Rancho Relaxo's Complete Guide to Home Brewing

Rancho Relaxo Brewing Co.
St. Paul, MN
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5/1/2009

THE RANCHO RELAXO MISSION

It is the unmistakable goal of Rancho Relaxo Brewing Co. to fill this world with as much great tasking beer as possible. If we have to do that one beer at a time, then so be it! But we need to make sure of two things before we are able to do that. First, we need to make sure that we can actually physically make enough beer, and second, we need to make sure that the beer we make is great tasting. We do not settle for good. Only great will do.

In order to make great beer, we need to make sure of one important thing; that all the ingredients we use are fresh, are premium quality, and are worthy of being associated with the Rancho Relaxo name. We use only distilled, filtered water, fresh hops and high quality flavoring agents in all of our brewing processes. We know that this is a very important factor in the great taste we pride ourselves on.

We know that our image is important as well. Without a trustworthy name behind our great beer, we may as well just pack it in and give it up. We work hard to build our reputation up to a level greatness comparable to the names of some of the great brewers of our history. How we exceed beyond their level of greatness, however, is by staying humble, staying genuine, and most importantly, staying trustworthy.

INTRODUCTION

Welcome to the complete and comprehensive Rancho Relaxo Brewing Co. User Guide to Home Brewing! Before you begin the home brewing process, it is very important that you read through this entire user guide and understand all terminology and procedures required of you. Many of the home brewing steps contained in this user guide are time sensitive and any hesitation due to a lack of knowledge can compromise your final product.

Now that we've made you a little nervous…don't be. We can almost guarantee that home brewing is one of the most enjoyable activities you will ever do and, in the end, if you find we were wrong, it's your fault, not ours. To make sure it's fun, we've designed this highly informative, highly useful, and somewhat amusing guide to relieve the stress and anxiety you may feel. In fact, making you feel as comfortable as possible during the home brewing process is our number one objective. You may think that it's pretty nice of us to be looking out for your best interests like that, but, admittedly, we're doing it for the beer. You see, we simply can't tolerate you, or anyone, making a bad batch of beer. We strongly believe at Rancho Relaxo that beer brewed under stressful circumstances will reflect those bad vibes in it's flavor. Past experiences have shown that this could resemble anything from drinking the 'tea' from a composter to licking the sweat off a rabid dog's back.

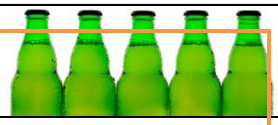
WHY THIS USER GUIDE

Because we've been there! We've been at the starting gates of this exciting new adventure before and we remember how confusing and stressful it can be. We don't want that to happen to you and this guide won't allow it to. It eliminates the confusion and stress and adds fun, success, and a guaranteed great tasting final product that even your Mother would be proud of. Rancho Relaxo is going to hold your hand, through this guide, in every step of the home brewing process until you become your own "Brew Masters," just like we have.

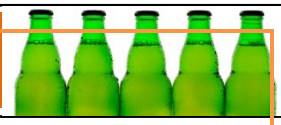
We have done everything we can to make each of the steps you will be following as easy to understand as possible, regardless of your reading level. We've included checklists and charts designed to keep you focused and organized because we know that it will be chaotic at times. Above all, however, we decided that we wanted to make you experts. Instead of just tasks and steps to follow with no explanation, you'll find answers to that one simple question that everyone seems to have…why? You'll know 'why' you should use certain ingredients, 'why' the wort needs to boil for certain lengths of time, or 'why' it's important to circulate the priming sugars during the bottling process. See, we're looking out for you…and your beer.

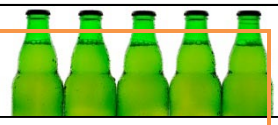
The biggest distinction we like to make between our brewing guide and others you may find is that we don't want you to reproduce our brews, but rather create your own. Every other guide to home brewing on the market has you following step by step instructions that have you producing their beer. We want you to make your own. We want you to discover the flavor you have always wanted to taste and to know exactly how it's made. We want you to experiment with flavoring agents, hops types, barley, sugars, and anything else you may want to add to your own recipe. We didn't lie when we said we want to turn you into your own 'Brew Masters" and to prove it, we are offering here the most rewarding and simplistic way to learn the art of brewing.

