

# SUNTEST

XENON TEST  
INSTRUMENTS

Lightfastness  
Weatherfastness  
Photostability



# SUNTEST – THE WORLD’S MOST WIDELY USED FLATBED WEATHERING INSTRUMENTS



Weathering is the adverse response of a material or product to climate, often causing unwanted and premature product failures. The main factors of weathering are sunlight, temperature and moisture. Sunlight initiates the degradation process and drives it forward, interacting with temperature and humidity to cause adverse effects. The objective of artificial weathering is to reproduce the degradation processes and resulting damage that occurs naturally in a laboratory under accelerated and reproducible conditions.

Since 1976, SUNTEST equipment has been the most widely used test chambers for accelerated material testing. Material changes due to the effects of light, temperature and moisture, such as color fading, embrittlement or yellowing can be simulated realistically within days or weeks as they would occur naturally over the course of months or years in their end-use environment.

## Reliable accelerated flatbed xenon exposure systems.

These easy-to-use xenon instruments are perfect for R&D testing of new materials for various end use environments, for standardized quality control (on incoming materials and components) or pharmaceutical drug development.

Generating repeatable and reproducible test results (again and again) is the hallmark of Atlas instruments and the SUNTEST family lives up to that standard. Every SUNTEST instrument is designed to provide superior irradiance uniformity from filtered xenon lamps specifically designed to closely simulate daylight. Atlas xenon lamps have proven to deliver more consistent daylight simulation over the life of the lamp than any other xenon light source.

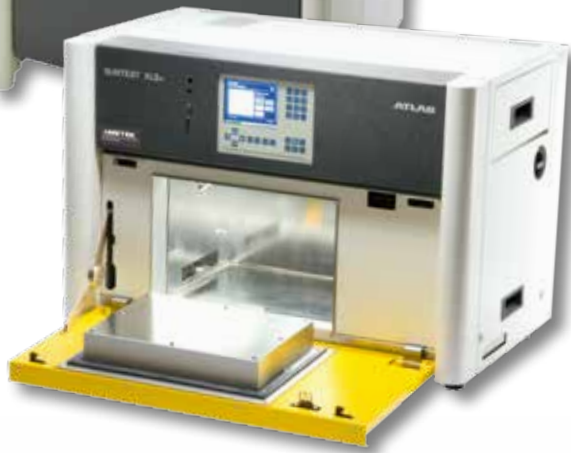
## The right instrument for your testing needs.

The SUNTEST family consists of three sizes to meet your testing needs. The two benchtop models CPS+ and XLS+ offer control of light and temperature and are particularly useful for aging tests of smaller specimens.

The larger model XXL+ comes fully equipped with automatic control of light, temperature and humidity and meets international standards for weathering testing.







## XXL+, XXL+ FD and XXL+ ST

- 3000 cm<sup>2</sup> exposure area
- Touch screen user interface available in multiple languages and online programming & monitoring features
- Irradiance control at 300-400/340 nm, or 300-800 nm/Lux
- Optional 420 nm irradiance control
- Simultaneous control of Chamber Air Temperature (CHT) and Black Standard Temperature (BST), or Black Panel Temperature (BPT)
- Direct setting of test tolerances for optimum control
- Automatic control of relative humidity
- Specimen spray
- Backspray (XXL+ ST)
- Adaptable/detachable chiller for specimen cooling (XXL+ FD)
- Built in water reservoir with automatic refill connection
- Access Port 3.0 x 2.5 cm for use of external sensors

## XLS+

- 1170 cm<sup>2</sup> exposure area
- Touch screen user interface in multiple languages and online programming & monitoring features
- Irradiance control at 300-400/340 nm, or 300-800 nm/Lux
- Direct setting of test tolerances for optimum control
- Automatic control of BST
- Monitoring and display of CHT
- Monitoring and display of relative humidity
- Specimen wetting by spray or immersion
- Specimen cooling by water-cooled sample table or chiller

## CPS+

- 560 cm<sup>2</sup> exposure area
- User interface with 4-line display in multiple languages
- Irradiance control at 300-400/340 nm, or 300-800 nm/Lux
- Automatic control of BST
- Monitoring and display of CHT
- Monitoring and display of relative humidity
- Specimen wetting by immersion
- Specimen cooling by water-cooled sample table or chiller



# SUNTEST – MEASUREMENT & CONTROL

## User-friendly control system



## XXL+, XXL+ FD, XXL+ ST and XLS+

The large TFT full color 5.7" touch screen for easy viewing is available in 13 languages supporting error-free operation.

