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# Inspiring Homebrewers to Fuel Philanthropy

**W**ith autumn finally upon us, I can brew again. I usually take the summer off from brewing beer because (1) it's too hot, (2) I'm often traveling, and (3) I like to LARP as a sixteenth-century brewer from Ingolstadt.

In my first week back at it, I managed two brews. First up was a 40-liter (10.6-gallon) batch of Bavarian-style hefeweizen, the grist of which consisted of wheat malt (no, really, I kid you not), Pilsner malt, and light Munich malt. A single bittering-hop addition of Tettnang to the tune of 10 IBU and a big pitch of Weihenstephan weizen yeast rounded things out. It was a fun brew that required the better part of a day, insisting as I did on a multi-step decoction mash schedule because, you'll recall, I party like it's 1553.

The second batch was 20 liters (5.3 gal.) of all-extract Kölsch-ish-style ale. I only boiled the wort for half an hour, with a bit of Magnum up front and a heavy-handed dose of Tettnang just before knockout. I didn't even start brewing this beer until nearly 6 p.m., and I still finished in time to cook dinner. I let it lazy-chill overnight before hitting it with Bootleg Biology's Mustange Kolsch the next morning.

These two brews lie at opposite ends of the effort spectrum. The first required appreciable time and energy, while the second was so simple I almost didn't bother to write down a recipe. Both were rewarding, and both will yield beer that I, and others, very likely will enjoy.

I've mentioned this before, but I do not endorse the arbitrary camps into which we homebrewers sometimes divide ourselves or, more plausibly, find ourselves divided. I'm neither an extract brewer nor an all-grain brewer. I'm neither a low-oxygen purist nor a laissez-faire "it'll be fine"-er. I'm a homebrewer who makes use of whatever tools I have at my disposal to suit what I want to

brew and how much time and money I'm willing and able to invest in brewing it.

Sometimes that means a full day of wrestling decoctions and wrangling starters. Sometimes it's a couple of hours with a stockpot, some malt extract, and a few sachets of yeast (three packs of expired yeast probably equal one freshie, right?). I enjoy brewing all-grain beer, but I enjoy drinking homebrew even more. I'm all for whatever fills the fermenter, so long as one has fun making and drinking what comes out the other side.

Less commonly, homebrewers sometimes get divided into competitive and recreational camps. I know and respect many homebrewers who clean up at competitions, but I am not one of them. I do like to toss my hat (bottles?) into the ring when I can, as doing so helps fill clubs' coffers, and I enjoy the objective feedback. But it's not my primary reason for brewing.

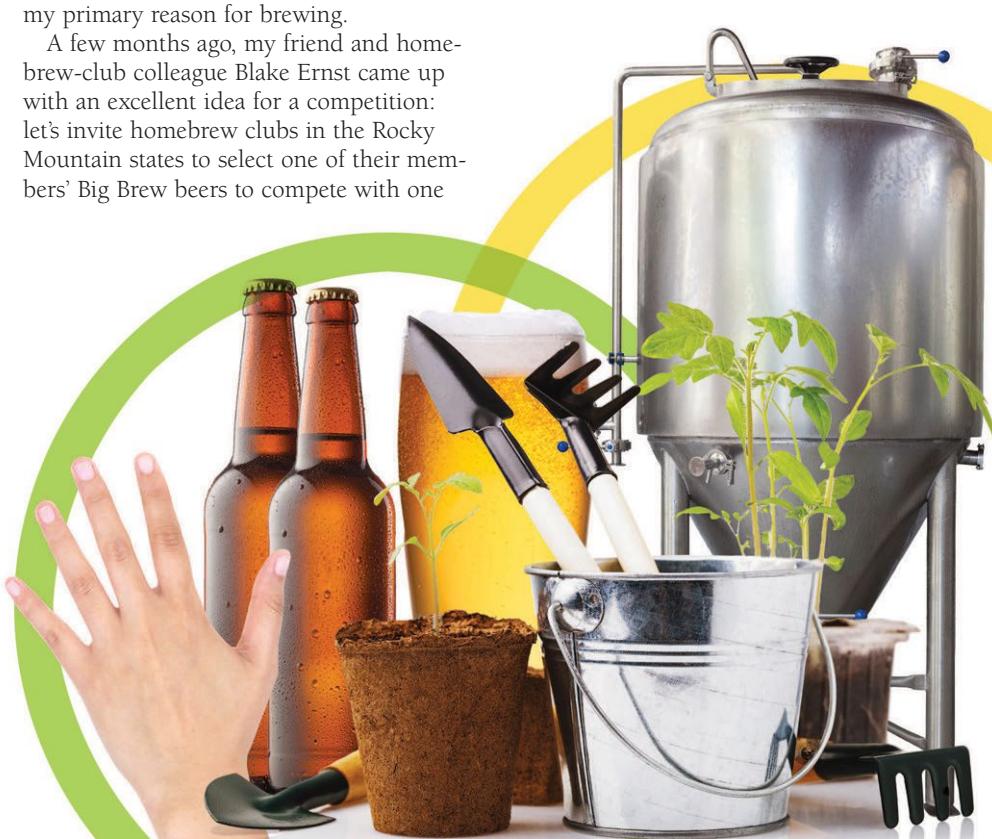
A few months ago, my friend and homebrew-club colleague Blake Ernst came up with an excellent idea for a competition: let's invite homebrew clubs in the Rocky Mountain states to select one of their members' Big Brew beers to compete with one

another for bragging rights, a mention in Zymurgy, some swag from BSG, and, most importantly, a donation to worthy causes. Entries were judged at the AHA's office over the summer, and as I write this, the winning clubs are receiving goodies (thanks, BSG!), and their selected beneficiaries are receiving checks.

Mesilla Valley Homebrew Club (Las Cruces, N.M.) donated proceeds to the David Allan Brewer's & Distiller's Scholarship, which benefits students pursuing the Brewery Engineering minor in the department of Chemical & Materials Engineering at New Mexico State University. The Indian Peaks Alers (Longmont, Colo.) chose to support the Left Hand Brewing Foundation, which was formed in the wake of Colorado's historic 2013 floods and maintains an endowment for helping community charities and causes. And the Weiz Guys (Loveland, Colo.) donated to Loveland Youth Gardeners, which helps local youth develop job and life skills while promoting active volunteerism through community service and environmental stewardship.

We have more that unites us than divides us, and nowhere is that more evident than when exploring the myriad ways homebrewers have found to support worthy causes. This issue of Zymurgy highlights homebrewers' eleemosynary efforts—as you read stories of brewers who find ways to give back, consider ways you might use your hobby to do some good.

**Dave Carpenter is editor-in-chief of Zymurgy.**



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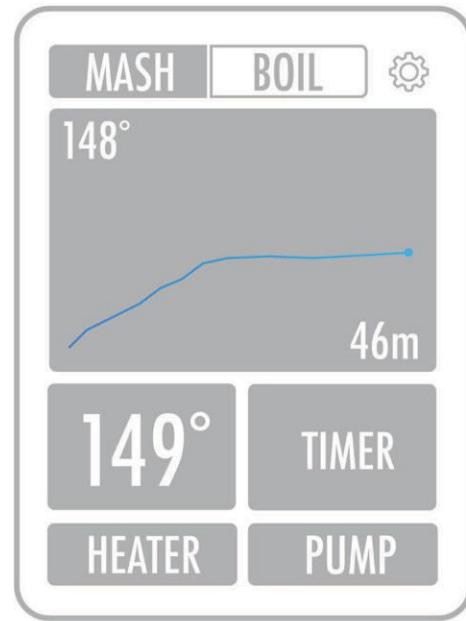
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RECIRCULATION



WHIRLPOOL



KNOCKOUT



# Features



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**BREWLANTHROPY**

Old Standby Brewing is a collaborative effort by which one homebrewer teams up with breweries to create beers that benefit charity. Over the years, tens of thousands of dollars have been donated to worthy causes. Get inspired to brew some good in the world.

By Ryan Holt

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**JAPAS CERVEJARIA ARTESANAL**

The four Nipo-Brazilian women behind Japas Cervejaria bring a shared culture to their beers. Their journey highlights the role of gender in a male-dominated profession, and the amalgamation of Japanese and Brazilian ingredients and cultures they bring to craft beer.

By Alexander Gashti

**HOMEBREW YOUR OWN CO<sub>2</sub>**

Every day, homebrewers let countless liters of carbon dioxide flow out of their fermenters and into the atmosphere. Stop wasting it and put that homebrewed CO<sub>2</sub> to good use! Learn to make the most of something you already have.

