

German Wheat Beers

BJCP defined styles - hefeweizen, dunkelweizen and weizenbock. Brewers Association adds Leichtes (light) and Bernsteinfarbenes (amber) categories, and also separates Kristal Weizen from Hefeweizen.

Common characteristics of all Bavarian Wheat beers:

- Low hop utilization. Most of the style guidelines list IBUs in the 10 to 15 range, with IBUs topping off at 30 for a weizenbock (although Aventinus is only 15). Little to no hop flavor or aroma.
- At least 50% wheat in malt bill. Wheat flavor should be noticeable.
- Effervescent. All are carbonated at between 3 and 4 volumes CO₂, with most typically around 3.5 volumes.
- Dry finish. All are supposed to be refreshing, quaffable beers. Too much residual sweetness detracts from drinkability.
- With the exception of weizenbocks, these beers are to be enjoyed young. Typically taste best 2 to 4 weeks after brew day.

Additional things to consider when judging:

- Roll the bottle before opening and include note in judging form that bottle was rolled. Be consistent during entire flight.
- There's a gap in color rating between hefeweizen and dunkelweizen. Schneider Weisse Original was listed as an example of a hefeweizen in the 2004 BJCP guidelines, then moved to dunkelweizen in the 2008 BJCP guidelines. It is out of range colorwise for both hefeweizen and dunkelweizen. Allow leeway on color (and associated flavors) for beers that wouldn't fit either category.

Ingredients

Aside from the darker malts for dunkelweizens and weizenbocks, very little is different in ingredients in any of the Bavarian Wheat beers. Application of each ingredient will be described here, with special notes for any particular style.

Hops

Low alpha acid Noble hops are traditionally used and are best to accurately hit such low bitterness levels. Some German breweries use multiple additions with the majority of the hops at the beginning of the boil. For simplicity, it's best for homebrewers to stick with one addition at the beginning of the boil.

For a non-traditional weizen, good results can be obtained by using highly aromatic American hops such as Amarillo, Columbus and Citra. Keep bitterness level low and focus on very late

hop additions (10 minutes or under) to give a blast of flavor and aroma. Have restraint on the first attempt to try to keep balance with the yeast characters.

Water

German brewing water for weizens vary from soft to moderately hard. Even for darker styles, roasted flavors are not typical so chalk additions are not necessary. De-chlorinated GCWW water works just fine for all German Wheat beers.

Malt

Reinheitsgebot required at least 50% malt bill to be wheat to be considered a weizen. Typical German weizens range in the 60% to 70% range, with 60% to 65% most common for breweries that share such details. Malt extracts are typically 65% wheat malt/35% Pils malt. Many German breweries also add a small percentage of Carahell or Munich malt even in their hefeweizens for added sweet and toasty flavors.

Base Malt Selection

German wheat and Pils malts are focused towards weizens. German Pils tends to have a more grainy flavor than Belgian Pils which is appropriate in weizens. English wheat malt is over-modified for a weizen beer. If using American malts, Briess suggests using their Red Wheat for a hefeweizen over their Pale Wheat. New Glarus uses Briess Pils and Red Wheat in their hefeweizens.

For hefeweizens and dunkelweizens, keep the original gravity on the low end of the BJCP guidelines. A OG between 1.046 and 1.048 will lead to a beer that isn't as filling as a beer with an original gravity of 1.052.

Malt Bill for Hefeweizen

60% Wheat malt
40% Pils malt
Optional - 3% Carahell, reduce Pils to 37%

Malt Bill for Bernsteinfarbenes

60% Wheat malt
25% Pils malt
12% Munich malt
3% Carahell

Malt Bill for Dunkelweizen and Weizenbock

60% Dark Wheat malt
25% Pils malt
10% Munich malt

5% Caramunich, Carawheat or Chocolate Wheat malt; vary depending on desired color, flavors, and aroma.

For all styles: add up to 3% Acidulated malt in place of Pils malt for a tart, crisp character.

Extract Substitution

Wheat malt extracts are typically 65% wheat malt/35% Pils malt and created with weizens in mind. Replace wheat malt extract with the wheat malt and Pils malt in the above recipes. Munich malt extract is less common but available. Carahell, Caramunich, Carawheat and Chocolate wheat malts can all be steeped.

