MERCURY INSTRUMENTS
Analytical Technologies

Member of the envea™ Group

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Mercury Instruments

Mercury LabAnalyzer 254

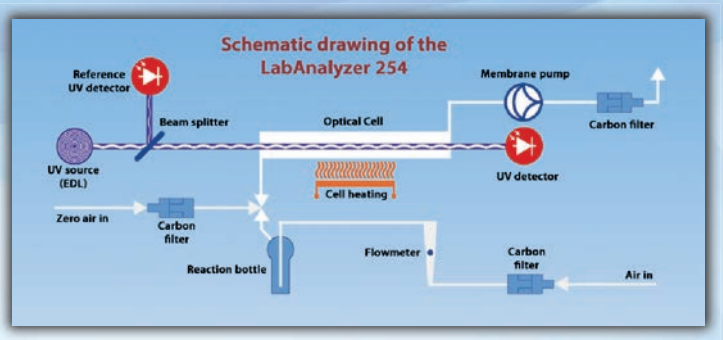
Rapid mercury determination in the laboratory

- Firmly adjusted optical system not requiring any adjustment
- Short analysis time
- Low reagent consumption
- Automatic zero adjustment
- Measuring range: 0.01 ppb ... 10 ppb (10 ng/l ... 10 µg/l)
- Hg trap: Mercury vapors cannot escape into the lab
- Upgradable to VM-3000 Mercury Vapor Monitor
- For analyses according to DIN 38406-12 / DIN EN 13806 / EN 1483 / EPA 7470A / EPA 7471A)

Fields of Application

The LabAnalyzer 254 is perfectly suited 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**
- **Petrochemical industry**
- **Scientific research**
- **Geological sample material**
- **Monitoring of foodstuffs**
- **Clinical samples: blood, urine, saliva**
- **Waste samples: glass, construction rumble, contaminated liquids, wood**
- **Incineration plant monitoring: smoke gas scrubber water, smoke gas analysis (e.g. to VDI 3868-2 VE)**
- **Chemical industry: environmental protection and quality control**



Measuring principle

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

Optimization of AAS technology

In contrast to a typical multi-element AAS the LabAnalyzer 254 is specially designed for elemental mercury. This allows top performance in analytical applications. The use of a specially developed highly stable electrodeless mercury lamp in connection with thermostat-controlled UV sensors results in a detection limit of a few ppt of mercury.

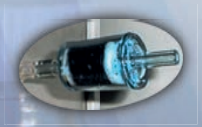
Memory effects are minimized and a high sample throughput is possible thanks to specially selected materials for sample gas conducting components and heating of the optical bench.

Operation and maintenance

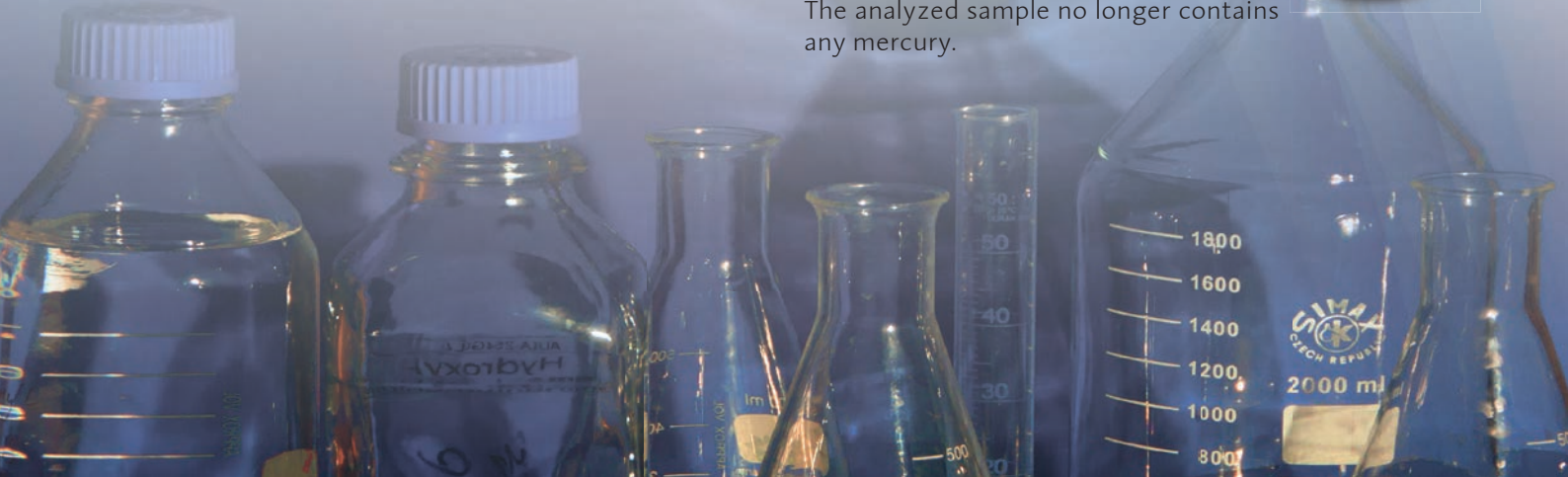
The LabAnalyzer 254 is operated with a waterproof membrane keypad and a graphic LCD. Handling is very simple. The LabAnalyzer 254 does not require auxiliary gases. The carrier gas flow required for the analysis is generated by a built-in membrane pump which is maintenance-free and has a long service life.

