

The History of Zinc Oxide

500 BC

First written evidence of zinc oxide used in Indian medicine for wound healing.

1940

Zinc-based creams and ointments become available to the consumer and were recommended for sunburn and nappy rash relief.

1970

Zinc lotions were used to relieve symptoms of poison ivy, dandruff, irritation and skin rashes.

1980

New scientific studies on sun damage and skin health changed how zinc oxide was used as it became a key ingredient in sun protection products.

Today

Scientific advances in skin care formulations have allowed this natural-skin healer and broad-spectrum sun protector to become an ideal choice for formulators. Today's zinc oxide products are lightweight, non-chalky, often invisible, and incredibly elegant on the skin.



What is Zinc Oxide?

Zinc is a naturally occurring metallic element like magnesium or iron. Like iron and magnesium, zinc can be found in the body and skin and is necessary for the maintenance of health and balance. It plays a role in the health of the immune system and the maintenance of enzyme systems and cells. It is essential for collagen formation and promotes skin healing. Zinc and one of its compounds, zinc oxide, have been used in medicinal and industrial applications for centuries.

Zinc oxide is produced because of chemically heated zinc ore. The ore is processed with oxygen molecules until the substance is vaporised, condensed, and finally appears as a fine, white, crystallized powder. Only in this oxidised form can it be combined with base creams and other formulations to create skin care products.

When safety is considered, zinc oxide is the safest and most effective UVA/UVB protecting ingredient on the market. It is a non-irritating and anti-inflammatory ingredient, offering broad spectrum physical UVA/UVB protection. It is the only mineral approved by the FDA to effectively block UVA and UVB rays in a single ingredient. Zinc oxide is photostable, meaning it does not degrade in the presence of solar radiation.

Many sunscreens such as avobenzone are unstable in UV light and require additives to stabilise. Instability to sunlight can also cause free radical damage to skin.

Chemical Vs. Physical solar protection

1. Chemical sunscreens:

- Solar energy absorbed by sunscreen in epidermis and released as heat energy
- Often related to sensitivity reactions (photosensitivity)
- Penetrates deeply and found in urine and bloodstream hours after application
- May be linked to hormonal imbalance and estrogen mimicking activity

"The Virgin Islands' 2020 ban of the importation, sale and distribution of sunscreen containing the 'toxic 3 Os' (Oxybenzone, Octinoxate, Octocrylene) in the territory makes it "the first to embrace the FDA's announcement recognising only zinc oxide and titanium dioxide (mineral sunscreen) as safe and effective sunscreen ingredients". Hawaii and other countries to follow.

Zinc Oxide

Fact Sheet

The reason for this is to protect oceans, coral reefs, and sea life. Particularly in high tourism areas, chemical sunscreens wash off people's bodies when they swim and can cause coral bleaching or "zombie" coral which looks healthy but is unable to reproduce. The good news is that once these chemicals are out of the water, the coral can rejuvenate.

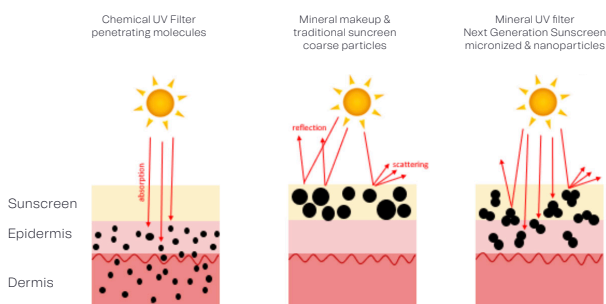
Chemical sunscreens are often considered more elegant as the particles are fully absorbed rather than sitting on the surface. This instability of chemical sunscreens is common as is its ability to cause irritation. There are some novel new chemical sunscreens emerging that may exhibit a more favourable profile, but more research is needed to ascertain efficacy and ocean safety. 'Clean beauty' formulators choose zinc oxide based sunscreens, moisturisers, and makeup as these protect from both UVA and UVB rays.

2. Physical sunscreens such as zinc oxide

- Found in Synergie formulations including Synergie Minerals, ÜberZinc and ÜberZinc Body, these are naturally occurring earth minerals.
- Large particles unable to penetrate skin
- Physical barrier to UVA, UVB (and near Infrared light)
- Reflects, scatters, and absorbs UVA and UVB.
- Smaller particles can penetrate the top layers of the skin but NOT the living layers of the skin.
- Does not absorb into the bloodstream like chemical sunscreens
- Stable, non-irritant and rare to illicit allergic responses
- Safe and effective in the protection of the skin
- Only FDA approved sunblock as highly effective against UVA and UVB

Traditional zinc oxide was less popular due to its thicker feel and chalky texture. With today's ingredient technology, zinc oxide can be used in more elegant fine particles which are better for lotions and moisturisers. Micronised zinc oxide and the use of nanotechnology give zinc oxide and lighter feel on the skin with minimal if any chalky residue.

