



## Total Sulfur Dioxide (SO<sub>2</sub>) in Beer

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

Sulfur dioxide (SO<sub>2</sub>) works as an antioxidant and is important for the shelf life of beer. However, SO<sub>2</sub> levels in beer need to be strictly monitored, because high concentrations of SO<sub>2</sub> in beer can cause allergic reactions.

A variety of analytical methods are available for the determination of SO<sub>2</sub> 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 SO<sub>2</sub>.

Therefore Skalar developed a new automated method on the San<sup>++</sup> continuous flow analyzer for determining Total SO<sub>2</sub> in beer. The automated method is based on the well known 5'-dinitrobenzoic acid (DTNB) method.

### Principle automated DTNB procedure

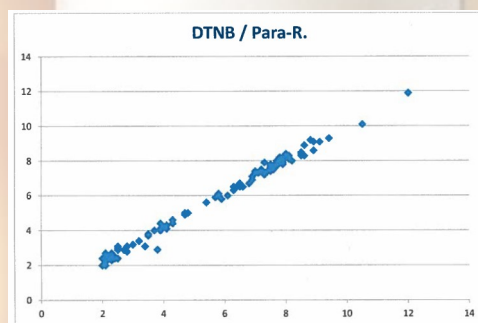
The beer sample is diluted in a sulfuric acid solution and heated at 90 °C to release the bound sulfur dioxide. Gaseous sulfur dioxide is formed, which is dialyzed into a phosphate buffer solution. Hereafter it reacts with the DTNB-solution to form the bright yellow 2-nitro-5-thiobenzoate. The absorption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



San<sup>++</sup> continuous flow analyzer

### Results

Several beer samples have been analyzed on the San<sup>++</sup> continuous flow analyzer. The results can be found in the graph below SO<sub>2</sub> in both methods.



Comparison DTNB/Para-R method for SO<sub>2</sub>

### Conclusion

The automated DTNB method for the determination of Total SO<sub>2</sub> on the San<sup>++</sup> gives comparable results to the classical *p*-rosoaniline method. The San<sup>++</sup> analyzer provides fully automatic accurate and reproducible results for Total SO<sub>2</sub> on large series of samples.

In addition, the San<sup>++</sup> analyzer easily combines the Total SO<sub>2</sub> 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 SO<sub>2</sub> method or other applications/questions please contact Skalar: [www.skalar.com](http://www.skalar.com)