

A Guide to TurboVap Selection and Use

Introduction

Caliper Life Sciences offer a range of TurboVap Concentration Workstations for sample evaporation. This guide is designed to help you select the most suitable TurboVap for your research requirements as well as answer some of the more common questions regarding services, maintenance and applications.

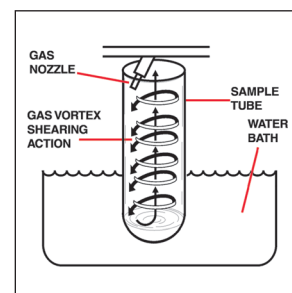
All TurboVaps use a patented vortex evaporation design that increases the speed of evaporation by a factor of 10 compared to other techniques. The combination of gas flow and temperature is then used to optimise the sample drying. Nitrogen is recommended as the best choice for the gas because it is inert and minimises the risk of oxidation. A clean oil free compressed air supply at 60psi can be used if the sample is stable and nitrogen is not available.

As gas usage can be high if large numbers of samples are prepared a Nitrogen generator or bulk liquid nitrogen supply is recommended to minimise cylinder handling.

The TurboVap LV Volume Range 1 mL to 60 mL

The standard Turbovap LV is ideal for sample volumes of 1 mL to 30 mL that need to be evaporated in GC vials, microcentrifuge tubes, conical bottom tubes or test tubes. This instrument offers a high throughput of 50 sample positions using the standard range of racks available. Evaporation is based on a water bath to give an even temperature and a gas flow delivered over a set time period. This gives the option to evaporate samples to dryness if required and reconstitute with an alternative solvent.

For volumes greater than 30 mL Caliper Life Sciences offers the ASE version of the TurboVap LV - compatible with the Dionex ASE 200. This has 24 sample positions providing plenty of capacity and comes with a rack that has a removable shelf allowing either 40 mL or 60 mL Dionex tubes to be used. If you need to evaporate acidic solutions then we can offer Teflon coated nozzles instead of stainless steel ones to prevent corrosion.



Key Applications

The Turbovap LV is used in environmental, forensic, clinical chemistry, food and pharmaceutical laboratories for concentration of solvents following SPE clean up of drug samples or pesticide extracts. The Turbovap LV is often used in conjunction with the RapidTrace Automated SPE workstation that collects extracts in 12mm x 75mm or 16mm x 100mm test tubes.

The TurboVap II

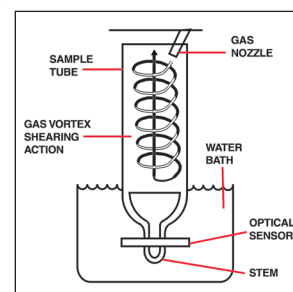
Volume Range 50 mL or 200 mL

The Turbovap II is ideal for evaporation of large volumes resulting from liquid to liquid extractions. It has 6 sample positions and uses special glass tubes with either a 1 mL or 0.5 mL end point. This is important because it concentrates the components without letting the sample go dry thus preventing volatiles from being lost especially from environmental samples. The instrument takes up only a fraction of the bench space used by conventional rotary evaporators and can be used outside a fume cupboard like the TurboVap LV due to its 12 foot duct hose. The optical sensors automatically stop the gas flow when the evaporation has reached its end volume.

For solvent extracts in Hexane, Dichloromethane, Acetonitrile and Methanol we recommend a temperature of 40 °C as this minimises thermal degradation and loss of most volatiles by allowing the cool gas to condense components while offering a rapid removal of solvent.

Key Applications

The main application areas for the TurboVap II are food, water, soil and environmental solvent extraction.



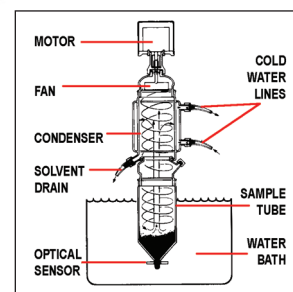
The TurboVap 500

Volume Range 500 mL or Less

The Turbovap 500 has two 500 mL end point tubes that can evaporate solvent down to a 1 mL end point in a similar way to the Turbovap II. A water bath is used to maintain a stable temperature but the key benefit is that it does not require a gas supply. The instrument has variable speed fan motors that provide the vortex evaporation and allows the unique ability of the cooled glassware to condense and collect the solvent. This gives the unit the ability to optimize evaporation conditions to prevent losses as the condensed solvent can be analysed for carry over.

Key Applications

The ability to take a large solvent sample makes the determination of residue on evaporation possible for solvent specifications. It can be used in laboratories where access to gas supplies is difficult which makes it ideal for portable installations on marine science boats and use in remote locations. If a laboratory has limited fume hood extraction then this is also an excellent choice.



The TurboVap 96 Deep or Shallow 96 Well Plates

The Turbovap 96 has two independent compartments that can take 1 mL or 2 mL deep well plates and control the gas flow and electrical heating. A set of spacers supplied can raise the smaller 400 μ L shallow plates to the correct height. The flow rate of the gas is determined by the volume of solvent in the plate and the temperature values can be set with the help of an evaporation guide supplied. The nozzle blocks can be easily cleaned if necessary as no other maintenance is required.



Key Applications

Genomic and proteomic applications that require concentration of purified extracts. The evaporation of DMSO solvent in plates is very common as well as HPLC solvent mixtures of Methanol or Acetonitrile with water. The Turbovap 96 complements the Zephyr SPE workstation that is widely used for drugs of abuse concentration of the eluant and other pharmaceutical SPE methods.

General Maintenance and Useful Tips (not applicable to TV96)

- The lid should be left open between use to prevent condensation build up.
- De-Ionised or distilled water should be used to prevent a build up of scale on the water bath and glassware and changed at least once a month. If chlorinated solvents are used then frequent water changing is recommended.
- Clear bath solution provided is used to keep the water clear and free from algae.
- The siphon pump provided should be used to empty the water quickly and safely.

Summary

Individual brochures and leaflets are available on each of the instruments along with information on the test tube sizes, evaporation rate guides, specifications, and some application notes. For further information please contact your local Caliper Life Sciences office or visit www.caliperLS.com.



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