



IGASORP

DYNAMIC VAPOR SORPTION ANALYZER

**FULLY AUTOMATED COMPACT BENCH-TOP DVS ANALYZER,
FOR FAST AND ACCURATE SORPTION MEASUREMENTS.**

www.hidenisochema.com

The **IGAsorp** is a fully automated compact bench-top DVS analyzer, for fast and accurate sorption measurements using the dynamic flow technique for water and organic vapors.

The measured vapor uptake and kinetics are used to characterize and understand materials in precisely defined environmental conditions.

The **IGAsorp** has an ultra-sensitive microbalance which measures the weight of the sample as a function of humidity and temperature. Multiple sensors at the sample position allow precise feedback control of the experimental parameters. Humidity is determined by relative mixing of wet and dry gas streams which is measured and regulated at the sample position. The temperature is controlled by active feedback fluid circulation.

TYPES OF MEASUREMENTS THAT CAN BE RECORDED

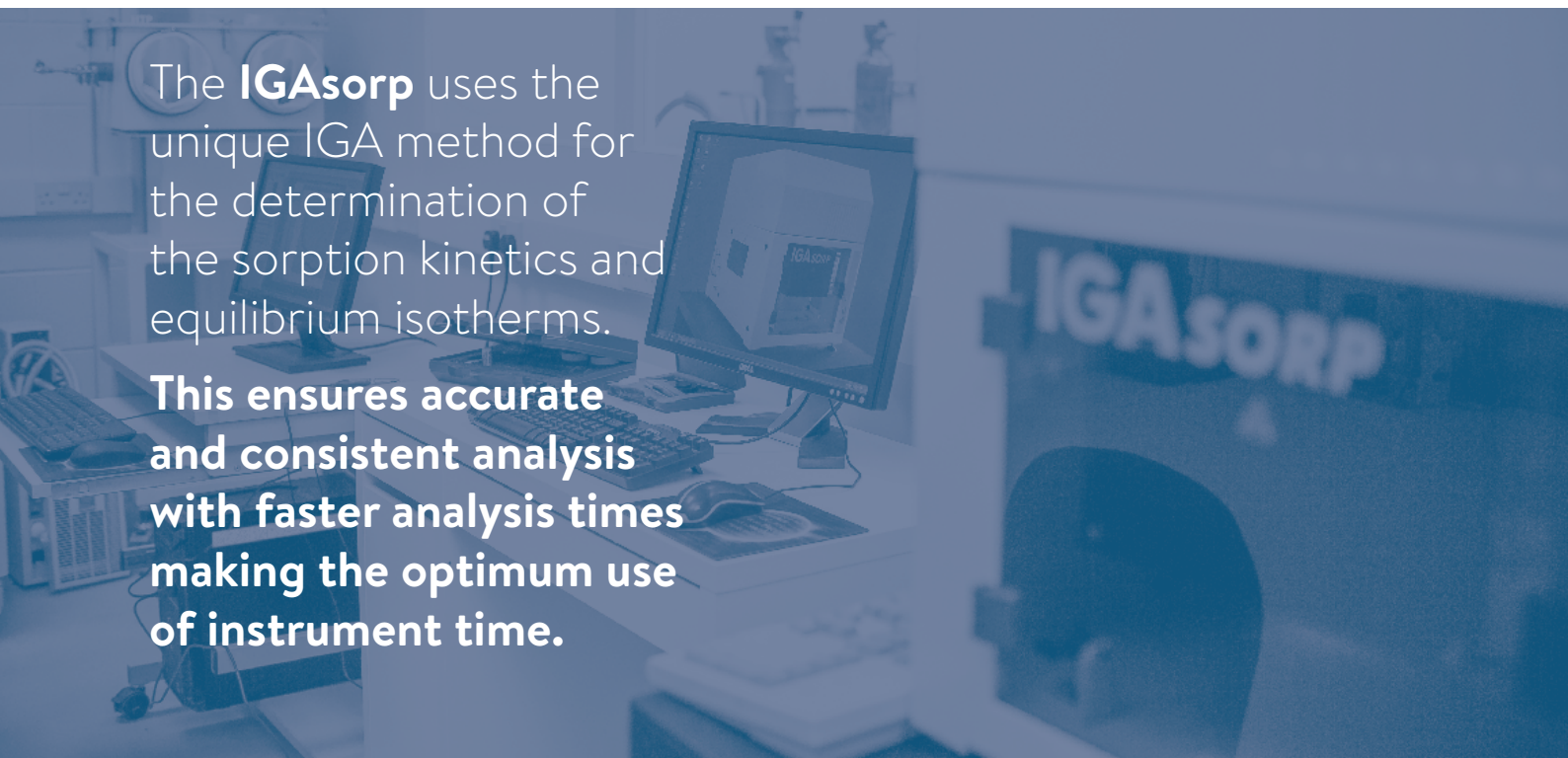
- ▶ Isotherm and kinetics analysis
- ▶ Cyclic/lifetime studies
- ▶ Moisture content determination
- ▶ Hydrate analysis
- ▶ Permeation and diffusion studies (MVTR)
- ▶ Amorphous phase detection

