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(71) Applicant: **Orlandi S.p.A.**
21012 Cassano Magnago (VA) (IT)

(72) Inventor: **ORLANDI, Massimiliano**
21012 Casorate Sempione (VA) (IT)

(74) Representative: **De Bortoli, Tiziano et al**
Zanoli & Giavarini SpA
Via Melchiorre Gioia, 64
20125 Milano (IT)

(54) SOLID DETERGENT FOR SURFACES

(57) The present invention relates to a solid detergent for cleaning surfaces, in particular for floors, comprising the following compounds expressed by weight relative to the weight of the total composition: water in an amount of between 5 and 8%; alkyl sulphate in an amount of between 40 and 52%; polyvinyl alcohol in an amount of between 24 and 32%; glycerine in an amount of between 5 and 9%; 4 to 8% fatty acid amide; siloxane in an amount of between 0,1 and 5%; alcohol ethoxylate in an amount of between 1 and 3.

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Description

[0001] The present invention relates to a solid detergent for cleaning surfaces.

[0002] In particular, the present invention relates to a detergent for both domestic and industrial floors which is in solid form during storage, and which is capable of easily solubilising in water before being used as a real detergent.

[0003] Currently, with the economic development and the improvement of the standard of living, the cleaning and care of both domestic and industrial floors, but in general of all environments, has gradually improved.

[0004] In this regard, therefore, the use of detergents for cleaning surfaces such as floors, has considerably increased, in particular with reference to the frequency of cleaning and the amount of detergent used.

[0005] Furthermore, in relation to the material of which the surface to be cleaned is made up, such as wood, tiles, concrete, etc., there is a gradual increase in the demand for cleaning products.

[0006] Related to the increase in the use of detergents, there is also the environmental issue to be taken into consideration, both relating to the detergents themselves, which aim to be highly sustainable both from the point of view of their production and their disposal, and relating to the envelopes that contain the material. In particular there is particular attention to the use of plastics for packaging which, as is well known, have a considerable environmental impact in relation to both their production and their disposal.

[0007] At present, almost the entirety of the floor cleaning market in Italy and in general in the world is made up of liquid products in bottles of various formats.

[0008] These containers can vary from small bottles for domestic use of 500ml or less, to large containers for industrial cleaning and are mainly made of plastic material, either recycled or first use.

[0009] These containers are bulky by nature and difficult to manage both at the time of purchase and for their storage at home or in distribution warehouses for domestic products, but also for the storage of large industrial containers.

[0010] Furthermore, these containers are heavy to transport since the detergent contains a large quantity of water which increases the volume thereof and therefore also its weight.

[0011] This problem also has repercussions on the transport of the detergent itself, both for the space occupied and for the weight, forcing the use of greater space in containers and/or trucks which inevitably involves a greater use of fuel for the transport of such goods.

[0012] The direct consequence of a greater use of fuel translates into a higher cost of the detergent, both retail and wholesale, but also in a greater production of CO2 and a greater impact on the environment.

[0013] On the basis of these considerations, the need to provide a detergent for cleaning surfaces, and in particular for cleaning floors, capable of reducing the aforementioned drawbacks, clearly emerges.

[0014] In particular, it would be desirable to have a floor detergent which can be packaged in completely recyclable or compostable containers of natural origin and with a low impact on the environment, such as for example cardboard.

[0015] It would also be desirable to have a floor detergent which is easy to store, i.e. which can be stored in the smallest possible space thereby reducing the overall volume.

[0016] It would still be desirable to have a floor detergent with a low specific gravity, so that it can be transported more easily.

[0017] In the light of the above, the task of the present invention is therefore to provide a detergent for surfaces which eliminates the environmental problems associated with the packaging and transport of detergents currently on the market, and which, at the same time, maintains the functionality thereof.

[0018] In particular, within the scope of this task, an object of the present invention is to provide a detergent for surfaces which is more manageable and less bulky in storage and transport, which maintains a high cleaning power and is simple to use.

[0019] A further object of the present invention is to provide a detergent for surfaces which contributes to solving the aforementioned environmental problems.

[0020] Another object of the present invention is to create a detergent for surfaces which can be easily predosed, so as to be easily usable by the user without running into an overdose of the same avoiding waste or excessive pollution problems, or vice versa which can be used in a dose not sufficient for correct cleansing of the surface.

[0021] Another object of the present invention is to provide a detergent for surfaces, and in particular for both domestic and industrial floors, which is easy to produce at low cost.

