

**Determination of sunscreen UVA photoprotection in vitro (ISO 24443:2012)**

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## EESTI STANDARDI EESSÕNA

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English Version

Determination of sunscreen UVA photoprotection in vitro (ISO  
24443:2012)

Détermination in vitro de la photoprotection UVA (ISO  
24443:2012)

In vitro Bestimmung des UVA-Schutzes von  
Sonnenschutzmitteln (ISO 24443:2012)

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## Foreword

This document (EN ISO 24443:2012) has been prepared by Technical Committee ISO/TC 217 "Cosmetics" in collaboration with Technical Committee CEN/TC 392 "Cosmetics" the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2012, and conflicting national standards shall be withdrawn at the latest by December 2012.

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### Endorsement notice

The text of ISO 24443:2012 has been approved by CEN as a EN ISO 24443:2012 without any modification.

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# Determination of sunscreen UVA photoprotection *in vitro*

## 1 Scope

This International Standard specifies an *in vitro* procedure to characterize the UVA protection of sunscreen products. Specifications are given to enable determination of the spectral absorbance characteristics of UVA protection in a reproducible manner.

In order to determine relevant UVA protection parameters, the method has been created to provide a UV spectral absorbance curve from which a number of calculations and evaluations can be undertaken. Results from this measurement procedure can be used for other computations, as required by local regulatory authorities. These include calculation of the Ultraviolet-A protection factor (UVAPF) [correlating with *in vivo* UVAPF from the persistent pigment darkening (PPD) testing procedure], critical wavelength and UVA absorbance proportionality. These computations are optional and relate to local sunscreen product labelling requirements. This method relies on the use of *in vivo* SPF results for scaling the UV absorbance curve.

This International Standard is not applicable to powder products such as pressed powder and loose powder products.

## 2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 2.1

#### ***in vitro* UVA protection factor UVAPF**

*in vitro* UVA protection factor of a sun protection product against UVA radiation, which can be derived mathematically with *in vitro* spectral modelling

### 2.2

#### ***in vitro* calculation of SPF SPF<sub>*in vitro*</sub>**

protection factor of a sun protection product against erythema-inducing radiation calculated with spectral modelling

### 2.3

#### **action spectrum for erythema**

$E(\lambda)$

relative effects of individual spectral bands of an exposure source for an erythema response

NOTE See References [1] and [2].

### 2.4

#### **action spectrum for PPD**

$P(\lambda)$

relative effects of individual spectral bands of an exposure source for a persistent pigment response

NOTE See References [3] and [4].

### 2.5

#### **monochromatic absorbance**

$A_\lambda$

sunscreen absorbance at wavelength,  $\lambda$ , related to the sunscreen transmittance,  $T_\lambda$ , by

$$A_\lambda = -\log(T_\lambda)$$

where transmittance,  $T_\lambda$ , is the fraction of incident irradiance transmitted by the sunscreen film