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(54) **Titre : BASE DE GOMME DOUCE ET COMPOSITIONS DE CHEWING-GUM CONTENANT CELLE-CI**
(54) **Title: INDULGENT GUM BASE AND CHEWING GUM COMPOSITIONS CONTAINING SAME**

(57) **Abrégé/Abstract:**

The present invention includes gum base compositions and/or chewing gum compositions that impart a perceptible creaminess upon consumption. The gum base and/or chewing gum compositions include an elastomer, a gum resin or ester thereof and a low-melting pointing fat. In some embodiments, the gum base and/or chewing gum compositions may contain sufficient fat to provide a creamy and/or juicy perception during consumption. In some embodiments, the gum base and/or chewing gum compositions may maintain sufficient fat to retain cohesive integrity during consumption. Also included are chewing gum products employing the gum base and/or chewing gum compositions, as well as methods of preparing and using same.



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(54) Title: INDULGENT GUM BASE AND CHEWING GUM COMPOSITIONS CONTAINING SAME

(57) Abstract: The present invention includes gum base compositions and/or chewing gum compositions that impart a perceptible creaminess upon consumption. The gum base and/or chewing gum compositions include an elastomer, a gum resin or ester thereof and a low-melting pointing fat. In some embodiments, the gum base and/or chewing gum compositions may contain sufficient fat to provide a creamy and/or juicy perception during consumption. In some embodiments, the gum base and/or chewing gum compositions may maintain sufficient fat to retain cohesive integrity during consumption. Also included are chewing gum products employing the gum base and/or chewing gum compositions, as well as methods of preparing and using same.

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INDULGENT GUM BASE AND CHEWING GUM COMPOSITIONS
CONTAINING SAME

FIELD

- 10 [0002] The present invention includes gum base compositions for use in chewing gum products and chewing gum compositions containing same. The gum base compositions and/or chewing gum compositions may provide a creamy and/or juicy perception upon consumption. In particular, the gum base compositions and/or chewing gum compositions include an elastomer, a gum resin or ester thereof and a low melting pointing fat.

15

BACKGROUND

- [0003] Gum base generally is the insoluble portion of a chewing gum product, which binds all of the ingredients together. It is used as a support for the edible and soluble portion of a chewing gum product, which includes flavors and sweeteners or the like. Traditional gum base includes elastomers or rubbers, among other ingredients, such as resins, plasticizers, fillers, waxes and softeners, which may be added to improve the texture of the base. Gum base typically is used in amounts of about 25% by weight of the total chewing gum product.
- 20
- 25 [0004] Gum base typically does not provide any sensory attributes of its own upon mastication. Although flavors or active substances may be included in traditional chewing gums to provide different tastes or chemical sensations, such as cooling, the gum base itself typically does not impart any perceptible sensation.
- 30 [0005] It often is desirable, however, for chewing gum products to provide an indulgent perception during mastication. In today's health conscious society, edible products that satisfy certain indulgent cravings yet are low-calorie or low-fat are in high demand. Confectioneries, such as chocolates or caramels, may satisfy such cravings, yet these products may be highly caloric and high in fat content. As such, many individuals search for
- 35 a snack replacement to such candies, yet one that still satisfies their indulgent cravings.

Although creamy flavors, such as chocolate, have been added to conventional chewing gum base, the resulting chewing gum products have not provided a creamy or indulgent mouthfeel, and moreover, tend to crumble and fall apart during mastication.

5 [0006] There is a need, therefore, for a gum base and chewing gum products that impart a creamy and/or juicy perception during mastication. Such gum base and chewing gum products may provide a lower calorie alternative to traditional, indulgent confectioneries.

10 SUMMARY

[0007] In some embodiments there is a chewing gum composition including: a gum base composition which includes at least one elastomer, at least one gum resin or ester thereof present in amounts of at least about 10% by weight of the gum base composition and at least one fat having a melting point from about 15°C to about 60°C present in amounts of
15 about 20% to 50% by weight of the gum base composition; at least one flavor; and at least one sweetener.

[0008] Some embodiments provide a chewing gum composition including: a gum base composition which includes at least one elastomer, at least one gum resin or ester
20 thereof present in amounts of at least about 10% by weight of the gum base composition and at least one fat having a melting point from about 15°C to about 60°C; at least one flavor; and at least one sweetener, wherein the gum base composition is present in amounts of about 75% to about 90% by weight of the chewing gum composition.

25 [0009] In some embodiments there is provided a chewing gum composition including: at least one elastomer containing one or more polar groups; at least one gum resin or ester thereof present in amounts of at least about 10% by weight of the composition; at least one fat having a melting point from about 15°C to about 60°C, the at least one fat including a hydrogenated oil; polyvinyl acetate having a molecular weight of about 10,000
30 g/mol to about 60,000 g/mol; at least one flavor; and at least one sweetener present in amounts of less than about 25% by weight of the composition.

[0010] In some embodiments there is a chewing gum composition including: at least one elastomer; at least one gum resin or ester thereof; and at least one fat having a melting

point from about 15°C to about 60°C, wherein upon mastication for a period of at least about 5 minutes, the chewing gum composition contains sufficient fat to provide a velvety chew score of at least about 2.0 on a scale of 0 to 4 as measured by descriptive analysis and a surface smoothness score of at least about 2.0 on a scale of 0 to 4 as measured by descriptive
5 analysis.

[0011] Some embodiments provide a method of preparing a chewing gum composition containing sufficient fat to provide a velvety chew score of at least about 2.0 on a scale of 0 to 4 as measured by descriptive analysis and a surface smoothness score of at
10 least about 2.0 on a scale of 0 to 4 as measured by descriptive analysis, including the steps of:

- (a) providing a gum base composition including:
 - (i) at least one elastomer containing one or more polar groups;
 - (ii) at least one gum resin or ester thereof; and
 - (iii) at least one fat having a melting point from about 15°C to about 60°C,
- 15 wherein the gum base composition is present in amounts of about 75% to about 90% by weight of the chewing gum composition; and
- (b) admixing the gum base composition with at least one flavor and at least one sweetener.

20 [0012] Some embodiments provide a continuous gum making process including the steps of: forming a blend of at least one elastomer containing one or more polar groups, at least one resin or resin ester and at least one fat having a melting point of about 15°C to about 60°C; admixing the blend in-line with at least one flavor and at least one sweetener; and forming a chewing gum shape from the blend.

25 [0013] In some embodiments there is a method of producing a chewing gum experience having a creamy organoleptic perception including the steps of:

- (a) providing a chewing gum composition containing a chewing gum base and at least one flavor, the chewing gum base including a blend of:
 - 30 (i) at least one elastomer containing one or more polar groups;
 - (ii) at least one gum resin or ester thereof; and
 - (iii) at least one fat having a melting point from about 15°C to about 60°C,
- wherein the chewing gum base is present in amounts of about 75% to about 90% by weight of the chewing gum composition; and

(b) chewing the chewing gum composition for a period of at least about 5 minutes to experience a creamy perception defined by a velvety chew score of at least about 2.0 on a scale of 0 to 4 as measured by descriptive analysis and a surface smoothness score of at least about 2.0 on a scale of 0 to 4 as measured by descriptive analysis.

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[0014] In some embodiments there is provided a method of producing a chewing gum experience having a juicy organoleptic perception including the steps of:

(a) providing a chewing gum composition containing a chewing gum base and at least one flavor, the chewing gum base including a blend of:

10 (i) at least one elastomer containing one or more polar groups;

(ii) at least one gum resin or ester thereof; and

(iii) at least one fat having a melting point from about 15°C to about 60°C,

wherein the chewing gum base is present in amounts of about 75% to about 90% by weight of the chewing gum composition; and

15 (b) chewing the chewing gum composition for a period of at least about 5 minutes to experience a juicy perception defined by a moistness of bolus score of at least about 2.0 on a scale of 0 to 4 as measured by descriptive analysis.

DETAILED DESCRIPTION

20 [0015] As used herein the transitional term “comprising,” (also “comprises,” etc.) which is synonymous with “including,” “containing,” or “characterized by,” is inclusive or open-ended and does not exclude additional, unrecited elements or method steps, regardless of its use in the preamble or the body of a claim.

25 [0016] As used herein, the terms “bubble gum” and “chewing gum” are used interchangeably and are both meant to include any gum compositions.

[0017] As used herein, the term “ingredient” and the term “component” are used interchangeably to describe any additive, fixing, substance, material, agent, active, element,
30 or part that may be included in the gum compositions of some embodiments.

[0018] Embodiments described herein provide gum base compositions and/or chewing gum compositions that impart a creamy and/or juicy perception upon consumption. The gum base and/or chewing gum compositions may include at least one low melting point

fat. The low melting point fat may provide lubricity to the gum base and/or chewing gum compositions, thereby enhancing the surface smoothness of chewing gum products into which the gum base compositions are incorporated, as well as the ease of chew of such products. In some embodiments, little or none of the low melting point fat may be released
5 from the gum base and/or chewing gum compositions during mastication, which may allow the compositions to retain cohesive integrity. Yet, the compositions still may impart a perceptible velvetiness upon consumption due, at least in part, to the presence of the low melting point fat. In some other embodiments, a portion of the low melting point fat may be released from the gum base and/or chewing gum compositions during consumption, yet a
10 sufficient amount of the low melting point fat may be retained in the gum base and/or chewing gum compositions during consumption to maintain the cohesive integrity thereof.

Gum Base and/or Chewing Gum Compositions

[0019] Embodiments described herein provide gum base and/or chewing gum
15 compositions that impart a perception of indulgence upon consumption. More specifically, as described above, the gum base and/or chewing gum compositions impart a creamy and/or juicy perception upon consumption while also retaining cohesive integrity. The gum base and/or chewing gum compositions may include at least one elastomer, desirably having one or more polar groups, at least one elastomer solvent, such as a gum resin or ester thereof, and
20 at least one low melting point fat. The gum base and/or chewing gum compositions may be incorporated into a variety of different chewing gum products to provide chewing gums that impart a creamy and/or juicy perception upon consumption.

