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(54) Title: LAUNDRY COMPOSITION

(57) Abstract: A solid fragrance booster composition comprising: a) 10 to 95 wt.% inorganic calcium salt; b) 0.25 to 10 wt.% anionic surfactant; c) 2 to 49 wt.% water; and d) 0.1 to 30 wt.% perfume.



LAUNDRY COMPOSITION

Field of the Invention

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The present invention is in the field of solid fragrance boosters for providing fragrance in the laundry process.

Background of the Invention

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Solid fragrance boosters are known in the field of laundry.

However there remains a need to improve theses solid boosters. One particular problem faced by consumers is the heat stability of the products. While the average consumer home is below 30°C most of the year, higher temperatures are not uncommon. Furthermore, in the supply chain, products may be exposed to much higher temperatures for examples in containers and lorries left in direct sunshine. Temperatures may reach 50°C or higher.

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Summary of the Invention

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It has been found that using calcium salts in combination with anionic surfactants provides improved temperature stability.

According in a first aspect of the present invention is provided a solid fragrance booster composition comprising:

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- a 10 to 95 wt.% inorganic calcium salt;
- b 0.25 to 10 wt.% anionic surfactant;
- c 2 to 49 wt.% water; and
- d 0.1 to 30 wt.% perfume.

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Also provided is a method of preparing the solid fragrance boosters described here wherein the composition is formed using a process selected from: extrusion, tableting, granulation, casting, pelletising, pastillation or a compression method.

In a further aspect of the present invention is provided a use of solid fragrance booster composition as described herein to deliver fragrance in the laundry process.

Detailed Description of the Invention

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These and other aspects, features and advantages will become apparent to those of ordinary skill in the art from a reading of the following detailed description and the appended claims. For the avoidance of doubt, any feature of one aspect of the present invention may be utilised in any other aspect of the invention. The word "comprising" is intended to mean "including" but not necessarily "consisting of" or "composed of." In other words, the listed steps or options need not be exhaustive. It is noted that the examples given in the description below are intended to clarify the invention and are not intended to limit the invention to those examples per se.

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Similarly, all percentages are weight/weight percentages unless otherwise indicated. Except in the operating and comparative examples, or where otherwise explicitly indicated, all numbers in this description indicating amounts of material or conditions of reaction, physical properties of materials and/or use are to be understood as modified by the word "about". Numerical ranges expressed in the format "from x to y" are understood to include x and y. When for a specific feature multiple preferred ranges are described in the format "from x to y", it is understood that all ranges combining the different endpoints are also contemplated.

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A "Solid fragrance booster particle" refers to an individual article.

A "Solid fragrance booster composition" refers to one or more solid fragrance booster particles.

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The solid fragrance booster composition described herein comprises 10 to 95 wt.% inorganic calcium salts, more preferably 12 to 70 wt.% and most preferably 14 to 50 wt.%. Examples of suitable inorganic calcium salts include calcium sulphate, calcium citrate, calcium carbonate, calcium chloride, calcium nitrate and combinations thereof. In this context inorganic is defined as any salts which do not comprise a carbon-carbon bond.

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The solid fragrance booster composition described herein comprises 0.25 to 10 wt.% anionic surfactant by weight of the composition, more preferably 0.5 to 10 wt.% anionic surfactant, even more preferably 0.75 to 10 wt.% anionic surfactant, especially preferably 0.75 to 8 wt.% and most preferably 1 to 5 wt.% anionic surfactant by weight of the composition. The anionic surfactant is preferably selected from soap (salts of fatty acids), Sodium laureth sulfate (SLES), Alkylbenzene sulfonates (such as LAS), primary alkyl sulphate (PAS), Ammonium lauryl

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sulfate, sodium lauryl sarcosinate, sodium myreth sulfate, sodium pareth sulfate, sodium lauryl sulfate, α olefin sulfonate, ammonium laureth sulfate, and combinations thereof. More preferably the anionic surfactant is selected from soap (salts of fatty acids), Sodium laureth sulfate (SLES), Alkylbenzene sulfonates (such as LAS), primary alkyl sulphate (PAS), and combinations thereof.

Preferably the anionic surfactant is soap, particularly preferably, sodium, potassium, magnesium or calcium salts of fatty acids. Preferably the fatty acids are C12-C22 fatty acids, more preferably C14 to C20 fatty acids. Preferably the fatty acids are derived from plants.

