

AUSTRALIA

Patents Act

DECLARATION FOR A PATENT APPLICATION

INSTRUCTIONS

(a) Insert "Convention" if applicable
(b) Insert FULL name(s) of applicant(s)

(c) Insert "of addition" if applicable
(d) Insert TITLE of invention

(e) Insert FULL name(s) AND address(es) of declarant(s) (See headnote*)

(f) Insert FULL name(s) AND address(es) of actual inventor(s)

(g) Recite how applicant(s) derive(s) title from actual inventor(s) (See headnote**)

(h) Insert country, filing date, and basic applicant(s) for the/or EACH basic application

(k) Insert PLACE of signing

(l) Insert DATE of signing

(m) Signature(s) of declarant(s)

Note: No legalization or other witness required

In support of the (a) convention application made by (b) CHARLES OF THE RITZ GROUP LTD., a corporation of the State of Delaware, U.S.A., located at 40 West 57th Street, New York, New York, 10019, U.S.A. (hereinafter called "applicant(s) for a patent (c) for an invention entitled (d) MOISTURE-RESISTANT SKIN TREATMENT COMPOSITIONS

I/We (e) Robert P. Oppenheim, Assistant Secretary, of Charles of the Ritz Group Ltd.: 40 West 57th Street, New York, New York 10019, United States of America

do solemnly and sincerely declare as follows:

- 1. I am/We are the applicant(s). (or, in the case of an application by a body corporate)
1. I am/We are authorized to make this declaration on behalf of the applicant(s).
2. I am/We are the actual inventor(s) of the invention (or where the applicant(s) is/are not the actual inventor(s))
2. (f) Arthur C.W. Georgalas, residing at 12 Bellevue Drive, Leonardo, New Jersey, 07737, U.S.A.

is/are the actual inventor(s) of the invention and the facts upon which the applicant(s) is/are entitled to make the application are as follows:

- (g) by Assignment in the United States dated February 4, 1987, the applicant is the assignee of the invention from the said actual inventor.

(Note: Paragraphs 3 and 4 apply only to Convention applications)

3. The basic application(s) for patent or similar protection on which the application is based is/are identified by country, filing date, and basic applicant(s) as follows:

- (h) United States of America
8 December, 1986
Arthur C.W. Georgalas

4. The basic application(s) referred to in paragraph 3 hereof was/were the first application(s) made in a Convention country in respect of the invention the subject of the application.

Declared at (k) New York, New York, U.S.A.

Dated (l) July 28, 1988.

(m) CHARLES OF THE RITZ GROUP LTD

By: Robert P. Oppenheim Assistant Secretary

To: The Commissioner of Patents

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MOISTURE-RESISTANT SKIN TREATMENT COMPOSITIONS

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(56) Prior Art Documents
US 4143159
US 4597963

(57) In accordance with the present invention, moisture resistant skin treatment compositions, such as sun screen and sun block formulations, and moisturizer formulations are provided, which compositions have improved moisture resistance and substantivity due to the presence therein of one or more secondary amides, which contain water, emollients, emulsifiers, thickeners, preservatives, coloring agents, fragrances, antioxidants and the like and one or more known ultraviolet absorbing compounds (in the case of sun screen or sun block formulations). In fact, the moisturizer compositions of the invention will be similar in composition to the sun screen or sun block formulations except for the presence or absence of the ultraviolet absorbing compound.

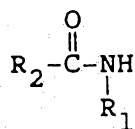
CLAIM

1. A moisture-resistant skin treatment composition in the form of an oil-in-water emulsion or a water-in-oil emulsion,

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comprising from 50 to 90% by weight water, from 1 to 10% by weight emulsifier, a preservative and a secondary amide having the structure



wherein R_1 and R_2 may be the same or different and represent saturated or unsaturated fatty acid residues containing 8 to 36 carbons and 0 to 3 double bonds, and 0 or 1 hydroxyl groups, in an amount within the range of from 0.5 to 10% by weight based on the total composition to impart moisture-resistance to said composition.

3. A composition according to claim 1 or claim 2 wherein said secondary amide is N-stearyl stearamide, N-stearyl erucamide, N-erucyl erucamide, N-oleyl palmitamide, N-stearyl oleamide, N-erucyl stearamide, N-oleyl oleamide, N-palmityl palmitamide, N-behenylbehenamide, N-behenyl-erucamide, N-oleylstearamide, N-oleylbehenamide or N-erucylbehenamide, or N-stearyl hydroxystearamide.

