


Master your IBU values.





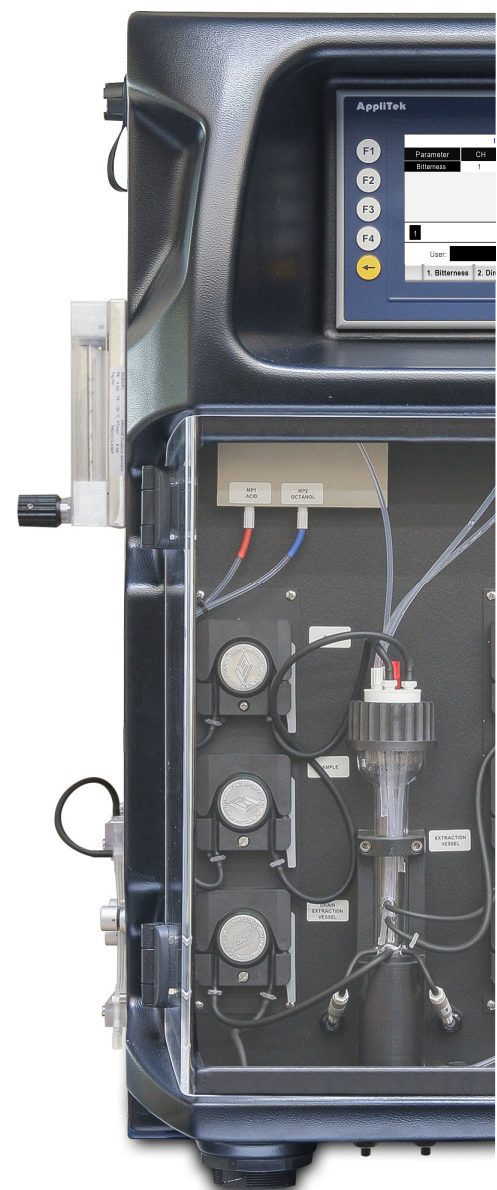
## Beer bitterness and testing

The predominant source of bitterness in beer is formed by the iso- $\alpha$  acids, derived from acids which are naturally present in the flowers of the female hop plant. With a huge variation in bitterness compounds and perceived differences in bitterness taste, beer bitterness tests have become an essential part of quality control in commercial beer production. Contrary to highly selective methods such as HPLC, the manual iso-octane extraction method is of relative simplicity and recognized as a standard method by the European Brewery Convention and the American Society of Brewing Chemists.



## Automatic determination of beer bitterness

The AppliTek **IBULyzer**® is an at-line beer analyzer developed by direct demand of the Belgian beer industry. The analyzer automates the manual iso-octane extraction method for bitterness tests on a number of sampling points. A cost-effective analytical solution, **IBULyzer**® complements your internal quality control procedures allowing to brew each time that same unique beer, yet with tight control over the IBU/EBU values.



# IBU★Lyzer

## A novel approach to analysis of bitterness units in beer

Bridging the gap between laboratory and process, the **IBULyzer®** is an alternative to highly selective liquid chromatography methods for determination of bitterness units. Yet at the same time the at-line analyzer eliminates systematic errors of the widely used manual iso-extraction method caused by sampling, shaking and liquid handling, while smart features contribute to trouble-free operation.

### Operation principle

- 1 Present a degassed sample to the analyzer
- 2 Absorbance of pure iso-octane is measured
- 3 Sample is acidified and iso-octane is added in 1:2 ratio
- 4 Extraction is promoted by forced aeration
- 5 Transfer for absorbance measurement at 275 nm
- 6 Calculation of IBU and reporting of results
- 7 Cleaning cycle prevents cross-contamination



UP TO 8  
SAMPLES





Each 13 minutes the **IBULyzer®** runs a sample, while multiple samples can be processed sequentially. As novel control alternative to current manual extraction or expensive chromatography methods, the beer analyzer can be used in process (at-line) for adjusting the brewing process, or as final QC/QA in your laboratory.



### High performance industrial panel PC

- Human interface
- Controller database software
- Analysis sequences
- Calibration
- Communication

### Overview of operational and analytical features

- Similar with internationally applied manual iso-octane extraction method
- Bitterness as sum parameter: iso  $\alpha$ -acids + other components
- Excellent accuracy and precision (repeatability)
- No sample pretreatment necessary (except degassing)
- Straight-forward operation requiring no specialist analytical skills
- Low cost of analysis relative to a large number of results
- Smart features: autocleaning, autocalibration
- Up to 8 sampling points possible
- Incorporated industrial panel PC with various remote access options

# IBU★Lyzer

## Field test for routine analysis of beer bitterness

In order to assess the suitability and facilitate acceptance of an automated method for routine analysis of beer bitterness, the analytical performance of the **IBULyzer®** was put to the test by a beer company listed as top-3 player in the global beer market. Results were in fine agreement with expected values, indicating the analyzer's potential for automated bitterness tests.

Several samples with corresponding lab data were supplied by the brewing company enabling us to compare results with the reference lab method. In total 10 different beers, ranging from 8.8 up to 27.8 IBU, were used to assess precision within a single run (repeatability). Results were in fine agreement with the expected values at a RSD (relative standard deviation) of less than 2.2%. Taking into account the relatively large measuring range of the sample set this was indicative of the analyzer's potential for automated bitterness tests, yet one which does not require special analytical skills. As expected, the test highlighted the importance of careful calibration by means of beers with known reference values, key to obtaining reliable results.







# Technical specifications

## Analytical data

### Analysis method

Determination of International Bitterness Units  
conform with ASBC MOA / Beer bitterness and EBC Analytica  
method 9.8

### Parameter

Bitterness as IBU or EBU

### Measuring ranges

0 - ( " IBU  
Other ranges on request.

### Cycle time

13 minutes (without degassing)

### Calibration

Factory calibrated (1-point)  
Additional manual calibration possible by extra reference  
sample sets

### Cleaning

Automatic, free adjustable sequence

### Precision / Repeatability

Better than 2.5% full scale

## Reagents

### Reagent containers (included)

Outside cabinet: 2  
Containers come with torqueless screw caps.

### Reagent solutions

Iso-octane  
Phosphoric acid

## Mechanical data

### Protection class

Analyzer cabinet: IP55 / Panel PC: IP65

### Cabinet and materials, hinged part

Thermoform ABS / Door: plexiglass

### Cabinet and materials, wall section

Galvanized steel, powder coated

### Dimensions (H X W X D)

69 cm (27.2") x 46.5 cm (18.3") x 33 cm (13")

### Total weight

25 kg (55 lbs.)

## Control and communication

### User interface / controller

Industrial PC with 5.7" TFT colour user interface, compact  
flash memory

### Data handling, logging and security

- Standard Ethernet 10 M (RJ45) NE 2000
- Communication ports supporting Ethernet connectivity to  
MODBUS TCP/IP
- Log files with 1,000 values/results are stored
- Easy export to spreadsheet files
- Sealed USB port for data download/upload
- User interface with administrator access and menu keys  
activated/inactivated
- Data retention in case of power failure, initialization pro-  
gram for safe status after restart

### Analogue outputs

Total: 8, active 4 –20 mA Max. 500 Ohm load

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