



Total Sulfur Dioxide (SO₂) in Beer

Sulfur dioxide is an important parameter in the beer brewing process.

Sulfur dioxide (SO₂) works as an antioxidant and is important for the shelf life of beer. However, SO₂ levels in beer need to be strictly monitored, because high concentrations of SO₂ in beer can cause allergic reactions.

A variety of analytical methods are available for the determination of SO₂ in beer. Often, the colorimetric EBC method 9.25.3 or comparable ASBC method, Beer-21 para-rosoaniline (*p*-rosoaniline) is used. More and more breweries are looking for a less toxic alternative method for analyzing SO₂.

Therefore Skalar developed a new automated method on the San⁺⁺ continuous flow analyzer for determining Total SO₂ in beer. The automated method is based on the well known 5'-dinitrobenzoic acid (DTNB) method.

Principle automated DTNB procedure

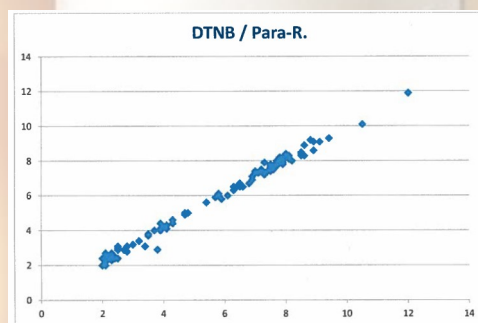
The beer sample is diluted in a sulfuric acid solution and heated at 90 °C to release the bound sulfur dioxide. Gaseous sulfur dioxide is formed, which is dialyzed into a phosphate buffer solution. Hereafter it reacts with the DTNB-solution to form the bright yellow 2-nitro-5-thiobenzoate. The absorption is measured at 410 nm.



San⁺⁺ continuous flow analyzer

Results

Several beer samples have been analyzed on the San⁺⁺ continuous flow analyzer. The results can be found in the graph below SO₂ in both methods.



Comparison DTNB/Para-R method for SO₂

Conclusion

The automated DTNB method for the determination of Total SO₂ on the San⁺⁺ gives comparable results to the classical *p*-rosoaniline method. The San⁺⁺ analyzer provides fully automatic accurate and reproducible results for Total SO₂ on large series of samples.

In addition, the San⁺⁺ analyzer easily combines the Total SO₂ application with other beer parameters such as Bitterness, F.A.N., Polyphenol and many others.

References

1. European Brewery Commission (EBC) method 9.25.3
2. American Society of Brewing Chemists (ASBC), Beer-21 para-rosoaniline (*p*-rosoaniline)
3. Guido, L.F., (2005) How do sulphites help to control beer ageing? *Cerevisia*, 30(2), pp. 132-137

For more information about the Total SO₂ method or other applications/questions please contact Skalar: www.skalar.com