PCT

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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification⁴ : A61K 7/42, 7/44, 9/10</p>	<p>A1</p>	<p>(11) International Publication Number: WO 88/04167 (43) International Publication Date: 16 June 1988 (16.06.88)</p>
<p>(21) International Application Number: PCT/US87/03263 (22) International Filing Date: 8 December 1987 (08.12.87) (31) Priority Application Number: 938,933 (32) Priority Date: 8 December 1986 (08.12.86) (33) Priority Country: US (71) Applicant: CHARLES OF THE RITZ GROUP LTD. [US/US]; 40 West 57th Street, New York, NY 10019 (US). (72) Inventor: GEORGALAS, Arthur, C., W. ; 12 Bellevue Avenue, Leonardo, NJ 07737 (US). (74) Agents: LITTENBERG, Joseph, S. et al.; Lerner, David, Littenberg, Krumholz & Mentlik, 600 South Avenue West, Westfield, NJ 07090-1497 (US).</p> <p><i>[Stamp: This document contains the amendments made with authority and is correct for mailing.]</i></p>		<p>(81) Designated States: AT (European patent), AU, BE (European patent), BR, CH (European patent), DE (European patent), DK, FI, FR (European patent), GB (European patent), IT (European patent), JP, KR, LU (European patent), NL (European patent), NO, SE (European patent).</p> <p>Published <i>With international search report. With amended claims.</i></p> <p>A.O.J.P. - 4 AUG 1988</p> <p>AUSTRALIAN 30 JUN 1988 PATENT OFFICE</p>
<p>(54) Title: MOISTURE-RESISTANT SKIN TREATMENT COMPOSITIONS</p> <p>(57) Abstract</p> <p>Skin treatment compositions and methods of making same, such as sun screen compositions and moisturizer compositions which include a secondary amide, such as N-stearyl stearamide, to impart moisture resistance or substantivity to the compositions.</p>		

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DESCRIPTIONMOISTURE-RESISTANT SKIN TREATMENT COMPOSITIONSTechnical Field

The present invention relates to skin treatment compositions and methods of making same, such as sun screen compositions and moisturizer compositions, which have improved substantivity.

Background Art

The market place is flooded with sun screen and sun block formulations. These products provide excellent protection against severe sun burning of exposed skin and contain chemicals which can absorb ultraviolet light at various wavelengths, such as 2-hydroxy-4-methoxybenzophenone, or an opaque substance that physically reflects or scatters ultraviolet light, such as zinc oxide or titanium dioxide. Most of these formulations offer protection from the sun for extended periods so long as they remain on exposed areas and are not washed off by bathing.

Unfortunately, bathing in pool water and ocean water will usually result in most conventional sun screen and sun block formulations being washed away from the skin thereby leaving exposed areas of skin. Attempts have been made at formulating sun screen products which are moisture resistant. For example, see U.S. Patent No. 3,666,732.

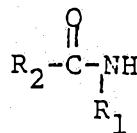
U. S. Patent No. 4,597,963 discloses moisture-resistant skin treatment composition, such as sunscreen compositions, containing a polyvinyl alkyl or alkenyl ester, such as polyvinyl stearate to impart moisture resistance or substantivity.

Disclosure of Invention

According to the present invention, there is provided a moisture-resistant skin treatment

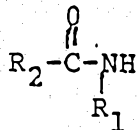
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composition in the form of a sun screen composition or moisturizer composition, in the form of an oil-in-water emulsion or a water-in-oil emulsion, consisting essentially of from about 50 to about 90% by weight water, from about 1 to about 10% by weight emollient, from about 1 to about 10% by weight emulsifier, a preservative and a secondary amide having the structure



wherein R_1 and R_2 may be the same or different and represent saturated or unsaturated fatty acid residues containing 8 to 36 carbons and 0 to 3 double bonds, and 0 or 1 hydroxyl groups, in an amount within the range of from about 0.5 to about 10% by weight based on the total composition to impart moisture-resistance to said composition.

In accordance with the present invention, there is further provided a method of enhancing the moisture resistant properties of a sun screen composition which contains one or more ultraviolet absorbing agents which comprises including at least about 0.5 by weight of a secondary amide having the structure



wherein R_1 and R_2 are the same or different and represent saturated or unsaturated fatty acid residues containing from 8 to 36 carbons, and 0 to 3 double bonds and 0 or 1 hydroxyl groups.

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Best Mode of Carrying Out Invention

In accordance with the present invention, moisture resistant skin treatment compositions, such as sun screen and sun block formulations, and moisturizer formulations are provided, which compositions have improved moisture resistance and substantivity due to the presence therein of one or more secondary amides, which contain water, emollients, emulsifiers, thickeners, preservatives, coloring agents, fragrances, antioxidants and the like and one or more known ultraviolet absorbing compounds (in the case of sun screen or sun block formulations). In fact, the moisturizer compositions of the invention will be similar in composition to the sun screen or sun block formulations except for the presence or absence of the ultraviolet absorbing compound.

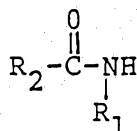
The formulation of the invention is preferably an oil-in-water type emulsion since this type of emulsion affords better cosmetic feel to the product. However, the product could also be formulated as a water-in-oil emulsion, cream base, or oil base. Depending upon the choice of ingredients, the formulation has a semi-solid cream-like consistency which can be packaged in a plastic squeeze tube or it has a lotion type consistency which can be packaged in a plastic squeeze container. The container can include a flow-type cap or pump-type dispenser.

