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## Beyond the instructions.

### **Avoiding off flavours and getting better quality product from your kit beer.**

This isn't about changing recipes or making different sorts of beer, it's about making the beer you already brew better by using a few tips, tricks and techniques

### **Good Fresh Ingredients:**

**Issue:** One of the major things that contribute to poor tasting kit beers is the "homebrew" taste. A big part of this taste is something known as Extract Twang. This is a flavour that is a part of the malt extract in the tin of your kit. The "twang" is a weird combination of flavours that can range from simply not tasting fresh, to a metallic inky flavour that is quite distinct. A fresh tin of extract that has been well stored will have virtually no detectable extract twang, but it's a flavour that develops as the extract ages. A result of slow chemical changes, the twang will be much more pronounced in an old tin, and the process is speeded up as temperature increases, so even a low-medium aged tin can display twang if it has been stored in a warm or hot situation.

**Issue:** Extract darkens with age and especially at a higher temperature. So it may not be possible to make a really light coloured beer with an older tin. The compounds that contribute the colour also contribute to the extract "twang"

**Solution:** Purchase the freshest possible kit. Target a homebrew shop with high turnover, target the popular brands of kit that move off the shelves quickly. Check the used by dates. Talk to the homebrew shop owner about the freshness of the kits and which are the latest arrivals.

**Solution:** If possible, store the kit whole kit in the fridge if you are not planning to use it immediately.

**Issue:** Yeast, even dried yeast dies over time. It happens much faster at higher temperatures.

**Solution:** If you are using the yeast that comes with your kit, be even more careful to buy the freshest kit you can. Once you get the kit home, if you aren't going to put the whole thing in the fridge, at the very least put the yeast packet in the fridge (NOT the freezer) make sure you label it so you know which kit it came from.

**Solution:** If you are buying aftermarket "premium" yeast, or even just a replacement for a lost packet, check the production date, if it's more than six months old, look for a fresher pack. If your homebrew shop doesn't keep its packets of yeast in a fridge... find another homebrew shop. Store your yeast in the coldest part of your fridge.

**Issue:** Hops lose bitterness, flavour and aroma as they age. They do so faster in the presence of oxygen and heat

**Solution:** If you are trying to enhance the flavour or bitterness of your brew by adding hop flowers, hop plugs or hop pellets, search for the freshest possible hops. Ask your homebrew shop owner which are the freshest hops. Hops should be packaged in a foil oxygen barrier pouch, preferably vacuum sealed and preferably stored in the fridge or freezer. If your homebrew shop doesn't store their hops in the freezer, it might be advisable to source them from a shop that does. At home, store your unused hops tightly sealed in the freezer.

**Issue:** Chlorinated or poor tasting tap water can affect beer flavour. Beer is 95% water; anything that tastes nasty in your water will taste nasty in your beer too. Too much chlorine in the water can lead to bandaid/plastic flavours in finished beer.

**Solution:** Filter your water through a carbon filter. This will remove most of the chlorine and all of the bad flavours. You can either use a filter and cartridge on your tap or, you can drill a hole in the bottom of a bucket and a standard Brita water filter cartridge can be jammed in. Fill the bucket with tap water; put it over your fermentor and 10mins later you have beautiful filtered, chlorine free water.

## **Yeast Management:**

Yeast is responsible for the production of many of the flavours in a beer, both good flavours and bad ones.

**Issue:** Using yeast that is in poor health or not using enough yeast, means that the yeast has to work extremely hard to get through the job of fermenting your beer. The cells will have to multiply more times than they should and their internal resources will be diluted too much. Under these conditions, the yeast will very often produce rubbery/plastic/bandaid/medicinal type off flavours.

Here are some strategies to improve the flavour of your beer by being nice to your yeast. I have tried to put them in order of ease and simplicity. You could do just one of these things, or you could combine them. Of course the first strategy is to obtain good fresh yeast in the first place as detailed above.

***Solution #1 – Re-hydrating your Yeast:*** When yeast are dried, the cells cannot function normally until they are re-hydrated. One of the things that they cannot do is control the amount of sugar that is able to pass through their cell walls. If you sprinkle your dried yeast directly into the wort, it is possible for the cell to absorb so much sugar during its re-hydration that the level becomes lethal; and the cell dies. When you add your dried yeast directly to the wort, up to half the yeast cells may be killed. By correctly re-hydrating your yeast before pitching, you can avoid this.

