Beginners guide to Brewing in a Bag, or BIAB

Welcome to the advanced world of All Grain Brewing using the BIAB (Brew in a Bag) process.

In comparison to other full grain mash methods, brew in a bag offers the brewer a number off benefits over the traditional process. These benefits include…

- **One vessel trebles up as a hot liquor tank, mash tun and kettle (boiler).**
- **BIAB offers a far lower equipment cost**
- **Less equipment means less space needed and quicker clean-up**
- **Less time investment making your fermentable wort**
- **Quick and simple process**
- **Produces as good a result as full mash brewing**

Hi there, I have tried to make this guide as simple and beginner friendly as possible, however a basic knowledge of All Grain brewing would definitely be an advantage and I highly recommend combining this guide with the book "How to brew" by John Palmer, as well as the online guide for BIAB found at www.BIABrewer.info. - Alternatively a wealth of information can be found online in forums such as www.forum.realbeer.co.nz or www.aussiehomebrewer.com .

However, if you are keen to just jump right in and get started here is the equipment you need and the process on how you go about your first brew in a bag recipe.

It is strongly recommended that you read through this entire document and assemble all your equipment and recipe prior to starting your beer making project.

Starting out

All Grain brewing is simple and easy, but does require a bit of equipment to get you going. I have assumed that readers will have dabbled in kit brewing (extract brewing) before and already have a fermentation vessel of some kind. In addition to your fermenter you will need…

1. A big Stainless Steel or Aluminium Vessel, minimum for 20 litre batches would be 30 litres. This is used for both mashing and as a kettle when you boil your wort. You can buy a 35 litre vessel from Mikes Homebrew shop, listed later.

Stainless Vessel

2. A Gas burner and LPG bottle, 2 ring burner minimum for a 30 litre kettle, 3 ring minimum for anything bigger.

3. Some Swiss Voile material to make a grain bag and someone with sewing skills or know how – This can be purchased at a local Spotlight or material haberdashery cheaply. There should be enough material to make up a large bag that is big enough to fit the outside of your vessel. Or buy a suitable bag from Mikes homebrew shop.

Stainless vessel and grain bag

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4. Ingredients for your first All Grain brew. A simple recipe is listed below but remember this process can be used for any recipe. Mike can also sell you the ingredients.

5. A thermometer which can be a digital, glass or stainless that measures 0 deg C to just over 100 deg C. Mike also has these.

6. A Cake tin or something to keep your bag off the bottom of the kettle to prevent the bag scorching when you boil. Or you can wrap the bag over the top of the vessel to keep it off the bottom.

7. A wort chiller is optional however highly recommended, refer Mike.

Immersion Wort Chiller

8. Brewing software so that you can eventually calculate your own recipes. There are plenty of options out there, some are free and some aren't. This is an optional extra and is not absolutely necessary to begin your brewing experience. It will however allow you to track your progress and help you determine temperatures, volumes, time of boil, hop additions etc etc. It is a worthy addition to your brewery.

The Recipe

Find a recipe that you would like to brew. Any recipe can be brewed using BIAB but for your first brew try to pick something that is relatively simple without many ingredients or hop additions, so if something goes wrong it will be easier to pinpoint what it was. I recommend a Pale Ale with just pale and crystal malt, one type of hop, and a clean fermenting yeast like US-05.

All Grain materials needed are…

For a 23 Litre recipe (US 6 Gallons)

4.6Kg Pale Malt
56 grams Pellet Hops such as Cascade
1 x Packet of dry Yeast US-05
1 x Packet Irish Moss

30 Litre vessel
As above but use 5.3Kg Pale malt and 73 grams of hops

The Brew

Ok, so you have your ingredients ready, you've got your equipment, so let's get brewing!! My calculations are based on a 30 litre pot volume (even though your final brew will end up at 20 Litres), so if you are using anything bigger you will need to adjust your volumes. You will also need to sew a bag out of the Swiss voile that is big enough to not only line your kettle, but your kettle should be able to fit inside the bag to ensure there is enough room.

1. Bring 26 litres of water up to 2 or 3 degrees above your desired mash temperature, this will ensure that when you add the room temperature grain it will drop to your desired mash temperature (or close enough depending on your system).

   The malted grain is full of enzymes that when activated convert the starch into sugars which is what the yeast feeds on to give us alcohol, a process called "mashing". The enzymes require a certain temperature to activate which is between 63-70 deg C. The lower the temperature, the

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more fermentable sugars you will have and the thinner your beer will be. The higher the temperature the less fermentable sugars you will have and your beer will have more body and mouth-feel as a result. It all depends on what type of beer you're brewing as to what kind of mash temperature you should use.

Mash Done

2. For this recipe the desired mash temperature is 66 deg C, common for most simple recipes. So bring up 26 litres of water to 68 deg C and when it hits the desired temperature, turn off the heat and line the kettle with your grain bag. Make sure the bag doesn't touch the bottom of the kettle or it could melt. You can use a cake tray, or roll the bag up and tie it to the side of the kettle, both ways work.

3. With your water up to temperature and your grain bag in the kettle its time to start the mash. Add your crushed malted grains into the bag in the kettle, ensuring that you stir really well to avoid dough balls which are dry areas of grain. Once all the grain is swimming around in the kettle, put the lid on and cover up the kettle with a camping mat, blanket or other material to keep as much of the heat in as possible. Then let the mash do its thing for 60-90 minutes. Some people check the temperature half way through and if necessary bring it back up to the desired temperature with a few litres of boiling water. I personally do not do this and leave the mash well alone for the full duration. A word of warning if you do decide to apply heat to the mash, ensure that you stir really well to ensure even heat distribution.

