

怎样为敏感肌肤带上防晒“太阳镜”

目前中国市场上，有30%的消费者声称自己是敏感肌肤，会使用药妆或者婴童类产品护肤，普通的防晒霜也许会造成皮肤的敏感、泛红、刺痛等等问题。

提到**敏感肌防晒**，大家第一反应就是物理防晒剂。的确，物理防晒剂，像二氧化钛和氧化锌，只停留在皮肤表层，不容易渗透到角质层中，而且相对惰性，安全性更高，特别适用于敏感肌防晒配方。而默克也是这方面的专家，是市场上高品质二氧化钛的主要供应商，大家也许已非常熟悉了。今天我们来介绍默克另一项专利技术：**包裹防晒剂**。



通过乳液聚合的方式，形成的硅氧烷包裹的三维透明硅球。打个形象的比喻，它就像小朋友玩的透明溜溜球，当然粒径只有**1um**。

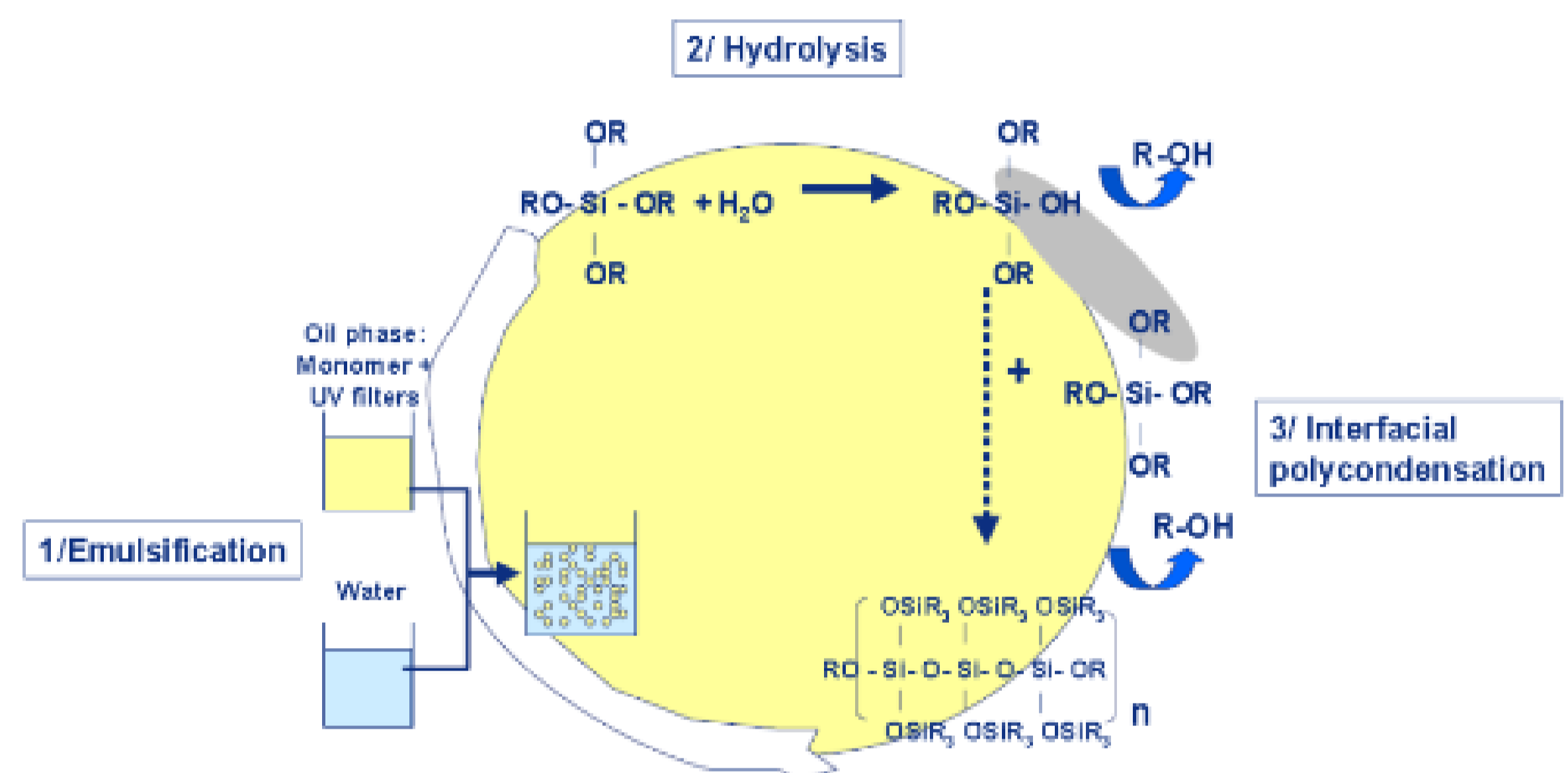


图1. 默克包裹防晒剂 UV-Pearl系列的生产工艺

Q1 那么，这么一颗玻璃球会不会也有一颗玻璃心，一碰就碎呢？

右边是一张电镜照片，这是用含有包裹防晒剂UV-Pearl的防晒霜样品，涂抹测试者前臂后，用胶带剥离第一层角质层后，拍摄的SEM电镜照片，左边是皮肤角质层，右边是玻璃球的小壳，基本上都是完整的。

而且对于一般喷雾头的剪切力也是耐受的，也不会堵塞喷雾头，可以用于防晒喷雾类的产品。当然还是要避免长时间的均质，所以一般建议在乳化结束后，40度以下，再加入配方，搅拌均匀。