### **Method:**

- How much yeast do you have?? If its yeast from a kit, then its probably 6grams. Measure out roughly 10x the amount of yeast in water (i.e.: 60ml). For premium yeast it will be 11g & 110ml
- Take a small glass jar that you think will be able to stand being boiled in water without breaking and pour in the water. Make a mark on the side of the jar that will last through the jar being boiled.
- Empty the jar and submerge it and its lid into a pot with 1L of water. Put the pot on the stove and bring the water to the boil. Boil it for 10minutes.
- With some tongs, take the jar and lid out of the pot, leave enough hot water in it to reach the mark you made earlier, sit the lid on top of the jar without tightening.
- In the rest of the hot water, stick the blades of a pair of scissors so that the blades are sterilised by the hot water
- Allow the water in the jar to cool to 25-30°C
- With clean hands and the sterilised scissors, open the packet of yeast and pour the contents into the jar. Try to spread it evenly over the surface of the liquid. Don't stir it. Try to hold your breath while the jar is open to avoid breathing bugs into the jar. Tighten the lid of the jar
- Leave the jar undisturbed for 15mins
- After 15mins give the jar a gentle swirl and shake to get all the yeast into suspension. Leave it for at least a further 5mins
- Open the jar and pour the yeast into your unfermented beer (wort).

This all sounds like a bit of a pain, but remember that you need to boil water to make your brew. Sterilise the jar etc in the water you would boil anyway & while the yeast is re-hydrating, you can do the rest of the brew. It doesn't take long to get a system going that makes it pretty easy.

***Solution #2 – Aerate your wort:*** Yeast needs oxygen to reproduce without exhausting its internal resources. It can do it without, but it will be tired and stressed and may either fail to completely ferment your beer, and/or produce nasty flavours when it does. Getting some oxygen dissolved in the wort will really help your yeast along.

**Method:**

- When you top up your fermentor with cold water, splash it in there!! Pour it from a height, get it splashing around. Oxygen from the air will dissolve in the water.
- After you have pitched your yeast, tighten your fermentor lid and put in the airlock, but don't fill it with water. Tilt the fermentor over on an angle and shake it. Give it a right old shaking till there is a lot of froth. Have a bit of a rest, and then shake it again. Your yeast will love it.

**Solution #3 – Use more and better yeast:** Yeast give the best flavour to a beer when they only have to reproduce around 4 times in order to grow up to the numbers needed to ferment your beer. The number of yeast cells needed to ferment a beer depends on the strength of the beer, the amount of beer and the temperature you will ferment at. The way to get this amount of cells without them having to reproduce more than 4 times is to start with the right number of grams of dried yeast. Assuming that you have good fresh dried yeast that has been stored in the fridge and isn't very old... the best amount of starting yeast for a 23L batch of roughly normal strength beer - is about 10-12grams of dried yeast (properly re-hydrated). So really, even if the yeast you got with your kit is in perfect shape, and you re-hydrate it correctly; the small packet is only giving you half the optimum amount.

**Method:**

- Buy a new packet of premium dried yeast from your homebrew shop. Chuck away the packet that came with the kit (or if you don't want to waste it; read below). There are a couple of brands and I will describe the beers they are best suited for in another article. Most of these premium yeasts come in a packet around 11.5g ... which is the perfect amount of yeast for a batch of homebrew.
- If you don't want to waste the kit yeast completely... you can use it as food for the premium yeast. Just open the *kit yeast* packet and tip it into the water you boil to make your brew with. This will of course kill all the yeast stone dead, it will in fact make the yeast cells explode into their constituent parts and dissolve into the water. The water (after mixing with your sugar and the contents of the tin) then goes into your fermentor. All these dissolved yeast bits are perfect fertilizer for the premium yeast that will actually ferment your beer.
- Remember to re-hydrate the premium yeast too

**Temperature Control:**

Most homebrewers know that temperature plays an important, vital role in fermenting a beer. The average (e.g. Coopers) kit will tell you to ferment your beer between 23 & 30 °C and indeed, yeast love to work at these sorts of temperatures. So homebrewers everywhere have come up with all sorts of ways to keep their brew at these temperatures when the weather turns a bit chilly.

**Issue:** The trouble is; that while the 23-30 range more or less guarantees a *successful* fermentation, it isn't really the best temperature range for producing good tasting beer. At higher temperatures, yeast goes into overdrive and produces lots more flavour compounds, some good and some bad. The good ones might be great in full flavoured English pale ales... but they would be out of place if you were trying to make a clean crisp lager. As for the bad flavours, they are mostly going to be higher alcohols and almost perfume like compounds. They will make your beer taste harsh & give it a bit of "hot" alcohol character. To rub salt into the wound, these higher alcohols also contribute heavily to the headache component of your hangover.

So mostly, homebrewers are actually controlling their temperature in the wrong direction, they are trying to keep their brews above 23°C, when for the best beer they should actually be working as hard as they can to stop the beer from *ever* getting that hot.

