BREWERS

HOW TO USE KERNZA®

A Technical Guide for Brewing with Kernza® to Enhance Flavor and Sustainability

Kernza[®] and Craft Beer: A Sustainable Grain for an Evolving Industry

As consumer demand for sustainability and transparency in their food and beverage choices continues to grow, craft brewers are in a prime position to integrate innovative ingredients that align with these values. Enter Kernza®, a deeply rooted perennial grain that not only enhances beer with unique flavor notes but also supports soil health and delivers many other environmental advantages.

With supply chain resilience and sustainable sourcing becoming focal points in brewing, Kernza® creates opportunities for brewers to differentiate their offerings while making positive impacts across the board.



Getting Started

It all begins with the type of beer you'd like to make. Keep in mind that Kernza® contains 17–20% protein¹ (individual lots may vary), which gives extra mouthfeel and strong foam to carry the aroma of the beer.

Styles to Consider:

- To showcase the nutty tasting notes of Kernza[®], try lighter beers such as lagers, golden ales, cream ales, or pilsners — Kernza[®] enhances the bready/doughy flavor of a pilsner.
- Brewers have also seen success with a wider range of styles, including saisons, brown ales, sours, IPAs, porters (a great way to feature the baking spice aroma), and non-alcoholic beers.

Adding a lot of hops can mask the Kernza[®] flavor, but brewers are still having success with hoppy Kernza[®] recipes.

Flavor and Aroma

Kernza[®] can be sourced as a raw whole grain, malt, or flakes. Each form lends slightly different notes.

Raw Whole Grain Kernza®

Tasting notes: bready, doughy, nutty, grainy, toasty, baking spices, cinnamon, slightly earthy, spelt, graham cracker, sourdough crust, chewy pasta, toasted pine nut, and buckwheat pasta

Some compare using raw whole grain Kernza® to rye, but it's different and more nuanced, with one expert saying the flavor seems to be unusually broad, intense, and diverse compared to other grains — possibly due to its high protein content or its cell wall structures.



Exciting New Development!

Malted Kernza[®] entered the market in May 2025 across a spectrum of colors and profiles. Early pilots have shown high-color Kernza[®] malt creates unique, standout flavor characteristics. Check with a malted Kernza[®] supplier for details.

Flaked Kernza®

Flaked Kernza[®] is created when the grain is lightly heated and flaked at certain moisture levels, which improves access to the starch and generates enhanced aroma and flavor properties, especially cinnamon. Toasting it can accentuate the flavors further.

The flavor of the flakes has been described as cherry, amaretto, almond extract, vanilla, and cinnamon. One supplier lists aromas of toasted bread, fire-roasted popcorn, biscuits, hardtack crackers, and flavors including rustic bread, popcorn kernel, pretzels, and shredded wheat cereal.²



Photo credit: Ana Castro

Total Protein

The level can vary quite a bit, but it is typically between

17–20%.¹ Depending on the recipe, Kernza[®] will contribute a significant amount of protein to the wort, which will contribute to haze, mouthfeel, and head retention.

Color

Color contribution to the wort from raw Kernza[®] grain is usually minimal. Consider flaked wheat or corn as an analogy. One lot of raw Kernza[®] was 2.71 SRM.³ Another study measured a wort from raw Kernza[®] at 1.5 SRM.⁴

Recipe Guidelines

Most brewers use 10–20% Kernza[®]. One experienced Kernza[®] brewer suggests starting at 20% to see how sticky the lauter is with your particular process and then going up or down from there. Example recipes that have been used include:

- ▶ 70% pilsner malt, 20% Kernza[®] flakes, 10% crystal malt, and toasted barley adjunct to enhance Kernza[®] flavor, plus rice hulls at 5% of the grain bill
- 7.5% malted rye, 7.5% raw, unmilled Kernza[®], remainder malt Note: Rye can overpower the Kernza[®] flavor.
- Sweater Weather, a malted beer from Bad Weather Brewing: 70% pilsner malt, 27% specialty malts (Biscuit, Honey, Special B, Double Roasted Crystal), 3% 9.82 SRM Kernza[®] malt

Gelatinization Temperature

Similar to wheat, peak gelatinization occurs at 140–144°F.⁴ No adjustments are needed to the mash temperature. Adding a step mash is an option but not necessary; you can easily do a single infusion.

Mash Rest Time

60-90 minutes

Brewing Process

Overall, brewing with Kernza[®] isn't very different from other grains. You can use it similarly to raw or malted wheat.

Milling can be tricky due to the small grain size, but consider these strategies:

• The easiest way to start out is with flaked grain.