Malt Modification

Traditionally, the high protein content in wheat malt and the poor modification meant that a multi-step decoction was required for a weizen brew to prevent stuck mashes and to improve brewhouse yield. Modern malts do not require such techniques. A single step infusion can be conducted even with a weizen malt bill. However, a step mash and decoction can be utilized to achieve the desired flavors.

Schneider Mash Profile

95F for 10 minutes

113F for 10 minutes

122F for 10 minutes

147F for 5 minutes, pull $\frac{1}{3}$ decoction. While main mash maintains 147F the decoction portion goes to 152F for 10 minutes, 158F for 20 minutes and then 203F for 5 minutes. Then the decoction is combined with the main mash.

167F for mash out

Ester Enhanced Mash Profile

An increased glucose to maltose ratio increases wort production. The enzyme maltase creates glucose and is active from 86F to 104F. However, maltase can only convert maltose to glucose, not the raw malt starches. This mash uses a low sacchrification rest to create maltose for the decoction and then recombines the decoction with the main mash for a maltase rest for high glucose production.

85F for 5 minutes with a very thin mash (2 to 2.5 qts/lb), then pull a 25% to 30% decoction.

While main mash maintains 85F, for the decoction:

144F for 30 minutes

Boil for up to 20 minutes, then recombine with main mash.

Combined mash rests at 104F for 30 minutes

162F until conversion is complete

172F for mashout

Mash Profile for Homebrewed Examples

Mash in at 110F with a 0.75 qts/lb thickness. Pull $\frac{1}{3}$ decoction. Main mash rests at 110F for 10 minutes, then infuse with another 0.75 qts/lb of 145F water to raise to main mash to 133F. For the decoction:

158F for 20 minutes.

Boil for 20 minutes. Recombine with main mash.

Combined mash is raised to 158F until conversion is complete.

Mashout at 168F.

Franzikaner Mash Profile

Mash in at 144F. Hold until conversion is complete.

Mashout at 168F.

Yeast

Bavarian weizen yeasts are phenol off flavor positive yeasts. Esters and phenols produced rely on certain compounds to be present and vary based on fermentation conditions. Generally speaking:

- Increased glucose to maltose ratio enhances isoamyl acetate (banana). Ester enhanced mash profile increases the resulting glucose levels in the final wort.
- Feurlic acid is necessary for 4-vinyl guaicol (clove) production. Mash rests in the 109F to 113F range increases feurlic acid in final wort.
- Low oxygenation stresses yeast, which increases ester production.
- High fermentation temperature increases ester production, but high fermentation temperatures from the start can produce undesirable flavors and aromas. Start low (60F to 65F) and let rise after the first two days as high as 75F.
- Shallow fermentation vessels result in lower pressure on the beer and increases ester production. This can be mimicked by splitting a 5 gallon batch between two fermenters. However, the affect on the homebrew scale is negligible.
- Open fermentation increases ester and phenol production. Practiced by many commercial weizen breweries.
- Underpitching (4 to 7 million cells/mL) increases ester and phenol production. If underpitching, it is suggested to make a starter but then not use entire amount. It is important that the yeast be in high krauesen when pitched to ensure that vital yeast are pitched that can well attenuate the beer.

Most German brewers skim the trub off the top of fermentation or use open, self-skimming fermenters as they believe that these compounds promote a harsh bitterness when mixed back into beer. To mimic these conditions on a homebrew scale, ferment in plastic bucket with lid on but not locked down for open fermentation. Lift lid off to skim trub off the top of fermentation (if it doesn't overflow the

Fermentation can complete in under a week. Since weizens are cloudy, no need for a secondary fermentation.

Packaging

Weizens are carbonated to 3 to 4 volumes CO₂, with 3.5 volumes typical. German breweries will typically bottle condition. Most American bottles can't handle high carbonation pressures. If bottle conditioning, get thicker European bottles.

When kegging, make sure you have the right length tubing to balance increased pressure.

Additional Resources

Hieronimus, Stan *Brewing With Wheat*, 2010

Warner, Eric, *German Wheat Beers*, 1998

Beers Presented

Hefeweizens

Paulaner Hefeweizen

Rivertown Hefeweizen

Weihenstephaner Hefeweizen

Dunkelweizen

Schneider Weisse Original

Franziskaner Dunkelweizen

Ayinger Ur-Weiss

Weizenbocks

Schneider Aventinus

Weihenstephaner Vitus