NSH
Expand Your Vision
Novin Saramad Hoonam

UNI-powder
联合微粉

Product Catalogue

2022 VERSION

TITANIUM DIOXIDE & ZINC OIXDE FOR SUNSCREEN

联合微粉
专业的纳米无机防晒剂制造商

UNI-POWDER Professional Inorganic UV filter Manufacturer

联合微粉掌握纳米二氧化钛和纳米氧化锌自主全产业链

UNI-POWDER owns the integral industry chain of nano titanium dioxide and nano zinc oxide

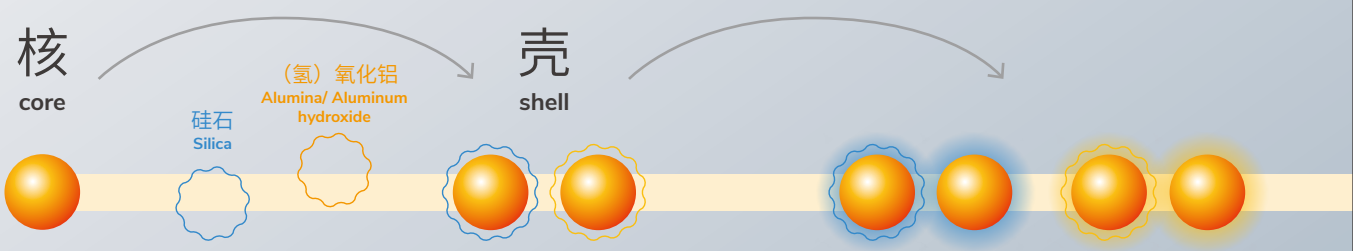
我们具备稳定可靠的质量保证体系

We have the stable and reliable quality assurance system.

· ISO 9001:2015 Quality Management System
· ISO22176:2007 (E) Cosmetics-Good Manufacturing Practice
· Guidelines for Cosmetic Good Manufacturing Practices —— GMPC U.S. FDA:2008

我们拥有领先的粉体表面处理技术和粉浆制造技术，满足多样化的配方需求

We have advanced powder surface treatment technology and dispersing technology to meet a variety of formulation requirements.



二氧化钛 TiO_2
氧化锌 ZnO

无机表面处理
Inorganic coating
（Al_2O_3, SiO_2）
作用：抑制无机防晒剂颗粒的光化学反应
Purpose: to inhibit photochemical reaction of inorganic sunscreen particles.

有机表面处理（脂肪酸、氨基酸、有机硅等）
Organic coating (fatty acid, amino acid, silicon)
作用：增加粉体的分散性；改善粉体的质感
Purpose: to increase powder dispersibility and improve powder texture.

无机防晒剂通过吸收、反射、散射等方式阻隔UVA、UVB辐射。在化妆品配方中，可以保护皮肤降低阳光带来的诸如晒黑、炎症、晒伤、光老化，甚至致癌等损害。

Inorganic UV filter is there to absorb, reflect, scatter and block UVA and UVB radiation. They are formulated into cosmetic products to protect skin from the damage of sunlight such as tanning, inflammation, burning, photoaging, even carcinogenicity.

与有机防晒剂相比
无机防晒剂具有**多项优点**

Inorganic UV filters have many advantages over organic ones.

- **无机防晒剂防晒波段更宽，涵盖UVA和UVB。有机防晒剂往往只在单一波段起作用**
  Inorganic UV filters have wider spectrum of UV protections, covering UVA and UVB. Organic UV filters often work only in a single band.

- **无机防晒剂具有更高的稳定性。一些有机防晒剂在光照下分解并逐步失去防晒效果，且有效作用时间短**
  Inorganic UV filters has better chemical & photochemical stability. Some organic UV filters decompose under sunlight and gradually lose their UV protection effect.

- **无机防晒剂具有更高的安全性。一些有机防晒剂会刺激皮肤或造成皮肤过敏，尤其是敏感肌需特别注意。**
  Inorganic UV filters have higher safety. Some organic UV filters will irritate the skin or cause skin allergies.

