SLOVENSKI STANDARD
SIST EN ISO 23675:2025

01-marec-2025

Kozmetika - Preskusne metode za zaščito pred soncem - Določanje faktorja zaščite pred soncem (SPF) in vitro (ISO 23675:2024)

Cosmetics - Sun protection test methods - In vitro determination of sun protection factor (SPF) (ISO 23675:2024)

Kosmetische Mittel - Untersuchungsverfahren für Sonnenschutzmittel - In vitro Bestimmung des Sonnenschutzfaktors (SSF) (ISO 23675:2024)

Cosmétiques - Méthodes d'essai de protection solaire - Détermination in vitro du facteur de protection solaire (FPS) (ISO 23675:2024)

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ICS:

71.100.70	Kozmetika. Toaletni pripomočki	Cosmetics. Toiletries

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SIST EN ISO 23675:2025

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 23675

January 2025

ICS 71.100.70

English Version

Cosmetics - Sun protection test methods - In vitro determination of sun protection factor (SPF) (ISO 23675:2024)

Cosmétiques - Méthodes d'essai de protection solaire - Détermination in vitro du facteur de protection solaire (FPS) (ISO 23675:2024)

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European foreword

This document (EN ISO 23675:2025) 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of an identical text or by endorsement, at the latest by July 2025, and conflicting national standards shall be withdrawn at the latest by July 2025.

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International Standard

ISO 23675

Cosmetics — Sun protection test methods — In vitro determination of sun protection factor (SPF)

Cosmétiques — Méthodes d'essai de protection solaire — Détermination in vitro du facteur de protection solaire (FPS)

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Foreword

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This document was prepared by Technical Committee ISO/TC 217, *Cosmetics*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 392, *Cosmetics*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

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Introduction

Chronic exposure to solar ultraviolet radiation (UVR) is the main environmental source of damage to human skin. Consumer protection against exposure to solar UVB and UVA radiation is, therefore, an important public health issue. The use of sunscreens is a critical part of holistic programs of consumer UVR protection, including the use of appropriate clothing, hats and minimising exposure to the sun around its zenith.

The in vivo sun protection factor (SPF) is historically measured by an in vivo method (see ISO 24444) to communicate the amplitude of protection offered by sunscreens from erythemally-effective solar UVR.[1][2] In recent years, additional test methods have been developed to measure the breadth of protection from solar UVR, namely the in vivo human persistent pigment darkening (PPD) test[3] (and associated UVA-PF) and an in vitro equivalent.[4][5][6][7]

Invasive methods based on tests conducted on human beings are ethically problematic, time-consuming and very costly. Therefore, it has for long been a desire to develop an in vitro SPF test method,[8][9][10][11][12][13][14][15][16][17] recognising the potential advantages of such methodology, including:

a) the use of a non-human model,

b) the significant improvements in speed and cost,

c) the improved repeatability and reproducibility,

d) the elimination of technically-challenging procedures (e.g., MED determination) and

e) the use of a method which is significantly more amenable to continuous improvement.

This in vitro SPF method is based on UVR transmittance spectroscopy, whereby spectrophotometric measurement of UVR transmission through appropriate UVR-transparent substrates, allows prediction of in vivo SPF values.[18][19][20][21][22] This in vitro SPF method revealed a strong reproducibility and correlation with in vivo SPF values.[23][24][25]

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Cosmetics — Sun protection test methods — In vitro determination of sun protection factor (SPF)

1 Scope

This document specifies a method for the in vitro determination of sun protection factor (SPF). This method is applicable to sunscreen products in form of an emulsion or alcoholic one-phase formulation, excluding in form of a loose or compressed powder or stick. Specifications are given to enable determination of the spectral absorbance characteristics of SPF protection in a reproducible manner.

Use of this method is strictly for the determination of a static sun protection factor. It is not applicable for the determination of water-resistance properties of a sun protection product.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 24444, *Cosmetics — Sun protection test methods — In vivo determination of the sun protection factor (SPF)*

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3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

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— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
sunscreen product
product containing any component able to absorb, reflect or scatter UV rays, which are intended to be placed on the surface of human skin with the purpose of protecting against erythema and other ultraviolet induced damage

3.2
emulsion
fine dispersion of minute droplets of one liquid in other(s) in which it is not soluble or miscible

3.3
in vitro sun protection factor
$SPF_{in\ vitro}$
protection factor of a sun protection product against erythema-inducing radiation calculated with spectral modelling between 290 nm and 400 nm

3.4
reference solar spectrum
$I_{sol}(\lambda)$
spectral irradiance of mid-summer sunlight in the spectral range of 290 nm to 400 nm, at a latitude of 40 °N, a solar zenith angle of 20° and an ozone layer thickness of 0,305 cm, as defined in Annex A

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3.5
solar UVR simulator
solar ultraviolet radiation simulator
light source emitting a continuous spectrum [S(λ)] with no gaps or extreme peaks of emission in the UV region

Note 1 to entry: The solar simulator has a spectral quality that complies with the required acceptance limits in Annex A.

3.6
erythemal action spectrum
***E*(λ)**
relative effects of individual spectral bands of an exposure source for an erythema response

Note 1 to entry: The symbol for the erythemal action spectrum is defined as $s_{er}(\lambda)$ in ISO/CIE 17166 and $E(\lambda)$ in the ISO 24443.

Note 2 to entry: This entry was numbered 17-401 in CIE S 017:2011.

[SOURCE: CIE-ILV 17-26-065]

3.7
spectrophotometer
instrument for measuring the ratio of 2 values of a radiometric quantity at the same wavelength

Note 1 to entry: This entry was numbered 17-1235 in CIE S 017:2011.

[SOURCE: CIE-ILV 17-25-008]

3.8
monochromatic absorbance
***A*(λ)**
sunscreen absorbance at wavelength λ calculated as logarithm to base 10 of the reciprocal of the spectral internal transmittance, $T(\lambda)$

$$A(\lambda) = -\log 10\ T(\lambda)$$

Note 1 to entry: This entry was numbered 17-1207 in CIE S 017:2011.

[SOURCE: CIE-ILV 17-24-090]

3.9
irradiance at a point of surface
***I*(λ)**
quotient of the radiant flux $d\Phi e$ incident on an element of the surface containing the point, by the area dA of that element

Note 1 to entry: Expressed in $W \cdot m^{-2}$.

Note 2 to entry: Note that the symbol for the irradiance is defined as E in CIE-ILV 017:2020 but because it could be confused with the symbol used in ISO 24443:2021 for the erythemal action spectrum, here we use $I(\lambda)$.

Note 3 to entry: This entry was numbered 17-608 in CIE S 017:2011.

[SOURCE: CIE-ILV 17-21-053]

3.10
spectroradiometer
instrument for measuring radiometric quantities in narrow wavelength intervals over a given spectral region

Note 1 to entry: This entry was numbered 17-1236 in CIE S 017:2011.

[SOURCE: CIE-ILV 17-25-007]

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