CHEERS! Let's get started.



QUICK REFERENCE INDEX





THE PRE-PRE-BREW PREPARATION

THE IMPORTANCE OF THE PRE-BREW PREPARATION Being prepared is one of the most important things a brewer can do in the process of home brewing. If you are not prepared, you could risk losing valuable time during the brewing process. Since some of the steps you'll be walked through are time sensitive, losing that time can mean the difference between getting a great product in the end or being stuck with five gallons of bad beer.

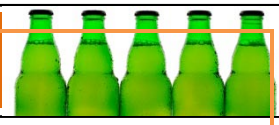
INGREDIENTS CHECKLIST One great way to be prepared before you begin brewing is by making sure you have all the ingredients you will need. You'll find that it's pretty hard to make a great brew when you're missing some of the key elements. Making a Honey Wheat without any honey for instance, isn't the end of the world. You can still end up with a great tasting beer. Trying to carbonate your brew without any priming sugar, however, is a big problem and you'll find yourself stuck with five gallons of flat, syrupy, alcoholic wheat-water. Therefore, it is vital that you take the time to check-off, whether mentally or otherwise, all the ingredients you will be using in your brewing process.

Compiled here is a list of ingredients you could feasibly use in the home brewing process. Since this guide to home brewing is NOT instructions on brewing a specific recipe, you will not be using all of these ingredients in a single brew. That would not work…and if it did, it would not taste good.

Ingredients

- ✓ Hops
- ✓ Bittering Hops
- ✓ Chinook Hops
- ✓ Malt Extract (either liquid or dry)
- ✓ Specialty Grains
- ✓ Flavoring Agents (fruit extracts, honey, etc.)
- ✓ Yeast (either liquid or dry)
- ✓ Priming Sugar (table sugar, candi sugar, lactose, honey, etc.)
- ✓ Carbonation Tabs (used in place of priming sugars)
- ✓ Distilled or Filtered Water

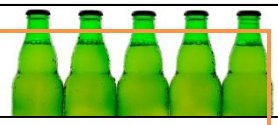
EQUIPMENT CHECKLIST Remember all that stuff I said about making sure you have all the ingredients you will need during the brewing process before you begin? The same thing goes for the brewing equipment. Without the proper equipment at your disposal, the entire process will be unnecessarily difficult. There are a few pieces of equipment that can be substituted for and in many cases they work just as well. However, this is not the case with everything, so you'll need to make sure you have the important tools on-hand. If anything can be substituted, we have made note of it in the checklist below.



- **Note - just like the ingredients list, you will not need all of the equipment listed below for each brew. The bolded items, however, you will definitely need no matter what brew you are making.**

Equipment

- ✓ **Boiling Kettle of at least 2.5 gallon capacity**
  - o **A turkey fryer kettle works just as well here and costs a lot less**
- ✓ **Two cases of either 12 ounce or 22 ounce pry-off beer bottles**
  - o **The exception to bottling is to put the beer in a keg**
  - o **Instead of buying, save the bottles you have already emptied (pop-top only)**
- ✓ Wort chiller
- ✓ **A large burner**
- ✓ **Mesh bag**
  - o **Pick up a pair of nylons – they work just as well and they make your legs look great**
- ✓ **Primary fermenter**
  - o **Glass works the best, but plastic works and costs less**
- ✓ **Secondary fermenter**
  - o **See above**
- ✓ **Airlock**
  - o **Fermenter lid or stopper**
- ✓ Funnel
- ✓ **Bottling bucket**
- ✓ **Siphon pump**
- ✓ **Tubing**
- ✓ **Capping clamp**
- ✓ **Bottle Caps**
- ✓ **Sanitizing bucket**
  - o **Any five gallon bucket will work**
- ✓ Hydrometer
  - o Although I didn't bold this item, it is highly recommended
- ✓ Pressurized cylinder of oxygen
- ✓ Micron diffusion stone
- ✓ Aquarium pump
- ✓ Blowoff hose



