



(51) International Patent Classification:

A61L 15/28 (2006.01) A61L 15/58 (2006.01)

A61L 15/30 (2006.01) A61L 24/00 (2006.01)

A61L 15/34 (2006.01) A61L 24/04 (2006.01)

(21) International Application Number:

PCT/US2012/043070

(22) International Filing Date:

19 June 2012 (19.06.2012)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/500,709 24 June 2011 (24.06.2011) US

(71) Applicant (for all designated States except US): AVERY

DENNISON CORPORATION [US/US]; 150 N. Orange Grove Blvd., Pasadena, CA 91103 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): WIBAUX, Anne

Marie [FR/BE]; 22 Hof ter Bekestraat, B-2018 Antwerpen (BE). VAN DE POL, Vicky [BE/BE]; Waterloopstraat 12 bus 1, B-2300 Turnhout (BE).

(74) Agent: BEMBENICK, Brian G.; Avery Dennison Corporation, 8080 Norton Parkway, 22-D, Mentor, OH 44060 (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, 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).

Declarations under Rule 4.17:

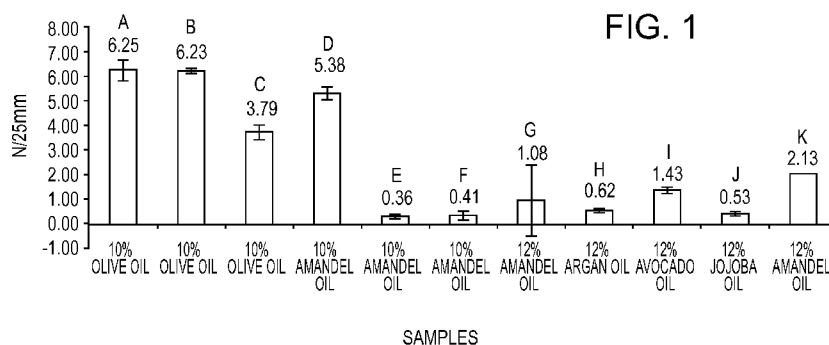
— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

— 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: ADHESIVE OR HYDROCOLLOID CONTAINING VEGETABLE OIL



(57) Abstract: Various compositions including vegetable oil are described. The compositions also include either or both of an adhesive component and a hydrocolloid component. The vegetable oil imparts a skin-soothing property in the resulting compositions. The compositions can be used in a wide range of medical products and consumer healthcare goods.

ADHESIVE OR HYDROCOLLOID CONTAINING VEGETABLE OIL**CROSS REFERENCES TO RELATED APPLICATIONS**

[0001] The present application claims the benefit of U.S. Provisional Patent Application No. 61/500,709 filed June 24, 2011, which is incorporated herein by reference in its entirety.

FIELD

[0002] The present subject matter relates to an adhesive or hydrocolloid composition that contains vegetable oil.

BACKGROUND

[0003] Adhesive compositions are known which contain oils. Mineral oil is widely used as a plasticizer for compounding hot melt adhesives and hydrocolloids. However, for applications in which adhesives may contact skin, mineral oil may produce or aggravate acne. Thus, mineral oil is not acceptable for use in adhesives for many medical and consumer health care applications.

[0004] Although a wide array of plasticizers are known, only a limited number are acceptable for incorporation in adhesives used in medical and consumer health care applications. Of the plasticizers that are acceptable for these applications, many are costly and/or limited in availability.

[0005] Accordingly, a need remains for an adhesive suitable for medical and health care applications which overcomes the disadvantages of adhesives containing mineral oil. And, a need exists for a plasticizer that is relatively inexpensive, widely available, and which is acceptable for medical and health care applications.

SUMMARY

[0006] The difficulties and drawbacks associated with previously known compositions and products are addressed in the present compositions, methods and articles relating to an adhesive or hydrocolloid composition comprising one or more vegetable oils.

[0007] In one aspect, the present subject matter provides a composition comprising from about 0.1% to about 20% of at least one vegetable oil and at least one component selected from an adhesive component and a hydrocolloid component.

[0008] In another aspect, the present subject matter provides a method of preparing a composition including vegetable oil. The method comprises providing an effective amount of at least one vegetable oil.

The method also comprises providing at least one of an adhesive component and a hydrocolloid component. The method additionally comprises blending the vegetable oil with the at least one of the adhesive component and the hydrocolloid component to thereby form the composition.

[0009] In yet another aspect, the subject matter provides an article adapted for placement on a user's skin. The article defines a skin-contacting region and disposed on at least a portion of the skin-contacting region, a particular composition. The composition includes (i) an effective amount of at least one vegetable oil, and (ii) at least one component selected from an adhesive component and a hydrocolloid component.

[0010] As will be realized, the present subject matter is capable of other and different embodiments and its several details are capable of modifications in various respects, all without departing from the subject matter. Accordingly, the drawings and description are to be regarded as illustrative and not restrictive.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] Figure 1 is a graph of 90° peel adhesion results of samples using the preferred embodiment compositions.

[0012] Figure 2 is a graph of reverse tack results of samples using the preferred embodiment compositions.

[0013] Figure 3 is a graph of static absorption of samples using the preferred embodiment compositions.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0014] The present subject matter relates to adhesives and/or hydrocolloid compositions that comprise one or more vegetable oils. The resulting compositions provide a soothing effect when applied to skin and may further provide anti-infective properties. The vegetable oil containing compositions also assist healing of wounds or other tissue damage by promoting the formation of scar tissue. This characteristic is known as cicatrisation. The incorporation of vegetable oil has also been found to provide a plasticizing effect upon the resulting compositions.

[0015] In addition to various compositions, the present subject matter also provides methods for preparing the compositions and methods of using the compositions.

[0016] The present subject matter additionally provides various products and namely medical products and consumer health care products using the compositions. These and other aspects are described in greater detail herein.

Vegetable Oil(s)

[0017] A wide array of vegetable oils can be utilized in accordance with the present subject matter. Generally, any vegetable oil or fat derived from plants can be used. Such oils or fats are lipid materials. Generally, the distinction between oils and fats is that oils are liquid at room temperature, while fats are solid at room temperature. Both vegetable oils and fats include triglycerides. The term "vegetable oil(s)" as used herein refers to both vegetable fats and vegetable oils.

