



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<b>(21) International Application Number:</b> PCT/GB97/01257 <b>(22) International Filing Date:</b> 9 May 1997 (09.05.97) <b>(30) Priority Data:</b> 9609865.2                      11 May 1996 (11.05.96)                      GB <b>(71) Applicant (for all designated States except US):</b> QUEST INTERNATIONAL B.V. [NL/NL]; Huizerstraatweg 28, NL-1411 GP Naarden (NL). <b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only):</b> DOBSON, Paul, Henry [GB/GB]; 11 Cragside Way, Wilmslow, Cheshire SK9 1ES (GB). CHANTLER, Stephen, John [GB/GB]; Mericourt, Berwick Hill, Stone Street, Lympne, Kent CT21 4JP (GB). <b>(74) Agent:</b> KEITH W. NASH & CO.; 90-92 Regent Street, Cambridge CB2 1DP (GB).	<b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i>	
<b>(54) Title:</b> LAVATORY CLEANSING COMPOSITIONS		
<b>(57) Abstract</b>  A solid lavatory cleansing composition comprises phenyl ethyl alcohol at a level of at least 2,5 % by weight which acts as a fragrance and also as an antibacterial agent.		

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**Title: Lavatory Cleansing Compositions****Field of the Invention**

This invention relates to lavatory cleansing compositions and particularly concerns solid lavatory cleansing compositions either intended to be positioned in a toilet bowl or urinal in such a manner that the composition is rinsed with water on flushing (toilet rim blocks or toilet rinse blocks) or intended to be positioned in a toilet or urinal cistern, immersed in flush water (in-cistern blocks).

**Background to the Invention**

Solid lavatory cleansing compositions are well known. See, for example, EP0167210, EP0350227, EP0462643, EP0526437, WO95/25162 and US4666671, for a discussion of solid compositions intended for use in toilet bowls, ie toilet rim blocks or toilet rinse blocks. GB 2290300 discloses toilet rim blocks comprising polyvinyl alcohol or partially hydrolysed polyvinyl acetate with fragrance material that may include a small amount of beta phenyl ethyl alcohol, at a level of 0.47% by weight.

**Summary of the Invention**

According to the present invention there is provided a solid lavatory cleansing composition comprising phenyl ethyl alcohol (PEA) in an amount of at least 2.5% by weight of the total weight of the composition.

PEA is a known fragrance material and acts to impart desirable fragrance properties to the composition. PEA also has antibacterial properties, so this material also acts to impart antibacterial properties to the composition.

The composition may be otherwise of generally conventional formulation.

The composition desirably comprises surfactant, preferably anionic surfactant, for cleaning purposes. Surfactant is suitably present in an amount in the range 25 to 75% by weight, conveniently 25 to 50% by weight, preferably 30 to 40% by weight of the total weight of the composition.

Anionic surfactants which can be used in the present invention include for example the alkali metal alkyl substituted benzene sulphonates, alkali metal long chain alkyl sulphates, alkali metal ether sulphates derived from long chain alcohols and alkyl phenols, alkali metal alkane sulphonates, alkali metal olefin sulphonates and alkali metal sulphosuccinates, of which the sodium salts are preferably used.

Preferred anionic surfactants are sodium C<sub>9</sub>-C<sub>14</sub> alkyl benzene sulphonates, sodium C<sub>11</sub>-C<sub>20</sub> olefin sulphonates, sodium C<sub>11</sub>-C<sub>20</sub> alkane sulphonates and sodium long chain C<sub>10</sub>-C<sub>14</sub> alkyl sulphates or mixtures thereof, sodium alkyl benzene sulphonates being particularly preferred as the main surfactant component.

In addition, other types of surfactants, such as nonionic surfactants including ethoxylated nonionic compounds, fatty acid alkanolamides and amine oxides, may be incorporated as desired, but only in amounts not exceeding 20% by weight, preferably less than 10% by weight, since they could otherwise tend to affect the foaming properties and rate of wear of the composition.