COOLING LIQUID YEAST (this only applies if you are using liquid yeast)

- **Refrigerate**

Unless you are planning to brew immediately after acquiring your liquid yeast from your local brew store, you must refrigerate it until you use it. If the yeast is kept at warmer temperatures, it could begin to activate inside its container, or the culture could begin to die.

STORING DRY YEAST (this only applies if you are using dry yeast in your brew)

- **Store in a cool, dry place**

Dry yeast is much easier to take care of than liquid yeast, however, it can be harder to work with. Dry yeast has a tendency to take longer to activate once added to the wort, or in some cases, will not activate at all. The advantage is that it is easier to get heavier, darker beers, such as porters or stouts, with dry yeast…if it works as it should.

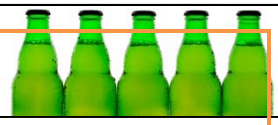
If you are not using the yeast immediately after purchase, you only need to store the dry yeast in a cool, dry place. Any moisture, such as excessive humidity, can activate the yeast or make it clumpy and impossible to use.

DETERMINE THE BOIL VOLUMES Please note that this user manual is designed to instruct on partial boils only, meaning that you will only be brewing five gallons of beer at a time. If you intend to do a full boil, you will need to consult your local brew store for additional instruction.

ASSEMBLE 'FERMENTABLES' The fermentables differ for each recipe of beer being brewed. Therefore, it is your responsibility to make sure all the fermentables you will be using for this particular brew are on hand. Consider this your reminder to double check to see if you have all you will need.

SANITIZE EQUIPMENT Sanitizing all your brewing equipment is very important in the home brewing process. This assures that no bacteria remain on any of the equipment which can cause mold to grow during the following brewing processes or during the fermentation process. Once you have sanitized all the brewing equipment, make sure not to touch any parts of the equipment that will come in direct contact with the wort or beer during any stage of the brewing process.

- **Tip – have an extra five gallon bucket on hand that you can fill with water and sanitizer and have on hand during the entire brewing process. That way if you do compromise the cleanliness of the equipment, you can easily re-sanitize it at any point.**



PRE-BREW PREPARATION

PREPARE YEAST FOR BREWING Your yeast must be activated in order to be prepared for the brewing process. The steps for doing this differ depending on the specific yeast you have purchased. However, since all home brewing requires you to use yeast that is in a pre-packaged, pre-measured amount, the package will provide instructions for activating the yeast.

- **IMPORTANT - You must activate the yeast at least 3 hours before the brewing process. If you don't do this, the yeast will not have enough time to establish an active culture inside the package and therefore will be unable to establish itself once you add it to the wort.**

- **FOR OPTIMAL RESULTS FROM THE YEAST, ACTIVATE IT 24 HOURS PRIOR TO BREWING.**

LIQUID YEAST For most yeast packages, the yeast cultures are separated by a small pouch inside the package. To activate the yeast, you must pop that pouch so the cultures can mix freely. **TO DO THIS**, simply lay the package flat on a hard surface and strike down once with your fist. This should pop the pouch, however, you'll be able to feel if the pouch is still in tact. If it is, repeat this process until you have broken the pouch open.

- **IMPORTANT - Do not strike the pouch too hard. You could break open the entire package and spill the yeast before it is activated.**

DRY YEAST There is no advanced preparation needed for dry yeast. It will be activated once it is added to the wort.

Take a deep breath and relax…'cause you're about to start brewing! Proceed only if you're relaxed!