[0018] Vegetable oils comprise triglycerides which are esters that include three fatty acids bound to a glycerol molecule. Examples of vegetable oils include, but are not limited to, soybean oil, palm oil, olive oil, corn oil, grape seed oil, borage oil, peanut oil, tung oil, canola oil, linseed oil, rapeseed oil, almond oil (also known as amandel oil), castor oil, coconut oil, cottonseed oil, palm kernel oil, rice bran oil, argan oil, safflower oil, sesame oil, sunflower oil, avocado oil, jojoba oil, tall oil, and combinations thereof. Typically, the fatty acids associated with vegetable oils include long chain, e.g. C₈ to C₂₂ and more typically C₁₂ to C₁₄, moieties, many of which include multiple double bonds per chain. The glycerol molecule has three hydroxyl (OH-) groups. Each fatty acid has a carboxyl group (COOH-). In triglycerides, the hydroxyl groups of the glycerol join the carboxyl groups of the fatty acids to form ester bonds.

[0019] As noted, chain lengths of the fatty acids in naturally occurring or bio-based triglycerides can be of varying lengths. However, chain lengths having 16, 18, and 20 carbons are the most common. Natural fatty acids found in plants are typically composed only of even numbers of carbon atoms as a result of how they are bio-synthesized from acetyl coenzyme A.

[0020] Most natural fats contain a complex mixture of individual triglycerides. Because of this, most natural fats melt over a broad range of temperatures. Cocoa butter is unusual in that it is composed of only a few triglycerides, one of which contains palmitic, oleic, and stearic acids, in order of concentration. As a result, cocoa butter has a relatively narrow melting temperature range.

[0021] Preferred fatty acids in the triglycerides of the vegetable oils of interest are set forth below in Table 1.

Table 1 - Chemical Names and Descriptions of Common Fatty Acids

Common Name	Carbon Atoms	Double Bonds	Scientific Name	Sources
Butyric acid	4	0	butanoic acid	butterfat
Caproic Acid	6	0	hexanoic acid	butterfat
Caprylic Acid	8	0	octanoic acid	coconut oil
Capric Acid	10	0	decanoic acid	coconut oil
Lauric Acid	12	0	dodecanoic acid	coconut oil
Myristic Acid	14	0	tetradecanoic acid	palm kernel oil
Myristoleic	14	1	9-tetradecenoic acid	
Palmitic Acid	16	0	hexadecanoic acid	palm oil
Palmitoleic Acid	16	1	9-hexadecenoic acid	
Stearic Acid	18	0	octadecanoic acid	
Oleic Acid	18	1	9-octadecenoic acid	olive oil
Ricinoleic acid	18	1	12-hydroxy-9-octadecenoic acid	castor oil
Vaccenic Acid	18	1	11-octadecenoic acid	butterfat
Linoleic Acid	18	2	9,12-octadecadienoic acid	grape seed oil
Alpha-Linolenic Acid (ALA)	18	3	9,12,15-octadecatrienoic acid	flaxseed (linseed) oil
Gamma-Linolenic Acid (GLA)	18	3	6,9,12-octadecatrienoic acid	borage oil
Arachidic Acid	20	0	eicosanoic acid	peanut oil
Gadoleic Acid	20	1	9-eicosenoic acid	
Arachidonic Acid (AA)	20	4	5,8,11,14-eicosatetraenoic acid	
EPA	20	5	5,8,11,14,17-eicosapentaenoic acid	
Behenic acid	22	0	docosanoic acid	rapeseed oil
Erucic acid	22	1	13-docosenoic acid	rapeseed oil
DHA	22	6	4,7,10,13,16,19-docosahexaenoic acid	
Lignoceric acid	24	0	tetracosanoic acid	small amounts in most fats

[0022] Vegetable oils contain varying amounts of triglycerides depending upon the type or source of the oil, and the ratio of oil to fat. See Tables 1 and 2, and “The Chemistry of Oils and Fats” by Frank D. Gunstone (Blackwell Publishing 2004). Table 2 set forth below, lists typical fatty acid amounts (as percentages by weight) of various common oils and fats.

Table 2 - Typical Fatty Acid Composition (wt%) of Common Oils and Fats

Oil/Fat	16:0	16:1	18:0	18:1	18:2	18:3	20:1	22:1	24:0	Average Unsaturation Per Triglyceride
soybean	11	0.1	4	23.4	53.2	7.8				4.6
palm	44.4	0.2	4.1	39.3	10	0.4				1.8
rapeseed	3	0.2	1	13.2	13.2	9	9	49.2	1.2	3.8
sunflower	6		5	20	60					1.4
tallow	27	11	7	48	2					0.6
cottonseed	21.6	0.6	2.6	18.6	54.5	0.7				3.9
olive	13.7	1.2	2.5	71.1	10	0.6				2.8
corn	10.9	0.2	2	25.4	59.6	1.2				4.5
canola	4.1	0.3	1.8	60.9	21	8.8	1	0.7	0.2	3.9
linseed	5.5		3.5	19.1	15.3	56.6				6.6

[0023] The unsaturation associated with the various triglycerides in the oils and/or fats serves as a potential reaction site for polymerization and/or for reaction. The double bonds are relatively unreactive in regards to polymerization unless conjugated as in drying oils such as Tung oil.

Adhesive or Hydrocolloid

[0024] A wide range of adhesives and/or hydrocolloids may be used in the preferred embodiment compositions. Preferably, the adhesive is a hot melt adhesive. Nonlimiting examples of suitable adhesives for use in the present subject matter include those described in EP 1206290, EP 1221986 (or its equivalent US 6,740,711), and EP 1383548 (or its equivalent US 7,335,416).

[0025] A preferred adhesive is a hot melt adhesive based on a styrene-containing thermoplastic elastomer and a liquid rubber, a low molecular weight polyisobutylene and a low molecular weight liquid

polybutene, which forms a continuous phase. Dispersed within the continuous phase the adhesive also includes a discontinuous phase of one or more water soluble and/or water swellable absorbent polymers.

