



## SPF and FDA

### What is an SPF rating?

*Sun Protection Factor (SPF) refers to the U.S. Food and Drug Administration's (FDA) approved techniques to assess the efficacy of a sunscreen in the Ultraviolet B (UVB) portion of the spectrum. An SPF rating does not measure Ultraviolet A (UVA) protection.*

The textbook definition of SPF is the ratio of the time of ultraviolet radiation (UVR) exposure necessary to produce minimally detectable erythema in sunscreen-protected skin to that time required to produce the erythema in unprotected skin. A typical testing protocol is as follows: skin in a non-skin-exposed area, such as the buttocks or lower back, is covered with light-proof adhesive foil; 1-cm areas of foil are removed sequentially so that each area receives a defined dose of UVB. The following day, the patient returns to be examined and areas are assessed for erythema (redness).

So, the SPF number gives you some idea of how long you can stay in the sun without burning. For example, if you normally burn in 10 minutes without sunscreen and you've applied a liberal dose of a sunscreen with an SPF number of 15, you should be protected from sunburn for 150 minutes. This does not mean that you are protected from other radiation damage. A broad spectrum sunscreen is required to give protection in the UVA range as well.

A **very water-resistant** rating is given if that same sunscreen still tests at the same SPF after being applied to human subjects and submerged in moving water for four 20-minute immersions. **Our powders achieved an SPF 20 for the loose bases and an SPF 18 for the pressed. They all received a Very Water Resistant rating.** Under the new FDA monograph, it is no longer permissible to claim a "Water Proof" rating.

### What's the difference between a sunscreen and a sunblock?

Under the new FDA monograph the word "Sunblock" is no longer allowed. The FDA is trying to eliminate any confusion the public may have or sense of false security. However, the titanium dioxide and zinc oxide in our bases literally block UV rays by acting like tiny mirrors on the skin reflecting and refracting the light. Most chemical sunscreens have highly efficient absorption capabilities through the UVB, partly the UVA, and in some instances infrared wavelengths. Once the chemicals have absorbed their limit, the sunscreen ceases to be effective. (Absorption is the process in which light is "lost" when it falls on a material. The light is not actually lost, but is converted into some other energy, such as heat.)

Dr. Nicholas J. Lowe and Dr. Josia Friedlander, both from the Skin Research Foundation of California, said in their recent book *Sunscreens: Development, Evaluation, and Regulatory Aspects: A new subclass of physical blockers, micronized reflecting powders, have more recently been made available from a variety of manufacturers. Unlike traditional physical blockers, micronized reflecting powders are less visible, yet provide broad-spectrum protection against UVR. These should prove useful in UVR-sensitive patients resistant to older physical blockers for cosmetic reasons. An additional benefit is that they do not cause photosensitization.*

Not all mineral powders have an SPF rating. If they do, the SPF rating must be specified on the label.

### How much sunscreen must be applied to get the protection advertised?

Much more than you think! At a recent conference of dermatologists, we learned that if you imagine your cupped hand mounded with shaving cream, that's the amount you must apply to achieve the SPF rating that the product claims. The FDA suggests: *to get the maximum protection from your sunscreen, apply **at least one large handful** about 30 minutes*

before you go outside, and reapply after swimming, toweling dry, or participating in any vigorous activity that causes heavy perspiration.

### Is there such a thing as a safe tan?

No! A tan is a sign of injury. It is the body's attempt to increase sun protection after the skin is already permanently damaged by an overdose of ultraviolet radiation! 80% of the visible signs of aging is due to sun exposure. And that means all sun exposure, because radiation is cumulative. Walking to the mailbox, getting in your car, and sitting by the window all count! Unprotected exposure to the sun is like sitting in a time machine on fast-forward.

**Buddhist Monk**  
**No exposure to the sun**



**American Indian**  
**Life-long exposure to the sun**



### Which are the most damaging rays?

UVB rays were once thought to be the culprits because they penetrate and affect the epidermis, but UVA rays are now known to be equally if not more damaging. According to Dr. Madhu A. Pathak at the Harvard Medical School: *Many lines of evidence indicate that the primary biological actions of UVA radiation involve DNA damage.*

UVB emissions from the sun undergo significant seasonal variations; the UVA emissions, however, do not appreciably change over the course of the year. The amount of solar UVA reaching the earth's surface is much greater than that of UVB. Also, UVA is transmitted by most window glass and many plastics that do not transmit UVB.

Always check to make sure your sunscreen protects from UVB and UVA, but be aware that regardless of the advertising no sunscreen product screens out all UV rays. The best defense is to try to minimize your exposure between the hours of 10 a.m. and 3 p.m. The effects of infrared rays (felt by the body as heat) are not fully known, but according to Drs. Lorraine and Albert Kligman from the University of Pennsylvania; they cannot be ignored in connection with photoaging.

### What are some of the effects of sun exposure?

Lines, wrinkles and sagging are the direct result of sun damage to the underlying collagen and elastin fibers. Hyperpigmentation can be caused or exacerbated by sun irritation to the melanocytes, which in turn causes over-production of melanin, which is in fact the body's attempt to protect itself. Then add hypopigmented macules, telangiectasias and raised, roughed precancerous actinic keratoses, and the result of tanning is not a pretty sight.

### Didn't I just hear that sunscreens aren't effective against melanoma?

No, Dr. Marianne Berwick only said that it is not safe to **rely** on sunscreens to prevent melanoma. This doesn't mean stop wearing them. Melanoma is now the 10th most common type of cancer in the U.S. The number of cases has risen

dramatically, increasing to 42,000 a year. Most dermatologists feel that it takes over 20 years for melanoma to develop. Those with this cancer today had to have been exposed to the sun's damage two decades ago before effective sunscreens had been developed.

Dr. Roger Ceilley, president of the American Academy of Dermatology said: *To be most effective, sun protection should begin in childhood and continue throughout life. Overwhelming evidence supports the beneficial effect of sunscreen usage, not only in preventing painful sunburn, but also in preventing photoaging and skin cancer, including melanoma. We believe it would be irresponsible to recommend that regular use of sunscreen be discontinued.*

## **Can sun damage be reversed?**

We are told that some of it can be if, and only if, the skin is always protected from the sun. The excellent skin care products on the market today can substantially aid the skin in reversing sun damage. But they do no good if they aren't combined with sun protection. Months of hard work can be undone in one morning working in the garden with no sunscreen, hat or gloves on.