

MCB/NCB Meeting Notes for 29th September 2018 at 12:00 Midday
Location: University Arms, Sheffield

1. Those attending; MCB Sean, TomA, SteveH, MattH, JamesF, JohnC.
NCB AdrianS, IanP, Derek.
2. Apologies form MCB members, AllanB, Mike C, JimS, GranvilleD, MattS, DesM, AlanQ, Beano, SteveO, RayC, JohnA, AllanG, AndyR, KarolK, SteveR, MarkL.
3. Introductions, Due to the low attendance these were brief.

4. MCB/NCB Irish Red Ale Competition.

Sean issued each brewer with sheets giving the details of the new BJCP marking system together with a worked example, a BJCP Irish Red Ale description and a competition marking sheet for each of the 10 beers to be judged. He then gave an explanation of the new system.

Each brewer had 2 glasses, one for the beer to be judged and the other for water. The tables were organised to have 3 brewers per table with at least one person from each club per table.

The ten beers were judged, 5 beers from the MCB and 5 beers from the NCB. These were brought forward from a previous in club competition.

At the end of the judging the completed sheets were handed to Sean who checked the addition of the scores and then entered the results into a spreadsheet. Ian Priddey from the NCB also checked the scores and that they had been entered correctly into the spreadsheet. The three scores for each beer were added together to produce the final score and are as shown below. 2 beers finished on equal points and a taste off for 4th/5th place was held with a simple show of hands deciding this placing by 7 votes to 1.

Individual score sheets are attached to these notes as well as a pdf of the spreadsheet. A summary of the final scores are shown below.

Place	Beer #	Brewer	Club	Table 1 Score	Table 2 Score	Table 3 Score	Total Score	Taste Off
1	10	Sean O'T	MCB	41	42	43	126	-
2	8	Matt H	MCB	43	40	41	124	-
3	1	Ian P	NCB	37	37	33	107	-
4	4	Adrian S	NCB	35	30	41	106	Beer A - 7
5	3	Allan G	MCB	27	37	42	106	Beer B - 1
6	6	John C	MCB	32	34	34	100	-

7	7	Nigel	NCB	32	22	24	78	-
8	9	Derek	NCB	23	24	28	75	-
9	5	Ian R	NCB	32	22	13	67	-
10	2	Tom	MCB	22	16	18	66	-

It was agreed that all beers were to a good standard and all brewers were to be congratulated.

5. Sulphate to Chloride Ratio in Beers

When designing a new recipe for a beer 2 important considerations to be made are the GU/BU ratios and the Sulphate to Chloride ratios.

On page 150 of the book, *Water a comprehensive guide for Brewers* by John Palmer and Colin Kaminski it is proposed that the effect of adding Sulphate and Chloride can be made in a glass by adding varying amounts of these chemicals in a glass of beer. (Note: Where text is quoted from the book, the American spelling of sulfate is used!)

To this end each table was given 2 glasses for each brewer , a glass containing diluted Gypsum (sulphate) and a glass containing diluted Salt (Calcium Chloride), a pipette, some fairly basic bitter beer and some documentation and a comments sheet, see below.

J Collins went through process and then the experimentation began.

Sulphate to Chloride Ratio in Beers

The Sulfate to Chloride ratio can have a significant impact on the perceived bitterness of your beer. In fact, it is probably second only to mash pH when we discuss the flavour impacts of water as a beer ingredient.

The Sulfate to Chloride Ratio

Chloride ions tend to enhance the malty aspects of beer, as well as enhance the perception of mouthfeel. Chloride concentrations in excess of 200 ppm in particular tend to give a full malty taste. Sulfate ions, in contrast, tend to accentuate hop flavours and bitterness, often leading to the perception of a drier and cleaner finish. Sulfate levels above 200 ppm are best reserved for hoppy beers like IPAs.

The Sulfate to Chloride ratio can be stated simply as the ratio of sulfate (SO₄) ions (in ppm or mg/l) to the concentration of Chloride (Cl) ions. You simply divide sulfate by the chloride ion concentration. A ratio of around 1:1 (or 1.0) is

considered balanced in that the water will neither enhance the malt or hop flavour. Ratios below 1 tend to lend more malt character and those above 1 tend to enhance the hop character of a beer. Note that some references have it listed as “Chloride to Sulfate ratio” which is basically the same measure but inverted.