Tyler adding grain

Step 2 Boiling the wort

4. Ok, so the mash has done its thing over the last 60-90 minutes and now you will have some semi-brown liquid we know as wort (unfermented beer). Start to apply heat to the kettle while stirring, with a desire to get your temperature up to about 76-78 deg C. This is called the 'mash out temp' and the purpose is to make the sugars in the solution more soluble and ensures you don't leave any sugars behind in the grain. Once you are up to mash out temp 76-78 deg C, give the grain one last really good stir. Then proceed to lift the bag out (with all the grain) and place it into a bucket or hang it over a drip bucket. Any liquid that collects at the bottom of the bucket can be added back to the kettle up until the last 15 minutes of the boil.

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Boiling the wort

5. Now that you have separated the grain from the wort, its time to boil, so crank your burner, put the lid on the kettle and bring the wort up to boil. Keep a close eye on it as it could easily boil over if you walk away.

6. Once the wort starts to boil, start timing. Some brewers boil for 90 minutes and some only boil for 60 minutes. Personally I always boil for 90 minutes but this is entirely up to you. The boil achieves many things, it sterilizes your wort and it isomerizes the essential oils and flavours in the hops. During the boil we add our hops. Hops are added at various stages in the boil for bitterness, flavour and aroma. The longer time the hop is boiled, the more bitterness you get and the less flavour you will have. For this recipe, 14grams of Cascade (the bitterness hops) are added to the boil for 60 minutes, another 14 grams Cascade (for the flavour) for the last 30 minutes and finally 28 grams Cascade for the aroma for the last 15 minutes. It is suggested you add kettle finings (Irish Moss) in the final 10 minutes to help settle out any protein matter to achieve a clearer beer.

Adding hop pellets

7. In the last 10 minutes of the boil, if you are intending to use an immersion chiller, put this into the boiling wort. This will ensure the boil sanitises the chiller. If however you are chilling your wort in some other way you may ignore this step.
   It is recommended that you use a wort chiller to quickly chill your wort. The reasons are – the chiller allows you to separate the wort from the “cold break” - working with cooled wort is safer than working with hot wort, the cooled wort can be poured into the fermenter with vigorous splashing for aeration without having oxidation damage – it allows you to pitch your yeast quickly into the cooled wort to avoid contamination or bugs.

Immersion Chiller

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8. So now we've done the boil, added our hops and you're now looking at 20 odd litres of boiling hot wort. If you are using a chiller, start this now, if you aren't, you need to figure out a way to get this liquid down to around 20 deg C as quickly as possible. Some brewers don't chill the wort and let it cool naturally in the fermenting vessel. If you do this I highly recommend making sure you get it into the fermenter ASAP sealing it up to avoid getting any nasty bugs into your beer. When the wort reaches a temp of 20 deg C (for ales) pitch (insert) your yeast, and wait patiently for the beer to ferment.

   NOTE: ensure your thermometer is sterilized before putting into your wort as you may introduce a bug. The fermentation will start after a period of time from a few hours to 12 hours approx and will begin slowly at first. Once the yeast culture is fully established it will pick up speed and the fermentation airlock will bubble away steadily.

9. Leave your beer in the fermenter and once the bubbles in the airlock virtually stop (1-3 weeks usually, take a hydrometer reading. Record the hydrometer reading and leave the fermenter for three days. Take another reading and if the reading is the same as the previous reading it is time to bottle or keg your beer. If the reading has dropped further record the reading and repeat the test in three days.

10. Congratulations you've just made All Grain beer, now wasn't that easy?

Sterilizing is taken care off as you are boiling your wort. Anything on the HOT side will become sterilized providing it is in the boil for 20 minutes. Once the boil is over you must not add any un-sterilized items or implements, thermometers, spoons etc to the wort or you may contaminate it with un-desired bugs or bacteria.

The information given above is a simple step by step process for brewing in a bag. It shares the same principles as other methods of full grain mashing but with the benefits previously mentioned.

One final word, brewing beer is a fascinating hobby and it is well known that home brewers can make beer that surpasses the commercial kind. After all we are making beer for flavour and drinkability not mass production and quick production for profit. There are many recipes and many diverse methods, many different processes, schools of thought and just as diverse arrays of individualized brewery equipment so I encourage you to read up, construct and experiment away…..

Mikes homebrew shop for all your equipment and brewing supplies…

Brewers Coop,
9/2 Harris Rd,
Mt Wellington.

Hours: Mon Tue Wed Shop
10:00am to 5:00pm
Thurs (Late night)
10:00am to 6:30pm
Sat
9:00am to 3:00pm

Proprietor: Mike Ellwood
Ph 09 525 2448
Website: www. http://www.brewerscoop.co.nz/
Email: brewerscoop@gmail.com

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Glossary

Adjuncts	additional grains you may use such as roast barley, chocolate malt, malted wheat, maize
Cold break	assists to settle out proteins, tannins and beta-glucans that improve storage and reduce chill haze in final product
Grain	malted barley and adjuncts used in your recipe
Hot break	the coagulation of proteins in the wort during the boil
Hydrometer	a glass tube that is calibrated to measure specific gravity of wort
Kettle	a vessel that is used to boil your wort
Kit Brewing	refers to the use of malt extract supplied in tins that avoids mashing grain
Irish Moss	a seaweed product that settles out the protein matter from the beer
Malt Extract	a ready made tin of concentrated malt extract
Mashing	the process of extracting fermenting sugars from your grain
Mash Temperature	the temperature used in the mashing process
Mash tun	a vessel that holds grain at the right temperature for mashing
Pitching	the term used when introducing yeast to the wort
Pitching Temperature	the temperature that the wort reaches when you add your yeast
Wort	pronounced (wert) and is the unfermented liquid that results from mashed grain
Wort Chiller	a coil of copper tubing that you run cold tap water through to cool your wort

Happy Brewing!!!!

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