Dynamic Water Vapor Sorption

Multi-Sample Moisture Sorption Analyzer – Vsorp

The Smart Sorption Solution

The Vsorp product line is the result of our many years of experience in instrument engineering combined with efficient manufacturing technology — a fully automated state-of-the-art system for humidity sorption analysis.

Multi-Sample Instrument
Fully automated high throughput test system to measure up to 23 samples simultaneously.

Unique Comparability of Samples
Direct sample comparison under the same climate conditions in one measurement.

Outstanding Precision and Long-Term Stability
No drift effects and precise closed loop temperature and humidity regulation.

User-Friendly Handling
Easy handling, easy to clean, easy access to measurement chamber.

Working with the Vsorp Instruments

Simply place the filled tray into the test chamber

Sample Preparation
Sample material is applied directly into the dishes on the sample tray. The easily accessible measurement chamber enables a convenient sample preparation.

Operating Software
– User-friendly and intuitive interface
– Programmable sorption/desorption cycles and unlimited number of cycle repetitions
– Humidity cycles as step profiles, ramps or plateaus
– Templates for standard measurements
– Optional 21 CFR part 11 compliant software package

Fully Automated Process
Measurement and data acquisition are fully automated. The large transparent lid enables the observation of the samples. Acquired data can be exported during a running measurement.

Data Export and Further Evaluation
– Import into an Excel® template with fully configurable graphical and tabulated data
– LIMS compatible data format
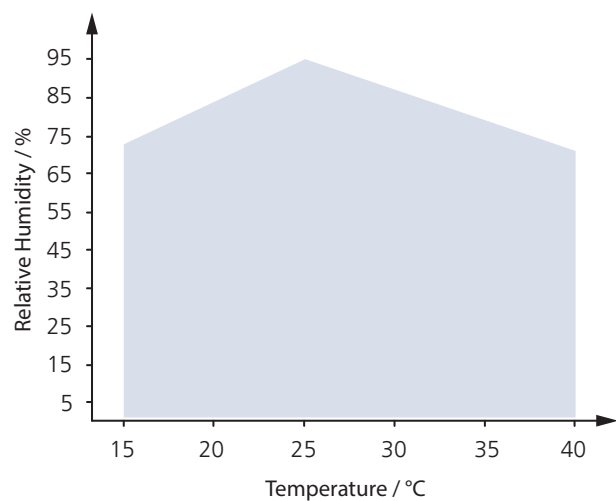– Optional software package for data import and advanced data analysis

Vsorp Series and Technical Data

Vsorp instrument	Vsorp Enhanced	Vsorp Plus	Vsorp Basic
Number of samples & sample size	23 samples Ø 33 mm 11 samples Ø 50 mm	11 samples Ø 50 mm	5 samples Ø 86 mm
Temperature range	15 °C to 40 °C (±0.1 K)		
Humidity range*	0 % RH to 95 % RH (±0.5 % RH at 10…30 °C)		
Load range min to max	<30 mg to 220 g	<50 mg to 220 g	<500 mg to 220 g
Balance resolution	1 µg (up to 22 g) 10 µg (up to 220 g)	10 µg (up to 111 g) 100 µg (up to 220 g)	100 µg
Repeatability**	±5 µg (up to 22 g) ±20 µg (up to 220 g)	±20 µg (up to 111 g) ±100 µg (up to 220 g)	±100 µg
Hardware options	Water vapor permeability rate Large objects sample tray		
Software options	21 CFR Part 11 compliant software package Analysis software		

* Max RH value. See diagram for possible T/RH combinations.

** Root Mean Square (RMS). The specified values assume that the system is installed in an environment suitable for the operation of micro-balances.

Humidity and temperature range for possible T/RH combinations at 22 °C ambient temperature.

