



# **Xenon lamp aging test Chamber (XD-80LS)**

## **Brochure**

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**Leader in Lighting & Electrical Test Instruments**

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Xenon lamp aging test Chamber adopts xenon arc lamp which can imitate the full spectrum of sunlight to reappear destructive spectral wave that exists in different environment. It can provide the corresponding simulation environment and accelerated test for scientific research, product development and quality control. Xenon lamp aging test Chamber can be used for the choice of new materials, improving of existing materials, or the test of evaluating the durability of material composition when it is changed. It can imitate well different environmental conditions to observe changes of the materials which were exposed in the sun. Xenon lamp aging test Chamber is designed according to standard GB/T16585-1996, GB14522-93, GB/T16422.3-97, D2565 ASTM D2565 and etc.

#### **Main configuration:**

- Xenon lamp of full spectrum
- Various choices of filtering system
- Water spraying function
- The relative humidity control
- Air temperature control system
- Sample holder for irregular shape
- Imported American xenon arc lamp
- Easy to install and use, basically do not need maintenance.
- The life of xenon arc lamp depends on the irradiance level used. Generally the lamp life is 1600 hours. The lamp can be replaced conveniently and quickly.
- The sustained filter guarantees the maintenance of required spectrum.

**Specifications:**

- Working size: 400 x 400 x 500mm (W x D x H)
- External dimension: 950 x 950 x 1650mm
- Temperature range: 0°C ~ 80°C
- Temperature deviation:  $\pm 2^{\circ}\text{C}$  (when turn off the light)
- Humidity range: 30~98%R.H
- Humidity deviation:  $\pm 2.5\%\text{R.H}$  (humidity  $\geq 75\%\text{R.H}$ ) + 3%R.H, humidity  $\leq 75\%\text{R.H}$  (when turn off the light)
- Type of light source: imported air cooling type long arc xenon lamp with full solar spectrum (the average life is about 1600 hours)
- Time of raining: 1 ~ 9999 minutes, can be adjusted
- Cycle of raining: 1 ~ 240min, the interval can be adjusted
- Spectral wavelength: 290nm ~ 800nm
- Xenon lamp power: 1.8kW (life: 1600 hours)
- Light source wavelength range: 290-800nm
- Heating power: about 4kW
- Humidifying power: about 2kW
- The UV source: 1200w/m<sup>2</sup>
- The distance between the center of the arc and the sample shelf: 350 ~ 380mm
- Sample rotation speed: 1r/min
- Water spray cycle:  
Spray time: 0 ~ 99h59min, continuously adjustable  
Time of interval: 0 ~ 99h59min, continuous adjustable
- Illumination time: continuous programmable
- Blackboard temperature:  $85\pm 3^{\circ}\text{C}$
- Refrigeration mode: mechanical refrigeration air cooling

**Working conditions:**

- Environmental temperature: 26°C
- Relative humidity:  $\leq 85\%\text{R.H}$
- Power: 220V + 10% 50HZ
- Total power: about 4KW
- No-load testing room, two hours after the temperature and humidity is constant.

**System description:**

Xenon lamp aging test Chamber includes the following parts: test chamber, control system, refrigeration/dehumidification system, heating system, humidifying system, air duct system, raining system, light illuminating system.

- **Test chamber:**

1. The chamber adopts an integrated structure. The top left part is the working room, the upper right part is electrical control room, and the lower part includes the compressor, refrigerators, mechanical speed device for sample holder, xenon lamp condensate tank, pumps and other device. Electrical control cabinet is placed on the right side of the chamber, which is easy to operate.
2. The internal wall of the chamber adopts international general SUS304 stainless steel plate.
3. The insulation material of the chamber adopts polyurethane foam with superfine glass fiber, which can achieve good insulation effect, and the surface of chamber outside will not be frosted and condensate.
4. The bottom of the chamber has a condensed water outlet.
5. Doorframe using environmental silicone rubber seal which can resist to high and low temperature for a long-term.
6. Glass window designed on the front of the chamber for observing the tested sample. The window has a protective film for protecting eyes, to avoid the damage of xenon ray on the eyes.

