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(54) Perfume delivery system

(57) A perfume carrier suitable for use in detergent compositions, in particular non-soap detergent compositions, containing a solid water insoluble mineral carrier, a perfume composition and a water and perfume soluble perfume viscosifier. The perfume viscosifier preferably is polyethylene glycol with a molecular weight of 400 to 20 000.

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Description

The invention is related to a perfume carrier for use in detergent compositions, in particular non-soap detergent compositions, the use of the perfume carriers for perfuming detergents and a detergent composition containing the perfume carrier.

Laundry bars, preferably non-soap laundry bars, are, usually, prepared by mixing at high temperatures (around 90°C) compositions containing minerals, surfactants (detergents) and perfumes. Such mixture is then extruded, conveniently at a high temperature, e.g. at around 80°C.

The perfume is a key ingredient of the composition because it strongly determines the first choice of the consumer. Because of the high temperatures of preparation of laundry bars, part of the perfume is lost by evaporation in the plant. One way of limiting the perfume loss is to design the perfume using perfumery materials with a low vapour pressure. This way is not fully satisfactory, because it does not avoid completely perfume losses and it limits to a great extent the palette of fragrance materials used by the perfumer in creating perfumes.

The invention in one of its aspects relates to perfume-containing carriers which limit perfume loss during the manufacture of detergent compositions, in particular non-soap detergent compositions, especially laundry bars, i.e. detergent composition bars, and/or increase the perfume storage stability of detergent compositions, in particular of non-soap detergent compositions, especially of detergent powders and afore-mentioned laundry bars. This effect enables a better perfume delivery of freshly prepared detergent products and also of laundry bars and powders stored under high temperature and high humidity.

Many techniques have been used to improve perfume delivery to fabrics:

Micro encapsulation has been described (USP 4145184, USP 4234627, USP 4096072, USP 4402856, WO 92/18601). The technique is satisfactory, but costs are high.

Perfumes can also be included in a water insoluble matrix (USP 4152272).

Other methods consist in adsorbing perfumes on various porous substrates such as silica, zeolite, clay or polymers. So, USP 4,539,135 discloses a perfume-containing carrier for use in admixture with a particulate detergent composition or an additive to a wash solution separate from the detergent composition. The carrier consists essentially of discrete particles containing at least 90%, by weight, of a clay, in particular of bentonite, and/or a zeolite, and less than about 5%, by weight, of surface active detergent compounds and a perfume, which is in the liquid state at ambient temperature and is adsorbed and/or absorbed on said particles. Further, WO94/28107 discloses a perfume delivery composition in the form of particles comprising a solid, water-insoluble, porous carrier which comprises a natural or synthetic zeolite having a nominal pore size of at least 6 Angstroms, a perfume which is releasably incorporated (trapped) in the pores of said zeolite carrier to provide a perfumed zeolite and a matrix coated on said perfumed zeolite comprising a water-soluble composition in which the perfume is substantially insoluble. The matrix forms a protective barrier entrapping and maintaining the perfume within the zeolite's pores. The matrix comprises from 0% to 80%, by weight, of at least one solid polyol containing more than 3 hydroxyl moieties and from 20% to 100%, by weight, of a fluid diol or polyol in which the perfume is substantially insoluble and in which the solid polyol is substantially soluble. The polyol or diol is selected from the group consisting of glycerol, ethylene glycol, and diglycerol.

Both these disclosures do not overcome the problem of perfume loss by evaporation during the production of detergent compositions at elevated temperatures as outlined at the beginning. Therefore, the object of the present invention is to present a perfume carrier for detergent compositions, in particular for non-soap detergent compositions, which has low loss of perfume, especially at elevated temperatures, e.g. when laundry bars or detergent powders are produced and/or stored.

The present invention now provides a cheap and, in particular, simple means to overcome the drawbacks of the prior art.

The following aspects form the invention:

In one aspect, the present invention relates to compositions, in particular granular compositions, enabling a better perfume delivery when introduced into detergents, in particular non-soap detergents, such as laundry bars on detergent powders.

This aspect covers a perfume carrier suitable for use in detergent compositions, in particular in non-soap detergent compositions, containing a solid water insoluble mineral, i.e. inorganic carrier, a perfume (composition) and a water and perfume soluble perfume viscosifier.

The role of the solid carrier ("the mineral") is mainly to produce solid granules by adsorbing a perfume/viscosifier mixture. From 20 to 90%, preferably from 50 to 90%, of any solid carrier chosen among the raw materials normally used in detergent products is usually present. The material of the solid carrier may be silica, a silicate, in particular a clay, a phosphate or any mixtures thereof. The preferred solid carriers consist of bentonite, bentonite/sodium tripolyphosphate (STPP), zeolite, bentonite/zeolite, bentonite/silica.

The term "zeolite" refers to any crystalline aluminisilicate material of natural or synthetic origin having a zeolite structure, e.g. having the general formula:

$(Na_2O)x.Al_2O_3.(SiO_2)y.zH_2O$

A preferred zeolite is Zeolite A as produced by Degussa under the trade name HAB A40.

Bentonite is a clay, e.g. as sold under the trademark Laundrosil DGA by Süd Chemie or Mineral Colloid by the Benton Clay Company.

Silica is, e.g. produced by Degussa under the trademark Supernat 22S.

Sodium tripolyphosphate is a common raw material used in detergent products; its purpose is mainly to complex calcium ions. A suitable material is produced by Albright and Wilson under the trademark Empiphos STPP.

The term "perfume" stands for the required mixture of any perfume materials of synthetic and/or natural origin, which is suitable for perfuming soap bars and detergents. It can contain (small amounts of) the usual solvents and diluents destined for this purpose. Propylene glycol is an example of such solvent.