TYPES OF MATERIALS THAT CAN BE TESTED

- ▶ Polymers
- ▶ Textiles
- ▶ Pharmaceuticals
- ▶ Porous materials
- ▶ Packaging materials
- ▶ Building and construction materials
- ▶ Food products and other consumables
- ▶ Wood, fibres, clays and other natural materials

The **IGAsorp** uses the unique IGA method for the determination of the sorption kinetics and equilibrium isotherms.

This ensures accurate and consistent analysis with faster analysis times making the optimum use of instrument time.



ACCURATE, CONSISTENT, RELIABLE.

Providing optimal performance for demanding research applications, method critical quality control, and process analysis.

ACCURATE

- ▶ Unrivalled long term microbalance stability.
- ▶ Traceable calibration and conformance values.
- ▶ Built-in user conformance tests for verification of weight, humidity and temperature readings.
- ▶ System optimized for small sample sizes.

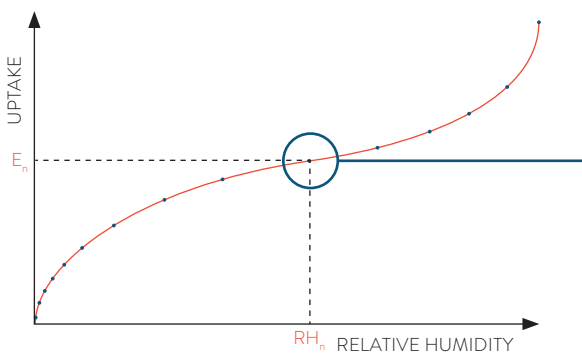
CONSISTENT

- ▶ Unrivalled temperature and humidity control.
- ▶ IGA method for objective sorption equilibration determination.
- ▶ Anodized aluminium sample chamber to eliminate static charge.
- ▶ Three independent temperature sensors to verify isothermal conditions.

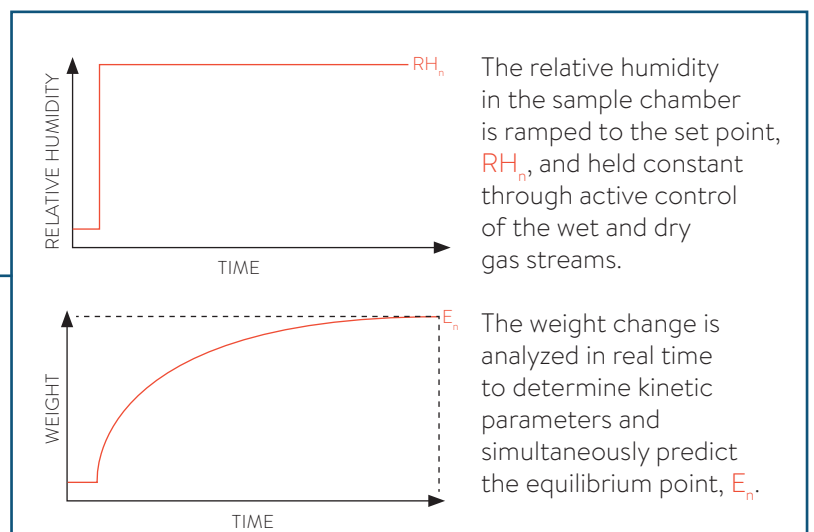
RELIABLE

- ▶ Designed for continuous operation in demanding R&D, process and QC environments.
- ▶ Minimal operator maintenance required.
- ▶ On-line embedded video help.
- ▶ Full 3 year parts and labour warranty as standard.