Mineral makeup is the most elegant form of physical sunscreen which uses zinc oxide as larger particles. This enables the zinc oxide to sit on the surface of the skin providing a light and protective veil. Zinc oxide is physical sunscreen which is designed to sit on surface of the skin. It works by reflecting and scattering both UVA and UVB rays.



Solar protection with Zinc Oxide

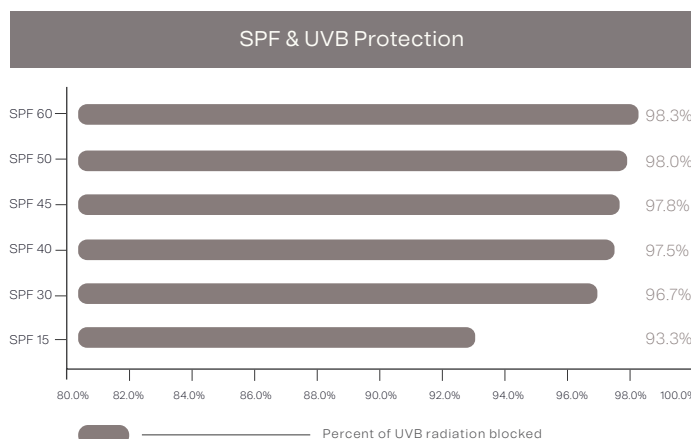
Zinc oxide is the only sunscreen ingredient which offers an extensive level of UVA and UVB protection.

FDA Monograph Sunscreen Ingredients	Amount of Ray Protection		Chemical (C) Physical (P)
	UVA	UVB	
Aminobenzoic acid (PABA)	○	●	C
Avobenzone	●	◐	C
Cinoxate	◐	●	C
Dioxybenzone	◐	●	C
Ecamsule	●	◐	C
Homosalate	○	●	C
Menthyl anthranilate	◐	●	C
Octocrylene	◐	●	C
Octyl methoxycinnamate	◐	●	C
Octyl salicylate	○	●	C
Oxybenzone	◐	●	C
Padimate	○	●	C
Phenylbenzimidazole	○	●	C
Sulisobenzene	◐	●	C
Titanium dioxide	◐	●	P
Trolamine salicylate	○	●	C
Zinc oxide	●	●	P

Protection Level:

● =extensive ◐ =considerable ◑ =limited ○ =minimal

Note: Today's consumer can be fooled by high SPF claims. The difference in sun protection from a SPF 15 in comparison to a SPF 30 is only a 3.4% increase. It is not double the protection even though it is double the SPF value.



Zinc Oxide

Fact Sheet

SYNERGIE SKIN
CLEAN SCIENCE

Clinically proven benefits of zinc oxide

01 Anti-inflammatory

Studies shown acne-prone skin reacts far more strongly to bacteria than normal skin

Zinc can temper this inflammatory response and reduce the effect of bacteria on acneic skin

02 Anti-bacterial

Indirect: Mediated via local defence systems not being directly toxic to bacteria.

In vitro, zinc oxide is a mild antimicrobial including *P. acnes*

Bacteria will not develop resistance to zinc

Ideal for antibiotic-resistant bacteria on the skin

03 Reduces hyperactivity of keratinocyte

Excess keratin protein binds cells and prevents cells separating and leads to blocked pores, as is the case in acne.

By reducing keratin, zinc helps to keep skin pores open

Non comedogenic

04 Mild dihydrotestosterone (DHT) blocker

Reduces excess oil in acne sufferers

Reduces the effect of dihydrotestosterone on the sebaceous gland to reduce the amount of oil sebum

05 Baby safe and environmentally friendly-great barrier reef ecotoxicity

It is ideal for all skin types, even sensitive skin, and perfect for use following clinical treatments. It is also indicated for use on acne sufferers as zinc oxide is non-comedogenic and will not clog pores

Clinical Data: split face study

- 40% ZnO/TiO₂ formula applied to LHS
- RHS of face untreated.
- UV scanner photo taken at time 0 and Time 6 hours

Conclusion:

After 6 hours the ZnO/ TiO₂ physical sunscreen is still blocking UV light effectively and has not moved from the surface of the skin. Zinc oxide is considered a highly solar protection ingredient for the skin.



Summary: benefits of zinc oxide

- Zinc oxide: physical sunscreen and only ingredient approved by FDA as highly effective for complete UVA and UVB blocking
- Infrared (IR) blocker
- Anti-inflammatory
- Non comedogenic
- Antibacterial
- Dihydrotestosterone (DHT) blocker for acne sufferers
- Reduced hyperactive keratinocytes to reduce pore blockage.
- High safety profile/ 'Clean Science' ingredient.
- No absorption into the bloodstream
- Ocean life and coral reef friendly

Backed by clinical data, zinc oxide possesses numerous benefits for all skin types and ages, leaving it protected, calmed, and balanced.