**Solution:** Keep your beer cooler when you ferment. You will be able to get away with a degree or so higher temp if you are using the yeast that comes with your kit; it's designed to be reasonable at a higher temp, but will still be cleaner at the lower end of the scale. Read the recommended temperatures from the packets if you are using premium after market yeasts. In general, 18-19C is fine for a normal beer, down to 16-17 for a really clean pseudo lager. Perhaps up to as high as 22 for a lovely full flavoured and fruity ale style. If you have followed the yeast

management advice above, then you shouldn't ever have to worry about the yeast not being able to do their job at these lower temperatures.

Of course, if you are going to try and make a true lager with genuine lager yeast, you will need to be able to get your temperatures down to at least 12 or 13 C.

**Note:** - Your yeast will take significantly longer to ferment your beer at these low temperatures. Your kit beers at 25 degrees might have been finished in 3-4 days.... But it's going to take at least a week and probably closer to ten days. Once the gravity of the beer stops dropping for three days in a row, it most likely all done, but it won't hurt to give it another couple of days just to make sure.

**Solution:** How do you control the temperatures?? Well, the best way is going to be a dedicated temperature controlled fridge or chest freezer. A \$60 digital temperature controller plugged into a fridge/freezer, with the temperature probe taped to the side of your Fermentor. With virtually no effort you will be able to accurately control your temperatures... But that takes up a lot of room, ties up a fridge/freezer, cost money to buy and run. If you want to be a little more frugal, there are a couple of ways.

- A big tub of water – just put your fermenter in a big tub with some cool tap water, it'll take a while for that to heat up even on the hottest days. Some frozen soft drink bottles will cool things down even more if you need it
- An ice box – Take a wooden or even cardboard box (or, even, an old non-working fridge) big enough to easily hold your fermenter and 4 x 2L soft drink bottles. Insulate the hell out of it by lining the box with Styrofoam from fruit boxes or whatever. By filling soft drink bottles with water and freezing them, you can keep the box as cold as you need by simply changing the number of bottles you put in there; and how often you rotate them. With a well insulated box and a bit of effort, its more than possible to keep good fermentation temperatures on even the hottest days – in slightly cooler weather you should be able to get your brew down to true lager temps.
- Wet towels – Or even wet T-shirts draped over the fermenter can make the difference if you only need to drop the temp by a degree or two. Point a fan at them for increased effect.

### **Nice but not necessary extras:**

**Storage of your brew:** - Heat is basically not good for beer. The beer will go stale more quickly and certain bad flavour characteristics can become more pronounced if the beer is stored in a warm or hot place. Of course you need to keep your beer in a slightly warm place for a week or so in order for it to carbonate properly, but it's not necessary for the temperature to be any warmer than the temperature at which the beer fermented. A little warmer is OK for a short time, but not too hot. Crack a test bottle to make sure it's fizzy, then get it into the cool and leave it there. The perfect storage for your brew would be an underground wine cellar, but most of us don't have one of those. In a pinch, the fridge will do. Your beer will still smooth out and improve with age in the fridge, it will take a little longer, but the result will actually be better. Your beer will stay at its peak for months and maybe even years if it never leaves the safety of the fridge.

**Clear Beer:** - A bit of yeast never hurt anyone, but unfortunately, nothing shouts "homebrew !!... be prepared for terrible beer" louder than a glass full of cloudy beer. And its not all non-brewer prejudice either; yeast in the beer does affect the flavour and can make an otherwise good beer a lousy drinking experience. You can filter your beer just like the major breweries do, it's not all that hard or expensive, but it's probably more than most home brewers are prepared to do. Here are a couple of other things that will improve the clarity of your beer.

**Cold Crashing** – After your brew has finished fermenting and you would normally be thinking about bottling. Instead, put the Fermentor in the fridge for a couple of days. The cold will make the yeast that is still in suspension settle to the bottom much more quickly, and will make the yeast cake at the bottom more solid and less likely to stir up if you move the fermenter a bit.

***Finings*** – Gelatine finings need to be dissolved in a mug of hot (not boiling) water and stirred vigorously. Add to the beer two days before you want to bottle. PVPP (or PolyKlar) finings are made of inert plastic and work on the same principle as gelatine i.e. opposite charges attract.

**Cleaning and Sanitising: -**

***Cleaner*** – The best and cheapest cleaner you can use for brewing is Trisodium Phosphate (TSP – a pink detergent). It's great for soaking off stubborn stains and will bring your bottles up like new.

***No-Rinse Sanitiser*** – A good sanitiser shouldn't need to be rinsed off. Perfectly effective sanitisers which don't need to be rinsed off are Iosan/Iodophor/Proxitane. You don't need to rinse these sanitisers because of the very low amount of chemical used.

**To make:** dilute the Iodophor/Iosan/Proxitane according to the manufacturer's instructions in a 1 litre spray bottle. Thoroughly wet the interior surface of the item you are sanitising, leave it sit for 20 minutes, pour out the excess and put your wort/beer straight in.