

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

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
13 March 2014 (13.03.2014)

WIPO | PCT

(10) International Publication Number
WO 2014/037682 A1

(51) International Patent Classification:

A61K 8/31 (2006.01) *A61K 8/04* (2006.01)
A61K 8/33 (2006.01) *A61Q 3/00* (2006.01)

(21) International Application Number:

PCT/GB2012/000696

(22) International Filing Date:

5 September 2012 (05.09.2012)

(25) Filing Language:

English

(26) Publication Language:

English

(71) Applicant (for all designated States except US): **32 DE-GREES LIMITED** [GB/GB]; Lynton House, 7-12 Tavistock Square, London WC1H 9BQ (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **EISENBERG, Angela, Susan** [GB/GB]; Flat 4, 24 Llanvanor Road, London NW2 2AP (GB). **PICKERING, John, Daniel, Robert** [GB/GB]; 2 Shellbrooke Cottages, Huntsham, Devon EX16 7NE (GB).

(74) Agent: **HARRIS, Andrew, John**; Northpoint House, 52 High Street, Knaphill, Woking, Surrey GU21 2PY (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, 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, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, 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.

(84) Designated States (unless otherwise indicated, for every

kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, 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, RS, SE, SI, SK, SM, 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))



WO 2014/037682 A1

(54) Title: NAIL POLISH DRYING METHOD AND PRODUCT THEREFOR

(57) Abstract: The invention comprises a nail drying aerosol spray that comprises a combination of solvents having different rates of volatility. One of the solvents is dimethyl ether.

NAIL POLISH DRYING METHOD AND PRODUCT THEREFOR

Field of the Invention

This invention relates to a method of drying nail polish and to a product for use in carrying out the method.

Background to the Invention

Polish or enamel applied to finger and toenails can take a considerable time to dry. Obviously this inhibits the activity of those whose nails have just been painted. The general problem has been addressed in a number of ways. US patent 6,238, 651 and European Patent No. 0 869 764 describe fast drying nail polish compositions however, because a manicurist will typically apply a number of layers of differing enamels, each would have to be of the claimed composition. This limits choice in a field in which widespread choice is expected.

An alternative approach has been to apply drying accelerators to conventional polishes or enamels. Examples of such accelerators are described in Japanese Patent Application JP3081214, Swiss Patent Application CH665771, European Patent Application No. 0 774 173 and US Patent 5,804,169. All of these examples include different types of oils, most commonly silicone oils, and are thus not suitable for use when multiple layers of enamel need to be dried quickly. Further, oils tend to leave a greasy film when used.

It is an object of this invention which will go at least some way in addressing the drawbacks mentioned above; or which will at least provide a novel and useful alternative.

Summary of the Invention

In one aspect the invention provides a method of drying polish applied to nails, said method being characterized in that it includes drying subsequent applications using an aerosol-based drying product which does not inhibit the adhesion of subsequent applications of polish.

Preferably each application of polish is dried with said aerosol-based product before the next application.

In a second aspect the invention comprises an aerosol-based nail drying product for use in the method set forth above, said drying product including 5% to 90% by weight of dimethyl ether.

Preferably said drying product is substantially oil free.

In a third aspect the invention comprises an aerosol-based nail drying product for use in the method set forth above, said drying product including a plurality of solvents, each of said solvents having a different rate of volatility.

Preferably said drying product includes three different solvents.

Preferably one of said solvents comprises dimethyl ether.

Preferably said solvents further comprise isopentane and ethanol.

Preferably said drying product further includes one or more of a UV filter, a fragrance and a cooling active.

In a fourth aspect the invention comprises an aerosol-based nail drying product for use in the method set forth above, said drying product including

propellant that also acts as a solvent.

Preferably said propellant and solvent comprises or includes dimethyl ether.

Many variations in the way the present invention can be performed will present themselves to those skilled in the art. The description which follows is intended as an illustration only of one means of performing the invention and the lack of description of variants or equivalents should not be regarded as limiting. Wherever possible, a description of a specific element should be deemed to include any and all equivalents thereof whether in existence now or in the future.

Description of Working Embodiment

The present invention provides a method of drying polish or enamel applied to finger nails and toe nails. The method and composition herein described allows multiple layers of enamel to be applied in relatively quick succession without detracting from the integrity and performance of the final layer, and without leaving a greasy or slippery residue.

A characterizing feature of the invention is that each layer is dried in a very short time before application of the next layer. Conventionally only final layers have been dried.

The drying preparation which enables the method to be performed effectively is preferably in the form of an aerosol and is preferably free of oils and compounds based on silicone.

