

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
18 November 2004 (18.11.2004)

PCT

(10) International Publication Number  
**WO 2004/099091 A1**

(51) International Patent Classification<sup>7</sup>: C02F 5/10, 5/12

(21) International Application Number:  
PCT/GB2004/001963

(22) International Filing Date: 7 May 2004 (07.05.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
0310803.2 10 May 2003 (10.05.2003) GB

(71) Applicant (for all designated States except MG, US):  
**RECKITT BENCKISER N.V.** [NL/NL]; Kantoorge-  
bouw De Appelaer, De Fruittuinen 2-12, NL-2132 NZ  
Hoofddorp (NL).

(71) Applicant (for MG only): **RECKITT BENCKISER  
(UK) LIMITED** [GB/GB]; 103-105 Bath Road, Slough,  
Berkshire SL1 3UH (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **AMICONI, Fabio**  
[IT/IT]; Reckitt Benckiser Italia, Piazza S. Nicolo 12/3,  
I-30034 Mira (IT). **CORRADINI, Fabio** [IT/IT]; Reckitt  
Benckiser Italia, Piazza S. Nicolo 12/3, I-30034 Mira (IT).  
**KOSUB, Mike** [DE/DE]; Scheelkopf 10, 76646 Bruchsal  
(DE).

(74) Agents: **BROWN, Andrew, Stephen** et al.; Reckitt  
Benckiser plc, Group Patents Department, Dansom Lane,  
Hull HU8 7DS (GB).

(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.

(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,  
FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,  
SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, ML, MR, NE, SN, TD, TG).

**Declaration under Rule 4.17:**

— as to applicant's entitlement to apply for and be granted a  
patent (Rule 4.17(ii)) for all designations

**Published:**

— with international search report  
— before the expiration of the time limit for amending the  
claims and to be republished in the event of receipt of  
amendments

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

(54) Title: WATER-SOFTENING PRODUCT

(57) Abstract: A liquid water-softening composition comprising: a) at least one water-softening active; and b) an organic solvent; said composition containing less than 35 wt % water.



WO 2004/099091 A1

WATER-SOFTENING PRODUCT

The present invention relates to liquid water-  
softening compositions, especially compositions which  
5 dissolve and disperse satisfactorily in water.

Water softening products are sold commercially (such  
as the product Calgon®) and are used to aid detergency  
and prevent the build up of scale in the washing machine  
10 and on clothes, such products are described in EP-A1-0  
628 627 (Benckiser), CH-577 937 (Lonza), WO-A1-95/21908  
(Henkel) and EP-A2-0 622 449 (Huls).

The use of water-softening polymer polycarboxylates  
in detergent formulas has provided multiple benefits such  
as calcium sequestration, crystal growth inhibition to  
minimize encrustation on fabrics, lime soap dispersancy,  
and particulate soil dispersion. Sequestration of  
20 "hardness" metal-ions such as calcium and magnesium by  
the polycarboxylates softens the water and increases  
detergency. Also sequestration of hardness ions by the  
polycarboxylates prevents the precipitation of salts of  
anionic surfactants, which if allowed to occur will lead  
25 to reduced detergency. Dispersion of particulate soil  
such as clay by the polycarboxylates prevents the  
redeposition of soils on the fabric.

Conveniently it would be preferred that water-  
softening products could be added to the washing machine  
30 as a liquid rather than as a solid product. Also it is  
preferable that the product has a viscosity which is  
greater than that of water.

Liquid water-softening compositions often contain up to 80 wt% water. Such compositions do not generally have any compatibility problems when being diluted with a large quantity of water.

GB2379214 describes an aqueous based water-softening composition thickened with xanthan gum.

Conveniently, it is preferred that such liquid water-softening products are added to the washing machine as convenient unit doses, encapsulated in a water-soluble polymer.

The invention relates to compositions in the form of a viscous composition, which is substantially free of water that contains water softening agents. Preferably the composition is transparent. The composition is highly concentrated with water softening actives incorporated by the use of solvents and has been specially developed with a low amount of water for encapsulation in water soluble packaging made of a water-soluble polymer, such as poly (vinylalcohol) [PVOH], cellulose, (HPMC), or gelatin, that dissolve easily in water.