Flaked grain works like flaked oats; you can put it straight into the mash. There is no processing necessary, and there's minimal risk of a stuck mash (it's not gummy like oats), but you can mill it lightly with the rest of the grain or add rice hulls if desired. Flakes are also somewhat pre-gelatinized so you don't have to worry if the grain will fully convert.

• Use raw grain and skip milling.

This approach is easy, but it doesn't enhance flavor as much or enable all the starch to be accessed.

Buy coarsely milled flour.

If using this method, mix the coarsely milled flour with warm water before adding it to the mash to avoid clumping, and add Kernza[®] husks (if you have access to them) or rice hulls to ensure smooth lautering.

Use a hammer mill.

Be aware that the fine flour can cause a stuck sparge. This strategy is best if you have a mash filter or mash press. If lautering, you could also evaluate the processed grain with a sieve analysis to anticipate if there will be any issues.

- Set your roller mill as tightly as possible. One brewer reported cracking started at 0.2 mm. Run it through the mill multiple times. It may help to mill the Kernza[®] separately from the rest of the grain bill.
- Use a wet mill with a very tight gap. Milling the grain when it's wet makes it softer without really cracking. It gets somewhat mushed, and it will go through the system without trouble.

A Note and Tip on High Protein

Adding capsules settles out some of the protein. High protein can cause a cloudy wort and could lead to potential downstream haze in the finished beer. This will *not* affect flavor or aroma negatively, but a protein rest would be a good consideration if downstream haze is a concern.

Enzymes

- As an unmalted grain, Kernza[®] isn't expected to provide enzymatic power, but it does contribute starch (fermentables) like other raw grains. Though numbers may vary significantly by lot, extract has been measured at 63%⁴ – 77%³ FG dry basis.
- In one university study, raw whole grain Kernza[®] had a high diastatic power (DP) value of 102°L, dry basis, which shows an already high level of enzymes that can degrade starch. Kernza may have unbound beta-amylase that is active prior to germination. So be aware that raw Kernza[®] in the grist could create additional conversion in the mash.⁴
- If using malted Kernza[®], check with suppliers on exact specifications.

Sourcing and Product Strategy

If you're considering an organic beer, you'll have to document the process for organic certification, and that may influence which supplier you work with.

Kernza[®] is a premium-priced grain, but it comes with a unique flavor profile and a compelling story that can help you position products in a premium category.

Kernza[®] can show a significant variance in SRM and flavor profile based on the source, allowing brewers to showcase the grain's terroir. Consider returning to the same source for consistency or varying sources to highlight regionality and uniqueness.

If purchasing whole grain, be sure to buy it dehulled. This will be the default with the main suppliers, but if you're sourcing directly from a farm, work with the farmer to ensure the grain gets cleaned and dehulled at a processing facility.



Kernza[®] Supplier Sourcing Information

Please speak directly with your supplier for information about pricing and the ingredient forms they carry (raw grain, flakes, flour, malt). Visit **Kernza.org** to locate a list of suppliers.

Credit to Contributors

These individuals have helped make this guide possible. We extend to them our sincere gratitude.

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Other Resources

- Over 45 breweries have worked with Kernza[®] as of this guide's publication. To connect with one in your area, please contact The Land Institute.
- Kernza[®] Perennial Grain: Value-Added Uses for Malting, Brewing, and Distilling. Agricultural Utilization Research Institute. 2024. To obtain a copy, contact reports@auri.org.
 - Appendix F contains a sub-report on high-color malt pilots.
 - Appendices G and H contain information on Kernza[®] flakes.
- Malting and Wort Production Potential of the Novel Grain Kernza[®] (Thinopyrum intermedium). Andrew Marcus & Glen Fox. 2022. Journal of the American Society of Brewing Chemists. DOI: 10.1080/03610470.2022.2026662; Compares Kernza[®] and barley.
- Andy Ruhland, head brewer at Bad Weather Brewing, is available for questions about brewing with a 9.82 SRM Kernza[®] malt and its excellent cinnamon flavor. andy@badweatherbrewery.com

¹ 2024 Kernza® whole grain tests by Great Plains Analytical Laboratory

² Sustain-A-Grain, Aroma and Flavor https://www.sustainagrain.com/store/p/brewers-kernza-bl86l

 ³ Sustain-A-Grain spec sheet https://static1.squarespace.com/static/61e721a7e1381e74b2b6460f/t/62a8f8cbf5c1d4781ced1f5a/1655240909471/Kernza+Brewing+Info.pdf
⁴ Marcus and Fox 2022

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