



# Improving Flavour Stability

- Through Electron Spin Resonance (ESR)

Knowing how to achieve flavour stability remains one of the great obstacles brewers would like to overcome.

Today a combination of taste panels on packaged beer, oxygen meters in the process, and SO<sub>2</sub> testing are the most common methods to manage flavour stability. However none of these methods allow the brewer to rapidly understand and routinely check how each stage of the brewing process impacts on flavour stability. In addition materials, plant design and operating procedures can impact flavour stability. For substantial improvement to be gained it is necessary to combine and align sensory and analytical knowledge, and equipment technology, in order to identify where and how to extend beer shelf life. While breweries' taste panels can detect oxidative flavours, it is not currently possible to determine where in the process the flavour stability was and certification.

## So why is FlavorActiV focusing on ESR?

For 20 years we have helped our customers' beer tasters to recognise the range of oxidation flavours that are formed when the flavour stability of the beer has been negatively impacted during the brewing process. Since stale flavours arise predominately from oxygen ingress, most of the effort has been focused on reducing dissolved oxygen uptake. This has been partially achieved by using dissolved oxygen meters monitoring the beer from end of fermentation to final packaged beer. Despite such efforts, significant improvements in beer flavour stability and hence longer shelf life remain elusive. While breweries' taste panels can detect oxidative flavours, it is not currently possible to determine where in the process the flavour stability was

negatively impacted. Without a reliable measurement that can be applied throughout the brewing process, corrective action cannot be taken.

However, the use of ESR\* technology identifies additional actions that can be taken, often earlier in the process, thereby improving flavour stability. Some breweries already routinely apply ESR testing for quality assurance and by aligning with updated sensory practices the benefits to be gained from this combination are significant and new.

As part of this flavour stability package, FlavorActiV will optimise the application performance of the Escan units it supplies and continue to deliver ongoing specialist support including latest reagents, encapsulated beer reference and a new software reporting platform that gives comparative visibility of flavour stability indices between breweries.

This is the reason FlavorActiV has moved from simply helping-to-identify into helping-to-improve the flavour stability of our customers' beers.

## Therapeutic Efficacy

Bruker is widely respected globally for its range of instruments and technical expertise, and is a global leader in ESR technology and has developed instruments to be used for routine quality control. The software is customised to rapidly measure in-process and beer flavour stability (within a 3-hour period), reducing the need for tedious shelf testing. Bruker recognises the need to provide expert knowledge regarding beer flavour stability and appreciates the benefits to be gained from a complete understanding of how this is impacted during the brewing process. Bruker sees the opportunity to introduce its technology as part of a sustained package for increasing beer flavour stability. Since this is generally predicted by advanced taste panels trained and calibrated by FlavorActiV's global team the chance to combine this sensory and analytical supply and support package has been agreed in the Bruker-FlavorActiV Partnership. FlavorActiV already leads the global market in delivering sensory quality products, taster training and proficiency services; every day thousands of beverage tasters use our GMP reference standards and sensory software.

To strengthen this Partnership Dr Heidi Grimmer (who has extensive ESR brewery and QC application experience) has joined FlavoractiV as Head of the Flavour Stability team.

# FlavorActiV™