BREWING DAY

1. COLLECT AND HEAT 1.5 GALLONS OF DISTILLED OR FILTERED WATER IN YOUR BOILING KETTLE

Distilled or filtered water is important here because it's usually chlorine free. Chlorine can have an effect on the flavor of your beer, as well as prevent the yeast from properly activating. Any water filtered through an activated carbon filter should remove a sufficient amount of the chlorine.

While you are heating the water, make sure to have the thermometer submerged. It is important to know what the temperature of the water is at all times.

- **While the water is heating, proceed to step #2.**

2. CRUSH ALL WHOLE GRAIN KERNELS - SPECIALTY GRAINS (IF NECESSARY)

- **If you are not using specialty grains in your brew, proceed to step #4**.

If you are using specialty grains for your brew, they need to be crushed prior to adding them to the heating water. Many home brewing stores provide a grinder in the 'grain' room that will crush them for you before you bring them home. If you have to crush them yourself, put the grains in a large, sealable freezer bag, lay the bag flat on a hard surface and push a rolling pin over them until all the grains are crushed.

3. STEEP THE GRAINS IN THE HEATED WATER

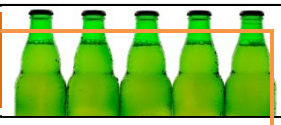
Here's where the mesh bag, or nylons, mentioned in the equipment list comes into play. Take the freshly crushed grains and place them into the bag. Now tie the bag into a knot as close to the opening as possible allowing for swelling of the grains. Once you are sure you have a solid knot tied, place the bag in the heating water and steep the bag like you would a tea bag. Continue steeping the bag for 15 to 20 minutes and remove it.

- **IMPORTANT – Do not allow the grains to get too hot or boil in the water. This will scorch the grains and cause your beer to taste burnt.**

4. BRING 1.5 GALLONS OF DISTILLED WATER TO A BOIL

Once the water you have been heating has come to a boil, remove it from the burner or turn the heat off.

- **Note – it is not imperative that you remove the kettle from the heat immediately, however, the sooner you do, the less water will be evaporated.**



5. ADD FERMENTABLES

- **IMPORTANT – Many fermentables need to be added at different times during the next few stages. Make sure you know the different adding points for each fermentable that you have chosen. This information can be found on the package of the fermentable you chose, or the brew store you purchased the fermentables from can provide this information.**

5a. STIR UNTIL DISSOLVED (NOW CALLED WORT) If your brew requires you to add all the fermentables at one time, do so and stir them in the hot water until they are completely dissolved. Once they are completely dissolved, return the kettle to the heat and bring the wort to a boil.

- **Note – once you have returned the wort to the heat, it must boil for a full 60 minutes. This is called the "60 minute boil."**

If your brew requires your fermentables to be added at different times during the 60 minute boil, you again need to make sure whether they require you to remove the wort from the heat while you add them, or if the wort can remain on the heat source. This information is available on the fermentable package, or through the brew store.

- **IMPORTANT - MAKE SURE THE WORT DOES NOT BOIL OVER by carefully monitoring the boiling process every few minutes. There will be a lot of foam in the kettle during the 60 minute boil and it and it can rise up quickly and spill over the edge of the kettle. Be prepared to reduce the heat quickly if a boil over occurs.**

- **Note – boil over can also occur when you add fermentables, so be prepared each time you do this.**

5b. ADD BOIL ADDITIONS There are other ingredients that need to be added to the wort during the 60 minute boil which are not included in the fermentables. These items are specifically intended to give the beer its flavor. As the "brew master," the ingredients you add to the beer for flavor are completely up to you. One staple ingredient in most beers is hops. It isn't as easy as just adding hops to the boil, however, because there are many different kinds of hops, each giving the beer a different and distinct flavor. And, of course, each of those ingredients is added at different times during the boil. Again, it is important to know at what points that each of the ingredients is to be added to the boil. Since this user guide is not intended to be a complete guide to the ingredients you can add to beer, but rather the process of brewing it, we advise you to have a consult with you brew store prior to brewing with your chosen ingredients to find out when they should be added.