无机防晒剂 二氧化钛粉末系列
Inorganic UV Filters Titanium Dioxide Powders

产品 Product	表面处理 Surface Treatment	基础粒径 Basic Particle Size	二氧化钛含量 TiO_2 Content	表面性质 Surface Property
UNI-TW-SI 01 (604229) Green	硅石 Silica	50nm	96-98%	疏油亲水 Hydrophilic
UNI-TW-SI 02GL (604230) Green	硅石，甘油 Silica, Glycerin	20-30nm	66.5-73.5%	疏油亲水 Hydrophilic
UNI-TO-SI 01AS (604231)	硅石，三乙氧基辛基硅烷 Silica, Triethoxycaprylylsilane	50nm	85-90%	亲油疏水 Hydrophobic
UNI-TO-AL 02LA (604232)	氢氧化铝，月桂酸 Aluminum hydroxide, Lauric acid	50nm	85~90%	亲油疏水 Hydrophobic
UNI-TO-SI 03DM (604233)	硅石，聚二甲基硅氧烷 Silica, Dimethicone	50nm	78-83%	亲硅疏水 Hydrophobic
UNI-TO-SI 04M (604234)	硅石，聚甲基硅氧烷 Silica, Methicone	10x80nm	72-77%	亲硅疏水 Hydrophobic
UNI-TO-AL 05AS (604235)	氧化铝，三乙氧基辛基硅烷 Alumina, Triethoxycaprylylsilane	100nm	85-92%	亲油疏水 Hydrophobic
UNI-TO-AL 06DM (604236)	氧化铝，聚二甲基硅氧烷 Alumina, Dimethicone	50nm	88-92%	亲硅疏水 Hydrophobic
UNI-TO-AL 07M (604237)	氢氧化铝，氢化聚二甲基硅氧烷 Aluminum hydroxide, Hydrogen dimethicone	10x80nm	83-88%	亲硅疏水 Hydrophobic
UNI-TO-AL 08SA (604238)	氢氧化铝，硬脂酸 Aluminum hydroxide, Stearic acid	10-50nm	80-85%	亲油疏水 Hydrophobic
UNI-TO-AL 09SA (604239)	氢氧化铝，硬脂酸 Aluminum hydroxide, Stearic acid	100nm	88-92%	亲油疏水 Hydrophobic
UNI-TO-AL 11SA (604245S)	氧化铝，硬脂酸 Alumina, Stearic acid	11x76nm	82-90%	亲油疏水 Hydrophobic

除UNI-TO-AL 11SA之外，以上产品中的二氧化钛均已做REACH注册
Except UNI-TO-AL 11SA, the rest titanium dioxide in above products is REACH registered.

适用于婴童防晒产品
Design for baby sunscreen.

无机防晒剂 二氧化钛粉浆系列
Inorganic UV Filters Titanium Dioxide Dispersions

产品 Product	二氧化钛含量 TiO_2 Content	表面处理 Surface Treatment	助分散剂 Dispersant	分散介质 Dispersion Medium
T-lique AB50Si (603011)	45-50%	硅石，聚二甲基硅氧烷 Silica, Dimethicone	PEG-30二聚羟基硬脂酸酯与聚羟基硬脂酸 PEG-30 Dipolyhydroxystearate & Polyhydroxystearic acid	C12-15烷醇苯甲酸酯 C12-15 Alkyl Benzoate
T-lique AQ55 (603112)	45-55%	硅石 Silica	无 N/A	水，甘油 Water, Glycerin
T-lique CM45AS (603013)	35-45%	硅石，三乙氧基辛基硅烷 Silica, Triethoxycaprylylsilane	PEG-9聚二甲基硅氧乙基聚二甲基硅氧烷 PEG-9 Polydimethylsiloxyethyl Dimethicone	环五聚二甲基硅氧烷/环己硅氧烷 Cyclopentasiloxane, Cyclohexasiloxane
T-lique LC50SA (603021) Green	40-55%	氧化铝/硬脂酸 Alumina, Stearic acid	聚羟基硬脂酸 Polyhydroxystearic acid	C9-12烷；椰油醇-辛酸酯/癸酸酯 C9-12 Alkane; Coco-Caprylate/Caprate

如有要求，可提供定制特殊的二氧化钛防晒粉浆。
More special dispersions of titanium dioxide available upon request.

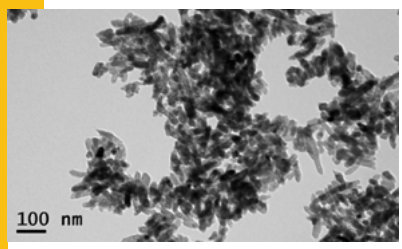
新技术：短棒形纳米二氧化钛

New Technology: Lanceolate crystal TiO_2

铺展后，长轴有利于紫外线反射，短轴有利于可见光透过。

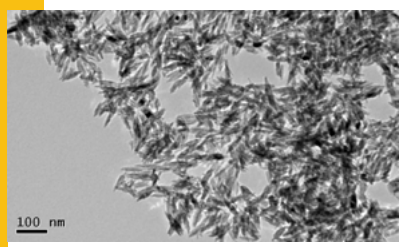
Its long axis is good for UV reflex, and the short axis allows visible light transmission.