[0026] Suitable styrene-containing thermoplastic elastomers include block copolymers based on styrene-butadiene, styrene-isoprene or styrene ethylene-butylene. Also, a low styrene synthetic copolymer of butadiene and styrene, commonly called SBR rubber, can be used as the thermoplastic elastomer. The elastomer may consist of linear or radial A-B-A block copolymers or mixtures of these A-B-A copolymers with simple A-B block copolymers. However, the proportion of A-B block copolymers in the mixture of A-B-A and A-B block copolymers should not exceed about 85% by weight and lower percentages would normally be used.

[0027] The A-B-A block copolymers are of the type which consist of A blocks derived from styrene or one of its homologues and B blocks derived from conjugated dienes, such as butadiene or isoprene, or from lower alkenes such as ethylene or butylene. The radial A-B-A polymers useful in this subject matter are of the type described for example in U.S. Pat. No. 3,281,383 and conform to the general formula $(A-B)_n X$, where A and B comprise blocks derived from monomers described above in connection with the A-B-A copolymers, X is an organic or inorganic connecting moiety having a functionality of at least 2, and n is equal to the functionality of X. The A-B block copolymers useful in this subject matter comprise A and B blocks derived from monomers described above in connection with the A-B-A copolymers.

[0028] Liquid rubbers include synthetic liquid isoprene rubber, depolymerised natural rubber, carboxyl terminated synthetic liquid isoprene-styrene rubber, hydroxyl terminated synthetic liquid isoprene rubber, hydrogenated liquid isoprene rubber, liquid isoprene-styrene copolymer, liquid isoprene-butadiene copolymer and liquid butadiene-styrene copolymer. The liquid rubbers have a molecular weight of about 25,000 to about 50,000. Preferably, the liquid rubbers have a glass transition temperature of less than -50°C, and a melt viscosity at 38°C of from 500-10,000 poises. A particularly preferred material for use as the liquid rubber component is a blend of 80% styrene isoprene liquid rubber and 20% styrene isoprene rubber. All references to percentages are percentages by weight. It will be appreciated that other liquid rubbers known in the art could be useful.

[0029] The polyisobutylene component is exemplified by the VISTANEX LM series of polyisobutylenes, available from Exxon Chemical Corporation, and which have Flory viscosity average molecular weights in the range 35,000 to 70,000, and Brookfield viscosities at 175° C within the range 20,000 and 140,000 mPa.s. Another preferred polyisobutene is commercially available from BASF under the designation OPPANOL B, and preferably B12. However, OPPANOL is available in various molecular weights and depending upon the particular application, any grade such as from grade B11 to B15, could be used.

[0030] The low molecular weight polybutene components are exemplified by the HYVIS series of materials from BP, and by the PARAPOL series of products from Exxon Chemical Corporation, and which have molecular weights ranging from 1000 to 3000, determined using test method AM-I 841-86, and kinematic viscosities at 100° C within the range 180 and 3500 cSt, as measured by test method ASTM D445.

[0031] Typically, a suitable processing stabilizer is also included in the hot melt adhesive component. Suitable stabilizers useful include those indicated for use with styrene-olefin styrene block copolymer thermoplastic elastomers such as organophosphites and the so-called hindered phenols, but any suitable stabilizers may be employed. An example of an organophosphite stabilizer is tris(nonylphenyl) phosphite, available as POLYGARD HR manufactured by Uniroyal. Particularly useful are the hindered phenols, IRGANOX 1010 and IRGANOX 565, manufactured by Ciba. IRGANOX 1010 is pentaerythritol tetrakis (3-(3, 5-di-tert-butyl-4-hydroxyphenyl) propionate. IRGANOX 565 is 2, 6-di-tert-butyl-4-(4,6-bis(octylthio)-1, 3,5-triazin-2-ylamino)phenol. Stabilizers may be used or in combination, and suitable ranges are from 0.3 1.5% by weight based on the total formulation.

[0032] Other optional ingredients such as tackifiers and plasticizers may be added to the continuous phase, to modify tack and optimise adhesion properties.

[0033] The hot melt adhesive component is comprised of the thermoplastic elastomer and the liquid rubber, both as defined above. Preferably this hot melt adhesive is formed with a weight ratio of thermoplastic elastomer to liquid rubber of about 1:0.5 to about 1:7. The amount of liquid rubber used is varied for the desired degree of adhesiveness and tackiness of the pressure sensitive adhesive.

[0034] It will be appreciated that in no way is the subject matter limited to any of the particular adhesives or adhesive components described herein. Instead, the present subject matter includes a wide array of adhesives, adhesive components, and adhesive intermediates.

[0035] In certain applications, the present subject matter is based upon a hydrocolloid that comprises one or more vegetable oils. As will be appreciated, a hydrocolloid is a colloid system in which the colloid particles are dispersed in water. An example of a suitable hydrocolloid is carboxymethyl cellulose. Additional examples of suitable hydrocolloids include gelatin, pectin, alginate, or synthetic super absorbent hydrocolloids. Preferred hydrocolloids are hydrocolloids typically used in wound care applications. Examples of commercially available products containing hydrocolloid compositions include, but are not limited to, TEGASORB and TEGASORB THIN from 3M; HYDROCOL from Bertek (Dow Hickam); BGC Matrix from Brennan; COMFEEL available from Colorplast; DUODERM and SIGNADRESS from Convatec; DERMAFILM from DermaRite; RESTORE from Hollister; NU-DERM available from Johnson and Johnson; ULTEC available from Kendall; EXUDERM available from Medline; and REPLICARE, CUTINOVA HYDRO, and CUTINOVA THIN available from Smith & Nephew. Another example of a suitable hydrocolloid is sodium

carboxymethyl cellulose available commercially under the designation AQUASORB from a variety of suppliers. It will be appreciated that in no way is the present subject matter limited to any of these hydrocolloids.

Preferred Compositions

[0036] The preferred embodiment compositions generally comprise (i) one or more vegetable oil(s), and (ii) at least one of an adhesive component and a hydrocolloid component. Representative examples of these preferred embodiment compositions are provided herein.

[0037] More specifically, the preferred embodiment compositions generally comprise from about 0.1% to about 20% of vegetable oil(s). Generally, if more than 20% vegetable oil is used in the composition, the composition is very uncohesive and if applied to human skin, tends to leave residue on the skin. All percentages noted herein are percentages by weight unless indicated otherwise.

