

USING LIGHTCHECK® LIGHT DOSIMETER STRIPS

FS 2/4

Contents:

LightCheck® (LUC & LCS)

Development aims to production of LightCheck®

Background to the development project

Method of Development

Achievements of the project

How to Use the Dosimeters

Working example of how to use the light strips

Comments

Supplier

LightCheck® (LUC & LCS)

This light dosimeter strip was developed between 2000-2004 as a European Research Project by a number of European Research partners.

Development aims to the production of LightCheck®: To produce a light monitoring tool that was more sensitive than the Blue Wool Standard (BWS), because the latter has low sensitivity (colour changes on dosimeter happen over a longer period of time) to museum lighting conditions.

Background to the development project

The LiDO (Light Dosimeter for Monitoring Cultural Heritage: development, testing and transfer to market) research project was conceived in response to the need for a sensitive and standardized light dosimeter, which would be easy to handle, environmentally robust, inexpensive, cumulative and designed for wide use in the heritage sector.

Method of development

The first stages in the project's work programme was concerned with the investigation of different combinations of dyes/matrices/substrates and their response to different light levels by laboratory experiments. The next stage was the field trials which were carried out in selected Museums in London, Paris, Berlin, Florence and Prague. The final step of the project was dedicated to the development of a standardized preparation method and quality control of the product.

Achievements of the project

The result is the production of two types of light dosimeters; one more sensitive (LCU) than the other (LCS). They are both based on the same

2007

Email: textileconservation@ecosse.net Web: www.textile-conservation.com

Sophie Younger *Conservation*

Accredited Conservator – Textiles & Preventive Conservation

principle: a light sensitive coating on a substrate that changes colour during exposure to light; the colour change is compared with a scale on a calibration card which translates exposure into Lux hours. Both types of dosimeter are more sensitive than BWS and therefore extend the monitoring range of instrument-free and cheaper ways of recording light exposure. The LightCheck® Ultra (LCU) is designed to monitor over a short exhibition/display times (up to 120,000 Lux hours) whereas LightCheck® Sensitive (LCS) is applicable for longer exposure times (at least four times as long as LCU).

How to Use the Dosimeters

Light exposure changes the colour of both dosimeters from blue to pink (and eventually white i.e. substrate is bleached of all its light sensitive dyes making the strip redundant because exposure goes out-with the range of the strip), the difference between the two products is that; LCU, on a glass substrate, changes more quickly from blue to pink because it is more sensitive than the LCS which is on a paper substrate.

Working example of how to use the dosimeter strips: calculating annual Lux hour exposure of lighting on an organic object in a Museum or Historic House

Choose which product is applicable: LCU works with exposures below 120,000 lux hours and good for monitoring shorter Lux exposures such as temporary exhibitions and transit times. LCS' range is at least 400,000 lux hours.

Place the LightCheck® dosimeter on the same plane and as close to your object as possible. Half the strip could be covered, as your control, or another dosimeter placed on the reverse of your object.

After a year check the dosimeter against the calibration card and note the number beside the colour that best describes the shift from blue to pink on your dosimeter.



As you can see, there are five calibration bands.

2007

Email: textileconservation@ecosse.net Web: www.textile-conservation.com

Sophie Younger *Conservation*

Accredited Conservator – Textiles & Preventive Conservation

LCS	Equivalent luminous exposure (lux hours)
4S	Above 340 000
3S	200 000-340 000
2S	80 000-240 000
1S	60 000-100 000
0S	Below 60 000

Calibration band

Each band represents a large range in possible lux hours; this makes its use in Historic Houses more applicable because the further away the environmental conditions, of the property or gallery, from those used in the development of the dosimeters (quartz halogen lamp at 500 lux, 23°C, 55% relative humidity) the greater the likelihood of a fluctuating reading. Compare Lux hour exposure with an ISO standard; the standard for highly sensitive objects: ISO category 1,2 & 3 which includes works on paper, textiles, parchment, leather, natural history, albumen prints and other sensitive photographic material is a recommended maximum luminous exposure of 10,000 lux hours. At this number of Lux hours per year, after one hundred years a just noticeable fading is predicted

Comments

LightCheck® dosimeters (LCU & LCS) are very useful. One criticism I had asfter trials in Malta in 2004 was that in both strips the colour rendition on the calibration cards did not accurately represent what actually happens to the dyes on the strips. I hope this has been addressed.

Supplier

www.lightcheck.co.uk

for information & orders: 32 Camden Loch Place, London NW1 8AL

T: +44 (0)207 267 7555 & +44 (0)1283 520365

email: david@outloores.co.uk

LCU - £34.50 per pack of 5

LCS - £67.00 per pack of 5

(prices will change)

2007

Email: textileconservation@ecosse.net Web: www.textile-conservation.com