

# XENOTEST<sup>®</sup> BETA+

Light Exposure and  
Weathering Testing  
Instrument



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Experience. The Atlas Difference.

# Accelerated Weathering

with the Xenotest® Beta+

The stability of materials to the stresses of weather is critical to the success of your products. Daylight exposure with heat and humidity exert permanent stresses on materials that affect overall appearance and other physical properties.

The **Xenotest Beta+** simulates and accelerates the natural weathering process providing reliable results concerning the long-term behavior of materials. By incorporating a variety of optional features, the Xenotest Beta+ can meet virtually all global weathering and lightfastness test requirements.



Standards				
AATCC	TM 16	TM 169		
ASTM	G151	G155	D6695	
DIN EN	513			
GME	60292			
GMW	3414TM			
ISO	105-B02	105-B04	105-B06	11341
	3917	4892-2	12040	
JASO	M 346			
MIL STD	810 G			
RAL	GZ 716/1			
VDA	621-429	621-430	75202	
VW	PV 1303	PV 1306	PV 3929	PV 3930





Test chamber with  
standard specimen rack  
and XENOSENSIV sensor

### Features and Benefits

The large, color touch screen makes operation easy and user friendly

Non-ageing XENOCHROME® filter systems decrease the cost of operation while increasing the precision of the test

Simultaneous, automatic control of chamber temperature and black standard temperature as well as humidity closely simulates your material's end-use temperature conditions test after test

XENOSENSIV® sensor combines accurate control of irradiance and black standard temperature to mirror on-rack exposure conditions (irradiance and black standard temperature are calibrated according to DIN EN ISO 17025)

Wide temperature ranges permit simulation of thermal conditions

4000 cm<sup>2</sup> exposure area offers an adequate sample surface area for the exposure of up to 56 single samples or large 3D samples (e.g. PET bottles in a special instrument type)



# The Technology

## in the Xenotest® Beta+



Xenotest Beta+ touch screen with serial interface port

### ◉ Ease of Operation with the Touch Screen

- The large color touch screen not only shows you the current status of your test, but also provides a graphic display of the progression of your test parameters
- The memory card interface loads data (e.g. software updates) directly to your test equipment, or allows test data to be downloaded to a PC for further processing
- Program parameters can be read via a serial RS 232 port or a faster USB port
- Digital data transfer reduces electrical interference to improve instrument reliability
- A dynamic memory offers 10 freely programmable and at least 10 preprogrammed weathering test programs, each with up to 12 test cycles

### ◉ Reliable Sensor Technology

Integrated measuring and control capabilities for precision and reproducibility:

- Rotating XENOSENSIV® sensor for measuring irradiance between 300 and 400 nm and Black Standard Temperature at sample holder level in accordance with ISO/DIN standards
- Stationary sensor for measuring test chamber temperature and relative humidity

### ◉ Versatile Instrument Functions

- Electrical heating system achieves high temperature values even during dark cycles
- Adjustable blower speed allows for simultaneous control of chamber temperature and black standard temperature
- Ultrasonic humidification system provides precise humidity levels in the test chamber
- Specimen spray system for sample moisture during weathering tests or rack spray system to cool the back of the sample (optional)
- Integrated water tank with automatic refilling function



# The Filtered Xenon Radiation

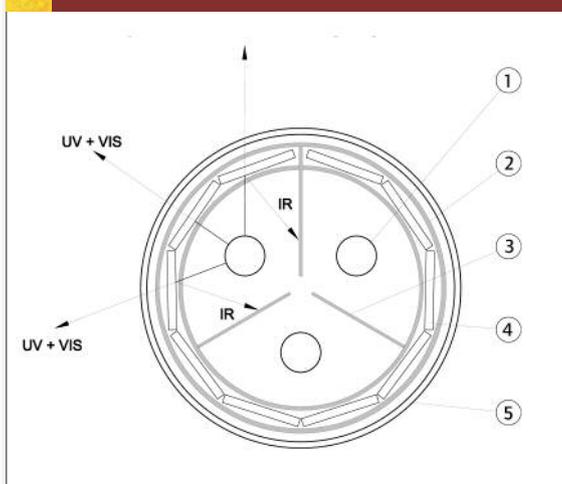
in the Xenotest® Beta+

In the **Xenotest Beta+** solar radiation is simulated by means of filtered light from a xenon lamp. The highly ageing-resistant XENOCHROME® filters have a recommended life-time of 25000 hours and meet the requirements associated with a wide variety of standards and test specifications.