The essence of the present invention resides in the use of one or more secondary amides as defined hereinafter to enhance the moisture resistance of the particular composition involved. Thus, the composition of the invention, regardless of whether it is a sun screen, sun block, moisturizer, etc. will

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contain from about 0.5 to about 10% and preferably about 1 to about 8% by weight (based on the total weight of the formulation) of secondary amide. Where amounts less than 0.5% by weight secondary amide are employed, the moisture resistance imparted will be minimal and unacceptable, whereas, where amounts greater than 10% by weight are employed, increase in moisture resistance imparted will be minimal and unwarranted considering the expense of raw materials involved.

The secondary amides useful in the present invention to impart improved substantivity to sun screen compositions will have the structure



wherein R_1 and R_2 may be the same or different and represent saturated or unsaturated fatty acid residues containing from 8 to 36 carbons and preferably 12 to 22 carbons, and zero to three double bonds, and zero or one or more hydroxyl groups. These amides are commercially available and may be prepared by conventional techniques.

Examples of secondary fatty amides suitable for use herein include, but are not limited to, N-stearyl stearamide, N-stearyl erucamide, N-stearyl 12-hydroxystearamide, N-erucyl erucamide, N-oleyl palmitamide, N-oleyl hydroxypalmitamide, N-stearyl oleamide, N-erucyl stearamide, N-stearyl hydroxyoleamide, N-oleyl oleamide, N-palmitylpalmitamide, N-oleyl hydroxyoleamide, N-behenylbehenamide, N-behenyl erucamide, N-oleyl hydroxystearamide, N-oleyl stearamide, N-oleylbehenamide, N-erucylbehenamide,

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N-caprylstearamide, N-lauryl myristamide, N-margarylarachidamide, N-lauryl hydroxymyristamide, N-tricosanyl nonadecanamide and the like.

Where the formulation is a sun screen or sun block formulation, it will contain one or more known ultraviolet absorbing agents, preferably at least one compound which absorbs in the UV-B region (wavelength 290 to 320 nanometers) and at least one compound which absorbs in the UV-A region (wavelength 320 to 400 nanometers). The total amount of UV absorbing agents included within the formulation will be from about 3% to about 15% by weight, which amount will determine whether it is a sun screen or sun block.

Suitable UV-A absorbing agents include 2-(2'-hydroxy-5'-methylphenyl)benzotriazole (Tinuvin P); 2-(2'-hydroxy-5'-t-octylphenyl)benzotriazole (Spectra-Sorb UV 5411); 2,4-dihydroxybenzophenone (Uvinul 400); 2-hydroxy-4-methoxybenzophenone (oxybenzone, Spectra-Sorb UV9, Uvinul M-40); 2,2', 4,4'-tetrahydroxybenzophenone (Uvinul D50); 2,2'-dihydroxy-4,4'-dimethoxybenzophenone (Uvinul D49); 2,2'-dihydroxy-4-methoxybenzophenone (dioxybenzone, Spectra-Sorb UV24); 2-ethylhexyl-4-phenyl-benzophenone carbonate (Eusolex 3573); 2-hydroxy-4-methoxy-4'-methylbenzophenone (mexenone, Uvistat 2211); 2-hydroxy-4-(n-octyloxy)benzophenone (octabenzone, Spectra-Sorb UV531); 4-phenylbenzophenone (Eusolex 3490); and 2-ethylhexyl-2-cyano-3,3'-diphenylacrylate (Uvinul N539). The UV-A absorbing agent or agents are present in the final product at from about 0.5% to about 10% by weight of the formulation. The amount will vary according to the particular agent selected and whether the formulation is intended to minimize or permit tanning. The preferred UV-A absorbing agent is

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2-hydroxy-4-methoxybenzophenone alone or in combination with 2,2'-dihydroxy-4-methoxybenzophenone.

Suitable UV-B absorbing agents include

4-(dimethylamino)benzoic acid, ethyl ester;

5 4-(dimethylamino)benzoic acid, 2-ethylhexyl ester (Escalol 507); 4-(dimethylamino)benzoic acid, pentyl ester (Escalol 506); glyceryl p-aminobenzoate (Escalol 106); isobutyl p-aminobenzoate (Cycloform); and isopropyl p-aminobenzoate. The UV-B absorbing agent
10 or agents are present in the final product at from about 1% to about 15% by weight of the formulation. The amount will vary according to the particular agent selected and degree of protection desired in the final product. The preferred UV-B absorbing agent is 4-
15 (dimethylamino)benzoic acid, 2-ethylhexyl ester.

The formulation also contains from about 50% to about 90% and preferably from about 60 to about 80% by weight of water, from about 1% to about 20% and preferably from about 1 to about 10% by weight of
20 emollients, from about 1% to about 10% and preferably from about 1 to about 5% by weight of emulsifiers, from about 0.05 to about 2% and preferably from about 0.1 to about 1% by weight of preservatives and
25 antioxidants, and less than about 1% by weight of fragrance and coloring agents.

Suitable emollients include mineral oil, avocado oil, squalane, octyl palmitate, cocoa butter, sesame oil, petrolatum, propylene glycol dicaprylate/dicaprate, isopropyl myristate, etc. The
30 formulation will preferably contain a mixture of several of these emollients or others which are approved for cosmetic use.