[0020] By the term “cohesive integrity,” it is meant that the gum base and/or chewing
25 gum holds together as a mass throughout mastication of the chewing gum product into which it is incorporated. More specifically, the gum base and/or chewing gum desirably does not crumble or break apart and become discontinuous during mastication.

[0021] The terms “velvety,” “velvetiness,” “creaminess” or “creamy perception” refer
30 to the texture attributes, i.e., mouthfeel, provided by the gum base and/or chewing gum compositions and perceived in the mouth upon mastication of the chewing gum. Like taste and chemical attributes, texture is perceived by sensors in the mouth. Texture is the sensory manifestation of a product based on: (1) the product’s reaction to stress, which is measured as mechanical properties by the kinesthetic sense in the muscles of the tongue, jaw, teeth or

lips; and (2) the product's tactile feel properties, which are measured as geometrical particles or moisture properties by the tactile nerves in the lips, tongue, or other areas of the oral cavity including, but not limited to the soft palate, hard palate, etc.

5 [0022] Texture attributes can be reliably and reproducibly measured using sensory analysis methods known as descriptive analysis techniques. The SpectrumTM method of descriptive analysis is described in MORTEN MEILGAARD, D.SC. ET AL., SENSORY EVALUATION TECHNIQUES (3d ed. 1999). The SpectrumTM method is a custom design approach meaning that the highly trained panelists who generate the data also develop the
10 terminology to measure the attributes of interest. Further, the method uses intensity scales created to capture the intensity differences being investigated. These intensity scales are anchored to a set of well-chosen references. Using these references helps make the data universally understandable and usable over time. This ability to reproduce the results at another time and with another panel makes the data potentially more valuable than analytical
15 techniques which offer similar reproducibility but lack the ability to fully capture the integrated sensory experiences as perceived by humans.

[0023] Sensory methods such as descriptive analysis can be conducted on a screening basis or on a full panel basis. When testing is done on a screening basis, there may be fewer
20 panelists and those panelists may use an abbreviated scale such as a 5 point scale for rating the products. When testing is done on a full panel basis, more panelists may be involved and a complete scale such as a 15 point scale may be used. When choosing whether to use a screening or full panel basis for the testing, sensory scientists consider a range of variables such as cost, time, number of samples, etc. A screening basis may be used when time for
25 generating the data is limited and/or when data from an abbreviated scale will adequately distinguish the samples.

[0024] For chewing gums, texture attributes such as "velvety chew," "surface smoothness," "ease to chew," and "wall integrity," have been developed by descriptive
30 analysis panels based on common descriptors used by the panelists to describe their experiences with chewing gums. Velvety chew is an integrated term that describes the playability or moveability in the mouth. It encompasses how the chewing gum bolus feels in the mouth as it moves around the teeth and gums as well as the fullness of body and how the bolus holds together. Once a trained panel agrees on a term like velvety chew, they can

reliably measure that texture attribute and distinguish chewing gums having varying degrees of that attribute.

[0025] The first assessment of texture noted above, i.e., the product's reaction to stress, relates to the mechanical properties of the product. Mechanical properties include the hardness and cohesiveness of the product. With regard to such mechanical properties of texture, the gum base and/or chewing gum compositions described herein may maintain cohesive integrity, as provided above. In particular, in some embodiments, the gum base and/or chewing gum mass, or bolus, sticks firmly together during mastication, rather than becoming too thin or stringy for an individual to press their tongue through the gum bolus. The gum base and/or chewing gum also may provide playability or ease of chew, i.e., not so hard or tough that an individual cannot deform the bolus during mastication, yet not so soft that the bolus becomes mushy. This property also may be referred to as fullness or body.

[0026] The second measure of texture noted above relates to the tactile feel properties of the product. Tactile feel properties include the smoothness, moistness, slipperiness and body of the product. As regards such tactile feel properties, the gum base and/or chewing gum compositions described herein may be perceived as full bodied, moist, slippery and smooth. In particular, the gum base and/or chewing gum bolus itself may be perceived as moist or watery during mastication. A slippery feeling also may be perceived, i.e., the composition may slide or glide across the tongue. Surface smoothness also may be perceived, which means that the bolus is soft, smooth and slick rather than hard and waxy with rigid tooth impressions. In addition, surface smoothness means that particles are not perceived in the gum base and/or chewing gum composition by an individual during mastication. After mastication, an individual may perceive a film remaining on mouth surfaces, which is referred to as a slick mouthcoating.

[0027] The combination of the mechanical and tactile feel textural attributes described above is referred to herein as "velvety," "velvetiness," "creaminess" or a "creamy perception." Such perception lends indulgence to the gum base and/or chewing gum compositions and chewing gum products in which they are employed. Accordingly, the gum base compositions and chewing gum compositions of some embodiments may provide the individual user with a means to feel their decadent inclinations are satisfied without the caloric content of some conventionally decadent foods.

[0028] In accordance therewith, in some embodiments the gum base composition, or chewing gum composition, imparts a creamy perception upon mastication for a period of at least about 5 minutes, defined by a velvety chew score of at least about 2.0 on a scale of 0 to 4 as measured by descriptive analysis and a surface smoothness score of at least about 2.0 on a scale of 0 to 4 as measured by descriptive analysis. Further, the gum base composition, or chewing gum composition, may retain cohesive integrity as measured by a wall integrity score of at least about 1.5 on a scale of 0 to 3 as measured by descriptive analysis. The gum base composition, or chewing gum composition, also may provide a score of at least about 2.0 on a scale of 0 to 4 as measured by descriptive analysis for one or more of the following criteria: mouth film; moistness of bolus; and ease to chew.

[0029] The gum base compositions also may impart a perception of juiciness upon consumption. Specifically, in some embodiments, the gum base composition, or chewing gum composition, imparts a juicy perception upon mastication for a period of at least about 5 minutes, defined by a moistness of bolus score of at least about 2.0 on a scale of 0 to 3 as measured by descriptive analysis.

[0030] The elastomer employed in the gum base and/or chewing gum compositions may be any water-insoluble polymer known in the art, and includes those gum polymers utilized for chewing gums and bubble gums. In some embodiments, the elastomer component of the gum base and/or chewing gum compositions may help to maintain the integrity of the gum base and/or chewing gum composition when combined with the at least one low melting point fat. For instance, elastomers having one or more polar groups may be employed to help maintain the cohesive integrity of the gum base and/or chewing gum compositions during consumption. An example of a suitable polar elastomer includes, but is not limited to, styrene butadiene rubber.

[0031] In some embodiments, relatively non-polar elastomers also may be included in the gum base and/or chewing gum compositions in combination with the polar elastomers. Suitable non-polar elastomers include, but are not limited to, butyl rubber, polyisobutylene and combinations thereof.

[0032] In some embodiments, the polar and/or non-polar elastomers used in the gum base and/or chewing gum may have a high molecular weight. High molecular weight elastomers enhance the integrity of the gum bolus.

5 [0033] Other conventional polymers for use in gum bases and/or chewing gums also may be employed. Illustrative examples of suitable polymers in gum bases and/or chewing gums include both natural and synthetic elastomers. For example, those polymers which are suitable in gum base and/or chewing gum compositions include, without limitation, natural
10 substances (of vegetable origin) such as chicle, natural rubber, crown gum, nispero, rosidinha, jelutong, perillo, niger gutta, tunu, balata, guttapercha, lechi capsii, sorva, gutta kay, and the like, and mixtures thereof. Examples of synthetic elastomers include, without limitation, styrene-butadiene copolymers (SBR), polyisobutylene, isobutylene-isoprene copolymers, polyethylene, polyvinyl acetate and the like, and mixtures thereof. Copolymers include alternating copolymers, periodic copolymers, random copolymers, statistical
15 copolymers, block copolymers and combinations thereof.

[0034] Styrene-diene block copolymers, such as a styrene-butadiene block copolymer, may be employed in some embodiments. Such block copolymers have two or more hard segments of polystyrene and at least one soft segment of a polydiene, such as, but
20 not limited to, a polybutadiene or polyisoprene. Blends with other elastomers, such as styrene-diene random copolymers, also are contemplated. Styrene-butadiene block copolymers may have a molecular weight of about 100,000 g/mol to about 300,000 g/mol, or higher.

25 [0035] In some embodiments, the elastomer may be a styrene-isoprene-styrene block copolymer. Such copolymers include polystyrene segments at each end of the polymer chain and an isoprene segment in between. Styrene-isoprene-styrene block copolymers may have a molecular weight of about 50,000 g/mol to about 1,000,000 g/mol.

30 [0036] The at least one elastomer may be employed in the gum base and/or chewing gum composition in amounts from about 5% to about 60%, and more specifically from about 20% to about 40%, by weight of the gum base and/or chewing gum composition.

[0037] The gum base and/or chewing gum compositions also may include at least one gum resin (rosin) or ester thereof. Gum resins or esters thereof may function as elastomer solvents or plasticizers, which may aid in softening the elastomer component. Such gum resins or esters thereof may include those elastomer solvents known in the art, for example, terpinene resins such as polymers of alpha-pinene or beta-pinene, methyl, glycerol and pentaerythritol esters of rosins and modified rosins and gums such as hydrogenated, dimerized and polymerized rosins, and mixtures thereof. Examples of gum resins or esters thereof suitable for use herein may include the pentaerythritol ester of partially hydrogenated wood and gum rosin, the pentaerythritol ester of wood and gum rosin, the glycerol ester of wood rosin, the glycerol ester of partially dimerized wood and gum rosin, the glycerol ester of polymerized wood and gum rosin, the glycerol ester of tall oil rosin, the glycerol ester of wood and gum rosin and the partially hydrogenated wood and gum rosin and the partially hydrogenated methyl ester of wood and rosin, and the like, and mixtures thereof.

