SPF-290AS™ SPF Testing And UV Transmittance Analyzer System

Wavelength Selection Solutions

Part Number: 210135
Revision Level: B
The SPF-290AS™ is a recording UV spectrophotometer designed and optimized for the determination of SPF values on a variety of sunscreen and cosmetic products, reducing the need (and cost!) for in-vivo testing.

Covering both the UVB and UVA spectral regions, the system automatically scans from 290 to 400nm, accumulating and storing data at intervals of 1, 2 or 5nm. The monochromatic protection factor (MPF) is determined for each of the selected wavelengths and is used to calculate the SPF value, using solar irradiance and erythemal constants that are programmed into the software but which can be easily modified. Liquids, creams and gels are applied in small “dabs” or “spots” to the Transpore Tape® or other substrate, with the pipette supplied with the system. The substrate is placed on an open metal frame. The sample is spread lightly and evenly over a 50 cm² area at 2 μl/cm², equivalent to in-vivo testing.

Quartz plates are available from Solar Light for sprays and other difficult samples. The high correlation between the SPF-290AS™’s in-vitro measurements and in-vivo test results gives you confidence that the instrument will be a reliable guide to product performance. The SPF-290AS™ can provide reliable results on the most difficult samples.

An easy-to-use testing methodology combined with reproducible results opens the door to efficient and low cost experimental design techniques for formulation optimization. This will result in faster formulation and lower development cost due to a reduction in the need for extensive in-vivo panel studies.

Validation Kit
Solar Light offers a Comprehensive Test Plate for use with the SPF-290AS™ and WinSPF™ software. The test plate is designed to provide the user with a clear understanding of how their SPF-290AS™ analyzer is performing. The test plate contains several optical filters that are measured by the SPF-290AS™ and the results are compared to NIST traceable factory measurements. Equipped with this tool, users will not spend time performing tests on an analyzer that is in need of repair nor will they spend money for repairs that are not necessary.

In addition to the test plate, the Validation Kit contains:

- Transpore™ Tape
- Hard Carrying Case
- (10) Syringes with tips
- Set of 3 PMMA Plates
- PMMA Plate Holder
- Calibration Plate Assembly
- (2) standard formulations:
  - 1 oz. of 8% Homosalate
  - 1 oz. of Colipa Standard
- (2) UV inhibited PMMA test plates in fixture for compliance to ISO24443:2012 Appendix A 1-5
A horizontal sample area permits testing of liquids, creams, emulsions and sprays. An integrating sphere placed just below the sample collects light scattered by the product and its supporting substrate, increasing measurement accuracy.

Ultraviolet (UVB) and near ultraviolet (UVA) radiation is provided by a 125W CW Xenon arc lamp.

**SPF-290AS™ Sample Handling and Support Media**

Liquids, creams and gels are applied in small “dabs” or “spots” to the Transpore Tape® or other substrate, with the pipette supplied with the system. The substrate is placed on an open metal frame. The sample is spread lightly and evenly over a 50cm² area at 2 μl/cm², equivalent to in-vivo testing.

Quartz plates are available from Solar Light for sprays and other difficult samples.

**SPF-290AS™ • Analyzer System**

<table>
<thead>
<tr>
<th>SPF-290AS SPECIFICATIONS</th>
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<tbody>
<tr>
<td><strong>Wavelength Range</strong></td>
<td>290 – 400 nm (Range Specified By International Methods)</td>
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<tr>
<td><strong>Wavelength Accuracy</strong></td>
<td>0.2% (0.58 nm – 0.80 nm)</td>
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<tr>
<td><strong>Wavelength Reproducibility</strong></td>
<td>0.25 nm</td>
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<tr>
<td><strong>Spectral FWHM Bandwidth</strong></td>
<td>1.66 nm</td>
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<tr>
<td><strong>Absorbance</strong></td>
<td>0 – 3.2 A (Dual Doped PMMA Method)</td>
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<tr>
<td><strong>SPF Measurement Range</strong></td>
<td>1 – 100+</td>
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<tr>
<td><strong>Scan Time</strong></td>
<td>As Little As 24 Seconds</td>
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<tr>
<td><strong>Wavelength Step Interval</strong></td>
<td>1 nm, 2 nm, or 5 nm (User selectable)</td>
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<tr>
<td><strong>Lamp</strong></td>
<td>Power Stabilized Xenon CW125 W (operated at 75 W)</td>
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<tr>
<td><strong>Detector</strong></td>
<td>High Sensitivity Multialkali side-on PMT</td>
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<tr>
<td><strong>Sample Positioning</strong></td>
<td>Automated X-Y Stage</td>
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<tr>
<td><strong>Power Options</strong></td>
<td>110V AC, 60 Hz or 220V AC, 50 Hz</td>
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Specifications subject to change without notice.