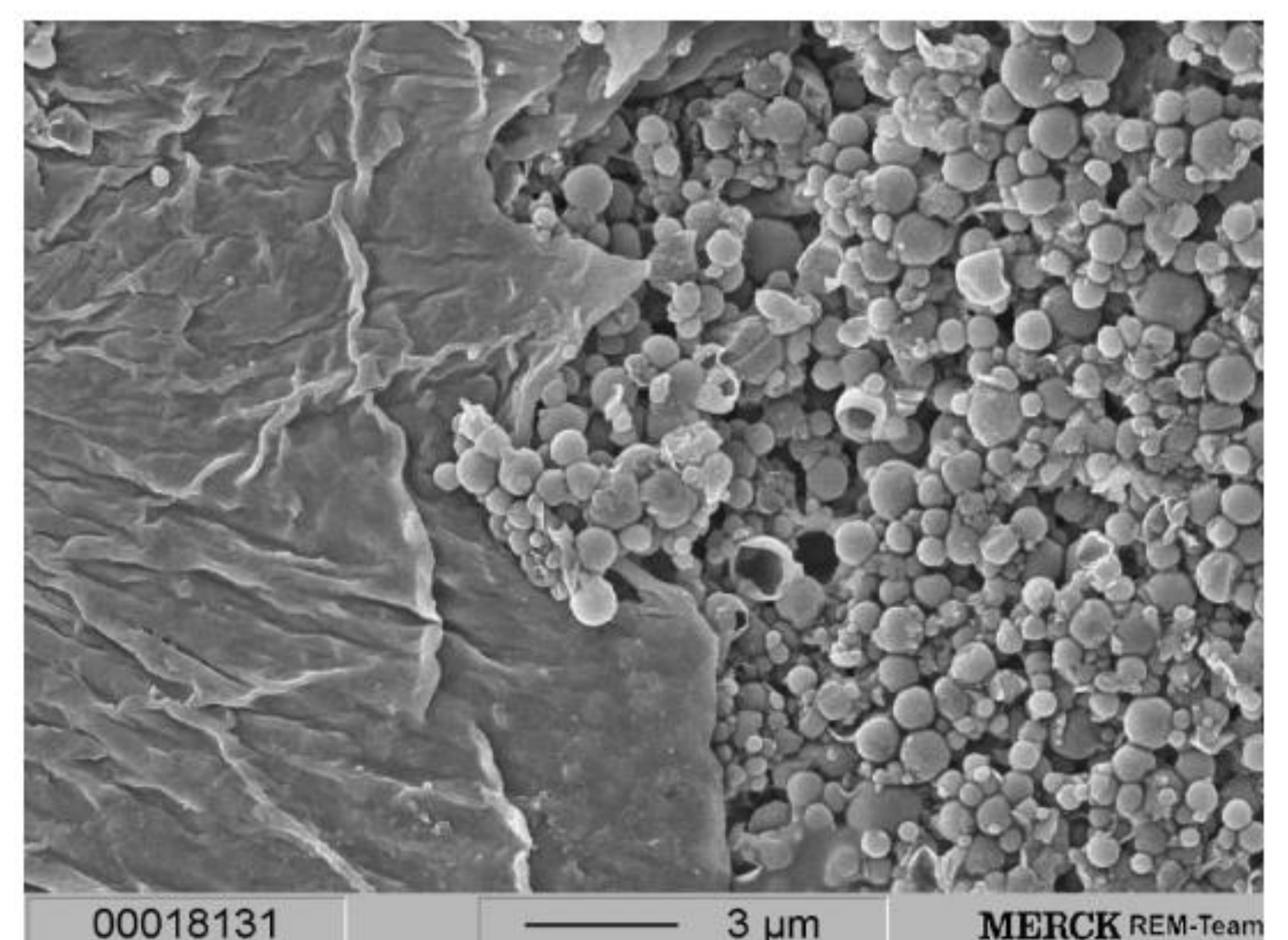


图2. 包裹防晒剂UV-Pearl系列在涂抹到角质层上的状态电镜图

Q2 那么会不会有防晒剂漏出壳外呢？

为此，我们在猪皮上做了多层皮肤角质层的剥离实验。

实验发现：在未包裹防晒剂OMC (b) 可以渗透到角质层80%的深度，而包裹防晒剂OMC (a) 只会渗透到角质层20%的深度。完胜！而对于敏感肌的宝宝们，本来就残破不堪的角质层，会进一步加剧防晒剂的渗透，甚至到达皮肤深层。**包裹防晒剂真是敏感肌宝宝们的福音啊~**

