



The Northern Craft Brewers

"We Live We Brew"



Beer Flavours: Diacetyl

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Diacetyl is an important flavour compound in beer, partly because of its distinctive character and partly because you don't need much of it to be there for it to be noticed and contribute to, or more likely detract from, the enjoyment of your beer.

So, what is Diacetyl and what does it taste like? Technically it is a flavour-active vicinal diketone, also known as 2,3-butanedione. If you understand that, excellent – you probably know more about organic chemistry than I do; if not, don't worry and we'll move swiftly onto its characteristics. It is variously described as having a buttery, butterscotch or toffee-like flavour, which can lend to a perception of sweetness. It is mainly produced from compounds thought to leak out of the yeast cells, although certain bacterial infections can increase Diacetyl levels. Its formation will depend on a variety of factors, such as composition of the unfermented beer, temperature and speed of fermentation, yeast variety and health, as well as the presence of oxygen. Hence the introduction of oxygen into the fermenting beer in the traditional Yorkshire Square system will increase the amount of Diacetyl produced, due to oxidation of acetoxy acids in the later part of the fermentation. However, these are not the only factors determining final Diacetyl levels, as live yeast cells (as in Real Ale or the traditional continental lagering process) will also take up Diacetyl and reduce it to a range of less flavourful compounds, depending on temperatures and length of contact with healthy yeast.

Apart from having a distinctive flavour, the other thing about Diacetyl is that you do not need much of it to notice it; about 0.08 mg/l is the flavour threshold. This is the level at which half the population can detect it and half can't. As individuals have different levels of sensitivity to flavours, some people may detect it at lower levels and some may need considerably higher levels before they notice the presence of Diacetyl. So, it is perfectly possible for someone to say there is Diacetyl present and someone else (even if they can recognise the flavour) say that they do not detect its presence. Brewers usually aim to keep levels low, as it is generally considered to be an off-flavour and indicative of poor brewing practices. Above 0.15 mg/l is generally considered to be the level at which Diacetyl becomes objectionable, at least in lagers. However, in relatively small amounts it can be an important contributory flavour to certain drinks, such as some red wines and traditional Yorkshire bitters.