

**SOLAR**<sup>®</sup>  
L I G H T



## SPF-290AS™ SPF Testing Analyzer System

Wavelength Selection Solutions

# Software • SPF Testing Analyzer System SPF-290AS™

## Analyzer for In-Vitro SPF Testing



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 cm<sup>2</sup> area at 2 µl/cm<sup>2</sup>, 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™ version 4. 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
- Syringes
- Two standard formulations:
  - 8% Homosalate
  - Colipa Standard





## Applications

- Architectural Lighting Design
- Lighting Efficiency Measurements
- Energy Efficiency Designing
- Scotopic Lighting Research

## Now Available

- Meets NEW FDA/UVA In-Vitro Test Procedure
- Now with NEW Validation Kit
- NEW Software Version 4.1
- Windows<sup>®</sup> Automation and Measurement Software
- Supports Revised Boots Protocol

## Features and Benefits

- 2.6 Million Dynamic Range
- On-board Calculations for S/P Ratio, Perceived Brightness and Visual Effectiveness
- NIST Traceable for 12 Months
- Selectable Units
- 99.997% Linearity



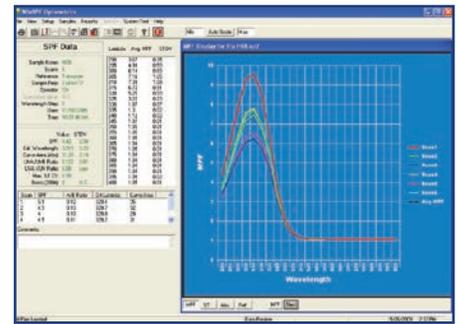
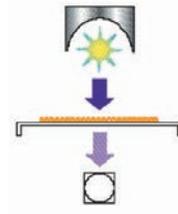
# Software • Analyzer System

SPF-290AS™

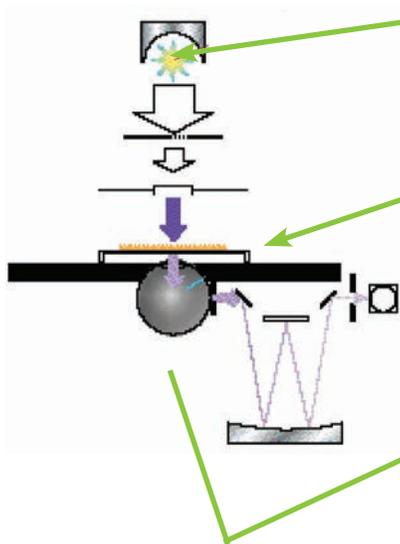
## Measurement

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.



Designed to Meet the Needs of SPF Assays



Ultra-violet (UVB) and near ultra-violet (UVA) radiation is provided by a 125W CW Xenon arc lamp.

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.



## 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 50cm<sup>2</sup> area at 2 μl/cm<sup>2</sup>, equivalent to in-vivo testing.

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

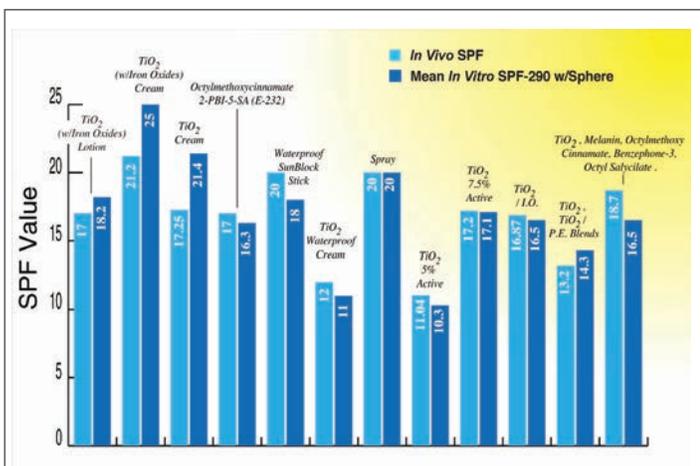


### Correlation Between SPF-290AS™ and In-Vivo SPF Testing

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

- Physical Sunscreens
- Sprays
- Waterproof Sunscreens and Stick Formulations



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.

### 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

### NEW with WinSPF™ v4.1

- Automatically loads Colipa spreadsheet during installation for use with Colipa's In-Vitro UVA guidelines.
- Now includes calculations and displays screens in compliance with AATCC-183 fabric test method.
- Now includes calculations and displays screens in compliance with AAS/NZS 4399 fabric test method.
- Now includes UVA Protection Factor and Erythral Protection Factor calculations.
- Updated Help System
- Comes with audio visual training aids; intuitive computerized modules designed to assist the operator with everything from spreading a sample to routine maintenance.

