

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
30 July 2009 (30.07.2009)

PCT

(10) International Publication Number
WO 2009/094336 A3

(51) International Patent Classification:

C07C 303/06 (2006.01) *C11D 1/12* (2006.01)
C07C 303/22 (2006.01) *A01N 25/30* (2006.01)

(21) International Application Number:

PCT/US2009/031455

(22) International Filing Date:

20 January 2009 (20.01.2009)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/022,662 22 January 2008 (22.01.2008) US

(71) Applicant (for all designated States except US):
STEPAN COMPANY [US/US]; 22 West Frontage
Road, Northfield, IL 60093 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **BERNHARDT, Randal, J.** [US/US]; 39771 N. Wittenburg Drive, Antioch, IL 60002 (US). **DADO, Greg, P.** [US/US]; 3520 N. Lake Shore Drive, Apartment 1M, Chicago, IL 60657 (US). **MURPHY, Dennis, S.** [US/US]; 1239 Deer Trail Lane, Libertyville, IL 60048 (US). **ALONSO, Lourdes, R.** [US/US]; 431 Elm Street #4C, Deerfield, IL 60015 (US). **GARIEPY, Christopher, A.** [US/—]; 2954 Acom Lane, Northbrook, IL 60062 (US). **FILIPOVIC, Eddie, I.** [US/—]; 2518 Central St., Apt. 2N, Evanston, IL 60201 (US).

(74) Agent: **GALLAGHER, Priscilla, F.**; McAndrews, Held & Malloy, LTD., 500 W. Madison Street, 34th Floor, Chicago, IL 60661 (US).

(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, BR, BW, BY, BZ, CA, CH, 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, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, 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, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) Date of publication of the international search report:

15 October 2009

(54) Title: SULFONATED ESTOLIDES AND OTHER DERIVATIVES OF FATTY ACIDS, METHODS OF MAKING THEM, AND COMPOSITIONS AND PROCESSES EMPLOYING THEM

(57) Abstract: Sulfo-estolides and methods of making them are described. Useful methods include acid side bleaching, partial hydrogenation of the fatty acid, pretreatment of the fatty acid to provide color inhibition, acid side hydrolysis of the sulfo-estolides, or conversion of SHP to an essentially fully hydrolyzed product (HSHP) or a partially hydrolyzed product (PHSHP). Detergent formulations, such as laundry detergents, softeners, and other materials, containing any of these materials are disclosed. Laundry methods employing these formulations are also disclosed. These formulations are useful as laundry detergents and can be biodegradable, heavy duty liquids, 2X or 3X and up to 6X concentrates, low foaming, and/or effective in a high efficiency washing machine. Methods for laundering fabrics with the compositions are also disclosed.



WO 2009/094336 A3

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2009/031455

A. CLASSIFICATION OF SUBJECT MATTER

INV. C07C303/06 C07C303/22 C11D1/12 A01N25/30

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)
C07C C11D A01N

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, BEILSTEIN Data, WPI Data, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	A.J. STIRTON, ET AL.: "Surface-active properties of salts fo alpha-sulphonated acids and esters" JOURNAL OF THE AMERICAN OIL CHEMISTS' SOCIETY, vol. 13, no. 1, January 1954 (1954-01), pages 13-16, XP002537683 SPRINGER, BERLIN, DE ISSN: 0003-021X DOI: 10.1007/BF02544763 the whole document	1-77
A	GB 1 380 390 A (UNILEVER) 15 January 1975 (1975-01-15) claim 1	1-77
A	WO 00/18363 A1 (US SECRETARY OF AGRICULTURE) 6 April 2000 (2000-04-06) claims 1,2	1-77
	-/--	

Further documents are listed in the continuation of Box C.

See patent family 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

17 July 2009

Date of mailing of the international search report

17/08/2009

Name and mailing address of the ISA/

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

Authorized officer

English, Russell

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2009/031455

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 01/53247 A1 (US SECRETARY OF AGRICULTURE) 26 July 2001 (2001-07-26) claims 1,7,16,19 -----	1-77

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2009/031455

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
GB 1380390	A	15-01-1975	AT	340553 B	27-12-1977
			AU	464680 B2	04-09-1975
			AU	3683271 A	21-06-1973
			CA	941261 A1	05-02-1974
			CH	576518 A5	15-06-1976
			DE	2161726 A1	06-07-1972
			FR	2118670 A5	28-07-1972
			NL	7117087 A	20-06-1972
			US	3915881 A	28-10-1975
			<hr/>		
WO 0018363	A1	06-04-2000	AU	5922499 A	17-04-2000
			US	6051214 A	18-04-2000
<hr/>					
WO 0153247	A1	26-07-2001	AU	3292901 A	31-07-2001