Suitable emulsifiers include polyethylene glycol 20 sorbitan monolaurate (Polysorbate 20),

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diethanolamine cetyl phosphate, glyceryl stearate, polyethylene glycol 100 stearate, polyethylene glycol 20 stearyl ether (Brij 78, Steareth 20), polysorbate 80 (Tween 80), etc. The formulation will preferably contain a mixture of two or more of these emulsifiers or others which are approved for cosmetic use.

Suitable preservatives include imidazolidinyl urea (Germall 115), methylparaben (Tegosept M¹), quaternium-15 (N-(3-chloroallyl)hexaminium chloride, Dowcil 200), propylparaben (Tegosept P), dimethyldimethyl hydantoin, benzyl alcohol and/or phenoxyethanol, etc., and the preferred antioxidant is a mixture of butylated hydroxyanisole, propylene glycol, propyl gallate and citric acid (Tenox 2). The formulation will preferably contain the antioxidant mixture and one or more of the preservatives or any other preservatives and antioxidants approved for cosmetic use.

As discussed above, by varying the percentage of ingredients the formulation can be obtained in a lotion or semi-solid form. For example, in formulation the product as a lotion, water would be included at from about 60% to 65% by weight of the final product and one or more humectants such as propylene glycol, glycerin, 1,3-butylene glycol, sorbitol, polyethylene glycols (for example, Carbowax 400), could be included at up to about 7.5% by weight of the final product.

The composition of the invention will optionally include a thickener in an amount within the range of from about 0.05 to about 1% and preferably from about 0.05 to about 0.3% by weight. A preferred thickener suitable for use herein is Carbopol 940 or Carbomer 940 which is hydrophilic acrylic polymer

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cross-linked with a polyfunctional agent and employed with an organic or inorganic base, preferably triethanolamine. Other examples of thickeners which may be employed herein include, but are not limited to, stearic acid, magnesium aluminum silicate, 5 stearoxydimethicone, hydroxyethyl cellulose, hydroxypropyl cellulose or xanthan gum.

Skin conditioning agents which may optionally be present in the composition of the invention include allantoin, d- or dl-panthenol, 10 hydrolyzed animal protein and the like. Such conditioning agents may be present in an amount within the range of from about 0.01 to about 5% and preferably from about 0.05 to about 2% by weight depending upon the ultimate use of the skin 15 preparation.

The process techniques will vary depending upon the particular ingredients present. In a preferred process, thickener such as stearic acid, 20 emulsifier such as polysorbate 20 laurate (Tween 20) and glyceryl monostearate and sodium lauryl sulfate (Tegacid special), emollient, such as dimethicone (Silicon 225), preservative, such as propyl paraben, and sun screen agents (where present) are blended 25 together with moderate mixing to form a first non-aqueous blend. A second blend of deionized water, gum thickener, such as Carbopol 940 and other water-soluble ingredients, if desired, and a third blend of humectant, for example, a polyethylene glycol (such as Carbowax 400) and preservative, such as methyl paraben 30 and benzyl alcohol are formed. The first non-aqueous blend is sweep mixed into the second and third blends to form an emulsion. Thereafter, a blend of a small amount of deionized water and triethanolamine

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(neutralizer for Carbopol 940, if necessary) and other water-soluble ingredients which can be included with this aqueous phase is added to the emulsion with mixing. Aqueous secondary amide is then added and the
5 final blend is cooled to room temperature, homogenized, stored or packaged.

Preferred sun block formulations offering maximum protection according to this invention include from about 60% to about 80% by weight of water, from
10 about 1% to about 10% by weight of a secondary amide, such as N-stearyl stearamide, from about 2.5% to about 3.5% by weight of UV-A absorbing agents selected from 2-hydroxy-4-methoxybenzophenone (oxybenzone) and 2,2'-dihydroxy-4-methoxybenzophenone (dioxybenzone), from
15 about 5% to about 10% by weight of the UV-B absorbing agent 4-(dimethylamino)benzoic acid, 2-ethylhexyl ester (Escalol 507), from about 1 to about 5% by weight of humectants, from about 1% to about 5% by weight of emollients, from about 1% to about 5% by
20 weight of emulsifiers, from about 0.1 to about 0.5% by weight thickeners, and up to about 1% by weight of combined preservatives, antioxidants, and fragrances.

Most preferably the maximum protection formulation will contain about 70% by weight of
25 deionized water, about 4% by weight of N-stearyl stearamide, about 3% by weight of 2-hydroxy-4-methoxybenzophenone, up to about 1% by weight of 2,2'-dihydroxy-4-methoxybenzophenone, about 8% by weight of 4-(dimethylamino)benzoic acid, 2-ethylhexyl ester,
30 about 3% by weight of emollients, about 5% by weight of emulsifiers, about 0.35% by weight thickener, and up to 1% by weight of combined preservatives, antioxidants, and fragrances.