[0038] The preferred embodiment compositions may also comprise one or more additional agents or components such as absorbent fillers, clays, antimicrobial agents, agents for treating pain, other medicinal agents and the like. The preferred embodiment compositions, particularly when comprising an adhesive component, exhibit sufficient tack and adhering ability to thereby enable their use in a wide range of medical and consumer health care applications.

[0039] A preferred component for including in the various adhesive and/or hydrocolloid compositions described herein is carboxymethyl cellulose (CMC). A variety of different grades of this material is commercially available. A preferred material is AQUASORB A500 available from Ashland Chemical. The A500 material is crystalline sodium carboxymethyl cellulose. This material or a suitable equivalent is also available from Aqualon, a division of Hercules Chemical.

[0040] One or more solvents can also be added. A wide array of solvents can be used such as water or oil based solvents. Preferred oil based solvents include, but are not limited to heptane or toluene. In addition, one or more surfactants can also be included.

[0041] Preferably, in certain versions the compositions comprise (i) from about 0.1% to about 20% and more preferably from about 10% to about 20% of one or more vegetable oil(s), (ii) from about 35% to about 80% of one or more hot melt adhesives, and (iii) from about 0 to about 50% of one or more hydrocolloids. In additional versions, preferred compositions comprise (i) from about 0.1% to about 20% and more preferably from about 10% to about 20% of one or more vegetable oil(s), (ii) from about 37.5% to about 60% of hot melt adhesive(s) containing styrene-isoprene-styrene and styrene-isoprene block copolymers, (iii) from about 30% to about 35% of one or more hydrocolloids such as sodium carboxymethyl cellulose,

commercially available under the designation AQUASORB, and (iv) from about 0 to about 17.5% polyisobutene.

Methods

[0042] The preferred compositions are preferably prepared by incrementally combining the one or more vegetable oil(s) with one or both of the adhesive component and the hydrocolloid component. Most preferably, the vegetable oil is added when in a liquid or flowable form. Heating may be used as necessary to transform the vegetable oil into a liquid or flowable form. The adhesive and/or hydrocolloid component is also preferably in a liquid or flowable form however, semi-viscous forms can also be used. It is contemplated that generally when using an adhesive component, the adhesive is heated to a temperature of from about 60°C to about 100° C. Preferably, the processing temperature is less than 70° C. The heated adhesive and/or hydrocolloid components are then blended with the one or more vegetable oil(s) in conventional mixing equipment. For example, a Z-Blade mixer can be used.

Products and Devices

[0043] The preferred embodiment compositions can be used in a wide array of products and devices. Non-limiting examples of such products and devices include consumer patches, consumer wound care products, dressings, bandages, and cosmetic patches. The term "cosmetic patch" as used herein refers to a patch that is typically used to cover skin defects or improve skin condition(s). For example, anti-wrinkle eye patches available from Montagne & Jeunesre are an example of cosmetic patches. Another use for a cosmetic patch is a patch that is placed over acne. An example of such patch is a patch available from Neutrogena under the designation ON THE SPOT. The term "consumer patch" as used herein refers to a dressing typically used for small wound treatment such as products commercially available under the designation NAND-AID. The subject matter includes other types of articles which may employ the preferred embodiment compositions.

Evaluations

[0044] A series of investigations were undertaken to further evaluate the preferred embodiment compositions.

[0045] A collection of preferred embodiment compositions were prepared as follows. The components of each composition or formulation were mixed or blended with one another. Blending was performed over the course of several phases with a total mixing time of about 36 minutes. The blending temperature was 60° C. Generally, during phase 1, blending was performed for 5 minutes in an open mixer. Phase 2

consisted of blending for 5 minutes in the open mixer. Phase 3 consisted of 5 minutes in the mixer however, closed. Tables 3-14 summarize the compositions. The components T2561 and T2560 are both hot melt adhesives containing styrene-isoprene-styrene and styrene-isoprene block copolymers. Specifically, T2560 contains 80% styrene-isoprene and 20% styrene-isoprene-styrene. The triblock copolymer of styrene-isoprene-styrene is KRATON D-1161 available from Kraton Polymers of Houston, Texas. T2561 contains 50% styrene-isoprene and 50% of styrene-isoprene-styrene. The triblock copolymer of styrene-isoprene-styrene used in T2561 is KRATON 1117.

Table 3 - Formulation A

RAW MATERIAL	TOTAL		PHASE 1	PHASE 2	PHASE 3	PHASE 4
Oppanol B12	17.5%		87.5			
T2561	0.0%		0.00			
T2560	37.5%			187.50		
Aquasorb A500	35.0%				175.00	
olive oil	10.0%					50.00
TOTAL	100%		87.50	187.50	175.00	50.00
MIXING TIME (min)	36		3	3	30	

Table 4 - Formulation B

RAW MATERIAL	TOTAL		PHASE 1	PHASE 2	PHASE 3	PHASE 4
Oppanol B12	12.5%		62.5			
T2561	0.0%		0.00			
T2560	37.5%			187.50		
Aquasorb A500	30.0%				150.00	
olive oil	20.0%					100.00
TOTAL	100%		62.50	187.50	150.00	100.00
MIXING TIME (min)	36		3	3	30	

Table 5 - Formulation C

RAW MATERIAL	TOTAL		PHASE 1	PHASE 2	PHASE 3	PHASE 4
Oppanol B12	0.0%		0			
T2561	0.0%		0.00			
T2560	60.0%			300.00		
Aquasorb A500	30.0%				150.00	
olive oil	10.0%					50.00
TOTAL	100%		0.00	300.00	150.00	50.00
MIXING TIME (min)	36		3	3	30	

Table 6 - Formulation D

RAW MATERIAL	TOTAL		PHASE 1	PHASE 2	PHASE 3	PHASE 4
Oppanol B12	0.0%		0			
T2561	30.0%		150.00			
T2560	30.0%			150.00		
Aquasorb A500	30.0%				150.00	
olive oil	10.0%					50.00
TOTAL	100%		150.00	150.00	150.00	50.00
MIXING TIME (min)	36		3	3	30	

Table 7 - Formulation E

RAW MATERIAL	TOTAL		PHASE 1	PHASE 2	PHASE 3	PHASE 4
Oppanol B12	0.0%		0			
T2561	0.0%		0.00			
T2560	60.0%			300.00		
Aquasorb A500	30.0%				150.00	
amandel oil	10.0%					50.00
TOTAL	100%		0.00	300.00	150.00	50.00
MIXING TIME (min)	36		3	3	30	

