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(54) Title: LAUNDRY COMPOSITION

(57) Abstract: A solid fragrance booster composition comprising: a) 30 to 95 wt.% sodium carbonate; b) 0.25 to 40 wt.% polymer; c) 2 to 49 wt.% water; and d) 0.1 to 30 wt.% perfume.



LAUNDRY COMPOSITION

Field of the Invention

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

Background of the Invention

10 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
15 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.

Summary of the Invention

20 It has been found that using hydrated sodium carbonate in combination with cellulosic polymer, acrylate polymer, or combinations thereof 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 30 to 95 wt.% Sodium carbonate;
- b 0.25 to 40 wt.% polymer;
- c 2 to 49 wt.% water; and
- d 0.1 to 30 wt.% perfume; and
- 30 e Perfume microcapsules;

wherein the polymer is selected from cellulosic polymers, carrageenan, alginate, xanthan gums, gellan gums, and combinations thereof.

Also provided is a method of preparing the solid fragrance boosters described here wherein the
35 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 sodium carbonate (Na_2CO_3), also known as soda ash. The solid fragrance booster composition comprises 30 to 95 wt.% sodium carbonate by weight of the composition, more preferably 40 to 90 wt.% and most preferably 50 to 85 wt.% sodium carbonate by weight of the composition. 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 .

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The solid fragrance booster composition described herein comprises 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, 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
5 cellulose (HPMC) and the sodium salt of carboxy methyl cellulose (SCMC). Preferably the polymer comprises cellulosic polymer, more preferably comprises a modified cellulosic polymer.

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.%
10 water by weight of the composition. This refers to the weight of water added to the composition. The water may associate with the sodium carbonate to form hydrated sodium carbonate. Preferably the water is deionized.

The solid fragrance booster composition may preferably further comprise additional inorganic
15 salts. Inorganic salts are preferably selected from divalent (for example calcium or magnesium) and trivalent (for example Aluminium) metal salts of sulphate, chlorides, nitrides and the respective hydrates. Suitable examples may preferably be selected from: CaCl_2 , CaSO_4 , CaNO_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
20 wt.% inorganic salts. The salts contribute to high temperature stability.

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.

25 The solid fragrance booster composition described herein may preferably comprise 0.25 to 40 wt.% anionic surfactant by weight of the composition, more preferably 0.5 to 20 wt.% anionic surfactant, even more preferably 0.75 to 10 wt.% anionic surfactant, and most preferably 1 to 5 wt.% anionic surfactant by weight of the composition. The anionic surfactant is preferably
30 selected from soap (salts of fatty acids), Sodium laureth sulfate (SLES), Alkylbenzene sulfonates (such as LAS), primary alkyl sulphate (PAS), Ammonium lauryl 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),
35 Alkylbenzene sulfonates (such as LAS), primary alkyl sulphate (PAS), and combinations thereof.

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

5 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.

10 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.

15 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
20 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
25 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.

30 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
35 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 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.

- 5 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.

10 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.

15 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.

20 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

25 *Table 1: Formulations*

Ingredients	wt.% of composition		
	A	1	2
Sodium carbonate	39.16	37.16	37.16
Calcium sulphate	27.84	27.88	27.88
Silica	1.47	1.47	1.47
Sodium Carboxy methyl cellulose	-	1.96	-
Hydroxypropyl Methylcellulose	-	-	1.96
Perfume	6.85	6.85	6.85
Perfume microcapsules	1.96	1.96	1.96
Glycerol	1.96	1.96	1.96
Water	20.76	20.76	20.76

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

- 5 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

- 15 measured to calculate the average strength of beads.

Table 2: Results

	Strength measurement (N)	
	25°C	45 °C
A	192.47	62.21
1	247.07	181.10
2	206.36	163.46

- 20 The presence of the cellulosic polymers increased the strength of the fragrance boosters.

Claims

1. A solid fragrance booster composition comprising:
 - a 30 to 95 wt.% sodium carbonate;
 - b 0.25 to 40 wt.% polymer;
 - c 2 to 49 wt.% water;
 - d 0.1 to 30 wt.% perfume; and
 - e Perfume microcapsules;wherein the polymer is selected from cellulosic polymers, carrageenan, alginate, xanthan gums, gellan gums, and combinations thereof.
2. A solid fragrance booster composition according to claim 1, wherein the composition comprises 0.1 to 10 wt.% perfume microcapsules.
3. A solid fragrance booster composition according to any preceding claim, wherein the polymer is selected from cellulosic polymers.
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 any preceding claim, wherein the composition further comprises optical enhancer is selected from pearlisers, dyes, colourants, pigments or combinations thereof.
6. A solid fragrance booster composition according to any preceding claim, wherein the sodium carbonate has a poured bulk density of less than 1000 kg/m³.
7. A solid fragrance booster composition according to any preceding claim, wherein the composition comprises multiple solid fragrance booster particles.
8. A solid fragrance booster composition according to claim 7, wherein the particles have a maximum linear dimension of 1 mm to 20 mm.
9. A solid fragrance booster composition according to claim 7, wherein the particles have a minimum linear dimension of 0.1 mm to 10mm.