[0038] In some embodiments, the at least one gum resin or ester thereof may have an intermediate molecular weight of about 100g/mol to about 1000g/mol. The at least one gum resin or ester thereof may be employed in the gum base and/or chewing gum composition in amounts from about 4% to about 40%, and more specifically from about 10% to about 30%, and even more specifically about 15% to about 25%, by weight of the gum base and/or chewing gum composition. Some embodiments include at least about 10% of the gum resin or ester thereof by weight of the gum base and/or chewing gum composition.

[0039] The gum base and/or chewing gum compositions also may include at least one low melting point fat. In particular, in some embodiments, the fat may have a melting point of about 15°C to about 60°C, more specifically about 15°C to about 40°C, and even more specifically about 30°C to about 40°C. Low melting point fats may provide lubricity, thereby enhancing the surface smoothness and ease of chew of chewing gum products into which the gum base and/or chewing gum compositions are incorporated. In some embodiments, low melting point fats may replace softeners, which are traditionally incorporated into gum base and/or chewing gum compositions to soften the compositions. In addition, in some embodiments, a portion of the low melting point fat may release from the gum base and/or chewing gum composition during consumption, yet a sufficient amount of the low melting point fat may remain in the gum base and/or chewing gum composition to retain the cohesive integrity thereof. As discussed above, sufficient low melting point fat may be present, upon

mastication for a period of at least about 5 minutes, to provide a velvety chew score of at least about 2.0 on a scale of 0 to 4 as measured by descriptive analysis and a surface smoothness score of at least about 2.0 on a scale of 0 to 4 as measured by descriptive analysis. In addition, sufficient low melting point fat may be present to retain cohesive integrity, as measured by a wall integrity score of at least about 1.5 on a scale of 0 to 3 as measured by descriptive analysis. Examples of suitable fats having a melting point of about 15°C to about 60°C include, but are not limited to, hydrogenated oils, such as hydrogenated palm oil (or palm kernel oil), hydrogenated cottonseed oil, cocoa fat, soy bean oil, peanut oil, cotton seed oil, sun flower seed oil, olive oil, and the like and combinations thereof.

[0040] Low melting point fats may be employed in the gum base and/or chewing gum composition in amounts from about 5% to about 50%, more specifically from about 20% to about 50%, and even more specifically from about 15% to about 35%, by weight of the gum base and/or chewing gum composition.

[0041] In some embodiments, a combination of a low melting point fat and a flavor may be used to add softness to the compositions. Flavors also tend to enhance the velvety perception of compositions into which they are incorporated.

[0042] In some embodiments, the gum base and/or chewing gum compositions also may include polyvinyl acetate. Polyvinyl acetate, particularly high molecular weight polyvinyl acetate, may serve as a textural and bulking agent and may assist in maintaining the integrity of the gum base composition during consumption. Polyvinyl acetates having a molecular weight range of about 10,000 g/mol to about 60,000 g/mol may be used in some embodiments. This may include combinations of polyvinyl acetates having different molecular weights, such as, for instance, combinations of low molecular weight polyvinyl acetates and high molecular weight polyvinyl acetates. Low molecular weight polyvinyl acetates useful in some embodiments may have a molecular weight of about 10,000 g/mol to about 15,000 g/mol. Medium molecular weight polyvinyl acetates useful in some embodiments may have a molecular weight of about 15,000 g/mol to about 55,000 g/mol. High molecular weight polyvinyl acetates useful in some embodiments may have a molecular weight of about 50,000 g/mol to about 100,000 g/mol, more specifically about 80,000 g/mol to about 100,000 g/mol. Ultra-high molecular weight polyvinyl acetates may have a molecular weight of about 100,000 g/mol or higher. Polyvinyl acetate may be employed in

the gum base and/or chewing gum composition in amounts from about 0% to about 50%, and more specifically from about 10% to about 35%, by weight of the gum base and/or chewing gum composition.

5 [0043] In addition to the components set out above, the gum base and/or chewing gum compositions may include any component known in the chewing gum art. Such components may be water soluble, water-insoluble or a combination thereof. For example, the gum base and/or chewing gum may include bulking agents, waxes, emulsifiers, plasticizers, fillers and mixtures thereof.

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[0044] In some embodiments, the gum base and/or chewing gum compositions may include wax. Wax may soften the polymeric elastomer mixture and improve the elasticity of the gum base and/or chewing gum compositions. When present, the waxes employed may have a melting point below about 60°C, and desirably between about 45°C and about 55°C.

15 The low melting wax may be a paraffin wax. The wax may be present in the gum base and/or chewing gum composition in an amount from about 6% to about 10%, and more specifically from about 7% to about 9.5%, by weight of the gum base and/or chewing gum composition.

[0045] In addition to the low melting point waxes, waxes having a higher melting point may be used in the gum base and/or chewing gum compositions in amounts up to about 20 5%, by weight of the gum base and/or chewing gum composition. Such high melting waxes include beeswax, vegetable wax, candelilla wax, caruba wax, most petroleum waxes, and the like, and mixtures thereof.

25 [0046] The gum base and/or chewing gum compositions also may include emulsifiers, which may aid in dispersing the immiscible components into a single stable system. The emulsifiers useful in some embodiments include glyceryl monostearate, lecithin, fatty acid monoglycerides, diglycerides, propylene glycol monostearate, and the like, and mixtures thereof. The emulsifier may be employed in amounts from about 2% to about 15%, 30 and more specifically, from about 7% to about 11%, by weight of the gum base and/or chewing gum composition.

[0047] The gum base and/or chewing gum compositions also may include plasticizers or softeners to provide a variety of desirable textures and consistency properties. Because of

the low molecular weight of these ingredients, the plasticizers and softeners are able to penetrate the fundamental structure of the gum base and/or chewing gum making it plastic and less viscous. Useful plasticizers and softeners include lanolin, palmitic acid, oleic acid, stearic acid, sodium stearate, potassium stearate, glyceryl triacetate, glyceryl lecithin, glyceryl monostearate, propylene glycol monostearate, acetylated monoglyceride, glycerine, and the like, and mixtures thereof. Waxes, for example, natural and synthetic waxes, hydrogenated vegetable oils, petroleum waxes such as polyurethane waxes, polyethylene waxes, paraffin waxes, microcrystalline waxes, fatty waxes, sorbitan monostearate, tallow, propylene glycol, mixtures thereof, and the like, may also be incorporated into the gum base and/or chewing gum compositions. The plasticizers and softeners are generally employed in the gum base and/or chewing gum compositions in amounts up to about 20% by weight of the gum base and/or chewing gum composition, and more specifically in amounts from about 9% to about 17%, by weight of the gum base and/or chewing gum composition.

[0048] Plasticizers also include hydrogenated vegetable oils, such as soybean oil and cottonseed oils, which may be employed alone or in combination. These plasticizers may provide the gum base and/or chewing gum compositions with good texture and soft chew characteristics. These plasticizers and softeners generally may be employed in amounts from about 5% to about 14%, and more specifically in amounts from about 5% to about 13.5%, by weight of the gum base and/or chewing gum composition.

[0049] Anhydrous glycerin may also be employed as a softening agent, such as the commercially available United States Pharmacopeia (USP) grade. Glycerin is a syrupy liquid with a sweet warm taste and has a sweetness of about 60% of that of cane sugar. Because glycerin is hygroscopic, the anhydrous glycerin may be maintained under anhydrous conditions throughout the preparation of the gum base and/or chewing gum composition.

[0050] In some embodiments, the gum base and/or chewing gum compositions also may include effective amounts of bulking agents, such as mineral adjuvants, which may serve as fillers and textural agents. Useful mineral adjuvants include calcium carbonate, magnesium carbonate, alumina, aluminum hydroxide, aluminum silicate, talc, tricalcium phosphate, dicalcium phosphate, calcium sulfate and the like, and mixtures thereof. These fillers or adjuvants may be used in the gum base and/or chewing gum compositions in various amounts. Preferably the amount of filler, when used, will be present in an amount from about

15% to about 40%, and desirably from about 20% to about 30%, by weight of the gum base and/or chewing gum composition. Higher ranges of filler could be used in some embodiments, such as about 30% to about 75% by weight of the gum base and/or chewing gum composition.

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[0051] A variety of traditional ingredients may be optionally included in the gum base and/or chewing gum compositions in effective amounts such as flavor agents and coloring agents, antioxidants, preservatives, and the like. For example, titanium dioxide and other dyes suitable for food, drug and cosmetic applications, known as F. D. & C. dyes, may be utilized. An anti-oxidant such as butylated hydroxytoluene (BHT), butylated hydroxyanisole (BHA), propyl gallate, vitamin E and mixtures thereof, may also be included. Other conventional chewing gum additives known to one having ordinary skill in the chewing gum art may also be used in the gum base and/or chewing gum compositions.

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15 Chewing Gum Products

[0052] The gum base and/or chewing gum compositions described above may be incorporated into a variety of different chewing gum products, which may provide a perceptible creaminess upon consumption. For instance, chewing gum products may be prepared in forms, such as, slabs, sticks, pellets, pillows, deposited, compressed gums, center-fill gums, and the like.

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[0053] The gum base composition, or the chewing gum composition itself, may include at least one elastomer, at least one gum resin or ester thereof and at least one fat having a melting point of about 15°C to about 60°C, as described above. The gum base and/or chewing gum composition also may include any of the additional components set out above. In some embodiments, chewing gum compositions may include the gum base composition, as described above, at least one flavor and at least one sweetener.