Preferably the fatty acids are saturated.

The solid fragrance booster composition described herein comprises 2 to 49 wt.% water by weight of the composition, more preferably 3 to 40 wt.% water and most preferably 4 to 30 wt.% water by weight of the composition. This refers to the weight of water added to the composition.

The water may associate with the inorganic calcium salt or other inorganic salts present to form hydrated salts. Preferably the water is deionized.

The solid fragrance booster composition comprises 0.1 to 30 wt.% perfume by weight of the composition. More preferably the compositions comprise 0.5 to 25 wt.% perfume and most preferably 2 to 20 wt.% perfume by weight of the composition. Many suitable examples of perfumes are provided in the CTFA (Cosmetic, Toiletry and Fragrance Association) 1992 International Buyers Guide, published by CFTA Publications and OPD 1993 Chemicals Buyers Directory 80th Annual Edition, published by Schnell Publishing Co. It is commonplace for a plurality of perfume components to be present in a formulation. In the compositions of the present invention it is envisaged that there will be four or more, preferably five or more, more preferably six or more or even seven or more different perfume components.

The solid fragrance booster composition may preferably comprise perfume microcapsules.

Preferably the composition comprises 0.1 to 10 wt.% perfume microcapsules by weight of the composition, more preferably 0.25 to 8 wt.% perfume microcapsules and most preferably 0.5 to 5 wt.% perfume microcapsules by weight of the composition.

The encapsulating materials, preferably comprise, but are not limited to; aminoplasts, proteins, polyurethanes, polyacrylates, polymethacrylates, polysaccharides, polyamides, polyolefins, gums, silicones, lipids, modified cellulose, polyphosphate, polystyrene, polyesters or combinations thereof. More preferably the encapsulating materials comprise aminoplast, such

as melamine formaldehyde or urea formaldehyde microcapsules, proteins and/or polysaccharides, or polyesters.

Perfume microcapsules of the present invention can be friable microcapsules and/or moisture activated microcapsules. By friable, it is meant that the perfume microcapsule will rupture when a force is exerted. By moisture activated, it is meant that the perfume is released in the presence of water. The particles of the present invention preferably comprises friable microcapsules. Moisture activated microcapsules may additionally be present. Examples of a microcapsules which can be friable include aminoplast microcapsules.

Perfume components contained in a microcapsule may comprise odiferous materials and/or pro-fragrance materials. It is commonplace for a plurality of perfume components to be present in a microcapsule. In the compositions for use in the present invention it is envisaged that there will be three or more, preferably four or more, more preferably five or more, most preferably six or more different perfume components in a microcapsule. An upper limit of 300 perfume components may be applied.

The microcapsules may comprise perfume components and a carrier for the perfume ingredients, such as zeolites or cyclodextrins.

The solid fragrance booster composition may preferably further comprise additional inorganic salts. In this context inorganic is defined as any salts which do not comprise a carbon-carbon bond. The inorganic salt may preferably be selected from: Na_2CO_3 , MgSO_4 , MgCl_2 , MgNO_3 , $\text{Al}_2(\text{SO}_4)$, AlCl_3 , $\text{Al}_2(\text{NO}_3)$ and their hydrates. The solid fragrance booster composition preferably comprises 1 to 40 wt.% inorganic salts, more preferably 5 to 30 wt.% inorganic salts. The salts contribute to high temperature stability.

Preferably the inorganic salt comprises sodium carbonate (Na_2CO_3), also known as soda ash. The sodium carbonate may be hydrated once it is mixed with the water to form, e.g. sodium monohydrate, sodium heptahydrate or sodium decahydrate. The sodium carbonate is preferably a so called 'light' soda ash or sodium carbonate product. Preferably the sodium carbonate has a poured bulk density of less than 1000 kg/m^3 , more preferably less than 900 kg/m^3 and most preferably less than 800 kg/m^3 .

