Claims

1. A container for containing a product, comprising a container body having an aperture and a seal assembly, the seal assembly comprising a seal and a seal support member,

wherein the container is configured to have an intermediate configuration prior to containing the product in which the container aperture is closed by the seal assembly, and

wherein the container is configured to have a filled configuration containing the product in which the container aperture is sealed.

2. The container of claim 1, wherein a shoulder is provided on the container body around the periphery of the aperture, the seal contacting the shoulder in both configurations.

3. The container of claim 1 or 2, wherein the seal is held in place by the seal support member in the intermediate configuration.

4. The container of any preceding claim, wherein the seal support member is configured to be movable into an interference fit with the container body to hold the seal in place in the intermediate configuration.

5. The container of claim 4, wherein the seal support member is provided with projections which, when the seal support member is rotated, engage with corresponding surfaces provided on the container body to provide the interference fit.

6. The container of claim 5, wherein the surfaces project inwardly from the internal periphery of the aperture.

7. The container of claims 2 and 6, wherein the surfaces are provided adjacent to the shoulder.

8. The container of any preceding claim, wherein the seal support member is a disc.

9. The container of any preceding claim, wherein the seal and the seal support member are coterminous.

10. The container of any preceding claim, wherein the seal and the seal support member are coextensive.

11. The container of any preceding claim, wherein the seal is coextensive with the aperture or has a larger area than the area of the aperture.

12. The container of any preceding claim, wherein the container aperture is substantially circular and wherein the seal is a disc.

13. The container of any preceding claim, wherein the seal is internal to the seal support member relative to the interior of the container.

14. The container of any of claims 1 to 12, wherein the seal is external to the seal support member relative to the interior of the container.

15. The container of any of claims 1 to 9, wherein the container aperture is substantially circular and wherein the seal is an annulus, the aperture being closed in the intermediate configuration and sealed in the filled configuration by the seal and the seal support member in combination.

16. The container of any preceding claim, wherein the container aperture is sealed by the seal assembly in the filled configuration.

17. The container of any of claims 1 to 13 wherein, the container aperture is sealed by the seal alone, without the seal support member present, in the filled configuration.

18. The container of claim 17, wherein the seal support member and seal are attached by means of a bond in the intermediate configuration, the bond being breakable to allow separation of the seal support member and seal to adopt the filled configuration.

19. The container of claim 18, wherein the bond is breakable by heating.

20. The container of any preceding claim, wherein the container aperture is sealed in the filled configuration by heating the seal.

21. The container of claim 19 and 20, wherein the heating of the seal simultaneously heats the bond holding the seal support member and seal together to permit separation.

22. The container of any preceding claim, wherein the seal is an induction seal and the container aperture is sealed in the filled configuration by applying electromagnetic energy to heat the seal.

23. The container of any preceding claim, wherein the container further includes a cap.

24. A method of adding a product to a container as claimed in any preceding claim, comprising the steps of:

providing the container in the intermediate configuration, in which the container aperture is closed by the seal assembly;

removing the seal assembly to open the container;

adding the product to the interior of the container;

replacing the seal assembly; and

applying energy to create a seal between the seal and the container so that the container adopts the filled configuration.

25. The method of claim 24, wherein the step of applying energy also creates a seal between the seal and the seal support member so that the container adopts the filled configuration sealed by the seal assembly.

26. The method of claim 24, further comprising the step of separating the seal support member from the seal so that the container adopts the filled configuration sealed by the seal alone without the seal support member present.

27. The method of claim 26, wherein the seal support member and seal are attached by means of a bond in the intermediate configuration, the bond being breakable to allow separation of the seal support member and seal to adopt the filled configuration.

28. The method of claim 27, wherein the bond is breakable by heating.

29. The method of any of claims 24 to 28, wherein the step of applying energy comprises heating the seal.

30. The method of claims 28 and 29, wherein the step of heating the seal simultaneously heats the bond holding the seal support member and seal together to permit separation.

31. The method of any of claims 24 to 30, wherein the seal is an induction seal and the step of applying energy comprises applying electromagnetic energy to heat the seal.

32. Apparatus for adding a product to a container as claimed in any of claims 1 to 23, comprising:

a filling chamber into which at least a part of the container in the closed intermediate configuration is inserted;

seal assembly handling means which is configured to attach to and separate the seal assembly from the container to open the container, and which is further configured to replace the seal assembly on the container after addition of the product to the container;

supply means configured to supply the product to the interior of the container; and

means for applying energy configured to create a seal between the seal and the container so that the container adopts the filled configuration.