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[0054] In some embodiments, the gum base composition may be employed in chewing gum compositions in amounts from about 5% to about 95%, more specifically from about 75% to about 95%, and even more specifically from about 75% to about 90%, by weight of the chewing gum composition.

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[0055] The low melting point fat may be employed in the chewing gum composition in amounts from about 5% to about 40%, more specifically from about 25% to about 35%, and even more specifically from about 30% to about 35%, by weight of the chewing gum composition.

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[0056] In some embodiments, a portion of the low melting point fat may be included in the gum base composition and a portion of the low melting point fat may be included in the chewing gum composition portion of the total product.

10 [0057] In some embodiments, a portion of the low melting point fat may be included in a separate layer in the chewing gum composition rather than all in the gum base composition. In particular, the gum base composition may include a first portion of the low melting point fat and a separate fat layer may include a second portion of the low melting point fat. Upon consumption, the separate fat layer may combine with the gum base bolus.

15 In some embodiments, for instance, the low melting point fat may be included in a layer of fat on the surface of the gum base. In some other embodiments, the low melting point fat may be included in a coating layer, which at least partially surrounds the chewing gum, such as a chocolate coating.

20 [0058] In addition, the chewing gum compositions also may include at least one flavor (flavorings or flavor agents). Examples of suitable flavors may include those flavors known to the skilled artisan, such as natural and artificial flavors. These flavorings may be chosen from synthetic flavor oils and flavoring aromatics and/or oils, oleoresins and extracts derived from plants, leaves, flowers, fruits, and so forth, and combinations thereof.

25 Nonlimiting representative flavor oils include spearmint oil, cinnamon oil, oil of wintergreen (methyl salicylate), peppermint oil, Japanese mint oil, clove oil, bay oil, anise oil, eucalyptus oil, thyme oil, cedar leaf oil, oil of nutmeg, allspice, oil of sage, mace, oil of bitter almonds, and cassia oil. Also useful flavorings are artificial, natural and synthetic fruit flavors such as vanilla, and citrus oils including lemon, orange, lime, grapefruit, yazu, sudachi, and fruit
30 essences including apple, pear, peach, grape, blueberry, strawberry, raspberry, cherry, plum, pineapple, apricot, banana, melon, apricot, ume, cherry, raspberry, blackberry, tropical fruit, mango, mangosteen, pomegranate, papaya and so forth. Other potential flavors include a milk flavor, a butter flavor, a cheese flavor, a cream flavor, and a yogurt flavor; a vanilla flavor; tea or coffee flavors, such as a green tea flavor, an oolong tea flavor, a tea flavor, a

cocoa flavor, a chocolate flavor, and a coffee flavor; mint flavors, such as a peppermint flavor, a spearmint flavor, and a Japanese mint flavor; spicy flavors, such as an asafetida flavor, an ajowan flavor, an anise flavor, an angelica flavor, a fennel flavor, an allspice flavor, a cinnamon flavor, a camomile flavor, a mustard flavor, a cardamom flavor, a caraway
 5 flavor, a cumin flavor, a clove flavor, a pepper flavor, a coriander flavor, a sassafras flavor, a savory flavor, a Zanthoxyli Fructus flavor, a perilla flavor, a juniper berry flavor, a ginger flavor, a star anise flavor, a horseradish flavor, a thyme flavor, a tarragon flavor, a dill flavor, a capsicum flavor, a nutmeg flavor, a basil flavor, a marjoram flavor, a rosemary flavor, a bayleaf flavor, and a wasabi (Japanese horseradish) flavor; alcoholic flavors, such as a wine
 10 flavor, a whisky flavor, a brandy flavor, a rum flavor, a gin flavor, and a liqueur flavor; floral flavors; and vegetable flavors, such as an onion flavor, a garlic flavor, a cabbage flavor, a carrot flavor, a celery flavor, mushroom flavor, and a tomato flavor. These flavoring agents may be used in liquid or solid form and may be used individually or in admixture. Commonly used flavors include mints such as peppermint, menthol, spearmint, artificial
 15 vanilla, cinnamon derivatives, and various fruit flavors, whether employed individually or in admixture. Flavors may also provide breath freshening properties, particularly the mint flavors when used in combination with the cooling agents, described herein below.

[0059] Other useful flavorings include aldehydes and esters such as cinnamyl acetate,
 20 cinnamaldehyde, citral diethylacetal, dihydrocarvyl acetate, eugenyl formate, p-methylamisol, and so forth may be used. Generally any flavoring or food additive such as those described in Chemicals Used in Food Processing, publication 1274, pages 63-258, by the National Academy of Sciences, may be used.

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 [0060] Further examples of aldehyde flavorings include but are not limited to acetaldehyde (apple), benzaldehyde (cherry, almond), anisic aldehyde (licorice, anise), cinnamic aldehyde (cinnamon), citral, i.e., alpha-citral (lemon, lime), neral, i.e., beta-citral (lemon, lime), decanal (orange, lemon), ethyl vanillin (vanilla, cream), heliotrope, i.e.,
 30 piperonal (vanilla, cream), vanillin (vanilla, cream), alpha-amyl cinnamaldehyde (spicy fruity flavors), butyraldehyde (butter, cheese), valeraldehyde (butter, cheese), citronellal (modifies, many types), decanal (citrus fruits), aldehyde C-8 (citrus fruits), aldehyde C-9 (citrus fruits), aldehyde C-12 (citrus fruits), 2-ethyl butyraldehyde (berry fruits), hexenal, i.e., trans-2 (berry fruits), tolyl aldehyde (cherry, almond), veratraldehyde (vanilla), 2,6-dimethyl-5-heptenal,

i.e., melonal (melon), 2,6-dimethyloctanal (green fruit), and 2-dodecenal (citrus, mandarin), cherry, grape, strawberry shortcake, and mixtures thereof.

[0061] In some embodiments, the at least one flavor employed in the chewing gum compositions may be selected from those associated with an indulgent flavor. As used herein, “indulgent flavor” refers to a type of flavor associated with a creamy or decadent taste. Sometimes these flavors are referred to as “sweet/brown” in the art. Examples of suitable indulgent flavors include, but are not limited to, maple, cola, chocolate, dulce de leche, raisin, vanilla, caramel, dairy flavors, such as cream, butter, milk and yogurt, butterscotch, peanut butter, fruit cream flavors, such as strawberry cream, and combinations thereof. In some embodiments, the chewing gum compositions could be flavored with a fat-containing flavor, such as, but not limited to, chocolate, chocolate crumb, nut butters, dairy-based creams and the like.

[0062] In some embodiments, the flavor may be employed in either liquid form and/or dried form. When employed in the latter form, suitable drying means such as spray drying the oil may be used. Alternatively, the flavor may be absorbed onto water soluble materials, such as cellulose, starch, sugar, maltodextrin, gum arabic and so forth or may be encapsulated. The actual techniques for preparing such dried forms are well-known.

[0063] Alternatively, the flavor may be used in an emulsion in some embodiments. For instance, the flavor may be pre-mixed as an emulsion with the low melting point fat. Such flavor emulsions may extend the release of the flavor during consumption.

[0064] In some embodiments, the flavor may be used in many distinct physical forms well-known in the art to provide an initial burst of flavor and/or a prolonged sensation of flavor. Without being limited thereto, such physical forms include free forms, such as spray dried, powdered, beaded forms, encapsulated forms, and mixtures thereof. In some embodiments, a single flavor may be used in its encapsulated form in combination with its unencapsulated, or free, form. In some other embodiments, multiple flavors may be used, some of which may be encapsulated and others which may be unencapsulated.

[0065] Typically, encapsulation of a flavor will result in a delay in the release of the predominant amount of the flavor during consumption of a chewing gum composition that

includes the encapsulated flavor (e.g., as part of a delivery system added as a component to the chewing gum composition). In some embodiments, the release profile of the flavor can be managed by managing various characteristics of the flavor, delivery system containing the flavor, and/or the chewing gum composition containing the delivery system and/or how the delivery system is made. For example, characteristics might include one or more of the following: tensile strength of the delivery system, water solubility of the ingredient, water solubility of the encapsulating material, water solubility of the delivery system, ratio of flavor to encapsulating material in the delivery system, average or maximum particle size of the flavor, average or maximum particle size of ground delivery system, the amount of the flavor or the delivery system in the chewing gum composition, ratio of different polymers used to encapsulate one or more flavors, hydrophobicity of one or more polymers used to encapsulate one or more flavors, hydrophobicity of the delivery system, the type or amount of coating on the delivery system, the type or amount of coating on a flavor prior to the flavor being encapsulated, among others.

[0066] The amount of flavor employed herein may be a matter of preference subject to such factors as the individual flavor and the strength of flavor desired. Thus, the amount of flavoring may be varied in order to obtain the result desired in the final product. In general, the flavors are present in amounts of about 1% to about 10%, and more specifically from about 2% to about 6%, and even more specifically, from about 3% to about 5%, by weight of the chewing gum composition.

[0067] In some embodiments, the chewing gum compositions also may include at least one sweetener. Suitable sweeteners (sweetening agents) may be natural, artificial or synthetic sweeteners, including bulk sweeteners such as sugars, sugarless bulk sweeteners, or the like, or mixtures thereof.

[0068] Suitable sugar sweeteners for use in the core and/or coating generally include mono-saccharides, di-saccharides and poly-saccharides such as but not limited to, sucrose (sugar), dextrose, maltose, dextrin, xylose, ribose, glucose, mannose, galactose, fructose (levulose), lactose, invert sugar, fructo oligo saccharide syrups, partially hydrolyzed starch, corn syrup solids and mixtures thereof.

[0069] Suitable sugarless bulk sweeteners for use in the core and/or coating include sugar alcohols (or polyols) such as, but not limited to, sorbitol, xylitol, mannitol, galactitol, maltitol, hydrogenated isomaltulose (isomalt), lactitol, erythritol, hydrogenated starch hydrolysate, stevia, lo han quo, and mixtures thereof.

