

# GENERAL EXTRACT BEER KIT INSTRUCTIONS

These instructions are basic brewing procedures for all Northern Brewer extract beer kits; please refer to the Kit Inventory (located on the label on the kit box) for specific instructions pertaining to your beer kit, including hop additions, yeast specifications, or special ingredients.

## BEFORE YOU BEGIN ...

### Upon receiving kit

**DOUBLE-CHECK CONTENTS VS. KIT INVENTORY.** Check the kit contents against the list on the box. Every Northern Brewer beer kit contains hops and malt extract (syrup and/or dry), but not all kits contain specialty grains. Additionally, some kits contain more than one type of specialty grain which are blended together in one bag. The base kits DO NOT contain yeast or priming sugar - yeast and sugar options are selected when you purchased the kit.

**REFRIGERATE LIQUID YEAST.** If you selected liquid yeast, refrigerate it unless you are brewing immediately. If you selected dry yeast, store in a cool, dry place - refrigeration is not necessary.

### Minimum requirements

- Homebrewing starter kit for brewing 5 gallon batches
- Boiling kettle of at least 2.5 gallons capacity
- Approximately two cases of either 12 ounce or 22 ounce pry-off style beer bottles

### Boil volumes

The instructions that follow are for brewing with a partial-boil - boiling a portion of the total batch volume (e.g., boiling 2 gallons out of a 5 gallon batch) and diluting the wort with water after the boil. Please refer to the modifications below if you will be doing a full-volume boil of 5 to 6 gallons. Please note that a partial boil will result in the beer finishing at a darker color than advertised. This is due to the caramelization of sugars and shouldn't change the flavor profile of the beer.

**ADJUSTMENTS FOR FULL-VOLUME BOILS.** If your system is designed for a full-volume boil of 5-6 gallons, make the following adjustments to the procedures in the following steps:

- **STEP #1** - collect 5.5 to 6 gallons of water in the kettle.
- **STEP #5** - use 15% to 25% less bittering hops (any hop additions during the first 30 minutes of the boil) than called for in the kit inventory - e.g., use 3/4 to 7/8 oz instead of 1 oz; all other boil additions remain the same
- **STEP #6** - use a wort chiller to cool the wort
- **STEP #8** - add only enough water to reach 5 gallons

## BEFORE YOU BREW

**PREPARE YOUR YEAST FOR BREWING.** Depending on the type of beer you are brewing, a yeast starter may be advisable. All lagers and any beer with an OG greater than 1.060 will achieve the best results with a yeast starter. For information on preparing a yeast starter, please see [http://docs.northernbrewer.com/yeast\\_starter\\_kit.html](http://docs.northernbrewer.com/yeast_starter_kit.html). Follow these guidelines for the type of yeast you will use:

**A. DRY YEAST.** No advance preparation needed.

**B. LIQUID YEAST.** Activation instructions are printed on the back of the Wyeast package. It is ideal but not necessary for the pack to fully inflate before use. **NOTE:** When stored in a refrigerator and used within 3 months of purchase, Wyeast packs will show inflation within 5 days of activation, or we will replace them free of charge. Do not brew with inactive yeast - we can replace the yeast, but not a batch that fails to ferment properly.

When brewing with a Wyeast Activator "smack pack", you will get the best results if you activate the yeast in advance:

- **MINIMUM** - 3 hours before brewing
- **BETTER** - 24 hours or more before brewing

## ON BREWING DAY

**1. COLLECT AND HEAT 1.5 GALLONS OF DRINKING WATER IN YOUR BREW KETTLE.** You will get optimum results if you use chlorine-free water. Chlorine can be removed by filtering tap water through an activated carbon filter. While the water heats, proceed to step #2.

**2. CRUSH SPECIALTY GRAINS (IF NECESSARY).** If your kit contains specialty grains, crush the grains in a large Ziplock freezer bag and crack the kernels open with a rolling pin. If your kit does not contain specialty grains, proceed to step #4.

**3. STEEP SPECIALTY GRAINS.** Pour the crushed specialty grains into the supplied mesh bag, and tie a knot in the bag as close to the opening as possible - this will allow for swelling of the grains. Add the bag full of grain to the water in the kettle and steep like a tea bag as the water continues to heat. Remove the bag and discard after 15 minutes or before the water reaches 170°F. **DO NOT BOIL THE SPECIALTY GRAINS!**

**4. BRING WATER TO A BOIL AND ADD FERMENTABLES.** Once boiling, turn off heat and/or remove the kettle from the burner. Add ingredients listed under "Fermentables" in the Kit Inventory (malt extract syrup, dry malt extract, honey, candi sugar, lactose, etc.) and stir to dissolve. Return the kettle to the burner and bring the wort (unfermented beer) to a boil.