	球形 Spherical 30-80nm	短棒形 Lanceolate 10×80nm	球形 Spherical 100-200nm
透明度 Transparency	高 High	高 High	非常低 Very low
团聚态 Agglomeration	高 High	低 Low	低 Low
防晒能力 UV block ability	高 High	高 High	低 Low
光活性 Photoactivity	略高 High	略高 High	低 Low
粒径分布控制 Particle size distribution control	差 Difficult	较好 Easy	好 Very Easy



球形二氧化钛颗粒 TEM 图像

TEM of spherical TiO_2 particles



短棒形二氧化钛颗粒 TEM 图像

TEM of lanceolate TiO_2 particles

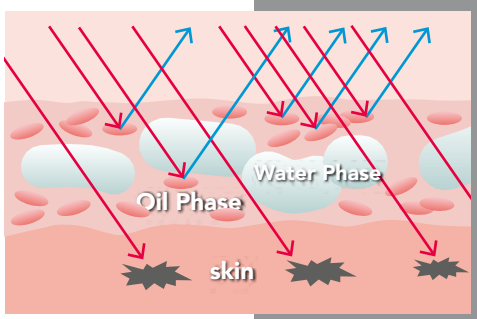
入射紫外线 Incident UV

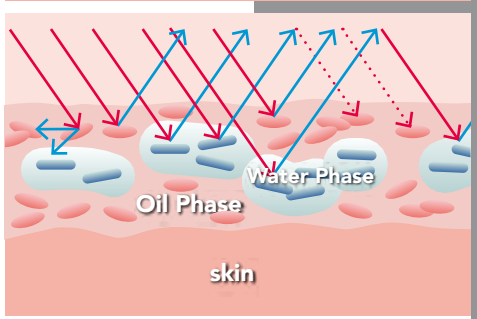
反射紫外线 Reflected UV

UV吸收 Absorbed UV

亲油防晒剂 Lipophilic UC Filter

亲水防晒剂 Hydrophilic UV Filter





全面防护

Complete Pretection

新技术：绿色水分散性纳米二氧化钛

New Technology: Water Dispersible Green Nano Titanium Dioxide

UNI-TW-Si 02GL	Code: 604230
INCI	Titanium Dioxide & Silica & Glycerin
TiO_2 Content	66.5-73.5%
Primary Particle size	20-30nm
Dispersibility	Hydrophilic

如果我们可以在水相中添加3-8%的防晒剂，那么既能提高防晒指数，又能降低配方油腻，带来干爽的肤感。

If we can add 3-8% UV filter in water phase, SPF will be increased and greasy sensory will be decreased.

水油两相均有防晒剂分布，可带来协同的防晒增效。

UV filters exist in both oil phase and water phase can increase protection efficacy synergy effect.

BENEFITS 优点

透明度高

High transparency

在水相非常稳定，不会进入油相

Stable in water phase. It won't go into oil phase.

在油包水防晒配方中，能节省油相占比，让配方师获得更大的配方设计自由度

Save proportion of oil in W/O formulation, which gives formulator more freedom in formula design.

少用油脂，降低配方成本，肤感更清爽

Reduce unnecessary oil dosage, to get lower formula cost and more clear sensory.

无机防晒剂 氧化锌粉末系列
Inorganic UV Filters Zinc Oxide Powders

产品 Product	表面处理 Surface Treatment	基础粒径 Basic Particle Size	氧化锌含量 ZnO Content	表面性质 Surface Property
Zn-5000 (604601S)	-	20-30nm	≥99%	亲水 Hydrophilic
Zn-DM 6107 (604602S)	聚二甲基硅氧烷，肉豆蔻酸 Dimethicone, Myristic acid	30-50nm	82-89%	疏水亲油 Hydrophobic
Zn-AS 6300 (604713)	三乙氧基辛基硅烷 Triethoxycaprylylsilane	20-30nm	95%-97%	疏水亲油 Hydrophobic

无机防晒剂 氧化锌粉浆系列
Inorganic UV Filters Zinc Oxide Dispersions

产品 Product	氧化锌含量 Zinc Oxide Content	表面处理 Surface Treatment	助分散剂 Dispersant	分散介质 Dispersion Medium
Z-lique AB 60Si NEW (604722)	45-58%	肉豆蔻酸、聚二甲基硅氧烷 Myristic Acid, Dimethicone	聚羟基硬脂酸 Polyhydroxystearic Acid	C12-C15醇苯甲酸酯 C12-15 Alkyl Benzoate