6. COOL THE WORT AS QUICKLY AS POSSIBLE As soon as you have reached the end of the 60 minute boil, it is imperative that you cool the wort as rapidly as possible. The faster the wort is cooled, the clearer your beer will be and the less chance bacteria will have of ruining your brew. The wort needs to be cooled to a safe temperature for the yeast, which is at least 100F. For optimal results, however, try to cool the wort to at around 65F-70F.

Some methods for cooling the wort include:

- **GOOD** – place the kettle with boiled wort in a tub or sink with cold water, replenishing the cold water when needed until you reach the optimal temperature. This process will take the longest, sometimes over an hour, but there is no extra equipment needed.
- **BETTER** – place the kettle with boiled wort in a tub or sink with cold water and ice, replenishing the ice when needed until you reach the optimal temperature. This process is a bit faster than the previous method, however, it requires a lot of ice.
- **BEST** – use a wort chiller to rapidly cool the wort in 10 to 20 minutes. This is by far the quickest method, however, it requires you purchase the wort chiller, which can be expensive. The chiller is basically a heat exchanger which provides much more surface are than the outside of the kettle, cooling the wort.

7. SANITIZE FERMENTING EQUIPMENT You many have already done this during the pre-brewing stages, but if not, it is a perfect time to get it done. While the wort is cooling, make sure that you sanitize all the fermenting equipment (fermenter, lid or stopper, airlock, funnel, etc.) and make sure they are ready for the next step.

8. FILL PRIMARY FERMENTER In the sanitized primary fermenter (carboy), add three full gallons of distilled or filtered water. Once the three gallons of water are added, pour the cooled wort into the primary fermenter.

- **Note - make sure to leave behind as much 'cold break' (the thick sludge left at the bottom of the kettle after cooling) as possible.**

Once the three gallons of water and the cooled wort are added to the primary fermenter, add more cold water, if necessary, until you reach a volume of five full gallons. Completely stir the contents until they are blended homogeneously.

9. TAKE A HYDROMETER READING After the contents are completely blended, take an initial hydrometer reading. To do this, you will need the hydrometer reader listed in the equipment list earlier in this manual. Record the reading (e.g. 1.045) and label it "original gravity" or "OG." This reading may differ every time you brew because of temperature, wort volume, ingredients, or other factors, however, if you are around the average reading, which I provided in the example a few sentences ago, then you are doing just fine. If the reading is dramatically different, then, unfortunately, you will not have a good batch of beer and you may as well dump the wort. To use it, follow the directions on the package since they vary.

10. AERATE THE WORT It's almost time to pitch the yeast, however, before we do that, we need to make sure the unfermented beer is filled with as much oxygen as possible. Oxygen inside the beer will help the yeast cells multiply and ultimately ferment the beer. If the yeast does not have a chance to multiply much, then the beer will be slightly flat in the end.

Some aerating techniques include:

- **MINIMUM** – Splash the cooled wort as you pour it into the fermenter.
- **GOOD** – Once you have the full five gallon mixture, leave the airlock off the fermenter and gently swirl the fermenter to mix in some oxygen. Make sure you leave the fermenter on the ground when you do this.
- **BETTER** – Use an aquarium pump to force air through a 2.0 micron diffusion stone for up to 60 minutes.
- **BEST** – Use a pressurized cylinder of oxygen to force O2 through a 0.5 micron diffusion stone for up to three minutes.

11. PITCH THE YEAST Pitching the yeast is a brewer's term for adding the yeast to the unfermented beer.

- **IMPORTANT – Make sure the temperature of the unfermented beer is 78F or less before pitching the yeast.**

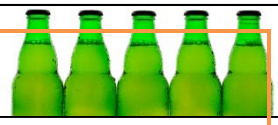
- **Note – make sure the yeast packet (liquid yeast) and the scissors you use to cut open the yeast packet have been sanitized prior to opening.**

11a. PITCHING DRY YEAST There are a few different techniques for pitching dry yeast, which include:

- **BETTER** – Pour the dry yeast directly into the primary fermenter and the unfermented beer.
- **BEST** – Rehydrate the dry yeast according to the directions on the yeast packet and add it directly to the unfermented beer.