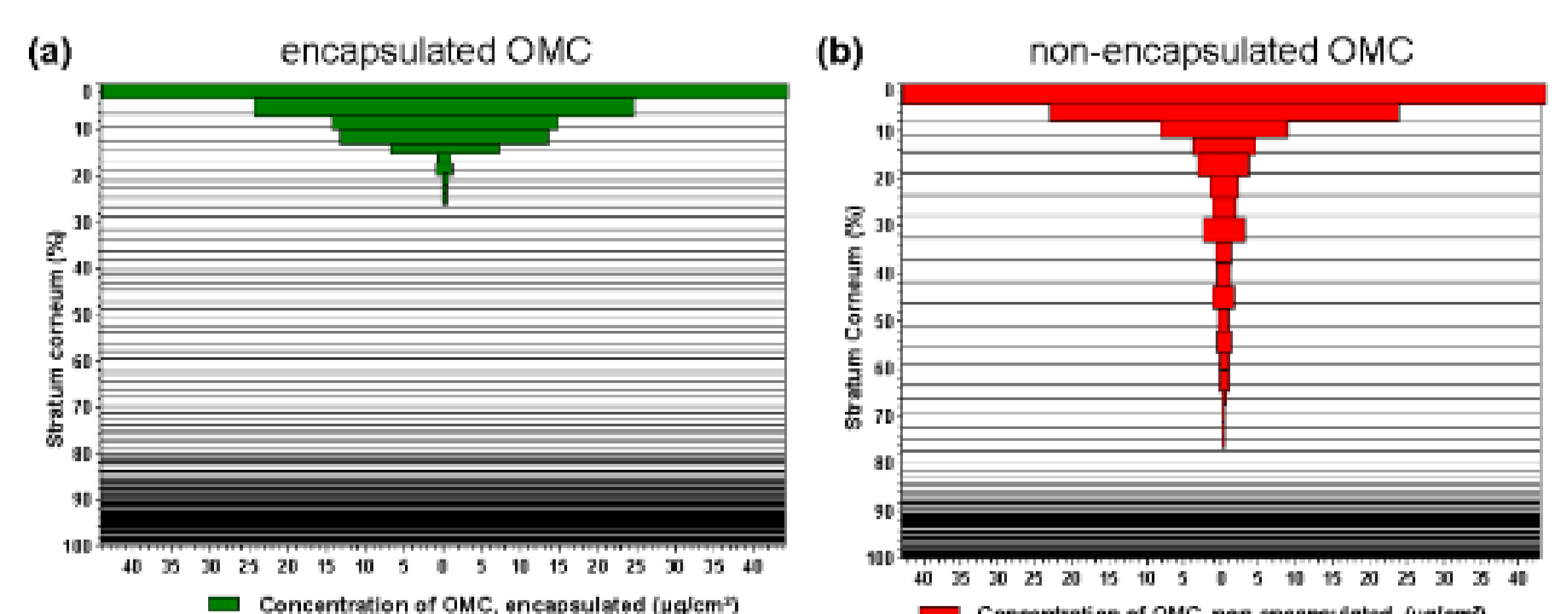


图3. OMC在皮肤角质层中的渗透情况（染色长条宽度代表防晒剂OMC的含量，测试角质层总深度20um）



Q3 那么防晒剂包裹以后会影响防晒效果吗？

下面给出一个防晒霜MC-SS-120505C的人体SPF测试结果在这款儿童防晒霜配方中，用到了6%二氧化钛防晒霜T-2000和6%包裹防晒剂UV-Pearl OMC（40%活性物含量）人体SPF值达到了30，远远超出两支防晒剂本身SPF之和，起到了很好的协同增效的能力。而且微胶囊封锁黏腻的防晒剂OMC，肤感也非常的清爽。