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Preferred sunscreen formulations which protect but still permit gradual tanning according to this invention contain from about 55% to about 65% by weight of water, from about 1 to about 10% by weight of secondary amide, up to about 1% by weight of 2-hydroxy-4-methoxybenzophenone (oxybenzone), from about 3% to about 5% by weight of 4-(dimethylamino)benzoic acid, 2-ethylhexylester (Escalol 507), up to about 7.5% by weight of humectants, from about 1 to about 10% by weight of emollients, from about 1% to about 5% by weight of emulsifiers, and up to about 1% by weight of combined preservatives, antioxidants, fragrances, and up to about 1% by weight of thickeners.

The most preferred sunscreen formulation which still permits tanning is a lotion containing from about 70% to about 72% by weight of deionized water, about 4% by weight of a secondary amide, about 0.5% by weight of 2-hydroxy-4-methoxybenzophenone, about 4% by weight of 4-(dimethylamino)benzoic acid, 2-ethylhexyl ester, about 3% by weight of glycerin or propylene glycol, about 3% to about 8% by weight of emollients, from about 2% to about 5% by weight of emulsifiers, and up to about 1% by weight of combined preservatives, antioxidants and fragrances and about 0.5% thickener.

Preferred moisturizer compositions will be similar to the sunscreen and sun block formulations set out above without the sunscreen agents.

The following Examples represent preferred embodiments of the invention. Unless otherwise indicated, all temperatures are expressed in degrees Centigrade.

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Example 1

A sun screen composition having improved substantivity having the following composition is prepared as described below.

5

<u>Ingredient</u>	<u>Parts by Weight</u>
Sun screen Base formulation*	90
N-Stearyl stearamide (Kemamide S-180)	4
Deionized water	6

10

*Sunscreen Base formulation

<u>Ingredient</u>	<u>% w/w</u>
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Phase A

15

Deionized water	75
Carbopol 940 (acrylic acid polymer-thickener)	0.4

Phase B

20

Carbowax 400 (PEG-400 humectant)	2
Benzyl alcohol (preservative)	0.5
Tegosept M (methyl paraben - preservative)	0.2

25

Phase C

Tegacid special (glyceryl stearate and sodium lauryl sulfate - emulsifier)	1.5
Cetyl alcohol (thickener-emollient)	1.6
Stearic acid (thickener)	3.5
Uvinul M-40/Spectra-Sorb UV-9 (benzophenone 3)	3

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	Escalol 507 (octyldi-	(sun screens)	
	methyl p-aminobenzoic		
	acid		8
5	Tween 20 (Polysorbate		
	20-emulsifier)		1
	Tegosept P (propyl		
	paraben-preservative)		0.1
	<u>Phase D</u>		
10	Deionized water		2
	Triethanolamine 99%		1.5
	<u>Phase E</u>		
15	Glydant (dimethyldimethoyl		
	hydantoin - preservative)		0.001

The Phase A ingredients are homomixed for 15 minutes. Thereafter, a mix of the Phase B ingredients is sweep mixed into Phase A. A mixture of Phase C ingredients, heated at 80°C, is then added to the above mix with fast mixing to form an emulsion. The mix is then combined with Phase D with mixing and thereafter Phase E is added and the mixture is cooled to 30°C to form the sun screen cream base formulation.

Next, the N-stearyl stearamide-water mix is heated at 100°C and one-third of the sun screen base formulation is mixed therewith at 100°C for 10 minutes. Thereafter, the remainder of the sun screen base formulation is mixed therewith at 60°C for 15 minutes. The batch is cooled and hand homogenized to form the sun screen composition of the invention which has improved substantivity.

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Example 2

A water-resistant sun block formulation (in the form of an oil-in-water type emulsion in thick lotion form) in accordance with the present invention having a sun protection factor (SPF) value of 15 having the following composition was prepared as described below.

The SPF value is determined by dividing minimal erythema dose (MED) for protected skin after the application of 2 mg/cm^2 of the formulation by the MED for unprotected skin.

	<u>Ingredient</u>	<u>Parts by Weight</u>
	<u>Blend I</u>	
15	Glyceryl monostearate and Sodium lauryl sulfate (Tegacid special) (thickener and auxiliary emulsifier)	3
20	Stearic acid (thickener and emollient)	3
	2-Hydroxy-4-methylbenzophenone (UVinul M40 - sunscreen)	3
25	4-(Dimethylamino)benzoic acid, 2-ethylhexyl ester (Escalol 507 - sunscreen)	8
	Dimethicone (Silicone 225 - emollient)	0.5
	Polysorbate 20 laurate (Tween 20 - emulsifier)	1
30	Propylparaben (Tegosept P - preservative)	0.1

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Blend II

	Deionized water	72
	Acrylate polymer (Carbopol 940 - gum thickener)	0.3

5

Blend III

	Polyethylene glycol 400 (Carbowax 400 - humectant)	1
10	Methylparaben (Tegosept M - Preservative)	0.2
	Benzyl alcohol (Preservative)	0.5

Blend IV

	Deionized water	8
15	Triethanolamine	1
	N-Stearyl stearamide	4

Aqueous Blend II is prepared by dispersing the acrylate polymer in the deionized water. Blend III (prepared by simple mixing of ingredients) is then mixed with Blend II. The combined Blend II-III is then heated to 75°C.

