

Concerned about Nanoparticles in Sunscreens?

Paul Penders Herbal Sun Prosperity is a gentle, effective and safe botanical sunscreen made with 22 certified organic herbs, plant waxes, plant oils, zinc oxide and titanium dioxide (2 mineral sun filters that naturally occur in nature. No chemical sun protection filters are being used.

We do not use chemical sun protection filters because mineral sun filters protect better and are safe to be used. There is a lot of misleading info out there about nanoparticles in sunscreens. The most important thing we like to bring up here that from a pure chemical perspective, zinc oxide and titanium dioxide -by nature- are considered nanoparticles.

We believe by heart and from experience over many years that zinc oxide and titanium dioxide still belong to the most safe and effective sunscreens today. Please read below what EWG (the world's leading organization for safe cosmetics in Washing D.C. says about this matter as well?

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Nanoparticles in Sunscreens

Sunscreens made with zinc oxide and titanium dioxide generally score well in EWG's ratings because:

- They provide strong sun protection with few health concerns.
- They don't break down in the sun.
- Zinc oxide offers good protection from UVA rays.
- Titanium oxide less so, but better than most other active ingredients.

Nanoparticles in American sunscreens are either titanium dioxide or zinc oxide. Zinc oxide is EWG's first choice for sun protection. It is stable in sunlight and can provide greater protection from UVA rays than titanium oxide or any other sunscreen chemical approved in the U.S. Years ago, zinc oxide sunscreens, often seen on lifeguards' noses, were famously white and chalky. Today, sunscreen makers use zinc oxide nanoparticles

to formulate sunscreens with less white tint.

A number of companies sell sunscreen products advertised as “non-nano” titanium dioxide and zinc oxide. These claims are generally misleading. While particle sizes vary among manufacturers, nearly all would be considered nanomaterials under a broad definition of the term, including the definition proposed in 2011 by the federal Food and Drug Administration.

The use of nanoparticles in cosmetics poses a regulatory challenge because the properties of nanoparticles may vary tremendously, depending on their size, shape, surface area and coatings. We don't know everything we would like to know about their performance because manufacturers are not required to disclose the qualities of the particles used in their sunscreens. More research and more specific FDA guidelines are essential to reduce the risk and maximize the sun protection of mineral sunscreens. Yet even with the existing uncertainties, we believe that zinc oxide and titanium dioxide sunscreen products are among the best choices on the American market.

Here's why:

- **The shape and size of the particles affect sun protection.** The smaller they are, the better the SPF protection and the worse the UVA protection. Manufacturers must strike a balance: small particles provide greater transparency but larger particles offer greater UVA protection. The form of zinc oxide most often used in sunscreens is larger and provides greater UVA protection than the titanium dioxide products that appear clear on the skin.
- **Nanoparticles in sunscreen don't penetrate the skin.** Some studies indicate that nanoparticles can harm living cells and organs when administered in large doses. But a large number of research studies have produced no evidence that zinc oxide nanoparticles can cross the skin in significant amounts.
- **It is unlikely that nanoparticles in sunscreen cause skin damage when energized by sunlight.** Any materials that penetrate don't go deep enough in skin to reach living skin cells. Titanium dioxide, and to a lesser extent zinc oxide, are photocatalysts, meaning that when they are exposed to UV radiation they can form free radicals that damage surrounding cells. Nanoparticle sizes of these

minerals are more affected by UV rays than larger particles.

EWG maintains ongoing vigilance in its assessment of sunscreen safety. At present all available evidence suggests that zinc oxide and titanium dioxide can be safely used in sunscreen lotions applied to healthy skin. The weight of evidence indicates that both zinc oxide and titanium dioxide pose a lower hazard than most other sunscreen ingredients approved for the U.S. market.

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All the ingredients in Herbal Sun Prosperity:

*Aqua, Cocos nucifera (Coconut) extract, **Zinc oxide, Titanium dioxide**, Glycerin, Cetearyl olivate, Sorbitan olivate, Carthamus tinctorius (Safflower) oil, Theobroma cacao (Cocoa) seed butter, Ethylhexylglycerin (skin conditioner & catalyst*

to enhance the efficacy of natural preservative), Sesamum indicum (Sesame) seed oil, Prunus dulcis (Sweet almond) oil, Orbigya oleifera (Babassu) oil, Calendula officinalis (Calendula) flower oil, Angelica archangelica (Angelica) root powder, Arnica montana (Arnica) flower powder, Calendula officinalis (Calendula) flower powder, Matricaria recutita (Chamomile) flower powder, Sambucus nigra (Elderflower) flower powder, Zingiber officinalis (Ginger) root powder, Panax quinquefolium (Ginseng) root powder, Lonicera japonica (Honeysuckle) flower powder, Humulus lupulus (Hops) flower powder, Equisetum hyemale (Horsetail) plant powder, Juniperus communis (Juniper) fruit powder, Lavandula angustifolia (Lavender) flower powder, Melissa officinalis (Lemon balm) leaf powder, Urtica dioica (Nettle) leaf powder, Centella asiatica (Pennywort) plant powder, Mentha piperita (Peppermint) leaf powder, Rosmarinus officinalis (Rosemary) flower powder, Salvia officinalis (Sage) flower powder, Hypericum perforatum (St. John's wort) plant powder, Curcuma longa (Turmeric) root powder, Hamamelis virginiana (Witch hazel) leaf powder, Archillea millefolium (Yarrow) flower powder, Tocopherol acetate (Vitamin E), Essential oil of Lavandula officinalis (Lavender), Benzoic acid, Dehydroacetic acid, Cocos nucifera (Coconut) oil, Citric acid, Phyto-tocotrienol (Vitamin E), Essential oil of Rosmarinus officinalis (Rosemary), Ananas comosus (Bromelain) extract, Carica papaya (Papain) extract, Essential oil of Pelargium

Graveolens (Geranium), Ubiquinone (Coenzyme Q10).