Alcolyzer Plus

Beer Analyzing System

::: Unique Density & Concentration Meters

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Accurate beer analysis ensures excellent beer quality. Beer analysis therefore constitutes an essential part of the daily work in the brewery. The new Alcolyzer Plus beer analyzing system is the innovative measuring system which determines important beer parameters efficiently and accurately:

- Alcohol, extract, original extract, density, degree of fermentation and calories as standard.
- Color and pH value optional.

The Alcolyzer Plus beer analyzing system from Anton Paar is an attractively priced, space-saving, virtually maintenance-free system which can grow to fit your needs. Adjustment/calibration, sample preparation and operation are simple. Measuring times are short and results highly accurate.

Features and benefits

- Easy to use
- Only approx. 10 minutes start-up time per day
- Quick and easy adjustment
- Integrated solid-state thermostat, no manual setting of the temperature required
- For samples with up to 12% V/V alcohol
- For non-alcoholic beers, beer mixtures, beers during fermentation, finished beers and cider
- Volatile, non-alcoholic components of beverages do not affect the function and lifetime of the measuring cells
- Very different samples can be measured immediately after one another without carry-over effects
- Space-saving, compact, modular design
- Virtually maintenance-free
- Attractive price

Measuring System

The measuring system consists of the Alcolyzer Plus basic instrument, a DMA density meter and a SP-1m automatic sample changer. These components are stacked on top of each other to take up minimum lab space. pH and color measurement are optionally available.

At the heart of this system is the patented, selective alcohol measurement: A narrow, highly alcohol-specific range of the NIR spectrum is evaluated using a specially developed, highly stable high-resolution spectrometer and suitable algorithms. In this particular spectral range, the influence of other beer ingredients is so small that extremely accurate alcohol results are obtained.

<< Bar code reader

<< Keyboard

<< Printer

Options

Bar code reader
Allows comfortable sample identification.

Keyboard
Allows comfortable sample identification and operation of the whole menu.

Printer
The results are printed out automatically after every measurement.

Principle

This new measuring method does not require the chemometric calibration procedures needed by traditional NIR-based instruments. Due to its selectivity and linearity, the measuring method only requires adjustment/ calibration with water and an alcohol/water solution.

While the Alcolyzer Plus determines the alcohol content, an Anton Paar oscillating U-tube density meter determines the density of the beer samples. The DMA 4500 is especially suitable for routine work; the DMA 5000 is usually chosen for research work due to its higher accuracy.

An optional color measurement can be integrated into the system. This determines the light absorption of the beer in the spectral range according to the EBC and ASBC standards. The optional pH sensor is attached to the side of the instrument and connected to the sample loop.

Operation

The Alcolyzer Plus beer analyzing system is simply adjusted with air and water and occasionally with an alcohol/water solution. This adjustment is valid for all types of beer including non-alcoholic beer, fermenting beer, beer mixtures and cider. The optional pH and color measuring devices are adjusted with appropriate standards.

The sample changer loads up to 24 samples automatically into the system. The typical sample throughput is 15 samples per hour.

The extract density is calculated from the primary measuring values, density and alcohol, using the Tabarié formula. The real extract is then calculated from this extract density. From this, original extract, degree of fermentation and calories are determined.

The measuring data are displayed and sent to a printer, PC or LIMS system. Up to 100 analyses can be stored in the system. Sample identification is either assigned automatically or entered via a keyboard or bar code reader.

Measuring value

Alcohol [%vol] Density [g/cm^3]

▼

Tabarié formula

ρ extract = ρ sample + ρ water – ρ alcohol

▼

Automatic calculation of

Er [%m/m], p [%Plato]
and derived properties such as
RDF [%], calories [kcal/kg] etc.

Specifications

Measuring range	
Alcohol	0 to 12 %V/V
Original extract	0 to 30 %Plato
Extract	0 to 20 %m/m
Density	0 to 3 g/cm^3
pH value (optional)	0 to 14
Color (optional)	0 to 120 EBC (0 to 60 °ASBC)
Repeatability - standard deviation	
Alcohol	0.01 %V/V
Original extract	0.03 %Plato
Real extract	0.01 %m/m
Apparent extract	0.01 %m/m
Density	0.00001 g/cm^3 (DMA 4500) or 0.000001 g/cm^3 (DMA 5000)
pH value (optional)	0.02
Color (optional)	0.1 EBC (0.05 °ASBC)
Thermostatting (20 °C)	Integrated Peltier thermostat
Sample volume	approx. 30 ml degassed beer per measurement
Typical measuring duration per sample	approx. 4 minutes (incl. filling)
Sample throughput	approx. 15 samples per hour
Dimensions (L x W x H)	590 x 690 x 530 mm (23.2 x 27.2 x 20.9 inches)
Weight	approx. 53.4 kg (117.7 lbs)
Power requirements	AC 85 to 264 V, 48 to 62 Hz
Power consumption	150 VA
Interfaces	2 x RS 232 for printer, PC and DMA. Connection for IBM-compatible keyboard and/or bar code reader.
Comparison with distillation method	Studies comparing the Alcolyzer Plus beer analyzing system with the distillation method have shown no significant deviation of the mean values and a reproducibility standard deviation of 0.025 %V/V alcohol. Literature: G. Zanker and R. Benes, EBC Convention, Budapest 2001
Results of the comparative test between SCABA 5610 and Beer Alcolyzer + DMA 4500	No. of samples 370 Reproducibility - standard deviation 0.034 Alcohol [%V/V] 0.029 Er [%m/m] 0.063 p [%Plato] Source: State Laboratory for Brewing Technology / Weihenstephan - Germany

Fotos: Croce & Wir

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Instruments for:
Density and concentration measurement

Rheometry and viscometry

Sample preparation

Colloid science

Microhardness testing

X-ray structure analysis

CO_2 measurement

High-precision temperature measurement

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