[0022] The aforesaid objects are achieved by means of a solid detergent for surfaces comprising:

- water in an amount from 5 to 8% by weight relative to the total weight of the composition;
- alkyl sulphate in an amount from 40 to 52% by weight relative to the total weight of the composition;
- polyvinyl alcohol in an amount from 24 to 32% by weight relative to the total weight of the composition;
- glycerine in an amount from 5 to 9% by weight relative to the total weight of the composition;
- fatty acid amide in an amount from 4 to 8% by weight relative to the total weight of the composition;
- siloxane in an amount from 0,1 to 5% by weight relative to the total weight of the composition;
- alcohol ethoxylate in an amount from 1 to 3% by weight relative to the total weight of the composition;

[0023] In this way we have a solid detergent capable

of being moulded into the desired shape so that it can be packaged and stored in containers of any material, reducing the storage space and the weight of the package itself.

[0024] According to the present invention, said siloxane is a mixture of:

- methyl silicon oil, preferably dimethicone (cas number 9006-65-9), in an amount from 1 to 5% by weight relative to the total weight of the composition;
- dimethyl siloxane (cas number 67762-85-0) in an amount from 0.1 to 1% by weight relative to the total weight of the composition.

[0025] Furthermore, the detergent according to the present invention dissolves quickly and completely in water so that it can be used for cleaning surfaces easily without leaving solid residues.

[0026] The solid detergent according to the present invention can be packaged in packaging of any material such as for example cardboard or biodegradable plastics, which normally could not be used for packaging liquid detergents. This solution is therefore more ecological and makes it possible to limit or eliminate the use of plastic material from fossil sources, with a consequent benefit for the environment.

[0027] In a preferred embodiment, the detergent according to the present invention also comprises:

- a citric acid salt in an amount from 0.05 to 0.3% by weight relative to the total weight of the composition;
- a dye in an amount between 0.01 and 0.5% by weight relative to the total weight of the composition;
- perfume in an amount between 0.3 and 2% by weight relative to the total weight of the composition;
- phenoxyethanol in an amount between 0.1 and 1% by weight relative to the total weight of the composition.

[0028] In this way a product is obtained that is pleasant both to the eye and to the smell, so as to make it commercially attractive.

[0029] Preferably, said polyvinyl alcohol is a mixture of fully hydrolysed polyvinyl alcohol and partially hydrolysed polyvinyl alcohol in an amount respectively from 12 to 20% and from 10 to 18% by weight relative to the total weight of the composition.

[0030] Preferably, said alkyl sulphate is C12 sodium alkyl sulphate or C13 sodium alkyl sulphate, even more preferably sodium lauryl sulphate.

[0031] Preferably, said fatty acid amide is cocamide monoethanolamine (MEA).

[0032] Preferably, said ethoxylated alcohol is a C12-C18 detoxylated alcohol or mixtures thereof. Preferably, said siloxane is dimethyl siloxane of cas number 67762-85-0 and/or methyl silicone oil, more preferably dimethicone of cas number 9006-65-9.

[0033] Preferably, said citric acid salt is sodium citrate.

[0034] In a preferred embodiment, the solid detergent for surfaces according to the present invention comprises:

- 6.5% by weight of water relative to the total weight of the composition;
- 46% by weight of C12-C13 sodium alkyl sulphate relative to the total weight of the composition;
- 16% by weight of totally hydrolysed polyvinyl alcohol relative to the total weight of the composition;
- 12% by weight of partially hydrolysed polyvinyl alcohol relative to the total weight of the composition;
- 7% by weight of glycerine relative to the total weight of the composition;
- 6% by weight of cocamide monoethanolamide relative to the total weight of the composition;
- 3% by weight of dimethicone relative to the total weight of the composition;
- 1.7% by weight of C12-C18 alcohol ethoxylate in an amount from 0.3 to 2% relative to the total weight of the composition;
- 0.4% by weight of dimethyl siloxane relative to the total weight of the composition;
- 0.16% by weight of sodium citrate relative to the total weight of the composition;
- 0.1% by weight of dye relative to the total weight of the composition;
- 0.9% by weight of perfume relative to the total weight of the composition;
- 0.24% by weight of phenoxyethanol relative to the total weight of the composition.

[0035] In this way one has a product capable of satisfying all the features listed above while maintaining a high cleaning power.

[0036] In a preferred embodiment, the solid detergent according to the present invention is moulded in the shape of a parallelepiped with side dimensions of between 0.5 and 5 cm and between 5 and 20 cm, with a thickness of between 0.5 mm and 4mm. This dimension roughly corresponds to a weight of between 0.1 and 4 grams of detergent.