The term "perfume composition", as used in connection with the present invention, means such solutions of perfume materials.

In the context of this invention, "perfume" and "perfume composition" will be used interchangeably.

The role of the perfume viscosifier is to increase the viscosity of the perfume to such an extent as to decrease its evaporation and to provide better stability. From 1 to 60% of a polyethylene glycol, especially with a molecular weight from 400 to 20000, more preferably between 2000 and 10000, can be used for this purpose.

The perfume carriers are preferably prepared in form of granulates by spraying a mixture of perfume viscosifier and perfume onto the solid carriers in a granulator, or by simple mixing of the perfume viscosifier/perfume mixture with the solid carriers.

The suitable concentrations (% w/w) of the components in the perfume carriers are as follows:

solid carrier	20-90	50-90	40-60
viscosifier	0.1-20	0.2-5	0.5-3
perfume	1-60	5-50	10-40

An effective amount, of the novel perfume carrier, especially about 0,5-20%, should be present in the final product, whereby the concentration of the perfume in the final product should conveniently be 0.1 to about 4%, preferably 0.1 to about 2%.

Example 1

Perfume carriers of the following compositions were prepared:

ingredients	B2
Bentonite	10
Zeolite	70
Polyethylene Glycol 4000	1
Perfume	19

B2 was added to a laundry bar composition and a detergent powder composition to reach a level of perfume of 0.15% in the final compositions and laundry bars and detergent powder, respectively, were produced.

The storage stability of the products was assessed against a product of the same formulation but where the perfume was introduced into the detergent product at a level of 0.2% (B1) and stored at room temperature. The products with B2 were stored 2 weeks at 43°C (for the powder) and 55°C (for the laundry bar). The products were then assessed by sniffing. The following results were found:

Formulation with		**Stability** laundry bar	**Stability** detergent powder
0.2% of non-protected perfume	B1	good	good
0.15% of protected perfume	B2	equivalent to B1	equivalent to B1

From these results it can be concluded, that the use of the perfume carrier according to the invention increases the stability of the perfume when the material products are stored at higher temperatures, i.e. no or nearly no loss of perfume occurred at higher temperatures.

Example 2

Perfume carrier granules of the following composition were prepared:

ingredients	R1
Bentonite	10
STPP	70
Polyethylene Glycol 4000	1
Perfume	19

The granules were introduced in a detergent powder to reach a perfume concentration of 0.15% in the final product, i.e. a product with protected perfume. The perfume performance under different conditions as shown below was assessed by sniffing against a benchmark, i.e. a standard, containing 0.2% of non protected perfume.

The assessment was carried out by a trained panel of 10 people. The products were evaluated on a 0 to 4 scale, 0 being the worst score and 4 the best.

The following results were obtained:

Formulation with		**after rinse**	**in wash**	**neat**
0.2% of the non-protected perfume	benchmark	3	3	3
0.15% of the protected perfume	R1	3.25	3.25	3.40

These results show that the protected perfume had a better performance.

Claims

1. A perfume carrier suitable for use in detergent compositions, in particular non-soap detergent compositions, containing a solid water insoluble mineral carrier, a perfume composition and a water and perfume soluble perfume viscosifier.

2. A perfume carrier according to claim 1, wherein the material of the solid carrier is silica, a silicate, in particular a clay, a phosphate or any mixture thereof.

3. A perfume carrier according to claim 1 or 2, wherein the material of the solid carrier is bentonite, a mixture of bentonite with zeolite or a mixture of bentonite with sodium tripolyphosphate, or a mixture of bentonite with silica.

4. A perfume carrier according to any one of claims 1 to 3, wherein the perfume contains organoleptically active ingredients of natural and/or synthetic origin.

5. A perfume carrier according to any one of claims 1 to 4, wherein the perfume viscosifier is polyethylene glycol with a molecular weight of 400 to 20 000.

6. A perfume carrier according to any one of claims 1 to 5, wherein the solid carrier is present in a amount of 20 to 90 %, preferably of 50 to 90 %.

7. A perfume carrier according to any one of claims 1 to 6, wherein the perfume viscosifier is present in an amount of 0, 1 to 20 %, preferably of 0.2 to 5%.

8. A perfume carrier according to any one of claims 1 to 7, wherein the perfume composition is present in an amount of 1 to 60 %, preferably of 5 to 50 %, most preferably of 10 to 40 %.

9. A perfume carrier according to any one of claims 1 to 8, wherein the detergent composition is in the form of bars or a powder, in particular in the form of laundry bars.

10. A perfume carrier according to any one of the claims 1 to 9 derived by a process which comprises spraying a mixture of the perfume viscosifier and the perfume onto the solid carrier, preferably in a granulator, or mixing a mixture of the perfume viscosifier and the perfume with the solid carrier.

11. A detergent composition containing about 4% to about 80% of a detergent and about 0.5 to about 20% of a perfume carrier according to any one of claims 1 to 10.

12. A detergent composition according to claim 11 having a perfume concentration of about 0,1 to 4%, in particular of about 0,1 to about 2%.

13. A detergent composition in the form of laundry bars with a composition according to claim 11 or 12 derived by a process which comprises the steps of

a) mixing the usual components of a detergent composition and a perfume carrier according to any one of the claims 1 to 10, and

b) extruding such mixtures.

14. The use of a perfume carrier according to any one of the claims 1 to 10 for perfuming detergents, in particular in the form of bars or a powder, especially to reach a perfume concentration of about 0,1 to about 4%, in particular of about 0,1 to about 2 %, in the final product.