Additional problems are to disperse and bring in solution during manufacture of the compositions a high amount of actives, in powder form, in a low amount of water and obtain a stable composition without any precipitation. The objective is achieved by producing a water softener composition in gel form containing a low amount of water by the use of organic solvents and a water-softening active that is preferably acidic, ideally containing at least one carboxylic acid, a part

neutralised acid polymer with an organic alkaline agent as the neutralising agent.

Accordingly the present invention provides a liquid  
5 water-softening composition comprising:

- a) at least one water-softening active; and
- b) at least one organic solvent;

said composition containing less than 35wt%, ideally less  
than 25wt%, preferably less than 18wt%, 15wt%, 10wt%,  
10 5wt%, or 1wt% of water.

Ideally the composition is transparent.

Larger amounts of water can be found in the  
15 composition which is chemically or physically bound.  
Therefore, the amount of water is preferably less than  
35wt%, or 25wt%, ideally less than 18wt%, preferably less  
than 15wt%, 10wt%, 5wt%, 1wt% of free water. Preferably  
the composition is anhydrous. By free water we mean water  
20 that is not physically or chemically bound.

The formulation may be diluted by the addition of  
further amounts of water of up to an additional 20, 30,  
40 or 50wt% of water.

25

There is no direct correlation between the actual  
amount of water present in a composition and the amount  
of free water present. Free water does not include water  
which is not available such as water held within a gelled  
30 matrix or water of solvation of any components present in  
the composition.

In order to determine the amount of free water  
present in a composition, a standard loss-on-drying  
35 determination test may be carried out. A sample of the

composition, usually about 10g, is weighed, and then maintained at 60°C for 3 hours under a partial vacuum of 200 mbar (20 kPa). The sample is then re-weighed, and the weight lost determined.

5

The composition preferably comprises water softening actives that are soluble in polar solvents.

10 Preferably the water-softening active is an acid.  
Preferably the acid is a carboxylic acid.

15 Preferably, the water-softening active is a water-softening polymer. By the use of the phrase "a water-softening polymer" we mean polycarboxylic acid polymers, preferably polyacrylic polymers, based on acrylic acid  
20 combined with or without other moieties. These include acrylic acid combined with; maleic acid (such as Sokalan CP5 and CP7 supplied by BASF or Acusol 479N supplied by Rohm & Haas); methacrylic acid (such as Colloid 226/35  
25 supplied by Rhone-Poulenc); phosphonate (such as Casi 773 supplied by Buckman Laboratories); maleic acid and vinyl acetate (such as polymers supplied by Huls); acrylamide; sulfophenol methallyl ether (such as Aquatreat AR 540  
30 supplied by Alco); 2-acrylamido-2-methylpropane sulfonic acid (such as Acumer 3100 supplied by Rohm & Haas or such as K-775 supplied by Goodrich); 2-acrylamido-2-methylpropane sulfonic acid and sodium styrene sulfonate (such as K-798 supplied by Goodrich); methyl  
methacrylate; sodium methallyl sulfonate and sulfophenol  
35 methallyl ether (such as Alcoperse 240 supplied by Alco); polymaleates (such as Belclene 200 supplied by FMC); polymethacrylates (such as Tamol 850 from Rohm & Haas); polyaspartates or ethylenediamine disuccinate and organo polyphosphonic acids and their salts such as the sodium

salts of aminotri(methylenephosphonic acid) and ethane 1-hydroxy-1,1-diphosphonic acid.

5 Preferably the polymer is a homopolymer of acrylic acid, blended with or without a polymaleic acid polymer or a polyacrylic/polymaleic acid copolymer. Preferably the polymer is a homopolymer of acrylic acid (such as those sold by Rohm & Haas under the Acusol trademark, such as Acusol WE).

10

Preferably, the water-softening polymer is partly neutralised. The term "partly neutralised" excludes neutralisation of more than 90% of the free acid (ideally carboxy) groups. We have found that if the polymer is added as a granulate into the composition then it is preferable for the granulometry to be "small" to improve manufacture, aesthetics and stability. By small we mean that at least 60% of the particles are 210 microns or less. Typically such polymer granules are prepared by spray drying processes, as opposed to fluid bed drying where larger particle sizes are produced.