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[0070] Suitable hydrogenated starch hydrolysates include those disclosed in U.S. Pat. No. 4,279,931 and various hydrogenated glucose syrups and/or powders which contain sorbitol, maltitol, hydrogenated disaccharides, hydrogenated higher polysaccharides, or mixtures thereof. Hydrogenated starch hydrolysates are primarily prepared by the controlled catalytic hydrogenation of corn syrups. The resulting hydrogenated starch hydrolysates are mixtures of monomeric, dimeric, and polymeric saccharides. The ratios of these different saccharides give different hydrogenated starch hydrolysates different properties. Mixtures of hydrogenated starch hydrolysates, such as LYCASIN[®], a commercially available product manufactured by Roquette Freres of France, and HYSTAR[®], a commercially available product manufactured by SPI Polyols, Inc. of New Castle, Delaware, are also useful.

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[0071] In general, the sweeteners are present in amounts of about 5% to about 20%, and more specifically from about 5% to about 15%, and even more specifically, from about 5% to about 10%, by weight of the chewing gum composition. Some embodiments include less than about 25% sweetener by weight of the chewing gum composition.

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[0072] In some embodiments, high-intensity sweeteners may be used. Without being limited to particular sweeteners, representative categories and examples include:

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(a) water-soluble sweetening agents such as dihydrochalcones, monellin, stevia steviosides, rebaudioside A, glycyrrhizin, dihydroflavenol, and sugar alcohols such as sorbitol, mannitol, maltitol, and L-aminodicarboxylic acid aminoalkenoic acid ester amides, such as those disclosed in U.S. Pat. No. 4,619,834, and mixtures thereof;

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(b) water-soluble artificial sweeteners such as soluble saccharin salts, i.e., sodium or calcium saccharin salts, cyclamate salts, the sodium, ammonium or calcium salt of 3,4-dihydro-6-methyl-1,2,3-oxathiazine-4-one-2,2-dioxide, the potassium salt of 3,4-dihydro-6-

methyl-1,2,3-oxathiazine-4-one-2,2-dioxide (Acesulfame-K), the free acid form of saccharin, and mixtures thereof;

(c) dipeptide based sweeteners, such as L-aspartic acid derived sweeteners, such as
 5 L-aspartyl-L-phenylalanine methyl ester (Aspartame) and materials described in U.S. Pat. No. 3,492,131, L-alphaaspartyl-N-(2,2,4,4-tetramethyl-3-thietanyl)-D-alaninamide hydrate (Alitame), N-[N-(3,3-dimethylbutyl)-L-aspartyl]-L-phenylalanine 1-methyl ester (Neotame), methyl esters of L-aspartyl-L-phenylglycerine and L-aspartyl-L-2,5-dihydrophenyl-glycine, L-aspartyl-2,5-dihydro-L-phenylalanine; L-aspartyl-L-(1-cyclohexen)-alanine, and mixtures
 10 thereof;

(d) water-soluble sweeteners derived from naturally occurring water-soluble sweeteners, such as chlorinated derivatives of ordinary sugar (sucrose), e.g., chlorodeoxysugar derivatives such as derivatives of chlorodeoxysucrose or
 15 chlorodeoxygalactosucrose, known, for example, under the product designation of Sucralose; examples of chlorodeoxysucrose and chlorodeoxygalactosucrose derivatives include but are not limited to: 1-chloro-1'-deoxysucrose; 4-chloro-4-deoxy-alpha-D-galactopyranosyl-alpha-D-fructofuranoside, or 4-chloro-4-deoxygalactosucrose; 4-chloro-4-deoxy-alpha-D-galactopyranosyl-1-chloro-1-deoxy-beta-D-fructo-furanoside, or 4,1'-dichloro-4,1'-
 20 dideoxygalactosucrose; 1',6'-dichloro 1',6'-dideoxysucrose; 4-chloro-4-deoxy-alpha-D-galactopyranosyl-1,6-dichloro-1,6-dideoxy-beta-D- fructofuranoside, or 4,1',6'-trichloro-4,1',6'-trideoxygalactosucrose; 4,6-dichloro-4,6-dideoxy-alpha-D-galactopyranosyl-6-chloro-6-deoxy-beta-D- fructofuranoside, or 4,6,6'-trichloro-4,6,6'-trideoxygalactosucrose; 6,1',6'-trichloro-6,1',6'-trideoxysucrose; 4,6-dichloro-4,6-dideoxy-alpha-D-galacto-pyranosyl-1,6-
 25 dichloro-1,6-dideox y-beta-D-fructofuranoside, or 4,6,1',6'-tetrachloro4,6,1',6'-tetradeoxygalacto-sucrose; and 4,6,1',6'-tetradeoxy-sucrose, and mixtures thereof;

(e) protein based sweeteners such as thaumaococcus danielli (Thaumatococcus daniellii) and talin;

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(f) the sweetener monatin (2-hydroxy-2-(indol-3-ylmethyl)-4-aminoglutaric acid) and its derivatives; and

(g) the sweetener Lo han guo (sometimes also referred to as "Lo han kuo" or "Lo han quo").

[0073] The intense sweetening agents may be used in many distinct physical forms well-known in the art to provide an initial burst of sweetness and/or a prolonged sensation of sweetness. Without being limited thereto, such physical forms include free forms, such as spray dried, powdered, beaded forms, encapsulated forms, and mixtures thereof.

[0074] In general, an effective amount of intense sweetener may be utilized to provide the level of sweetness desired, and this amount may vary with the sweetener selected. The intense sweetener may be present in amounts from about 0.001% to about 3%, by weight of the product, depending upon the sweetener or combination of sweeteners used.

[0075] Similar to the description of flavors provided above, any of the sweeteners may be used in their encapsulated and/or unencapsulated forms. Multiple sweeteners also may be employed, which may be encapsulated and/or unencapsulated. Encapsulation typically will result in a delay in the release of the predominant amount of the sweetener during consumption of a chewing gum composition that includes the encapsulated sweetener. Also as discussed above with regard to flavors, the release profile of the sweetener can be managed by managing various characteristics of the sweetener, delivery system containing the sweetener, and/or the chewing gum composition containing the delivery system and/or how the delivery system is made.

[0076] In some embodiments, the at least one sweetener may be added to the chewing gum composition as a solid. For instance, powdered or crystalline sweeteners, such as powdered or crystalline sorbitol, may be employed in some embodiments.

[0077] The chewing gum compositions also may include a variety of optional components. For instance, in some embodiments, the chewing gum compositions may include amounts of conventional additives selected from the group consisting of plasticizers, softeners, emulsifiers, waxes, fillers, bulking agents (carriers, extenders, bulk sweeteners), mineral adjuvants, coloring agents, antioxidants, acidulants, thickeners, medicaments, oral care actives, such as remineralization agents, antimicrobials and tooth whitening agents, as described in assignee's co-pending U.S. Patent Application No. 10/901,511, now Patent No. 7,641,892, filed on July 29,

2004 and entitled "Tooth Whitening Compositions and Delivery Systems Therefor,"

and the like, and mixtures thereof. Some of these additives may serve more than one purpose. For example, in sugarless gum compositions, a sweetener, such as maltitol or other sugar alcohol, may also function as a bulking agent.

[0078] Coloring agents may be used in amounts effective to produce the desired color. The coloring agents may include pigments which may be incorporated in amounts up to about 6%, by weight of the composition. For example, titanium dioxide may be incorporated in amounts up to about 2%, and preferably less than about 1%, by weight of the composition. The colorants may also include natural food colors and dyes suitable for food, drug and cosmetic applications. These colorants are known as F.D.& C. dyes and lakes. The materials acceptable for the foregoing uses are preferably water-soluble. Illustrative nonlimiting examples include the indigoid dye known as F.D.& C. Blue No.2, which is the disodium salt of 5,5-indigotindisulfonic acid. Similarly, the dye known as F.D.& C. Green No.1 comprises a triphenylmethane dye and is the monosodium salt of 4-[4-(N-ethyl-p-sulfoniumbenzylamino) diphenylmethylene]-[1-(N-ethyl -N-p-sulfoniumbenzyl)-delta-2,5-cyclohexadieneimine]. A full recitation of all F.D.& C. colorants and their corresponding chemical structures may be found in the Kirk-Othmer Encyclopedia of Chemical Technology, 3rd Edition, in volume 5 at pages 857-884,

[0079] The plasticizers, softening agents, mineral adjuvants, waxes and antioxidants discussed above, as being suitable for use in the gum base, may also be used in the chewing gum composition. Examples of other conventional additives which may be used include emulsifiers, such as lecithin and glyceryl monostearate, thickeners, used alone or in combination with other softeners, such as methyl cellulose, alginates, carrageenan, xanthan gum, gelatin, carob, tragacanth, locust bean, and carboxy methyl cellulose, acidulants such as malic acid, adipic acid, citric acid, tartaric acid, fumaric acid, and mixtures thereof, and fillers, such as those discussed above under the category of mineral adjuvants.

[0080] A variety of additional components optionally may be included in the chewing gum compositions, such as, but not limited to, physiological cooling agents, throat-soothing agents, spices, warming agents, tingling agents, tooth-whitening agents, breath-freshening

agents, dental care agents, vitamins, minerals, caffeine, drugs, potentiators, mouth moisteners, food acids and other actives.

