

FLIP OPEN SMOKING ARTICLE PACKAGE WITH MICROENCAPSULATED FLAVOUR RELEASE

The invention relates to a flip open smoking article package with microencapsulated
5 flavour applied to a surface of the outer frame, which flavour is released to the air by frictional
contact with another surface of the package or its contents as the top of the outer frame is opened.

Microencapsulation is a process by which a material is captured either as a core of
material or as a matrix of material within a second material or shell. It is well known in the field
to encapsulate aromas and flavours in shells of varying sizes so that the flavour is preserved until
10 the rupture of the capsule by mechanical or other means. Preservation of the flavour within the
capsule assures that upon release the flavour is as consistently strong as when it was first
encapsulated. "Flavour," "fragrance," "aroma," and like terms are used interchangeably herein to
indicate any substance that is capable of causing an olfactory sensation.

A multitude of processes exists for manufacturing microcapsules. A variety of techniques
15 can be utilized to produce microcapsules of varying sizes, differing resistances to rupture and
alternative capsule compositions and capsule constituents. Interfacial complexation, molecular
entrapment, complex coacervation, preferential precipitation, interfacial polymerisation, melt/wax
coating, spray drying, in-situ polymerisation and agglomeration are all suitable known
microencapsulation techniques. Several different encapsulation processes are disclosed in U.S.
20 Pat. Nos. 3,516,846; 3,516,941; 3,778,383; 4,087,376; 4,089,802; 4,100,103 and 4,251,386 and
British Patent Specification Nos. 1,156,725; 2,041,319 and 2,048,206. Common shell formations
include the polymerization reaction of urea and formaldehyde and the polycondensation of
methylated urea and aldehydes.

It is also known to incorporate a flavour in a package in such a way so that when the
25 package is opened, the flavour is aromatically released to the user. Flavour release can be
accomplished, for example, utilizing microencapsulation of the flavourant and embedding of the
microcapsules into an adhesive substrate that bonds two opposing surfaces of a closure together.
Opening of the package separates the bonded surfaces and fractures the microcapsules, releasing
the flavourant.

30 One manner of flavour-releasing package is disclosed in U.S. Pat. No. 4,717,017, which
teaches a cigarette pack with a receptacle for containing a fragrance to be released upon initial
opening by the consumer. The release points are disclosed to be along the tear strip portion of the
overwrap film. When the tear tape is pulled to slit the overwrap, it also ruptures the receptacle,
releasing a pleasant aroma to the consumer.

U.S. Pat. No. 4,720,423 teaches the use of microcapsules containing therein a fragrance in a multilayer adhesive strip. Separation of the adhered multilayers ruptures the microcapsules, releasing the fragrance. The multilayer adhesive strip is utilized as a tear strip for a package overwrap.

5 It would be desirable to utilize encapsulated fragrance materials on the blank providing the outer frame of a flip open box, such as a cigarette flip open box. Opening the box top would cause frictional contact of the microcapsules with other elements of the frame and release a desirable aroma to the consumer each time the box top is opened. Placement of the encapsulated flavourants is determined by consideration of the greatest points of frictional contact between
10 box components, as well as those areas with the least direct consumer contact. The flavourant is released through frictional contact of the encapsulating materials with other structural elements of the box.

An object of the invention is to provide a smoking article flip open box or other package, particularly but not exclusively for cigarettes, that releases a pleasing aroma to the
15 consumer upon opening.

It is a further object of the invention that the aroma is preserved against degradation until it is released upon opening of the box.

The present invention provides a flavourant releasing flip open package comprising an encapsulated flavourant applied to an inner surface of said package, said encapsulated
20 flavourant being positioned on said package so that said flavourant is released upon frictional contact with a further portion of said package upon opening of said package.

Advantageously the encapsulated flavourant is comprised of microcapsules containing aroma oils. Preferably the encapsulated flavourant is applied to the inside of the lid portion of said package and may be in contact with a surface of an inner frame of said package, an edge of
25 said body portion or with the product enclosed by said package or a wrapping of said product or a combination thereof.

Advantageously when the contacting surface is an inner frame, the inner frame member has at least one outwardly extending lug which frictionally engages an interior surface of the lid.

30 Preferably one or more of the interior surfaces of a lid inside right side wall flap, a lid inside top wall right flap, a lid inside front wall, a lid inside top wall left flap, a lid inside left side wall flap or a lid inside back wall has encapsulated flavourant applied thereon.