33. The apparatus of claim 32, wherein the seal assembly handling means is a piston which attaches to the seal assembly by means of a vacuum generated between the piston and the seal assembly.

34. The apparatus of claim 32 or 33, wherein the seal support member is configured to be movable into an interference fit position with the container body to hold the seal in place in the intermediate configuration, and wherein the seal assembly handling means is configured to move the seal support member out of the interference fit position and separate the seal assembly from the container.

35. The apparatus of any of claims 32 to 34, wherein the means for applying energy is also configured to create a seal between the seal and the seal support member so that the container adopts the filled configuration sealed by the seal assembly.

36. The apparatus of any of claims 32 to 34, wherein, after the seal is created, the seal assembly handling means is configured to separate the seal support member from the seal so that the container adopts the filled configuration sealed by the seal alone without the seal support member present.

37. The apparatus of claim 36, wherein the seal support member and seal are attached by means of a bond in the intermediate configuration, the bond being breakable by heating to allow separation of the seal support member and seal to adopt the filled configuration.

38. The apparatus of any of claims 32 to 37, wherein the means for applying energy comprises means for heating the seal.

39. The apparatus of claims 37 and 38, wherein the means for heating the seal simultaneously heats the bond holding the seal support member and seal together to permit separation.

40. The apparatus of any of claims 32 to 39, wherein the seal is an induction seal and the means for applying energy comprises means for applying electromagnetic energy to heat the seal.

Claims

1. A container for containing a product, comprising a container body having an aperture and a seal assembly, the seal assembly comprising a seal and a seal support member,

wherein the container is configured to have an intermediate configuration prior to containing the product in which the container aperture is closed by the seal assembly, the seal assembly being removable from the container to open the container aperture for filling with the product,

wherein the container is configured to have a filled configuration containing the product in which the container aperture is sealed by the seal alone, without the seal support member present, and

wherein the seal support member and seal are attached by means of a bond in the intermediate configuration, the bond being breakable to allow separation of the seal support member and seal to adopt the filled configuration.

2. The container of claim 1, wherein a shoulder is provided on the container body around the periphery of the aperture, the seal contacting the shoulder in both configurations.

3. The container of claim 1 or 2, wherein the seal is held in place by the seal support member in the intermediate configuration.

4. The container of any preceding claim, wherein the seal support member is configured to be movable into an interference fit with the container body to hold the seal in place in the intermediate configuration.

5. The container of claim 4, wherein the seal support member is provided with projections which, when the seal support member is rotated, engage with corresponding surfaces provided on the container body to provide the interference fit.

6. The container of claim 5, wherein the surfaces project inwardly from the internal periphery of the aperture.

7. The container of claims 2 and 6, wherein the surfaces are provided adjacent to the shoulder.

8. The container of any preceding claim, wherein the seal support member is a disc.

9. The container of any preceding claim, wherein the seal and the seal support member are coterminous.

10. The container of any preceding claim, wherein the seal and the seal support member are coextensive.

11. The container of any preceding claim, wherein the seal is coextensive with the aperture or has a larger area than the area of the aperture.

12. The container of any preceding claim, wherein the container aperture is substantially circular and wherein the seal is a disc.

13. The container of any preceding claim, wherein the bond is breakable by heating.

14. The container of any preceding claim, wherein the container aperture is sealed in the filled configuration by heating the seal.

15. The container of claim 13 and 14, wherein the heating of the seal simultaneously heats the bond holding the seal support member and seal together to permit separation.

16. The container of any preceding claim, wherein the seal is an induction seal and the container aperture is sealed in the filled configuration by applying electromagnetic energy to heat the seal.

17. The container of any preceding claim, wherein the container further includes a cap.

18. A method of adding a product to a container as claimed in any preceding claim, comprising the steps of:

providing the container in the intermediate configuration, in which the container aperture is closed by the seal assembly;

removing the seal assembly to open the container;

adding the product to the interior of the container;

replacing the seal assembly; and

separating the seal support member from the seal and applying energy to create a seal between the seal and the container so that the container adopts the filled configuration sealed by the seal alone without the seal support member present,

wherein the seal support member and seal are attached by means of a bond in the intermediate configuration, the bond being breakable to allow separation of the seal support member and seal to adopt the filled configuration.

19. The method of claim 18, wherein the bond is breakable by heating.

20. The method of claim 18 or 19, wherein the step of applying energy comprises heating the seal.

21. The method of claims 19 and 20, wherein the step of heating the seal simultaneously heats the bond holding the seal support member and seal together to permit separation.

22. The method of any of claims 18 to 21, wherein the seal is an induction seal and the step of applying energy comprises applying electromagnetic energy to heat the seal.