Vsorp Special Features

Humidity & Temperature Range

The Vsorp is designed for optimized temperature and humidity stability and best performance in the extended room temperature range.
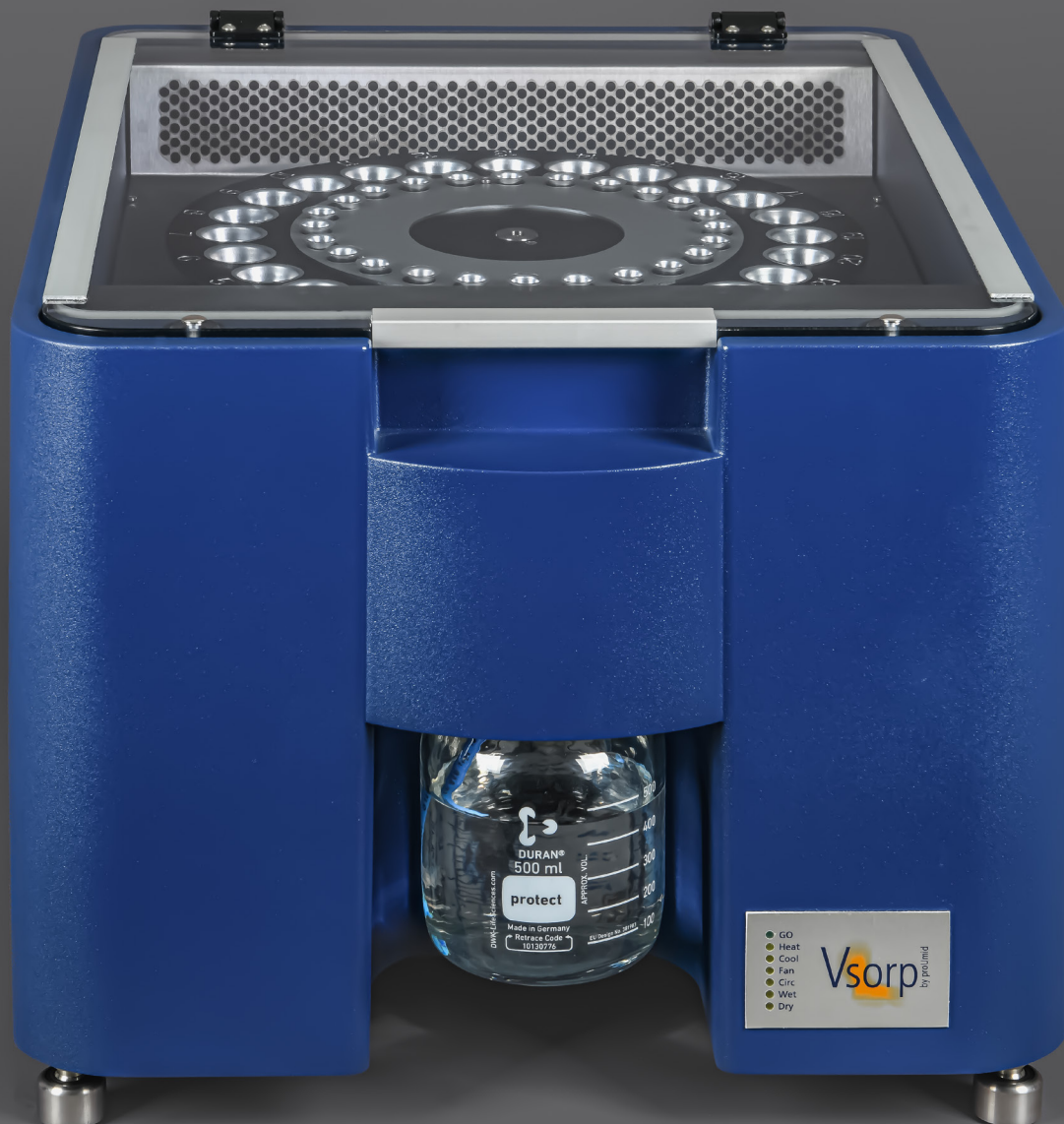
Proven Load Cell Technology

Baseline stability, accuracy and reproducibility are on a level beyond comparable single sample instruments.

Exchangeable Sample Trays

Different sample trays with dish size ranging from Ø 33–86 mm, as well as dishes for large rectangular samples enable the analysis of powders and granules and larger items such as packaging or concrete.

Permeability Testing

The optional Permeability Kit enables the investigation of the water vapor transmission rate (WVTR) through films, foils and packaging materials.

Multi-Sample Dynamic Moisture Sorption Vsorp

Fully automated, multi-sample gravimetric sorption analyzer. Determination of sorption and desorption isotherms and sorption kinetics. Optimized for measurements at and around room temperature over a wide humidity range.

