

# MicroCal VP-ITC Data sheet

## MicroCal label-free interaction analysis

MicroCal VP-ITC is a sensitive isothermal titration calorimeter that is easy to use and operated using a software interface for fast and accurate analysis.

MicroCal VP-ITC applications include characterization of molecular interactions of proteins, antibodies, nucleic acids, lipids, and other biomolecules. It is widely used in industry for lead optimization, hit validation, assessment of the effect of molecular structure changes on binding mechanisms, and enzyme kinetics.

## MicroCal VP-ITC delivers:

- Affinity data that provides insights into biomolecular interactions
- The ability to investigate any biomolecular interaction
- Convenience and speed since there is no need for immobilization and labeling
- Free choice of buffers and no limitations with respect to molecular weight
- Unattended operation after sample loading, allowing you to focus on other tasks
- A complete system without the need for additional accessories, reagents or consumables

Isothermal titration calorimetry (ITC) is a powerful analytical tool that measures the binding affinity and thermodynamics between any two biomolecules.

When substances bind, heat is either generated or absorbed. Measurement of this heat change in an ITC experiment enables accurate determination of binding affinity ( $K_B$ ), reaction stoichiometry ( $n$ ), enthalpy ( $\Delta H$ ) and entropy ( $\Delta S$ ), thereby providing a complete thermodynamic profile of the molecular interaction in a single experiment.

MicroCal VP-ITC can also be used to determine heat capacity changes upon binding by performing experiments over a range of temperatures.



Figure 1: MicroCal VP-ITC.

## MicroCal VP-ITC features:

- Directly measures millimolar to nanomolar binding constants ( $10^2$  to  $10^9$   $M^{-1}$ )
- Measures nanomolar to picomolar binding constants using competitive binding techniques ( $10^9$  to  $10^{12}$   $M^{-1}$ )
- Nonreactive Hastelloy™ cells for excellent chemical resistance
- Fixed-in-place cells for reproducible, ultrasensitive performance with low maintenance
- Precision liquid delivery system for accurate and reproducible injections
- Three user selectable response times for application versatility
- User-selectable mixing speeds to match sample conditions
- Peltier controlled for rapid temperature equilibration
- Includes ThermoVac sample preparation and cleaning device
- Controlled by VPViewer software and data analysis performed with Origin

## Technical specifications

MicroCal VP-ITC	
Operating temperature range	2° to 80°C
Response time	20 s
Cell design	Coin-shaped, fixed in place, non-removable, non-reactive
Cell volume	1400 µl (1800 µl to fill)
Cell material	Hastelloy
Injection syringe volume	300 µl
Sample throughput	4-8 per 8 hour day
Weight	11.5 kg
Dimensions (W × H × D)	20.3 × 43.8 × 36.5 cm



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