Methods of Preparing and Using Chewing Gum Compositions

5 [0081] Embodiments described herein also relate to methods of preparing chewing gum compositions and products, which provide a creamy and/or juicy perception upon consumption. For instance, in some embodiments, a chewing gum composition containing sufficient fat to provide a velvety chew score of at least about 2.0 on a scale of 0 to 4 as measured by descriptive analysis and a surface smoothness score of at least about 2.0 on a
10 scale of 0 to 4 as measured by descriptive analysis is prepared. The chewing gum compositions and products may be prepared using standard techniques and equipment known to those skilled in the art. The apparatus useful in accordance with the embodiments described herein includes mixing and heating apparatus well known in the chewing gum manufacturing arts, and therefore the selection of the specific apparatus will be apparent to
15 the artisan. For general chewing gum preparation processes see U.S. Patent Nos. 4,271,197 to Hopkins et al, 4,352,822 to Cherukuri et al and 4,497,832 to Cherukuri et al.

[0082] In accordance with some embodiments, a gum base composition first is
20 provided. The gum base composition, as described in detail above, may include at least one elastomer, at least one gum resin or ester thereof and at least one fat having a melting point of from about 15°C to about 60°C. In some embodiments, the gum base may be admixed with additional chewing gum components, such as at least one flavor and at least one sweetener, to form a chewing gum composition. Any of the other optional components described above
25 also may be admixed with the gum base to form the final chewing gum composition.

[0083] In some embodiments, a continuous gum making process may be used. In accordance therewith, a blend of at least one elastomer, at least one gum resin or ester thereof and at least one fat having a melting point of from about 15°C to about 60°C may be formed.
30 The blend then may be admixed in-line with additional chewing gum components, such as at least one flavor and at least one sweetener. Any of the other optional components described above also may be admixed with the gum base to form the final chewing gum composition. Continuous gum making processes are more fully described in U.S. Patent Nos. 6,858,237,

6,440,472, 6,017,565 and 5,543,160.

[0084] Once the chewing gum composition is prepared, individual chewing gum
5 pieces may be formed using standard techniques known in the chewing gum art. Chewing
gum pieces may be prepared in any shape, such as a slab, pellet, stick, center-fill gum,
deposited, compressed chewing gum or any other suitable format.

[0085] For instance, center-fill chewing gum embodiments may include a center-fill
10 region, which may be a liquid or powder or other solid, and a gum region. Some
embodiments also may include an outer gum coating or shell, which typically provides a
crunchiness to the piece when initially chewed. The outer coating or shell may at least
partially surround the gum region. The gum base and/or chewing gum compositions
described above may be employed in the gum region of the center-fill chewing gum. Center-
15 fill chewing gums and methods of preparing same are more fully described in assignee's co-
pending U.S. Patent Application No. 10/925,822, filed on August 24, 2004 and assignee's co-
pending U.S. Patent Application No. 11/210,954, filed on August 24, 2005, both entitled
"Liquid-Filled Chewing Gum Composition."

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[0086] In some embodiments, the chewing gum may have a coating thereon. Such
coated chewing gums are typically referred to as pellet gums. The outer coating may be hard
or crunchy. Any suitable coating materials known to those skilled in the art may be
employed. Typically, the outer coating may include sorbitol, maltitol, xylitol, isomalt,
25 erythritol and other crystallizable polyols; sucrose may also be used. Furthermore the coating
may include several opaque layers, such that the chewing gum composition is not visible
through the coating itself, which can optionally be covered with a further one or more
transparent layers for aesthetic, textural and protective purposes. The outer coating may also
contain small amounts of water and gum arabic. The coating can be further coated with wax.
30 The coating may be applied in a conventional manner by successive applications of a coating
solution, with drying in between each coat. As the coating dries it usually becomes opaque
and is usually white, though other colorants may be added. A polyol coating can be further
coated with wax. The coating can further include colored flakes or speckles. If the
composition includes a coating, it is possible that one or more oral care actives can be

dispersed throughout the coating. This is especially preferred if one or more oral care actives is incompatible in a single phase composition with another of the actives. Flavors may also be added to yield unique product characteristics.

5 [0087] Other materials may be added to the coating to achieve desired properties. These materials may include without limitations, celluloses such as carboxymethyl cellulose, gelatin, xanthan gum and gum arabic.

[0088] The coating composition may be applied by any method known in the art
10 including the method described above. The coating composition may be present in an amount from about 2% to about 60%, more specifically from about 25% to about 45% by weight of the total chewing gum piece.

[0089] Some embodiments described herein extend to methods of producing a
15 chewing gum experience, which includes a creamy organoleptic perception. In accordance therewith, a chewing gum composition may be provided, which includes a gum base composition, as described above. More specifically, the gum base composition may include at least one elastomer, at least one gum resin or ester thereof and at least one fat having a melting point of from about 15°C to about 60°C. The chewing gum composition also may
20 include additional components, such as at least one flavor. The flavor may be a creamy flavor, such as, for example, chocolate or strawberry cream. The chewing gum composition may be chewed by an individual user to experience a creamy perception. More specifically, chewing the chewing gum composition for a period of at least about 5 minutes may provide a creamy perception defined by a velvety chew score of at least about 2.0 on a scale of 0 to 4 as
25 measured by descriptive analysis and a surface smoothness score of at least about 2.0 on a scale of 0 to 4 as measured by descriptive analysis. In some embodiments, the chewing gum composition may contain sufficient fat to provide the perception of creaminess and maintain sufficient fat to retain cohesive integrity during mastication.

30 [0090] Some other embodiments described herein extend to methods of producing a chewing gum experience, which includes a juicy organoleptic perception. In accordance therewith, a chewing gum composition may be provided, which includes a gum base composition, as described above. The chewing gum composition may be chewed by an individual user to experience a juicy perception. In particular, chewing the chewing gum

composition for a period of at least about 5 minutes may impart a juicy perception defined by a moistness of bolus score of at least about 2.0 on a scale of 0 to 4 as measured by descriptive analysis.

- 5 [0091] The features and advantages of the present invention are more fully shown by the following examples which are provided for purposes of illustration, and are not to be construed as limiting the invention in any way.

EXAMPLES

10 Examples 1-6:

Table 1: Gum Base Compositions

Component	Weight %					
	1	2	3	4	5	6
Styrene butadiene rubber	27.80	27.80	27.80	27.80	27.80	27.80
Resin ester	25.00	25.00	4.00	15.00	4.00	4.00
Polyvinyl acetate	12.20	12.20	33.20	12.20	23.20	28.20
Wax	4.61	4.65	3.65	4.64	4.12	3.85
Hydrogenated oil	4.79	4.81	3.90	4.81	4.33	4.10
Triacetin ¹	1.65	1.65	4.48	1.65	3.13	3.81
Lecithin	1.72	1.64	1.64	1.64	1.64	1.64
Glycerol Monostearate	2.19	2.22	1.30	2.23	1.75	1.57
Butylated hydroxytoluene	0.03	0.03	0.03	0.03	0.03	0.03
Talc	20.00	20.00	20.00	30.00	30.00	25.00

¹ Glycerol triacetate

- [0092] Gum base compositions were prepared according to the formulations in Table 15 1 above.

- [0093] The gum base compositions were prepared by heating and blending the components listed in Table 1. More specifically, the components listed in Table 1 for each composition were added to a mixer and heated to form a molten gum base.

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- [0094] A low melting point fat, such as, hydrogenated palm oil, may be added to each of the gum base compositions set forth in Table 1. In particular, up to about 40% by weight low melting point fat may be added. Alternatively, a low melting point fat may be substituted for a portion or all of the traditional plasticizing components in the gum base compositions set forth in Table 1, i.e., the wax, hydrogenated oil (high melting fat having a melting point of 25 about 78°C), and/or triacetin.

[0095] The gum base compositions set forth in Table 1 may be incorporated into chewing gum compositions, as described in the examples below. Such chewing gum compositions may include a low melting point fat.

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Examples 7-26:

Table 2: Chewing Gum Compositions

Component	Weight %									
	7	8	9	10	11	12	13	14	15	16
Gum base	60.00 (Ex.1)	60.00 (Ex.1)	60.00 (Ex.2)	60.00 (Ex.2)	75.00 (Ex.3)	60.00 (Ex.3)	75.00 (Ex. 3)	60.00 (Ex. 3)	75.00 (Ex. 4)	60.00 (Ex. 4)
Sorbitol	20.00	5.00	20.00	5.00	5.00	20.00	5.00	5.00	5.00	20.00
Hydrogenated palm oil	15.00	30.00	15.00	30.00	15.00	15.00	15.00	30.00	15.00	15.00
Aspartame	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Acesulfame potassium	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Encapsulated aspartame	1.635	1.635	1.635	1.635	1.635	1.635	1.635	1.635	1.635	1.635
Encapsulated acesulfame potassium	0.765	0.765	0.765	0.765	0.765	0.765	0.765	0.765	0.765	0.765
Strawberry cream flavor	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

Table 3: Chewing Gum Compositions

Component	Weight %									
	17	18	19	20	21	22	23	24	25	26
Gum base	60.00 (Ex.4)	75.00 (Ex.4)	60.00 (Ex. 4)	60.00 (Ex.5)	60.00 (Ex.5)	75.00 (Ex.6)	60.00 (Ex.6)	65.00 (Ex.6)	65.00 (Ex.6)	65.00 (Ex.6)
Sorbitol (crystalline)	5.00	5.00	20.00	20.00	5.00	5.00	5.00	10.00	10.00	10.00
Hydrogenated palm oil	30.00	15.00	15.00	15.00	30.00	15.00	30.00	20.00	20.00	20.00
Aspartame	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Acesulfame potassium	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Encapsulated aspartame	1.635	1.635	1.635	1.635	1.635	1.635	1.635	1.635	1.635	1.635
Encapsulated acesulfame potassium	0.765	0.765	0.765	0.765	0.765	0.765	0.765	0.765	0.765	0.765
Strawberry cream flavor	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

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[0096] Chewing gum compositions were prepared according to the formulations in Tables 2 and 3 above.

