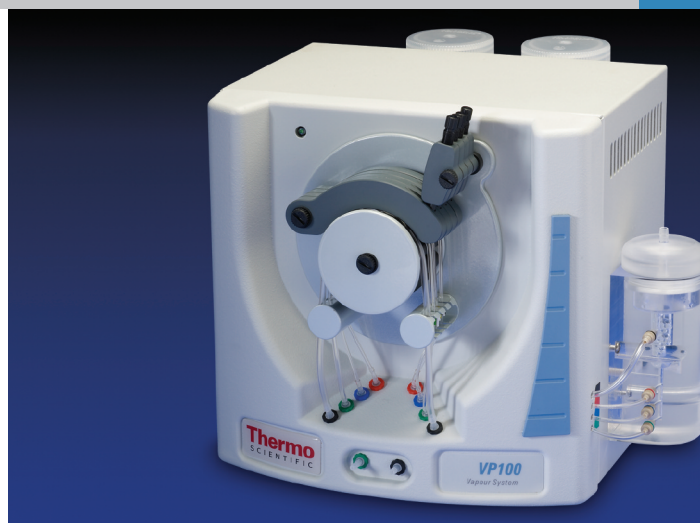
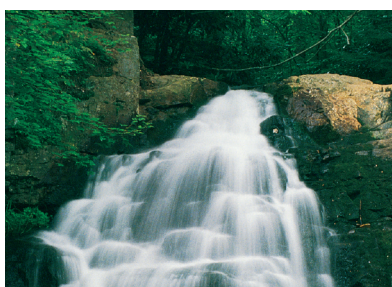


The unique VP100 continuous flow vapor generation system offers exceptional performance, fast sample analysis and easy method development. The system achieves superb detection limits for hydride and cold vapor forming elements including mercury and arsenic.

## VP100 Continuous Flow Vapor Generation System

Incredible performance in a user-friendly package



The Thermo Scientific iCE 3000 Series Atomic Absorption Spectrometers combined with the VP100 accessory enables you to achieve detection limits comparable to an ICP-MS, but at a fraction of the cost.

- **Fast Analysis**

Analysis of a typical sample is possible in less than 60 seconds. The VP100's unique continuous flow design means that sample wash-out time is reduced and sample throughput is increased.

- **Superb performance**

An iCE 3000 Series Atomic Absorption Spectrometer and VP100 accessory can give you detection limits in the parts per trillion range for several important hydride and cold vapor forming elements: As, Se, Ge, Bi, Pb, Te, Sb, Sn, and Hg.

- **Fully customizable**

The VP100 can be optimized to meet the exact needs of the user. With simple, software-controlled adjustments you will quickly be able to find the perfect balance of speed and sensitivity for your analysis.

- **User-friendly**

All the tubing and connections on the VP100 are color-coded, making set-up of the accessory quick and easy. The unique design removes the need for switching-valves and makes the analysis simpler for the user. The VP100 is entirely controlled by the Thermo Scientific SOLAAR Software, so any adjustments to instrument parameters can be made using SOLAAR's intuitive user interface.

- **Easy to maintain**

The unique continuous flow system ensures self-cleaning of the VP100. The only maintenance required is to wash the system with de-ionized or distilled water when an analysis is complete.

## Principle of Operation

Hydride generation AAS uses a chemical reaction to create volatile metal-hydride species which can be analyzed in the vapor phase. Suitable liquid reagents are mixed with samples in a reaction zone to form hydride vapor. The vapor is separated from the liquid mixture in a gas-liquid separator and carried to an atomization cell which can be heated if required. When heated, the hydride decomposes to release atoms, which are then measured by atomic absorption. The cell can either be heated using the air-acetylene flame or by an electrically heated furnace. For the analysis of mercury, no heating is required as the chemicals used form elemental mercury, which passes as a vapor to the cell.

## Performance

The VP100 vapor generation accessory combined with the iCE 3000 Series Atomic Absorption Spectrometers enables part per trillion level detection of hydride and vapor-forming elements. Table 1 gives typical detection limits for some commonly analyzed elements. These figures are comparable with those obtained via ICP-MS. In addition, the figures are likely to be more reliable for arsenic and selenium due to the removal of common ICP-MS interferences for those elements.

	Characteristic Concentration µg/L	Detection Limit µg/L
Antimony	0.29	0.06
Arsenic	0.2	0.05
Bismuth	0.36	0.1
Mercury	0.26	0.06
Selenium	0.7	0.15
Tellurium	0.46	0.1
Tin	0.38	0.2

Table 1. Typical detection limits achievable with the VP100 Vapor Generation Accessory and iCE 3000 Series Atomic Absorption Spectrometers

## Intelligent Design

The VP100 has been designed to make vapor analysis as fast, simple and sensitive as possible. A unique, continuous flow design reduces wash-out times and eliminates carry-over. The gas-liquid separator is made from advanced materials that are completely inert to all reagents to reduce interferences and prolong its lifetime. All connections on the VP100 are color-coded to make set-up and maintenance simple.

## Precision

Our use of state-of-the-art, mass-flow controlled gas supplies means that the VP100 is not reliant upon older, less accurate gas systems. This means that we can precisely control the carrier gas flow through the VP100. The accurate and precise mass-flow controlled system provides exceptional long-term stability, ensuring that gas flow rates do not change even if laboratory temperature or pressure varies.

## EC90

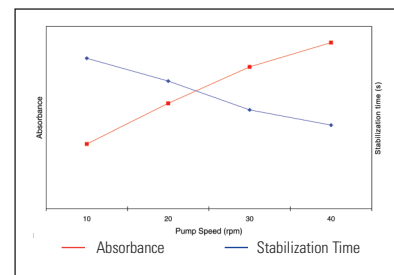
The electrically heated atomization cell (EC90) can be used in conjunction with the VP100. It provides better sensitivity and lower running costs compared to standard flame heating.

## Specialized measurement kits

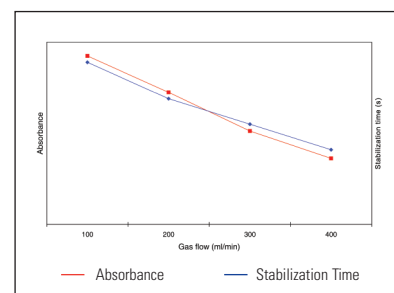
To ensure that the best performance is achieved for each of the hydride-forming elements we have included two different measurement cells. The T-cell is used for As, Se, Ge, Bi, Pb, Te, Sb and Sn. This silica cell is incredibly temperature-resistant, which means that it can be heated to the optimal temperatures to degrade the metal hydrides formed in the VP100. Mercury is analyzed using a special mercury cell, specifically designed with a longer path length to allow you to achieve the lowest possible detection limits.

## Flexible analysis

The VP100 parameters can be adjusted using the software to allow you to fully optimize your analysis. Carrier gas flow and pump speed can be varied independently, which allows you to find the perfect balance between speed and sensitivity.



Graph 1: Pump speed vs Absorbance and Stabilization Time



Graph 2: Gas Flow vs Absorbance and Time

## Conclusion

- The VP100 is a powerful tool for the measurement of hydride-forming elements, achieving exceptionally low detection limits
- Its unique design provides fast, repeatable and accurate analyses
- The VP100 is fully controlled by the Thermo Scientific SOLAAR software, eliminating manual optimization and making method development quick and user-friendly

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