The composition desirably also includes a filler, which is suitably present in an amount in the range 20 to 75% by weight, preferably 40 to 65% by weight, more preferably 50 to 60% by weight of the total weight of the composition.

The filler can be an electrolyte, such as sodium sulphate, sodium chloride, sodium carbonate and phosphates, such as sodium triphosphate, hexametaphosphate, pyrophosphate and orthophosphate; or and inert material, such as calcite, clay and urea. A mixture of filler materials may be used.

Fragrance, comprising PEA possibly in combination with other fragrance materials, is

typically present in an amount in the range 5 to 20% by weight, eg about 10% of the total weight of the composition. The fragrance preferably comprises at least 50% by weight of the weight of the fragrance, corresponding to PEA levels in the composition of at least 2.5% to at least 10% by weight of the total weight of the composition.

The composition may additionally include a solubility control agent to reduce solubility of the composition and so extend the life of the composition in use.

Suitably solubility control agents include natural polysaccharide gums such as guar gum, xanthan gum, tragacanth, carrageenan, etc and their semi-synthetic analogues as produced by fermentation.

Other solubility control agents may additionally or alternatively be used, including waxes, such as waxes of natural origin, polyethylene waxes and amide waxes; long chain (eg. containing more than 10 carbon atoms) fatty alcohols such as stearyl or behenyl alcohol; long chain, (eg. containing more than 10 carbon atoms) fatty acids, such as stearic acid, and their salts; esters of long chain fatty alcohols with aliphatic carboxylic acids, such as stearyl acetate; esters of long chain fatty acids with mono or polyhydric alcohols, such as ethyl stearate or glycerol tristerate or mono-, di- or tri- glycerides of natural origin; fatty acid mono- or di- alkanolamides, such as coconut monoethanolamide; ethoxylated products of fatty acid mono- or di- ethanolamides containing low amounts, eg. 2 to 4 units, of ethylene oxide per mole; paradichlorobenzene; or long chain aliphatic hydrocarbons of natural or synthetic origin.

Preferred solubility control agents are generally insoluble fragrance materials, particularly pine oil, which function both as fragrances and solubility control agents.

Solubility control agent, if present, is suitably used in an amount in the range 1 to 10% by weight, preferably 2 to 5% by weight of the total weight of the composition. Suitable levels depending on factors including composition ingredients and intended block life, and can be readily determined by experiment.

Use of solubility control agent such as pine oil may enable PEA to be used at lower levels than would otherwise be the case without compromising performance.

The composition may optionally also contain non-surfactant nonionic polymeric materials, such as polyethylene glycols and minor ingredients, such as dyes, germicides, fungicides, bleaches, opacifiers and the like as desired. For example, in-cistern products typically include dye to colour the flush water, but this is not essential.

The composition is conveniently in the form of a block, which suitably has a weight in the range 20 to 150 grams, preferably in the range 50 to 80 grams. The block may be of any suitable desired shape and size for positioning in a toilet bowl or urinal for a rim block or for location in a cistern for an in-cistern block.

The composition may be conveniently formed into blocks by mixing the ingredients to form a dough, extruding the dough and cutting the extruded dough, eg as described in EP 0167210.

For a rim block, the composition is typically placed in or on a suitable container or holder designed to be suspended from the rim of a toilet bowl or urinal, to hang within the bowl or urinal just below the rim in a position for the composition to be rinsed with flush water on flushing of the toilet. The container or holder is conveniently of plastics material and usually has apertured walls to enable flush water to contact and flow past the composition.

In a further aspect, the invention provides a container or holder having located therein or thereon a solid lavatory cleansing composition in accordance with the invention.

An in-cistern block is used by simply being placed in a cistern immersed in the cistern water. No container or holder is used, although for handling/aesthetic purposes the block is usually wrapped in water-soluble film.

The invention will be further described, by way of illustration, in the following Examples.

**Example 1**

A solid lavatory cleansing composition intended for use as a rim block has the following formulation.

	% w/w
Sodium dodecylbenzene sulphonate	35
Fragrance (50% PEA)	10
Water	0.5
Sodium Sulphate (filler)	54.5

The ingredients are mixed to form a dough which is extruded and cut into lengths to form blocks having a weight of about 50 grams, as described in EP 0167210.