Fully Functional Toolbar  
 System Test and Validation  
 Complete On-Line Help System  
 Utilizes All Windows Features: Printing, Screen, Capture, Etc.

Single Step Control Icons  
 Switch Between Display Formats

WinSPF v4.1.0  
 File View Setup Samples Reports Spectra System Test Help  
 Min Auto Scale Max  
 SPF Data  
 Sample Name: H58  
 Scan: 0  
 Reference: Transpaw  
 Sample Prep: 2 u/ton\*2  
 Operator: CH  
 Time Point Step: 1.0 s  
 Wavelength Step: 5  
 Date: 11/18/2005  
 Time: 10:39:45 AM  
 Value: STDV  
 350 1.05 0.01  
 355 1.05 0.01  
 360 1.05 0.01  
 365 1.04 0.01  
 370 1.05 0.01  
 375 1.04 0.01  
 380 1.04 0.01  
 385 1.04 0.01  
 390 1.04 0.01  
 395 1.05 0.02  
 400 1.05 0.01  
 Scan: SPF A/B Ratio C/Lambda Curve Area  
 1 5.1 0.12 329.4 35  
 2 4.5 0.13 329.7 32  
 3 4 0.12 328.8 29  
 4 4.5 0.11 329.2  
 Comments:  
 MPF [OK] Abs. [OK] MPF [OK]

MPF Display for file: H58.sp2  
 MPF  
 Wavelength

Data can be acquired in approximately 20 seconds. Results displayed in easy to read format.

# Software • Analyzer System Automation

## SPF-290AS™

### Computer Controlled Sampling Stage

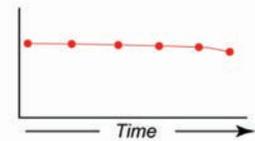
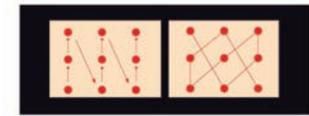
There are two modes of computer controlled operation:

- Programmed reading of up to 12 locations (Autoscan), and,
- 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.



### X-Y Sampling Stage

The Computer Controlled X-Y Sampling Stage:

- Reduces the overall cost of testing,
- Frees technicians for other tasks,
- Improves the repeatability and accuracy of measurements, and
- Facilitates photo-stability testing

### Validation Kit

Optometrics is now offering a Comprehensive Test Plate for use with the SPF-290AS™ and WinSPF™ version 4. 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, syringes and two standard formulations: 8% Homosalate and the Colipa Standard.

### WinSPF™ Version 4 Software

In August of 2007 the US Department of Health and Human Services, Food and Drug Administration proposed a UVA in-vitro testing procedure. The measurement takes the ratio of UVA 1 area per unit wavelength to UV area per unit wavelength. WinSPF™ Release 4 performs the calculations and ratings prescribed in the Federal Register thus allowing the SPF-290AS™ user to evaluate their products to ensure they conform to US Federal labeling guidelines. Beginning with WinSPF™ Release 3.0, Optometrics software added the capability to make more than a single reference measurement, allowing up to 12 spatially separated measurements of the blank sample. With



both the Boots Star rating and the new proposed Federal rules calling for the use of Taylor's approximation for MPF and transmittance standard deviation reporting, WinSPF™ Release 4 calculates all MPF and transmittance standard deviations using this method when multiple reference recipes are used. When a single reference scan is prescribed, WinSPF™ 4 performs the standard deviation evaluation in the more familiar manner.



Specifications	
Lamp	Xenon CW
Power	125W (Operated at 75w)
Detector Type	Multialkali Side-on PMT
System Dimensions	46 x 32 x 35cm
Monochromator Resolution	1.66nm
Wavelength Accuracy	± 0.2%
System Spectral Range	290 nm to 400nm
Wavelength Reproducibility	0.25nm

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1.215.517.8700

For more information on this product contact Customer Service

## 300 Plus Customers Worldwide

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- 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



The background of the entire page is a vibrant green sunburst pattern. The sunburst originates from the center and radiates outwards, with the lines becoming more densely packed towards the center. The word "SOLAR" is written in a bold, dark blue, sans-serif font. Below it, the word "LIGHT" is written in a lighter blue, spaced-out, sans-serif font. A registered trademark symbol (®) is positioned to the upper right of the word "SOLAR".

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