The solid fragrance booster composition described herein may preferably comprise 0.25 to 40 wt.% polymer, more preferably 0.5 to 20 wt., even more preferably 0.75 to 10 wt.% and most

preferably 1 to 5 wt.% polymer, by weight of the composition. The polymer is preferably selected from cellulosic polymers, acrylate polymers, polyvinyl alcohol, carrageenan, alginate, xanthan gums, gellan gums, and combinations thereof. Cellulosic polymers include cellulose and modified celluloses. Modified cellulose includes any polymers with a cellulose backbone and additional functionalisation, such as hydroxy methyl cellulose (HPMC) and the sodium salt of carboxy methyl cellulose (SCMC). Acrylate polymers include any polymer comprising an acrylate monomer. Preferably the polymer is selected from acrylate polymers, cellulosic polymers, and combinations thereof. Preferably the polymer comprises cellulosic polymer, more preferably comprises a modified cellulosic polymer.

The solid fragrance booster composition may further comprise silicates, such as sodium silicate, disodium silicate, etc. the compositions preferably comprise 0.5 to 10 wt.% silicate by weight of the composition, more preferably 2 to 5 wt.% silicate by weight of the composition.

The solid fragrance booster composition may comprise an optical enhancer. Preferably the optical enhancer is selected from pearlisers, dyes, colourants, pigments or combinations thereof. Optical enhancers are intended to improve the aesthetics of the solid fragrance booster. They should be non-substantive to fabrics. The solid fragrance booster composition may comprise individual fragrance boosters having different optical enhancers, for example the composition may comprise a mixture of blue boosters and yellow fragrance boosters.

The solid fragrance booster composition may comprise other fabric benefit agents in addition to perfumes. These may be selected from: silicones, softening agents, antifoams, insect repellents, shading or hueing dyes, preservatives (e.g. bactericides), perfume carriers, hydrotropes, anti-redeposition agents, soil-release agents, anti-shrinking agents, anti-wrinkle agents, anti-oxidants, dyes, colorants, sunscreens, drape imparting agents, anti-static agents, sequestrants and ironing aids.

The solid fragrance booster composition may comprise a single solid fragrance booster particle or multiple solid fragrance booster particles.

The solid fragrance booster particles may be any suitable shape. Examples of suitable shapes include: spheres, hemispheres, compressed hemispheres, cylinders, cubes, cuboids, tetrahedron, cones, ellipsoid and prisms having any cross-sectional shape (triangle, pentagon, hexagon, star shapes, heart shapes, etc.). The solid fragrance booster composition may comprise fragrance booster particles having of different shapes. For example the solid

fragrance booster composition may comprise a mixture of spherical particles and star shaped prism particles.

The solid laundry booster composition may comprise a single unit dose particle. Preferably a unit dose solid laundry booster particle would have a maximum linear dimension of 60 mm and a minimum linear dimension of 5 mm. The mass is preferably 6 to 20 g.

Preferably the solid laundry booster composition comprises a plurality (two or more) of solid laundry booster particles.

A solid fragrance booster particle preferably has a maximum linear dimension of 1 mm to 20 mm, preferably 2 mm to 15 mm and most preferably 3 mm to 10 mm. This dimension refers to the largest cross sectional measurement of the solid fragrance booster particle.

A solid fragrance booster particle preferably has a minimum linear dimension of 0.1 mm to 10mm, preferably 0.2 mm to 8 mm and most preferably 0.5 mm to 5 mm. This dimension refers to the smallest cross sectional measurement of the solid fragrance booster particle.

The solid fragrance booster particles may be prepared by any suitable method. The ingredients may be mixed in any order. Preferably all ingredients excluding water are mixed, followed by the addition of water. Preferably the mixtures are prepared at a temperature of 15 to 70°C. The mixture is then preferably shaped into the desired shape of solid fragrance booster particles.

The solid fragrance booster particles may be shaped by any suitable method, these may be selected from: extrusion, tableting, granulation, casting, pelletising, pastillation or a compression method.

The solid laundry booster composition described herein may be used to deliver fragrance in the laundry process. Preferably they are added to the wash stage of the laundry process.

Preferably the solid laundry booster composition is used to in addition to a detergent composition.