Safety for the user

The mercury cannot escape into the working environment, as any free mercury is collected in a sulfurized activated carbon absorber. If the cartridge needs replacement a message appears on the control panel.



The analyzed sample no longer contains any mercury.



Measuring a sample is easy

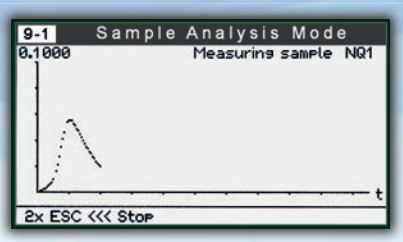
The sample is pipetted into a reaction flask and spiked with 0.5 ml reduction reagent e. g. Tin-II-Chloride solution.

The flask is then inserted into the reaction unit of the LabAnalyzer 254. Measurement is started by a keystroke.

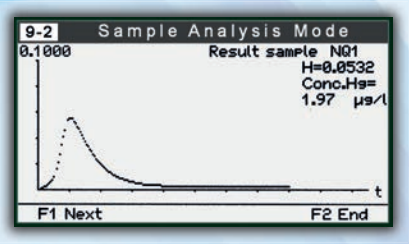
After 60 to 90 seconds the result of the measurement will be displayed on the photometer. The analyzer is now ready for the next analysis. Purging of the system is not necessary. An Auto-Zero is performed before each measurement

Display of results

While measuring the signal is continuously displayed on the screen. An acoustic alarm is activated to indicate the end of the measurement.



In addition to the measurement signal graph, the peak value and the mercury concentration in µg/l are indicated.



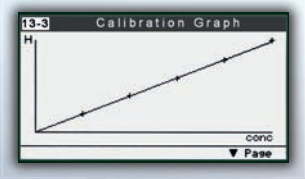
For samples which are diluted prior to analysis a dilution factor can be entered..

Fast measurement

Even with high concentrations no lengthy purging time is required. The typical duration of a measurement including purging is 60 to 100 sec. over the entire measuring range.

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.



Storage of analytical results and quality assurance

Together with all the data necessary for quality assurance up to 100 results are stored in the RAM of the built-in computer. They can be recalled or printed at any time. All data can be transferred to a PC via USB or a RS 232 interface.

Technical Specifications LabAnalyzer 254

Measuring principle:	UV absorption (CVAAS), Wavelength = 253,7 nm, Peak method
UV source:	Electrodeless low-pressure mercury lamp (EDL)
Stabilization method:	Reference beam method
Optical cell:	Fused silica (Suprasil), Length approx. 230 mm, heated, approx. 45°
Measuring ranges: (liquid / solid sample)	• 0,01 - 10 µg/l at 10 ml sample volume • 0,1 ng/g - 0,1 µg/g at 1 g sample weight
Reducing agent:	tin-II-chloride or sodiumborohydride
Sample volume:	2 to 10 ml
Sensitivity:	approx. 5 ng/l resp. 0,05 ng absolutely
Signal outputs:	• analogue: 4-20 mA • serial: RS 232 / USB
Power supply:	• 230 VAC / 50 Hz • 115 VAC / 60 Hz
Power consumption:	35 VA
Dimensions:	• Photometer: 45 x 15 x 35 cm (W x H x D) • Reactor: 24 x 48 x 27 cm (W x H x D)
Required floor space:	approx. 70 x 50 cm (W x D)
Weight:	approx. 10 kg

ISO 9001

As a leading supplier of high precision analytical equipment, we strive at all times to offer top quality solutions. Our products are manufactured according to the ISO 9001 quality regulations.

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