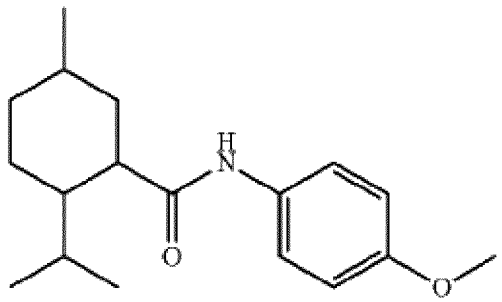
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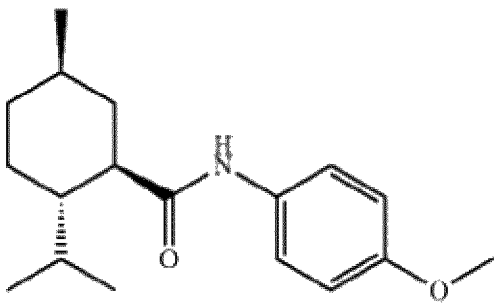
CLAIMS

What is claimed is:

1. A hair removal device comprising:
   a. a hair removal head (14);
   b. one or more elongated edges (18) positioned on said cartridge; and
   c. the skin engaging member positioned on said cartridge, said skin engaging member (22) comprising:
   a. a matrix comprising at least one of: a water soluble polymer, selected from polyethylene oxide, polyvinyl pyrrolidone, polyacrylamide, polyhydroxymethacrylate, polyvinyl imidazoline, polyethylene glycol, polyvinyl alcohol, polyhydroxyethymethacrylate, silicone polymers, and mixtures thereof, an emollient, a soap base, and a mixture thereof;
   b. a thermally resilient sensate comprising a menthane carboxylic acid-N-(4-methoxyphenyl)-amide of formula:

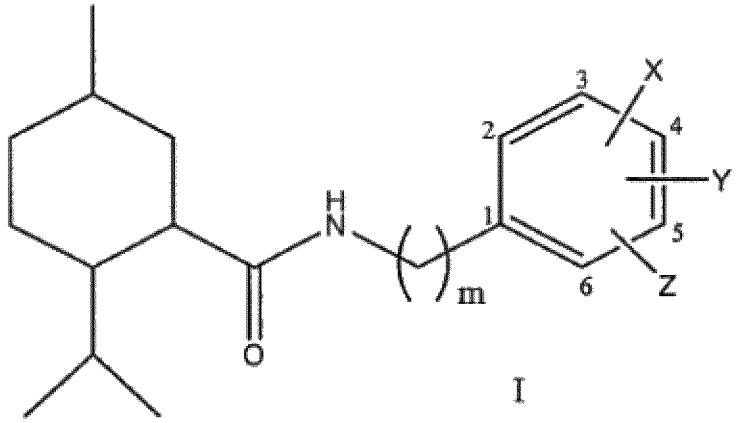


2. A hair removal device of claim 1, wherein said menthane carboxylic acid-N-(4-methoxyphenyl)-amide has the formula:



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3. A hair removal device of claim 1 or 2, wherein said thermally resilient sensate further comprises a N-substituted menthanecarboxamide having the formula:



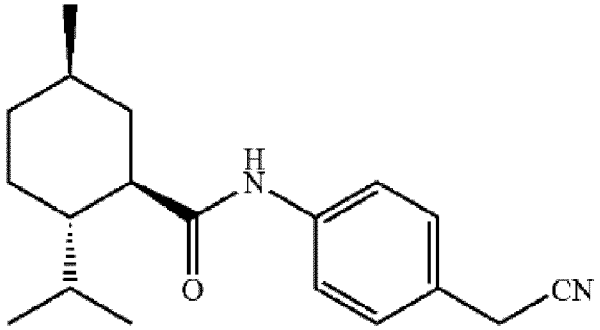
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in which m is 0 or 1, Y and Z are selected independently from the group consisting of H, OH, C1-C4 straight or branched alkyl, or, a C1-C4 straight or branched alkoxy, X is (CH2)n-R, where n is 0 or 1 and R is a group with non-bonding electrons, selected from halogens, OH, OMe, NO2, CN, Ac, SO2NH2, CHO, CO2H and C1-C4 alkyl carboxylates, subject to the provisos that: (a) when Y and Z are H, X is not F, OH, MeO or NO2 in the 4-position and is not OH in the 2 or 6-position, and (b) when Y or Z is H then X, Y and Z are such that (i) the groups in the 3- and 4-positions are not both OMe, (ii) the groups in the 4- and 5-positions are not both OMe, (iii) the groups in 3- and 5-positions are not OMe if the group in the 4-position is OH, and (iv) the groups in the 3- and 5-positions are not OH if the group in the 4- position is methyl.