- Easy programming, plus quick start of test programs
- Pre-programmed international standard weathering tests
- Ethernet interface for XenoTouch Add-ons
- Graphic display of the progression of all test parameters
- Automatic test countdown in kJ/m<sup>2</sup>
- Advanced auto-start functions
- Fast and precise "do it yourself" calibration routines for irradiance and temperature using SunCal sensors

## Atlas XenoTouch Add-ons

### XXL+, XXL+ FD, XXL+ ST and XLS+

Additional software modules activate the Ethernet interface on the instrument control board. Online features help make your daily lab work easier:

#### Remote Control



Conveniently program the instrument remotely.  
Security protection via access rights.

#### E-Mail Service



Receive important system information and error messages quickly and securely via E-mail.

#### Online Monitoring



Online access to instrument status reports via a web browser.



## Accurate monitoring and control of test parameters



## CPS+

Large 4-line display for easy viewing is available in 11 languages supporting errorfree operation in all labs around the world.

- Clearly arranged programming elements with arrow keys for easy scrolling through programming menus
- Two pre-programmed lightfastness / weathering tests
- Space for 6 custom test programs
- Integrated monitoring of irradiance and BST incl. automatic shut-down
- Automatic test countdown in kJ/m<sup>2</sup>
- Fast and precise "do it yourself" calibration routines for irradiance and temperature using SunCal sensors

## Multiple languages supporting error-free operation around the world:

- |                      |                 |
|----------------------|-----------------|
| ● Willkommen         | ● 환영받는*         |
| ● 歡迎*                | ● Welkom*       |
| ● Bienvenue          | ● Vítejte       |
| ● Benvenuto          | ● Fogadtatás    |
| ● Witaj              | ● 歡迎            |
| ● Bienvenidos        | ● Hoşgeldiniz*  |
| ● Welcome            | ● Boas-vindas** |
| ● Добро пожаловать** |                 |