By Andy Tipler and  
Pierre Margraff**SMaSH!**

It's easy to overlook the beautiful simplicity that lies in a beer made from only one kind of grain and one hop variety. SMaSH (single malt and single hop) beers don't represent a specific style as much as a blueprint for a "less is more" thing of beauty.

By Dan Jablow

**SUPER SAISON**

What makes super saison super? Sure, it's strong, but a look beyond the alcohol reveals a mesmerizing libation that enchants the curious with its fluffy white head, aromas of pepper, lemon, and orange, and herbal, earthy hops. Senses, be intrigued!

By Ryan Pachmayer

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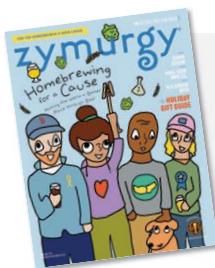
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**Cover Illustration**  
© Em Sauter**Vol 46 • No. 6**  
November/December 2023**zymurgy®**(zī'mərjē) n: the art and science  
of fermentation, as in brewing.**ON THE WEB**

Find these homebrewing recipes  
and more on our website @  
[HomebrewersAssociation.org/  
homebrew-recipes](https://HomebrewersAssociation.org/homebrew-recipes)

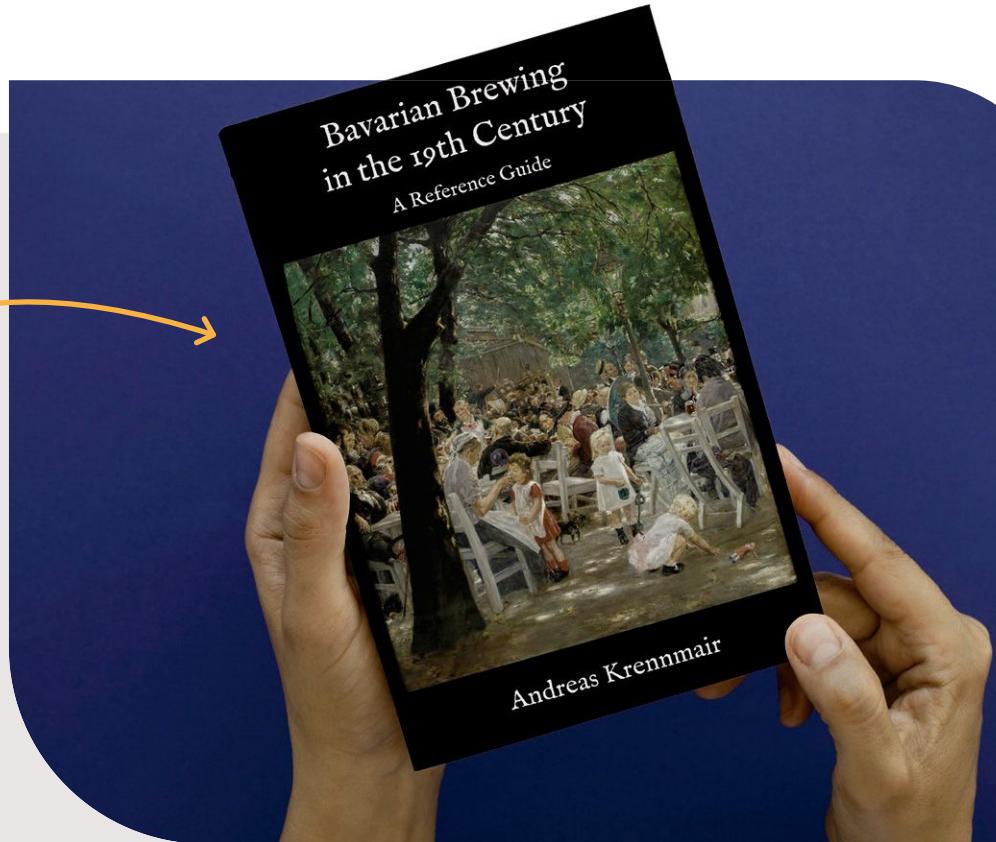
## New Book

### BAVARIAN BREWING IN THE 19TH CENTURY

By Andreas Krennmaier

The author of *Historic German and Austrian Beers for the Home Brewer* (2018) and *Vienna Lager* (2020) is out with his third title, *Bavarian Brewing in the 19th Century: A Reference Guide*.

Like Krennmaier's other works, *Bavarian Brewing in the 19th Century* is built on a comprehensive survey of historical primary-source references. The book offers a survey of malting, mashing, and brewing techniques that would have been found in cities across Bavaria in the 1800s. From Augsburg and Nuremberg to Bamberg and Munich, readers will gain a deeper understanding of brewhouse best practices at a time when the Kingdom of Bavaria was establishing itself as Continental Europe's leading center of brewing.



Krennmaier's third book is neither a how-to nor a collection of recipes—in fact, there are no recipes. Rather, it's a rare English-language glimpse into the malthouses and brewhouses of 19th-century Bavaria that

explains methods of brewing and malting within their rightful historical context.

*Bavarian Brewing in the 19th Century: A Reference Guide* is available in paperback or as a Kindle ebook at Amazon.com.

### AHA MEMBERS WIN BIG AT 2023 U.S. OPEN BEER CHAMPIONSHIP

Breweries from Maui to Miami sent more than 9,000 beers (3,107 entries) representing over 160 different styles to the 2023 U.S. Open Beer Championship. In addition to naming top breweries Toppling Goliath Brewing (Decorah, Iowa), Flix Brewhouse (Carmel, Ind.), and Schulz Brau Brewing (Knoxville, Tenn.), three AHA members won medals in head-to-head competition against commercial entries.

The U.S. Open is the only major beer competition to allow the gold-medal winners of the AHA's National Homebrew Competition to participate. This year, three homebrewers won medals, which ties the U.S. Open record. Big congratulations go to Alex Cigan from Brooklyn, N.Y., for winning a bronze medal for his Contrived Spontaneity Wheat Wine, to Joseph Belevender from Warren, Mich., for winning a silver medal for his North Biere Belgian Ale, and to Caleb Meinke from Cambridge, Wis., for winning silver for his Len's Light Lager. These winning recipes can be found in the Sept/Oct 2022 issue of *Zymurgy*.

The U.S. Open judging was held at the new U.S. Open Event Center in Oxford, Ohio. The U.S. Open became the first beer competition to be held in its own venue, a 6,000-square-foot Amish pole barn on a small farm. The barn consists of a judging area, a serving area, two 450-square-foot coolers, an office, and a nano brewery.

To learn more, visit [usopenbeer.com](http://usopenbeer.com).





# Choop

By Aaron Poochigian

Something was seething in a lean-to shed.  
Behind a pitch-splotched, patchwork blanket spread  
across the angle, in a drum among  
four others fraught with kerosene, potash,  
raticide called “Red Squill” and chicken dung,  
something was seething.

One week back a mash  
of maize and malted barley had released  
sweetness into a wash, and a cascade  
of Crystal Sugar, melting in it, made  
what would be potent still more fortified.  
One week the fungal juju of a yeast  
plucked from the cooking aisle at Pantry Pride  
had been transmuting this peculiar stew  
into a substance ripe to be sublimed.

Something was seething in a metal drum.  
The moon was calling out. The time had come.

Off in the creek-side sweet gums, there was dew  
like magic on a riveted, begrimed  
copper alembic. After having rolled  
sloshingly down a path, the antsy batch  
leapt echoing into the smelted mold.  
Fatwood lay waiting, and a safety match  
tickled a strike strip, and a blaze took hold  
and smutched the underside with greens and blues.

Vapors diffusely bubbled to the top  
then thickened to a fog that, wanting out,  
went for a vent and found a downward route  
into a whorl of iced and tightening flues.  
There, brushing through the cold coil walls, the mist  
liquefied and at last emerged, a drop  
at first and then a dribble, from the spout.

Stars glazed in triumph when the cup was kissed  
and luscious lightning salved a human soul.

At dawn this libertine evangelist  
would dash stashed in a roadster’s metalwork  
through prowling Prohis to a soda jerk  
at Harlan’s Lunch and Drug where, at the droll  
solicitation of a dime and wink,  
it would dispense a hazy space to shirk  
tenacious hurt in, a condensed parole,  
to feigned abstainers desperate for a drink.

Aaron Poochigian earned a PhD in Classics from the University of Minnesota and an MFA in Poetry from Columbia University. His latest poetry collection, “American Divine,” the winner of the Richard Wilbur Award, came out in 2021. He has published numerous translations with Penguin Classics and W.W. Norton. His work has appeared in such publications as Best American Poetry, The Paris Review, and POETRY.



