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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: GROUND GLASS SURFACE OR OBJECT TREATING AGENT, USE THEREOF, AND METHOD OF MAKING SAME

(57) Abstract: A ground glass surface or object treating agent, a use therefor, and a method of making the same are provided. The agent comprises at least ground foamed glass, and if in dry form can also include disinfectant powder and/or surfactant powder. If in gel form, the agent can also include water as well as binder, thickener and/or surfactant. The ground glass is virgin glass, recycled glass or a mixture thereof, and preferably has a particle size of no greater than 12 mesh.



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GROUND GLASS SURFACE OR OBJECT TREATING AGENT, USE
THEREFOR, AND METHOD OF MAKING SAME

Technical Field

The present invention relates to a surface or object treating agent that includes ground glass, as well as the use for this agent and a method of making such an agent.

Numerous products are known for treating surfaces and objects, in particular for polishing or cleaning objects and surfaces as well as for removing unwanted or undesirable material from such objects and surfaces. Unfortunately, many of the known products contain toxic or otherwise environmentally unfriendly chemicals. In addition, some of these products are expensive to produce, and are not always particularly effective.

It is therefore an object of the present invention to provide a non-toxic economical and effective surface or object treating agent that is specifically formulated, as well as a method of making the same.

Disclosure of the Invention

This object, and other objects and advantages of the present invention, will appear more clearly from the following specification in conjunction with the accompanying Examples.

The surface or object treating method of the present invention is characterized primarily by the steps of providing an agent that comprises at least ground foamed glass, and contacting a surface or object that is to be treated with the agent and then providing relative movement between the agent and the surface or object to treat the surface or object.

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Whereas currently known products contain one type of abrasive with one grit size, pursuant to the current invention, the round ground glass particles act as a more gentle abrasive while the sharp particles of ground foamed glass are a more aggressive abrasive. A large number of combinations of glass types and grit sizes can produce many very specific abrasion levels for many different applications.

Detailed Description of Preferred Embodiments

Pursuant to one aspect of the present invention, the agent is a dry agent that is a mixture of 1.0 to 99.9% by weight ground foamed glass, 0.0 to 98.9% by weight ground glass, and 0.1 to 10% by weight of a disinfectant powder and/or a surfactant powder. The disinfectant powder is an antibacterial substance, and can, for example, be citrus based, such as the grapefruit seed extract CITRICIDAL. The surfactant is, for example, a coconut oil based soap, such as MACKANATE CM-100F.

The agent mixture can also include a fragrance, which can be a powder or can be in liquid form. One example of a suitable scent liquid is D-LIMONENE.

Pursuant to another exemplary specific embodiment of the present invention, the surface or object treating agent can be in liquid or gel form. In such a case, the agent can be a mixture of 1.0 to 88.0% by weight ground foamed glass, 0.0 to 87.0% by weight ground glass, 10.0 to 90.0 % by weight water, along with 2.0 to 10.0% by weight binder, plus optionally 0.5 to 5.0 % by weight thickener and/or 0.5 to 10% by weight surfactant. An example of a suitable binder could be GERMABEN II, and an example of a suitable thickener could be CARBOPOL 940 POLYMER, which is a water-soluble resin from the B.F. Goodrich Chemical Company and has good gel forming properties. An example of a suitable surfactant for the inventive

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surface or object treating agent in the form of a gel could be sodium hydroxide. The gel agent mixture could additionally include 0.1 to 5.0% by weight fragrance and/or color. One example of a suitable fragrance would be lemon fragrance B.S., and examples of suitable colors could be FD&C Yellow No.5 and D&C Green No. 3.

The ground foamed glass could be manufactured from virgin glass, recycled glass or a mixture thereof. The ground glass could be a virgin glass, recycled glass, or a mixture thereof. In addition, the ground foamed glass could be a waste product of a foamed glass manufacturing process of other products.

As indicated above, the glass and foamed glass in the inventive surface or object treating agent is ground. In particular, the glass is ground or otherwise converted to small or very small particles in any suitable manner, for example by means of a ball mill. In this application the term "ground" is used to refer to the conversion of glass into particles regardless of the process used to produce the particles. In addition, the glass is ground so that it has a particle size of no greater than 12 mesh. The presently preferred size range for the glass particles is 12 to 400 mesh, although the ground glass or foamed glass could also contain finer powder. To ensure that the agent mixture contains no particles of a size greater than 12 mesh, the ground glass particles, either prior to being mixed with any additional substituents or subsequent to being mixed with other substituents, can be passed through an appropriate sieve or screen.

The present invention not only provides a unique method for treating a surface or an object, but also provides a method of making a unique surface or object treating agent, and also provides the unique surface or object treating agent. The surface or object treating

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agent of the present invention is an effective, non-toxic agent that can be used for industrial as well as domestic applications.