20

In a feature of the invention the water-softening polymer is partly neutralised with an organic base, preferably a C<sub>1-16</sub> alkanolamine (preferably a trialkanolamine). A preferred alkanol is ethanol. Preferred amounts are up to 15wt%. Under such circumstances, neutralisation, certain polymer, based upon carboxy groups, may also thicken the composition.

30

Preferably the average MW (Mw) of the water-softening polymer should be greater than 1,000, ideally greater than 2,000, based upon the free acid.

Additional water-softening agents may be added to the composition. Preferably the additional water softening agent is a water-soluble water softening agent, which is organic monomeric polycarboxylic acids and their salts (such as citrates, gluconates, oxydisuccinates, glycerol mono- di- and trisuccinates, carboxymethyloxysuccinates, carboxymethyloxymalonates, dipicolinates and hydroxyethyliminodiacetates); sequestering agents (such as phosphonates and iminodisuccinates); radical scavengers (such as BHT); phosphonates (such as diethylenetriaminepenta (methylene phosphonic acid) and its corresponding pentasodium salt, (available under the trade names Dequest 2060 and Dequest 2066 Monsanto Chemical Co.), DTPMP and DTPMA).

15

Preferably the composition of the invention comprises at least two water-softening actives, ideally at least one water-softening polymer and at least one monomeric polycarboxylic acid, preferably citric acid or a salt thereof.

20

Inorganic water-soluble water softening agents that may be present include alkali metal (generally sodium) carbonate.

25

Water-softening agents that are not soluble in polar solvents may also be present. They may be suspended in the solvent or may form a paste or a mull, if larger amounts are included. Preferably, they are present only at levels of up to 50%wt, 40%wt, 30%wt, 20%wt, 10%wt, 5%wt. Suitable examples include hydrominerals, such as zeolite, clay or any other suitable silicate.

30

The presence of surfactant and/or a source of active oxygen is not excluded from this invention. This

35

invention may find use in the preparation of viscose  
detergent liquid compositions that contain a water-  
softening active and low amounts of water. Preferably the  
composition contains less than 20%wt, 15%wt, 10%wt or  
5 5%wt, ideally less than 1%wt, of a surfactant.

The composition of the present invention may contain  
surfactants such as anionic, nonionic, amphoteric,  
cationic or zwitterionic surfactants, or a mixture  
10 thereof.

The composition, either encapsulated in a water-  
soluble polymer or not, can be used in fabric  
washing (washing machines or handwashing) jointly with a  
15 detergent composition. Other applications, in machine  
dishwashing as anti limescale product or as anti  
limescale product in general for hard surfaces are also  
possible.

Organic solvents may be added to replace the water.  
Suitable organic solvents include C3-C12 alkyl glycol,  
C3-C12 alkylglycol ethers and C1-C4 alcohols, such as  
methanol, ethanol and isopropanol. The solvent is  
typically present in an amount from 0.5wt% to 80wt%,  
25 preferably from 10wt% to 70wt%, ideally from 20wt% to  
55wt%, and most preferably from about 35wt% to 50wt% by  
weight of the composition.

The organic solvent may be any organic solvent,  
30 although it is desirable that it is miscible with water.  
Examples of organic solvents are glycols, glycerine or an  
alcohol. Preferred organic solvents are C<sub>1-4</sub> alcohols  
such as ethanol or propanol, and C<sub>2-4</sub> glycols such as  
monoethylene glycol and monopropylene glycol. Additional  
35 solvents include polyethylene glycols (PEG200, PEG400 and

PEG600).

The pH is measured as 5%wt solutions in deionised water at 20°C. For optimum stability of these  
5 compositions, the pH, measured in the above-mentioned conditions, must be in the range of less than 9, 8 or 7, or from 2.0 to 7.0, ideally from 4.0 to 6.0 or 4.5 to 6.5, especially 5.0 to 5.7. The pH of these compositions can be regulated by the addition of a Bronsted acid or  
10 base. Preferably the composition is neutralised with a base, since the preferred water softening actives are typically acidic. Preferably an organic base is used. Suitable organic bases are added as organic amines, i.e. alcohol amines, mono-, di-, tri- (or a mixture thereof)  
15 ethanolamine. Preferably only up to 15wt% of a base is added.