4. A hair removal device of claim 3, wherein X is in the 4-position, preferably wherein X is in the 4-position and Y and Z are H, OH, Me or OMe.

5. A hair removal device of any of claims 3 to 4, wherein said thermally resilient sensate comprises N-[4-(cyanomethyl)phenyl]-(1R,2S,5R)-2-isopropyl-5-methylcyclohexanecarboxamide of formula:

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6. A hair removal device of any preceding claim, further comprising an additional cooling agent selected from the group consisting of: L-menthol; p-menthane-3,8-diol; Isopulegol; Menthoxypropane-1,2,-diol; Curcumin; Menthyl Lactate (such as Frescolat ML by Symrise); Gingerol; Icilin; Tea Tree Oil; Methyl Salicylate; Camphor; Peppermint Oil; N-Ethyl-p-menthane-3-carboxamide; Ethyl 3-(p-menthane-3-carboxamido)acetate; 2-Isopropyl-N,2,3-trimethylbutyramide; Menthone glycerol ketal, Menthone Glyerine Acetal; and mixtures thereof, preferably wherein said optional cooling agent is a mixture of menthol and menthyl lactate, more preferably wherein the mixture of menthol and menthyl lactate is in a ratio of from 1:4 to 4:1 by weight.

7. A hair removal device of any preceding claim, wherein the level of thermally resilient sensate is from 0.01% to 25%.

8. A hair removal device of any preceding claim, wherein said water soluble polymer is present at a level of from about 50% to about 90% by weight of said solid polymeric matrix.

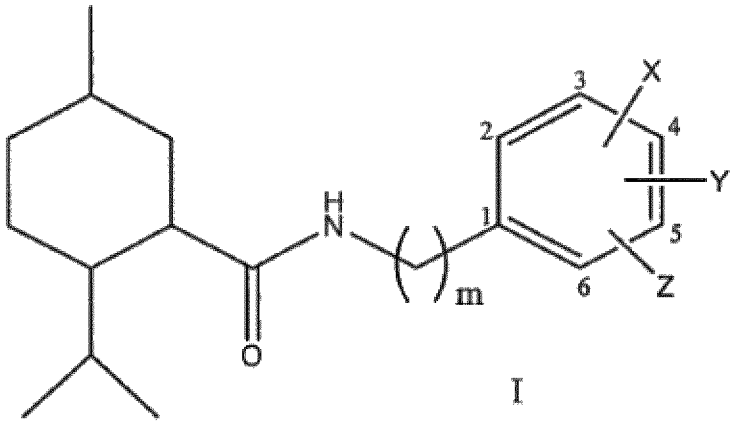
9. A hair removal device of any preceding claim, wherein said matrix further comprises a water insoluble polymer, preferably comprising at least one of: polyethylene, polypropylene, polystyrene, high impact polystyrene, butadiene styrene copolymer, polyacetal, acrylonitrile-butadiene styrene copolymer, ethylene vinyl acetate copolymer, and mixtures thereof. wherein said water insoluble polymer is preferably present at a level of from 5% to 40%, preferably from 15% to 35% by weight of the skin engaging member.

