

# XENOTEST® 150 S+

Light Exposure and Weather Testing Instrument



# Light exposure and weather testing

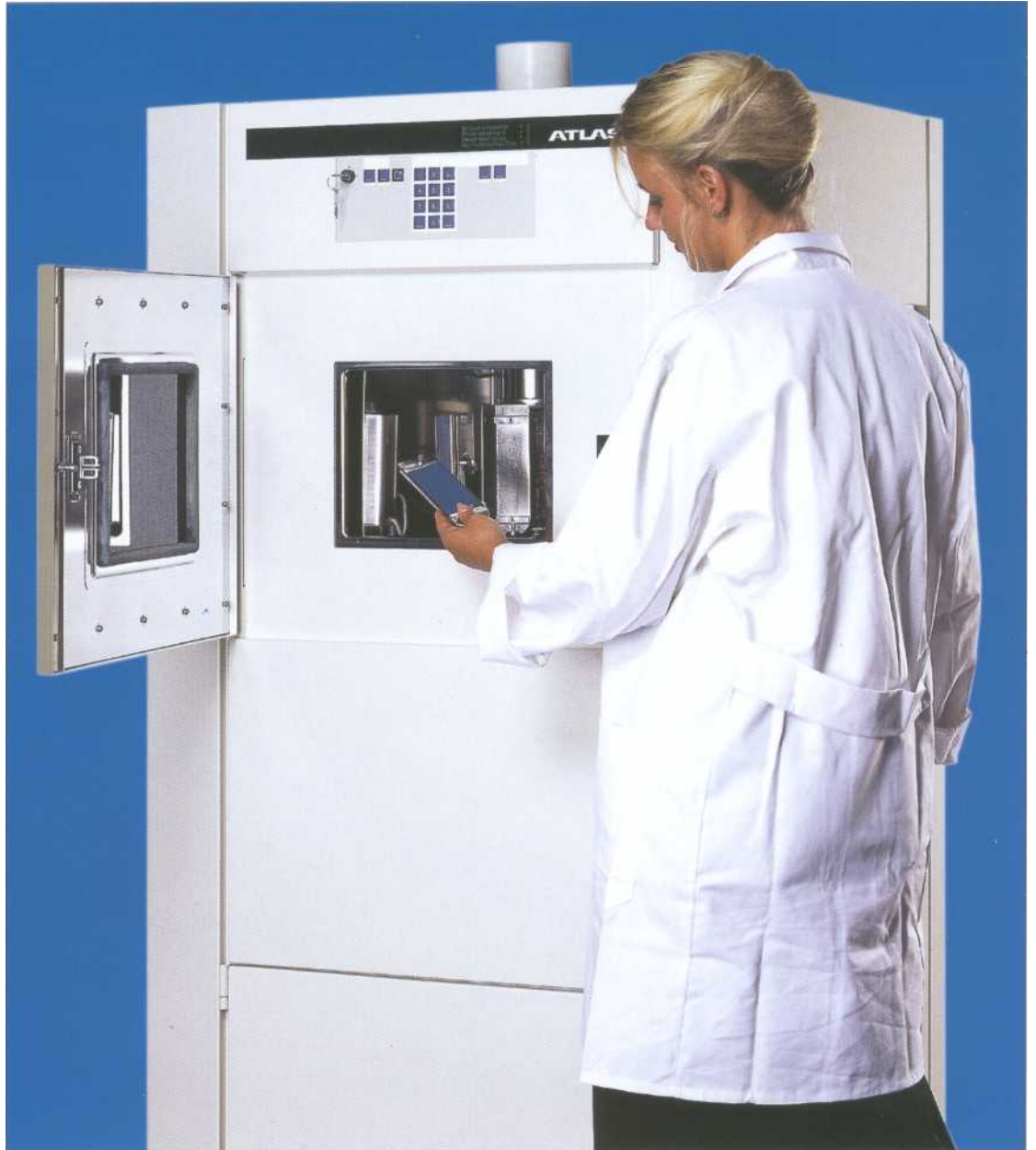
## *XENOTEST® 150 S+, a proven test instrument with new technology*

*Since the 1950s, the xenon lamp has successfully been used for lighthfastness and weathering testing of different materials and products. In the meantime, xenon exposure represents the standard test method in many industries.*

*Today filtered xenon radiation is still the most suitable light source to closely simulate the effects of sunlight and today's national and international industry standard.*

*In recent years, the XENO-TEST 150, as the first xenon test instrument with air-cooled lamp, held with its successor the XENOTEST 150 S worldwide entry into test laboratories.*

*In addition it contributed substantially to the improvement of material properties in many fields of application. In particular, the XENOTEST 150 S improved lighthfastness and weatherfastness of modern textiles.*