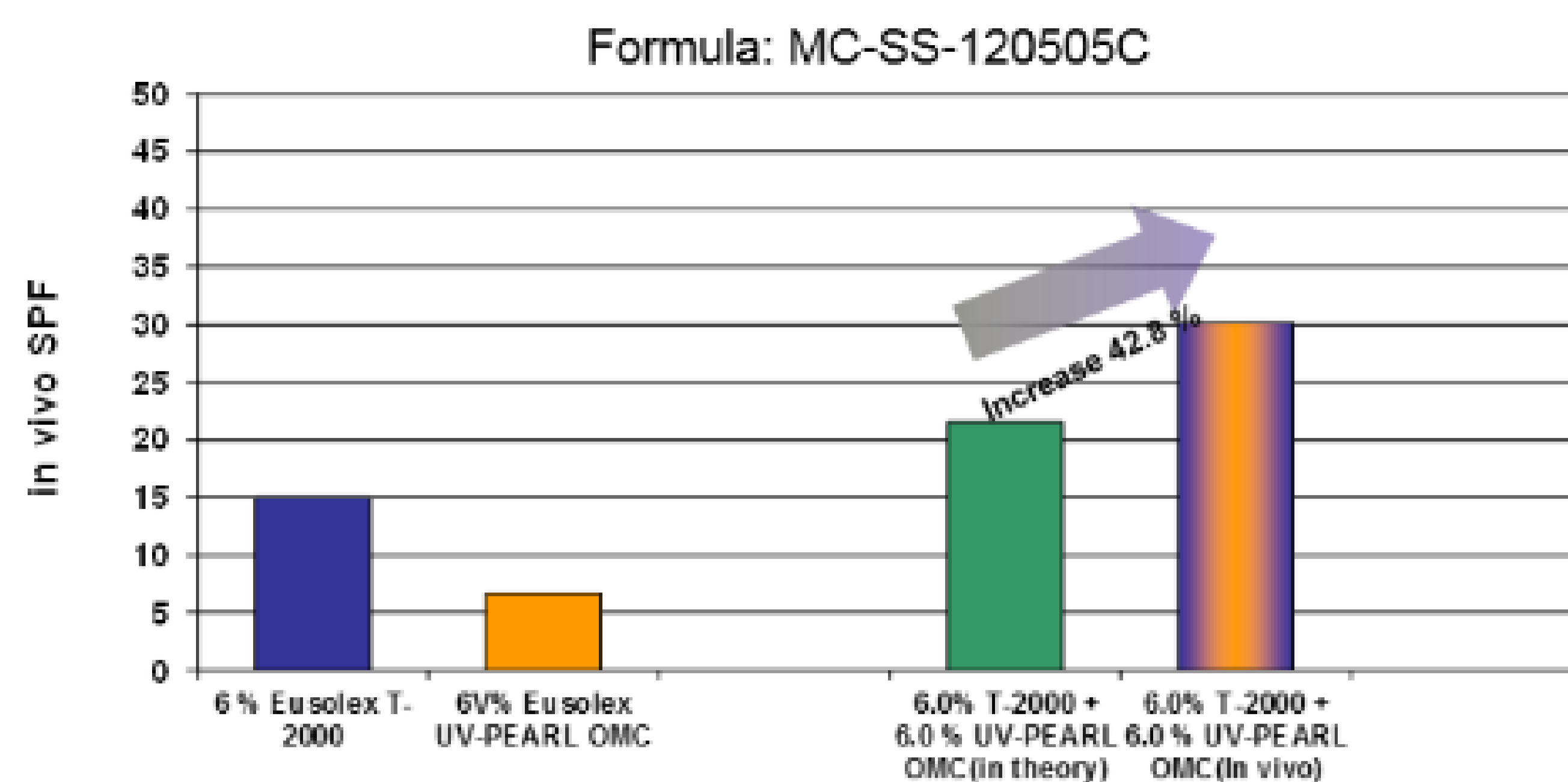


图4. 防晒配方增效研究

默克有两个系列的包裹防晒剂，分别针对UVB和UVA波段的防护。

- ①甲氧基肉桂酸乙基己酯OMC的包裹防晒剂系列；
- ②丁基甲氧基二苯酰化甲烷Avobenzene和奥克立林Octocrylene搭配的包裹防晒剂系列。

Eusolex® UV-Pearls® OB-S, Item no. 132700

INCI: Water (for EU: Aqua), Octocrylene, Sorbitol, Butyl Methoxydibenzoylmethane, Silica, PVP, Phenoxyethanol, Chlorphenesin, Disodium EDTA

水，奥克立林，山梨醇，丁基甲氧基二苯酰化甲烷，硅石，聚乙烯吡咯烷酮，苯氧乙醇，氯苯甘醚，乙二胺四乙酸二钠

Eusolex® UV-Pearls® OB-SX, Item no. 132704

INCI: Water (for EU: Aqua), Octocrylene, Sorbitol, Butyl Methoxydibenzoylmethane, Silica, PVP

水，奥克立林，山梨醇，丁基甲氧基二苯酰化甲烷，硅石，聚乙烯吡咯烷酮

Eusolex® UV-Pearls® 2292, Item no. 130801

INCI: Water (for EU: Aqua), Ethylhexyl Methoxycinnamate, Silica, PVP, Phenoxyethanol, Chlorphenesin, Disodium EDTA, BHT