Understanding Sulfate to Chloride Ratios

John Palmer and Colin Kaminski cover the ratio in their book “Water, a comprehensive guide for brewers” , on p149 state that a prerequisite for using the ratio is that some modest level of both sulfate and chloride must be in the water to start with. Typically brewing water has 50-250 ppm of sulfate and 0-250 ppm of chloride. They also note that the potential strategy of maximizing both sulfate and chloride at the same time to emphasize both malt and hops does not work. Excessively high sulfate and chloride levels at the same time lead to harsh flavours. For example a ratio of 30 ppm to 30 ppm is not at all the same as a ratio of 300 ppm to 300 ppm.

They define the useful ratio range as roughly 0.5 to 9, as beyond that you are often working with a sulfate or chloride level that is too high or low for use in beer. They suggest a minimum threshold of chloride of roughly 50 ppm before you can affect the flavour of the beer, and a similar minimum of 50 ppm for sulfate. Noble hops and light lagers tend to be more sensitive to sulfate levels, and sulfate levels below 100 are recommended for these beers. Ales can often withstand higher levels of sulfates.

John Palmer also published a water spreadsheet with guidelines for the ratio. A summary is below:

- 0-0.4: Too Malty
- 0.4-0.6: Very Malty
- 0.6-0.8: Malty
- 0.8-1.5: Balanced
- 1.5-2.0: Slightly Bitter
- 2-4: Bitter
- 4-9: Very bitter
- 9+: Too bitter!

Looking at the above table you may want to target a ratio in the 4-7 range if you are brewing an IPA for example, while for a malty German Lager you would want to instead target something in the 0.4-0.6 range while keeping the overall sulfate levels low. Excessive levels of either sulfate or chloride is not advised.

You can add more chloride to your water by adding Calcium Chloride (CaCl₂), and you can add sulfate by adding Gypsum (Calcium Sulfate or CaSO₄). Go light on the water additions, however, as it does not take many grams to significantly change the water content. You can use a number of online

spreadsheets or the Water Profile Tool in Beersmith to calculate the effects of your additions.

That's a quick summary of how the sulfate to chloride ratio works.

On page 150 of the book on Water it reads as follows.

The nice thing about experimenting with the sulphate to chloride ratio in a beer is that it can be done in a glass. An easy experiment is to take several glasses of beer and dose these with different amounts of CaCl_2 and CaSO_4 . To do this dissolve a teaspoon (a few grams) of CaCl_2 and CaSO_4 into separate glasses of warm water. CaSO_4 is hard to dissolve so stir thoroughly; most of it will eventually dissolve. Use a dropper to add a few a few millilitres of one or the other solution and taste the beer. You will learn the difference the ratio can make first hand.

For the experiment today it is proposed to use various amounts of CaCl_2 in beer to determine if there is an increase in the maltiness.

Each brewer will have 2 glasses, one for the beer testing and the other for a reference beer. The beer supplied is to be poured into the test glass up to the fill line and fill the other glass about half full. Add 1ml of CaCl_2 into the test glass and take just a small sip as it is important not to change the addition ratio too much. Compare with the reference glass and then make comment of any perceived difference in the comments column. Top up the test glass with beer and then to add another dose of CaCl_2 and repeat the exercise.

If time permits the experiment can be repeated for CaSO_4 and joint additions.

Team Name	Comments
CaCl ₂ addition in ml	
1	
2	
3	
4	
Go for it	
CaSO ₄ addition in ml	

1	
2	
3	
4	
Go for it	
Both additions in ml	
1	
2	
3	
4	
Go for it	

Results Summary:

CaCl₂ additions, 1 to 3 ml additions either no difference or slightly smoother, 4 ml and above additions too salty. No increase in maltiness recorded.

CaSO₄ additions 1 To 4ml additions no difference. 7 ml less bad but not good.

Conclusion: Don't trust everything you read or the beer had the optimum additions to start with. May be worth trying with home brew where the balance may not be correct.

6. Quizzes

Three mini fun quizzes were held during the day namely spot the label, missing word in beer title and in what country was this beer brewed.

7. Winners certificates were presented and photos taken.
From left to right: Adrian NCB, Matt MCB, Sean MCB. Ian NCB



Group Photo:
From Left to right: Derek NCB, James MCB, Adrian NCB, Matt MCB, John MCB, Tom MCB, Sean MCB. Ian NCB, Steve MCB.



8. There was no other business and the meeting closed at 16:00 hours.

Many thanks to Sean who organised the competition, to Steve for producing the certificates and Adrian for booking the venue.

E&OE