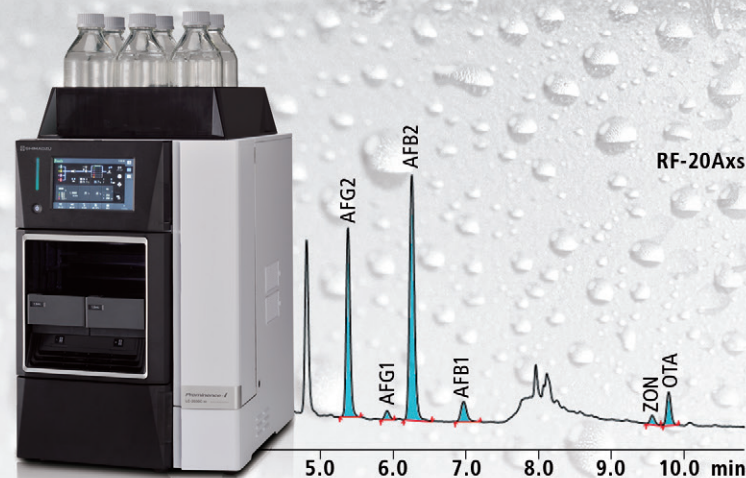


Mycotoxin Screening System



Mycotoxin is a generic term for toxic and carcinogenic metabolites produced by mold on food products. Aflatoxin B1, B2 (AFB1, AFB2), G1, G2 (AFG1, AFG2), Deoxynivalenol (DON), Nivalenol (NIV) and Ochratoxin A (OTA) can be produced by fungal infestation during or after harvest of grain and can therefore end up in beer, brewed from malt. To ensure consumer safety, manufacturers of food and beverages have to strictly manage risks from such contaminants.

The mycotoxin screening system based on the i-Series integrated-UHPLC offers the ultimate performance in a very compact format. In only 14 minutes, it is able to detect the presence of these 7 mycotoxin components in beer and wort with high sensitivity at concentration levels specified by the European Commission Regulation (EC) No 1881/2006, which sets maximum levels for certain contaminants in foodstuffs.

Mycotoxin screening

UV-1900 for Beer Color measurement



UV-VIS spectrophotometers are ideal analytical instruments for a brewer's lab. They enable determination of color and IBU (International Bitterness Unit). A multi-talent for routine analysis, Shimadzu's UV-1900 performs bitterness and color analysis in an easy way.

As a part of beer quality management, the color of beer and wort is controlled according to the EBC (European Brewery Convention). The method uses the UV-1900 UV-VIS spectrophotometer to measure the attenuation of light at a wavelength of 430 nanometers [nm] as it passes through a sample contained in a 1 cm cuvette located in the light path of the instrument.

For more information and application support for the analysis of beer, please contact us:



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Contaminants in Beer?

Complete Solution for Beer Analysis



High-level quality control

After water and tea, beer is not only the third most popular drink overall, it is also the most widely consumed alcoholic drink. Its quality control procedures reach back several hundred years, with the German beer purity law from 1516 being one of the best known examples.

Today, beer undergoes a number of analytical tests, e.g. regarding bitterness, strength and color. The quality standards for beer analysis are defined by the Central European Commission for Brewing Analysis (MEBAK) and the European Brewery Convention (EBC), representing technical and scientific interests of the brewing sector in the European countries.

These regulations also include the determination of numerous elements (e.g. arsenic, calcium, copper, sodium, potassium and others), anions (for example nitrate and sulfite) as well as organic components (ethanol, glycerine) and other impurities such as pesticides and mycotoxins.

To quantify all of the potential contaminants, different analytical techniques like spectroscopy, chromatography and / or mass spectrometry are applied to maintain the high level of quality.

Shimadzu's wide range of analytical equipment provides customer-specific configurations and applications as a complete solution for beer analysis.

GCMS for flavor and contaminant analysis



For beer analysis, various instrument configurations can be used. A Single Quadrupole GCMS (QP2020) equipped with a dedicated Flavor and Fragrances library will help to study aroma as well as alcohol content, diacetyl levels and amino acids etc. by using different injection techniques (Headspace sampler, SPME or liquid injection). The system is ideal for evaluating the influence of ingredients on the bouquet of flavors present in beer.

When it comes to contaminants such as organic water contaminants or pesticides in hops, a GCMS triple quadrupole will be necessary to reach low levels in a complex matrix. As a perfect fit for ultra-trace analysis, the GCMS-TQ8050 triple quadrupole mass spectrometer features a new high-sensitivity detector and three noise reduction technologies. The system ensures a robust, long-term analysis at femtogram level based on the contamination-resistant ion source and the five times longer service life of the new detector. In addition, Smart MRM technology and the LabSolution Insight software support reliable operation from method creation to data analysis.

Flavor analysis

ICP-MS for determination of heavy metals



ICP-MS technology covers the analysis of inorganic contamination through heavy metals in beer ingredients such as water and grain and even ultra-low level element concentrations in the final product.

The ICPMS-2030 combines high sensitivity analysis and easy operation / maintenance. The newly developed collision cell minimizes spectral interferences and enables the determination of copper, zinc, arsenic, selenium and antimony at ppt-concentration levels according to EN ISO 17294-2:2016. Applying the "Development Assistant" function, users can easily perform qualitative analysis just by selecting the elements to be measured. The software automatically selects the most suitable analysis conditions. The patented mini-torch significantly reduces argon gas consumption.

Elemental analysis