水，甲氧基肉桂酸乙基己酯，硅石，聚乙烯吡咯烷酮，苯氧乙醇，氯苯甘醚，乙二胺四乙酸二钠，丁羟甲苯

Eusolex® UV-Pearls® OMC, Item no. 130805

INCI: Water (for EU: Aqua), Ethylhexyl Methoxycinnamate, Silica, PVP, Phenoxyethanol, Methylparaben, Propylparaben, BHT

水，甲氧基肉桂酸乙基己酯，硅石，聚乙烯吡咯烷酮，苯氧乙醇，尼泊金甲酯，尼泊金丙酯，丁羟甲苯

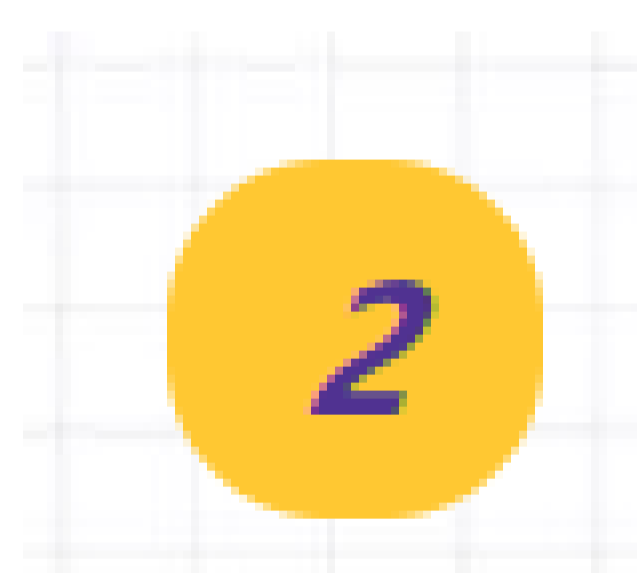


Q3下面3个由包裹防晒剂和二氧化钛搭配的防晒配方, **已通过人体SPF测试, SPF值达30/50, 肤感清爽,** 供配方师们参考。



MC-SS-120505/C
Baby SPF 30 lotion with T-2000 and UV-PEARL
In vivo SPF:30.24(CFDA standard, 6 Volunteers)
In vitro UVAPF 7.5, PA+++

Ingredients	Art. No.	INCI (EU)
A		
RonaCare® AP	1.30163 (1)	BIS-ETHYLHEXYL HYDROXYDIMETHOXY BENZYL MALONATE
FINSOLV TPP	(2)	DIPROPYLENE GLYCOL DIBENZOATE, PPG-15 STEARYL ETHER BENZOATE, C12-15 ALKYL BENZOATE
DC 200 fluids	(3)	DIMETHICONE
DowCorning 593 Fluid	(3)	DIMETHICONE, TRIMETHYLSILOXYSILICATE
Eusolex® T-2000	1.05373 (1)	TITANIUM DIOXIDE, ALUMINA, SIMETHICONE
Antaron V-216	(4)	PVP/HEXADECENE COPOLYMER
Cetiol CC	(5)	DICAPRYLYL CARBONATE
Miglyol 812	(5)	CAPRYLIC/CAPRIC TRIGLYCERIDE
Jjoba Oil	(6)	JOJOBA OIL
Amphisol K	(7)	POTASSIUM CETYL PHOSPHATE
Brij-72	(5)	STEARETH-2
Brij-721	(5)	STEARETH-21
Lanette 18	(8)	CETEARYL ALCOHOL
RonaCare® Bisabolol	1.30170 (1)	BISABOLOL
RonaFlair® LDP White	1.17755 (1)	SODIUM POTASSIUM ALUMINUM SILICATE, C177891, SILICA
B		
Water, demineralized		AQUA
RonaCare® Ectoin	1.30200 (1)	ECTOIN
Pemulen TR-1	(9)	ACRYLATES/C10-30 ALKYL ACRYLATE COPOLYMER
1,3-Butanediol	8.01964 (1)	BUTYLENEGLYCOL
Glycerol 85%	1.04091 (1)	GLYCERIN, AQUA
EDTA.2Na		EDTA DISODIUM SALT
TEA		TRIETHANOLAMINE
C		
Simulgel EG	(10)	SODIUM ACRYLATE, SODIUM ACRYLATES/ACROLEIN COPOLYMER, ISO HEXADECANE, POLYSORBATE 80
D		
Eusolex® UV-Pearls® OMC	1.30805 (1)	AQUA, ETHYLHEXYL METHOXYCINNAMATE, SILICA, PVP, PHENOXYETHANOL, METHYL PARABEN, PROPYL PARABEN, BHT
PHENONIP XB	(11)	PHENOXYETHANOL, METHYL PARABEN, ETHYL PARABEN, PROPYL PARABEN