## Learn to Homebrew Day is Nov. 4, 2023

In 1999, the American Homebrewers Association established the first Saturday in November as Learn to Homebrew Day to promote the most rewarding and delicious activity of all time—homebrewing. Beer lovers worldwide are invited to brew, share their knowledge, and celebrate the hobby of homebrewing this year on Nov. 4.

One of the best things about a brew day—your brew day—is the ability to choose your own adventure. For this year's 2023 Learn to Homebrew Day, we are featuring SMaSH ales. SMaSH is short for “single malt and single hop,” and the term refers to a recipe that uses only one type of malt and one hop variety. Even relatively simple ingredients can deliver fulsome flavors.

Read all about SMaSH beers in Dan Jablow’s article “SMaSH! Embrace Your Experimental Side” in this issue of *Zymurgy*. Then, for Learn to Homebrew Day, either brew one of Dan’s Super Smash Bros. recipes (see page 59 of this issue) or whip up Jason Chalifour’s SMaSH Sensory Blonde Ale, which originally appeared in the May/June 2021 issue of *Zymurgy* and is reprinted below.

Be sure to share photos and videos of your brew day with us! Tag @HomebrewAssoc on X (the platform formerly known as Twitter), Instagram, and Facebook using the hashtag #SMASHbeer.

Visit [HomebrewersAssociation.org](https://HomebrewersAssociation.org) for the latest information on Learn to Homebrew Day.

Brew This!



### SMaSH Sensory Blonde Ale

Recipe by Jason Chalifour

<b>Batch volume:</b>	1 US gal (4 L)
<b>Original gravity:</b>	1.046 (11.4°P)
<b>Final gravity:</b>	1.010 (2.6°P)
<b>Efficiency:</b>	70%
<b>Color:</b>	varies with base malt
<b>Bitterness:</b>	25 IBU
<b>Alcohol:</b>	4.7% by volume

#### MALTS

2 lb. (907 g) base malt of your choice

#### HOPS

0.15 oz. (4 g) Cluster, 7.8% a.a. @ 60 min

#### YEAST

½ sachet (5.5 g) Fermentis SafAle US-05

#### BREWING NOTES

Mash at 152°F (67°C) for 60 minutes. Use the same base malt in each batch, but use different hops, specialty malts, or different yeasts. Use 1.2 lb. (550 g) of dry malt extract in place of base malt for an all-extract version.





## Ales West Beer Festival

By Billy Campbell

Old Joe Brew Club's Ales West Beer Festival recently unfolded as a beer aficionado's dream, bringing together an impressive array of talented brewers, enthusiasts, and advocates of charitable causes. With a record-breaking turnout of over 750 attendees and more than 70 esteemed commercial, home-, and microbrewers showcasing their craft, the festival proved to be an extraordinary celebration of beer, community, and giving back.

Hosted by Old Joe Brew Club in St. Joseph, Mo., Ales West Beer Festival presented an exceptional lineup of brewers who delighted attendees with their creative and masterful brews. From well-established names to rising stars in the brewing industry, these passionate artisans showcased their unique flavors and techniques, mesmerizing festivalgoers with every sip. Breweries such as Vine Street, 4 Hands Brewing Co., and 1st Barrel, and homebrewers from such area clubs as Witness Brewery, Wacked Out Brewing, 3 Monkey Imperial, and Approachable Face Brewing, stood out for their commitment to quality and innovation, leaving an indelible mark on the festival's atmosphere.

With more than 70 brewers participating in the festival, Ales West Beer Festival offered an unparalleled opportunity for beer enthusiasts to explore a diverse range of flavors and styles. From crisp and refreshing lagers to bold, hop-forward IPAs, attendees were spoiled for choice. Summer and experimental brews also made their marks, with brewers pushing the boundaries of taste and offering delightful surprises at every turn. Ales West Beer Festival truly embodied the spirit of discovery and appreciation for the art of brewing.

Ales West Beer Festival's fifth annual event proved to be a resounding success, drawing in a record crowd of more than 750, who shared a common love for great beer and a desire to make a difference. The festival provided an ideal platform for attendees to mingle, exchange brewing knowledge, and forge new connections within the vibrant beer community. The atmosphere was electric, with laughter, lively conversations, and a sense of camaraderie permeating the incredible downtown St. Joseph space at Coleman Hawkins Park.

In addition to celebrating the craft of brewing, Ales West Beer Festival will make a significant impact on the community by directing its proceeds towards charitable causes. The festival organizers were proud to announce that a substantial portion of the funds raised would be donated to local charities. By combining their passion for beer with a commitment to social responsibility, Ales West Beer Festival demonstrated the power of collective action in making a positive difference. The festival's philanthropic efforts exemplified the spirit of giving and encouraged attendees to embrace their role as agents of change in their community.

To learn more about the festival, visit [aleswest.com](http://aleswest.com).



### BREW OVER

In the Sept/Oct 2023 issue of *Zymurgy*, Alex Cigan's homebrew club was incorrectly listed as St. Louis Brews on page 50. It should have read New York City Homebrewers Guild. Additionally, Steve Gardner of Greenville, S.C., won the bronze medal in Category 11,

American Pale Ale and should have been credited on page 51 of the same issue. We apologize for these oversights and congratulate both medal-winning gents on their accomplishments in the 2023 National Homebrew Competition.

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Every time an American Homebrewers Association (AHA) member gives away a homebrew, we are delivering the gift of sharing in ways that are unique and unmatched. Another way homebrewers give is by educating others. Sure, we're each in it for the reward of learning, yet every time we share our knowledge, we, too, are giving—giving to the cause of the hobby of homebrewing.



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LIVE

Where Fresh Ideas  
Are Brewed

Sharing knowledge is exactly what the AHA has been doing since 1978, and no doubt if you are a member, your homebrewing and beer appreciation are more rewarding than without. In our work to provide reasons, recipes, and rewards for brewing, there are some exciting new offers in the mix, one of which is Zymurgy Live, an exclusive benefit for AHA members.

Just check out the below list of educators the AHA has tapped to educate us and give back to the collective cause. My friends, if you have not tuned in, hesitate no longer. These can all be found at [HomebrewersAssociation.org/presentations/zymurgy-live](https://HomebrewersAssociation.org/presentations/zymurgy-live) and are prime examples of how the AHA is able to fuel you and the cause of homebrewing.

The 2023 lineup for Zymurgy Live includes the following educators.

» **January 2023:**  
*Charlie Papazian, "Why We and CHARLIE Homebrew"*

» **February 2023:**  
*Stan Hieronymus, "New Zealand Hops: What Is All the Fuss About? The Delicious World of South Pacific Hops"*

» **March 2023:**

*Dr. Charlie Bamforth, "Beer Foam Science: Ingredients, Methods and Processes to Ensure Great Beer Foam"*

» **April 2023:**

*Ken Grossman, "How Homebrewing Led to Sierra Nevada Pale Ale"*

» **May 2023:**

*Sarah Flora, "Moving Fast and Breaking Taste Buds: Creative Recipe Design"*

» **June 2023:**

*Justin Crossley, "Behind the Beer with Justin Crossley"*

» **July 2023:**

*Ashleigh Carter, "Homebrewing, Lagering, Spunding, and What's Next in Beer"*

» **August 2023:**

*Jamil Zainasheff, "Fermentation Frontiers"*

» **September 2023:**

*Dr. Laura Burns, "Tapping into Thiols: Unraveling the Interactions Between Hops, Malt, and Yeast"*

**ZYMURGY LIVE**

You can watch Zymurgy Live or listen to it. If you prefer podcast-style learning, then queue up each show without video. Like watching? Then you're all set to view the conversation through our webinar platform Crowdcast.

» **October 2023:**

*Betsy Lay, "What Homebrewing Teaches Us and What Betsy Lay Is Teaching Others"*

» **November and beyond:** Stay tuned to the AHA What's Brewing newsletter and [HomebrewersAssociation.org](https://HomebrewersAssociation.org) for updates.

Zymurgy Live is just one of many new things the AHA has in motion dedicated to protecting, uniting, and educating homebrewers while empowering an equitable homebrewing culture and showcasing the fun of fermenting.

An important tidbit to share is that the speaker selection and moderating of these webinars has been driven by volunteer AHA leaders who sit on your representative committee—talk about giving! Hats off to AHA members Shawna Cormier,





Crispy Frey, Doug Piper, and Amy Martin, who, along with key AHA staff (special shout out to MacKenzie Staples) bring this content to life.