**IMPORTANT:** Some fermentables are added at different times during the 60-minute boil - please refer to the Kit Inventory. All times on the Kit Inventory are listed in minutes before the end of the 60-minute boil (e.g. T-minus). For example, if you have a recipe that calls for 1 lb of dry malt extract at 60 minutes, and 3.15 lbs of malt syrup at 15 minutes, then add 1 lb of dry malt extract right away and set a timer for 60 minutes. When there are 15 minutes left on the timer, add the 3.15 lbs of malt syrup.

**BOIL OVER:** Watch the kettle carefully after adding fermentables. When it returns to a boil, there will be a lot of foam that can very quickly rise up and spill over the sides of the kettle. Be prepared to reduce the heat as soon as the boiling begins again. Boil over can also occur whenever you add ingredients to the kettle; this is particularly true of the first hop addition.

**5. BOIL THE WORT FOR 60 MINUTES.** Once the wort returns to a boil, set a timer to 60 minutes. Add boil additions (hops and spices) to the kettle at the times specified on the Kit Inventory. All times on the Kit Inventory are listed in minutes before the end of the boil (e.g. T-minus). For example, if you have a recipe that calls for 1 ounce of Chinook hops at 60 minutes, and 1 ounce of Cascade hops at 10 minutes, then add the Chinook hops right away and set the timer. When there are 10 minutes left in the boil, add the ounce of Cascade hops.

**6. COOL THE WORT.** After the boil is finished, the wort needs to be cooled as rapidly as possible to a safe temperature for the yeast (<100F). The faster you can cool the wort, the clearer the finished beer will be and bacteria will have less chance to spoil the unfermented wort. For optimum results the wort should be cooled to 65-70F.

**WORT COOLING METHODS, IN INCREASING ORDER OF EFFICIENCY AND COST:** A priming solution is a measured amount of sugar dissolved in water; the yeast remaining in the beer will ferment this small dose of sugar inside the capped bottle; the CO2 gas given off will carbonate the beer. Use the following amounts, depending on which type of sugar you will use:

- **MINIMUM** - put the boil kettle with the hot wort in a sink or tub full of cold water, replenishing the cold water as necessary, to bring the wort temp down to 100 F or less as quickly as possible. This method requires no extra equipment, but will take the longest. May take over an hour.
- **OK** - put the boil kettle with the hot wort in a sink or tub full of ice and cold water, replenishing the ice as necessary, to bring the wort temp down to 100 F or less as quickly as possible. This method requires lots of ice, but is a bit faster.
- **BEST** - use a wort chiller to rapidly cool the wort to under 100 F in 10 to 20 minutes, depending on temp of tap water. A wort chiller is basically a heat exchanger that has a greater surface area than the outside of your boil kettle, which is why it cools boiling wort much faster than immersing the kettle in cold water or ice.

## NORTHERN BREWER

**7. SANITIZE FERMENTING EQUIPMENT.** While the wort is cooling, sanitize the fermenting equipment - fermenter, lid or stopper, airlock, funnel, etc.

**8. FILL PRIMARY FERMENTER.** Fill the sanitized primary fermenter with 3 gallons of cold, chlorine-free water first. Pour the cooled wort into the primary fermenter second. Leave behind as much cold break (the thick sludge in the bottom of the kettle after cooling) as possible. Add cold water to the fermenter as necessary to reach a volume of 5 gallons.

**9. TAKE A HYDROMETER READING.** Ensure that the wort is completely stirred and blended homogeneously. Take a hydrometer reading and record it (e.g. 1.042) - this is the original gravity or OG. Do not worry if the OG is a few points off from the OG given in the Kit Inventory - discrepancies in wort volume, temperature, and blending will affect the OG and/or hydrometer reading.

**10. AERATE THE WORT** - Before adding yeast to the unfermented wort, introduce some oxygen to help the yeast cells multiply and ferment the beer.

### AERATION TECHNIQUES, IN INCREASING ORDER OF EFFICIENCY AND COST:

- **MINIMUM** - Splash the cooled wort as you pour it into the fermenter.
- **OK** - Leave the airlock and stopper off, and gently swirl the fermenter to slosh the wort around and mix in some oxygen. Make sure you rest the fermenter on the ground while you do this.
- **BETTER** - Use an aquarium pump to push air through a 2.0 micron diffusion stone for up to 60 minutes.
- **BEST** - Use a pressurized cylinder of oxygen to force O<sub>2</sub> through a 0.5 micron diffusion stone for up to 3 minutes.

**11. PITCH YEAST.** Pitch yeast (brewer's term for adding yeast to the wort) when the temperature of the wort is 78°F or lower (not warm to the touch). Sanitize the yeast packet and a pair of scissors.

#### A. DRY YEAST.

- **GOOD** - sprinkle dry yeast directly onto the surface of the cooled wort
- **BETTER** - rehydrate dry yeast according to instructions on packet before adding to the wort

**B. LIQUID YEAST.** Carefully cut off a corner of the packet and pour the yeast into the wort.

**12. SEAL THE FERMENTER.** Add approximately 1 tablespoon of water to the sanitized airlock. Insert the airlock into the stopper/bung or lid, and seal the fermenter.

