

## APPLICATIONS

The LabAnalyzer 254 is used for quantitative determination of mercury in aqueous samples and sample digests.

- Water samples: drinking water, waste water, ground water, surface water, sea water
- Soil and sludge samples
- Geological sample material
- Waste samples: glass, construction rubble, contaminated liquids, wood
- Stack emissions monitoring: incinerators, power plants (e.g. to VDI 3868-2 VE / Ontario Hydro Method)
- Testing of foodstuffs
- Clinical samples: urine, blood, saliva
- Chemical industry: environmental protection and quality control
- Petrochemical industry
- Research (development of demercurisation techniques, etc.)



To know mercury concentrations is of great importance because of the toxicity of mercury and its compounds. Mercury analysis has gained an increased actual requirements demanded by legal regulations. Whether samples should be analyzed only occasionally or if there are large quantities of samples to be done every day, the LabAnalyzer is the right instrument. It is ready to go without time consuming preparations. A complete analysis cycle time is in a minute range. Operation of the LabAnalyzer 254 is very simple. The user is guided through his work step by step. The accuracy of the measurement results in the range of 10 ppt up to 10 ppb is outstanding.

## MEASURING PRINCIPLE

First the mercury contained in the sample is stripped with an air stream and carried into an optical cell made of fused silica. There the quantitative determination of mercury is obtained by measuring UV absorption at a wavelength of 254nm. This method is commonly known as the cold vapor method (CVAAS).

## OPTIMIZATION OF AAS TECHNOLOGY

In contrast to a typical multi element AAS as often used in laboratories the LabAnalyzer 254 is specially designed for mercury determination. This allows top performance in analytical applications.

The use of a specially developed highly stable mercury lamp in connection with thermostat-controlled UV sensors results in a detection limit of a few ppt of mercury. Memory effects are minimized and a high sample throughput is possible thanks to specially selected components and heating of the optical bench.

## OPERATION AND MAINTENANCE

The LabAnalyzer 254 is operated with a waterproof membrane keypad and a graphic LC display. Handling is very easy. The LabAnalyzer 254 features a small footprint. No auxiliary gases are required for operation. The carrier gas flow required for the analysis is generated by a built-in diaphragm pump which is maintenance-free and has a long service life.

## MEASUREMENT OF A SAMPLE

The sample is transferred into a reaction bottle and 0.5 ml of reducing reagent, for example tin-IIchloride solution, is added. The bottle is then connected to the reaction unit of the LabAnalyzer 254 and measurement is started by just pressing a key. The mercury is quickly stripped from the reaction flask. After 60 to 80 seconds the end of the analysis is acoustically announced and the measurement result is displayed on the screen. Now the device is ready for the next analysis.

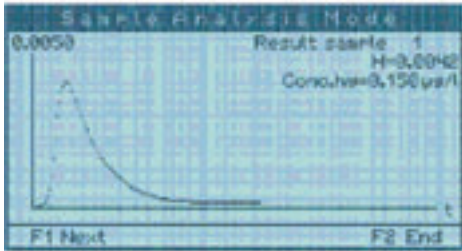


## SHORT ANALYSES

Even with high concentrations no lengthy purging time is required. After every measurement a zero adjustment is carried out automatically (auto zero). The typical duration of a measurement including purging the system free from mercury is 60 to 80 seconds.

**DISPLAY OF RESULTS**

During the measurement the measuring signal is continuously displayed on the screen. An acoustic alarm measurement. In addition to the measurement signal graph, the peak value and the mercury concentration in µg/l are indicated. For samples which are diluted prior to analysis a dilution factor can be entered.

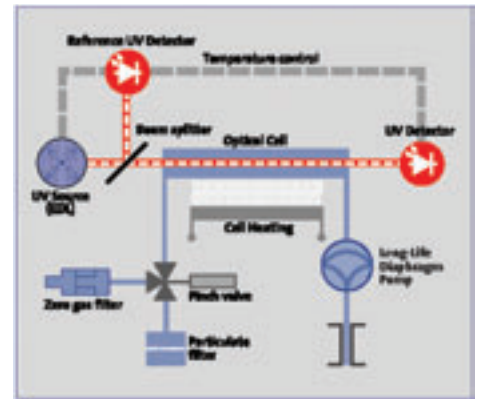


**CALIBRATION**

Commonly available mercury standard solution is used for calibration. Up to three calibrations can be stored and activated for analysis. At the end of a calibration a linear calibration graph is automatically calculated and displayed. Up to 10 calibration points can be used for a calibration. Outliers are marked automatically and the corresponding calibration points may be rejected or accepted.

**SAFETY FOR THE USER**

The mercury cannot escape into the working environment, as any free mercury is collected in a sulfurized activated carbon cartridge. If the cartridge needs replacement, a message appears on the control panel. The analysed sample no longer contains any mercury.



**STORAGE OF ANALYTICAL RESULTS AND QUALITY ASSURANCE**

Together with all the data necessary for quality assurance the results of the analyses are stored in the RAM of the built-in computer. They can be recalled at any time, and a print-out of this data is also possible. The transfer of all data to a PC can be done easily with the included connecting cable.

**HG VAPOR IN GASES: VM-3000 UPGRADE**

The LabAnalyzer 254 can be also used to measure mercury vapor in air and other gases with the optional VM-3000 upgrade. Measuring range is 0.1 to 2000 µg/m³. More detailed information see VM-3000 brochure.

Specification

Measuring principle	UV absorption measurement (CVAAS), peak method
Wavelength	253.7 nm
Light source	electrodeless low-pressure mercury lamp (EDL), temperature-controlled
UV detectors	solid state, UV-enhanced, temperature-controlled
Measuring cell	approx. 23 cm, made entirely of fused silica (Suprasil), heated
Pump	long-life diaphragm pump
Air flow	30 l/h, adjustable
Measuring range	0.01 µg/l ... 10 µg/l (10 ppt ... 10 ppb) for 10 ml sample volume
Sensitivity	5 ng/l or 0.05 ng absolute
Reproducibility	< 1.5 % RSD at 1 ppb
Analysis duration	< 80 sec
Sample volume	0.1 ... 10 ml
Reducing reagent	tin-II-chloride or sodium tetrahydroborate
Display	graphic LCD with background illumination
Signal outputs	analogue 4-20 mA, RS232 serial output, parallel (Centronics) printer output
Power supply	230 VAC/ 50-60 Hz (optional 115 VAC / 50-60Hz)
Power rating	35 VA
Dimensions	45 x 15 x 35 cm (W x H x D) photometer section 24 x 48 x 27 cm (W x H x D) reaction unit
Required bench space	approx. 70 x 50 cm (W x D)