**BREW WITH US**

**Brew Day instructions: American pale ale**

**INGREDIENTS**

<table>
<thead>
<tr>
<th>Malt extract:</th>
<th>Specialty grains:</th>
<th>Hops:</th>
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</thead>
<tbody>
<tr>
<td>□ 6 pounds pale malt extract</td>
<td>□ ½ pound crystal 10L malt</td>
<td>□ 2 ounces Perle hops (whole or pellet)</td>
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<td></td>
<td>□ ½ pound Carapils (dextrine malt)</td>
<td>□ 2 ounces Cascade hops (whole or pellet)</td>
</tr>
</tbody>
</table>

**Yeast options:**

- □ Safale US-05, Danstar BRY-97, Wyeast 1056 American Ale or White Labs WLP060 American Ale

*Note: If using liquid yeast, such as Wyeast, follow instructions on the packaging to start the yeast 3 hours before brewing.*

**BREWING DIRECTIONS**

**Prep the specialty grains (crystal 10L and Carapils):**

1. If you didn’t crush your grains at the brewing store, use a rolling pin to crush the grains until the husks are broken apart.
2. Pour all of the crushed grains into a muslin bag and tie it closed.

**Steep the grains:**

1. Fill your large pot with 2½ gallons of water.
2. Add the grain bag to the pot and bring water to a near boil.
3. Turn off the heat and allow the grain to steep for 10 minutes.
4. Remove the grain bag and set it in a strainer over the pot. "Rinse" the grain bag over the pot by pouring 4 cups of hot water over it. Remove the strainer and throw away the spent grain.
5. Add all the pale malt extract to the pot slowly while stirring until it is completely dissolved.

*Why: Steeping the grains adds special malt characteristics to the unfermented beer, known as the "wort." For this beer, the crystal 10L adds a golden hue and a subtle, sweet flavor similar to toffee. Carapils malt adds fullness to the beer and improves the "head" (the foam on top of the beer).*

**Boil the wort:**

1. If using whole hops, separate the hops into three muslin bags: 1 ounce Perle in one bag, 1 ounce Perle in a second bag, and 2 ounces Cascade in a third. If using pellet hops, you won't need to use a bag.
2. Bring the wort back to a boil. Once a vigorous boil has been reached, add the first ounce of Perle hops (these are the "boiling hops"). Set a timer for 30 minutes.
3. After 30 minutes, add the second ounce of Perle hops. Set a timer for 28 minutes. Continue boiling.
4. After 28 minutes, add the 2 ounces of Cascade hops (the "finishing hops") and boil the wort for just 2 minutes.
5. Remove the pot from the heat and let cool for 20 minutes.

*Why: Boiling dissolves the ingredients, sterilizes the wort and breaks down proteins that cloud beer. Hops added at the beginning of the boil have more time to create bitter flavors (measured in IBUs). Hops added at the end of the boil will add aroma, but not bitterness.*

**If using dry yeast, rehydrate yeast:**

*Note: If you are using liquid yeast, you should have prepared this 3 hours before brewing.*

1. Heat ½ cup water to about 100 degrees Fahrenheit. (If water is hotter than 100 degrees, let cool.)
2. Sprinkle the dry yeast on top of the water.
3. Cover and set aside. The yeast starter will be added to the wort in step 8.

*Why: This rehydrates dry yeast and gives it time to become active. The starter will bubble and form a foamy layer, indicating that it is alive and viable to use.*
Sanitize equipment:
1. All brewing equipment kits should include a sanitizing mix, usually 1 Step or C-Brite. Follow the instructions on the package to make the sanitizing solution.
2. Fill your fermenting bucket with the sanitizing solution and submerge the airlock, thermometer, racking cane, hose and bucket lid in the solution for at least 10 minutes. Transfer sanitized equipment and solution to another bucket or tub to empty the fermenting bucket. Don’t rinse the bucket: The suds of the sanitizing solution won’t harm the beer.

Why: Beer can be ruined by bacteria that produce bad flavors. Sanitizing equipment ensures only the "good" yeast remains.

Cool the wort:
1. If using whole hops: Remove the hops bags from the pot and place them in a strainer over the fermenting bucket. (Note: When we brewed this beer, we did not use bags and found that the whole hops removed fermentable sugars from the wort. Rinsing the bags over the fermenting bucket will add these sugars back). If using pellet hops, skip this step.
2. Fill a sink or tub with at least 6 inches of ice water. Set the pot in the cold-water bath and let cool for 10 minutes.

Why: Wort that is too hot will kill yeast, so the wort needs to be cooled before the yeast is added. An ice or cold-water bath speeds up the cooling process to decrease the risk of contamination.

Transfer to the fermenting bucket:
1. Once cool, place the pot on a counter. Put the sanitized fermenting bucket on the floor below (we’ll be using gravity to help us). Place the racking cane in the pot, with the filter tip submerged.
2. Fill hose with water and, while plugging one end with your finger, attach the other end of the hose to the racking cane. To start the siphon, release your finger from the hose to allow the liquid to flow downward into the fermenting bucket. This process can take several minutes. (For detailed instructions about starting a siphon, see this tutorial.) Note: Your kit might come with a siphon starter or auto-siphon, which make starting a siphon much easier.
3. Once all of your wort has been siphoned into the fermenting bucket, pour cold water from above the bucket (if you used whole hops, pour water through the hops bags and strainer) until the liquid in the bucket reaches the 4½-gallon mark. Pouring water from several feet above the fermenting bucket will help introduce oxygen into the wort, which encourages healthy fermentation (if you used whole hops, be careful when pouring to avoid splashing).

Why: Pouring water from a few feet above the bucket introduces more oxygen to the wort, which yeast needs.

OPTIONAL: Check the wort's "gravity" (hydrometer is required)
1. Do this step only if you are curious about the potential alcohol by volume (ABV) of your finished beer. Use the spigot on your fermenting bucket to fill a clear cylinder with a sample of your wort. Float the hydrometer in the cylinder.
2. Take note of the number where the liquid hits the hydrometer. For this beer, we are shooting for a gravity reading around 1.045. Discard your sample wort when you are done.

Why: The initial gravity reading indicates how much fermentable sugar is present in the wort. This gives an idea for how alcoholic the final beer might be.

Add the yeast:
1. By now, your yeast starter should be cloudy with bubbles on the surface.
2. Add the yeast to the fermenting bucket. After adding the yeast, put the lid on the bucket. Insert the rubber stopper into the bucket lid.
3. Fill the airlock halfway with water, up to the fill line. Insert the floater and cap it.
4. Insert the airlock into the hole in the rubber stopper, and make sure the fit is snug.

Why: The fermenting bucket needs to be airtight to keep out oxygen and contaminants. The airlock allows CO2 to escape.

Leave wort to ferment:
Carefully move the bucket to a place where it can sit undisturbed for several weeks. For this recipe, the air temperature should be kept around 65 to 70 degrees. When the water in the airlock begins to bubble (within 12 to 24 hours), fermentation has begun.

Clean equipment:
We don’t recommend using soap, since it leaves residue on equipment. Instead, use cleaners included in brewing kits or use environmentally-friendly cleaners, such as 5-Star PBW or Straight-A cleaner.