11b. PITCHING LIQUID YEAST Using the sanitized scissors, cut open the corner of the yeast pouch and pour it directly into the unfermented beer.

12. SEAL THE FERMENTER Add a little bit of water, approximately one table spoon worth, to the sanitized airlock. Then, insert the airlock into the stopper, bung or lid, and seal the fermenter. The airlock will seal the fermenter, but will release the appropriate amount of pressure created when the yeast ferments and releases gas.



TRANSFER DAY

13. TRANSFER WORT FROM PRIMARY TO SECONDARY FERMENTER The beer needs to be transferred to the secondary fermenter once the initial fermentation period has ended. This takes approximately one week to complete and will be fairly obviously when it has. The signs to look for are first, there will be no more bubbles being released through the airlock, and second, the thick foam that has been forming on the top of the fermenting beer will begin to subside and 'melt' back into the beer.

To transfer the beer from the primary fermenter to the secondary fermenter, use the siphon pump and tubing listed in the equipment list.

- **Note – try to leave behind as much 'debris'(yeast and grain particles) as possible on the bottom of the primary fermenter. This will make the beer cleaner and clearer in the end. To do this, make sure you do not put the tubing down into the 'debris' on the bottom.**

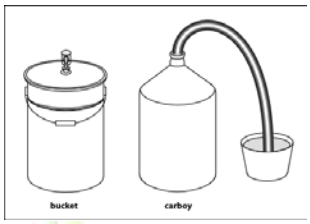
FERMENTATION

So, what exactly happens during fermentation? Good question. CO2 and alcohol are produced when the yeast cells that we pitched metabolize sugars and nutrients in the wort. In the time between when the yeast was pitched and the actual fermentation begins, called lag time, the yeast cells and the sugar molecules begin to rapidly move around each other. It is ideal for this process to happen really quickly for the faster it does, the better quality beer is produced. Fermentation should usually happen within 48 hours, but stronger beers, such as lagers and porters, tend to take longer.

- **IMPORTANT – The single most important thing to remember when it comes to fermentation is temperature. Each yeast has an ideal temperature at which it has optimal reaction, so being able to stay within that temperature range will result in the best fermentation. The package the yeast came in should list that yeast's ideal temperature, however, if it does not, consult your brew store. If the beer is kept at a temperature that is too hot or too cold, the beer will either not ferment, or ferment to quickly.**

BLOWOFF Blowoff occurs when during the fermenting stage, so much foam is crated that it blows off the airlock and spills out of the fermenter. This usually happens within the first 24 to 48 hours after fermentation has begun. Keep in mind that blowoff does not happen with all batches. When it does happen, the foam must be dealt with in a sanitary way. Here are a few examples of how to deal with blowoff.

HANDLING THE BLOWOFF Using the sanitized blowoff hose, push one end of the hose into the carboy. Put the other end of the hose into a bucket or pan of water and excess foam will be removed from the carboy and put into the bucket without contaminating the carboy. The diagram here shows the set up.



BOTTLING DAY

14. SANITIZE BOTTLING EQUIPMENT AND BOTTLES It is important to make sure all the bottling equipment, including the bottles and caps, are sanitized before you do anything else on bottling day. A quick reference check list of bottling equipment is listed here.

- **Note – to sanitize a large amount of bottles at once, fill the bathtub with hot water, drop in the appropriate amount of sanitizing pellets, and submerge all the bottles for a minimum of five minutes. The bottle of sanitizing pellets will tell you how many pellets to add per gallon of water. Each brand varies, so make sure to read the bottle.**

- Bottles
- Bottle caps
- Siphon
- Bottling bucket
- Bottle filler
- Bottle cap clamp

15. MIX A PRIMING SOLUTION (PRIMING SUGAR) The priming solution, or priming sugar is a measured amount of sugar dissolved in a certain amount of water. The yeast that remains in the fermented beer will also ferment this small amount of sugar releasing CO2 gas and causing carbonation. The amounts of sugar needed depends on the type of sugar being used. A few examples include:

- **Corn sugar** – Stir 2/3 cup of sugar into 16 oz of water.
- **Table sugar** – Stir 5/8 cup of sugar into 16 oz of water.