\*Languages not available on SUNTEST CPS+ model

\*\*Languages not available on SUNTEST XXL+ and XLS+ models





# SUNTEST – TEST CHAMBERS & SUNLIGHT SIMULATION

Superior chamber design to meet your testing needs

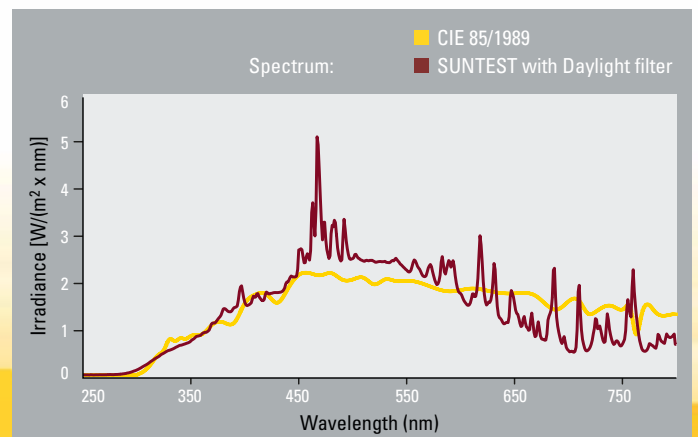
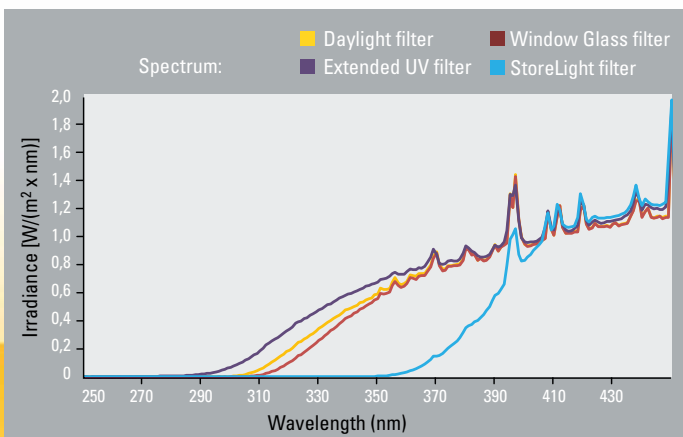
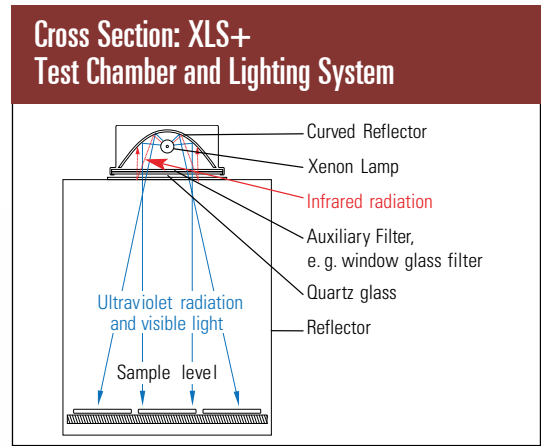
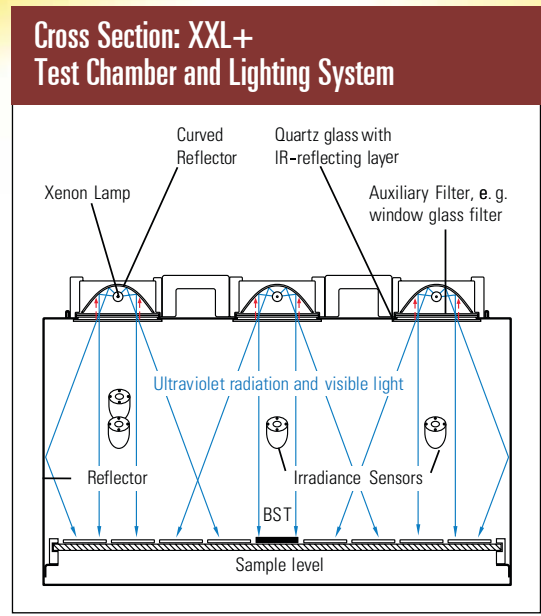
## Accurate and Repeatable Test Results

An accelerated weathering instrument must combine a high quality chamber with fully developed light technology, precise sensors and intelligent control algorithms. A finely tuned calibration concept permits individual components to interact seamlessly with one another. As a result, you achieve high quality test conditions for repeatable test results.



## Solar Simulation

Atlas xenon lamps deliver consistent, even irradiance and a stable spectral power distribution. The spectral output closely matches solar radiation. The distinct advantage of the simulation of the total solar spectrum lies in the realistic reproduction of the comparable natural sample heating due to VIS and IR radiation correlated to sample color. Atlas offers a range of filters to meet industry standards such as ISO 4892-2 and ASTM G155 including both daylight and daylight behind window glass filters. Special filters tailored to specific applications are also available (please see "Optional Accessories" section).



# XENON LAMPS & CONTROL

## Quality Lamps

All Atlas xenon lamps have been specially designed for use in weathering devices. This ensures optimal spectral power distribution across the lamp's entire 1500 hour service life. Our fully assembled "plug & play" light cassette makes replacing lamps and filters easy.