[0097] The chewing gum compositions were prepared by first melting the gum base composition for each example at a temperature of about 150-175°F. Once melted and placed in a standard mixer, the remaining components provided in Tables 2 and 3 for each example were added and thoroughly mixed for about 1 to about 20 minutes. The resulting mix was formed into the desired final shape using a laboratory-size extruder, rolled and cut into slabs, and then optionally coated.

[0098] The chewing gum compositions of Examples 7-26 were tested by a fully-trained descriptive analysis panel using the SpectrumTM method. The panel developed and measured the following characteristics: velvety chew; surface smoothness; mouth film/coat perception; moistness of bolus (mass); ease to chew; and wall integrity. Each of these characteristics, except wall integrity, were measured on a five-point scale of 0-4 in accordance with the following. Wall integrity was measured on a four-point scale of 0-3.

[0099] For velvety chew, 0 was not velvety, 1 was slightly velvety, 2 was slight to moderately velvety, 3 was moderately velvety and 4 was very velvety.

[0100] For surface smoothness, 0 was not smooth, 1 was slightly smooth, 2 was slight to moderately smooth, 3 was moderately smooth and 4 was very smooth.

[0101] For mouth film/coat perception, 0 was no mouth film/coat perception, 1 was slight perception, 2 was slight to moderate perception, 3 was moderate mouth film/coat perception and 4 was very mouth filmy/coat perception.

[0102] For moistness of bolus, 0 was bolus not perceived as moist, 1 was slight moistness, 2 was slight to moderate moistness, 3 was moderately moist and 4 was very moist bolus perception.

[0103] For ease to chew, 0 was not easy to chew, 1 was slightly easy to chew, 2 was slight to moderately easy to chew, 3 was moderately easy to chew and 4 was very easy to chew.

[0104] For wall integrity, 0 was wall too thin or too tough to put tongue through, 1 was can put tongue through, but wall is too thin or separates apart in strings, 2 was gum can be manipulated into a wall and stays firmly together and 3 was can blow air into wall, as though preparing to blow a bubble.

[0105] All of the characteristics were scored at 1 minute, 3 minutes, 5 minutes and 7 minutes. All of the characteristics except moistness of bolus and wall integrity were also scored at 30 seconds. For data collection, the samples were coded and randomly presented to the panelists. Each panelist completed two repetitions of each sample. The raw data was statistically analyzed and the average scores for each of the six characteristics tested are provided in Tables 4-9 below.

Table 4: Velvety Chew

Ex. #	30 s	1 min	3 min	5 min	7 min
7	0.5	1	1.5	2	2.2
8	0.5	0.8	1.5	2.2	3
9	0	0.5	1	1.5	2
10	1.5	2.2	2.8	3.2	3.3
11	0	0	0.5	0.5	0.8
12	0.3	0.5	0.7	0.8	0.8
13	0	0.2	0.7	1	1.5
14	1.8	2.2	2.7	3.2	3.5
15	0.9	1.2	1.5	1.7	1.8
16	1.5	1.8	2.2	2.3	2.5
17	1	1.5	2	2.5	2.5
18	0	0.5	0.7	0.5	0.5
19	0.5	0.5	0.5	1	1
20	0	0	0	0.5	0.5
21	0.8	1.1	1.8	2.3	2.5
22	0.5	0	0	0	0
23	0.7	1	1.5	1.9	2.2
24	1	1.5	1.5	2.2	2.5
25	1.4	1.5	1.8	2.3	2.6
26	0.5	1	1.5	2	2

Table 5: Surface Smoothness

Ex. #	30 s	1 min	3 min	5 min	7 min
7	0.7	1.5	2.3	2.5	3
8	1	1.5	2.5	3.5	4
9	0	1.5	2.7	3	3
10	1.7	2	2.7	3.5	4
11	0	0.5	1	1	1.5
12	0	0.5	1	1.5	2
13	0	0.5	1	1.5	2
14	0.5	1.3	2	3	3.5
15	0.5	1.5	2	2	2.3
16	1	1.8	2.3	2.7	2.7
17	1	2	2.2	2.7	3
18	0	0.5	1	1	1.2
19	0.5	1	1.5	2	2
20	0	1	1.5	2	2.5
21	1	1.5	3	3.5	3.7
22	0.5	0.5	1.5	1.5	1.5
23	1.5	2.5	3	3.5	3.5
24	1.3	2	2.5	2.8	3
25	1	1.3	2	2.7	3
26	0.4	2	2.5	3	3

Table 6: Mouth Film/Coat Perception

Ex. #	30 s	1 min	3 min	5 min	7 min
7	0.5	1	1.5	1.7	2
8	0.5	1	1.5	2	2.5
9	0.5	0.8	1	1.5	1.7
10	1	1.4	1.8	2.2	2.3
11	0	0	0.5	0.5	0.5
12	0.3	0.5	0.5	0.7	0.7
13	0	0.5	0.9	1	1.2
14	1.3	2	2.5	3	3.5
15	0.7	1	1	1	1.2
16	1	1.5	1.6	1.7	1.9
17	1	1.5	1.7	2.2	2.2
18	0	0.5	0.8	0.8	0.8
19	0	0.5	0.5	1	1
20	0	0.7	1	1.2	1.5
21	0.3	1	1.5	2	2
22	0.5	1	1.2	1.2	1.2
23	0.5	1	1.5	1.6	1.9
24	0.5	0.8	1.3	1.7	2
25	0.8	1	1.3	1.5	1.7
26	0.2	0.6	1	1.5	1.8

Table 7: Moistness of Bolus

Ex. #	1 min	3 min	5 min	7 min
7	2	2.3	2.5	2.8
8	2	3	3	3.8
9	1.5	2.5	2.5	2.5
10	2	2.5	2.7	3
11	0.5	0.8	1	1.2
12	0.8	1.5	1	1.5
13	1	1	1.5	1.5
14	1.5	2	2.5	2.5
15	1.5	1.5	2	2
16	1.7	2	2	2.3
17	1.5	2.5	3	3
18	1	1.5	1	1.5
19	1	1	1.2	1.5
20	1	1.2	1.5	2
21	1.5	2.5	3	3.5
22	0.5	1.5	1.5	1.5
23	2	2.5	2.5	2.7
24	1	2	2	2
25	1.5	2	2.5	2.5
26	1	1.5	1.8	2

Table 8: Ease to Chew

Ex. #	30 s	1 min	3 min	5 min	7 min
7	2	2.3	2.5	2.5	3
8	1.5	2	2.5	2.5	2.5
9	1.8	2.5	3	3	3.4
10	2	3	3.2	3.3	3
11	0.5	0	0	1	1
12	1.5	1	0.5	0.5	0.5
13	1	0.5	0.8	1.3	1.8
14	3	3	3.5	3.8	3.8
15	2	2.5	2	2.5	2.8
16	2.5	2.8	3	3	3
17	2.8	3	3	3.2	3.2
18	1	1	2	1.5	1.5
19	1	2	2	2	2.5
20	2	1.5	1	1	1
21	3.5	4	3.5	3	3
22	0.5	0.5	1	1	1
23	3	3	3	3	3
24	2.5	2.5	2.3	2.5	2.5
25	1.8	2	2.3	2.7	2.8
26	2	1.7	2	2.3	2.5

Table 9: Wall Integrity

Ex. #	1 min	3 min	5 min	7 min
7	1	1	1	2.3
8	0.7	1.5	1.5	2
9	1.5	2	2	2.3
10	1	1.5	2	2.5
11	0	0	0	0.5
12	0	0	0	0.5
13	0	0.5	1.5	2
14	3	3	3	3
15	2.5	2.8	3	3
16	1	1.5	2.7	2.7
17	0.5	1	1.5	2
18	0	0.5	1	1.5
19	0	0.5	0.5	2
20	0	0.5	1	1.5
21	1	2.5	3	3
22	0	0	0	0
23	3	3	3	3
24	2.5	3	3	3
25	2.7	3	3	3
26	2.5	2.5	2.8	3

Examples 27-39:**Table 10: Gum Base Compositions**

Component	Weight %				
	27	28	29	30	31
Styrene butadiene rubber	27.80	27.80	27.80	27.80	27.80
Resin ester	25.00	4.00	15.00	4.00	4.00
Polyvinyl acetate	12.20	33.20	12.20	23.20	28.20
Wax	4.53	4.53	4.53	4.53	4.53
Hydrogenated oil	4.71	4.71	4.71	4.71	4.71
Triacetin ¹	1.98	1.98	1.98	1.98	1.98
Lecithin	1.64	1.64	1.64	1.64	1.64
Glycerol Monostearate	2.11	2.11	2.11	2.11	2.11
Butylated hydroxytoluene	0.02	0.02	0.02	0.02	0.02
Talc	20.00	20.00	30.00	30.00	25.00

Table 11: Gum Base Compositions

Component	Weight %							
	32	33	34	35	36	37	38	39
Butyl rubber	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Polyisobutylene	17.80	17.80	17.80	17.80	17.80	17.80	17.80	17.80
Resin ester	25.00	4.00	15.00	4.00	4.00	20.00	14.50	12.00
Polyvinyl acetate	12.20	33.20	12.20	23.20	28.20	12.20	22.70	20.20
Wax	4.53	4.53	4.53	4.53	4.53	4.53	4.53	4.53
Hydrogenated oil	4.71	4.71	4.71	4.71	4.71	4.71	4.71	4.71
Triacetin ¹	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98
Lecithin	1.64	1.64	1.64	1.64	1.64	1.64	1.64	1.64
Glycerol Monostearate	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11
Butylated hydroxytoluene	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Talc	20.00	20.00	30.00	30.00	25.00	25.00	20.00	25.00

¹ Glycerol triacetate

[0106] Gum base compositions are prepared according to the formulations in Tables 10 and 11 above.