SN-MC-09-07
Sun Protection for sensitive skin (W/O)
in vivo SPF 50.11 (CFDA standard, 6 Volunteers)
In vitro UVAPF 10.1, PA+++

Ingredients	Art. No.	INCI (EU)
A		
Eusolex® T-2000	1.05373 (1)	TITANIUM DIOXIDE, ALUMINA, SIMETHICONE
Dehymuls PGPH	(2)	POLYGLYCERYL-2 DIPOLYHYDROXYSTEARATE
Lameform TGI	(2)	POLYGLYCERYL-3 DIISOSTEARATE
Cetiol CC	(2)	DICAPRYLYL CARBONATE
Myritol 331	(2)	COCOGLYCERIDES
BeeWax white	1.11544 (1)	CERA ALBA
Magnesium stearate	1.08865 (1)	MAGNESIUM STEARATE
DL-d-Tocopherol	1.08283 (1)	TOCOPHEROL
B		
Eusolex® UV-Pearls® OMC	1.30805 (1)	AQUA, ETHYLHEXYL METHOXYCINNAMATE, SILICA, PVP, CHLORPHENESIN, BHT
Glycerol 85%	1.04091 (1)	GLYCERIN, AQUA
RonaCare® Magnesium Sulfate	1.60628 (1)	MAGNESIUM SULFATE
Water, demineralized		AQUA
C		
RonaCare® Bisabolol Preservative	1.30170 (1)	BISABOLOL





MC-SS-160815/A
Ultra UV protection lotion for sensitive skin
in vivo SPF: 51.1, In vitro UVAPF 25.3 PA++++
(6 volunteer, Shanghai dermatologic hospital(CFDA authority institute), Jan. 20

Ingredients	Art. No.	INCI (EU)
A		
Montanov S		(1) COCO-GLUCOSIDE, COCONUT ALCOHOL
EMULIUM 22		(2) TRIBEHENIN PEG-20 ESTERS
DC 200 fluids (5cst)		(3) DIMETHICONE
DC 345 Fluid		(3) CYCLOPENTASILOXANE, CYCLOHEXASILOXANE
Myritol 318		(4) CAPRYLIC/CAPRIC TRIGLYCERIDE
FINSOLV TPP		(5) DIPROPYLENE GLYCOL DIBENZOATE, PPG-15 STEARYL ETHER BENZOATE, C12-15 ALKYL BENZOATE
RonaCare® Bisabolol	1.30170	(6) BISABOLOS
Lanette O		(4) CETYL ALCOHOL, STEARYL ALCOHOL
Eusolex® T-2000	1.05373	(6) TITANIUM DIOXIDE (NANO), ALUMINA, DIMETHICONE
Silkflo 366		(7) POLYDECENE POLYDECENES
RonaFlair® Boroneige® SF-3	1.17774	(6) BORON NITRIDE
WILBRIDE S-753		(8) PEG/PPG/POLYBUTYLENE GLYCOL-8/5/3 GLYCERIN
B		
Carbopol Ultrez 21 Polymer		(9) ACRYLIC POLYMER
Water, demineralized		AQUA
RonaCare® Disodium EDTA	1.32221	(6) DISODIUM EDTA
TEA 50%		TRIETHANOLAMINE
1,3-BG		BUTYLENE GLYCOL
C		
Water, demineralized		AQUA
Dermacryl 79		ACRYLATES/OCTYLACRYLAMIDE COPOLYMER
TEA 50%		TRIETHANOLAMINE
D		
euxyl PE 9010		(10)
Eusolex® UV-Pearls® 2292	1.30801	(6) PHENOXYETHANOL, ETHYLHEXYLGLYCERIN AQUA, ETHYLHEXYL METHOXYCINNAMATE, SILICA, PVP, CHLORPHENESIN, DISODIUM EDTA, BHT
Eusolex® UV-Pearls® OB-S	1.32700	(6) AQUA, OCTOCRYLENE, SORBITOL, BUTYL METHOXYDIBENZOYLMETHANE, SILICA, PVP, CHLORPHENESIN, PHENOXYETHANOL, DISODIUM EDTA
RonaFlair® LDP White	1.17755	(6) SODIUM POTASSIUM ALUMINUM SILICATE, CI 77891, SILICA