THE IGA METHOD



Equilibrium points are collected and plotted as an isotherm.



The relative humidity in the sample chamber is ramped to the set point, RH_n , and held constant through active control of the wet and dry gas streams.

The weight change is analyzed in real time to determine kinetic parameters and simultaneously predict the equilibrium point, E_n .

USER-FRIENDLY, VERSATILE.

The IGAsorp offers straightforward and user-friendly operation with pre-programmed methods for routine use, such as materials screening and QC applications. Method templates may also be easily edited to suit individual requirements.

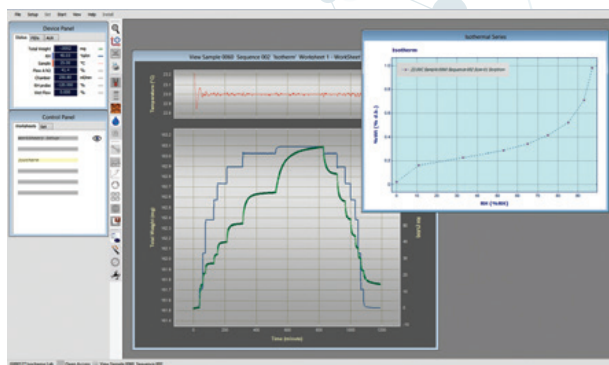
The IGAsorp is versatile for advanced users with fully programmable options for detailed and demanding method development. The HIsorp software allows the programming of sample pre-treatments, heating and cooling ramps, multiple set-point temperatures for isotherm determination, and full control over the relative humidity or partial pressure in the sample chamber.

HISORP SOFTWARE

Fully compatible with all MS Windows® operating systems, and featuring an intuitive user interface and high resolution graphics, **HIsorp** offers the user complete control of the **IGAsorp**.

HIsorp uses the unique **IGA method** for real time kinetic analysis, and endpoint prediction. It also incorporates a series of useful and timesaving features including a PDF report generator, single click exports to Excel®, automatic email notification on completion of measurement and on-line video help.

Options include full 21CFR Part II compliance.



TECHNIQUE HYPHENATION

All **IGAsorp** models can be interfaced with complementary characterization tools, including Raman and Infrared (IR) probes, optical systems and a range of Hiden Analytical quadrupole mass spectrometers.

EXTENDED OPERATING RANGES

The standard **IGAsorp** analyzer can be readily upgraded to other **IGAsorp** models, **IGAsorp-CT** and **IGAsorp-HT**, offering extended operating temperature and vapor partial pressure ranges, as required.

OPTIONS AND ACCESSORIES

A range of options and accessories are available including moisture vapor transmission rate (MVTR) cells, organic vapor measurement capability, and an electrically actuated external water feed for extended operation.

EXAMPLE APPLICATION DATA

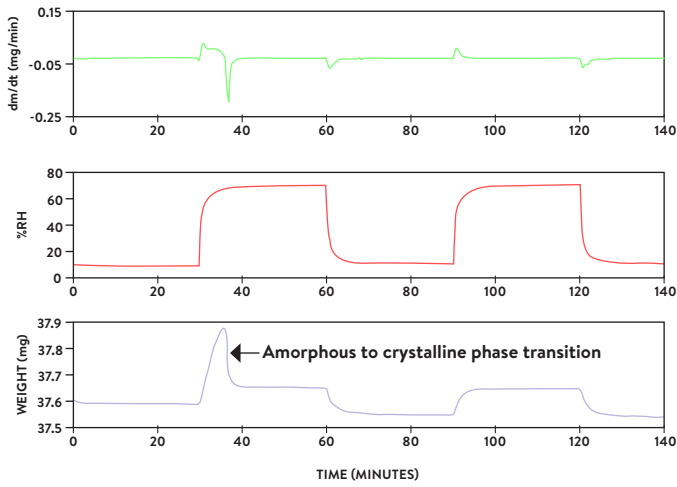


Figure 1: A simple test used to detect amorphous phase.