Table 8 - Formulation F

RAW MATERIAL	TOTAL		PHASE 1	PHASE 2	PHASE 3	PHASE 4
Oppanol B12	0.0%		0			
T2561	60.0%		300.0			
T2560	0.0%			0		
Aquasorb A500	30.0%				150.00	
amandel oil	10.0%					50.00
TOTAL	100%		0.00	300.00	150.00	50.00
MIXING TIME (min)	36		3	3	30	

Table 9 - Formulation G

RAW MATERIAL	TOTAL		PHASE 1	PHASE 2	PHASE 3	PHASE 4
Oppanol B12	0.0%		0			
T2561	40.0%		200.00			
T2560	20.0%			100.00		
Aquasorb A500	30.0%				150.00	
amandel oil	10.0%					50.00
TOTAL	100%		200.00	100.00	150.00	50.00
MIXING TIME (min)	36		3	3	30	

Table 10 - Formulation H

RAW MATERIAL	TOTAL		PHASE 1	PHASE 2	PHASE 3	PHASE 4
Oppanol B12	0.0%		0			
T2561	34.0%		170.00			
T2560	20.0%			100.00		
Aquasorb A500	34.0%				170.00	
amandel oil	12.0%					60.00
TOTAL	100%		170.00	100.00	170.00	60.00
MIXING TIME (min)	36		3	3	30	

Table 11 - Formulation I

RAW MATERIAL	TOTAL		PHASE 1	PHASE 2	PHASE 3	PHASE 4
Oppanol B12	0.0%		0			
T2561	34.0%		170.00			
T2560	20.0%			100.00		
Aquasorb A500	34.0%				170.00	
argan oil	12.0%					60.00
TOTAL	100%		170.00	100.00	170.00	60.00
MIXING TIME (min)	36		3	3	30	

Table 12 - Formulation J

RAW MATERIAL	TOTAL		PHASE 1	PHASE 2	PHASE 3	PHASE 4
Oppanol B12	0.0%		0			
T2561	34.0%		170.00			
T2560	20.0%			100.00		
Aquasorb A500	34.0%				170.00	
avocado oil	12.0%					60.00
TOTAL	100%		170.00	100.00	170.00	60.00
MIXING TIME (min)	36		3	3	30	

Table 13 - Formulation K

RAW MATERIAL	TOTAL		PHASE 1	PHASE 2	PHASE 3	PHASE 4
Oppanol B12	0.0%		0			
T2561	34.0%		170.00			
T2560	20.0%			100.00		
Aquasorb A500	34.0%				170.00	
jojoba oil	12.0%					60.00
TOTAL	100%		170.00	100.00	170.00	60.00
MIXING TIME (min)	36		3	3	30	

Table 14 - Formulation L

RAW MATERIAL	TOTAL		PHASE 1	PHASE 2	PHASE 3	PHASE 4
Oppanol B12	0.0%		0			
T2561	14.0%		70.00			
T2560	40.0%			200.00		
Aquasorb A500	34.0%				170.00	
amandel oil	12.0%					60.00
TOTAL	100%		70.00	200.00	170.00	60.00
MIXING TIME (min)	36		3	3	30	

[0046] After mixing through the various phases, the resulting composition was pressed at 60°C to a layer thickness of 0.5 mm.

[0047] A series of measurements were taken of samples formed from the compositions. Specifically, the samples were subjected to 90° peel adhesion tests, reverse tack tests, and static absorption tests. Each of these tests are as follows.

90° Peel Adhesion of Hydrocolloid Adhesives on Stainless Steel

[0048] Peel adhesion on stainless steel (SS) is the average force to remove a hydrocolloid adhesive, laminated under specified conditions on a stainless steel panel, from the stainless steel panel at constant speed and at an angle of 90°.

Procedure

[0049] Clean the stainless steel panel with solvent. Cut a hydrocolloid sample of 25.4 mm width and reinforce with reinforcing tape. Laminate a paper strip at one end of the hydrocolloid sample using an overlap of about 1 cm. Remove the liner from the hydrocolloid sample and laminate the sample on the stainless steel panel with a 450 gm. Roller at a speed of 150 cm/min. Allow the sample to dwell for 1 minute. Place the paper strip in an upper clamp of the test system and the stainless steel panel in the lower

clamp, making sure that the angle between peel direction and stainless steel panel is 90°. Start the measurement using a crosshead speed of 300 mm/min. The angle must be kept at 90° until the measurement is completed. The 90° peel adhesion is the average force to remove the hydrocolloid strip from the stainless steel panel.

Reverse Tack

[0050] Reverse tack of hydrocolloid adhesives is the maximum force necessary to remove a standard polyester strip brought into contact with the hydrocolloid without external force, from this hydrocolloid surface.

Procedure

[0051] Prepare the test panel using double coated self adhesive tape. Laminate the hydrocolloid adhesive on the test panel. Place the test panel with the hydrocolloid in the lower clamp. Program the tensile tester. Place a polyester test strip of thickness 125 μm (5 mils) and dimensions (21 cm x 2.54 cm) in the upper clamp, making sure that the total length of polyester under the clamp (loop) is 15 cm. Remove the release liner from the hydrocolloid and start the measurement.

[0052] The reverse tack is the maximum force to remove the polyester strip from the hydrocolloid surface.

Static Shear of Hydrocolloid Adhesives

[0053] Static shear is the time necessary to remove a hydrocolloid adhesive, laminated on a stainless steel panel under specified conditions, from the test panel under influence of a specified weight.

Procedure

[0054] Condition the hydrocolloid samples at $23 \pm 1^\circ \text{C}$ and $50 \pm 2\%$ relative humidity for 24 hours. Clean the stainless steel shear panel with solvent. Cut a hydrocolloid strip of 25.4 mm width and 50 mm length. Reinforce the hydrocolloid strip with reinforcing tape. Laminate the hydrocolloid strip on the test panel using an overlap surface of 1 inch². Protect the free hydrocolloid with release liner. Put a weight of 500 g on the laminate for 1 hour. Reinforce the free hydrocolloid adhesive zone with reinforcing plastic and perforate. Place the test panel with hydrocolloid on the shear bar using a shear weight of 500 g. Re-zero the registration clock. Note the time on the clock when the measurement is completed.

