

BUBBLES WITH ALTITUDE

TAITTINGER CARRIES OUT HIGH LEVEL EXPERIMENT

The Taittinger hot air balloon recently soared to 10,000ft, its highest UK ascent, to study the size and speed of bubble formation at different altitudes and to taste the effect of altitude on flavour delivery.

After initial sampling of the five Taittinger Champagnes - *Taittinger Brut Réserve NV*, *Folies de la Marquetterie NV*, *Prestige Rosé NV*, *Nocturne Sec NV* and *Comtes de Champagne Blanc de Blancs 1999* - at Gloucestershire's Bibury Court Hotel, the Champagnes were then sampled again at 2500ft, 5000ft, 7500ft and 10,000ft at wind speeds of up to 12 knots.



Lynn Murray, Marketing Director for Hatch Mansfield, the UK agents for Champagne Taittinger explained: "It is a well established fact that our sense of taste changes as one achieves altitude. Over the years many of our guests who have taken flight with us in our Taittinger hot air balloon have asked whether the change in pressure affects the size, speed and number of Champagne bubbles. We know of no study that has looked at this; so we decided to carry out a series of Taittinger tastings at various heights and the results are very interesting."

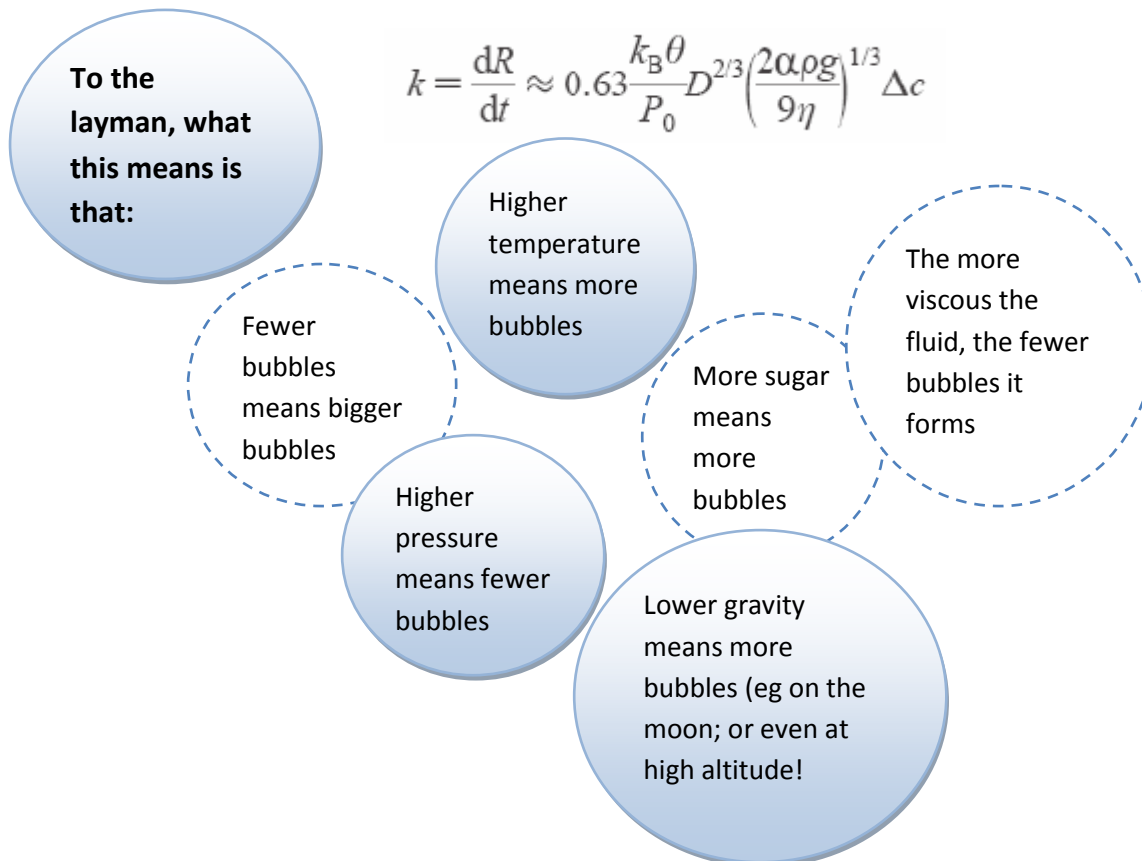
Sensory Food Scientist, Margaret Everitt, who took part in the experiment, comments : "I thought that, irrespective of the individual Champagne, the overall aroma seemed to lessen and become softer with altitude. This might be due to the fact that, although the larger bubbles give an initial surge of aroma as they release the volatile compounds within them, the aroma is not maintained in the same way as with a steady stream of finer bubbles. The cooler temperature at higher altitudes, plus the fact that we were moving, may also have affected perception of the 'nose'.



TAITTINGER BRUT RESERVE N/V AT GROUND LEVEL, 2,500FT AND 10,000FT

It was also noted that the bubbles left in the liquid at altitude showed more of a tendency to adhere to the sides of the glass, rather than giving a steady stream from the points of nucleation. This could be due to the fact that they have become so large that they are affected by self-imposed turbulence and fragmentation.

Gerard Liger-Belair, professor of theoretical physics at the University of Reims, devised a theoretical model for the growth of ascending bubbles.



Chief Executive of the Science Council, Diana Garnham, said: “This experiment is a great example of how science can be an uncomplicated way of explaining what is happening in the world around us. I know that scientists will say the hypothesis still needs some further testing (and sampling, perhaps on the Moon next time!) but it’s good to see scientists showing that they can have plenty of fun testing the second law of thermodynamics!”

Notes to Editor

- The fundamental principle that explains the behaviour of gas dissolved in a liquid is the second law of thermodynamics. This is the law that states that any spontaneous event is

accompanied by a decrease of order in the universe. The gas is leaving the ordered and structural nature of the liquid to become a random and unrestrained gaseous molecule.

- The amount of gas that a liquid can absorb is dependent on many factors, the most important of which are, of course, temperature and pressure. The solubility of carbon dioxide in water under standard conditions (25°C and 1 bar) is 1.45g/L. This figure almost doubles as we approach serving temperature (7°C).
- The higher the balloon rose, the larger the bubbles in the Champagne became, perhaps as a result of the lower pressure at higher altitude. The amount of carbon dioxide that diffuses out of a liquid increases at lower pressure, and this (*see images below*) may have some bearing on the bubble size, as the bigger the bubble, the faster the gas can diffuse. This is supported by the observation that there seemed to be a quicker surge of bubbles to the surface of the liquid as the balloon rose higher.
- The Taittinger family has had its roots in Champagne since 1931. The company remains one of the few top houses to be owned and actively managed by the named family.
- For more information, visit www.champagnetaittinger.co.uk
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