



Product Development - Process - Quality Control



## **HERACLES II > Odor Analyzer**

Flash Gas Chromatography based Electronic Nose



**> Fast Sensory Profiling & Detailed Aroma Characterization**



# HERACLES II Odor Analyzer

## > A two in one instrument

The HERACLES II, the most powerful and flexible Electronic Nose yet with unique combination of features:

- ▶ Two different metal capillary columns in parallel
- ▶ Two Flame Ionization Detectors coupled to the columns
- ▶ Embedded cooled trap

It achieves:

- ▶ Aroma profiling and characterization correlated to sensory analysis
- ▶ Chemical compounds separation, identification and quantification following GC accepted principles



Quality Control Card

## Unsurpassed performance

### ■ Fast analysis without compromise on resolution

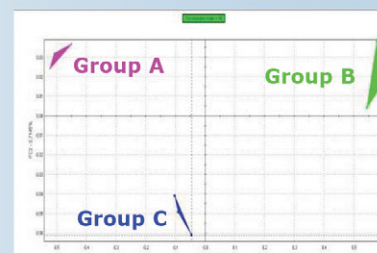
- ▶ Fast column heating rates: up to 600°C/min
- ▶ Short cycle time: typically 5 minutes

### ■ High Sensitivity

- ▶ Peltier-cooled adsorption trap provides enhanced sensitivity for highly volatile components (low picogram range)

### ■ Excellent Repeatability

- ▶ Relative Standard Deviation better than 0.3% on retention times and better than 3% on peak areas



Qualitative odor mapping

## Powerful & user-friendly software

### ■ Unique and easy to use functionalities

- ▶ Multivariate Statistical package for simplified data analysis
- ▶ Multiple Graphical tools for fast comparison of entire aroma profiles

### ■ Customizable data processing tools

- ▶ Qualitative models for products comparisons based on quality, origin, supplier, batch
- ▶ Quality control charts for product conformity checking
- ▶ Quantitative models for the prediction of flavor / odor intensity, chemical concentration or odor unit
- ▶ Shelf life models for aging profiles and follow-up of stability

## Arochembase: Kovats indices library

- ▶ Chemical characterization with sensory features display
- ▶ More than 83 000 compounds available, sorted by application area or chemical family, and around 2 000 sensory descriptors
- ▶ Link with NIST Database included
- ▶ Ability to enrich the database by including your own data

The screenshot shows a software interface with a table of compounds. The table has columns for 'Compounds', 'Formula', 'Molecular weight', 'Retention index', 'Odor name', 'Sensory attributes', and 'Kovats index'. A list of possible compounds is shown in a dropdown menu. A detailed chemical structure is shown for a selected compound. Sensory attributes are displayed in a separate section.

Kovats indices and sensory attributes display

# What can **HERACLES II Analyzer**

## do for you?

**Rapid product profiling and compounds identification**

**High throughput sample pre-screening**

**Fast conformity checking**

**Process validation**



>> **Petrochemical & Chemical**

>> **Plastic & Packaging**

>> **Food & Beverage**



>> **Pharmaceutical**

>> **Personal care products**

>> **Environment**

- **Conformity & Quality Control**
- **Batch to Batch Consistency Testing**
- **Off-odor Investigation**
- **Process Optimization / Monitoring**
- **Shelf-life & Stability Follow-up**
- **Competition Benchmarking**
- **Candidate Formulations Screening**
- **Correlation With Sensory Panel Analysis**





# > HERACLES II Analyzer

## Specifications

### ■ Injection & sampling

- ▶ Liquid & headspace injection modes
- ▶ Manual or automated injection
- ▶ Tedlar bags sampling with internal pump
- ▶ Integrated solid adsorbent trap thermo-regulated by Peltier cooler (0-280°C)

### ■ Columns & Oven

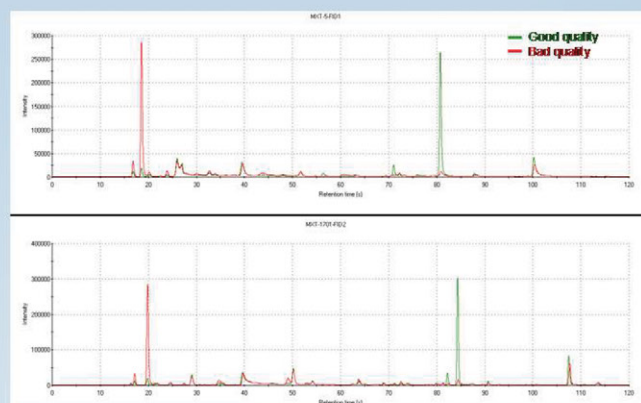
- ▶ 2 metal capillary columns (10m - 0.18mm)
- ▶ Carrier gas: Hydrogen
- ▶ Oven temperature: 35°C to 300°C
- ▶ Heating rate up to 600°C/min

### ■ Detectors

- ▶ 2 Flame Ionization Detectors (FID)
- ▶ FID Ignition monitored by software
- ▶ Operating temperature: up to 300°C
- ▶ FID Sensitivity:  $10^{-9}$  to  $10^{-12}$  A/mV
- ▶ FID dynamic linearity  $> 10^8$

### ■ Software

- ▶ Comprehensive data processing with a software package including chromatograms, fingerprint charts (Radar plot, SQC, PCA, DFA, PLS, SIMCA)
- ▶ Available languages : English, French, Spanish, German, Japanese, Chinese, Korean



Superimposed chromatograms of a good and a bad sample of a same product

### ■ Performance

- ▶ Start up in less than 15 minutes
- ▶ RSD  $< 0.3\%$  on retention times
- ▶ RSD  $< 3\%$  on peak areas
- ▶ Detection limit  $< 100$  pg of  $nC_{12}$
- ▶ Usual analysis cycle time: 5 min

### ■ Maintenance

- ▶ Fully monitored by software (FID ignition, pressure and flow rates settings, temperature programs)
- ▶ Easy daily maintenance (septum replacement)

### ■ General Features

- ▶ Dimensions: 230 x 320 x 440mm (LxHxP)
- ▶ Weight: 16 kg
- ▶ Voltage: 100 / 115 / 230 VAC
- ▶ Computer connection by USB port
- ▶ Operating conditions: 0°C to 30°C  
0 – 90% humidity (non condensing)
- ▶ Storage: -20°C to 60°C

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