



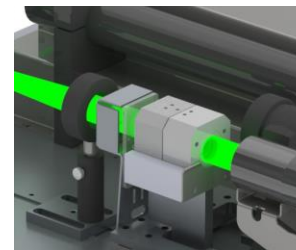
SOLUTIONS  
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MARKETS

## Peira LLBO 180

**Laser Light-Based Opacitometer  
for  
OECD Test Guideline 437 (BCOP)**

# Laser Light-Based Opacitometer 'Peira LLBO 180'

The "Peira LLBO 180" is a Laser Light-Based Opacitometer that can be used as an alternative for the standard OP-KIT device in the Bovine Corneal Opacity and Permeability (BCOP) test (OECD Test Guideline 437) to identify chemicals inducing serious eye damage as defined by United Nations Globally Harmonized System of Classification and Labelling of Chemicals (UN GHS), *i.e.* chemicals to be classified as UN GHS Category 1 and chemicals not requiring classification for eye irritation or serious eye damage under the UN GHS classification system (No Category).



The Peira LLBO 180 offers the advantage of analyzing the complete corneal surface and is therefore able to detect more efficiently opaque spots located around the periphery of the excised corneas.

This new device will allow not only a more accurate definition of the eye irritating potential of compounds, but also a more precise ranking of moderate to mild and non-irritating compounds. The value of Peira LLBO 180 has been confirmed during in-house and multi-laboratory evaluation studies performed by VITO and published in latest OECD Test Guideline 437 dated 26<sup>th</sup> of June 2020.

The Laser Light-Based Opacitometer system will standard be delivered with following options:

- Automatic laser beam light adjustment
- Connectivity pack incl. software
- Standard calibration filter set (OM30, OM60, OM80, OM100)
- Power supply cable
- Manual

Optional: Custom holders on demand

## BCOP Test Method

The OECD Test Guideline 437 describes the BCOP Test Method for Identifying Ocular Corrosives and Severe Irritants, thereby reducing and refining the number of *in vivo* Rabbit Eye Irritation tests. In 2020, the Test Guideline was updated to allow the use of a Laser Light-Based Opacitometer (LLBO) which was shown to have similar performance as the OP-KIT opacitometer used in the validation of the BCOP test method (<https://doi.org/10.1787/9789264203846-en>).

# Peira LLBO 180

The Peira LLBO 180 is used in the BCOP Test Method (OECD Test Guideline 437 - Prediction model page 9) to evaluate the eye hazard potential of a test chemical as measured by its ability to induce opacity and increased permeability in an isolated bovine/calf cornea. The LLBO Irritancy Score (LIS) is used to classify the irritancy level of the test chemical with as unit for measurement lux, the SI unit of illuminance, and the opacity is defined as mean lux/7.

- LIS with LLBO = mean opacity value (read-out of LLBO in lux/7) value + (15 x mean permeability OD490 value)

## Characteristics

Main characteristics of Peira LLBO 180:

<b>Laser Light-Based Opacitometer (Peira LLBO 180)</b>
Laser (monochromatic) light
One light source (one beam)
The whole cornea is analysed
Linear
The width of the light beam can be adjusted

## Connectivity incl. software

Standard the LLBO will come with an USB (2.0 and 3.0) interface incl. 'state of the art' software to facilitate data collection and processing incl. reporting.



## Glass filters for calibration

Standard certified glass filters and filter holders especially designed to ensure linear and accurate readings are included. The device is verified by using four neutral density glass filters (OD 0.3; 0.6; 0.8 and 1.0). After verification, the device is ready to measure opacity values of the (un)treated corneas.



## Cornea Holders

The corneal holders are made of an inert material (polypropylene) and comprised of two halves (an anterior and posterior chamber) with two similar cylindrical internal chambers. The corneas are placed endothelial side down on the O-ring of the posterior chambers and the anterior chambers are placed on the epithelial side of the corneas. The chambers are maintained in place by three stainless steel screws located on the outer edges of the chamber.



The end of each chamber houses a glass window, which can be removed for easy access to the cornea. An O-ring is also located between the glass window and the chamber to prevent leaks. Two holes on the top of each chamber permit introduction and removal of medium and test compounds and are closed with rubber caps during the treatment and incubation periods.

## Specifications

### Laser Light-Based Opacitometer Peira LLBO 180:

Laser Light-Based Opacitometer with automatic laser beam light adjustment, integrated camera and easily to operate with the professional LLBO software.

Component	Specification	Manufacturer
Light source	532 nm Laser	ROITHNER Lasertechnik GMBH Wien, Austria
Luminometer	Effective range 0,1 – 50.000 lux	Edmund Optics Ltd. , York, UK
Connectivity	USB 2.0, USB 3.0	Exmore NV, Beerse, Belgium
Software	LLBO professional software	Exmore NV, Beerse, Belgium

**Certified glass filters:** Certified glass filters are built in separate polypropylene holders to prevent touching and risk on scratches.

**Cornea holders:** Each holder includes 2 glasses, 3 O-rings, 3 screws and rubber caps. With the specialized tool the chambers could be easily opened and closed.