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(71) **Applicant** (for AE, AG, AU, BB, BH, BN, BW, BZ, CA, CY, EG, GB, GD, GH, GM, IE, IL, IN, KE, KN, LC, LK, LS, MT, MW, MY, NA, NG, NZ, OM, PG, QA, RW, SA, SC, SD, SG, SL, SZ, TT, TZ, UG, VC, ZA, ZM, ZW only): **UNILEVER PLC** [GB/GB]; a company registered in England and Wales under company no. 41424 of Unilever House, 100 Victoria Embankment, London Greater London EC4Y 0DY (GB).

(71) **Applicant** (for all designated States except AE, AG, AU, BB, BH, BN, BW, BZ, CA, CY, EG, GB, GD, GH, GM, IE, IL, IN, KE, KN, LC, LK, LS, MT, MW, MY, NA, NG, NZ, OM, PG, QA, RW, SA, SC, SD, SG, SL, SZ, TT, TZ, UG, US, VC, ZA, ZM, ZW): **UNILEVER N.V.** [NL/NL]; Weena 455, NL-3013 AL Rotterdam (NL).

(71) **Applicant** (for US only): **CONOPCO, INC., D/B/A UNILEVER** [US/US]; 800 Sylvan Avenue AG West, S. Wing, Englewood Cliffs, NJ New Jersey 07632 (US).

(72) **Inventors**: **BATCHELOR, Stephen, Norman**; Unilever R&D Port Sunlight Quarry Road East, Bebington, Wirral

Merseyside CH63 3JW (GB). **BIRD, Jayne, Michelle**; Unilever R&D Port Sunlight Quarry Road East, Bebington, Wirral Merseyside CH63 3JW (GB).

(74) **Agent**: **AVILA, David, Victor**; Unilever PLC Colworth House, Sharnbrook, Bedford Bedfordshire MK44 1LQ (GB).

(81) **Designated States** (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

Published:

- with international search report (Art. 21(3))

(54) Title: WHITENING COMPOSITION

(57) **Abstract**: The present invention provides a laundry detergent composition comprising (i) from 4 to 50 wt % of a charged surfactant, (ii) from 0.1 to 20 wt % of an alkoxyated polyaryl or alkoxyated polyalkyl phenol, (iii) from 0.0001 to 0.5 wt % of a blue or violet shading dye, and (iv) from 0.0001 to 0.5 wt % of a fluoresecer. Domestic method of treating a textile, the method comprising the step of treating a textile with an aqueous solution of uncharged alkoxyated polyarylphenol or alkoxyated polyalkyl phenol, the aqueous solution comprising from 10 ppm to 5000 ppm of the alkoxyated polyarylphenol or alkoxyated polyalkyl phenol, 1 ppb to 5ppm of blue or violet shading dye, 0.0001 g/l to 0.1 g/l of fluoresecer and up to 6 g/L of surfactant. Domestic method of treating a textile, the method comprising the step of treating a textile with an aqueous solution of the laundry detergent composition, said aqueous solution comprising from 10 ppm to 5000 ppm of uncharged alkoxyated polyarylphenol or alkoxyated polyalkyl phenol, 1 ppb to 5ppm of blue or violet shading dye, 0.0001 g/l to 0.1 g/l of fluoresecer and up to 6 g/L of surfactant.



Box No. VIII (iii) DECLARATION: ENTITLEMENT TO CLAIM PRIORITY

The declaration must conform to the standardized wording provided for in Section 213; see Notes to Boxes Nos. VIII, VIII (i) to (v) (in general) and the specific Notes to Box No. VIII (iii). If this Box is not used, this sheet should not be included in the request.

Declaration as to the applicant's entitlement, as at the international filing date, to claim the priority of the earlier application specified below, where the applicant is not the applicant who filed the earlier application or where the applicant's name has changed since the filing of the earlier application (Rules 4.17(iii) and 51bis.1(a)(iii)):

in relation to international application: PCT/EP2015/067348

Unilever NV is entitled to claim priority of earlier application no. EP 14185268.1 by virtue of the following:

An assignment from Unilever PLC to Unilever NV, dated 20 July 2015.

☐ This declaration is continued on the following sheet, "Continuation of Box No. VIII (iii)".

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/EP2015/067348

International filing date (day/month/year)
29.07.2015

Priority date (day/month/year)
18.09.2014

International Patent Classification (IPC) or both national classification and IPC

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C11D1/29 C11D1/34 C11D1/72

Applicant
UNILEVER PLC

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office
P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk - Pays Bas
Tel. +31 70 340 - 2040
Fax: +31 70 340 - 3016

Date of completion of
this opinion

see form
PCT/ISA/210

Authorized Officer

Bertran Nadal, Josep

Telephone No. +31 70 340-0



Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:
 - ☒ the international application in the language in which it was filed.
 - ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).
2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))
3. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:
 - a. ☐ forming part of the international application as filed:
 - ☐ in the form of an Annex C/ST.25 text file.
 - ☐ on paper or in the form of an image file.
 - b. ☐ furnished together with the international application under PCT Rule 13ter.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
 - c. ☐ furnished subsequent to the international filing date for the purposes of international search only:
 - ☐ in the form of an Annex C/ST.25 text file (Rule 13ter.1(a)).
 - ☐ on paper or in the form of an image file (Rule 13ter.1(b) and Administrative Instructions, Section 713).
4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	<u>1-18</u>
	No: Claims	
Inventive step (IS)	Yes: Claims	<u>1-18</u>
	No: Claims	
Industrial applicability (IA)	Yes: Claims	<u>1-18</u>
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