Cheers!  
Julia

*Julia Herz is executive director of the American Homebrewers Association. You can follow Julia's homebrew talks and travels on Instagram @ImmaculateFermentation.*



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# Room to Grow?



Dear Zymurgy,

I had the privilege of attending this year's Homebrew Con and judging at the Final Round of the National Homebrew Competition in San Diego. As a longtime member of the AHA, I always look forward to the Zymurgy issue with the winning recipes (Sept/Oct).

I always have wished that the styles of the bronze and silver medalists would be published and, for categories with special ingredients, what those ingredients were. In looking at the 2023 Sept/Oct issue, it does appear that there is enough space to provide the information.

Thanks for publishing Zymurgy. It remains the best magazine for homebrewers.

Cheers,  
Jim Dunlap  
Blaine, Wash.

**Zymurgy editor-in-chief Dave Carpenter responds:**

Thanks for your suggestion, Jim, and for your kind words about the magazine. We will certainly consider including the bronze and silver styles in future issues! In the meantime, you can find the BJCP categories for all of the medal winners (but not special ingredients, I'm afraid) at the National Homebrew Competition's website, [HomebrewersAssociation.org/national-homebrew-competition/winners](https://HomebrewersAssociation.org/national-homebrew-competition/winners).



## FOAMING AT THE MOUTH (OF THE FLASK)

**Dear Zymurgy,**

I used to make yeast starter wort in a pot on the stove. Then I would chill it and pour it through a funnel into a sanitized growler before adding the yeast. When I switched to boiling directly in an Erlenmeyer flask, I found that I had to watch it a lot more closely to avoid a messy boil over, as the narrow neck seems to just invite eruptions. Any tips for reducing the mess?

Andy Moore  
Evansville, Ind.

**Zymurgy editor-in-chief Dave Carpenter responds:** This is something I have struggled with as well. My standard method for reducing foam in the boil kettle is to spray a fine mist of

water over the top, but that doesn't work so well when dealing with a narrow-mouthed flask. I'd also read about a trick by which one sticks a wooden spoon or dowel into the foam. This worked sometimes, but just as often, it seemed like it just made the foam angry. You can also throw in a few hops pellets, but I never add hops to my starters, and I'm not going to break any out just for a couple of pellets.

What finally ended up working best for me is FermCap S, an anti-foam agent (dimethylpolysiloxane) that reduces surface tension. You only need one drop in a starter, and it effectively destroys any tendency for the starter wort to boil up and out of the flask. Many homebrewers use FermCap S in the boil kettle and fermenter as well, to reduce the required amount of headspace, i.e. if you want to boil 10 gallons and only have a 12-gallon kettle.



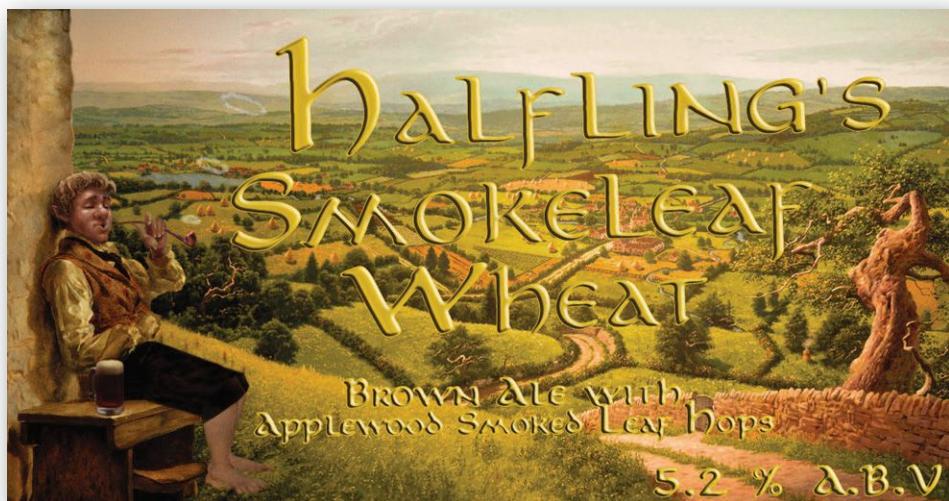
Some have expressed safety concerns over dimethylpolysiloxane, as it is a synthetic polymer. That's your call, of course, but keep in mind that it's a common food additive used to reduce foaming, especially in cooking oil. In the European Union, it's listed on food labels as E900. A mixture of dimethylpolysiloxane and silica gel is called simethicone and is a common over-the-counter treatment for flatulence.



### DEAR ZYMURGY

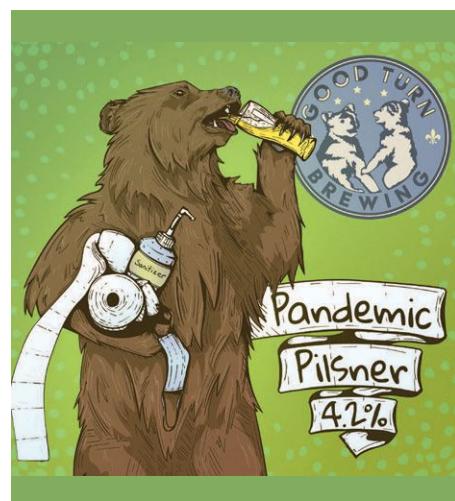
Send your Dear Zymurgy letters to [zymurgy@brewersassociation.org](mailto:zymurgy@brewersassociation.org). Letters may be edited for length and/or clarity.

## YOUR HOMEBREW LABELS



Homebrew label I made for a brown ale I made with some applewood-smoked Cascade leaf hops. (Homebrewer 10 years)

Jack Misner  
Brewminaries  
Brooklyn, N.Y.



I came up with this Pilsner in 2020 and worked with graphic designer Caitlin Wippel (Aithon Creative) on this label and our logo. The logo and beer is a crowd favorite. (Homebrewer 10 years, AHA Member 7 years)

Chris Ritchie  
Vestavia Hills, Ala.

 **SUBMIT YOUR LABEL**  
Upload your label to [HomebrewersAssociation.org/your-homebrew-experience](https://HomebrewersAssociation.org/your-homebrew-experience) and we will take it into consideration!

A product advertisement for the Tapcooler Counter Pressure Bottle Filler. The central image shows a stainless steel tap arm with a blue plastic cylinder attached to the end, which is inserted into the neck of a brown glass bottle. The Tapcooler logo is visible on both the tap arm and the cylinder. To the left of the product, the Great Fermentations logo is displayed. On the right side, the text "BOTTLE FROM THE TAP" is written in large, bold, dark blue letters, flanked by five orange stars above it. Below this, the text "ITEM N° GF883" and "COUNTER PRESSURE BOTTLE FILLER" are printed. At the bottom, there are two call-to-action boxes: "Order online:" and "GREATFERMENTATIONS.COM/TAPCOOLER". A circular Great Fermentations logo is also present in the bottom right corner.

## YOUR HOMEBREW EXPERIENCE

Homebrewing is all about sharing, and we get hoppy when Zymurgy readers share their homebrewing and fermentation experiences with us. We'd love to show the AHA community what your experience looks like. From 1-gallon batches on the stovetop to 20-gallon brew days on your custom sculpture, we all have fun with family, friends and pets while we make and enjoy our favorite beverage. Show us your brewing/fermentation day, who you brew with, the ingredients you include, what special processes you use, and how you enjoy the final product of beer and beyond.

**Upload photos of your homebrew-related fun at  
[HomebrewersAssociation.org/your-homebrew-experience](https://HomebrewersAssociation.org/your-homebrew-experience)**



This is Chewie, our brew dog. He loves hanging out and helping clean up!

**Cj Ransdell**  
(Homebrewer 7 years, AHA member 2 years)  
Friends With Beer  
Dover, Del.



I finally realized my dream of serving my homebrew through a beer engine [thanks, Pint365!] and enjoying cask-style ale at home. This pic shows my first pour of a tasty English dark mild.

**Tim Ewald**  
(Homebrewer 29 years, AHA member 21 years)  
St. Paul, Minn.



Petunia's first brew day.

**Peter Spicer**  
(Homebrewer 9 years, AHA member 7 years)  
Alameda, Calif.



My trusty brew dog Cooper keeping watch over our batch of sahti. He loves munching on the grain, testing samples throughout the brew day for quality control, and lounging with his spent grain treats while I clean up!

