



## Great Lakes Pale Ale

Our refreshingly hoppy Great Lakes Pale Ale. Finished with the most popular hop, Cascade.

**Original Gravity :** 1.057

**Final Gravity :** 1.014

**Color SRM :** 10.31

**Alcohol by Volume :** 5.48

**IBU :** 66.41

### All Grain Recipe

AG99-0064

Procedure : Please read all the instructions before you begin brewing, to ensure you have all the ingredients and fully understand the process.

<b>Clean</b>	It is important to thoroughly clean and sanitize all of your brewing equipment. Assemble your mash tun. Add 1 quart of 180°F water for every pound of grain to be mashed (add water first). By adding water first, you will pre-heat your mash tun. Stir water until your temperature hits 170°F. It is now time to add your CRUSHED grains to the cooler. Gently dough grains in until all grain is covered by water. Place lid on and continue to Mash.				<b>Grains :</b> <b>10 lbs 2 Row Malt</b> <b>0.5 lbs Cara Pils</b> <b>0.25 lbs Crystal Malt (40 °L)</b>
<b>Mash</b>	After 10 minutes you can check your temperature. You will be between 149°F and 156°F assuming you measured your water and grains correctly. Replace lid and "Mash" for 1 hour. Start to heat your sparge water at this point. You will need enough 200°F water for your expected final volume (5 gallons if you want five gallons of brew).				
<b>Conversion</b>	After mashing for one hour, you will want to check for conversion of starch to sugar. This will be done by placing a small amount of grain free wort on a white plate or bowl. Add one drop of "Tincture of Iodine" to the wort. If it quickly disappears or stays/remains red, you are ready to move on. If the iodine turns black, starch is still present. Calibrate your thermometer. Recheck the temperature of the mash. If both are accurate, do another iodine test every 20 minutes until conversion is complete.				
<b>Sparge</b>	Conversion is now complete. Slowly drain 1/2 gallon of wort and pour it back on top of your mash. This process (Vorlauf) is used to clear your wort. You may need to run more than 1/2 gallon. When wort is clear, sparging is your next process. Sparging is no more than rinsing the sweet wort from the grains in your mash tun. You will want to gently pour 200°F water over your grains (try to keep an inch or so of clean water on top of the grain bed). SLOWLY collect your wort from the spigot at the bottom of your mash tun. This process should take ONE HOUR. If this is rushed, your gravity will be low...take your time!				
<b>Boil</b>	After ONE HOUR and you have collected enough wort, it is time to start your boil. Keep in mind you will lose approximately 15% of your boil due to evaporation. If you want five gallons of beer, start with six gallons of wort. You are now on familiar ground. You will simply add your hops as scheduled in the recipe. No need to add specialty grains, they were in your mash. Be sure to add your wort chiller to the last 15 minutes of the boil.				
<b>Hop &amp; Additive Schedule</b>	Ounces	Hop/Additives	Hop Addition	Boil Time (minutes)	
	1	10 HBU Pack	Boil/Bittering	60	
	1	5 HBU Pack	Boil/Bittering	60	
	1	oz Cascade Hop Pellets	Aroma	5	
<b>Cooling the wort and preparing the fermentor</b>	Once the 60 minute boil is over, it is time to cool the wort. There are many ways to cool a wort, the AIH recommendation is a wort chiller. Cool the wort to approximately 100° F as quickly as possible.  The fermenting equipment needs to be sanitized. This can be done while the wort is cooling. Be sure to clean and sanitize the fermenters, airlock, lid, hose, hydrometer and test jar and rubber stopper. Anything that may come into contact with the wort should be sanitary.  Transfer the wort into the primary fermenting vessel, then top off with cold water until a total of 5.125 gallons is in the primary fermenter. Aerate the wort at this point. This can be accomplished with an aeration stone or simply by rocking the fermenter back and forth once the lid is in place.				
<b>Take the reading</b>	This is the time that you will want to take a specific gravity reading. Use a hydrometer and record the reading.				
<b>Pitch the yeast</b>	Once the wort is cooled to 78° F, it is safe to pitch the yeast. Pitch according the proper procedures of the type of yeast you have. Seal the fermenter tight. Attach the sanitized airlock and stopper. Fill the airlock with water. Fermentation should begin within 24 - 48 hours. "Do Not Disturb" until fermentation is complete.  During the fermentation process, CO2 will begin to escape the airlock. Follow manufacturer's pitch instructions and recommended temperature for fermentation.				<b>Suggested Yeast :</b> <b>California Ale Yeast 82-001</b> <b>American Ale 67-1056</b> <b>US-05 Safale</b>
<b>Fermenting - Primary</b>	Once the Primary fermentation is complete, approximately 1 to 2 weeks, rack the beer into the secondary fermenter.				
<b>Fermenting - Secondary</b>	If the recipe calls for Dry Hops or Additives that need to go into the secondary, add these now. The Secondary Fermentation should be complete within 1 to 2 weeks.				
<b>Bottling</b>	Siphon finished beer into a bottling bucket. If the recipe calls for any Bottling Additives to be added to the bottling bucket, add them now.  At this point, follow bottling or kegging procedures....Cheers!				