The blocks are located in apertured plastics holders and in use are hung from the rim of a toilet bowl to be rinsed by flush water on flushing.

The blocks have good cleansing properties, with the PEA acting as a fragrance and also as an antibacterial agent.

**Example 2**

A solid lavatory cleansing composition intended for use as an in-cistern product was made by the method described in Example 1. The composition has the following formulation:

	% w/w
Sodium dodecylbenzene sulphonate	40.0
Sodium sulphate (filler)	to 100
Fragrance (50% PEA)	6.0
Water	0.5
Dye - Acid Blue 9	4.0

Blocks of the composition of desired size and shape are wrapped in water-soluble film. In use, a wrapped block is located in a toilet cistern, immersed in the cistern water.

The blocks have good cleansing properties, with PEA acting as a fragrance and also as an antibacterial agent.

### Example 3

A series of blocks of lavatory cleansing compositions were prepared as described in Example 1, but incorporating varying amounts of fragrance (50% PEA) and hence varying amounts of PEA.

The germ kill efficacy of the blocks and also a number of commercially available bleach-containing lavatory cleansing compositions was then tested.

The test protocol was as follows:

#### Standard Dirty Water (S.D.W.)

Containing approximately  $10^4$  cfu/mL

Prepared from:

- |   |          |
|---|----------|
| 1. Synthetic hard water of $200 \pm 10$ mg/Kg hardness  | 18 parts |
| 2. Horse serum (Oxoid, sterile)   | 2 parts  |
| 3. <i>E.coli</i> NCIB 9132 grown in Nutrient broth (Oxoid), diluted after 24hrs growth with sterile distilled water to give approx. $10^5$ cfu/mL | 1 part   |

#### Samples

Samples were dissolved in sterile distilled water, to give solutions of appropriate concentration corresponding with a block life of 500 flushes, each of 9L.

#### Test Procedure

At time zero, 1mL of S.D.W. (containing approximately 10,000 cfu) was added to 9mL of sample solution and after 2, 5, 10, 30, 60 and 120 minutes survivors were counted using pour plates and incubation @  $37 \pm 1^\circ\text{C}$  for 24 hours.

A blank test was also performed, using sterile distilled water in place of sample solution,



to determine the number of cfu/mL added to the sample solutions.

Results were as follows:

Test Block 1 (0% PEA)

Survivors after	2 minutes	9400	6% kill
	5 minutes	10000	0% kill
	10 minutes	9400	6% kill
	30 minutes	7200	28% kill
	60 minutes	6400	36% kill
	120 minutes	3200	68% kill

Test Block 2 (3.60% PEA)

Survivors after	2 minutes	330	96.7% kill
	5 minutes	330	96.7% kill
	10 minutes	300	97% kill
	30 minutes	270	97.3% kill
	60 minutes	240	97.6% kill
	120 minutes	170	98.3% kill

Test Block 3 (5.76% PEA)

Survivors after	2 minutes	660	93.4% kill
	5 minutes	660	93.4% kill
	10 minutes	660	93.4% kill
	30 minutes	440	95.6% kill
	60 minutes	440	95.6% kill
	120 minutes	220	97.8% kill

Test Block 4 (12.69% PEA)

Survivors after	2 minutes	1200	88% kill
	5 minutes	660	93.4% kill
	10 minutes	660	93.4% kill
	30 minutes	440	95.6% kill
	60 minutes	440	95.6% kill
	120 minutes	220	97.8% kill

Test Block 5 (19.16% PEA)

Survivors after	2 minutes	440	95.6% kill
	5 minutes	440	95.6% kill
	10 minutes	440	95.6% kill
	30 minutes	1000	90% kill
	60 minutes	660	93.4% kill
	120 minutes	440	95.6% kill

S.C. Johnson Bleach Power Rim Stick

Survivors after	2 minutes	4400	56% kill
	5 minutes	660	93.4% kill
	10 minutes	440	95.6% kill
	30 minutes	440	95.6% kill
	60 minutes	440	95.6% kill
	120 minutes	440	95.6% kill