**Tyler Stubbs**  
(Homebrewer 16 years, AHA member 8 years)  
Ft. Leavenworth, Kan.



### SHARE YOUR BEST HOMEBREWING SHOTS!

Homebrewing is all about fun and sharing. We would love to show others in the community what your homebrewing/fermentation experiences looks like. Upload photos of your homebrew related fun at [HomebrewersAssociation.org/your-homebrew-experience](https://HomebrewersAssociation.org/your-homebrew-experience) and you may see it in the pages of Zymurgy!

SCAN ME





# GINGER BEER

By Amahl Turczyn

Ginger is an ancient spice that dates back over 5,000 years. The term refers both to the dried, powdered form, and the fresh, pungent root (though it isn't a root at all, but a rhizome—if that sounds familiar, yes, hops also have rhizomes!). It originally hails from southwest Asia, where it was highly coveted by ancient Chinese and Indian civilizations, who recognized both its culinary and medicinal uses. It's a great warming and stomach-settling tonic that comforts folks suffering from colds, flu, and nausea. Once it was "discovered" by the Roman Empire around 1 CE, it soon spread to many other parts of the world. I have fond memories of the tall, leafy ginger plants that produce these rhizomes. They grew wild near my house in O'ahu, Hawaii, and produce beautiful and intoxicatingly fragrant blossoms when they flower.

Ginger beer is a traditional drink made from either the fresh or powdered form of this spice. It isn't at all like what we've come to know as ginger ale, that tepid, overly sweet soda pop found in grocery stores. Ginger beer in its traditional form is like ginger ale on steroids. It's sharp, powerful, not terribly sweet, and possesses a spicy, addictive kick that's sharpened even further by a healthy level of carbonation.

Ginger beer is usually brewed with cane sugar as the base fermentable, so perhaps the height of its popularity was during the Caribbean sugar trade in the mid to late 1700s. Much favored by the British empire, it was bottled and exported to the far ports of the world. Undoubtedly it was prescribed for seafaring lubbers suffering seasickness on sailing vessels.

Today, ginger beer is a refreshing historical beverage any homebrewer worth their salt can easily reconstruct and ferment at home—the recipe can be tweaked to any preferred level of tartness and spiciness. Because it is fermented, there will be a slight amount of alcohol, just enough to produce the necessary fizz. Typically, though, ginger beer is less than 1% ABV, so by most definitions, it is a non-alcoholic beverage. (Of course, there are ways to produce a "hard" ginger beer, which we'll look at later.)

#### THE EASY WAY

Modern ginger beer can be made using just six ingredients: filtered water, ginger (I prefer fresh), sugar (I prefer brown cane sugar), an acid (fresh-squeezed lime juice is a natural fit here, but I've used citric acid when I've been too lazy to squeeze limes), and yeast (any dry wine yeast works—I usually go with D-47). This is the easy way, and really the hardest part is chopping the fresh ginger root.

“  
Ginger beer is a refreshing historical beverage any homebrewer worth their salt can easily reconstruct and ferment at home.

Besides the aforementioned ingredients, you need a few kitchen items, all of which you probably already have. You'll need a small steel stovetop kettle with lid, a mesh bag as you'd use for BIAB brewing, a fine-meshed sieve, a citrus press for juicing limes, a funnel, and some PET bottles (or glass ones if you're brave). Optional but highly recommended for lazy folks like me is a food processor or blender—if you happen to have a Vitamix, this is a great opportunity to dust it off.

First, you'll need fresh ginger. The organic stuff is usually best, but it can be pricey. For a 1-gallon batch of finished beer, you'll need about a pound (454 g) of fresh rhizome. Pass on the wrinkled or moldy stuff: when ginger is nice and fresh, the pieces will be plump, and the finger-like knobs should snap off from the hand-shaped bunches easily. If you don't have a machine to do the work for you, you'll need to mince the whole pound as finely as you can.

Drop your fine-meshed bag into the kettle, drape any excess folds around the edges of the kettle, and then add the ginger. If using a blender, break the ginger

into 1- or 2-inch pieces, as it will help the machine chew through it, add about a quart of the total 1 gallon (3.79 L) of water, and pulse until everything is shredded, then dump the puree into the bag-lined kettle. Rinse the blender jar or food processor bowl with the remaining water and add it to the kettle.

Next, add your sugar: brown, white, honey, palm, or whatever you prefer. (Wanting a darker color, I've also experimented with adding a couple of ounces of blackstrap molasses to ginger beer, which adds a pleasant flavor and aroma component. I've also brewed a batch of strong black tea and added that in lieu of plain water, and really enjoyed the interplay of tea aromas, tannins, lime, and ginger, so there are definitely different directions you can take the recipe. Feel free to experiment!) I recommend starting out with about 10 ounces (283 g) of brown cane sugar per gallon batch, but some will want a sweeter or drier finished beer.

If you are using crystalline citric acid, add it now. About 2 ounces (57 g) is a good starting point. If using lime juice, hold off on adding that until later. Stir to

Ginger beer ingredients.



Break ginger into pieces.



Process pieces in blender or mince finely.



Ferment This!

# Ginger Beer

**Batch volume:** 1 US gal. (3.8L)

**Original gravity:** 1.044 (11°P)

**Final gravity:** 1.038–1.040 (9.5–10°P)

**Color:** varies with sugar

**Alcohol:** 0.5–0.8% by volume

## FERMENTABLES

1 lb. (454 g) fresh ginger

10 oz. (283 g) brown sugar

## OTHER INGREDIENTS

1.25 cups (295 mL) fresh lime juice,

OR

2 oz. (57 g) citric acid

## WATER

1 gal. (3.8 L) filtered water

## YEAST

2.2 g dry wine or champagne yeast

OR

"ginger plant" SCOBY

## BREWING NOTES

Mince or puree ginger. Add to mesh brewing bag in a steel kettle or stock pot. Add 1 gallon water, sugar, and citric acid (if using instead of lime juice). Stir, bring to a boil, cover and let steep until syrup is 70°F (21°C). Add fresh lime juice (if using instead of citric acid). Stir in dried yeast, then bottle in PET bottles. If using ginger plant, hang tea ball with SCOBY nuggets in the brew for three to five days until fermentation is obvious, then bottle in PET bottles.

Keep bottles at 70°F until carbonated to desired level, then refrigerate. Drink within 7 days, or be prepared for gushers.

For hard ginger beer, bulk ferment in covered kettle with wine yeast until desired strength is attained, back sweeten to taste with brown sugar, then bottle.

dissolve, then heat to a boil. Cover the kettle tightly and let the brew sit for several hours to allow the flavor of the ginger to thoroughly infuse. If you're impatient, you can also place the kettle in an ice bath or cold-water bath to bring it to room temperature, about 70°F (21°C).

Now, remove the bag and tie it up over the kettle, allowing the remaining liquid in the ginger solids to drain. Squeezing the ginger at this point, even with clean hands, can introduce unwanted bacteria, but this rarely causes any trouble in reality: ginger beer is made to consume fresh, so go ahead and squeeze if you want to maximize your yield. If you did use a blender, however, you'll get more ginger "mud" in your bottles; finely chopped ginger yields a

clearer final product. I don't mind the mud, personally, and those dregs pack a wallop of gingery heat, but some may prefer a relatively clear beer. In that case, you might want to pass the syrup through a fine-mesh sieve to remove more of the ginger solids.

Now is the time to stir in your fresh-squeezed lime juice. I like to add 1.25 cups per gallon (78 mL/L), which is a lot of limes to squeeze, but you may like yours less tart. The acid balances the sweetness of all that sugar, and really brings out the flavor of the ginger. I like squeezing the fruit in a Mexican-style press, as it extracts more of the aromatic lime oil as well.

Taste the syrup and make any adjustments. The carbonic acid bite will make it sharper once the beverage carbonates, but since you will be halting fermentation very early, it won't get noticeably drier. Stir in your dried yeast. About ¼ tsp. should be plenty for 1 gallon. I haven't noticed a difference rehydrating the yeast first vs. just stirring it in dry, but rehydrate if you like.

Once everything is well blended, bottle it up and let the bottles sit at room temperature for a few days to carbonate. I like using half-liter PET bottles with screw caps so I can monitor which ones are ready to go into the fridge. You'll know by squeezing them when they are fully carbonated. Once chilled and settled, they are ready to decant into a glass with ice, or blended with dark rum for the best Dark & Stormy you've ever tasted, or blended with vodka for a Moscow Mule. But the plain "non-alcoholic" ginger beer is great as a morning tonic, or for any occasion where alcohol is not appropriate.

If you do want to produce a hard ginger beer, it is possible to bulk ferment in your lidded kettle, at room temperature, until the sugars are attenuated to your preferred alcohol strength. Since it's wine yeast, you can take things pretty far, and the yeast

Add minced ginger to mesh-lined kettle.



