Ethical Brewing and Beer

Find out how we make our beer at the Jolly Sailor Brewery as ethically as we can without compromising on taste, flavour and quality.

- Our Beer Production
- Yeasts and Proteins
- Filtering, Fining and Process Aids
- Vegan/Vegetarian friendly beer
- Food Intolerances
- Jolly Sailor Brewery's ongoing development in ethical and environmentally conscientious brewing.

Brewers make wort; yeast(s) make beer. A brewer's job is to prepare the wort to a high quality so the yeast can take advantage of its natural composition and characteristics by converting its fermentable sugars into alcohol and releasing other flavour compounds as a by-product of this process.

Production of wort requires the brewer to take malted barley and steep it in brewing water (mashing) to release its starches and convert them into simple, fermentable sugars for the yeast to metabolise. The wort is then boiled up as a sanitation step but also to stabilise it and release some unwanted volatile compounds which affect taste and quality. During the boil stage, hops are also added as a natural anti-bacterial and to add bitterness as well as flavour and aroma to the beer.

Because beer is comprised of all natural ingredients it provides natural resources advantageous to the brewing process. The disadvantage however is that by adding these ingredients we also add their proteins to the wort, which dissolve in the wort and can produce haze and stability problems when packaging later.

Yeast is an amazing creature which sits in suspension in the fermenting wort converting those sugars into alcohol and carbon dioxide, as well as providing ester flavours to the beer. Once it is finishes fermentation it floats to the top of the maturation vessel to be cropped (ale) or sinks to the bottom (lager) for re-use or to be discarded. Different yeasts have different characteristics and some flocculate (drop out of suspension) fully and fast whereas others take longer to flocculate whilst some beers do not drop bright at all. If the remaining yeast isn't regulated, controlled or removed it

can secrete unwanted flavours into the finished beer and depending on the packaging method can cause carbonation and other problems down stream.

How do brewers tackle this problem?

There are three main ways to remove yeasts and proteins in beer:

- Temperature and Time
- Chemical Finings and Process Aids
- Mechanical Removal

Historically beer would be stored cold over a period of days and weeks for ale and months, maybe years in lagers (German term for 'cold store'). With colder temperatures the proteins would come out of solution and fall to the bottom of the tank. Similarly, with temperature and time the yeast would become sedentary, stop fermenting, become dormant and flocculate to the bottom of the tank. The beer would then be packaged into casks from above the sediment, a little yeast added to the cask for secondary fermentation and beautiful clear beer would ensue.

As production increased and tank time was becoming more valuable, brewers started to 'speed up' this process by taking advantage of chemistry and using kettle finings and adjunct finings to remove proteins from the fermenting vessels in the form or cold break and trub (protein sediment in the fermenter). These worked as negatively charged substances that would chemically bond with the positively charged proteins, become larger molecules and fall out of suspension due to their mass (Stoke's Law).

In a similar way, brewers would add a fining derived from the collagen found in the swim bladders of fish called Isinglass and found it to be very efficient as a highly, positively charged substance at attracting negatively charged yeast cells. For decades this would prove to be an effective way of clearing beer fast in order to get the beer out of the brewery and into pubs. As macro-breweries became ubiquitous and keg (force carbonated) dispense was introduced as a way of beer lasting longer in pubs, breweries started to use filtration, pasteurisation and centrifuges to remove these particles and improve stability.

What's wrong with Filtering and Fining?

Most if not all breweries fine their beer to some extent. Irish Moss is often used as a kettle finings and adjunct finings are often added to the maturation vessel and described as 'process aids'. The problem is that when people talk about finings they are talking about Isinglass finings and not finings in general. Isinglass is problematic because it is not vegan or vegetarian friendly as it comes from animal protein and only Pescatarians and people with an omnivorous diet can consume it. Customers who have certain fish allergies have had issues drinking larger brewery's products and if continued to be used during the beer and breweries boom it will deplete fish stocks of certain species across the world. There are alternative products to Isinglass such as Brausol by Erbsloeh and Super F by Murphy and Sons which are finings or process aids that are suitable for vegans and vegetarians and breweries have started to use these products in recent years.

"Filtering is done by Big Breweries". It is but not exclusively, a lot of bottling and canning companies filter as well as some small to mid-level breweries because they want to improve shelf life for their customers. The issue with filtering is that the filters that are small enough to remove the unwanted particles are also small enough to remove the flavours imparted from such stages as dry hopping and change the desired character of the beer. Most smaller craft breweries build their businesses off the backs of hop-forward beers and advertise as unfiltered and unfined (often technically incorrectly) because they want to reassure their customers that they are getting the best product they can put into the world, that it isn't a cheap commercialised imitation and that it does not contain Isinglass.

