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# TEST REPORT
# SPF.2026.05.14.2710

**DATE TESTS**
Starting: 27/05/2026
Ending: 17/06/2026

**IDENTIFICATION AND DESCRIPTION OF SAMPLES**

| Sample code | Name | Sample description |
|---|---|---|
| SPF.2026.05.14.2710 | Moleculogy Starter Sunscreen SPF50+ PA++++ | Liquid in sample collection container |

**TESTS CARRIED OUT**

IN VITRO DETERMINATION OF SUN PROTECTION FACTOR (SPF)
*/ OBJECTIVE AND PRINCIPLE OF THE STUDY*

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## DESCRIPTION OF SAMPLES

**Sample code:** SPF.2026.05.14.2710

**Sample name:** Moleculogy Starter Sunscreen SPF50+ PA++++

**Sample description:** Liquid in sample collection container

**Reference code by collaborating laboratory:** 2026CS1608-S01

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# RESULTS

## IN VITRO DETERMINATION OF SUN PROTECTION FACTOR (SPF)

### OBJECTIVE AND PRINCIPLE OF THE STUDY

**Standard**

EN ISO 23675:2025

**Main objective**

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

This method is strictly for determining a static sun protection factor. It is not applicable for determining the water resistance properties of a sun protection product. This in vitro SPF method is based on UV transmittance spectroscopy, using spectrophotometric measurement of UV transmission on appropriate UV-transparent substrates, which allows for the prediction of in vivo SPF values. This invitro SPF method has yielded highly reproducible results that correlate with in vivo SPF values.

**TECHNICAL TEAM**

Asociación de investigación de la industria textil y cosmética – AITEX
Technician: ABLD

**DATE TEST**

Starting 27/05/2026
Ending 17/06/2026

**TESTED PRODUCT REFERENCE**

Reference: SPF.2026.05.14.2710

**INFORMATION OF THE SAMPLE**

Qualitative composition (INCI) and expected SPF
The customer is responsible for compliance with the data provided
Theoretical protection factor:**50+**

**INCI:** Water, Dibutyl Adipate, Butyloctyl Salicylate, Diethylamino Hydroxybenzoyl Hexyl Benzoate, Propanediol, Phenethyl Benzoate, Ethylhexyl Triazone, Methylene Bis-Benzotriazolyl Tetramethylbutylphenol, Diethylhexyl Butamido Triazone, Pentylene Glycol, Polybutene, Coco-Caprylate/Caprate, 1,2-Hexanediol, Butylene Glycol, Glycerin, Behenyl Alcohol, Panthenol, Polyglyceryl-3 Methylglucose Distearate, Poly C10-30 Alkyl Acrylate, Decyl Glucoside, Tromethamine, Dipotassium Glycyrrhizate, CI 77019, Titanium Dioxide, Acrylates/C10-30 Alkyl Acrylate Crosspolymer, Carnosine, Carbomer, Sodium Stearoyl Glutamate, Sorbitan Sesquioleate, Polyacrylate Crosspolymer-6, Octyldodecanol, Maltodextrin, Ethylhexylglycerin, Lecithin, Polyhydroxystearic Acid, Propylene Glycol, Xanthan Gum, Aluminum Hydroxide, Stearic Acid, Echium Plantagineum Seed Oil, Ethylhexyl Palmitate, Isostearic Acid, Isopropyl Myristate, Helianthus Annuus Seed Oil Unsaponifiables, Polyglyceryl-3 Polyricinoleate, Caesalpinia Spinosa Fruit Extract, Cardiospermum Halicacabum Flower/Leaf/Vine Extract, Phenoxyethanol, Magnolia Officinalis Bark Extract, Tocopherol, Helianthus Annuus Sprout Extract, Sodium Benzoate, Kappaphycus Alvarezii Extract, Citrullus Lanatus Fruit Extract, Leontopodium Alpinum Callus Culture Extract, Sodium Hyaluronate, Citrulline, Potassium Sorbate, Hydroxypropyltrimonium Hyaluronate, Sodium Acetylated Hyaluronate, Hydrolyzed Hyaluronic Acid, Hyaluronic Acid, Sodium Hyaluronate Crosspolymer, Hydrolyzed Sodium Hyaluronate, Potassium Hyaluronate

