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INVE 2000

AGEING  
TEST  
SIMULATOR

# EQUIPMENT





# INVE 2000

The IR and UV radiation present in sunlight is responsible for almost all processes of photo-degradation of durable materials exposed to the external environment. The types of damage include color change, loss of gloss, chalking, cracking, crazing, hazing, blistering, weakness, loss of strength, oxidation, etc...

Since 1950 Helios Quartz produces INVE equipment providing customers a reliable and professional solution for Accelerated Ageing Test of any material that is exposed to the Sun Light. INVE equipment has been developed and continuously improved thanks to the close cooperation between Helios Quartz R&D dept. and research centers, universities and private companies' laboratories.

The device INVE over the decades has had great success thanks to its ease of use, low purchase price and low cost of use, now it boasts excellent references in more than twenty countries on four continents (Europe, North and South America and Asia).



INVE 2000, the latest version available in the market, is widely used and appreciated by customers to define, through laboratory testing, the degree of aging for any material, in solid or liquid form. The laboratory testing provides real-life data to materials that are normally exposed to the natural sunlight by exposing it to ultraviolet and infrared artificial radiation sources. The version INVE 2000 maintains the excellent quality/price ratio, which allows the purchase at a very affordable price by small laboratories or anywhere quality control is needed.

The test is performed by subjecting the materials to a uniform and constant irradiation with an aging power from 30 to 50 times higher than the intensity of the solar rays, obtaining consequently a fast and clear feedback about the reaction and deterioration rate of the materials tested.



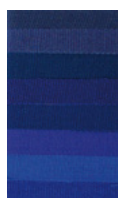
# ACCESSORIES

**SPECIAL LIQUID CONTAINER** made by high purity quartz perfectly transparent to UV and IR radiation. Helios Quartz quartz glass dept. can produce customized quartz container's according to customers' specs and drawing.

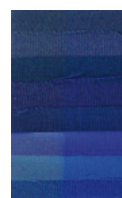


## BLUE WOOL SCALE CARDS:

Traditionally, this test has been widely adopted as a standard during the exposure to UV rays in the laboratory to determine the degree of aging of the materials.



unexposed



exposed to INVE 2000  
- Zp lamp  
- 30 minutes

## GREY SCALE ISO 105-A02 E ISO 105-A03

For change in colour and for staining according to ISO 105 BS 1006. **Grey Scale for Change in Colour** The grey scale consists of nine pairs of non-glossy neutral grey coloured chips, which illustrate the perceived colour differences. They are used in the assessment of colour change occurring in fastness tests as described in ISO 105-A02. They are also essential in the grading of light fastness tests when using the Light Fastness Standards.

**Grey Scale for Staining** The grey scale consists of nine pairs of non-glossy grey and white coloured chips which illustrate the perceived depth of staining. They are used to assess the amount of staining occurring on adjacent undyed fabrics during fastness tests. Their use is described in ISO 105-A03. Il loro uso è descritto in ISO 105-A03.



Grey scale  
for change in colour



Grey scale  
for staining



# CHARACTERISTICS

INVE 2000 - Cod 84L00004 is a fully automatic apparatus which requires no maintenance and can work continuously 24 hours a day. The device has been designed to guarantee external protection from the ultraviolet radiation and is equipped with a security alarm that switches the UV lamps off in case of accidental opening of the doors. All the device's controls and programs are easy to use through one touch - screen PLC of the latest generation from which you can adjust the intensity of the lamps, to set up the test time, to set up the chamber temperature from room temperature up to 80 ° C., etc..



PLC touch - screen

The materials are placed inside the chamber above a height-adjustable aluminium rotating plate (300 mm diam.), moreover the chamber doors are equipped with a safety micro-switch that turns off the lamps in case of accidental opening of the chamber during the use of the device without any loss of data.

## TECHNICAL DATA:

- Dimension 725 x 505 x H. 783 mm., 70 Kg weight
- Electric output line 230 V single-phase
- Light sources:
- N° 2 UV high pressure lamps
- N° 1 IR emitter;
- Electrical power supply panel and controls voltage 24V in compliance with the CE and CEI regulations.

## APPLICATION FIELDS

Listed below are some typical industrial sectors that already utilized INVE device:

- Additives
- Colorants (Pigments, varnishes, lacquers, inks, etc.)
- Adhesives
- Sealants
- Automotive
- Building Materials
- Paints
- Coatings
- Pharmaceuticals
- Cosmetics
- Leather
- Plastics
- Packaging
- Rubber
- Natural & Synthetic Fabrics and Textiles
- Paper & Paperboards packages
- Foodstuffs & Beverages
- Electric wire and cables
- Wine & Liquors

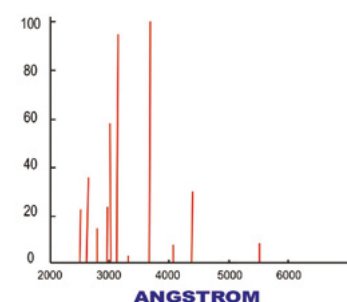


# UV LAMPS

Helios Quartz in according to customer's requests and application field equips the apparatus with different types of UV lamps:

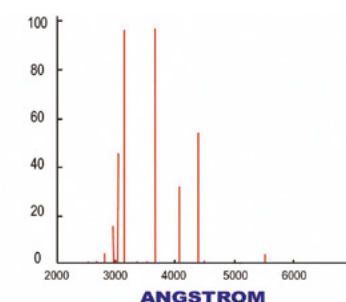
## Zp types

cover all ultraviolet range (UVA, UVB and UVC) with the emission peak in UVA region at 366 nm.



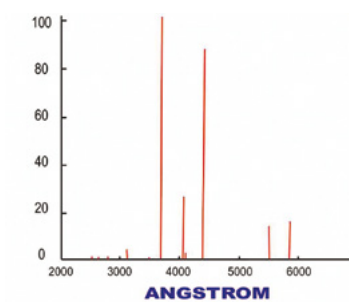
## Zh types, (ozone free)

are available with UVB and UVA emission from 280 nm to visible wavelength range.



## Zs types (ozone free)

are available only with UVA emission from 320 nm to visible wavelength range.



In order to maintain the reliability of the test repetition, it is recommended to replace the UV lamps after 1000 working hours and the IR emitter after 10000 working hours.

helios quartz