The drying preparation preferably includes dimethyl ether as the major active ingredient. The dimethyl ether may be present in an amount of between 5%

and 90% by weight and, more preferably, between 30% and 50% by weight. A characteristic feature of the dimethyl ether is that it acts both as the propellant and also contributes to the drying function. Given that dimethyl ether is slightly polar, it is believed to have a degree of solvency in the nail enamel in contrast to conventional butane or propane propellants, and therefore interacts more effectively with the nail enamel.

In addition to the dimethyl ether the solvent blend may also include one or more additional volatile solvents such as, for example, isopentane and ethanol. The solvents may be chosen to have different rates of volatility and thus provide a graduated drying function. In this regard, dimethyl ether is highly volatile, isopentane very volatile and ethanol fairly volatile. It is believed that the combination of solvents of differing volatilities gives a drying profile that starts very fast, then slows, then slows further resulting in a tougher enamel through control of the evaporation profile.

The drying agent may further include one or more fragrances, UV filters and cooling agents. The fragrance is simply a matter of choice. Benzophenone-3 is a suitable UV filter and may be present in an amount of between 0% and 0.3%. Menthyl lactate provides a suitable cooling effect and may be present in an amount of 0% to 0.5%.

Example

A drying preparation as above described was prepared with the following composition:

Dimethyl ether:	40%
Isopentane:	34%
Ethanol	24.3%

5

Fragrance:	1%
Menthyl lactate	0.2%
Benzophenone-3:	0.1%

The resulting preparation exhibited good stability and dried each later of enamel in the order of ? minutes.

Claims

1. A method of drying polish applied to nails, said method being characterized in that it includes drying subsequent applications using an aerosol-based drying product which does not inhibit the adhesion of subsequent applications of polish.
2. A method as claimed in claim 1 wherein each application of polish is dried with said aerosol-based product before the next application.
3. An aerosol-based nail drying product for use in the method as claimed in claim 1 or claim 2, said drying product including 5% to 90% by weight of dimethyl ether.
4. A drying product as claimed in claim 3 being substantially oil free.
5. An aerosol-based nail drying product for use in the method claimed in claim 1 or claim 2 including a plurality of solvents, each of said solvents having a different rate of volatility.
6. A drying product as claimed in claim 5 including three different solvents.
7. A drying product as claimed in claim 5 or claim 6 wherein one of said solvents comprises dimethyl ether.
8. A drying product as claimed in any one of claims 5 to 7 wherein said solvents further comprise isopentane and ethanol.
9. A drying product as claimed in any one of claims 3 to 8 further including one or more of a UV filter, a fragrance and a cooling active.

10. An aerosol-based nail drying product for use in the method claimed in claim 1 or claim 2, including a propellant that also acts as a solvent.
11. A nail drying product as claimed in claim 10 wherein said propellant and solvent comprises or includes dimethyl ether.

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2012/000696

A. CLASSIFICATION OF SUBJECT MATTER
 INV. A61K8/31 A61K8/33 A61K8/04 A61Q3/00
 ADD.
 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)
 A61Q A61K

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)
 EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DATABASE GNPD [Online] MINTEL; August 2003 (2003-08), "Wart Remover", XP002699393, Database accession no. 10145390 the whole document	5-7,10, 11
X	----- DATABASE GNPD [Online] MINTEL; February 2011 (2011-02), "Nail enamel dryer", XP002699394, Database accession no. 1498536	1,2,5,6, 9,10
Y	the whole document ----- -/--	1-11

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 application or patent 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 25 June 2013	Date of mailing of the international search report 08/07/2013
--	---

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 Cismaru, L
--	---

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2012/000696

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DATABASE GNPD [Online] MINTEL; September 2011 (2011-09), "Brightening nail dry", XP002699395, Database accession no. 1632527	1,2,5,10
Y	the whole document	1-11
X	US 2 366 260 A (CURRY HICKEY ROWENA) 2 January 1945 (1945-01-02)	1,2,5,6
Y	claim 1 column 2, line 54 - column 3, line 2	1-11
X	US 4 906 453 A (TSOUCALAS MICHAEL C [US]) 6 March 1990 (1990-03-06)	1,2,5,6, 9,10
Y	example 2 column 3, line 29 - line 39	1-11
X	GB 2 479 544 A (BRANDS WORLDWIDE HOLDINGS I P PTY LTD [AU]) 19 October 2011 (2011-10-19)	3-7,9-11
X	example 1	
X	DATABASE GNPD [Online] MINTEL; July 2012 (2012-07), "Body cool spray", XP002699396, Database accession no. 1832904	5,6,8-10
E	the whole document	
E	GB 2 488 594 A (32 DEGREES LTD [GB]) 5 September 2012 (2012-09-05)	1-11
	the whole document	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/GB2012/000696

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2366260	A	02-01-1945	NONE
US 4906453	A	06-03-1990	NONE
GB 2479544	A	19-10-2011	NONE
GB 2488594	A	05-09-2012	NONE