[0055] Table 15 lists a summary of adhesive performance. Figure 1 is a graph of 90° peel adhesion results of samples using the preferred embodiment compositions. Figure 2 is a graph of reverse tack results

of samples using the preferred embodiment compositions. Figure 3 is a graph of static absorption of samples using the preferred embodiment composition.

Table 15 - Summary of Adhesive Performance

Formulation Non-sterile Samples (laminated on PE)	90° Peel Adhesion on Stainless Steel (N/25 mm) T04/142			Reverse Tack (N/25 mm) T04/009			Static Absorption (g/m ² /7d) T06/022		
	results	average	st dev	results	average	st dev	results	average	st dev
A 10% olive oil	5.84			17.78			/		
17.5% Oppanol B12	6.66	6.25	0.41	17.43	17.48	0.28	/		
37.5% T2560 35% A500	6.25			17.22			/		
C 10% olive oil	6.13			18.92			/		
60% T2560	6.25	6.23	0.10	15.95	17.77	1.59	/		
30% A500	6.32			18.44			/		
D 10% olive oil	3.55			12.72			240.00		
30% T2561/30% T2560	3.70	3.79	0.30	10.23	11.51	1.25	/	240.00	/
30% A500	4.12			11.57			/		
E 10% amandel oil	5.57			15.31			395.79		
60% T2560	5.13	5.38	0.22	14.92	14.52	1.05	/	395.79	/
30%A500	5.43			13.33			/		
F 10% amandel oil	0.40			2.56			3486.32		
60% T2561	0.26	0.36	0.08	0.90	2.29	1.27	3591.58	3538.95	74.43
30% A500	0.41			3.40			/		
G 10% amandel oil	0.52			2.06			1831.58		

40% T2561/20%									
T2560	0.50	0.41	0.17	3.78	2.52	1.10	1802.11	1816.84	20.84
30% A500	0.21			1.73			/		
H 12% amandel oil	3.79			5.14			5031.58		
34% T2561/20%									
T2560	3.12	1.08	1.41	4.46	5.47	1.21	5098.95	5065.26	47.64
34% A500	1.08			6.82			/		
I 12% argan oil	0.56			4.93			5309.47		
34% T2561/20%									
T2560	0.59	0.62	0.07	7.70	6.28	1.39	5313.68	5311.58	2.98
34% A500	0.70			6.20			/		
J 12% avocado oil	1.41			4.91			5974.74		
34% T2561/20%									
T2560	1.56	1.43	0.13	4.60	5.23	0.83	6155.79	6065.26	128.02
34% A500	1.31			6.17			/		
K 12% jojoba oil	0.60			1.98			4981.05		
34% T2561/20%									
T2560	0.52	0.53	0.06	2.69	2.53	0.49	5292.63	5136.84	220.32
34% A500	0.48			2.93			/		
L 12% amandel oil	2.19			7.50			/		
14% T2561/40%									
T2560	2.17	2.13	0.08	5.50	6.60	1.01	/		
34% A500	2.04			6.80			/		

[0056] Formulation J with avocado oil exhibited the best properties, e.g., a combination of good adhesive performance and good static absorption. Generally, when utilizing T2560 and T2561 in the mixture and the ratio T2560/T2561 is 1:1 or higher, the formulation exhibits instability because the formulation leaches the hydrocolloid after water absorption.

[0057] Many other benefits will no doubt become apparent from future application and development of this technology.

[0058] All patents, applications, and articles noted herein are hereby incorporated by reference in their entirety.

[0059] It will be understood that any one or more feature or component of one embodiment described herein can be combined with one or more other features or components of another embodiment. Thus, the present subject matter includes any and all combinations of components or features of the embodiments described herein.

[0060] As described hereinabove, the present subject matter solves many problems associated with previous type compositions and practices. However, it will be appreciated that various changes in the details, materials and arrangements of components and operations, which have been herein described and illustrated in order to explain the nature of the subject matter, may be made by those skilled in the art without departing from the principle and scope of the subject matter, as expressed in the appended claims.

WHAT IS CLAIMED IS:

1. A composition comprising:
from about 0.1% to about 20% of at least one vegetable oil;
at least one component selected from an adhesive component and a hydrocolloid component.
2. The composition of claim 1 wherein the at least one component is an adhesive component.
3. The composition of claim 1 wherein the at least one component is a hydrocolloid component.
4. The composition of claim 1 wherein the at least one component is a combination of an adhesive component and a hydrocolloid component.
5. The composition of claim 1 wherein the adhesive component is a hot melt adhesive.
6. A method of preparing a composition including vegetable oil, the method comprising:
providing an effective amount of at least one vegetable oil;
providing at least one of an adhesive component and a hydrocolloid component;
blending the vegetable oil with the at least one of the adhesive component and the hydrocolloid component, to thereby form the composition.
7. The method of claim 6 wherein the effective amount of the vegetable oil is from about 0.1% to about 20% by weight of the total amount of the composition.
8. The method of any one of claims 6-7 further comprising:
heating the at least one vegetable oil prior to or during blending.
9. The method of any one of claims 6-8 further comprising:
heating the at least one of an adhesive component and a hydrocolloid component prior to or during blending.
10. The method of any one of claims 6-9 wherein blending is performed incrementally.

11. An article adapted for placement on a user's skin, the article defining a skin-contacting region and disposed on at least a portion of the skin-contacting region, a composition including (i) an effective amount of at least one vegetable oil, and (ii) at least one component selected from an adhesive component and a hydrocolloid component.

12. The article of claim 11 wherein the article is selected from the group consisting of consumer patches, consumer wound care products, dressings, bandages, and cosmetic patches.