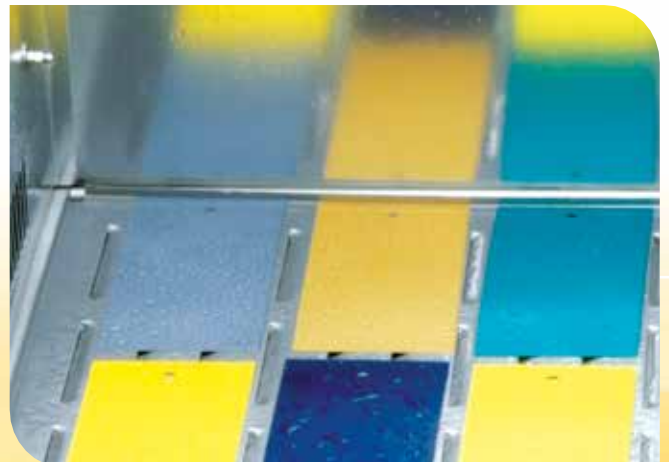


## Humidity Control

The third major factor of weathering is moisture which can represent humidity, dew and rain. Optional specimen spray and immersion accessories are available for the SUNTEST XLS+, and an immersion unit is also available for the CPS+ model. Relative humidity can be controlled in the SUNTEST XXL+ via an ultrasonic humidification system that produces a homogenous steam like dispersion. A built-in 60 litre water reservoir ensures continuous operation over several days without refill.

## Temperature Control

Temperature plays an important role in the rate in which a material degrades. The most relevant temperature parameter with regard to weathering tests is the black standard temperature. All SUNTEST models measure and control the maximum surface temperature of a black sample following ISO 4892-1.



# SUNTEST – OPTIONAL ACCESSORIES EXTEND THE TEST CAPABILITIES OF THE SUNTEST FAMILY



## Specimen spray unit for simulated weathering tests (XLS+)

- Specimen spray for specimens such as paints or plastics to simulate exposure to moisture
- Programmable spray periods
- Water level indicator
- Automatic refill



## Immersion units for simulated weathering tests (CPS+ and XLS+)

- Immersion of specimens such as paints or plastics to simulate exposure to moisture
- Programmable immersion intervals
- Water temperature control from 30 °C to 55 °C
- Water level indicator
- Automatic refill



## Chiller units for chamber air refrigeration (CPS+, XLS+, and XXL+ FD)

- For photostability testing of Consumer Goods, Pharmaceuticals, and Cosmetics
- Lowest achievable CHT during light cycle: approx. 10 – 15 °C (depending on method and laboratory conditions)
- CFC-free refrigerants
- Digital control (XLS+ and XXL+ FD only)



## Water-cooled sample table for contact cooling (CPS+ and XLS+)

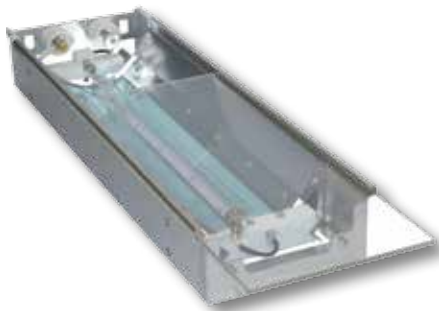
- Uniform cooling of samples through direct contact with the cooling surface
- Recommended for exposure of thermosensitive substances
- Frequently used for testing cosmetics and pharmaceutical samples





## SunTray (CPS+)

- Fast and secure specimen exchange during continuous light operation
- For in vitro determination of UVA protection of sunscreen products
- Sample holder for 8 standard PMMA plates (50x50x2 mm)
- Sub-frame design tailored for SUNTEST CPS+



## Flat Optical Filters (XXL+ and XLS+)

- Daylight Filter (non-aging) for simulation of outdoor solar radiation
- Window Glass Filter (non-aging) for simulation of indoor solar radiation behind 3 mm window glass
- Solar ID65 Filter for simulation of indoor solar radiation behind 6 mm window glass
- StoreLight Filter for simulation of artificial supermarket light (only XXL+ FD, XLS+)
- Extended UV Filter (non-aging) for simulation of solar radiation with extended UV (SAE)



## Optical Filter Dishes (CPS+)

- Daylight Filter for simulation of outdoor solar radiation
- Window Glass Filter for simulation of indoor solar radiation behind 3 mm window glass
- Solar ID65 Filter for simulation of indoor solar radiation behind 6 mm window glass
- StoreLight Filter for simulation of artificial supermarket light



## SunCal Calibration Sensors

Simultaneous irradiance and BST calibration sensors for SUNTEST models, available with different wavelength sensitivities.