参考配方：羽缎轻柔防晒乳
Refererce Formula: Camlet Gentle Sunscreen

相 Phase	商品名 Trade Name	INCI		%	供应商 Supplier
A	Uvinul MC 80	甲氧基肉桂酸乙基己酯，丁羟甲苯	Ethylhexyl Methoxycinnamate, BHT	5	BASF
	水杨酸乙基己酯	水杨酸乙基己酯	Ethylhexyl Salicylate	2	
	Uvinul A Plus	二乙氨羟苯甲酰基苯甲酸己酯	Diethylamino Hydroxybenzoyl Hexyl Benzoate	2	BASF
	HALLBRITE® BHB	丁基辛醇水杨酸酯	Butyloctyl Salicylate	4	HallStar
	ABIL EM 90	鲸蜡基 PEG/ PPG-10/ 1 聚二甲基硅氧烷	Cetyl PEG/ PPG-10/ 1 Dimethicone	2	Evonik
	span 120	山梨坦异硬脂酸	Sorbitan Isostearate	0.5	Croda
	异十六烷	异十六烷	Isohexadecane	10	PUEN
	DC-200-5CST	聚二甲基硅氧烷	Dimethicone	4	DOW
	TMS 803	三甲基硅烷氧基硅酸酯	Trimethylsiloxysilicate	3	Wacker
	Bentone 38	二硬脂二甲铵锂蒙脱石	Disteardimonium Hectorite	0.6	Elementis
B	KSP 101	乙烯基聚二甲基硅氧烷 / 聚甲基硅氧烷硅倍半氧烷交联聚合物	Vinyl Dimethicone/ Methicone Silsesquioxane Crosspolymer	1	ShinEtsu
	Zn-DM 6107	氧化锌，聚二甲基硅氧烷，肉豆蔻酸	Zinc Oxide, Dimethicone, Myristic Acid	4	UNI-POWDER
	UNI-TO-Si 03DM	二氧化钛，聚二甲基硅氧烷，硅石	Titanium Dioxide, Dimethicone, Silica	4	UNI-POWDER
C	去离子水	水	Water	49.2	
	甘油	甘油	Glycerin	2	
	UCON 75-H-450	PEG/PPG-17/6 共聚物	PEG/PPG-17/6 Copolymer	1	DOW
	Microcare Emollient PTG	戊二醇	Pentylene Glycol	2	THOR
	PEHG	苯氧乙醇，乙基己基甘油	Phenoxyethanol，Ethylhexylglycerin	0.7	THOR
	UNI-TW-Si 02GL	二氧化钛，硅石，甘油	Titanium Dioxide, Silica, Glycerin	3	UNI-POWDER

实验室制备工艺：
1. 分别加热A相和C相至60°C，搅拌至完全溶解分散均匀；
2. 将B相依次加入A相，搅拌分散均匀；
3. 边均质A+B相边慢慢加入C相，高速均质乳化10min；
4. 慢慢搅拌冷却至室温。

Preparation process in lab:
1. Heat phase A and C to 60°C separately, and stir until completely dissolved uniformly;
2. Add phase B to A in turn, stir and disperse evenly;
3. Slowly add phase C while homogenizing phase A+B, then homogenize at high speed for 10 minutes;
4. Slowly stir and cool down to room temperature.