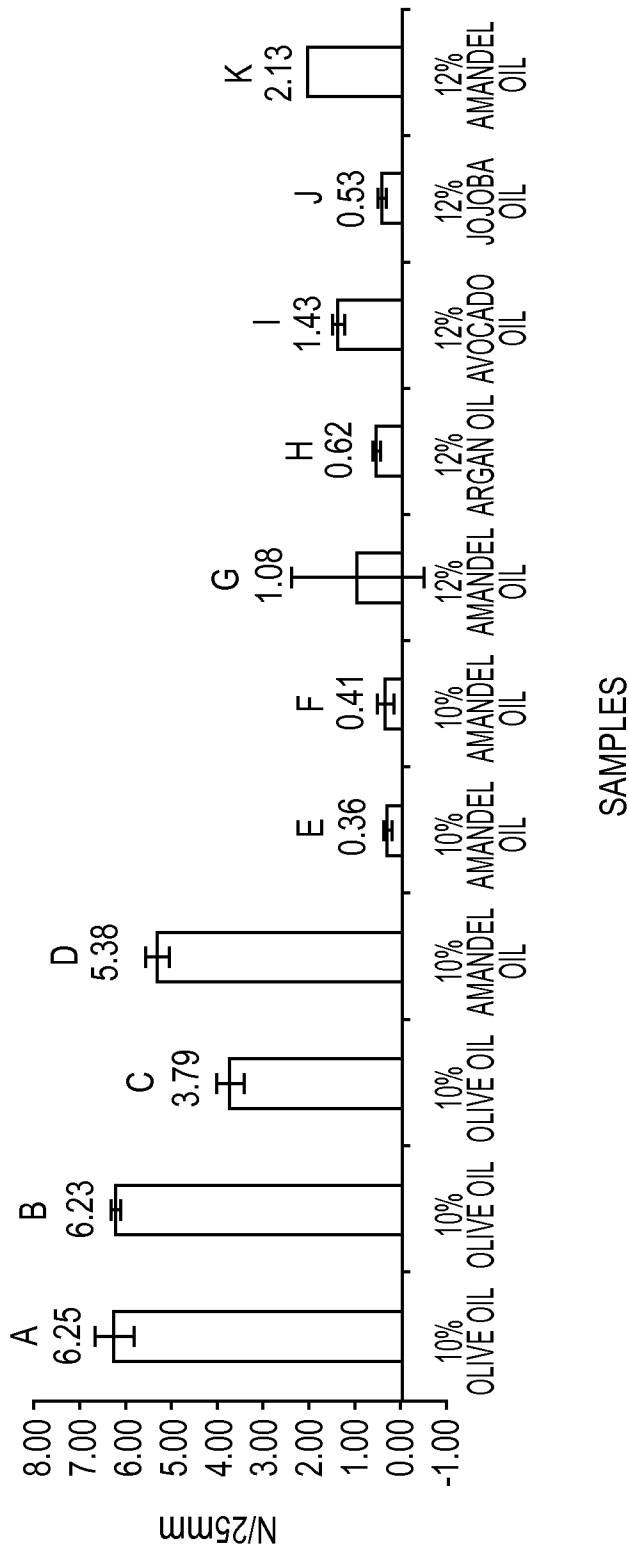


FIG. 1

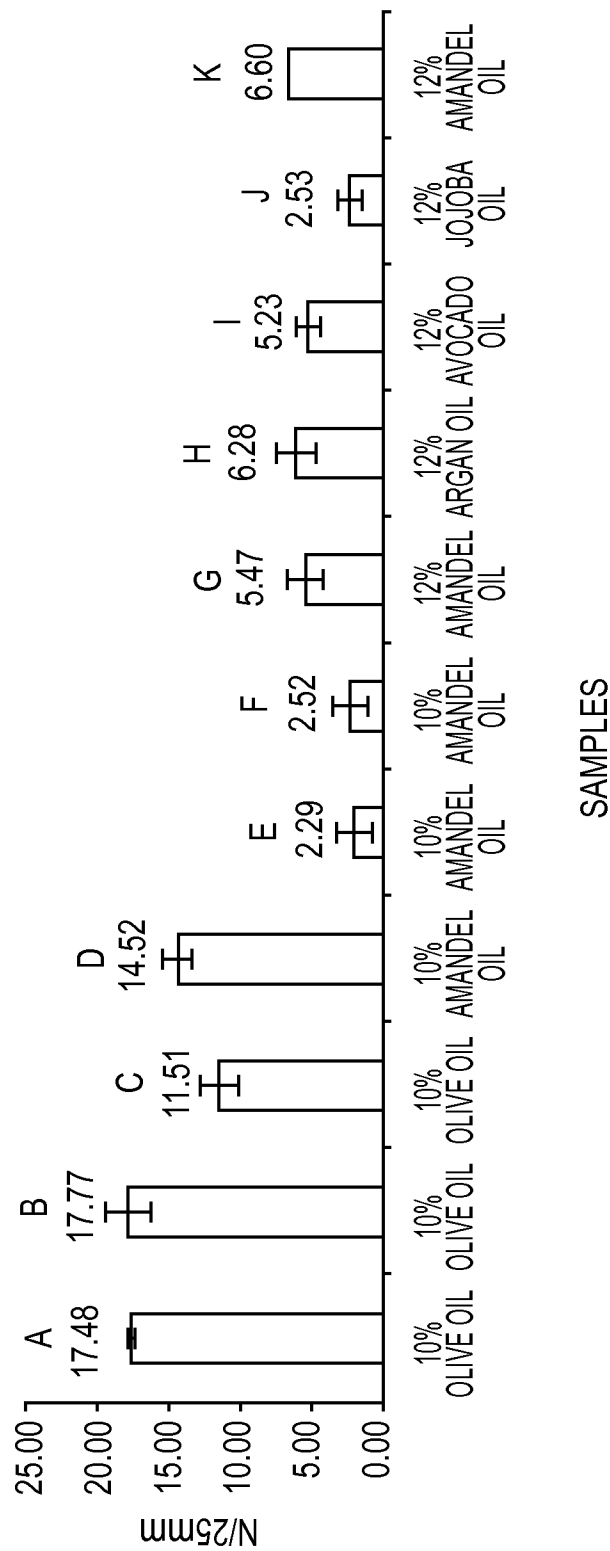
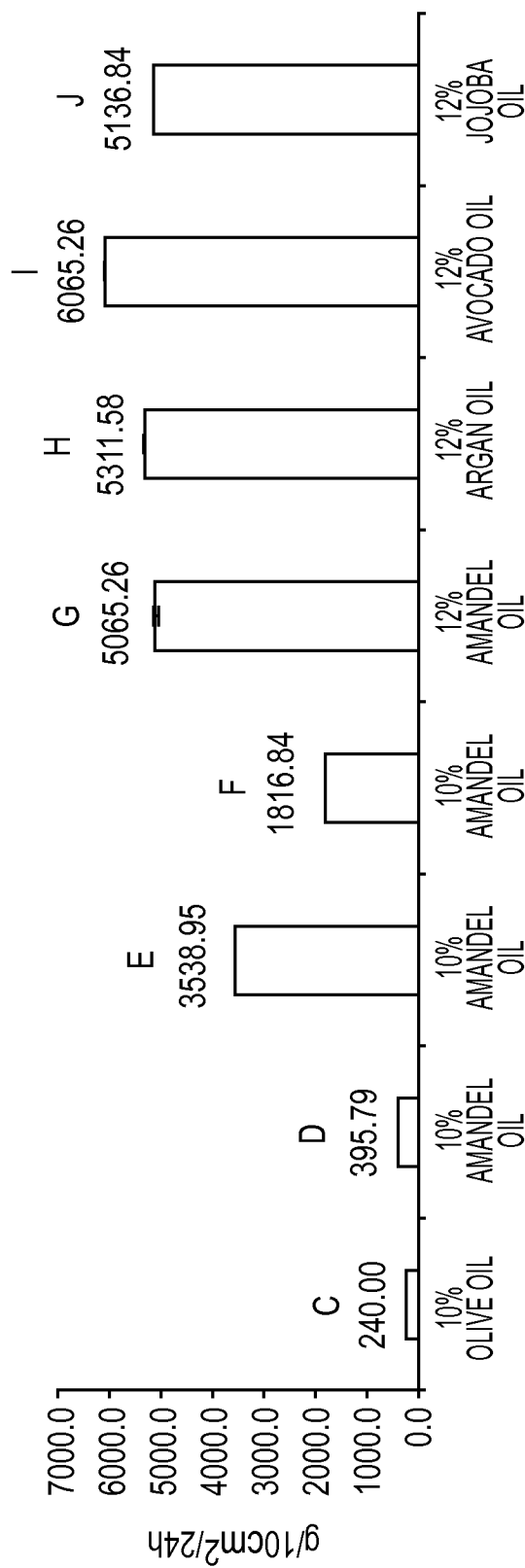