- SunCal BB 300-400 BST
- SunCal WB 300-800 BST
- SunCal LUX BST

# SUNTEST – APPLICATIONS & STANDARDS

## SUNTEST instruments are used successfully in numerous industries and many different applications



Flatbed testing technology allows for the testing of almost any shape and size. The optional accessories for lowering the sample temperature are helpful tools for photostability testing of thermal sensitive products, pharmaceuticals or cosmetics.

The extensive range of accessories and optical filter systems makes it possible to fulfill specific industrial test methods (ICH, COLIPA) or to simulate specific environments like outdoor, indoor or light in a warehouse or store (see Optical Filters section).

### The SUNTEST family is designed to meet the following standards:

<b>General</b>	ASTM G151, G155
<b>Automotive</b>	SAE J2412, SAE J2527, PV3929
<b>Building</b>	ASTM C1442, C1501, D2565, D4637, D4811, D6083, D6662
<b>Cable/wire</b>	ASTM D1248
<b>Chemical</b>	EPA/ASTM E896, OECD 432, OECD 316, OECD Guideline Phototransformation of Chemicals on soil
<b>Coatings</b>	ASTM D3451, D3794, D6577, D6595, D6695, ISO 11341, ISO 16474-2, Qualicoat, RAL-RG631
<b>Cosmetic</b>	COLIPA In-Vitro UVA (2011), ISO 24443:2012, L'Oreal QAC-MC-151-0
<b>Geotextile</b>	ASTM D4355
<b>Graphic</b>	ASTM D904, D3424, D4303, D5010, D6551, D6901, F2366
<b>Medical</b>	ISO 4049, 7491, 11979-5
<b>Plastics</b>	ASTM D2565, D4101, D4459, D5071, ISO 4892-1, 4892-2
<b>Pharma</b>	ICH Q1B, Q5C
<b>Textile</b>	AATCC TM169, ISO 105-B10

This table is a representative compilation of global standards that can be met with SUNTEST instruments. For more information on specific models or specific standards, contact your local Atlas representative. Please note: Not all SUNTEST models fulfill all standards or all methods within individual standards.