The present invention further provides a flip top smoking article package comprising a body outer frame member, a flip top portion hingedly attached to the body outer frame member,

an inner frame member extending upwardly from the body outer frame member, the flip top portion having an interior surface thereof, said interior surface contacting at least a portion of said inner frame member when said flip top is closed onto said inner frame member, said interior surface of said flip top portion contacting said inner frame member having at least one
5 area having encapsulated flavourant applied thereon.

The present invention also provides a flip top smoking article package comprising a body outer frame member, a flip top portion hingedly attached to said body outer frame member, the flip top portion having an interior surface thereof, said interior surface having a lid inside right side wall flap, a lid inside top wall right flap, a lid inside front wall, a lid inside top
10 wall left flap, a lid inside left side wall flap and a lid inside back wall, and at least one of said lid inside right side wall flap, lid inside top wall right flap, lid inside front wall, lid inside top wall left flap, lid inside left side wall flap and lid inside back wall of said flip top portion comprising encapsulated flavourant applied thereon.

The present invention further provides a flip top smoking article package comprising a
15 body outer frame member, a flip top portion hingedly attached to said body outer frame member, the flip top portion having an interior surface thereof, the interior surface having a lid inside right side wall flap, a lid inside top wall right flap, a lid inside front wall, a lid inside top wall left flap, a lid inside left side wall flap and a lid inside back wall, at least one of said lid inside right side wall flap, lid inside top wall right flap, lid inside front wall, lid inside top wall
20 left flap, lid inside left side wall flap and lid inside back wall of said flip top portion comprising encapsulated flavourant applied thereon, the encapsulated flavourant being an ink 50% of which is encapsulated flavourant having a diameter size range of between about 10 to about 40 micrometers.

In order that the invention may be easily understood and readily carried into effect,
25 reference will now be made, by way of example, to the following diagrammatic drawings in which:

FIG. 1 is a top view of a blank for a cigarette flip open box which blank provides an outer frame;

FIG. 2 is a perspective view of a closed flip open cigarette box in its assembled form from the
30 blank of FIG. 1;

FIG. 3 is a top perspective view of an open flip open cigarette box in its assembled form with hatch marks indicating areas printed with microencapsulated flavours on the inside of the lid;

FIG. 4 is a right side perspective view of a partially open flip open cigarette box in its assembled form with marks indicating areas which may be printed with microencapsulated

flavours on the inside of the lid; and,

FIG. 5 is a left side perspective view of a partially open flip open cigarette box in its assembled form with hatch marks indicating areas printed with microencapsulated flavours on the inside of the lid.

5 A blank for a cigarette flip open box outer frame 10 is shown in Figure 1. The shaded areas on the blank show one possible option for regions printed with microcapsules. Referring to Figure 1, areas which may be printed with the aroma-containing microcapsules in the exemplary embodiment of the present invention may be the lid inside right side wall flap 11, the lid inside top wall right flap 12, the bottom half of the lid inside front wall 13, the lid inside
10 top wall left flap 14, the lid inside left side wall flap 15, and the lid inside back wall 16. As depicted in Figure 1 the flip open box 10 is substantially cuboidal in shape but many differing shapes may be utilized.

 When folded the microcapsule-printed surfaces may constitute a majority of the inner surface of lid 27. In contrast, it is beneficial that direct consumer contact with the
15 microcapsule-printed surfaces is kept to a minimum. Figure 2 shows a completely assembled package with lid 27 closed. No microcapsule-printed surfaces are exposed when the package lid 27 is closed. Standard gravure or screen printing processes may be utilized to apply the microcapsules to package blanks.

 Areas chosen for printing are those in which frictional contact occurs between box
20 components or box components and product upon opening, and areas where consumer contact is least likely to occur. For example, Figures 3, 4 and 5 illustrate a completely assembled flip open box with inner frame 21 and outer frame 22 in position and lid 27 opened. Inner frame lugs 23 and 24 frictionally contact the microcapsules which are printed on the lid left and right inner side walls 25 and 26. When the lid top 27 is opened, the microcapsules are ruptured
25 releasing the contained aroma to the consumer. Similarly, inner frame ridges 28 and 29 also frictionally contact lid left and right inner side walls 25 and 26 and the inner front wall 13 when the lid 27 is opened, rupturing other microcapsules and releasing more aroma to the consumer. In like manner, the inner frame side walls 32 and 33 also make frictional contact with lid left and right inner side walls 25 and 26 releasing encapsulated aroma to the consumer.