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## INFORMATION ABOUT THE PLATES

### Plates Sandblasted

Helioplate SB6 - Sandblasted PMMA plate Substrate on which the cosmetic product is applied to assess the sun protection

- Roughness (~5µm) compliant ISO 24443:2021| ISO/FDIS 23675 | ISO/FDIS 23698 | FDA | BOOTS
- One unit: Overall size 50x50mm - Spreading area 47x47mm
- Quality certificate HS Code: 3920510090 - Origin: France - Manufacturer: WENEOS

Serial: 731

**Specification of the profile:**

| | | | | | RESULTS | |
|---|---|---|---|---|---|---|
| Profile | | Measured value | | | | |
| Parameter* | Unit | Mean | ± | SD** | ISO 24443:2021 | |
| Ra | (µm) | 4,839 | ± | 0,065 | 4,853 ± 0,501 | OK |
| Rv | (µm) | 12,616 | ± | 0,242 | 13,042 ± 0,989 | OK |
| Rdq | (°) | 10,010 | ± | 0,408 | 11,122 ± 2,032 | OK |
| A1 | ($\mu m^2/mm$) | 226,051 | ± | 5,114 | 239,750 ± 70,165 | OK |
| Ssc | (1/µm) | 0,015 | ± | 0,002 | 0,033 ± 0,021 | OK |
| Vvv | ($mm^3/mm^2$) | 9,046E-05 | ± | 2,729E-06 | 1,044.10-4 ± 9,76.10-5 | OK |
| Sa | (µm) | 5,43 | ± | 0,20 | / | |

### Plates Moulded

Moulded PMMA plate on which the cosmetic product is applied to assess the in vitro sun protection performance

- Topographic parameters compliant: ISO/DIS 23675 - ISO/DIS 23698 - ISO 24443:2021 - FDA 2021 – BOOTS STAR RATING 2011
- One unit: Overall size 50x50mm - Spreading area 47x47mm • Material: PMMA (Polymethylmethacrylate)
- HS Code: 3906.10.00 – Origin: France – Manufacturer: WENEOS

Serial: 1461

**Specification of the profile:**

| | | | | | RESULTS | |
|---|---|---|---|---|---|---|
| Profile | | Measured value | | | | |
| Parameter* | Unit | Mean | ± | SD** | ISO 24443:2021 | |
| Ra | (µm) | 4,839 | ± | 0,065 | 4,853 ± 0,501 | OK |
| Rv | (µm) | 12,616 | ± | 0,242 | 13,042 ± 0,989 | OK |
| Rdq | (°) | 10,010 | ± | 0,408 | 11,122 ± 2,032 | OK |
| A1 | ($\mu m^2/mm$) | 226,051 | ± | 5,114 | 239,750 ± 70,165 | OK |
| Ssc | (1/µm) | 0,015 | ± | 0,002 | 0,033 ± 0,021 | OK |
| Vvv | ($mm^3/mm^2$) | 9,046E-05 | ± | 2,729E-06 | 1,044.10-4 ± 9,76.10-5 | OK |
| Sa | (µm) | 5,43 | ± | 0,20 | / | |

Table of "C" constants for each type of plate according to ISO 23675:2025:

| CONSTANT C | | |
|---|---|---|
| **Plate** | Emulsion | Monophasic alcoholic |
| **Moulded** | 0,225 | 0,000 |
| **Sandblasted** | 0,800 | 0,800 |