Technical data	
Temperature range	+15 °C to +40 °C
Temperature accuracy	over time ±0.1 K
Humidity range	0 % RH to 95 % RH**
Humidity accuracy	±0.5 % RH (0 … 95 % RH), at 10 … 30 °C
Long term stability	better than 1 % RH per year
Water supply	removable tank, 500 ml
Gas supply	compressed air / N_2 3 bar to 10 bar dry, clean, oil-free (class 1, ISO 8573-1:2010)
Dimensions & weight	width 450 mm, depth 660 mm, height 350 mm (800 mm with open lid), weight 32 kg***
Environmental conditions	temperature +15 °C to +25 °C, humidity max 75 % RH
Power supply	100–240 VAC, 50–60 Hz, consumption: 0.5 kW***
Humidity sensor	calibration with salt solutions
Internal controller	operating system Windows 11 (English)
Software	SPS Software (English) incl. calibration tool 21 CFR part 11 compliant software package (optional)
Data format	MS Excel, LIMS compliant data format
Optional hardware	Permeability Kit, Large Objects Kit

** Max RH value, see T/RH diagram, valid at 22 °C ambient temperature.
*** Dimension, weight and power consumption do not include keyboard, mouse and monitor.

Suitable Accessories

Sample Tray 5 ø86 mm
Compatible with *Vsorp Basic, Vsorp Plus, Vsorp Enhanced*

Sample Tray 11 ø50 mm
Compatible with *Vsorp Basic, Vsorp Plus, Vsorp Enhanced*

Sample Tray 23 ø33 mm
Compatible with *Vsorp Plus, Vsorp Enhanced*

Permability Kit 5
Compatible with *Vsorp Basic, Vsorp Plus, Vsorp Enhanced*
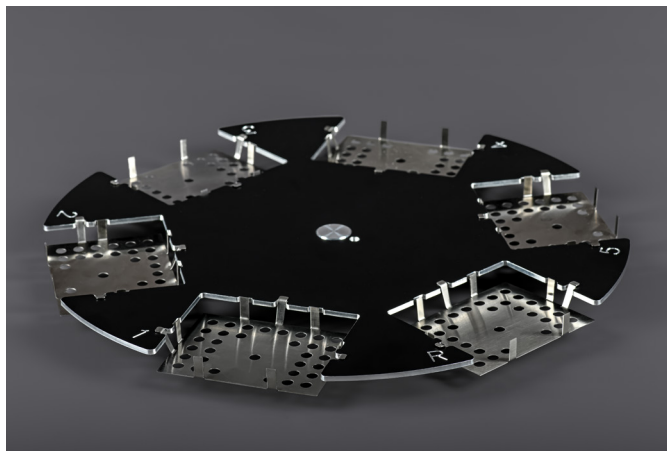

Permability Kit 11
Compatible with *Vsorp Basic, Vsorp Plus, Vsorp Enhanced*

Inverted Wet Cup Kit
Compatible with *Vsorp Basic, Vsorp Plus, Vsorp Enhanced*

Large Objects Kit
Compatible with *Vsorp Basic, Vsorp Plus, Vsorp Enhanced*

Mesh Cover
Compatible with *Vsorp Basic, Vsorp Plus, Vsorp Enhanced*

Spacer
Compatible with *Sample tray 11*

PTFE Inlay
Compatible with *Vsorp Basic, Vsorp Plus, Vsorp Enhanced*

Membrane Dryer
Compatible with *Vsorp Basic, Vsorp Plus, Vsorp Enhanced*

The Vsorp in a Nutshell

Special Features

- High precision and long-term stability

- Unique comparability of samples

- Easy to clean
  (smooth stainless-steel surfaces)

- Optimized sample surface area to sample
  volume ratio

- Top-weighing balance for easy sample handling
  and improved dynamic range

- Full weighing range from 0 to max. load
  (no counterweight required), milligram sample
  sizes up to large objects

- Large measuring chamber

- Effective air flow along the sample surface

- Perfect drift compensation with the aid
  of a reference weight

- Easy handling (sample tray with up to
  23 samples removed and prepared in seconds)

- High sample throughput - automatic and
  simultaneous determination of up to 23 samples
  with a single analysis

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