- **External chamber:**

The external chamber is made of high-quality cold-rolled steel plate and manufactured by CNC machining. Its surface has been sprayed electrostatic after pickling phosphating.

- **Door and door buckle:**

1. The door sealing adopt double refining silicon rubber, which is more reliable and will not be aging and hardening in high and low temperature conditions.
2. The test chamber is the single door (embedded door handle with no reaction).
3. Observing window, frost prevention device and lamp with switchable control designed on the chamber door.
4. Observing window size: 25cm × 30cm (W × H), material: Anti - radiation hollow glass

- **The electrical parts (key) of the test chamber:**

1. Main power switch is an empty pressure switch which controls the whole circuit.
2. Safety protection measures: the control system should automatically cut off the whole system and alarm when detected the following protection device (single) action:
  - Working room over temperature protection;
  - Power phase shortage, leakage protection
  - Over-current protection for the blower motor
  - Overpressure / overload protection for refrigerator
  - The heater, humidifier overload/short circuit protection
  - The fuse protection

- **The working part of the test chamber:**

1. Compressor condensing system:
  - a. Magix refrigeration system: The core of the refrigeration system is the compressor, we use a French Taikang full closed compressor that ensures the requirement of cooling for the working room.
  - b. Magix refrigeration system is designed and applied of energy regulation technology, a kind of effective way which can not only guarantee refrigerator working under the normal condition, but also can adjust the energy consumption of the refrigeration system and refrigerating capacity, which makes operation cost and fault rate of the refrigeration system fell to a more economical situation.
  - c. Refrigeration evaporator is inside of the air duct interlayer at one side of the chamber, ventilated forcedly by blower motor, which can transfer heat rapidly.
  - d. The cooling method of refrigeration system: forced air cooling system.
  - e. Refrigerant: R404a (environmental refrigerant)
2. Heating part:
  - a. Heating method: Directly heating inside the chamber.
  - b. Adopting the military grade stainless steel finned heating pipe, heating rate is stable to keep the temperature inside the chamber constant. It possesses characteristics of corrosion resistance, high and low temperature resistance, no leakage, convenient for installation.
  - c. SSR (solid state relay) output control, possessing the advantages of no noise, reliable work, long service life, strong anti-interference ability, fast switching speed, small external interference, convenient use and so on.
3. Raining system: The raining system is mainly composed of nozzle, solenoid valve, water source and connecting hose etc.

**Safety Protection Devices:**

- Ground protection
- Power overload short-circuit breaker
- Circuit overload control、 short-circuit fuse
- Water shortage protection
- Over temperature protection

## Temperature control

### UV:

In the UV process, temperature can be set at any point between 50°C~70°C, depending on the light level and the indoor environmental temperature. Temperature of the device is adjusted by a controller with a microcomputer calculation functions to direct air heater, water heater and a series of other systems within the device.

### Humidity:

With the rising of temperature, the destructivity of moisture on material will increase rapidly. Therefore, temperature control is the basic requirement for the process of damping. In order to generate acceleration effect, it requires maintaining a high temperature in the damping process. So, in the condensation process, temperature will be set at any point between 40 °C ~ 60 °C.

### Heating system:

- Adopting u-shaped titanium alloy high-speed electric heating pipe.
- Temperature control and lighting system are two completely independent systems.
- Output power of the temperature controlled by microcomputer.
- Heating system equipped with over-temperature protect function.
- Blackboard temperature is controlled and heated by color touch screen programmable scanner or digital buttons temperature controller. Power output is calculated by the microcomputer. PID is self-tuning and monitor is equipped with standard PT100 temperature sensor blackboard.
- Sink temperature is controlled and heated by Korean color touch screen programmable temperature controller. The sink locates in the lower part of the chamber, plus built-in electric heater. During the test, one of the sections is dark condensation process, which require the chamber inside is able to produce saturated steam with higher temperature. When the steam encountered relatively cold model surface, it will condense dew on the model surface.