between the outer package and the inner package.

12. The pack of claim 11, wherein the at least one rigid element includes instructions related to the item for aerial delivery.

13. The pack of claim 1, wherein the outer package includes a perforation to facilitate opening of the outer package.

14. The pack of claim 13, wherein the perforation extends inwardly from an edge of the pack and permits access to the item.

15. The pack of claim 1, wherein the at least one item is chosen from the group consisting of one or more of mosquito netting, a tent, a blanket, one or more tools, one or more communication, navigation, heating, location or illumination devices, one or more batteries, a shelter, clothing, foot protection, rain gear, one or more hygienic supplies, one or more first aid supplies, ammunition or weapons, one or more parts for vehicles or equipment, one or more water purification supplies, one or more filters to remove contaminants from water, and video or paper information.

16. The pack of claim 1, wherein the at least one item is a chosen from the group consisting of food, water, a medication, a fire-starting kit, and a fuel.

17. The pack of claim 1, further comprising at least one alerting device.

18. The pack of claim 17, wherein the at least one alerting device is chosen from the group consisting of a whistle, a buzzer, a beeper, a light, and a glowing film.

19. The pack of claim 1, further comprising a tracking device.

20. The pack of claim 1, further comprising perforations within the outer package, wherein the perforations create a handle when separated.

21. The pack of claim 1, wherein the outer package is vacuum sealed.

22. The pack of claim 1, wherein the rigid element is one or more of cardboard, paper, plastic, ribs, metal, embossed surfaces, vacuum sealed portions, pressurized chambers and chambers filled with gas.

23. The pack of claim 1, wherein at least a portion of the outer package is filled with one or more of helium and hydrogen.

24. A method for manufacturing a pack, the method comprising the steps of:

providing a first sheet;

depositing at least one item for aerial delivery to persons on the first sheet;

disposing a second sheet over the at least one item and the first sheet;

sealing the first sheet and the second sheet to form an outer package housing the at least one item; and

forming at least one aerodynamic component on the outer package by folding corresponding side edges of the first sheet and the second sheet to form folded edges, wherein the aerodynamic component causes turbulent air flow across the outer package and reduces

freefall descent rate of the pack in operation, and wherein the aerodynamic component comprises a pair of wings that unfurl during and aerial delivery of the pack.

25. The method of claim 24, wherein the step of sealing the first sheet and the second sheet includes forming a top edge seal, a bottom edge seal, and spaced apart side edge seals.

26. The method of claim 25, wherein the step of sealing the first sheet and the second sheet includes forming a pair of mid-pack seals, the at least one item confined within the outer package by the pair of mid-pack seals, the top edge seal, and the bottom edge seal.

27. The method of claim 24, wherein the folded edges are sealed to form one or more wing seals.

28. The method of claim 24, wherein the one or more wing seals are formed between one of the side edge seals and one of the mid-pack seals.

29. The method of claim 24, further comprising a step of coupling an inner package to the outer package, the inner package containing the at least one item.

30. The method of claim 29, wherein a top edge and a bottom edge of the inner package is sealed between the first sheet and the second sheet with a top transverse seal and a bottom transverse seal to couple the inner package to the outer package.

31. The method of claim 24, further comprising creating perforations within the first layer that facilitate opening of the pack.

32. The method of claim 31, wherein the perforations extend inwardly from an edge of the pack and permits access to the inner package.

33. The method of claim 24, wherein the at least one item is selected from the group consisting of a mosquito netting, tent or shelter, a blanket, one or more tools, illumination,

communication, heating or navigation devices, one or more batteries, rain gear, clothing, foot protection, hygienic supplies, ammunition or weapons, one or more parts for a vehicle or equipment, one or more first aid supplies, one or more water purification supplies, a filter, and video or paper informational instructions.

34. The method of claim 24, wherein the at least one item is selected from the group consisting of food, water, medication, combustion materials, and fuel.

35. A pack for distribution by an aircraft to persons on the ground, comprising:

an outer package comprised of two superimposed sheets of material configured to house at least one item disposed between the superimposed sheets of material of the outer package; and

at least one aerodynamic element attached to the outer package and comprised of at least one of the two superimposed sheets of material, wherein the aerodynamic element:

is formed by folding corresponding side edges of the sheets and sealing the folded edges to form wing seals;

comprises a pair of wings that unfurl during an aerial delivery of the pack ; and

reduces freefall impact force of the pack by increasing turbulent flow during descent so that the at least one item disposed in the outer package is not damaged upon contact with the ground and the pack poses a minimal risk of harm to the persons on the ground.

36. A pack for aerial distribution of at least one item to persons on the ground, comprising:

an outer package comprised of two superimposed sheets of material configured to house the at least one item disposed between the superimposed sheets of material of the outer package; and

a pair of wings fashioned from the two superimposed sheets of material and extending from opposite edges of the outer package that unfurl during an aerial delivery of the pack, wherein the pair of wings reduce the descent rate of the pack in comparison to freefall and each of the pair of wings is formed by folding corresponding side edges of the sheets and sealing the folded edges to form wing seals.

37. The pack of claim 1, wherein two superimposed sheets of material are comprised of a polymeric material.

38. A pack for aerial distribution of at least one item to persons on the ground, comprising:

an outer package comprising two superimposed sheets of polymeric material coupled together to form a housing for the at least one item;

at least one rigid element disposed between the superimposed sheets of material of the outer package; and

at least one aerodynamic component extending from the outer package, wherein the aerodynamic element reduces descent rate of the pack in comparison to freefall by increasing turbulent flow during descent and is formed by folding corresponding side edges of the sheets and sealing the folded edges to form wing seals, and wherein the aerodynamic component comprises a pair of wings that unfurl during an aerial delivery of the pack.