Data courtesy of GSK

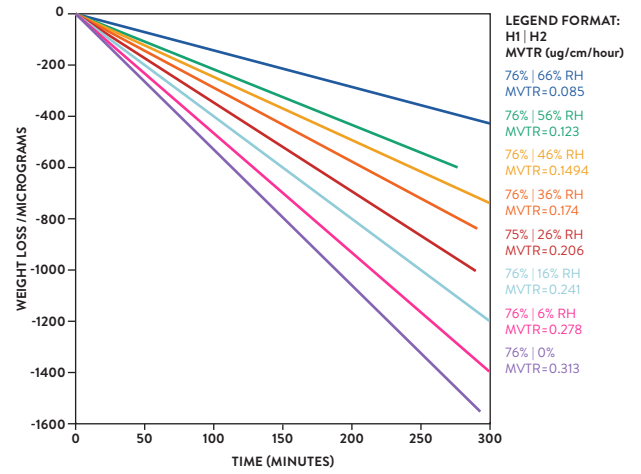


Figure 2: MVTR results from a polymer film.

Data courtesy of GSK

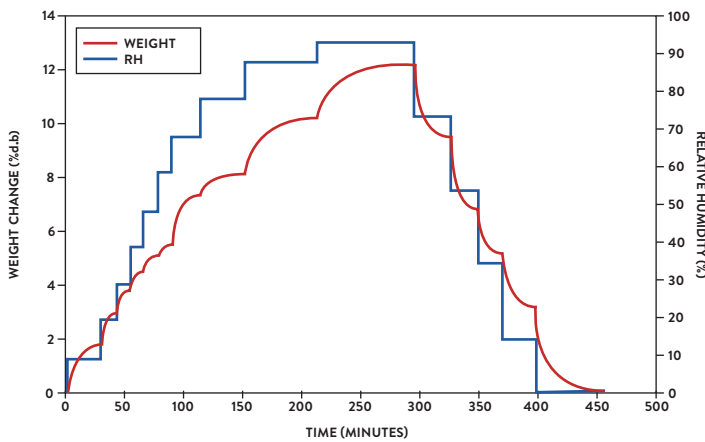


Figure 3: Example of isothermal kinetic response data.

Reference Hiden Isochema application note 121

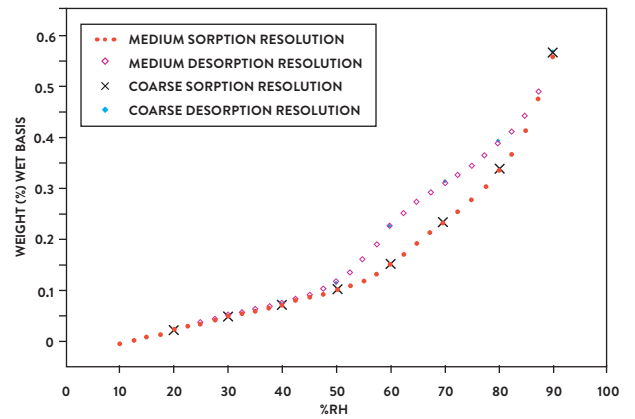


Figure 4: Comparison between isotherms at coarse and medium resolution.