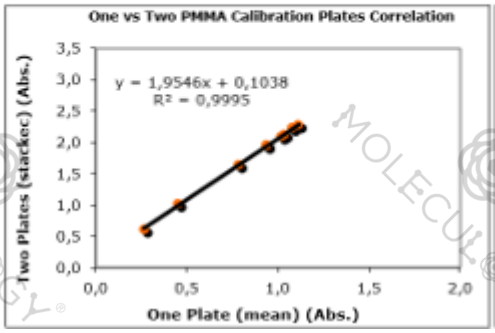
**INSTRUMENTS USED**

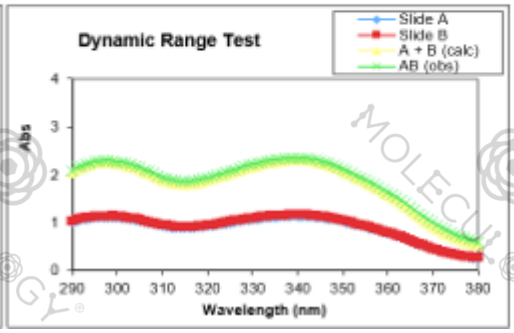
UV spectrophotometer whose wavelength range covers the spectral band from 290 nm to 400 nm and the wavelength increment is 1 nm. The model used is the Solar Light SPF-290AS which is designed and optimized for determining the SPF values of a wide variety of cosmetic products and sun creams, reducing the need for in-vivo testing.

The UV spectrophotometer should be validated at regular intervals by reading reference materials. A triple assay is required:

- Dynamic range of the spectrophotometer (Test PMMMA plate)
- Linearity test of the spectrophotometer (Standard reference plates). Number 603

| | Limit | Measurement | Result |
|---|---|---|---|
| Additivity (DO) | 2,2 | 2,34 | Pass |
| Linearity (%) | 85 | 103,5 | Pass |
| Abs of a plate (340 nm) | 1.1 - 1.5 | 1,15 | Pass |

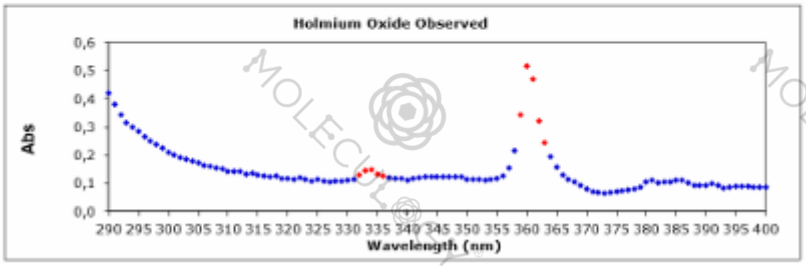



- Wavelength accuracy test (holmium oxide filter).

| | Peak |
|---|---|
| Reference wavelength (nm) | 361 |
| Measured wavelength (nm) | 360 |
| Peak value | 0,517 |
| Limit +/-1 | 1 |

| Result |
|---|
| Pass |



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**SOLAR SIMULATOR AND POWER SUPPLY**

**Manufacturer and model of the instrument: Solar Light. LS 1000**

This device is designed to mimic sunlight very accurately, as if you were outdoors or even in space. To achieve this, they use special lamps called xenon, along with filters that adjust the color and intensity of the light to resemble real sunlight. The light is concentrated using mirrors and quartz lenses, and directed to an-output area that can be round or square, depending on what is needed. Additionally, the filters can simulate two types of sunlight:

Internal filters of the equipment

- UV dichroic mirror: selects UV radiation from the lamp spectrum and eliminates visible and infrared, reducing the thermal load on the sample.
- Heat blocking filter: Installed closer to the lamp to reduce heat/IR before the UV stages, “heat blocking filter”.
- UVA+B Filter: Cuts short-wavelength UV rays to adjust the solar UVA+UVB spectrum; manufactured to meet COLIPA, ISO, and FDA specifications
- UVA filter (alternative to UVA+B): Cuts the spectrum so that the resulting spectrum is only UVA.
- “Black glass” filter: Blocks visible and IR light and allows UVB and UVA light to pass through.