[Image of SPF-290AS™ Analyzer System]

[Image of SPF-290AS™ Sample Handling and Support Media]
**NEW with WinSPF™ Software**

- Full compliance to FDA2011 and ISO24443
- Export data direct to ISO Spreadsheet
- Includes calculations and displays screens in compliance with AATCC 183, BS EN 13758-1, GBT18830-2009, and NZS 4399 UPF fabric test methods.
- USB connectivity
- Includes UVA Protection Factor and Erythemal Protection Factor calculations.
- Updated Help System
- Comes with audio visual training aids and intuitive computerized modules designed to assist the operator with everything from spreading a sample to routine maintenance.

**Software Features**

- Calculate and Print SPF Values
- Both Tabular and Graphical Formats
- Boots Star Ratings Calculated
- Create Formulation Assays of Up to 36 Scans
- Display MPF and Absorbance Values
- Photo-Stability Testing
- Calculate Area Under the Curve
- Critical Wavelength Calculation
- UVA/UVB Ratio
- Complete On-Line Help Menu
- View Scans Individually
- Calculates TNUV Standard
- Supports FDA UVA In-Vitro Test Procedure
- UPF per AATCC 183, BS EN 13758-1, GBT18830-2009, and NZS 4399
- 150 Spreadsheet Export Function

**Computer Controlled Sampling Stage**

There are two modes of computer controlled operation:

- Programmed reading of up to 12 locations (Autoscan)
- Time based measurements (photo-stability)

Autoscan mode offers two methods of choosing up to 12 sampling locations. The operator can either specify the positions to be read or the computer can generate them randomly. Once set, the operation, data collection and reporting are performed automatically. The stage moves the sample on the holder into the light beam, takes the measurements, moves to the next position and continues until all the measurements have been completed.

Time-based (photo-stability) measurements monitor the SPF values for a sample at a user specified position against time. The effects of drying and exposure to air and light on a sample can be easily evaluated, making it particularly suitable for photostability testing. The system’s computer provides a controlled repeatable time base for measurements.

Computation of statistics for multiple assays is provided by the software.

Data can be acquired in approximately 20 seconds. Results displayed in easy to read format.
Correlation Between SPF-290AS™ and In-Vivo SPF Testing

The high correlation between the unit’s in-vitro measurements and in-vivo test results gives you confidence that the instrument will be a reliable guide to product performance.

The chart shows data comparisons for a variety of commercially available products including:

- Physical Sunscreens
- Sprays
- Waterproof Sunscreens and Stick Formulations

Korea Food & Drug Administration Qualify the SPF-290S as an Alternative Method to In-vivo Testing

“The results of this study for correlation between the in-vivo SPF and in-vitro SPF measured using SPF-290 analyzer are…..The in vitro SPF test method will be used as an alternative method for in vivo SPF and a new test item for quality control sunscreens.”

– Drug Evaluation Department, Korea Food & Drug Administration, 5 Nokbun-dong, Eunpyung-gu, Seoul, Korea

Over 300 Customers Worldwide

- Avon
- BASF
- Clairol
- Elizabeth Arden
- Estee Lauder
- Good Housekeeping
- ISP
- Johnson & Johnson
- Lever Bros
- L’Oreal
- Mary Kay
- Merck
- Revlon
- Rohm & Haas
- Proctor & Gamble
- Unilever
- Andrew Jergens
- Helene Curtis
- Whitehall Robins
- Bayer
- S/C/Johnson
- Bristol-Myers Squibb
- Tanning Research
- Pfizer
- Boots (the Chemist)
- Amway
- And Many More