Pour the water and sugar solution into a saucepan and bring to a boil. Boil the solution for five minutes and then pour the solution into the bottling bucket.

- **Note – if you are using a different sugar than one listed above, consult your brew store on the amounts needed for the solution.**

16. ADD ANY FLAVORING AGENT (IF NECESSARY) If you choose to add a fruit extract, honey, or any other flavoring agent to the beer, add it to the bottling bucket before you add the beer to it. When the beer is added, it will evenly distribute the priming sugar and flavoring agent throughout the bucket.

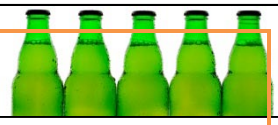
17. TRANSFER BEER FROM SECONDARY FERMENTER TO BOTTLING BUCKET Using the siphon and tubing, transfer the beer from the secondary fermenter to the bottling bucket. Again, make sure to leave behind as much 'debris' as possible to make the beer cleaner and clearer. Once you have transferred all the beer, gently stir the contents in the bucket.

18. FILL BOTTLES AND CAP THEM To fill the bottles, place the bottling bucket on an elevated surface near the edge so you can place the bottles under the spout. Fill the bottles until the bucket is empty. Once you have filled all the bottles that will be filled, you can put on the bottle caps. Using the cap clamp, secure a cap on every bottle you have filled.

- **Note – make sure the caps are clamped on tight or the bottle will not carbonate.**
- **Note – make sure you leave at least 1.5 inches of space from the top of the bottle to all the beer to breath and grow foam, if needed.**

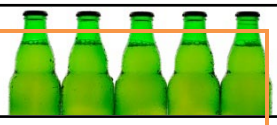
19. THE CONDITIONING PROCESS Conditioning means that the beer inside the bottles is being carbonated because the yeast is reacting with the priming sugar. This process will take at least 14 days to complete. For ideal conditions, store the bottles at room temperature during this process. The colder the bottles are kept, the longer the conditioning process will take.

After 14 days, open a bottle and test it. If the level of carbonation is at a level you desire, chill the bottles and enjoy!



EQUIPMENT CHECKLIST

Equipment	1	2	3	4	5
✓ **2.5 + Gal.Boiling Kettle**					
o Alternative: Turkey Frier					
✓ **2 Cases: 12 or 22oz Bottles**					
o Alternative: Keg					
✓ **Wort chiller**					
✓ **Large burner**					
✓ **Mesh bag**					
o Alternative: Nylons					
✓ **Primary fermenter: Glass or Plastic**					
✓ **Secondary fermenter: Glass or Plastic**					
✓ **Airlock**					
o Alternative: Fermenter lid or stopper					
✓ **Funnel**					
✓ **Bottling bucket**					
✓ **Siphon pump**					
✓ **Tubing**					
✓ **Capping clamp**					
✓ **Bottle Caps**					
✓ **Sanitizing bucket**					
✓ **Hydrometer**					
✓ **Pressurized cylinder of oxygen**					
✓ **Micron diffusion stone**					
✓ **Aquarium pump**					
✓ **Blowoff hose**					



INGREDIENTS CHECKLIST

Ingredients	1	2	3	4	5
✓ Hops					
✓ Bittering Hops					
✓ Chinook Hops					
✓ Malt Extract					
✓ Specialty Grains					
✓ Flavoring Agents					
✓ Yeast: Liquid or Dry					
✓ Priming Sugar					
✓ Carbonation Tabs					
✓ Distilled or Filtered Water					