- Calibration factor “Y” used to adjust the radiometer measurement with the reference spectroradiometer measurement of the UV exposure source = 1

- UV irradiance = **6.706 MED/hour**

**RESULTS OF THE REFERENCE STANDARDS**

- At least once a month, the following reference patterns should be tested: reference pattern P2 or P3, and reference pattern P5 or P6, and reference pattern P8.

- Results according to EN ISO 23675:2025

| Reference Sunscreen Formulation | Mean SPF | Acceptance Limits | |
|---|---|---|---|
| | | Limits Lower | Limits Upper |
| P2 | 16,1 | 13,7 | 18,5 |
| P3 | 15,7 | 13,7 | 17,7 |
| P5 | 30,6 | 23,7 | 37,4 |
| P6 | 43,0 | 31,0 | 54,9 |
| P8 | 63,1 | 43,9 | 82,3 |

## RESULTS

### REFERENCES STANDARD

SPF Analyzer Calibration

| Ref.Std. | SPF: | Date Tested: | CI%: |
|---|---|---|---|
| P2 | 18.4 | 18/05/2026 | 1.34 |
| P5 | 36.7 | 20/05/2026 | 10.35 |
| P8 | 81.2 | 19/05/2026 | 5.36 |

Results are within ISO 23675 Acceptance Limits per Annex C.