*XENOTEST 150 S+ is the enhanced edition of the proven classical test instrument. This unit offers the user extended technology, and as indicated by the +, numerous functions were added in order to improve the flexibility.*

*The result:  
XENOTEST 150 S+ is an ideal combination of modern technology, economical testing, optimum reproducibility and good correlation to natural weathering.*

# Equipment technology



## Control

- Measurement and control of lamp power
- Stationary sensor for measuring and controlling test chamber temperature
- Modern, capacitive sensor for measurement and control of relative humidity

## Microprocessor control

- Clear instruction for operation and program monitoring on the front panel (eligible languages: English, German and French)
- Interactive user guidance via 4-line text display
- Programming capabilities of up to 10 weathering tests with up to 12 test segments each
- Countdown timer selectable by running and exposure time
- Display of ACTUAL/TARGET data
- Independent programming of stop intervals for intermediate evaluation
- Monitoring of test parameter tolerances

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12:14:04 26.09.00

Program number 1
Instrument runs in non-turning mode
Switch-off criterion: total time
Fan speed: 2000 rpm
Autostart after voltage failure: yes

Parameter check is activated

Max. deviation
r.H. = +/- 10 %
CHT = +/- 3 deg C
Switch-off after 10 min.

Filter system:
6 IR + 1 UV window
with SUPRAX outer cylinder

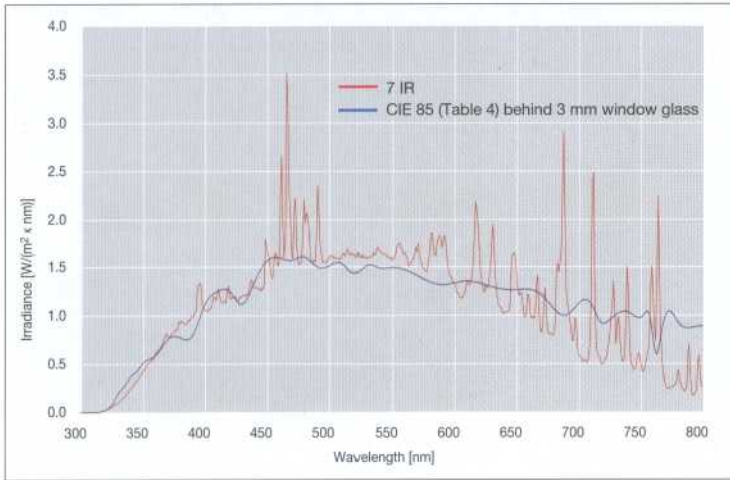
PN = phase number
PT = phase time
CHT = test chamber temperature deg C
r.H. = rel. humidity %
E = Radiation NTM
t = irradiation time h
TM = turning mode
NTM = non-turning mode
    
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PN	PT	CHT	rH	E	t
	min	deg	%	%	h
01 0099	050	51	70	0000L	
01 0098	049	50	70	0000L	
01 0097	049	50	70	0000L	

## XENOTEST® 150 S+ features

- Microprocessor control
- Easy operation with interactive instruction guideline and parameter text display
- Modern xenon lamp technology with long lamp lifetime
- Infinitely variable adjustment of lamp power
- Irradiance measurement with XenoCal at sample surface (optional)
- Measurement and control of test chamber temperature
- High temperature tests by heating up the air in the test chamber
- Measurement and control of relative humidity
- Ultrasonic humidification system
- Calibration of test chamber temperature and humidity
- Water spray system for sample wetting during weathering tests
- Integrated water reservoir for storage of ultra-pure water; automatic refill when connected to supply line
- Easy access to sample holder, lamp and filter system
- 11 sample holders
- Turning and non-turning mode
- Max. sample capacity: approx. 950 cm<sup>2</sup>

# Xenon exposure systems / Temperature



An external Black Standard Thermometer (optional) measures the temperature.

## XENOTEST® 150 S+ lamp and filter systems

The newly implemented and patented lamp technology guarantees constant radiation of the xenon lamp and therefore high correlation to already executed tests. In addition the generous power reserve of the xenon lamp ensures a high lamp lifetime even when switching over from non-turning to turning mode.

The absorption filter system, which has been used for many years to meet current textile industry test methods, is a basic accessory for the XENOTEST 150S+.

XENOTEST 150 S+ offers good flexibility by use of infrared (IR) and UV filters, the so called "UV-windows" (UV). The special filter transmission characteristics guarantee a

- simulation of sunlight according to spectral power distribution as specified in CIE publication No. 85 (Table 4)
- appropriate cut-ons in the UV wavelength range and
- a controlled emission of heat radiation on sample surface.

7 filter segments and 1 Suprax outer cylinder make-up a stable filter system.