SUNTEST Features			XXL+	XXL+ FD	XXL+ ST	XLS+	CPS+
Air-cooled xenon lamps			1700 W (3)	1700 W (3)	1700 W (3)	1700 W (1)	1500 W (1)
Exposure area			3000 cm <sup>2</sup>	3000 cm <sup>2</sup>	2925 cm <sup>2</sup>	1170 cm <sup>2</sup>	560 cm <sup>2</sup>
Specimen tray size			79x39 cm	79x39 cm	79x37 cm	39x30 cm	28x20 cm
SUNSENSIV sensor for controlling irradiance at 300-400nm / 340nm			●	●	●	●	●
SUNSENSIV sensor for controlling irradiance at 300-800nm / Lux			N/A	■	■	■	■
SUNSENSIV sensor for controlling irradiance at 420nm			■	■	■	N/A	N/A
Irradiance range Extended UV Filter (340 nm; W/m <sup>2</sup> nm)			N/A	N/A	0,5-0,75	N/A	N/A
IRRADIANCE RANGES:							
	Daylight Filter	Window Glass Filter					
300-400 nm	40-65 W/m <sup>2</sup>	30-60 W/m <sup>2</sup>	●	●	●	●	●
340 nm	0.34-0.62 W/(m <sup>2</sup> nm)	0.26-0.56 W/(m <sup>2</sup> nm)	●	●	●	●	●
420 nm	0.75-1.45 W/(m <sup>2</sup> nm)	0.65-1.30 W/(m <sup>2</sup> nm)	■	■	■	N/A	N/A
300-800 nm	250-765 W/m <sup>2</sup>	250-765 W/m <sup>2</sup>	N/A	■	■	■	■
LUX	45-130 klx	45-130 klx	N/A	■	■	■	■
Automatic CHT control*			up to 70° C	up to 70° C	up to 70° C	N/A	N/A
Automatic simultaneous BST and CHT control			●	●	●	N/A	N/A
BST range*			45-100° C	25-100° C	45-100° C	45-100° C	45-100° C
BPT range*			45-95° C	25-95° C	45-95° C	45-95° C	N/A
Automatic blower speed control			●	●	●	●	●
Ultrasonic humidification system			●	●	●	N/A	N/A
Automatic humidity control			●	●	●	N/A	N/A
Specimen spray system			●	●	●	■	N/A
Backspray system			N/A	N/A	●	N/A	N/A
Integrated water reservoir (60 l)			●	●	●	N/A	N/A
TFT full color 5.7" touch screen control panel display of all test parameters			●	●	●	●	N/A
Multiple languages available			●	●	●	●	●
Graphic display of the progression of your test parameters			●	●	●	●	N/A
Parameter check for set tolerances			●	●	●	●	●
Automatic test countdown in kJ/m <sup>2</sup>			●	●	●	●	●
Data acquisition via interfaces RS232, or memory card			●	●	●	●	RS232
Ethernet interface for Software Add-ons			■	■	■	■	N/A
Software updates via memory card			●	●	●	●	●
Internal memory chip for storing instrument data			●	●	●	●	N/A
CE compliant			●	●	●	●	●
Instrument dimension (WxDxH) in cm			90x91x172	90x91x172	90x91x172	90x54x62	78x35x35
SunCool chamber air refrigeration			N/A	●	N/A	■	■
SunSpray specimen spray system			N/A	N/A	N/A	■	N/A
SunFlood test chamber immersion system			N/A	N/A	N/A	■	■
SunTray sample exchanger for in-vitro SPF testing			N/A	N/A	N/A	N/A	■
Water-cooled sample table for contact cooling			N/A	N/A	N/A	■	■
SunCal BB 300-400 BST Irradiance and Temperature Sensor			■	■	■	■	■
SunCal WB 300-800 BST Irradiance and Temperature Sensor			■	■	■	■	■
SunCal LUX BST Irradiance and Temperature Sensor			■	■	■	■	■

● Standard    ■ Optional

\* All ranges may not be achieved depending on other instrument parameter set points.



Atlas offers more than testing instruments. From technical advice to final test method implementation, Atlas provides the support that you need when determining the right weathering testing solution for your products. For more information, please contact your local Atlas sales office or visit us at [www.atlas-mts.com](http://www.atlas-mts.com)

## ■ Corporate Offices

Chicago, Illinois USA ■ Linsengericht, Germany ■ Shanghai, China ■ São Paulo, Brazil  
Élancourt, France ■ Mörfelden-Walldorf, Germany ■ Bangalore, India ■ Leicester, United Kingdom

## ● Outdoor Exposure Sites & Laboratories

Miami, Florida USA • Phoenix, Arizona USA • Sanary, France • Chicago, Illinois USA  
Linsengericht, Germany • Hoek van Holland, The Netherlands • Chennai, India • Prescott, Arizona USA  
Medina, Ohio USA • Keys, Florida USA • Jacksonville, Florida USA • Alberta, Michigan USA  
Hainan, China • Guangzhou, China • Turpan, China • Seosan, Korea • Miyakojima, Okinawa, Japan  
Choshi, Japan • Kirishima, Japan • Singapore • Melbourne, Australia • Townsville, Australia  
Novorossiysk, Russia • Gelendzhik, Russia • Moscow, Russia

## ▲ Local Sales & Service Support

To contact your local Atlas Sales representative please visit <http://atlas-mts.com/contact/local-representatives/>

For general inquiries please contact us at [www.atlas-mts.com](http://www.atlas-mts.com)