Bottled ginger beer.



will continue to produce ethanol if they are fed a sufficient supply of sugar. Then you can just back-sweeten with more sugar to taste, bottle, carbonate, and go. A word of caution though: things can get a bit harsh with boozy ginger beer, so 6% to 8% ABV is probably as far as you can go without the ginger flavor becoming (pardon the pun) grating.

Oh, and there's still plenty of gingery goodness in those leftover solids, so don't compost them yet! You can make another, albeit weaker batch of ginger beer for kids, or any friends or family who prefer a slightly tamer beverage. Just put the bag back in the kettle, add more sugar and water, and brew up a second gallon, provided you have the limes and the bottle space.

### THE TRADITIONAL WAY

Back in the day, there was a special "ginger plant" used to produce ginger beer. Basically, this was a SCOPY, a Symbiotic Culture of Bacteria and Yeast, that was similar to what people use now to ferment kefir, kombucha, and the like. Little jelly-like nuggets of fermentation goodness. Fortunately for us, there is a yeast culture bank in Germany that collects these sorts

of historical treasures, and based on that culture, ginger plant SCOBYS are available to homebrewers today. (I got mine from a company called Yemoos.) As with a sour-dough culture, it is something one has to maintain, so ginger beer is a beverage you'd want to ferment fairly often, but the culture is easy to please. A couple of tablespoons of sugar dissolved in a pint of water is sufficient to keep it happy until your next ginger brew.

How does this differ from the modern method described above? For one thing, you are dealing with a complex collection of microbes. They vary in their ability to ferment various sugars, and they contribute a whole gamut of compounds to the beer, making it a far more complex beverage. Acids are produced by different species of *Acetobacter* and lactic-acid bacteria, so there is no need to add lime juice for pH balance. But there are other contributions. Solids from fermentation can form, resulting in extra sediment. Also, the yeast in this SCOPY is fairly sensitive to even moderate levels of alcohol, so if hard ginger beer is what you want, you'll need to remove the SCOPY after inoculation, then re-pitch with wine yeast and sugar for a secondary fermentation.

Process wise, it's pretty similar to the modern recipe detailed above. You'll boil and steep the syrup and get it to room temperature, but rather than pitch wine yeast, you'll have your ginger plant fed, active, and ready to ferment your gallon of ginger beer. This usually takes a good three to five days of contact time. I keep my SCOPY in one of those stainless steel extra-jumbo tea balls...it's like a mesh chamber on a steel chain with two sides that clamp together, so that the SCOPY can come in contact with the ginger beer, but I don't have to go sifting through the dregs of the last batch to recover all the little rubbery chunks. Between batches, I can just hang the tea ball in a separate pint jar with a mild sugar solution to keep the SCOPY happy until I'm ready to put it to work again.

That's pretty much it. I haven't experimented with galangal or dried ginger for this recipe, but if you do, and have suggestions, please let us know! Until then, hope you have fun brewing up some extra-spicy (or maybe not-so-spicy) ginger beer.

*Amahl Turczyn is associate editor of Zymurgy.*





# Thiols

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# Dude, I'm Roasted



## Roasted Grains at the Malthouse and in the Brewhouse

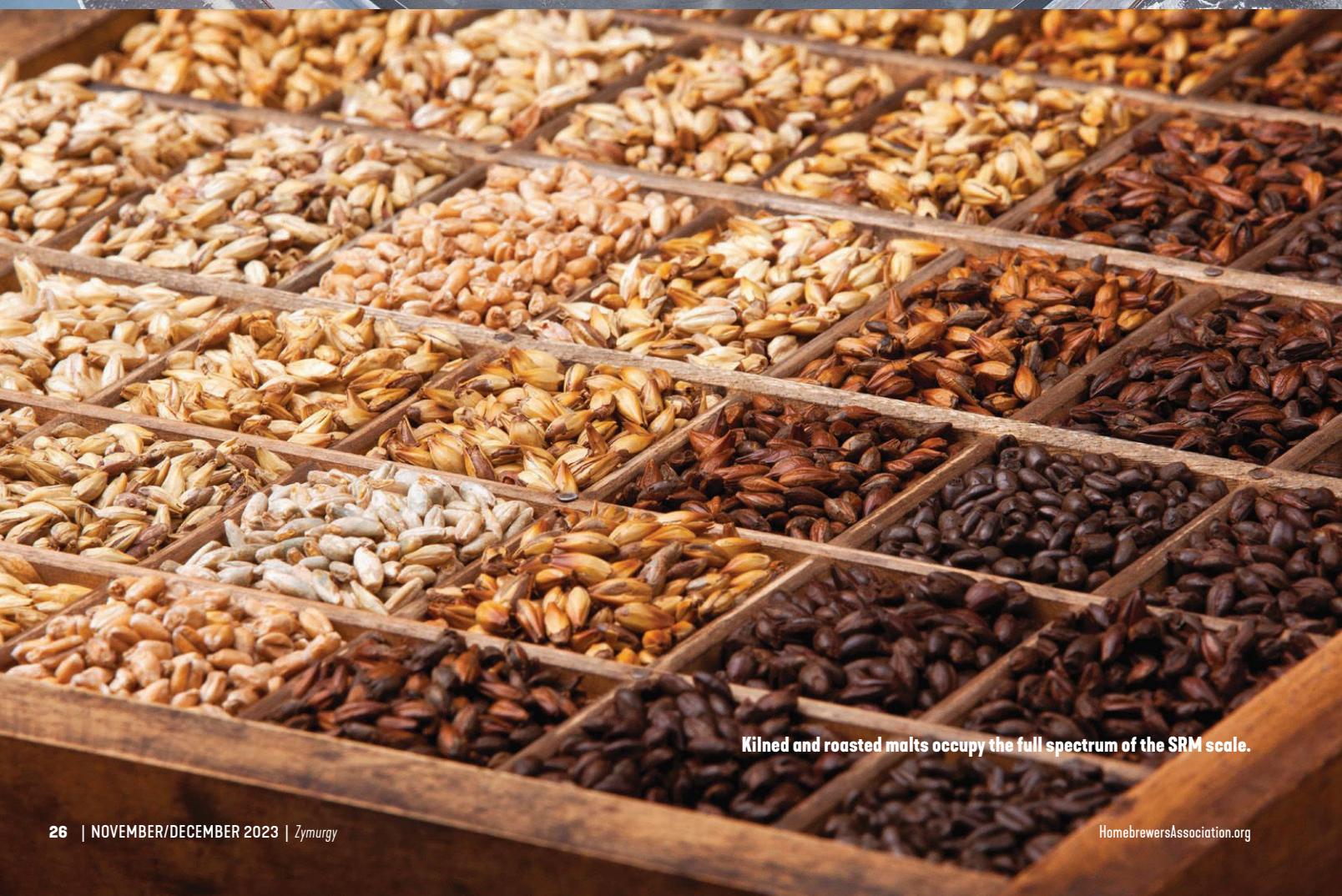
By Chris Colby

**R**oasting is the process of cooking food with hot air, whether it's a turkey in an oven, a steak on the grill, or green coffee beans in a coffee roaster. Grains, either malted or unmalted, are also roasted for brewing. Roasted grain, generally making up between 0 and 10 percent of the grist, adds flavor, aroma, and color to beer.





Interior of a drum roaster.



Kilned and roasted malts occupy the full spectrum of the SRM scale.



## KILNED VS. ROASTED MALTS

Kilned and roasted malts are initially steeped in water and allowed to germinate. Kilned malts are then dried in an oven that allows heated air to be pushed through a false bottom and upward through the grain. The largest malt kilns are as large as entire rooms, able to process large batches of grain. Any color development in kilned malts comes from the heat of the kiln. Roasters, by comparison, are usually much smaller than kilns and can heat the grains more quickly and to a higher temperature. They are used for cooking rather than drying, and can bring grain to the point of combustion, around 450°F (232°C). And in fact, this can happen if the process is not monitored closely.

Some roasted malts—including biscuit, amber, brown, chocolate, and black—are first dried in a kiln and then finished in a roaster. Others, including many caramel-type malts, are steeped, germinated, and then transferred “green” to the roaster. Caramel-type malts can also be finished by kilning. Kilned caramel malts of the same color as roasted caramel malts have different flavors and aromas, due to variations in temperature and roasting time. And of course, raw, unmalted grains can also be roasted.



A drum roaster at Briess.

## DRUM ROASTERS

While there are other types of roasters used for grain, such as batch roasters and continuous roasters, drum roasters are the most common. Coffee and cocoa are likewise commonly produced in drum roasters.