Blend I is formed by simple mixing of the ingredients in a separate vessel while heating to 75°C.

Blend I (heated at 75°C) is then added to the combined Blend II-III (also at 75°C) with sweep mixing.

The combined Blend I-II-III is heated at 75°C for 30 minutes, allowed to air cool to 60°C, and then Blend IV (prepared by simple mixing of ingredients) is added with sweep mixing. The resulting batch is then allowed to air cool to 30°C to form the sun block formulation of the invention.

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Example 3

A sun screen formulation in accordance with the present invention having the following composition and having a sun protection factor (SPF) value of 8 is prepared as described below.

The ingredients are listed on a parts by weight basis and the chemical, CTFA, and/or trade name are included. This formulation is an oil-in-water type emulsion in a thick lotion form.

10

<u>Ingredient</u>	<u>Parts by Weight</u>
<u>Blend IA</u>	
Deionized water	69.2
Acrylate polymer (Carbopol 940- gum thickener)	0.35
<u>Blend IB</u>	
Glycerine (humectant)	1
Deionized water	0.1
Methylparaben (Tegosept M, preservative)	0.25
<u>Blend II</u>	
Cetyl alcohol (thickener emollient)	5
Polysorbate 60 (Tween 60, emulsifier)	2
Glyceryl monostearate (Tegin, thickener)	2
Cetyl palmitate (Kessco X653, emollient)	1
Dimethicone (Silicone 200 (350 c.s.) emollient)	1

30

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	Petrolatum (emollient)	0.5
	Propylparaben (Tegosept P, preservative)	0.1
5	4-(Dimethylamino)benzoic acid, 2-ethylhexyl ester (Escalol 507, sun screen)	4.25
	2-Hydroxy-4-methoxybenzophenone/ 2,2'-dihydroxy-4-methoxy-benzo- phenone (Uvinul M-40/Spectra-Sorb UV-9)	1.2
10	<u>Blend III</u>	
	Deionized water	2
	Sodium hydroxide	0.16
	Perfume oil	0.45
15	<u>Blend IV</u>	
	Deionized water	2
	Potassium sorbate (Sorbistat-K, preservative)	0.2
20	Imidazolidinyl urea (Germall 115, preservative)	0.45
	N-Palmityleamide	5

25 Aqueous Blend IA is prepared by dispersing the acrylate polymer in the deionized water. Blend IB (prepared by simple mixing of ingredients) is then mixed with Blend IA. The combined Blend IA-B is then heated to 75°C.

30 Blend II is formed by simple mixing of the ingredients in a separate vessel while heating at 75°C.

Blend II (heated at 75°C) is then added to the combined Blend IA-B (also at 75°C) with sweep mixing.

The combined Blend IA-B-II is heated at 75°C for 30 minutes, allowed to air cool to 60°C and then Blends III and IV (each prepared by simple mixing) together with the perfume oil are) added with sweep
 5 mixing.

The resulting batch is then allowed to air cool to 30°C to form the sun screen formulation of the invention.

10 Example 4

A sunscreen formulation having a sun protection factor value of 4 having the following composition is prepared as described below. The ingredients are listed on a parts by weight basis and
 15 both the CFTA and trade name are included. This formulation is an oil-in-water type emulsion having a lotion consistency.

<u>Ingredient</u>	<u>Parts by Weight</u>
20 <u>Blend IA</u>	
Deionized water	74
Acrylate polymer (Carbopol 940-gum thickener)	0.2
25 <u>Blend IB</u>	
Propylene glycol (humectant)	2
Methylparaben (Tegosept M, preservative)	0.2
30 <u>Blend II</u>	
Polyethylene glycol 23 - lauryl ether (Brij 35, Laureth 23, auxiliary emulsifier)	2

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	Sorbitan stearate (Arlacel 60, emulsifier)	1
5	4-(Dimethylamino)benzoic acid, 2-ethylhexyl ester (Escalol 507, sun screen, UV-B)	3
	C ₁₂ -C ₁₅ alcohol benzoate (Finsolv TN, emollient)	3
	Dimethicone (Silicone 225, emollient)	1
10	Propylparaben (Tegosept P, preservative)	0.1
	Cetyl alcohol (thickener, emollient)	2.5
15	<u>Blend III</u>	
	Deionized water	1
	Triethanolamine	0.2
	Dimethyldimethoyl hydantoin (Glydant, preservative)	0.2
20	N-behenylerucamide	4.5

Aqueous Blend IA is prepared by dispersing the acrylate polymer in the deionized water. Blend IB (prepared by simple mixing of ingredients) is then mixed with Blend IA. The combined Blend IA-B is then heated to 75°C.

Blend II is formed by simple mixing of the ingredients in a separate vessel while heating at 75°C.

Blend II (heated at 75°C) is then added to the combined Blend IA-B (also at 75°C) with sweep mixing.

The combined Blend IA-B-II is heated at 75°C for 30 minutes, allowed to air cool to 60°C and then

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Blend III (prepared by simple mixing) is added with sweep mixing.

The resulting batch is then allowed to air cool to 30°C to form the sun screen formulation of the invention.