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10. A hair removal device according to claim 1, further comprising a second skin engaging member positioned on said cartridge, said second skin engaging member being according to any of claims 1-9, or comprising:

a. a matrix comprising at least one of: a water soluble polymer, selected from polyethylene oxide, polyvinyl pyrrolidone, polyacrylamide, polyhydroxymethacrylate, polyvinyl imidazoline, polyethylene glycol, polyvinyl alcohol, polyhydroxyethymethacrylate, silicone polymers, and mixtures thereof, an emollient, a soap base, and a mixture thereof;

b. thermally resilient sensate further comprises a N-substituted menthanecarboxamide having the formula:



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in which m is 0 or 1, Y and Z are selected independently from the group consisting of H, OH, C1-C4 straight or branched alkyl, or, a C1-C4 straight or branched alkoxy, X is (CH2)n-R, where n is 0 or 1 and R is a group with non-bonding electrons, selected from halogens, OH, OMe, NO2, CN, Ac, SO2NH2, CHO, CO2H and C1-C4 alkyl carboxylates, subject to the provisos that: (a) when Y and Z are H, X is not F, OH, MeO or NO2 in the 4-position and is not OH in the 2 or 6-position, and (b) when Y or Z is H then X, Y and Z are such that (i) the groups in the 3- and 4-positions are not both OMe, (ii) the groups in the 4- and 5-positions are not both OMe, (iii) the groups in 3- and 5-positions are not OMe if the group in the 4-position is OH, and (iv) the groups in the 3- and 5-positions are not OH if the group in the 4- position is methyl.

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11. A hair removal device according to claims 1 or 10, wherein the hair removal device is a razor, the hair removal head is a razor cartridge and the one or more elongated edges are blades.

12. A method of making a hair removal device according to any preceding claim comprising the steps of:

a. providing a polymeric matrix and the thermally resilient sensate to form a feed;
b. preferably heating said feed to a temperature of from about 120°C to about 200°C, and
c. forming a skin engaging shaving aid member.

13. The method of claim 12, wherein said step of forming is selected from the group consisting of: extruding said feed into said skin engaging shaving aid member; molding said feed said feed into said skin engaging shaving aid member; injection molding said feed into said skin engaging shaving aid member; and a combination thereof.

The claims defining the invention are as follows:

1. A hair removal device comprising:

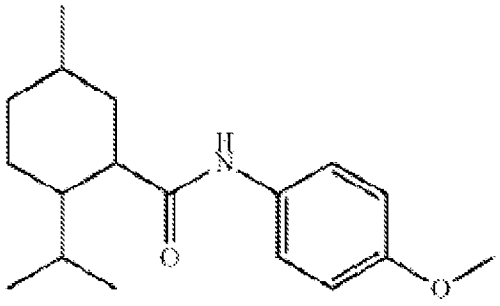
    a. a cartridge;

    b. one or more elongated edges positioned on said cartridge; and

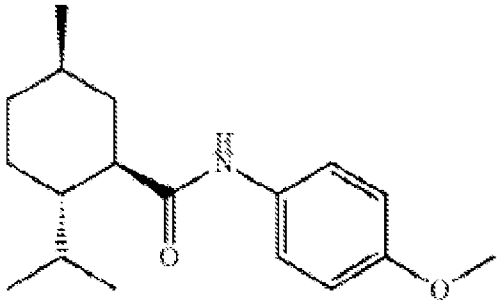
    c. a skin engaging shaving aid member positioned on said cartridge, said skin engaging shaving aid member comprising:

    a. a matrix comprising at least one of: a water soluble polymer, selected from polyethylene oxide, polyvinyl pyrrolidone, polyacrylamide, polyhydroxymethacrylate, polyvinyl imidazoline, polyethylene glycol, polyvinyl alcohol, polyhydroxyethymethacrylate, silicone polymers, and mixtures thereof, an emollient, a soap base, and a mixture thereof;