Data courtesy of Boehringer Ingelheim Pharma GmbH & Co KG

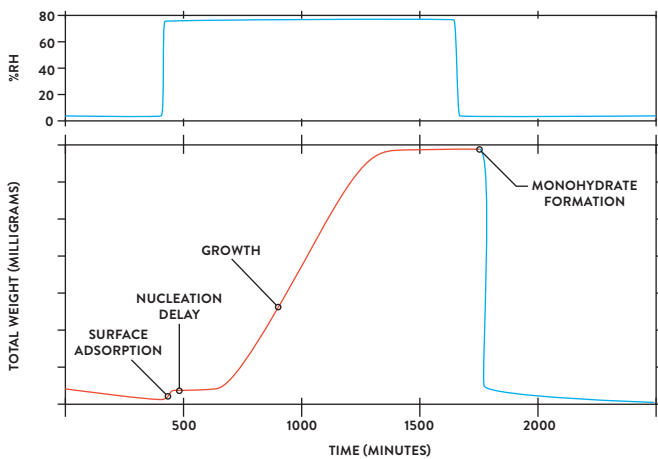


Figure 5: Example of a hydration-dehydration cycle.

Data courtesy of Pharamaterials Ltd

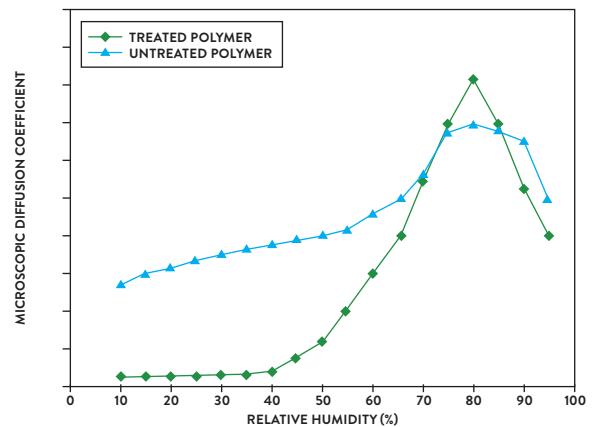


Figure 6: Variation of the microscopic diffusion coefficient with relative humidity.

Reference Hiden Isochema application note 124

TECHNICAL SPECIFICATIONS

IGAsorp

WEIGHT

Capacity	5 gram
Weighing range	25 / 200 / 1000 mg (fixed) or user selectable (optional)
Resolution	from 0.05 microgram
Stability	nominal +/- 1 microgram / week

HUMIDITY

Control range	0 to 98 %RH
Absolute Calibration Accuracy	+/-1 % (0-90 %); +/-2 % (90-100 %)
Regulation accuracy	+/- 0.01 %RH
Minimum control increment	0.02 %RH
Gas Supply	Dry air, N ₂ or He
Maximum flow rate	500 ml/min

TEMPERATURE

Measurement range	5 – 50 °C
Regulation accuracy	+/- 0.01 °C
Pre-heater	Optional, to 250 °C

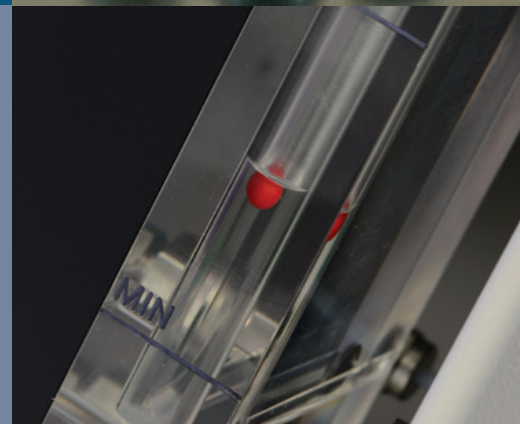
IGAsorp CT

Temperature Measurement range	5 – 85 °C
Regulation accuracy	+/- 0.01 °C
Pre-heater	Optional, to 350 °C

IGAsorp HT

Temperature Measurement range	5 – 300 °C
Pre-heater	Included, to 350 °C
Water Vapor Partial Pressure Range	0 – 500 mbar

The **IGAsorp** is a fully automated compact bench-top DVS analyzer, for fast and accurate sorption measurements using the dynamic flow technique for water and organic vapors.



SUPPORT

Hidden Isochema offers unrivalled technical support free of charge, for the lifetime of the instrument.

Telephone and email access to our team of highly qualified engineers with a guaranteed response within 24 hours.

3 year warranty as standard.

A range of service contracts available.

CONTACT US

If you have any questions about **IGAsorp** or any of Hidden Isochema products or services, please give us a call, we will be happy to help.

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