10. A solid fragrance booster composition according to claims 1 to 6, wherein the composition comprises a single unit dose solid fragrance booster particle.
11. A solid fragrance booster composition according to claim 10, wherein the particle has a maximum linear dimension of 60 mm and minimum linear dimension of 5 mm.
12. 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.
13. 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.	C11D7/12	C11D7/26	C11D11/00	C11D17/06
ADD.	C11D3/50	C11D7/10	C11D3/37	
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 D06M A61K				
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.
A	US 2008/207476 A1 (ARTIGA GONZALEZ RENE-ANDRES [DE] ET AL) 28 August 2008 (2008-08-28) paragraphs [0197], [0222], [0227], [0296] - [0298], [0308] - [0310] -----			1 - 13
A	US 2022/071863 A1 (XU LI [US] ET AL) 10 March 2022 (2022-03-10) paragraphs [0087], [0133] - [0134], [0330], [0373]; table 29 -----			1 - 13
A	US 2011/015114 A1 (GUILLARD NICOLAS [GB] ET AL) 20 January 2011 (2011-01-20) paragraphs [0031], [0071]; examples 1-5 ----- - / - -			1 - 13
☒ 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				
Date of the actual completion of the international search 5 September 2024			Date of mailing of the international search report 30/09/2024	
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2008/032910 A1 (SMETS JOHAN [BE] ET AL) 7 February 2008 (2008-02-07) paragraphs [0011], [0025], [0162], [171264]; example 10_J -----	1 - 13
Y	US 2017/218310 A1 (SCHRAMM JR CHARLES JOHN [US] ET AL) 3 August 2017 (2017-08-03) paragraphs [0020], [0024] - [0025], [0042]; table 1 -----	1 - 13
Y	US 2020/255776 A1 (SCHMIEDEL PETER [DE] ET AL) 13 August 2020 (2020-08-13) paragraphs [0117], [0127], [0134], [0255], [0256]; table 1 -----	1 - 13
Y	GB 2 003 913 A (COLGATE PALMOLIVE CO) 21 March 1979 (1979-03-21) page 3 l. 16-39, page 3 l. 81-87, page 4 l. 80-95, page 6 l.5-11; example I -----	1 - 13

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2024/066863

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2008207476 A1	28-08-2008	AT E471975 T1	15-07-2010
		DE 102005042054 A1	08-03-2007
		EP 1920042 A1	14-05-2008
		ES 2348068 T3	29-11-2010
		PL 1920042 T3	30-11-2010
		US 2008207476 A1	28-08-2008
		WO 2007028478 A1	15-03-2007
US 2022071863 A1	10-03-2022	BR 112021011885 A2	31-08-2021
		CN 113453653 A	28-09-2021
		EP 3897525 A1	27-10-2021
		US 2022071863 A1	10-03-2022
		WO 2020131866 A1	25-06-2020
US 2011015114 A1	20-01-2011	AR 077467 A1	31-08-2011
		BR 112012000398 A2	27-12-2016
		CN 102471739 A	23-05-2012
		EP 2451928 A1	16-05-2012
		US 2011015114 A1	20-01-2011
		WO 2011005816 A1	13-01-2011
US 2008032910 A1	07-02-2008	AU 2286501 A	03-07-2001
		AU 3364501 A	03-07-2001
		BR 0017049 A	05-11-2002
		CA 2392629 A1	28-06-2001
		CN 1413248 A	23-04-2003
		EP 1111034 A1	27-06-2001
		EP 1240303 A1	18-09-2002
		JP 2003518165 A	03-06-2003
		MX PA02006373 A	29-11-2002
		US 2006014655 A1	19-01-2006
		US 2008032910 A1	07-02-2008
		WO 0146374 A1	28-06-2001
US 2017218310 A1	03-08-2017	AU 2014402474 A1	19-01-2017
		BR 112017001196 A2	17-07-2018
		EP 3174966 A1	07-06-2017
		US 2017218310 A1	03-08-2017
		WO 2016018271 A1	04-02-2016
		ZA 201607662 B	28-11-2018
US 2020255776 A1	13-08-2020	DE 102017218991 A1	25-04-2019
		EP 3701004 A1	02-09-2020
		US 2020255776 A1	13-08-2020
		WO 2019081281 A1	02-05-2019
GB 2003913 A	21-03-1979	AU 525774 B2	02-12-1982
		CH 643294 A5	30-05-1984
		DE 2838800 A1	22-03-1979
		DK 376978 A	13-03-1979
		ES 473240 A1	16-10-1979
		FR 2402703 A1	06-04-1979
		GB 2003913 A	21-03-1979
		GR 72500 B	15-11-1983
		IE 47263 B1	08-02-1984
		MX 150384 A	26-04-1984
		NL 7809249 A	14-03-1979
		NZ 188209 A	28-04-1980

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2024/066863

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		PT 68507 A	01-10-1978
		SE 444953 B	20-05-1986