A drum roaster consists of a rotating cylinder surrounded by the elements that heat it. The drum rotates at 15 to 60 revolutions per minute and vanes within the drum turn the malt as it roasts. The outside of the drum is heated, and that heat will be transferred from the metal of the drum to the malt via conduction. When grain is being roasted by conduction, its moisture is trapped inside of the drum. Alternatively, hot air can be blown through the roaster to heat the grains via convection. When heated solely by convection—hot air moving past the grain and out of the roaster—the grain is dried as it heats. When heating by convection, both the temperature of the air and the volume of air moving past the grain influence how quickly the grain is roasted. The air-on temperature, airflow, and temperature of the malt being roasted are all monitored during roasting. Likewise, samples of malt are taken during the malting process to assess color development and moisture levels.

During the roasting process, the three main variables are temperature, time, and moisture.

A spray tube extends through the middle of the roaster, which allows water to be added at any time during the process. In addition, the initial moisture content of the malt varies with malt type, and heating by conduction or convection either retains moisture or dries the grain. Both Maillard reactions and caramelization reactions are influenced by pH. I asked Bob Hansen, the Director of Technical Services at Briess, if the pH of roasted malts was manipulated. He said that Briess doesn’t spray their malts with either acidic or alkaline solutions for this purpose. However, the details of how the dried or green malt is produced will influence its pH.

While a malt or grain is roasting, the operator of the roaster takes samples, grinds them and compares their color to their target. Near the end of a roasting cycle, the color of the grain changes rapidly. The judgement of whether the correct color has been reached is made by a human. According to Hansen, they have not found a machine that can do a better job of making that assessment.

## TYPES OF ROASTED MALTS

Roasted malts can be divided into three classes: caramel-type malts, dry-roasted malts, and dark-roasted malts. Caramel malts are made by kilning or roasting green malts. In some cases, a dried malt may be re-wetted in order to make a caramel malt. Crystal malts are roasted caramel-type malts.



## ROASTING REACTIONS

When food or grain is roasted, a number of chemical reactions occur. The most important of these are Maillard reactions, caramelization, and Strecker degradations.

Maillard reactions are a series of chemical reactions that begin with amino acids reacting with reducing sugars. The subsequent downstream reactions produce compounds that are collectively called melanoidins. Melanoidins give bread crust its brown color and roasted coffee beans their brown color. The malty flavor of Vienna and Munich malts is largely due to melanoidins.

Amino acids are the subunits of proteins and reducing sugars are sugars capable of donating electrons to another compound, thus reducing it. There are 22 common amino acids in living organisms and numerous reducing sugars, including glucose, fructose and lactose, and maltose. So, the many combinations of these are starting points to the Maillard reactions.

Maillard reactions are favored at temperatures between 280°F and 330°F (140–165°C) and low water activity. The initial reaction between the amino acid and the sugar produces a glycosylamine and water. The unstable glycosylamine is then modified to form a ketosamine. Continued heating breaks down and rearranges the various ketosamines into many different compounds called dicarbonyls.

The rate of Maillard reactions increases in high pH environments, which is why some pretzel recipes include sodium hydroxide (lye) as a processing agent.

Caramelization is a set of reactions between sugars that occurs at temperatures from 220–360 °F (105–180 °C). Caramel candies are produced by caramelizing sugars. Likewise, French onion soup is made with onions that have been caramelized. The glassy interiors of crystal malts are the result of caramelization.

In caramelization, sugar polymers called caramelans ( $C_{24}H_{36}O_{18}$ ), caramelens

( $C_{36}H_{50}O_{25}$ ), and caramelins ( $C_{125}H_{188}O_{80}$ ) are produced. These brown “cara-” compounds have a distinct caramel aroma, the result of diacetyl that is released during the caramelization process. An additional caramelization reaction results in sucrose being broken down into its components, fructose, and glucose. (Sucrose is a non-reducing sugar, while fructose and glucose are both reducing sugars.) The rate of caramelization is lowest around neutral pH [7] but increases in both acid and alkaline solutions.

Strecker degradations are reactions that degrade an amino acid into an aldehyde, ammonia ( $NH_3$ ), and carbon dioxide ( $CO_2$ ). Many of the aldehydes released have strong aromas that are important parts of the aroma and flavor of coffee, chocolate, and roasted malt. In addition, the carbon dioxide produced in the Strecker degradation is responsible for the second crack in coffee roasting. The first crack is due to water being volatilized into steam.

In foods, the Strecker degradation is often catalyzed by dicarbonyls, which act as oxidants. These carbonyls are formed from the Maillard reactions. As such, some people refer to Strecker degradations as part of the Maillard reactions. These reactions mostly occur at or above 320°F (160°C).

In a commercial malt roaster, the temperatures required to drive these reactions is easily met.

As a brewer, the important thing to remember is that each of these is a set of reactions, not a single reaction of two substrates being joined into a product or one substrate being split into two or more products. Additionally, these sets of reactions can interact. Carbonyls from the Maillard products can serve as oxidizing agents in the Strecker degradation. Sucrose can be broken down into reducing sugars via caramelization to react with amino acids at the beginning of the Maillard reactions.

Dry-roasted malts are dried (kilned) pale malts that are roasted to a darker color than base malts. The pale malt to be roasted may be “ordinary” pale malt, pale malt that didn’t meet the specifications for pale base malt, or even chit malt. Chit malt is a malt that spends less time in the germination phase and hence is less modified. Amber malt, biscuit malt, brown malt, and other, darker roasts can be made as a dry-roasted malt.

Dark roasted malts are the darkest of the dry-roasted malts. Dark-roasted malts also begin as pale malts, but they are roasted for longer times at higher temperatures to produce their deep colors. Chocolate malt and black malt are two common types of dark roasted malt. Other common dark roasted grain products available to brewers include dark-roasted (unmalted) grains (especially barley), powders of these malts and grains, and liquids—wort or beer—made with a high percentage of darkly roasted malts and grains. The latter are primarily used as coloring agents.

Wheat, oats, rye, sorghum, and other cereal grains can all be malted and hence can potentially be made into roasted malts. Briess, for example, makes a roasted wheat malt. In practice, however, most roasted malts are made from barley malt. Unmalted grains can also be roasted. Of all the grains, roasted barley is the most common roasted (unmalted) grain.

For comparison, base malts are generally dried and kilned for 24 to 48 hours, with the temperature peaking around 190°F (88°C) for the darkest types. The color of base malts ranges from around 2°L for pale malts to around 20°L for darker Munich types. Roasted malt is generally roasted—in some cases after kilning—for up to 2 hours, with temperatures peaking at around 446°F (230°C) for the darkest malts and grains. The best-known roasted malts range in color from around 25°L for biscuit-type malts to over 500°L for black malts and roasted barleys, but lower-color roasted malts also exist.

## ROASTING PROFILES

The exact roasting profiles of different malts—including the temperatures, times, moisture levels, etc.—are proprietary secrets closely guarded by the maltsters who produce them. In addition, in professional malting texts, comparatively

little detail is given on roasting profiles. This includes texts that go into a great deal of detail with regards to pale malt production. Some information can be found in brewing science papers; however, the information differs among sources. This is because eight different maltsters could approach making a chocolate malt nine (or more) different ways. However, enough information can be gathered to give homebrewers a general idea of how these malts and grains are produced.

Bob Hansen also stressed that making roasted malts is not an automated process. Humans monitor every step and, according to him, “roasting malts is as much of an art as it is a science.” So even if you were to obtain the precise roasting profile for one of your favorite roasted grains, you’d still need to gain experience as a roaster to produce a similar malt. Think of the difference between someone grilling a steak for the first time, relying on information from a website on how long to grill it versus an experienced grill cook—with a good quick-read thermometer—handling the tongs.

## CARMEL MALTS

Roasted caramel-type malts are first heated by convection. The green malt has an initial moisture content around 42 percent. It is dried a bit by the hot air, but extra water may be added before or during roasting to compensate for this. Once the green malt reaches starch conversion temperatures—the same temperature range brewers employ in the mash, 148° F–162° F (64–72°C)—they begin to be heated by conduction, which stops any further moisture loss. The enzymes in the malt convert the starches into simpler sugars. If you removed the malt at this point, you could squeeze a thick, sugary “wort” from the kernels. The temperatures are held in this range long enough for the sugars to convert, around 30 minutes, and then the temperature is raised.