MC-SS-160815/A
Ultra UV protection lotion for sensitive skin
in vivo SPF: 51.1, In vitro UVAPF 25.3 PA++++
(6 volunteer, Shanghai dermatologic hospital(CFDA authority institute), Jan. 2019)

Ingredients	Art. No.	INCI (EU)
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Montanov S		(1) COCO-GLUCOSIDE, COCONUT ALCOHOL
EMULIUM 22		(2) TRIBEHENIN PEG-20 ESTERS
DC 200 fluids (5cst)		(3) DIMETHICONE
DC 345 Fluid		(3) CYCLOPENTASILOXANE, CYCLOHEXASILOXANE
Myritol 318		(4) CAPRYLIC/CAPRIC TRIGLYCERIDE
FINSOLV TPP		(5) DIPROPYLENE GLYCOL DIBENZOATE, PPG-15 STEARYL ETHER BENZOATE, C12-15 ALKYL BENZOATE
RonaCare® Bisabolol	1.30170	(6) BISABOLOS
Lanette O		(4) CETYL ALCOHOL, STEARYL ALCOHOL
Eusolex® T-2000	1.05373	(6) TITANIUM DIOXIDE (NANO), ALUMINA, DIMETHICONE
Silkflo 366		(7) POLYDECENE POLYDECENES
RonaFlair® Boroneige® SF-3	1.17774	(6) BORON NITRIDE
WILBRIDE S-753		(8) PEG/PPG/POLYBUTYLENE GLYCOL-8/5/3 GLYCERIN
B		
Carbopol Ultrez 21 Polymer		(9) ACRYLIC POLYMER
Water, demineralized		AQUA
RonaCare® Disodium EDTA	1.32221	(6) DISODIUM EDTA
TEA 50%		TRIETHANOLAMINE
1,3-BG		BUTYLENE GLYCOL
C		
Water, demineralized		AQUA
Dermacryl 79		ACRYLATES/OCTYLACRYLAMIDE COPOLYMER
TEA 50%		TRIETHANOLAMINE
D		
euxyl PE 9010		(10)) PHENOXYETHANOL, ETHYLHEXYLGLYCERIN
Eusolex® UV-Pearls® 2292	1.30801	(6) AQUA, ETHYLHEXYL METHOXYCINNAMATE, SILICA, PVP, CHLORPHENESIN, DISODIUM EDTA, BHT
Eusolex® UV-Pearls® OB-S	1.32700	(6) AQUA, OCTOCRYLENE, SORBITOL, BUTYL METHOXYDIBENZOYLMETHANE, SILICA, PVP, CHLORPHENESIN, PHENOXYETHANOL, DISODIUM EDTA
RonaFlair® LDP White	1.17755	(6) SODIUM POTASSIUM ALUMINUM SILICATE, CI 77891, SILICA



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