

Sunscreening Effects and Particle Size Distribution

Microtrac MT3300EX II Laser Diffraction / Light Scattering-Based Particle Size Distribution Measurement System

Overview

SPF and PA are shown as indicators of sunscreening effects on the label of sunscreen products.

SPF (Sun Protection Factor)

UV ray protection index

An indicator of the effect of blocking UVB waves (ultraviolet rays with a wavelength of 280-320 nm)

PA (Protection Grade of UVA)

UV-A ray protection index

An indicator of the effect of blocking UVA waves (ultraviolet rays with a wavelength of 320-400 nm)

SPF is shown in the range of 2 to 50+.¹ For example, a sunscreen Product with SPF30 can extend by 30 times the minimum ultraviolet ray exposure time causing the appearance of red spots on the skin.

To put it more concretely, if a person who usually develops red spots in about 20 minutes of UV ray exposure applies SPF30 sunscreen cream onto his/her skin, the sunscreening effect can be expected for about 10 hours (calculated with the equation given below).

$$20 \text{ (min)} \times 30 \text{ (SPF)} = 600 \text{ min}$$

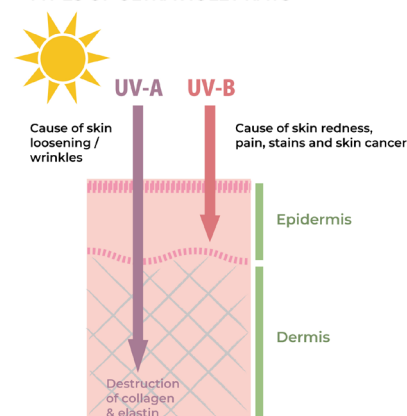
There are the following PA grades that correspond to the degree of blocking UVA waves.

PA+, PA++, PA+++

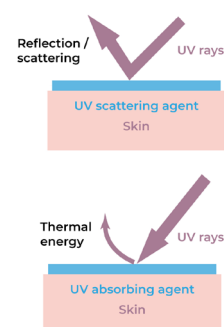
As the number of "+" increases, the effect against UVA waves is increased.

The results of measurement with the Microtrac Particle Size Analyzer on multiple sunscreen products with varying SPF and PA are given below.

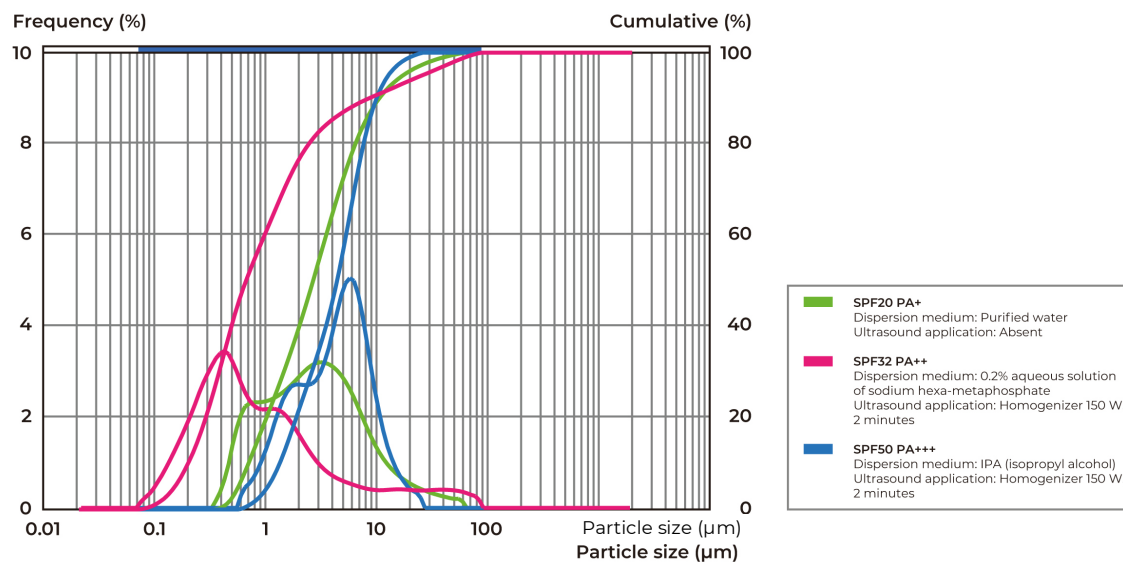
■ TYPES OF ULTRAVIOLET RAYS



■ SUNSCREENING COMPONENTS



High-Resolution Measurement of Sunscreen Products With Varying SPF & PA



For further information please contact us at:

www.microtrac.com