Examples*Table 1: Formulations*

	wt. % active				
	A	1	2	3	4
Calcium sulphate	27.84	27.88	27.88	27.88	27.88
Sodium carbonate	39.16	37.16	37.16	37.16	37.16
Silica	1.47	1.47	1.47	1.47	1.47
SLES	-	1.96	-	-	-
Na LAS	-	-	1.96	-	-
PAS	-	-	-	1.96	-
Soap	-	-	-	-	1.96
Perfume	6.85	6.85	6.85	6.85	6.85
Perfume microcapsules	1.96	1.96	1.96	1.96	1.96
Glycerol	1.96	1.96	1.96	1.96	1.96
Water	20.76	20.76	20.76	20.76	20.76

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A liquid part was prepared by, by mixing the anionic surfactant in hot water. Cooling the mixture to 45°C and adding the perfume, perfume microcapsules and glycerol. Mixing continued until homogeneous.

- 10 A solid part was prepared by mixing the sodium carbonate, calcium sulphate and silica. Mixing continued until a uniform powder was obtained.

The solid and liquid parts were mixed to form a paste. The paste was then cast into moulds to form the desired shape.

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Strength was assessed: Strength was measured using texture analyzer (model TA-HDi Perfect ex. *Stable Micro Systems*). The texture analyzer evaluated the compression strength of an individual bead in force divided by distance, using a 25 kg load. Beads were stored at the relevant temperature for 24 hours before measurements were taken. Multiple beads were measured to calculate the average strength of beads.

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Table 2: Results

	Strength measurement (N)	
	25°C	45 °C
A	192.47	62.21
1	247.09	130.83
2	240.77	167.4
3	246.23	63.74
4	188.49	114.66

Temperature stability was greatly improved by the presence of an anionic surfactant in the formulations.

Claims

1. A solid fragrance booster composition comprising:
 - a 10 to 95 wt.% inorganic calcium salt;
 - b 0.25 to 10 wt.% anionic surfactant;
 - c 2 to 49 wt.% water; and
 - d 0.1 to 30 wt.% perfume.
2. A solid fragrance booster composition according to claim 1, wherein the composition further comprises perfume microcapsules.
3. A solid fragrance booster composition according to any preceding claim, wherein the anionic surfactant comprises: soap (salts of fatty acids), Sodium laureth sulfate (SLES), Alkylbenzene sulfonates (such as LAS), primary alkyl sulphate (PAS), and combinations thereof.
4. A solid fragrance booster composition according to any preceding claim, wherein the composition comprises 1 to 40 wt.% additional inorganic salt.
5. A solid fragrance booster composition according to claim 4, wherein the additional inorganic salt comprises sodium carbonate.
6. A solid fragrance booster according to any preceding claim, wherein the calcium salt is selected from: calcium sulphate, calcium citrate, calcium carbonate, calcium chloride, calcium nitrate and combinations thereof.
7. A solid fragrance booster composition according to any preceding claim, wherein the composition further comprises optical enhancer is selected from pearlisers, dyes, colourants, pigments or combinations thereof.
8. A solid fragrance booster composition according to any preceding claim, wherein the composition comprises multiple solid fragrance booster particles.
9. A solid fragrance booster composition according to claim 8, wherein the particles have a maximum linear dimension of 1 mm to 20 mm.

10. A solid fragrance booster composition according to claim 8, wherein the particles have a minimum linear dimension of 0.1 mm to 10mm.
11. A solid fragrance booster composition according to claims 1 to 7, wherein the composition comprises a single unit dose solid fragrance booster particle.
12. A solid fragrance booster composition according to claim 11, wherein the particle has a maximum linear dimension of 60 mm and minimum linear dimension of 5 mm.
13. A method of preparing the solid fragrance boosters according to claim 1, wherein the composition is formed using a process selected from: extrusion, tableting, granulation, casting, pelletising, pastillation or a compression method.
14. Use of solid fragrance booster composition according to any preceding claim to deliver fragrance in the laundry process.

INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER					
INV.	C11D1/14	C11D1/22	C11D1/29	C11D3/04	C11D3/50
	C11D17/06	C11D3/10			
ADD.	C11D1/37				
According to International Patent Classification (IPC) or to both national classification and IPC					
B. FIELDS SEARCHED					
Minimum documentation searched (classification system followed by classification symbols) C11D					
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched					
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPO-Internal					
C. DOCUMENTS CONSIDERED TO BE RELEVANT					
Category*	Citation of document, with indication, where appropriate, of the relevant passages				Relevant to claim No.
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☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.					
* Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance;; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance;; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family					
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Information on patent family members

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