FIG. 2



SAMPLES

FIG. 3

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2012/043070

A. CLASSIFICATION OF SUBJECT MATTER INV. A61L15/28 A61L15/30 A61L15/34 A61L15/58 A61L24/00 A61L24/04 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) 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 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	WO 2011/044449 A1 (EUROMED INC [US]; RAMJIT RAVI [US]; KENG TA KANG [US]; JENSEN JARL [US]) 14 April 2011 (2011-04-14) paragraphs [0096] - [0100], [0104], [0108] - [0111]; examples 2,6,7,8,XX.3,XX.4, osteomy formulation paragraphs [0089] - [0094] paragraphs [0010], [0044], [0047], [0051], [0085] - [0087] -----	1-12
X	WO 01/13968 A1 (AVERY DENNISON CORP [US]; LIPMAN ROGER DAVID ARNOLD [BE]) 1 March 2001 (2001-03-01) cited in the application example 9 ----- -/--	1-12
☒ 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 July 2012		Date of mailing of the international search report 02/08/2012
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 Schmitt, Johannes

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2012/043070

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 01/30406 A1 (AVERY DENNISON CORP [US]; LIPMAN ROGER DAVID ARNOLD [BE]) 3 May 2001 (2001-05-03) cited in the application example 18 -----	1-12
X	US 2004/071757 A1 (ROLF DAVID [US]) 15 April 2004 (2004-04-15) paragraphs [0203], [0214], [0226]; example all -----	1-12
X	US 6 190 689 B1 (HOFFMANN HANS-RAINER [DE] ET AL) 20 February 2001 (2001-02-20) example 12 -----	1-12
A	US 2004/241215 A1 (LIPMAN ROGER D A [BE]) 2 December 2004 (2004-12-02) paragraphs [0146], [0159], [0160]; example all -----	1-12

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2012/043070

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2011044449	A1	14-04-2011	CA 2777372 A1 14-04-2011 EP 2485775 A1 15-08-2012 US 2011118363 A1 19-05-2011 WO 2011044449 A1 14-04-2011
WO 0113968	A1	01-03-2001	AU 773395 B2 27-05-2004 AU 6173400 A 19-03-2001 CA 2382564 A1 01-03-2001 DE 60037252 T2 09-10-2008 DK 1206290 T3 31-03-2008 EP 1206290 A1 22-05-2002 JP 2003507536 A 25-02-2003 WO 0113968 A1 01-03-2001
WO 0130406	A1	03-05-2001	AT 235926 T 15-04-2003 AU 772824 B2 06-05-2004 AU 7803800 A 23-04-2001 AU 7804400 A 08-05-2001 CA 2387395 A1 03-05-2001 DE 60001980 D1 08-05-2003 DE 60001980 T2 19-05-2004 DK 1221987 T3 28-07-2003 EP 1221986 A1 17-07-2002 EP 1221987 A1 17-07-2002 ES 2197118 T3 01-01-2004 JP 4541623 B2 08-09-2010 JP 2003512512 A 02-04-2003 US 6740711 B1 25-05-2004 WO 0126700 A1 19-04-2001 WO 0130406 A1 03-05-2001
US 2004071757	A1	15-04-2004	US 2004071757 A1 15-04-2004 WO 2004110401 A2 23-12-2004
US 6190689	B1	20-02-2001	AT 197901 T 15-12-2000 AU 702502 B2 25-02-1999 AU 2612795 A 05-12-1995 CA 2189996 A1 23-11-1995 CZ 9602620 A3 11-12-1996 DE 4416927 C1 31-08-1995 EP 0758885 A1 26-02-1997 ES 2154337 T3 01-04-2001 FI 964534 A 12-11-1996 GR 3035478 T3 31-05-2001 IL 113611 A 31-08-2000 JP H10500117 A 06-01-1998 NO 964799 A 12-11-1996 NZ 287410 A 26-08-1998 PL 317199 A1 17-03-1997 SK 131196 A3 09-04-1997 US 6190689 B1 20-02-2001 WO 9531188 A1 23-11-1995 ZA 9503894 A 07-03-1996
US 2004241215	A1	02-12-2004	US 2004241215 A1 02-12-2004 WO 2004103415 A2 02-12-2004