The composition of the present invention contains less than 3wt% of water, preferably of free water.  
20 Desirably the composition contains less than 2wt% water, even more desirably less than 1wt% water, preferably of free water. Most preferably, the composition is substantially anhydrous. It will be appreciated that higher water content could be included when it is  
25 chemically or physically bound.

The present composition is especially suitable for use in a water-soluble container where the container is simply added to a large quantity of water and dissolves,  
30 releasing its contents. The favourable dissolution and dispersion properties of the composition of the present invention are particularly useful in this context.

Thus the present invention also provides a water-

soluble container containing a composition as defined above.

5 A further feature of the invention is a method of softening water during a fabric washing process the method comprising adding a composition or container as defined herein to the fabric wash or rinse liquor.

10 The water-soluble container may comprise a thermoformed or injection moulded water-soluble polymer. It may also simply comprise a water-soluble film. Such containers are described, for example, in EP-A-524,721, GB-A-2,244,258, WO 92/17,381 and WO 00/55,068.

15 In all cases, the polymer is formed into a container such as a pouch which can receive the composition, which is filled with the composition and then sealed, for example by heat sealing along the top of the container in vertical form-fill-processes or by laying a further sheet  
20 of water-soluble polymer or moulded polymer on top of the container and sealing it to the body of the container, for example by heat sealing.

25 Desirably the water-soluble polymer is a poly(vinyl alcohol) (PVOH). The PVOH may be partially or fully alcoholised or hydrolysed. For example, it may be from 40 to 100% preferably 70 to 92%, more preferably about 88%, alcoholised or hydrolysed, polyvinyl acetate. When the polymer is in film form, the film may be cast, blown  
30 or extruded.

The water-soluble polymer is generally cold water (20°C) soluble, but depending on its chemical nature, for example the degree of hydrolysis of the PVOH, may be  
35 insoluble in cold water at 20°C, and only become soluble

in warm water or hot water having a temperature of, for example, 30°C, 40°C, 50°C or even 60°C. Because the composition contains less than 35wt% water, preferably less than 35wt% of free water, the composition should not attack the PVOH container. However, if larger amounts of water are present, either as free water or as total water, it is preferable to include electrolyte into the composition to increase the ionic strength of the composition and protect the PVOH container, such technique is taught in EP0519689. Suitable electrolytes are metal salts that freely dissociate upon dissolution, such as salts of alkali or alkaline earth metals. Amounts of electrolyte present may be up to 50wt%, 40wt%, 30wt%, 20wt% or 10wt%.

The containers of the present invention find particular use where a unit-dosage form of the composition is required. The use of the container may place restrictions on its size. Thus, for example, a suitable size for a container to be used in a laundry or dishwashing machine is a rounded cuboid container having a length of 1 to 5cm, especially 3.5 to 4.5cm, a width of 1.5 to 3.5cm, especially 2 to 3cm, and a height of 1 to 2cm, especially 1.25 to 1.75cm. The container may hold, for example, from 10 to 40g of the composition, especially from 15, 20 or 30 to 40g of the composition for laundry use or from 15 to 20g of the composition for dishwashing use.

Process for preparing suitable water-soluble containers are described in WO0136290 and WO0216207.

The viscosity of the composition of the present invention, measured using a Brookfield viscometer, model DV-II+, with spindle S31 at 12 RPM and at 20°C, is

desirably 500 to 1,000,000 cps, more especially 1500 to 500,000 cps, especially 10,000 to 40,000 cps.

5 The present invention is now further described in the following Examples, in which all of the parts are parts by weight.