[0037] In a second embodiment, the solid detergent according to the present invention is moulded in the shape of a disk with a diameter of between 4 and 10 cm with a thickness of between 0.5 mm and 4 mm. This dimension roughly corresponds to a weight of between 0.1 and 4 grams of detergent

[0038] In this way, it is possible to dose the detergent in advance in the desired quantity, so as to avoid waste of the detergent itself.

[0039] This shape also allows the "sheets" to be stacked and compacted, significantly reducing the weight and size of the package itself, just think that a pack of 15 sheets is equivalent to 1 litre of liquid detergent currently on the market, but with a weight of about 50 g. It should also be emphasized that 12 packets of solid detergent in the form of sheets according to the present invention oc-

cupy the space occupied by a 1 litre bottle of liquid detergent currently on the market.

[0040] This shape is in no way binding and therefore the solid detergent according to the present invention may be moulded into any shape and size based on market needs or the manufacturer's preferences.

Claims

1. Solid detergent for surfaces comprising:

- water in an amount from 5 to 8% by weight relative to the total weight of the composition;
- alkyl sulphate in an amount from 40 to 52% by weight relative to the total weight of the composition;
- polyvinyl alcohol in an amount from 24 to 32% by weight relative to the total weight of the composition;
- glycerine in an amount from 5 to 9% by weight relative to the total weight of the composition;
- fatty acid amide in an amount from 4 to 8% by weight relative to the total weight of the composition;
- siloxane in an amount from 0,1 to 5% by weight relative to the total weight of the composition;
- alcohol ethoxylate in an amount from 1 to 3% by weight relative to the total weight of the composition;

2. Solid detergent according to claim 1, **characterized by** further comprising:

- citric acid salt in an amount from 0.05 to 0.3% by weight relative to the total weight of the composition;
- dye in an amount between 0.01 and 0.5% by weight relative to the total weight of the composition;
- perfume in an amount between 0.3 and 2% by weight relative to the total weight of the composition;
- phenoxyethanol in an amount between 0.5 and 1% by weight relative to the total weight of the composition.

3. Solid detergent according to one or more of the preceding claims, **characterized in that** said polyvinyl alcohol is a mixture of fully hydrolysed polyvinyl alcohol and partially hydrolysed polyvinyl alcohol in an amount respectively from 12 to 20% and from 10 to 18% by weight relative to the total weight of the composition.

4. Solid detergent according to one or more of the preceding claims, **characterized in that** said alkyl sulphate is C12 sodium alkyl sulphate or C13 sodium alkyl sulphate, preferably sodium lauryl sulphate.

5. Solid detergent according to one or more of the preceding claims, **characterized in that** said fatty acid amide is cocamide monoethanolamide (MEA).

6. Solid detergent according to one or more of the preceding claims, **characterized in that** said ethoxylated alcohol is a C12-C18 detoxylated alcohol or mixtures thereof;

7. Solid detergent according to one or more of the preceding claims, **characterized in that** said siloxane is dimethicone and/or dimethyl siloxane.

8. Solid detergent according to claim 2, **characterized in that** said citric acid salt is sodium citrate.

9. Solid detergent for surfaces comprising

- 6.5% by weight of water relative to the total weight of the composition;
- 46% by weight of C12-C13 sodium alkyl sulphate relative to the total weight of the composition;
- 16% by weight of totally hydrolysed polyvinyl alcohol relative to the total weight of the composition;
- 12% by weight of partially hydrolysed polyvinyl alcohol relative to the total weight of the composition;
- 7% by weight of glycerine relative to the total weight of the composition;
- 6% by weight of cocamide monoethanolamide relative to the total weight of the composition;
- 3% by weight of dimethicone relative to the total weight of the composition;
- 1.7% by weight of C12-C18 ethoxylated alcohol relative to the total weight of the composition;
- 0.4% by weight of dimethyl siloxane relative to the total weight of the composition;
- 0.16% by weight of sodium citrate relative to the total weight of the composition;
- 0.1% by weight of dye relative to the total weight of the composition;
- 0.9% by weight of perfume relative to the total weight of the composition;
- 0.24% by weight of phenoxyethanol relative to the total weight of the composition.

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EUROPEAN SEARCH REPORT

Application Number
EP 23 17 4701

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	27 September 2023	Douelle, Frédéric

CATEGORY OF CITED DOCUMENTS

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