30 Depending on product arrangement, the product or its covering may also frictionally contact one or more microcapsule coated inner surfaces of lid 27. Of course, the actual placement of the microcapsule coated inner surface on the flip top can vary quite extensively depending on the aromatic effect desired, strength of the flavourant encapsulated, extent of frictional engagement between the flip top and the lower body member, or other factors.

Additionally, as can be seen from the Figures, inner front side wall 13 of the lid 27 may actually contact the cigarettes 32 when it is opened thereby causing frictional engagement and release of flavourant.

An additional aspect of the designs depicted in Figures 1-5 is the usage on cigarette flip
5 top boxes having either no inner frame 21, as depicted in Figures 1 and 2, and that of Figures 3-
5 wherein inner frame 21 extends upward from the top edge of the lower body outer frame
member 22. As can be understood from the Figures, in Figures 1-2, the lid 27 will contact
upper edges 40-42 upon closing of the lid. Thus, flavourant may be added as shown, on areas
11-16. Primarily, however, edges on panels 11 and 15 will contact and potentially frictionally
10 engage edges 40 and 42. Alternatively, in Figures 3-5 an inner frame type flip open carton is
utilized in which first and second inner frame side panels 32 and 33 are provided with inner
frame front panel 34. However, multiple variations are possible with many types of packaging
designs and no particular embodiment set forth herein for exemplary purposes only should be
read as limiting. The teachings of the present description is felt to cover a significant number
15 of variants for enabling release of flavourants upon use or opening of the package 10.

Microcapsules containing an aroma of choice are manufactured and can be obtained
commercially from companies such as Arcade, Inc., Chattanooga, TN. Examples of potential
aromas for encapsulation include peppermint, menthol, spearmint and roasted/toasted aromas.
However, almost any flavour oil may be encapsulated so long as it meets certain basic
20 requirements of the technology, such as having hydrophobic qualities. A solution such as
polyoxymethylene urea polymer may be used to coat the flavour oils and produce the
microcapsules after polymerization. The microcapsules may range in size from about 10 to
about 40 micrometers in diameter.

The microcapsules may be obtained as a wet cake that can be combined with water to
25 produce an "ink" slurry. Solvents are generally not utilized in combination with the cake as
they may dissolve the polymer shell surrounding the microencapsulated aroma. A variety of
concentrations will result in a usable ink slurry depending on the printing conditions and
processes. For example, a 50% to 60% concentration of wet cake produces ink of consistency
usable for gravure printing systems. In gravure printing press runs, for example, 40 kilograms
30 of ink at a 50% dilution concentration may yield enough ink to print approximately one million
flip open boxes. Screen printing processes may also be used with microencapsulation inks.

Thus, a flip open box package is provided which is strategically coated with
microencapsulated aroma oil ink so that frictional contact between a coated surface and other
surfaces of the package occurs upon opening by the consumer. Frictional contact ruptures the

microcapsules releasing a fragrant aroma to the consumer. One skilled in the art will appreciate that the present invention can be practiced by other than the described embodiments, which are presented for purposes of illustration and not limitation, and the present invention is limited only by the claims which follow.

CLAIMS

1. A flavourant releasing flip open smoking article package comprising an outer frame having a body portion and a lid portion hingedly attached to said body portion, an encapsulated
5 flavourant applied to an inner surface of said package, said encapsulated flavourant being positioned on said package so that said flavourant is released upon frictional contact with a further portion of said package upon opening of said package.
2. A flip open package according to Claim 2, wherein said encapsulated flavourant is
10 comprised of microcapsules containing aroma oils.
3. A flip open package according to Claim 1 or 2, wherein said encapsulated flavourant is applied to the inside of the lid portion of said package.
- 15 4. A flip open package according to Claim 1, 2 or 3, wherein said encapsulated flavourant is in contact with a surface of an inner frame of said package.
5. A flip open package according to Claims 1, 2, 3 or 4, wherein said encapsulated flavourant is in contact with an edge of said body portion.
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6. A flip open package according to Claims 1, 2, 3, 4 or 5, wherein said encapsulated flavourant is in contact with the product enclosed by said package or a wrapping of said product.
- 25 7. A flip top smoking article package, comprising:
a body outer frame member;
a flip top portion hingedly attached to said body outer frame member;
an inner frame member extending upwardly from said body outer frame member ;
wherein said flip top portion has an interior surface thereof, said interior surface contacting at
30 least a portion of said inner frame member when said flip top is closed onto said inner frame member, said interior surface of said flip top portion contacting said inner frame member having at least one area having encapsulated flavourant placed thereon.
8. The flip top package of Claim 7, wherein said cigarette package is cuboidal.