CLAIMS

1. A liquid water-softening composition comprising:
  - a) at least one water-softening active; and
  - b) an organic solvent;said composition containing less than 35 wt% water.
2. A composition according to claim 1 wherein the at least one water-softening active is an acid.
3. A composition according to claim 1 or 2 wherein the at least one water-softening active is a carboxylic acid.
4. A composition according to claim 2 or 3 wherein the acid is partly neutralised.
5. A composition according to any one of claims 1 to 4 wherein at least one water-softening active is a water-softening polymer.
6. A composition according to claim 5 wherein the water-softening polymer is a polycarboxylic acid polymer
7. A composition according to claim 6 wherein the polycarboxylic acid polymer is a polyacrylic polymer.
8. A composition according to any one of the preceding claims wherein the acid water-softening active is partly neutralised by an organic base.
9. A composition according to claim 8 wherein the acid water-softening active that is neutralised is citric

acid.

10. A composition according to claim 8 or 9 wherein the organic base is an alkanolamine.
- 5
11. A composition according to claim 10 in which the alkanolamine is monoethanolamine, diethanolamine or triethanolamine.
- 10
12. A composition according to any one of the preceding claims wherein the organic solvent is a glycol, glycolether glycerine, or an alcohol or a mixture thereof.
- 15
13. A composition according to claim 12 wherein the organic solvent is polyethylene glycol, glycerine, monopropylene glycol or ethanol.
- 20
14. A composition according to any one of the preceding claims which contains less than 15wt% of free water.
15. A composition according to any one of the preceding claims that is anhydrous.
- 25
16. A composition according to any one of the preceding claims which comprises from 10 to 70 wt% of organic solvent.
- 30
17. A composition according to any one of the preceding claims which has a pH when measured as a 5%wt solution in deionised water at 20°C of less than 9, ideally 4.0 to 6.0.
- 35
18. A composition according to any one of the preceding claims which contains a monomeric polycarboxylic

acid.

- 5 19. A composition according to any one of the preceding claims which has a viscosity of 500 to 1,000,000cps measured using a Brookfield viscometer with spindle S31 at 12 RPM and 20°C.
- 10 20. A composition according to claim 18 wherein the monomeric polycarboxylic acid is citric acid.
21. A water-soluble container containing a composition as defined in any one of the preceding claims.
- 15 22. A water-soluble container containing a liquid water-softening composition comprising:  
a) at least one water-softening active;  
b) an organic solvent;  
c) an electrolyte; and  
said composition containing greater than 35 wt%  
20 water.
23. A container according to claim 19 or claim 20 which comprises a thermoformed or injection moulded water-soluble polymer.
- 25 24. A container according to any one of claims 21 to 23 wherein the water-soluble polymer is a poly (vinyl alcohol) or gelatin.

## INTERNATIONAL SEARCH REPORT

PCT/GB2004/001963

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 C02F5/10 C02F5/12		
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 7 C02F C11D		
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) EPO-Internal, WPI Data, PAJ		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 379 214 A (RECKITT BENCKISER NV) 5 March 2003 (2003-03-05)	1-3, 5-7, 12, 13, 17-19
Y	page 2, line 23 - page 4, line 23; claims 1-3	21-24
A	DE 41 22 490 A (HENKEL KGAA) 7 January 1993 (1993-01-07) the whole document	1
A	US 5 575 946 A (BECK RUDOLF ET AL) 19 November 1996 (1996-11-19) the whole document	1
X	US 2001/006936 A1 (LEE WAI MUN ET AL) 5 July 2001 (2001-07-05) claims; table 1	4, 8-11
	-/--	
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C. <input checked="" type="checkbox"/> Patent family members are listed in 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 document 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  22 September 2004		Date of mailing of the international search report  20 October 2004
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  Serra, R

INTERNATIONAL SEARCH REPORT

PCT/GB2004/001963

**Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3.  As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

**Remark on Protest**

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claim: 1 2 3 5 6 7 12 13 17 18 19 20