[0107] The gum base compositions are prepared by heating and blending the components listed in Tables 10 and 11. More specifically, the components listed in Tables 10 and 11 for each composition are added to a mixer and heated to form a molten gum base.

[0108] A low melting point fat, such as, hydrogenated palm oil, may be added to each of the gum base compositions set forth in Tables 10 and 11. In particular, up to about 40% by weight low melting point fat may be added. Alternatively, a low melting point fat may be substituted for a portion or all of the traditional plasticizing components in the gum base compositions set forth in Tables 10 and 11, i.e., the wax, hydrogenated oil (high melting fat having a melting point of about 78°C), and/or triacetin.

[0109] The gum base compositions set forth in Tables 10 and 11 may be incorporated into chewing gum compositions, as described in the examples below. Such chewing gum compositions may include a low melting point fat.

Examples 40-44:**Table 12: Chewing Gum Compositions**

Component	Weight %				
	40	41	42	43	44
Gum base	60.00	60.00	75.00	60.00	65.00
Sorbitol (crystalline)	20.00	5.00	5.00	15.00	10.00
Hydrogenated palm oil	15.00	30.00	15.00	20.00	20.00
Aspartame	0.40	0.40	0.40	0.40	0.40
Acesulfame potassium	0.20	0.20	0.20	0.20	0.20
Encapsulated acesulfame potassium	0.7650	0.7650	0.7650	0.7650	0.7650
Encapsulated aspartame	1.6350	1.6350	1.6350	1.6350	1.6350
Strawberry cream flavor	2.00	2.00	2.00	2.00	2.00

[0110] Chewing gum compositions are prepared according to the formulations in

5 Table 12 above. The chewing gum compositions of Examples 40-44 may incorporate any of the gum base compositions from Examples 27-39 provided in Tables 10 and 11 above.

[0111] The chewing gum compositions are prepared by first melting the gum base composition for each example at a temperature of about 150-175°F. Once melted and placed

10 in a standard mixer, the remaining components provided in Table 12 for each example are added and thoroughly mixed for about 1 to about 20 minutes. The resulting mix is formed into the desired final shape using a laboratory-size extruder, rolled and cut into slabs, and then optionally coated.

CLAIMS:

1. A chewing gum composition comprising:

(a) a gum base composition comprising;

(i) at least one elastomer;

(ii) at least one gum resin or ester thereof present in amounts of at least 12% by weight of said gum base composition; and

(iii) at least one fat having a melting point from 15°C to 60°C present in amounts of 20% to 50% by weight of said gum base composition;

(b) at least one flavor; and

(c) at least one sweetener.

wherein the chewing gum composition further comprises a combination of polyvinyl acetate having a molecular weight of 10,000 g/mol to 15,000 g/mol and polyvinyl acetate having a molecular weight of 80,000 g/mol to 100,000 g/mol.

2. The composition of claim 1, wherein said gum base composition is present in amounts of 75% to 90% by weight of said chewing gum composition.

3. The composition of claim 1, wherein said gum resin or ester thereof is present in amounts of 12% to 30% by weight of said gum base composition.

4. The composition of any one of claims 1 to 3, wherein said at least one elastomer is present in amounts of 20% to 40% by weight of said gum base composition.

5. The composition of any one of claims 1 to 4, wherein said gum base composition further comprises at least one filler present in amounts of 30% to 75% by weight of said gum base composition.

6. The composition of any one of claims 1 to 5, wherein said elastomer contains one or more polar groups.

7. The composition of any one of claims 1 to 6, wherein said at least one flavor
5 comprises a flavor emulsion.

8. The composition of any one of claims 1 to 7, wherein at least a portion of said at least one flavor is premixed with said fat.

10 9. The composition of any one of claims 1 to 8, wherein at least a portion of said at least one flavor is encapsulated.

10. The composition of any one of claim 1 to 9, wherein said at least one flavor comprises an indulgent flavor selected from the group consisting of maple, cola,
15 chocolate, dulce de leche, raisin, vanilla, caramel, cream, butter, milk, yogurt, butterscotch, peanut butter, strawberry cream and combinations thereof.

11. The composition of any one of claims 1 to 10, further comprising a layer of fat having a melting point from 15°C to 60°C on the surface of said gum base
20 composition.

12. The composition of any one of claims 1 to 11, further comprising a coating at least partially surrounding said chewing gum composition, said coating comprising at least one fat having a melting point from 15°C to 60°C.

25

13. A chewing gum composition comprising:

(a) at least one elastomer;

(b) at least one gum resin or ester thereof present in amounts of at least 12% by weight of said chewing gum composition; and

(c) at least one fat having a melting point from 15°C to 60°C present in amounts of 20% to 50% by weight of said chewing gum composition,

wherein upon mastication for a period of at least 5 minutes, said chewing gum composition provides a velvety chew score of at least 2.0 on a scale of 0 to 4 as measured by descriptive analysis and a surface smoothness score of at least 2.0 on a scale of 0 to 4 as measured by descriptive analysis, and wherein the chewing gum composition further comprises a combination of polyvinyl acetate having a molecular weight of 10,000 g/mol to 15,000 g/mol and polyvinyl acetate having a molecular weight of 80,000 g/mol to 100,000 g/mol.

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14. The composition of claim 13, wherein upon mastication for a period of at least 5 minutes, said chewing gum composition retains cohesive integrity as measured by a wall integrity score of at least 1.5 on a scale of 0 to 3 as measured by descriptive analysis.

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15. The composition of claim 13 or 14, wherein upon mastication for a period of at least 5 minutes, said chewing gum provides a score of at least 2.0 on a scale of 0 to 4 as measured by descriptive analysis selected from the group consisting of mouth film, moistness of bolus, ease to chew, and combinations thereof.

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16. The composition of any one of claims 13 to 15, wherein said fat having a melting point range of 15°C to 60°C is present in amounts of 20% to 40% by weight of said chewing gum composition.

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17. The composition of any one of claims 13 to 16, wherein said fat is selected from the group consisting of hydrogenated oils, hydrogenated palm oil, palm kernal oil, hydrogenated cotton seed oil, soy bean oil, peanut oil, cotton seed oil, sun flower seed oil, olive oil and combinations thereof.

18. The composition of any one of claims 13 to 17, wherein said at least one elastomer contains one or more polar groups.

19. The composition of any one of claims 13 to 18, further comprising at least one sweetener present in amounts of less than 25% by weight of said chewing gum composition.

20. A method of preparing a chewing gum composition providing a velvety chew score of at least 2.0 on a scale of 0 to 4 as measured by descriptive analysis and a surface smoothness score of at least 2.0 on a scale of 0 to 4 as measured by descriptive analysis, comprising the steps of:

(a) providing a gum base composition, comprising:

(i) at least one elastomer containing one or more polar groups;

(ii) at least one gum resin or ester thereof present in amounts of at least 12% by weight of said gum base composition; and

(iii) at least one fat having a melting point from 15°C to 60°C present in amounts of 20% to 50% by weight of said gum base composition, wherein said gum base composition is present in amounts of about 75% to 90% by weight of said chewing gum composition;

(iv) a combination of polyvinyl acetate having a molecular weight of 10,000 g/mol to 15,000 g/mol and polyvinyl acetate having a molecular weight of 80,000 g/mol to 100,000 g/mol; and

(b) admixing the gum base composition with at least one flavor and at least one sweetener.

21. The method of claim 20, wherein step (a) comprises forming a blend of the at least one elastomer, the at least one gum resin or ester thereof, the at least one fat and the combination of polyvinyl acetates; and wherein step (b) comprises admixing the blend in-line with the at least one flavor and the at least one sweetener.

22. The method of claim 20 or 21, further comprising the step of forming a chewing gum shape from the blend.

23. A method of producing a chewing gum experience comprising a creamy organoleptic perception comprising the steps of:

(a) providing a chewing gum composition comprising a chewing gum base and at least one flavor, said chewing gum base comprising a blend of:

(i) at least one elastomer containing one or more polar groups;

(ii) at least one gum resin or ester thereof present in amounts of at least 12% by weight of said gum base composition; and

(iii) at least one fat having a melting point from 15°C to 60°C present in amounts of 20% to 50% by weight of said chewing gum base, wherein said chewing gum base is present in amounts of 75% to 90% by weight of said chewing gum composition;

(iv) a combination of polyvinyl acetate having a molecular weight of 10,000 g/mol to 15,000 g/mol and polyvinyl acetate having a molecular weight of 80,000 g/mol to 100,000 g/mol; and

(b) chewing the chewing gum composition for a period of at least 5 minutes to experience a creamy perception defined by a velvety chew score of at least 2.0 on a scale of 0 to 4 as measured by descriptive analysis and a surface smoothness score of at least 2.0 on a scale of 0 to 4 as measured by descriptive analysis.

24. A method of producing a chewing gum experience comprising a juicy organoleptic perception comprising the steps of:

(a) providing a chewing gum composition comprising a chewing gum base and at least one flavor, said chewing gum base comprising a blend of:

(i) at least one elastomer containing one or more polar groups;

(ii) at least one gum resin or ester thereof present in amounts of at least 12% by weight of said gum base composition; and

(iii) at least one fat having a melting point from 15°C to 60°C present in amounts of 20% to 50% by weight of said chewing gum base, wherein said chewing gum base is present in amounts of 75% to 90% by weight of said chewing gum composition;

5 (iv) a combination of polyvinyl acetate having a molecular weight of 10,000 g/mol to 15,000 g/mol and polyvinyl acetate having a molecular weight of 80,000 g/mol to 100,000 g/mol and

(b) chewing the chewing gum composition for a period of at least 5 minutes to experience a juicy perception defined by a moistness of bolus score of at
10 least 2.0 on a scale of 0 to 4 as measured by descriptive analysis.