

# BCOP LLBO for Identifying i) Chemicals Inducing Serious Eye Damage and ii) Chemicals Not Requiring Classification for Eye Irritation or Serious Eye Damage

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## Organisation

**Name of the organisation** Vlaamse Instelling voor Technologisch Onderzoek (VITO)

**Department** Health

**Country** Belgium

**Geographical Area** Flemish Region

## SCOPE OF THE METHOD

<b>The Method relates to</b>	Human health
<b>The Method is situated in</b>	Regulatory use - Routine production
<b>Type of method</b>	In vitro - Ex vivo
<b>Species from which cells/tissues/organs are derived</b>	Bovine

## DESCRIPTION

### Method keywords

eye irritation

opacitometer

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Category 1

No Category

opacity

### **Scientific area keywords**

regulatory toxicology

regulatory use

eye irritation

### **Method description**

In order to find a solution for the center-weighted opacity reading associated with the OP-KIT opacitometer, a prototype of a laser light-based opacitometer (PLLBO) allowing better measurement of opacities was developed (Van Goethem et al., 2010; Annex 1). The technical optimization and optical characteristics of this device can be found in the paper by Verstraelen et al. (Verstraelen et al., 2013; Annex 2). The LLBO uses a monochromatic laser light source and has the advantage of analysing the complete corneal surface, and is therefore able to detect more efficiently opaque spots located around the periphery of the excised corneas. The different devices result in a different read-out and different threshold values that distinguish between the different irritation categories (Verstraelen et al., 2013, 2018).

### **Lab equipment**

Opacitometer

### **Method status**

Currently submitted for further validation by an external party (e.g. OECD, EURL ECVAM,...)

## **PROS, CONS & FUTURE POTENTIAL**

### **Advantages**

Laser (monochromatic) light ;

One light source (one beam) ;

The whole cornea is analysed ;  
Linear ;  
The width of the light beam can be adjusted.

## Modifications

Non planned.

## REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

### References

- Van Goethem, F., Hansen, E., Sysmans, M., De Smedt, A., Vanparys, P., Van Gompel, J. (2010). Development of a new opacitometer for the bovine corneal opacity and permeability (BCOP) assay. *Toxicol. In Vitro* 24:1854-1861
- Verstraelen, S., Jacobs, A., De Wever, B., Vanparys, P. (2013). Improvement of the Bovine Corneal Opacity and Permeability (BCOP) assay as an *in vitro* alternative to the Draize rabbit eye irritation test. *Toxicol. In Vitro* 27: 1298–1311
- Verstraelen, S., Maglennon, G., Hollanders, K., Boonen, F., Adriaens, E., Alépée, N., Drzewiecka, A., Gruszka, K., Kandarova, H., Willoughby, J.A., Guest, R., Schofield, J., Van Rompay, A.R., 2018a. Reprint of “CON4EI: Bovine Corneal Opacity and Permeability (BCOP) test for hazard identification and labelling of eye irritating chemicals.” *Toxicol. Vitro.* 49, 53–64. <https://doi.org/10.1016/j.tiv.2018.03.005>
- Adriaens, E., Van Rompay, A.R., et al., Verstraelen, S. (2019). Overall performance and multi-laboratory validation of Bovine Corneal Opacity and Permeability (BCOP) Laser Light-Based Opacitometer (LLBO) test method with regard to solid and liquid chemicals testing, Manuscript under preparation

### Associated documents

[BCOP TG 437\\_0.pdf](#)

### Links

[OECD TG No. 437](#)

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