liquid water softening composition

1.1. claim: 2 3 18 20

comprising a carboxylic acid water softener

1.2. claims: 5-7

comprising a polymeric water softener

1.3. claim: 12 13

comprising a specific organic solvent

1.4. claim: 17

of a specific pH

1.5. claim: 19

of a specific viscosity  
---

2. claim: 4 8 9 10 11

Liquid composition comprising a neutralized acid  
---

3. claim: 14 15

liquid composition comprising less than 14 wt% water  
---

4. claim: 16

liquid composition comprising 10-70 wt% of organic solvent  
---

5. claims: 21-24

container comprising a composition  
---

## INTERNATIONAL SEARCH REPORT

PCT/GB2004/001963

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 02/057513 A (ADVANCED TECH MATERIALS ; NGUYEN LONG (US); BERNHARD DAVID (US); SEIJO) 25 July 2002 (2002-07-25) claims 1-5 -----	14-16
X	US 4 797 220 A (MILLER DALE A) 10 January 1989 (1989-01-10) column 3, line 2 - line 3; claims -----	16
Y	WO 02/085707 A (DUFFIELD PAUL JOHN ; RECKITT BENCKISER UK LTD (GB)) 31 October 2002 (2002-10-31) claims -----	21-24

## INTERNATIONAL SEARCH REPORT

PCT/GB2004/001963

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 2379214	A	05-03-2003	DE 10213243 A1	27-03-2003
			EP 1423339 A2	02-06-2004
			WO 03020649 A2	13-03-2003
DE 4122490	A	07-01-1993	DE 4122490 A1	07-01-1993
US 5575946	A	19-11-1996	DE 4313908 A1	03-11-1994
			AT 179750 T	15-05-1999
			DE 59408197 D1	10-06-1999
			DK 622449 T3	15-11-1999
			EP 0622449 A2	02-11-1994
			ES 2132273 T3	16-08-1999
US 2001006936	A1	05-07-2001	US 6187730 B1	13-02-2001
			US 5334332 A	02-08-1994
			US 5279771 A	18-01-1994
			EP 0975731 A1	02-02-2000
			JP 2001526836 T	18-12-2001
			TW 416984 B	01-01-2001
			WO 9845399 A1	15-10-1998
			US 6367486 B1	09-04-2002
			JP 9296200 A	18-11-1997
			TW 426816 B	21-03-2001
			US 2002183219 A1	05-12-2002
			US 2004018949 A1	29-01-2004
			US 6399551 B1	04-06-2002
			US 6221818 B1	24-04-2001
			US 6276372 B1	21-08-2001
			US 6121217 A	19-09-2000
			EP 0578507 A2	12-01-1994
			JP 3048207 B2	05-06-2000
			JP 6266119 A	22-09-1994
			JP 3150306 B2	26-03-2001
			JP 11194505 A	21-07-1999
			KR 9707328 B1	07-05-1997
			US 2003032567 A1	13-02-2003
			US 6156661 A	05-12-2000
			US 2004067860 A1	08-04-2004
			US 6110881 A	29-08-2000
			US 2004147420 A1	29-07-2004
			US 6546939 B1	15-04-2003
			US 5981454 A	09-11-1999
			US 5911835 A	15-06-1999
			US 6000411 A	14-12-1999
			US 6140287 A	31-10-2000
US 5482566 A	09-01-1996			
US 5672577 A	30-09-1997			
US 6319885 B1	20-11-2001			
US 6242400 B1	05-06-2001			
US 5902780 A	11-05-1999			
US 2002052301 A1	02-05-2002			
AT 176337 T	15-02-1999			
DE 69130823 D1	11-03-1999			
DE 69130823 T2	09-09-1999			
DK 485161 T3	13-09-1999			
EP 0485161 A1	13-05-1992			
ES 2129403 T3	16-06-1999			
GR 3030070 T3	30-07-1999			

## INTERNATIONAL SEARCH REPORT

PCT/GB2004/001963

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2001006936	A1	JP 2691952 B2	17-12-1997
		JP 4289866 A	14-10-1992
		US 5381807 A	17-01-1995
WO 02057513	A 25-07-2002	US 2002013238 A1	31-01-2002
		CN 1483093 T	17-03-2004
		EP 1349969 A1	08-10-2003
		US 2002065204 A1	30-05-2002
		US 2002132744 A1	19-09-2002
		WO 02057513 A1	25-07-2002
US 4797220	A 10-01-1989	NONE	
WO 02085707	A 31-10-2002	GB 2374830 A	30-10-2002
		CA 2444730 A1	31-10-2002
		EP 1379433 A1	14-01-2004
		WO 02085707 A1	31-10-2002
		US 2004172917 A1	09-09-2004