Example 5

A moisturizer formulation having the following composition is prepared as described below. The ingredients are listed on parts by weight basis and both the CTFA and trade name are included. The formulation is an oil-in-water type emulsion and is in the form of a lotion.

<u>Ingredient</u>	<u>Parts by Weight</u>
<u>Blend I</u>	
Deionized water	74.3
Magnesium aluminum silicate (Veegum R, thickener)	0.2
dl-Panthenol (skin conditioner)	0.5
Allantoin (skin conditioner)	0.2
N-Stearyl stearamide	4
<u>Blend II</u>	
Polyethylene glycol (Carbowax 400, humectant)	2
Xanthan gum (Keltrol F, thickener)	0.2
Methylparaben (Tegosept M, preservative)	0.2
<u>Blend III</u>	
Isopropyl palmitate (emollient)	2.5

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	Cetearyl octanoate (Purcellin oil, emollient)	4
5	Propylene glycol dicaprate/ dicaprylate (Standamul 302 emollient)	8
	Propylparaben (Tegosept P, preservative)	0.1
	Stearic acid (thickener)	2
	Cetyl alcohol	0.5
10	Polyethylene glycol 100 stearate and glycerol monostearate (1:1) (Arlacel 165, emulsifier)	2
	Polyethylene glycol 20 stearyl ether (Brij 78, emulsifier)	2
15	<u>Component IV</u> Dimethyldimethoyl hydantoin (Glydant, preservative)	0.3

20 Aqueous Blend IA is prepared by mixing the
ingredients in the deionized water. Blend II
(prepared by simple mixing of ingredients) is then
mixed with Blend I. The combined Blends I-II is then
heated to 75°C.

25 Blend III is formed by simple mixing of the
ingredients in a separate vessel while heating at
75°C.

30 Blend III (heated at 75°C) is then added to
the combined Blend I-II-III (also at 75°C) with sweep
mixing.

The combined Blend I-II-III is heated at
75°C for 30 minutes, allowed to air cool to 60°C and
then component IV is added with sweep mixing.

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The resulting batch is then allowed to air cool to 30°C to form the moisturizer formulation of the invention.

Industrial Applicability

5 The composition of the present invention and method of making same, is useful in skin treatment compositions, particularly as moisturizer compositions and sun screen and sun block compositions.

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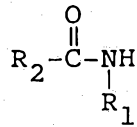
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THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:-

1. A moisture-resistant skin treatment composition in the form of an oil-in-water emulsion or a water-in-oil emulsion, comprising from 50 to 90% by weight water, from 1 to 10% by weight emulsifier, a preservative and a secondary amide having the structure

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wherein R_1 and R_2 may be the same or different and represent saturated or unsaturated fatty acid residues containing 8 to 36 carbons and 0 to 3 double bonds, and 0 or 1 hydroxyl groups, in an amount within the range of from 0.5 to 10% by weight based on the total composition to impart moisture-resistance to said composition.

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2. A composition according to claim 1 wherein R_1 and/or R_2 contains from 12 to 22 carbons.

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3. A composition according to claim 1 or claim 2 wherein said secondary amide is N-stearyl stearamide, N-stearyl erucamide, N-erucyl erucamide, N-oleyl palmitamide, N-stearyl oleamide, N-erucyl stearamide, N-oleyl oleamide, N-palmityl palmitamide, N-behenylbehenamide, N-behenyl-erucamide, N-oleylstearamide, N-oleylbehenamide or N-erucylbehenamide, or N-stearyl hydroxystearamide.

4. A composition according to any one of claims 1 to 3 wherein the secondary amide is N-stearyl stearamide.

5. A composition according to any one of claims 1 to 4 further including one or more ultraviolet absorbing agents.

6. A composition according to any one of claims 1 to 5 further including from 1 to 15% by weight of at least one ultraviolet absorbing agent.

7. A composition according to claim 5 or claim 6 wherein the ultraviolet absorbing agents include one or more UV-A absorbing and one or more UV-B absorbing agents.

8. A composition according to claim 7 wherein the UV-A



absorbing agent or agents are present at from 0.5% to 10% by weight and the UV-B absorbing agent or agents are present at from 3% to 10% by weight.

9. A composition according to claim 7 or claim 8 wherein the UV-A absorbing agent is one or more selected from the group consisting of 2-(2'-hydroxy-5'-methylphenyl)benzotriazole; 2-(2'-hydroxy-5'-t-octylphenyl)benzotriazole; 2,4-dihydroxybenzophenone; 2-hydroxy-4-methoxybenzophenone; 2,2', 4,4'-tetrahydroxybenzophenone; 2,2'-dihydroxy-4,4'-

10 dimethoxybenzophenone; 2,2'-dihydroxy-4-methoxybenzophenone 2-ethylhexyl-4-phenylbenzophenone carbonate; 2-hydroxy-4-methoxy-4'-methylbenzophenone; 2-hydroxy-4-(n-octyloxy) benzophenone; 4-phenylbenzophenone; and 2-ethylhexyl-2-cyano-3,3'-diphenylacrylate and the UV-B absorbing agent is one or more selected from the group consisting of 4-(dimethylamino)benzoic acid, ethyl ester; 4-(dimethylamino)benzoic acid, 2-ethylhexyl ester; 4-(dimethylamino) benzoic acid, amyl ester; glyceryl p-aminobenzoate; isobutyl p-aminobenzoate; and isopropyl p-aminobenzoate.