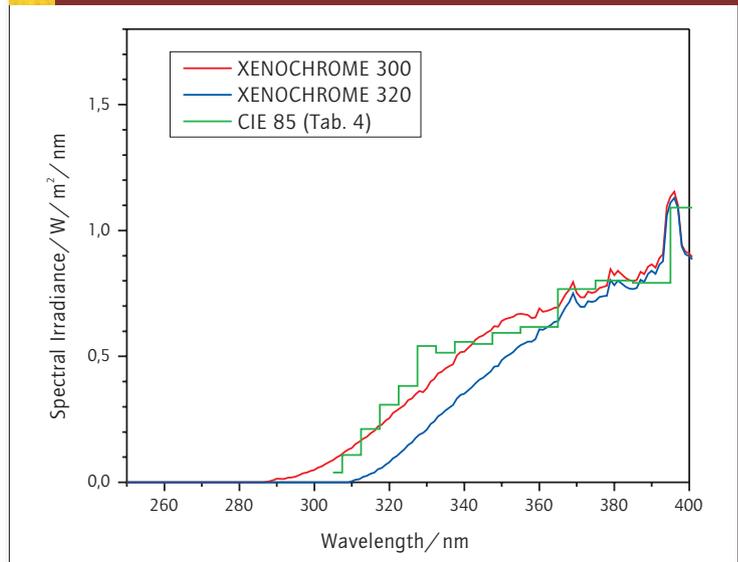
XENOCHROME 300 or 320 with ten filters of special coated quartz glass simulates the solar radiation as specified in CIE publication No. 85, Table 4, or behind window glass, according to test requirements in the paint and plastics industries.

UV and visible light wavelengths pass XENOCHROME filters while IR radiation is reflected and absorbed by three black absorbers. Heat is dissipated by air passing along the xenon lamp and over black absorber panels in the optical filter system. This prevents any unwanted temperature increase.

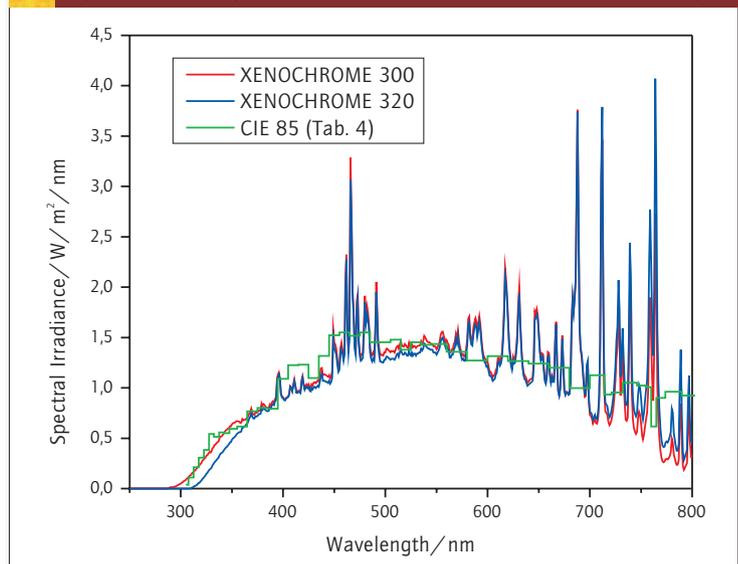
## XENOCHROME Filter System and Path of Radiation



## Spectrum Comparison: XENOCHROME vs CIE 85 (Tab. 4)



## Spectrum Comparison: XENOCHROME vs CIE 85 (Tab. 4)



The values, illustrated in both graphs, are normalized at 550 W/m<sup>2</sup> in the wavelength range 300 to 800 nm.