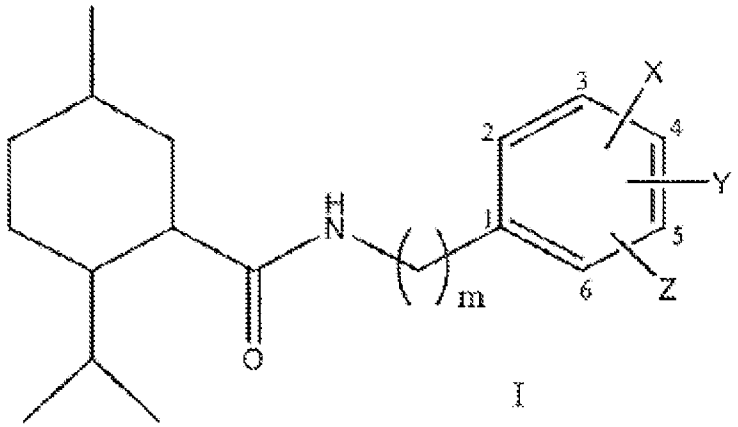
    b. a thermally resilient sensate comprising a menthane carboxylic acid-N-(4-methoxyphenyl)-amide of formula:



2. A hair removal device of claim 1, wherein said menthane carboxylic acid-N-(4-methoxyphenyl)-amide has the formula:



3. A hair removal device of claim 1 or 2, wherein said thermally resilient sensate further comprises an N-substituted menthanecarboxamide having the formula:

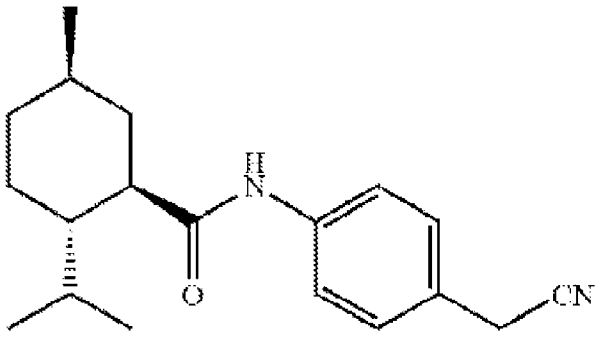


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in which m is 0 or 1, Y and Z are selected independently from the group consisting of H, OH, C1-C4 straight or branched alkyl, or, a C1-C4 straight or branched alkoxy, X is $(CH_2)n$-R, where n is 0 or 1 and R is a group with non-bonding electrons, selected from halogens, OH, OMe, NO_2, CN, Ac, SO_2NH_2, CHO, CO_2H and C1-C4 alkyl carboxylates, subject to the provisos that: (a) when Y and Z are H, X is not F, OH, MeO or NO_2 in the 4-position and is not OH in the 2 or 6-position, and (b) when Y or Z is H then X, Y and Z are such that (i) the groups in the 3- and 4-positions are not both OMe, (ii) the groups in the 4- and 5-positions are not both OMe, (iii) the groups in the 3- and 5- positions are not OMe if the group in the 4-position is OH, and (iv) the groups in the 3- and 5-positions are not OH if the group in the 4- position is methyl.

4. A hair removal device of claim 3, wherein X is in the 4-position, preferably wherein X is in the 4-position and Y and Z are H, OH, Me or OMe.

5. A hair removal device of any of claims 3 to 4, wherein said thermally resilient sensate comprises N-[4-(cyanomethyl)phenyl]-(1R,2S,5R)-2-isopropyl-5-methylcyclohexanecarboxamide of formula:



6. A hair removal device of any preceding claim, further comprising an additional cooling agent selected from the group consisting of: L-menthol; p-menthane-3,8-diol; Isopulegol; Menthoxypropane-1,2,-diol; Curcumin; Menthyl Lactate (such as Frescolat ML by Symrise); Gingerol; Icilin; Tea Tree Oil; Methyl Salicylate; Camphor; Peppermint Oil; N-Ethyl-p-menthane-3-carboxamide; Ethyl 3-(p-menthane-3-carboxamido)acetate; 2-Isopropyl-N,2,3-trimethylbutyramide; Menthone glycerol ketal, Menthone Glycerine Acetal; and mixtures thereof, preferably wherein said optional cooling agent is a mixture of menthol and menthyl lactate, more preferably wherein the mixture of menthol and menthyl lactate is in a ratio of from 1:4 to 4:1 by weight.