The surface or object treating agent of the present invention can be used in several ways. For example, the powder or gel can be placed directly on the surface or object that is to be treated, or can be placed on a sponge or cloth. In the case of the dry agent, the surface (or object) or cloth can be first moistened.

It should also be noted that for certain applications, it could be expedient to additionally add to the ground glass of the agent another abrasive and/or a suitable chemical such as an aggressive chemical capable of dissolving material on an object or a surface.

The present invention will now be explained further in conjunction with the following two examples.

EXAMPLE 1

To make a dry surface or object treating agent the following substituents were provided:

		WT. %
Abrasive	200 mesh recycled glass	90.0
Abrasive	60 mesh recycled foamed glass	5.9
Disinfectant Powder	CITRICIDAL Grapefruit Seed Extract	0.1
Scent Liquid	D-LIMONENE – technical grade	1.5
Surfactant powder	MACKANATE CM-200F	2.5

The ground glasses and dry powders were mixed together in a drum mixer for 10-15 minutes. The scent liquid was then slowly added and mixing continued for an additional 10-15 minutes.

EXAMPLE 2

To provide the inventive surface or object treating agent in gel form, the following substituents were provided:

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		WT. %
Water		68.6%
Recycled glass and foamed glass mixture	ECOMAX	20.0
Binder	GERMABEN II	5.0
Thickener	CARBOPOL 940 Polymer	2.5
Surfactant	Sodium Hydroxide	2.5
Fragrance	Lemon Fragrance B. S.	1.0
Color	FD&C Yellow No. 5	0.2
	D&C Green No. 3	0.2

The ground glasses and dry powders were mixed together in a paddle mixer for 10-15 minutes. The liquids were separately mixed together. The dry mixture was then slowly added to the liquid and mixed together for 10-15 minutes. The final mixture was mixed for 10-15 minutes at high speed while being pulled through a fine screen to thoroughly mix in any dry powder lumps.

The present invention is, of course, in no way restricted to the specific disclosure of the specification and Examples, but also encompasses any modifications within the scope of the appended claims.

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CLAIMS:

1. A method of treating a surface or an object, characterized by the steps of:
providing an agent that comprises at least ground foamed glass, and
contacting a surface or an object with said agent and providing relative movement between said agent and said surface or object to treat said surface or object.
2. A method of making a surface or object treating agent, characterized by the step of:
grinding at least foamed glass to form glass particles of a size no greater than 12 mesh.
3. A method according to claim 1 or 2, characterized in that said agent is a mixture comprising 1.0 to 99.9% by weight ground foamed glass, 0.0 to 98.9% by weight ground glass, and at least one of a disinfectant powder and surfactant powder, and may also include a fragrance.
4. A method according to claim 1 or 2, characterized in that said agent is a mixture comprising 1.0 to 88.0% by weight ground foamed glass, 0.0 to 87.0% by weight ground glass, 10.0 to 90.0% by weight water, and 2.0 to 10.0% by weight binder, and said mixture may additionally include at least one of a thickener, a surfactant, fragrance and color.
5. A method according to claim 1 or 2, characterized in that said glass is at least one of virgin and recycled glass.
6. A method according to claim 1, characterized in that said ground glass essentially has a particle size no greater than 12 mesh.

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7. A surface or object treating agent comprising at least ground foamed glass.

8. A surface or object treating agent according to claim 7, characterized in that said agent further includes at least one of a disinfectant powder and surfactant powder, and may also include a fragrance.

9. A surface or object treating agent according to claim 7, characterized in that said agent further includes water and a binder, and may additionally include at least one of a thickener, a surfactant, fragrance and color.

10. A surface or object treating agent according to claim 7, characterized in that said glass is at least one of virgin and recycled glass.

INTERNATIONAL SEARCH REPORT

International application No.

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A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : C11D 3/14; B24C 1/08, 3/32
US CL : 510/268, 368, 395; 51/295, 308

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)
U.S. : 510/268, 368, 395; 51/295, 308

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)
Westsearch: glass abrasive

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3,673,746A (HIGHBERG) 04 July 1972 (04.07.1972), column 3, example II.	1, 2, 5-7, and 10
X	US 5,782,939A (FARBSTEIN et al) 21 July 1998 (21.07.1998), column 4, example I-1.	1, 2, 5-7, and 10
X	WO 88/00613 (SUSKO) 28 January 1988 (28.01.1988), see abstract.	1-10
X	US 4,716,690A (SZUCS) 05 January 1988 (05.01.1988), col. 8, claims 7 and 8.	1, 2, 5-7, and 10
A	US 4,155,870A (JORGENSEN) 22 May 1979 (22.05.1979), col. 6, example 4.	1-10
A	US 5,484,548A (KIEWERT et al) 16 January 1996 (16.01.1996), col. 5, example 4.	1-10

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:

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"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

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document member of the same patent family

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