- ① Xenon lamp (3x)
- ② Filter lantern
- ③ Absorber (3x)
- ④ Filters (10x)
- ⑤ Outer cylinder

# Temperature Regulation in the Xenotest® Beta+

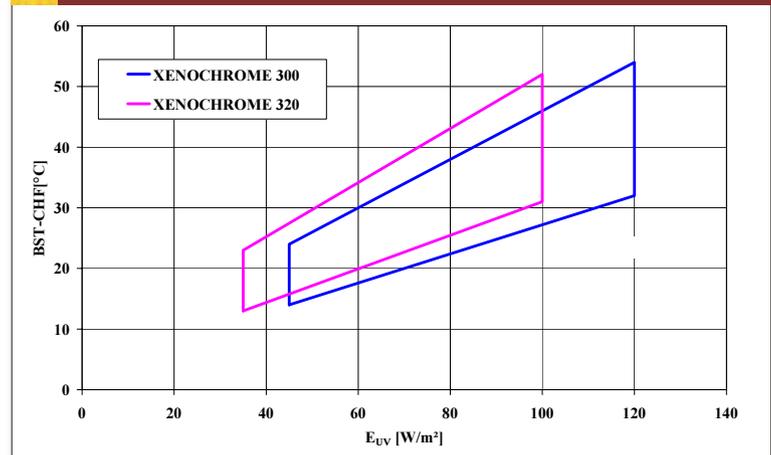
The **Xenotest Beta+** offers the choice of controlling test chamber temperature (CHT) or Black Standard Temperature (BST), or both simultaneously.

The lower range of the test chamber temperature depends on the ambient air temperature in the laboratory: by increasing the lab temperature, the temperature in the test chamber increases accordingly. The black standard temperature is determined by the test chamber temperature and humidity. It is also influenced by the airflow rate, the irradiance and the installed filter system.

By varying the blower speed in the test chamber, it is possible to maintain test chamber and black standard temperature within tight tolerance and within the temperature range. When simultaneously controlling the temperature, the specified test chamber temperature is adjusted with the aid of a regulated air flap to mix metered amounts of cooler ambient air with the warm instrument air, while the desired black standard temperature is regulated by the blower motor fan speed.

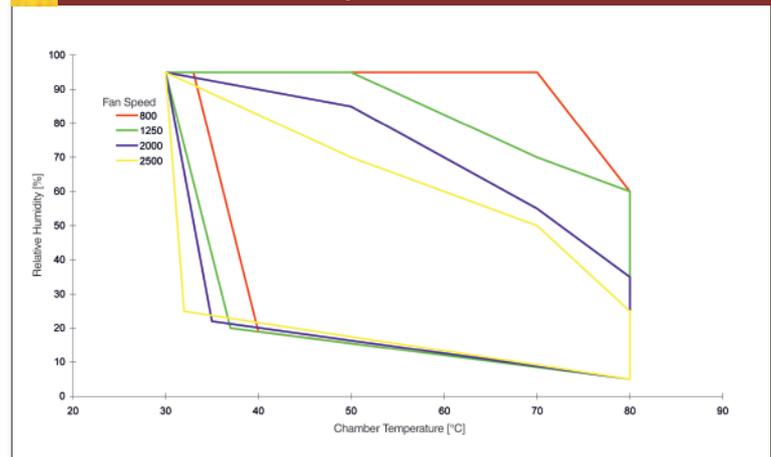
Currently, numerous test specifications – particularly in the automotive industry – require simultaneous regulation of the black standard and the test chamber temperature. This type of regulation provides the best possible reproducibility of test results.

Xenotest Beta+ Temperature Fields



Temperature fields provide an indication of the limits of test chamber and/or black standard temperature that can be reached or programmed.

Xenotest Beta+ Humidity Fields



Humidity fields indicate the humidity ranges which can be set at a given test chamber temperature.

## Humidity Control in the Xenotest Beta+

The relative humidity is adjusted uniformly across the sample level by means of an optimized airflow in the test chamber and is dependent on the test chamber temperature and the test chamber fan frequency.

# Optional Accessories

for the Xenotest® Beta+

## XenoCal® Irradiance Sensor/Combination Sensor

to measure, calibrate and adjust irradiance and to measure radiant exposure:

- ◉ XenoCal BB 300–400 | 300–400 nm (UV)
- ◉ XenoCal BB 300–400 BST (in addition BST)

## XenoCal Irradiance Sensor

to measure irradiance and radiant exposure:

