



## Sensors "HM-Sensor"

### PRODUCT DESCRIPTION

The sensors of the "HM-Sensors" line are three electrode electrochemical cells where the working electrode has been specifically modified for the determination of heavy metals including zinc, cadmium, lead and copper, coupled with anodic stripping voltammetry (ASV).

The HM-sensors may be applied for disposable use or, alternatively, these devices may be applied for environmental monitoring or depuration processes. The electrode surface can be easily regenerated using a simple electrochemical treatment.

Through the use of standard additions in acidified samples, the HM-sensors may be applied for the quantitative analysis of heavy metals in real samples of various nature, with a limit of detection in the order of mg/L.

Each electrode is produced by screen-printing technology and constitutes of a circular working electrode (3 mm diameter), a silver pseudoreference electrode and a graphite counter electrode.

The miniaturized electrode dimensions allow for the use of these devices with small sample volumes while their low cost permit disposable use.

### TECHNICAL SPECIFICATIONS

Dimensions: 0.8 x 4.5 cm

Working electrode dimensions: 7.06 mm<sup>2</sup>

Thickness: 450 µm

Connection system: Standard connector 2.54 mm pitch (upon request)

Coefficient of variation (CV) (n = 10) calculated on lead detection (Pb): 3 %

### APPLICATIONS

Determination of heavy metals such as Zn, Cd, Pb and Cu in acidified liquid samples, solutions from solid sample digestion coming from organic and inorganic matrixes (minerals, sediments, soil, animal and plant tissue), waste water, river water as well as in food products (for example wine).

### APPLICATION ADVICES

The silver pseudoreference electrode shows higher stability in the presence of chloride ions. Hence, it is recommended that measurements are carried out in solutions with a chloride ion concentration of at least 10 mM.

The recommended medium solution for the analysis is hydrochloric acid (HCl), and it is suggested to always work in acidic conditions. The use of nitric acid (HNO<sub>3</sub>) or other oxidizing acids is not advised as these may inactivate the film present on the working electrode. All measurements have to be carried out under stirring conditions.