参考配方：马卡龙轻爽防晒乳

Refererce Formula: Macaron Fresh Sunscreen

相 Phase	商品名 Trade Name	INCI		%	供应商 Supplier
A	去离子水	水	Water	To 100	
	丁二醇	丁二醇	Butanediol	2	
	甘油	甘油	Glycerin	4	
	UCON 75-H-450	PEG/PPG-17/6 共聚物	PEG/ PPG-17/ 6 Copolymer	1	DOW
	spectrastat PHL	辛酰羟肟酸，1,2- 己二醇，1,3- 丙二醇	Caprylhydroamic Acid, 1,2-Hexanediol, Propanediol	0.7	INOLEX
	symsave H	对羟基苯乙酮	Hydroxyacetophenone	0.3	Symrise
	EDTA-Na2	EDTA 二钠	Disodium EDTA	0.05	Nouryon
	柠檬酸	柠檬酸	Citric Acid	0.05	
	Carfill 9221	聚氨酯 -35、水	Polyurethane-35, Water	1	WANHUA
B	UNI-TW-Si 02GL	二氧化钛，硅石，甘油	Titanimu Dioxide, Silica, Glycerin	6	UNI-POWDER
	Cr Green 49	氧化铬绿	Chromium Oxide Greens	0.16	UNI-POWDER
	Zn-N5000	氧化锌	Zinc Oxide	3	UNI-POWDER
	UNI-Sil 60	水合硅石	Hydrated Silica	1	UNI-POWDER
C	NuGum Ultra	硅酸镁铝	Magnesium Aluminum Silicate	0.7	SANDING
	SIMULGEL EG	丙烯酸钠/丙烯酰二甲基牛磺酸钠共聚物；异十六烷；聚山梨醇酯 -80；水；山梨坦油酸酯	Sodium Acrylate/Sodium Acryloyldimethyl Taurate Copolymer, Isohexadecane，Polysorbate 80, Water, Sorbitan Oleate	0.3	Seppic
D	Uvinul MC 80	甲氧基肉桂酸乙基己酯，丁羟甲苯	Ethylhexyl Methoxycinnamate, BHT	5	BASF
	Uvinul A Plus	二乙氨羟苯甲酰基苯甲酸己酯	Diethylamino Hydroxybenzoyl Hexyl Benzoate	3	BASF
	Tegosoft TN	C12-15 醇苯甲酸酯	C12-15 Alkyl Benzoate	4	Evonik
	Ceralution H	二椰油酰乙二胺 PEG-15 二硫酸酯二钠、甘油硬脂酸酯柠檬酸酯、甘油硬脂酸酯、山嵛醇	Disodium Ethylene Dicocamide PEG-15 Disulfate, Glyceryl Stearate Citrate, Glyceryl Stearate, Behenyl Alcohol	2	Sasol
	DUB OD 25	辛基十二醇聚醚 -25	Octyldodeceth-25	2	DUB
	16-18 醇	鲸蜡硬脂醇	Cetearyl Alcohol	2.5	
	DC-200-5CST	聚二甲基硅氧烷	Dimethicone	4	DOW
	SeraSense SF CPM	辛基聚甲基硅氧烷	Caprylyl Methicone	2	KCC
	Softisan 100	氢化椰油甘油酯类	Hydrogenated Coco-glycerides	2.5	IOI
	Cosmedia DC	氢化二聚亚油醇碳酸酯/碳酸二甲酯共聚物	Hydrogenated Dimer Dilinoleyl/ Dimethylcarbonate Copolymer	0.5	BASF
	Vitamin E-Acetate Care	生育酚乙酸酯	Tocopheryl Acetate	0.5	BASF
E	SIMULGEL EG	丙烯酸钠/丙烯酰二甲基牛磺酸钠共聚物；异十六烷；聚山梨醇酯 -80；水；山梨坦油酸酯	Sodium Acrylate/Sodium Acryloyldimethyl Taurate Copolymer, Isohexadecane, Polysorbate 80, Water, Sorbitan Oleate	1	Seppic

实验室制备工艺：

1. 将 A 相和 C 相分别加热至 85℃，搅拌至完全溶解分散均匀；
2. 将 B 相原料依次加入 A 相中，搅拌分散均匀；
3. 保持 85℃搅拌 A+B 相时加入 C 相，高速均质至料体均匀；
4. 将 D 相倒入高温均质中的 A+B+C 相，高速均质至料体均匀；
5. 降温至 60℃，加入 E 相，均质搅拌均匀；
6. 搅拌降温至室温，真空脱泡。

Preparation process in lab:

1. Heat phase A and C to 85°C respectively, and stir until completely dissolved and dispersed evenly;
2. Add phase B to A in turn, stir and disperse evenly;
3. Add phase C while stirring phase A+B at 85°C, homogenize at high speed until uniform;
4. Add phase D into phase A+B+C, homogenize at high speed until uniform;
5. Cool down to 60°C, then add phase E, homogenize and stir evenly;
6. Stir and cool down to room temperature, and degas in vacuum.

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sustainable brilliance
UNI-POWDER
联合微粉

上海市金山区山阳镇红旗东路 269 号
No. 269 East Hongqi Road, Shanyang Town, Jinshan District, Shanghai 201508
Website: www.uni-powder.com
Email: service@uni-powder.com

华东地区 East China
Tel: +86 21 6064 3393

华南地区 South China
Tel: +86 20 8629 2068

微信公众号
Official WeChat Account