- ◉ XenoCal WB 300–800 | 300–800 nm (UV + VIS)
- ◉ XenoCal NB 340 | 340 nm

## XenoCal BST

to measure, calibrate and adjust black standard temperature

## XenoCal WST

to measure, calibrate and adjust white standard temperature

## Various Specimen Holders

to test, for example, samples with backings, panels, or PET bottles

## Thermoprinter

for printout of protocols regarding instrument and program data as well as test parameters at pre-selectable intervals



```

-----
1 29 | 37 44 29 | 75 40 OL
1 30 | 37 44 29 | 72 40 OL
1 31 | 37 44 29 | 70 40 OL
1 32 | 37 44 29 | 68 40 OL
1 33 | 38 45 29 | 66 40 OL
1 34 | 37 45 29 | 63 40 OL
1 35 | 37 45 30 | 60 40 OL
1 36 | 37 45 29 | 58 40 OL
1 37 | 37 44 30 | 56 40 OL
1 38 | 37 44 31 | 53 40 OL
1 39 | 37 44 32 | 51 40 OL
1 40 | 37 44 32 | 48 40 OL
-----

```

```

-----
min | deg deg % | kJ/m² W/m² h
PN PT | CHT BST r.H. | H E t
-----

```

```

NTM = non-turning mode
TM = turning mode
t = irradiation time or total time (h)
H = radiant exposure
r.h. = rel. humidity (%)
BST = black standard temperature (deg C)
CHT = test chamber temperature (deg C)
PT = phase time
PN = phase number

```

Parameter check not activated

```

Autostart after voltage failure: yes
Fan speed: 800 rpm
Switch-off criterion: total time
Instrument runs in turning mode

```

Program number: 1

08:31:18 24.01.2009

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### Xenotest® Beta+ Features

Air-cooled xenon lamp with power output (3)	●
XENOSENSIV® combination sensor for measuring and controlling irradiance between 300 and 400 nm and Black Standard Temperature at sample holder level	●
Temperature control selectable by test chamber or Black Standard Temperature or both simultaneously	●
Air flow control to regulate the Black Standard Temperature	●
Controlled relative humidity	●
Ultrasonic humidification system	●
Specimen Spray System	●
Non-turning mode	●
Microprocessor control	●
Color touch screen to show the current test status and graphic display of the progression of your test parameters	●
Parameter check	●
Program-assisted self calibration with the optional XenoCal® sensor	●
Serial interface RS232	●
Memory card interface	●
USB slave port	●
4000 cm <sup>2</sup> exposure area	●
CE certified	●
Rack spray system	●
XenoCal BB 300–400 irradiance sensor	●
XenoCal BB 300–400 BST	●
XenoCal WB 300–800 irradiance sensor	●
XenoCal NB 340 irradiance sensor	●
XenoCal BST Black Standard Thermometer	●
XenoCal WST White Standard Thermometer	●
Thermoprinter	●

● Standard ● Optional

### Xenotest Beta+ Specifications

<b>Irradiance</b> in the wavelength 300–400 nm (based on the sample holder level)	
<b>Filter System</b>	
XENOCHROME® 300 (daylight)	45–120 W/m <sup>2</sup>
GMW 3414TM	
XENOCHROME 320 (behind window glass)	35–100 W/m <sup>2</sup>
<b>Temperature/Humidity Range</b>	
Test chamber temperature*	up to 80 °C
Black standard temperature*	up to 130 °C
Relative humidity*	10–95%

\* Depending on chosen filter system, irradiance setting, as well as the environmental conditions

### Utility Requirements

Electrical	400 V ±10 %, 50/60 Hz (3P,N,PE) AC   CEE (32 A, 5 pol. 6h)
Amperage	16 A
Power consumption	12 kVA, max.
Nominal rating of the xenon lamps	2800 VA, max.
Cooling air requirement for the xenon lamps	200 m <sup>3</sup> /h, max.
Cooling air requirement for the test chamber	200 m <sup>3</sup> /h, max.
Purified water for the specimen spray system	0.7 l/min
Purified water for rack spray	0.7 l/min
Purified water for humidity	0.07 l/min

### Sample Capacity

Sample holder	Dimension height x width	Number of holders/Set
»Standard« (for 1 sample/holder)	31 x 8 cm	16
»Special 3 segments« (for 3 samples/holder)	10 x 6.8 cm	16
»Special 2 segments« (for 2 samples/holder)	13.5 x 4.5 cm	28

### Dimensions and Weight

Width x Depth x Height	900 x 1200 x 1800 mm
Weight	approx. 400 kg