- 1 Reference is made to the following documents:
 - D1 WO 2013/011071 A1 (UNILEVER PLC [GB]; UNILEVER NV [NL]; UNILEVER HINDUSTAN [IN]) 24 January 2013 (2013-01-24)
 - D2 US 2005/107281 A1 (DAHLMANN UWE [DE] ET AL) 19 May 2005 (2005-05-19)
 - D3 FR 1 313 944 A (GEN ANILINE & FILM CORP) 4 January 1963 (1963-01-04)
 - D4 GB 1 337 190 A (HOECHST AG) 14 November 1973 (1973-11-14)
 - D5 GB 2 007 692 A (RHONE POULENC IND) 23 May 1979 (1979-05-23)
 - D6 WO 2012/159778 A1 (UNILEVER PLC [GB]; UNILEVER NV [NL]; UNILEVER HINDUSTAN [IN]) 29 November 2012 (2012-11-29)
- 2 The present application appears to meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1-18 appears to be novel in the sense of Article 33(2) PCT and to involve an inventive step in the sense of Article 33(3) PCT.
 - 2.1 None of the documents cited in the International Search Report discloses a laundry detergent composition comprising a charged surfactant in combination with an alkoxylated C3-C15-trialkyl or triaryl phenol, a dye and a fluorescer. A method of treating a textile with the combination of charged surfactant, an alkoxylated trialkyl or triaryl phenol, a dye and a fluorescer is also not disclosed. Thus, the subject-matter of claims 1-18 appears to be novel.
 - 2.2 The present application concerns the use of whitening and brightening laundry compositions. It addresses the problem of reducing redeposition and enhancement of cleaning in domestic laundry products containing shading dyes and fluoescers (cf. page 1 lines 6-7, page 2 lines 3-4).

- 2.3 The document D1 discloses (cf. page 1, line 22 - page 2, line 14; page 10, line 18 - page 12, line 12; page 14, lines 3-20; examples; claims) a liquid laundry detergent composition providing improved whitening and reduced greying of textiles during laundering, which is usually caused by soil redeposition, comprising anionic surfactant, blue or violet shading dye, and optionally a fluorescent agent.

The subject-matter of claim 1 therefore differs from this known composition in that it comprises (ii) alkoxyated polyaryl or polyalkyl phenol, and (iv) a fluorescer.

The experimental data of the application shows a reduction of the neat contact staining of the detergent: in example 1 the addition of polyethylene glycol mono(2,4,6-tris(1-phenylethyl)phenyl) ether with ethoxylation degree 20 or 54 reduces the neat contact staining of the detergent. Example 2 shows the same effect with tributyl phenol ether sulphate, tributyl phenol ether and tristyryl phenol ether phosphate.

Thus, the objective technical problem is regarded as the reduction of the neat contact staining of a detergent composition.

The solution proposed in claim 1 of the present application appears to involve an inventive step for the following reasons: although alkoxyated polyaryl or alkoxyated polyalkyl phenol compounds according to (ii) of present claim 1 are known (cf. documents D2-D5 and the passages cited in the International Search Report), the available prior art does not disclose or suggest that these compounds would reduce the neat contact dye staining of a laundry detergent composition. Thus, none of these documents would have prompted the skilled person faced with the objective technical problem to modify or adapt the teaching of D1 to arrive at the claimed solution.

- 2.4 The same reasoning applies to the domestic method of treating a textile of independent claims 17 and 18. It follows that the subject-matter of claims 17 and 18 also appears to involve an inventive step.
- 2.5 Claims 2-16 are dependent on claim 1, whose subject-matter is considered as being new and inventive, as discussed above, and as such said dependent claims also meet the requirements of the PCT with respect to novelty and inventive step.
- 2.6 The same reasoning would apply if the document D6 would have been considered the closest state of the art. D6 discloses (cf. page 2, lines 1-29; examples; claims) a liquid laundry detergent composition, with reduced neat

contact staining, comprising charged surfactant and a shading dye. The objective technical problem is thus regarded as the further reduction of the neat contact staining of a detergent composition. The available prior art does not disclose or suggest that uncharged ethoxylated trialkyl or triaryl phenol according to (ii) of present claim 1 would reduce the neat contact staining of a laundry detergent composition.

Re Item VII

Certain defects in the international application

- 3 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in documents D1-D6 is not mentioned in the description, nor are these documents identified therein.
- 4 Dependent claims 11-13 depend on claim 1 but they refer to a laundry *aqueous liquid* detergent composition. It appears therefore that they should depend on claim 9, which requires that the laundry detergent composition is aqueous and liquid.

Re Item VIII

Certain observations on the international application

- 5 Although claims 17 and 18 have been drafted as separate independent claims, they appear to relate effectively to the same subject-matter and to differ from each other only with regard to the definition of the subject-matter for which protection is sought and/or in respect of the terminology used for the features of that subject-matter. The aforementioned claims therefore lack conciseness and as such do not meet the requirements of Article 6 PCT.
- 6 It is clear from the description on page 5 lines 9-11 that the alkoxylated polyaryl phenol or alkoxylated polyalkyl phenol, which may be an anionic surfactant, is not taken into account for calculating the amount of charged surfactant as defined in claim 1(i).

Since independent claim 1 does not contain this feature, it does not meet the requirement following from Article 6 PCT taken in combination with Rule 6.3(b) PCT that any independent claim must contain all the technical features essential to the definition of the invention.