Jeyes Parazone Rim Stick

Survivors after	2 minutes	390	96.1% kill
	5 minutes	260	97.4% kill
	10 minutes	130	98.7% kill
	30 minutes	50	99.5% kill
	60 minutes	50	99.5% kill
	120 minutes	10	99.9% kill

Domestos Rim Stick

Survivors after	2 minutes	180	98.2% kill
	5 minutes	120	98.8% kill
	10 minutes	50	99.5% kill
	30 minutes	70	99.3% kill
	60 minutes	40	99.6% kill
	120 minutes	20	99.8% kill

**CLAIMS**

1. A solid lavatory cleansing composition comprising phenyl ethyl alcohol in an amount of at least 2.5% by weight of the total weight of the composition.
2. A composition according to claim 1, further comprising surfactant.
3. A composition according to claim 2, wherein the surfactant is anionic.
4. A composition according to claim 3, wherein the surfactant is sodium dodecylbenzene sulphonate.
5. A composition according to claims 2, 3 or 4, wherein the surfactant is present in an amount in the range 25 to 75% by weight, conveniently 25 to 50% by weight, preferably 30 to 40% by weight of the total weight of the composition.
6. A composition according to any one of the preceding claims, further comprising filler.
7. A composition according to claim 6, wherein the filler is sodium sulphate.
8. A composition according to claim 6 or 7, wherein the filler is present in an amount in the range 20 to 75% by weight, preferably 40 to 65% by weight, more preferably 50 to 60% by weight of the total weight of the composition.
9. A composition according to any one of the preceding claims, wherein fragrance, comprising phenyl ethyl alcohol possibly in combination with other fragrance materials, is present in an amount in the range 5 to 20% by weight of the total weight of the composition

10. A composition according to claim 9, wherein the fragrance comprises at least 50% by weight phenyl ethyl alcohol.
11. A composition according to any one of the preceding claims, further comprising one or more solubility control agents, preferably pine oil.
12. A composition according to any one of the preceding claims, in the form of a block.
13. A container or holder having located therein or thereon a solid lavatory cleansing composition in accordance with any one of the preceding claims.
14. Use of phenyl ethyl alcohol for imparting antibacterial properties to a solid lavatory cleansing composition.

# INTERNATIONAL SEARCH REPORT

Int'l Patent Application No  
PCT/GB 97/01257

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC 6 C11D17/00 A61L9/01 A61L2/16 C11D3/50

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)  
 IPC 6 C11D A61L

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 practical, search terms used)

**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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A	US 4 604 487 A (WIEGERS WILHELMUS J ET AL) 5 August 1986 see column 3, line 21 - line 24 see column 20; example 7 see column 17; example 4 ---	1,2,11, 14
A	US 4 396 522 A (CALLICOTT ROBERT H ET AL) 2 August 1983 see column 6, line 43 - line 45 see column 9, line 56 - line 64 ---	2-6,8, 12,13
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Further documents are listed in the continuation of box C.       Patent family members are listed in annex.

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<p>*A* document defining the general state of the art which is not considered to be of particular relevance</p> <p>*E* earlier document but published on or after the international filing date</p> <p>*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)</p> <p>*O* document referring to an oral disclosure, use, exhibition or other means</p> <p>*P* document published prior to the international filing date but later than the priority date claimed</p>	<p>*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</p> <p>*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</p> <p>*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.</p> <p>*&amp;* document member of the same patent family</p>
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Date of the actual completion of the international search  <b>19 August 1997</b>	Date of mailing of the international search report  <b>29.08.97</b>
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Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax (+31-70) 340-3016	Authorized officer  <b>Richards, M</b>
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Inter. .onal Application No PCT/GB 97/01257
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
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A	US 4 666 671 A (PURZYCKI KENNETH L ET AL) 19 May 1987 see column 3, line 57 - column 4, line 4 see column 4, line 27 - line 31 see column 5, line 7 - line 19 ---	1-13
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Information on patent family members

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