9. The flip top package of Claim 8, wherein said inner frame member extends upwardly from an upper edge of said body outer frame member and is spaced inwardly therefrom.

5 10. The flip top package of Claim 9, wherein said inner frame member has at least one outwardly extending lug which frictionally engages said interior surface of said flip top portion.

11. The flip top package of Claim 9, wherein said flip top portion is further comprised of a lid inside right side wall flap, a lid inside top wall right flap, a lid inside front wall, a lid inside
10 top wall left flap, a lid inside left side wall flap and a lid inside back wall, wherein at least one of said lid inside right side wall flap, lid inside top wall right flap, lid inside front wall, lid inside top wall left flap, lid inside left side wall flap and lid inside back wall of said flip top portion contains said encapsulated flavourant placed thereon.

15 12. A flip top smoking article package, comprising:
a body outer frame member;
a flip top portion hingedly attached to said body outer frame member;
wherein said flip top portion has an interior surface thereof, said interior surface contacting at least a portion of said body outer frame member when said flip top is closed onto said body
20 outer frame member, said interior surface of said flip top portion having at least one area having encapsulated flavourant applied thereon.

13. The flip top package of Claim 12, wherein said flip top has a lid interior front wall, said lid interior front wall having an upper portion and a lower portion, said lower portion of said
25 interior front wall having said encapsulated flavourant placed thereon.

14. The flip top package of Claim 13, and further comprising an inner frame member extending upwardly from said body outer frame member, said flip top portion covering said inner frame member when said flip top is in a closed position.

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15. The flip top package of Claim 14, wherein said inner frame member has a front panel and a first and second side panel, said front panel having at least one outwardly extending lug formed therein, said lug frictionally contacting a surface on said interior of said inner frame member which has said encapsulated flavourant placed thereon.

16. A flip top smoking article package, comprising:

a body outer frame member;

a flip top portion hingedly attached to said body outer frame member;

5 wherein said flip top portion has an interior surface thereof, said interior surface having a lid inside right side wall flap, a lid inside top wall right flap, a lid inside front wall, a lid inside top wall left flap, a lid inside left side wall flap and a lid inside back wall, wherein at least one of said lid inside right side wall flap, lid inside top wall right flap, lid inside front wall, lid inside top wall left flap, lid inside left side wall flap and lid inside back wall of said
10 flip top portion contains encapsulated flavourant placed thereon.

17. The flip top package of Claim 16, further comprising an inner frame member extending upwardly from said body outer frame member, said inner frame member having a front panel and a first and a second side panel member.

15 18. The flip open package of any one of Claims 1 to 6, wherein said microcapsules are composed of polyoxymethylene urea polymer.

19. The flip open package of any one of Claims 1 to 6 or 18, wherein said microcapsules
20 have a diameter size range of 10 to 40 micrometers.

20. The flip open package of any one of Claims 1 to 6, 18 or 19, wherein said flavour is selected from a group consisting of peppermint, menthol, spearmint, roasted or toasted aromas.

25 21. The flip open package of any one of Claims 1 to 6, 18, 19 or 20, wherein said encapsulated flavourant is printed on said package so as to maximize frictional contact of said encapsulated flavourant with opposing surfaces of said package.

22. The flip open package of Claim 17, wherein said encapsulated flavourant is printed on
30 the inside of a lid of said package.

23. The flip open cigarette box of Claim 22 wherein said microcapsules are applied as an ink comprising 50% microcapsules.

24. A flip top cigarette package, comprising:

a body outer frame member;

a flip top portion hingedly attached to said body outer frame member;

wherein said flip top portion has an interior surface thereof, said interior surface having

5 a lid inside right side wall flap, a lid inside top wall right flap, a lid inside front wall, a lid inside top wall left flap, a lid inside left side wall flap and a lid inside back wall, wherein at least one of said lid inside right side wall flap, lid inside top wall right flap, lid inside front wall, lid inside top wall left flap, lid inside left side wall flap and lid inside back wall of said flip top portion contains encapsulated flavourant applied thereon, the encapsulated flavourant
10 being applied as an ink 50% of which is encapsulated flavourant having a diameter size range of between about 10 to about 40 micrometers.

25. The flip open package of Claim 24, wherein said encapsulated flavourant is comprised of microcapsules containing aroma oils.

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26. The flip open package of Claim 25, wherein said encapsulated flavourant has microcapsules which are composed of polyoxymethylene urea polymer.