7. A hair removal device of any preceding claim, wherein the level of thermally resilient sensate is from 0.01% to 25%.

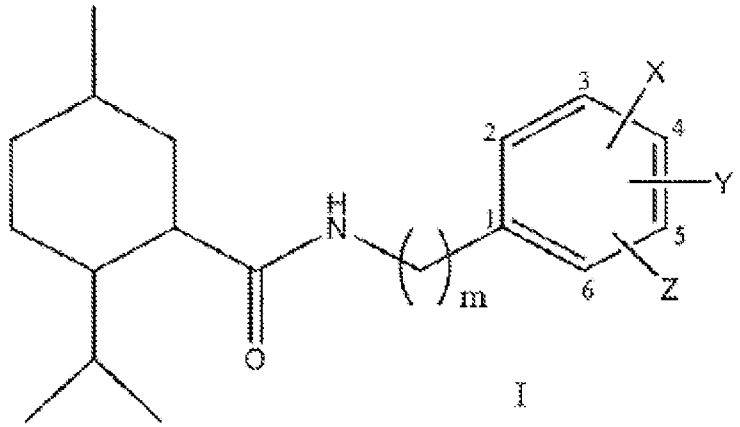
8. A hair removal device of any preceding claim, wherein said water soluble polymer is present at a level of from about 50% to about 90% by weight of said solid polymeric matrix.

9. A hair removal device of any preceding claim, wherein said matrix further comprises a water insoluble polymer, preferably comprising at least one of: polyethylene, polypropylene, polystyrene, high impact polystyrene, butadiene styrene copolymer, polyacetal, acrylonitrile-butadiene styrene copolymer, ethylene vinyl acetate copolymer, and mixtures thereof, wherein said water insoluble polymer is preferably present at a level of from 5% to 40%, preferably from 15% to 35% by weight of the skin engaging shaving aid member.

10. A hair removal device according to claim 1, further comprising a second skin engaging shaving aid member positioned on said cartridge, said second skin engaging shaving aid member being according to any of claims 1-9, or comprising:

a. a matrix comprising at least one of: a water soluble polymer, selected from polyethylene oxide, polyvinyl pyrrolidone, polyacrylamide, polyhydroxymethacrylate, polyvinyl imidazoline, polyethylene glycol, polyvinyl alcohol, polyhydroxyethymethacrylate, silicone polymers, and mixtures thereof, an emollient, a soap base, and a mixture thereof;

b. thermally resilient sensate further comprises an N-substituted menthanecarboxamide having the formula:



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in which m is 0 or 1, Y and Z are selected independently from the group consisting of H, OH, C1-C4 straight or branched alkyl, or, a C1-C4 straight or branched alkoxy, X is $(CH_2)n$-R, where n is 0 or 1 and R is a group with non-bonding electrons, selected from halogens, OH, OMe, NO_2, CN, Ac, SO_2NH_2, CHO, CO_2H and C1-C4 alkyl carboxylates, subject to the provisos that: (a) when Y and Z are H, X is not F, OH, MeO or NO_2 in the 4-position and is not OH in the 2 or 6-position, and (b) when Y or Z is H then X, Y and Z are such that (i) the groups in the 3- and 4-positions are not both OMe, (ii) the groups in the 4- and 5-positions are not both OMe, (iii) the groups in the 3- and 5- positions are not OMe if the group in the 4-position is OH, and (iv) the groups in the 3- and 5-positions are not OH if the group in the 4- position is methyl.

11. A hair removal device according to claim 1 or 10, wherein the hair removal device is a razor and the one or more elongated edges are blades.

12. A method of making a hair removal device according to any preceding claim comprising the steps of:

a. providing a polymeric matrix and the thermally resilient sensate to form a feed;
b. preferably heating said feed to a temperature of from about 120°C to about 200°C, and
c. forming a skin engaging shaving aid member.

13. The method of claim 12, wherein said step of forming is selected from the group consisting of: extruding said feed into said skin engaging shaving aid member; molding said feed into said skin engaging shaving aid member; injection molding said feed into said skin engaging shaving aid member; and a combination thereof.

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