## Temperature parameters in the XENOTEST®150 S+

XENOTEST 150 S+ controls the test chamber temperature at given values which is supported by the test chamber heating device respectively by varying the air flap position for the test chamber air speed. By varying the blower speed and hence the air speed in the test chamber, it is possible to maintain test chamber and Black Standard Temperature within tight tolerances and within the

temperature range.

The Black Standard Temperature is determined by the test chamber temperature and the test chamber humidity. It is also influenced by the irradiance level, the filter system and the operation mode (turning or non-turning). By varying the blower fan speed in the test chamber it is possible to maintain the Black Standard Temperature.

### Absorption filter combination

Filter system	Application
7 IR and Suprax cylinder	Simulation of solar radiation behind window glass
6 IR + 1 UV and Suprax cylinder	Simulation of outdoor solar radiation

# Applications / Optional accessories



The successful application of the xenon exposure in the textile industry led to international accepted colorfastness testing methods of the ISO-105-B series, which form the basis of the current "European standardization". For example, the former DIN 54004 for "Determination of Lightfastness of Dyeings and Prints" has been replaced by DIN EN ISO 105-B02.



The basics of this standard,
 

- the filtered xenon arc radiation,
- the determination of the "effective humidity" at sample surface by use of the "red control fabric" and
- the measurement of black panel and black standard temperature

 are based on the technology of the XENOTEST 150 system.



By its modern equipment technology the XENOTEST 150 S+ represents a universal testing instrument for versatile applications, for example:
 

- weathering tests according to ISO 105-B04,
- AATCC lightfastness tests of textiles, based on the equipment technology of the air-cooled xenon lamp (Method 16, Option H) and

• numerous standards of lightfastness testing, which were developed in the course of decades with the introduction of the "xenon lamp technology" in quality control.

**XenoCal<sup>o</sup>**  
 Sensor system independent of the unit to measure irradiance and radiant exposure in the LIV wavelength range between 300 and 400 nm (LIV sensor). Evaluation and readout of the measuring values via IBM-compatible PC in connection with the XenoSoft software program.



XenoCal sensor

**External Black Standard Thermometer** - Measurement of the Black Standard Temperature at sample surface, with digital LCD-display.

**External White Standard Thermometer** - Measurement of the White Standard Temperature at sample surface, with digital LCD-display.



Thermoprinter

**Thermoprinter**  
 Printout of protocols regarding instrument and program data as well as test parameters at preselectable intervals.

**Standard sample holder set**  
 For samples up to a thickness of 3 mm.

**Special sample holder set**  
 For samples up to a thickness of 15 mm such as automotive upholstery materials.

**Special sample holder**  
 For determination of weatherability.

**Accessory kit "Textile"**  
 The ideal standard accessories configuration for textile testing.

## XENOTEST® 150 S+ features

New xenon lamp technology, air cooled:  
0,8 to 2,2 kVA (65 to 100 % lamp power)

Measurement and control of test chamber temperature

Measurement and control of test chamber humidity

Air volume control to influence the temperature difference between test chamber and Black Standard Temperature

Test chamber heating device

Ultrasonic humidification system

Sample spray system

Integrated water reservoir

Microprocessor control

Parameter check

Turning and non-turning mode

User guided operation by alphanumeric four-line display

Serial interface RS232 or on request RS485

XenoCal UV sensor

Thermoprinter

Black Standard Thermometer

Black Panel Thermometer

White Standard Thermometer

■ Standard

□ Optional

## Utility requirements

Electric	230 V $\pm$ 10 %, 50/60 Hz (1,N,PE) AC or (2,PE) AC CEE (32 A, 3 pol., 6h)
Amperage	max. 16 A
Power consumption	max. ca. 5 kVA
Nominal power of xenon lamp	max. 2,2 kVA
Cooling air requirement	
• for xenon lamp	max. 200 m <sup>3</sup> /h
• for test chamber	max. 100 m <sup>3</sup> /h
Water consumption	
• for spray system	0,3-0,5 l/min
• for humidity	max. 2 l/h

## XENOTEST® 150 S+ specifications

### Irradiance

Lamp power infinitely adjustable between 65 and 100 %.

### Temperature range and relative humidity

Test chamber temperature: 30 °C–70 °C\*

Black standard temperature: 40 °C–130 °C\*

Relative humidity: 10–95 %\*

\* Max. values achievable depend on chosen filter system, irradiance setting and the environmental conditions

### Filter systems

Absorption filter lantern with:

6 IR + 1 UV window + Suprax outer cylinder

7 IR + Suprax outer cylinder

## Sample capacity

Sample holders	11*
Sample dimensions	135 x 45 mm
Exposed area (max.)	ca. 950 cm <sup>2</sup> **

\* Samples on both sides in turning mode

\*\* In turning mode

## Physical specifications

Width x Depth x Height	900 x 780 x 1800 mm
Floor weight	approx. 280 kg



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