## FERMENTATION

During primary fermentation, the yeast cells metabolize sugars and nutrients in the wort and produce CO<sub>2</sub> and alcohol. The amount of time between when the yeast is pitched and fermentation begins is called the lag phase. The shorter the lag phase the better quality of the finished beer. Fermentation should begin within 48 hours, although it can take longer for strong beers and lagers.

**FERMENTATION TEMPERATURE:** The three most important things in beer fermentation are temperature, temperature, temperature! Every yeast strain performs best within a specific range of temperatures, which can be found in the Kit Inventory. You will achieve the best results if the primary fermentation of your beer stays within the recommended temperature range of the yeast you are using.

#### FERMENTATION STAGES

- **PRIMARY FERMENTATION:** Primary fermentation should be finished within about two weeks. This is indicated by the foam dissolving back into the beer and bubbling of the airlock slowing down or stopping. At this point, begin taking daily hydrometer readings - when hydrometer readings are the same on consecutive days, primary fermentation is complete. Proceed to bottling or secondary fermentation, depending on your equipment.

- **SECONDARY FERMENTATION:** This is an intermediate step between primary fermentation and bottling to clarify the beer and refine the flavor. Despite the name, there is little to no fermentation during this stage. Please refer to the instructions that came with your equipment to determine if you can and how to conduct a secondary fermentation.

**BLOWOFF:** Blowoff occurs when the fermenting beer creates so much foam that it can't be contained in the sealed fermenter. It usually begins in the first 24 to 48 hours after fermentation starts and lasts for a day or two. Blowoff does not occur in every batch, but when it does, it's important to vent the excess foam in a sanitary fashion. When blowoff stops, you can replace the blowoff hose with an airlock and stopper and proceed with the remainder of primary fermentation.

#### HANDLING BLOWOFF

- **A. IF YOU HAVE A GLASS CARBOY** Sanitize the blowoff hose (3.5 feet long, 1" diameter). Remove the bung and airlock and push one end of the blowoff hose into the mouth of the carboy. Put the other end into a bucket of water. Excess foam will be expelled into the bucket without allowing anything to enter the carboy.
- **B. IF YOU HAVE A PLASTIC CARBOY** Sanitize the blowoff hose (3.5 feet long, 1/2" diameter) and the large-hole rubber stopper. Push one end of the blowoff hose into the stopper. Remove the airlock and stopper and replace it with the large-hole stopper and hose. Put the other end of the hose into a bucket of water. Excess foam will be expelled into the bucket without allowing anything to enter the carboy.

**DRY HOPPING:** If your beer kit calls for dry hopping, add the specified amount of hop pellets to the secondary fermenter (or, if you have a single-stage system, add the hops to the primary fermenter after fermentation subsides).

#### "WHEN IS IT READY?"

The "Ready" time for your beer, indicated on the Kit Inventory, is the approximate time from Brewing Day until the beer is carbonated and ready to drink. We allow 2 weeks for primary fermentation and 2 weeks for bottle conditioning for every recipe; the remaining time is the approximate duration of the secondary fermentation. For example, a beer with a "Ready" time of 6 weeks would follow this schedule: 2 weeks primary, 2 weeks secondary, 2 weeks bottle conditioning. However, every fermentation is different and "your mileage may vary," so when in doubt go by hydrometer readings and not the calendar.

## BOTTLING AND CONDITIONING

**13. SANITIZE BOTTLING EQUIPMENT.** Sanitize siphon equipment, bottling bucket, bottle filler, bottle caps and beer bottles.

**14. MIX A PRIMING SOLUTION.** A priming solution is a measured amount of sugar dissolved in water; the yeast remaining in the beer will ferment this small dose of sugar inside the capped bottle; the CO<sub>2</sub> gas given off will carbonate the beer. Use the following amounts, depending on which type of sugar you will use:

- **IF YOU ARE USING CORN SUGAR (DEXTROSE)**  
Stir 2/3 cup of corn sugar into 16 oz water.
- **IF YOU ARE USING TABLE SUGAR (SUCROSE)**  
Stir 5/8 cup of table sugar into 16 oz water.

Pour the solution into a saucepan and boil 5 minutes to sanitize. Pour the boiled priming solution into the bottling bucket.

**15. ADD FRUIT EXTRACT (IF NECESSARY).** If your kit includes a Natural Fruit Extract, pour it directly into the bottling bucket.

**16. MIX BEER AND PRIMING SOLUTION.** Siphon the beer into the bottling bucket, leaving behind as much sediment as possible. Stir gently to mix.

**17. FILL AND CAP BOTTLES.**

**18. CONDITIONING.** Allow bottles to condition at room temperature for 14 days (if bottles are kept cold they will take much longer to carbonate). It's not a bad idea to set aside a few 'testing' bottles in a warm spot (80F), to gauge the progress of carbonation. Once the beer is carbonated as indicated by a test bottle, chill the bottles and enjoy!