10. A composition according to any one of claims 7 to 9 wherein the UV-A absorbing agent is 2-hydroxy-4-methoxybenzophenone alone or in combination with 2,2'-dihydroxy-4-methoxybenzophenone and the UV-B absorbing agent is 4-(dimethylamino)benzoic acid, 2-ethylhexyl ester.

11. A composition according to any one of claims 1 to 10 wherein water is present in an amount of from 50 to 90% by weight, emollients are present in an amount of from 1 to 10% by weight, emulsifiers are present in an amount of from 1 to 5% by weight, thickeners are present in an amount of from 0.1 to 1% by weight, humectants are present in an amount of from 1 to 5% by weight, preservatives are present in an amount of from 0.5 to 1% by weight.

12. A composition according to any one of claims 5 to 10 offering maximum ultraviolet protection and moisture resistance comprising from 60% to 80% by weight of water, from 2% to 7% by weight of secondary amide, from 1% to 5% by weight of 2-hydroxy-4-methoxybenzophenone alone or in

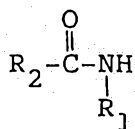


combination with 2,2'-dihydroxy-4-methoxybenzophenone, from 5% to 10% by weight of 4-(dimethylamino)benzoic acid, 2-ethylhexyl ester, from 1% to 10% by weight of emollients, from 1% to 5% by weight of emulsifiers, and up to 1% by weight of combined preservatives, antioxidants and fragrances.

13. A composition according to claim 12 comprising about 73% by weight of deionized water, about 4% by weight of N-stearyl stearamide, 2% to 4% by weight of 2-hydroxy-4-methoxy-benzophenone, up to 1% by weight of 2,2'-dihydroxy-4-methoxybenzophenone, about 8% by weight of 4-(dimethylamino)benzoic acid, 2-ethylhexyl ester, from 3% to 8% by weight of emollients, from 2% to 4% by weight of emulsifiers, and up to 1% by weight of combined preservatives, antioxidants and fragrances.

14. A composition according to any one of claims 1 to 13 further including a thickener in an amount within the range of from 0.05 to 1% by weight.

15. A method of enhancing the moisture resistant properties of a sun screen composition which contains one or more ultraviolet absorbing agents which comprises including at least 0.5% by weight of a secondary amide having the structure



wherein R_1 and R_2 are the same or different and represent saturated or unsaturated fatty acid residues containing from 8 to 36 carbons, and 0 to 3 double bonds and 0 or 1 hydroxyl groups.

16. A method according to claim 15 wherein the sun screen composition contains from 3% to 15% by weight of ultraviolet absorbing agents and the secondary amide is included at from 0.5 to 10% by weight of the composition.

17. A method according to claim 15 or claim 16 wherein the secondary amide is N-stearyl stearamide, N-stearyl



erucamide, N-erucyl erucamide, N-oleyl palmitamide, N-stearyl oleamide, N-erucyl stearamide, N-oleyl oleamide, N-palmityl palmitamide, N-behenylbehenamide, N-behenyl-erucamide, N-oleylstearamide, N-oleylbehenamide or N-erucylbehenamide, or N-stearyl hydroxystearamide.

18. A method according to any one of claims 15 to 17 wherein the secondary amide is N-stearyl stearamide.

19. A composition according to claim 1 substantially as hereinbefore described with reference to any one of the Examples.

20. A method according to claim 15 substantially as hereinbefore described with reference to any one of the Examples.

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INTERNATIONAL SEARCH REPORT

International Application No. PCT/US 87/03263

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ¹		
According to International Patent Classification (IPC) or to both National Classification and IPC		
INT Cl. (4) A61k 7/42, A61k 7/44, A61k 9/10		
U.S. Cl. 424/59, 424/60, 514/847		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁴		
Classification System	Classification Symbols	
U.S. 424/59, 424/60, 514/847		
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁴		
III. DOCUMENTS CONSIDERED TO BE RELEVANT ¹⁴		
Category ⁶	Citation of Document, ¹⁶ with indication, where appropriate, of the relevant passages ¹⁷	Relevant to Claim No. ¹⁸
X	U.S., A, 4,143,159, MOLLER ET AL, 06/ March 1979, Column 3, lines 52 to 68 and Column 4, lines 1 to 25	1 to 18
X	U.S., A, 4,597,963, DECKNER, 01/ July 1986, Column 8, lines 55 to 69 and column 9, lines 1 to 20.	1 to 18
<p>¹⁵ Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"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</p> <p>"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"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.</p> <p>"Z" document member of the same patent family</p>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search ²		Date of Mailing of this International Search Report ¹
02 FEBRUARY 1988		30 MAR 1988
International Searching Authority ³		Signature of Authorized Officer ¹⁹
ISA/USA		<i>Dale R. Ore</i> DALE R. ORE