Here at The Jolly Sailor Brewery we prefer to use the term **Unfiltered and Ethically Fined** because we put the mantra **Beer for Everyone** at the heart of everything we do. We add vegan kettle finings 15 minutes before the end of the boil to enhance protein flocculation during transfer to the fermenter, we use a product called Brewer's Clarex to remove haze-forming proteins during fermentation and we use Super F finings in our conditioning tank to remove yeast. These steps give us bar-bright beer with a slight 'craft haze' versus star-bright beer with Isinglass and its plethora of ethical problems.

Why are there so many hazy beers in the world?

Hazy beers are often deliberate. Wheat beers are nearly always cloudier than other styles because they use a very high percentage of malt derived

from wheat versus barley. Wheat is rich in protein and it hangs around in the beer.

There are also examples of styles where haze is deliberately added such as New England IPA. These styles often have descriptors such as 'tropical' or 'juicy' and they are supposed to be drunk fresh so stabilisation isn't a concern. Often oats are added for body and a thick protein mouth-feel. In some cases apples are added to the mash tun to take advantage of the naturally occurring pectin to 'gum up' the wort.

The problem is that macro-breweries did a great job of closing smaller breweries, making generic beer and white-washing the industry, eliminating all but a few beer styles along its way. Because these beers were having to last longer, travel further and be identical for each batch, the public got used to drinking crystal clear beer and have struggled by and large, to let the fixation with crystal clear beer go. Publicans at times have shared this same obsession and instead of accepting different levels of clarity in beer and educating their customers about it, they have refused to sell the product. Brewers often haven't helped themselves by not stating on pump clips and badges that the beer is supposed to be hazy and isn't in fact 'off' as it is often mistakenly perceived to be.

The Jolly Sailor uses Brewer's Clarex to remove haze-forming proteins in ALL of our beers despite its high price-tag because a nice little side effect of this decision is that is also removes the proteins responsible for gluten. We do not market that our beers are gluten free as we do not currently test them for gluten on every brew, but we use this product at its highest rates in order to feel confident that if a gluten-intolerant customer did happen to drink it we had done everything in our power to remove as much of the risk as possible. This is one of our targets going forward, to confirm this claim and be loud and proud telling our customers about it.

What about Milk Stouts, I'm Vegan and/or Lactose Intolerant?

This is a concern of ours too. We endeavour to make all of our beers suitable for everybody and Milk Stout currently is our only exception. Although suitable for vegetarians because we use lactose powder (sugars derived from milk) our Milk Stout is currently not suitable for Vegans or people who suffer from Lactose Intolerance. In 2019 and beyond, The Jolly Sailor brewers are going to re-develop our Milk Stout (initially in bottle and then into large pack). The plan is to use a less active yeast that leaves more

of the sugars in the beer to account for he lost lactose sweetness and aloso to add vanilla and mimic the dairy qualities of lactose. We will announce it far and wide upon successful completion so keep checking back for updates.

So what about the future?

The environment and the impact our ingredients, products, processes and packaging have on it will be the things we review and continually revise in the future.

We offer a Bag in Box product, (www.jollysailorbrewery.uk/bag-in-box), which benefits many of our customers in ways that no other product we have found can but one of its disadvantages is that the double-lined plastic bag is single use. In 2019 and beyond we are aiming to remove the options of 5L and 10L Bag in Box as a one-use item and replace them with recyclable 5L metal party kegs and re-usable 10L Polypin Bag in Boxes for our home bar customers. We are going to introduce a fleet of pins (half sized casks) so customers can get double the shelf life of casks to transition them away from 20L Bag in Boxes where appropriate and buy metal kegs, rather than endorse single use Key Kegs or Dolliums for our foray into force carbonated beer. As part of this stance we also intend to replace plastic casks when they break with metal and order any chemicals that only come in plastic in larger quantities so we can a) reduce the amount of plastics units being produced and b) refill them rather discard where possible.

The Jolly Sailor has invested thousands of pounds into new equipment and have managed to cut down on water usage by over 75% as well as reducing the overall amount of effluent chemicals that are released into sewerage. We acknowledge that we still have a long way to go in this department and considerations are part of an ongoing process. Unfortunately limitations are imposed on our efficacy by funding issues associated with it by being a small family-run business.

The final thing we would like to pursue is seeing if we can change our cereals, hops and any ingredients from crop to organic sources and remove pesticides and the damage they do to the environment from our own footprint. At the moment availability and cost are the hurdles that stand in the way of swapping to these sources and substitutions or

alternatives would significantly alter our recipes but as we grow and availability improves we will endeavour to switch where possible.

Like all of our endeavours in beer and brewing, the fun is in finding out and giving it a go!