### FINAL ABSORBANCE

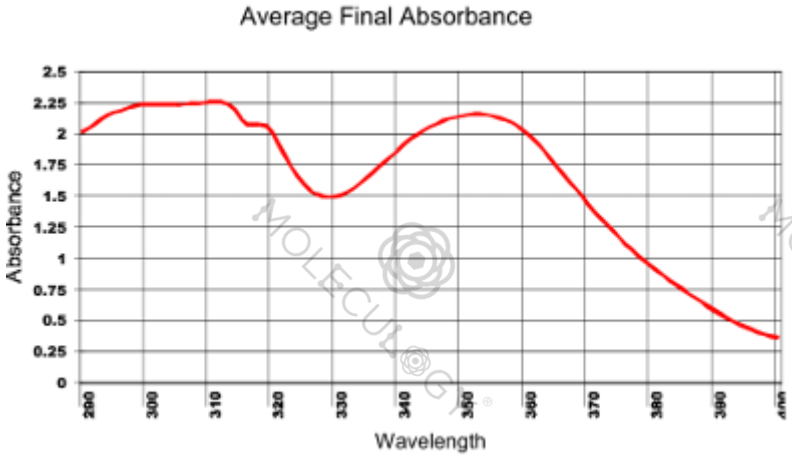
Table with the final absorbance values

**Final Absorbance**

Mean Combined Plates Spectral Absorbance

| nm | $A_{Final}$ | nm | $A_{Final}$ | nm | $A_{Final}$ | nm | $A_{Final}$ | nm | $A_{Final}$ | nm | $A_{Final}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 290 | 2.019 | 310 | 2.251 | 330 | 1.495 | 350 | 2.143 | 370 | 1.439 | 390 | 0.584 |
| 291 | 2.051 | 311 | 2.251 | 331 | 1.51 | 351 | 2.152 | 371 | 1.38 | 391 | 0.553 |
| 292 | 2.086 | 312 | 2.25 | 332 | 1.536 | 352 | 2.157 | 372 | 1.323 | 392 | 0.523 |
| 293 | 2.123 | 313 | 2.237 | 333 | 1.569 | 353 | 2.157 | 373 | 1.267 | 393 | 0.495 |
| 294 | 2.151 | 314 | 2.194 | 334 | 1.609 | 354 | 2.153 | 374 | 1.215 | 394 | 0.469 |
| 295 | 2.173 | 315 | 2.124 | 335 | 1.652 | 355 | 2.144 | 375 | 1.164 | 395 | 0.446 |
| 296 | 2.187 | 316 | 2.075 | 336 | 1.696 | 356 | 2.129 | 376 | 1.115 | 396 | 0.426 |
| 297 | 2.205 | 317 | 2.074 | 337 | 1.741 | 357 | 2.111 | 377 | 1.068 | 397 | 0.408 |
| 298 | 2.221 | 318 | 2.073 | 338 | 1.786 | 358 | 2.087 | 378 | 1.022 | 398 | 0.391 |
| 299 | 2.232 | 319 | 2.064 | 339 | 1.829 | 359 | 2.057 | 379 | 0.981 | 399 | 0.377 |
| 300 | 2.235 | 320 | 2.007 | 340 | 1.871 | 360 | 2.02 | 380 | 0.94 | 400 | 0.366 |
| 301 | 2.232 | 321 | 1.918 | 341 | 1.917 | 361 | 1.976 | 381 | 0.899 | | |
| 302 | 2.23 | 322 | 1.822 | 342 | 1.96 | 362 | 1.923 | 382 | 0.86 | | |
| 303 | 2.23 | 323 | 1.736 | 343 | 1.997 | 363 | 1.865 | 383 | 0.823 | | |
| 304 | 2.231 | 324 | 1.661 | 344 | 2.029 | 364 | 1.804 | 384 | 0.787 | | |
| 305 | 2.234 | 325 | 1.595 | 345 | 2.058 | 365 | 1.744 | 385 | 0.753 | | |
| 306 | 2.236 | 326 | 1.547 | 346 | 2.083 | 366 | 1.683 | 386 | 0.719 | | |
| 307 | 2.241 | 327 | 1.516 | 347 | 2.105 | 367 | 1.621 | 387 | 0.684 | | |
| 308 | 2.245 | 328 | 1.498 | 348 | 2.123 | 368 | 1.56 | 388 | 0.649 | | |
| 309 | 2.248 | 329 | 1.491 | 349 | 2.133 | 369 | 1.499 | 389 | 0.616 | | |

Graph with the final absorbance values



| | Unexposed SPF | UV exposure dose (MEDs) | Exposure time (min) | Exposed SPF | Final SPF |
|---|---|---|---|---|---|
| **Plate 1** | 72.9 | 18.24 | 163.19 | 89.7 | 74.9 |
| **Plate 2** | 65.4 | 16.36 | 146.33 | 82.1 | 71.0 |
| **Plate 3** | 73.0 | 18.25 | 163.28 | 95.7 | 77.8 |
| **Plate 4** | 65.5 | 16.38 | 146.51 | 87.3 | 73.7 |
| **Average** | 69.1 | 17.31 | 154.83 | 88.6 | 74.3 |
| **Standard desviation** | 4.33 | 1.08 | 9.71 | 5.64 | 2.82 |
| **95 % CI** | ---- | --- | --- | --- | 6.04 |

Product referenced as "**SPF.2026.05.14.2710**" with the testing conditions previously mentioned has obtained:

The SPF in vitro has been determined with the value of **74.3**

According to 2006/647/CE, the following labeling is recommended depending on the range of protection factors:
TABLE. Labeling of the sun protection product.

| CATEGORY | SPF LABELED | SPF MEASURED |
|---|---|---|
| LOW PROTECTION | "6" | 6-9.9 |
| | "10" | 10-14.9 |
| MEDIUM PROTECTION | "15" | 15-19.9 |
| | "20" | 20-24.9 |
| | "25" | 25-29.9 |
| HIGH PROTECTION | "30" | 30-49.9 |
| | "50" | 50-59.9 |
| VERY HIGH PROTECTION | "50+" | ≥ 60 |

| Sample code | Name | Sample description |
|---|---|---|
| SPF.2026.05.14.2710 | Moleculogy Starter Sunscreen SPF50+ PA++++ | Liquid in sample collection container |

**Eleni Apostolakou**
Laboratory Supervisor
Date: 17/06/2026

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This document has been electronically signed by the authorized signatories.
This study is performed under subcontract by a collaborating laboratory.

-----ΤΕΛΟΣ ΠΙΣΤΟΠΟΙΗΤΙΚΟΥ ΑΝΑΛΥΣΗΣ - END OF CERTIFICATE OF ANALYSIS----