In the next phase, the caramel malt is roasted via convection. During this time, it dries and caramelization occurs inside the kernel. Temperatures inside the roaster are in the caramelization range, 302–360°F (150–180°C). The low temperature in this range is the caramelization temperature of glucose. At the high end is the caramelization temperature of maltose. Longer roasting times, up to

two hours, result in caramel malts that are drier, more deeply colored, and more flavorful. Because the interiors consist of caramelized sugars, crystal malt has a glassy endosperm, as opposed to the mealy endosperm seen in base malts.

Kunze, in his book *Technology Brewing and Malting: 3rd International Edition*, gives slightly different numbers—140°F

to 158°F (60–70°C) for 60 to 90 minutes followed by 302°F to 356°F (150–180°C) for 1 to 2 hours. He also gives separate roasting profiles for various “Cara” malts. All are similar. In *A Textbook of Brewing*, DeClerk gives another set of numbers—140 to 167°F (60–75°C) for 30 to 45 minutes followed by 302°F (150°C) for 1 to 2 hours.

## ROASTED MALTS IN THE BREWHOUSE

Roasted caramel malts—including most of those with a “Cara” prefix and most crystal malts—have had their internal starches converted to sugars and do not need to be mashed. They can be steeped and the resulting liquid combined with wort before fermentation. This is something extract brewers take advantage of all the time. For all-grain recipes, simply crushing the caramel malts with their diastatic malts and mashing them is the most straightforward way of incorporating their flavor into a beer. Most often, caramel malts are used at rates 5 to 10 percent of the grist. Roasted caramel malts have moisture contents ranging from around 7 percent for the lightest colored malts down to 3 percent for the darkest. Moisture added during roasting will disrupt this correlation.

Dry-roasted malts include biscuit, amber, brown, and others. They have starchy interiors and hence need to be mashed along with malts with a diastatic power high enough to convert all the starches in the mash. Some dry-roasted malts, including amber and brown, may be used in fairly large percentages, up to 30 percent of the total grist, but most are typically added at a rate of 5 to 10 percent. Dry-roasted malts usually have moisture levels from 2.5 to 3 percent.

Dark-roasted malts offer the most options for handling in the brewhouse. They can be steeped, as any starches they contained were destroyed during mashing. They can be mashed as normal, or the brewer can conduct a mash of pale malts and then stir the dark grains into the top of the grain bed. The color of dark roasted malts comes from the interior of the grains, and the porous interior of the grain gives up its color quickly.

Due to malting losses, dark roasted grains are thinner than pale malts. Some homebrewers respond to this by crushing these grains

separately and tightening their mill gap a bit. In practice, crushing the darkest malts more finely makes little difference in how quickly or how much color is extracted.

Dark-roasted grains contribute a roasted character, as well as bitter notes and sometimes astringency. Sometimes this is a desired component of a roasty beer. In other cases, a brewer may wish to moderate these characters. There are several ways to do this. Some maltsters produced dehusked, sometime called debittered, versions of their darkest malts. A brewer may also seek to limit the time the grains are exposed to heat in the mash, which cuts down on the amount of time that bitter or astringent compounds are extracted.

Dark-roasted grains (or dark-roasted grain powders) can also be added in the boil, especially for color adjustments. For the most aromatic dark grains, adding in the boil decreases the amount of time that aromatic compounds can be volatilized. If you are trying to brew a stout that just screams coffee, find an intensely aromatic dark malt and try adding at least some of it at the end of the boil or in the whirlpool. Adding dark grains at this time also limits the amount of time they are exposed to heat, which may limit the extraction of bitter or astringent compounds.

Dark-roasted grains, grain powders, and liquid extracts of these products can also be added during or after fermentation. If you are trying to hit a specific color, this can be a big help. Liquid preparations are available from some maltsters, but homebrewers can also just make a French press extract of these dark grains and use that. (Although the darkest grains leave the roaster sterile, they may have subsequently picked up small amounts of contamination. For that reason, boiling the extract for a couple minutes before adding it is prudent.)

## ROASTED MALTS

To make black malt, water is added at the beginning of the cycle. The malt is then subjected to a series of increasing temperatures. DeClerk describes black malt as being roasted for 30 minutes at 320°F–347°F (160–175°C) and then held for 30 minutes at 419°F (215°C), after which the temperature is raised to 428°F–437°F (220–225°C). The low end of the initial temperature range overlaps with the range in which Maillard products are formed. The later temperatures are in the range that cause charring in roasted foods.

Once the desired color is reached, perhaps 30 to 60 minutes later, water is added to quench the malt. This raises the moisture content from 0 percent to around 5 percent. "Without the water, black malt would easily turn into a powder," says Jordan Geurts, Technical Maltster at Briess. It also cools the malt to a point where it can be safely removed from the roaster.

The endosperm of the darkest roasted malts is very porous, unlike either mealy base malts or glassy crystal malts. The extractable color of the darkest malts actually comes from the endosperm, not the

husks. The darkest roasted malts quickly give up their color in water. An interesting quirk about black malt is that, beyond a certain point, it actually loses extractable color with prolonged roasting.

Roasted malts with less color than black malt are roasted at lower temperatures for a shorter period of time. For example, DeClerk claims amber malt is made by roasting at 266°F–284°F (130–140°C) "for a prolonged period." Lewis, in his book *Brewing: Second Edition*, writes that amber malt is made by roasting at 199°F (93°C) for 20 minutes, then slowly increasing the temperature to 284°F (140°F). The malt is finished when the desired color is reached. Various sources give a final roasting temperature of 338°F (170°C) for chocolate malts.

## CONCLUSION

The exact details of roasting vary by malt or grain type being produced, maltster, and cultivar of grain being roasted. The dried or green malt being roasted may be malted with the intention of making it more suitable for roasting. And producing the best roasted malt requires

the attention of a skilled roaster. But the basics are straightforward. A roasted grain may be made from dried malt, green malt, or an unmalted grain. Drum roasting can heat grains to temperatures ranging from just over 100°F (about 40°C) to the point of combustion, around 446°F (230°C). Higher temperatures and longer roasting temperatures result in darker products. The moisture level can be manipulated via the initial water content, adding water during roasting, and choosing to heat the grain via conduction or convection.

*Chris Colby has been a homebrewer since the early '90s, when he studied molecular evolutionary genetics at Boston University. After receiving his PhD in 1997, he briefly worked in educational publishing before becoming a beer writer and editor. He is the author of Methods of Modern Homebrewing (2017), Home Brew Recipe Bible (2016), and the Brewers Publications® title How to Make Hard Seltzer: Refreshing Recipes for Sparkling Libations (September 2020). He lives in Bastrop, Texas, with his wife and many cats.*

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# DUDE, LET'S START A BREWERY!

If you've ever found yourself thinking about starting your own brewery, you're not alone. But what all goes into planning a successful new brewhouse? On Season 2 Episode 23 of The BrewDeck Podcast, Aaron Justus, takes a deep dive into all of the work behind starting a new company and brewhouse planning.

Aaron started as a keg washer and worked his way up to brewmaster at Ballast Point. In September 2021, he started a new venture by preparing to open a brewery with his co-worker and hiking buddy, Brandon Green, in downtown San Diego, called the East Village Brewing Company. With the market and global challenges in brewery planning, Aaron shares his extensive checklist from funding to equipment, to software, storage, and more.



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The BrewDeck Podcast won a gold Crushie for "Best Beer Podcast," at the 2023 Craft Beer Marketing Awards (CBMAs), held at the Craft Brewers Conference in Nashville. The CBMAs were developed to recognize and award top-notch marketing in the brewing industry across the world.

# Brewlanthropy

Collaborating and  
Brewing for Charity





By Ryan Holt

Illustration by Em Sauter

**M**y journey through the incredible hobby of homebrewing started off typically and may seem quite familiar to your own beginnings. For me, it was 1996 on the east side of Long Beach, Calif., where my older brother and I were renting an apartment. I was a fresh lad of 21 years old and trying to figure things out after spending the summer working in a fish freezer in Alaska. As you can probably imagine, our fridge was mostly empty except for some frozen burritos and a solid variety of those frosty American light lagers rotating through the barren shelves and produce drawer (this is an excellent hiding place when tons of thirsty pals show up at your place).

But, in the fall of 1996, our tastes were changing; we were exploring more flavors from our beers and stepping into the craft beer scene. It wasn't long before those light lagers were replaced by Sierra Nevada Pale Ale, Samuel Adams Boston Lager, Red Hook ESB, and Widmer Hefe.

We (and our friends) were pretty thirsty, so one autumn afternoon my brother arrived home from work with a couple boxes of gear and ingredients from Stein Fillers, our local homebrew shop. We headed straight to our messy little kitchen, cracked a Ken Grossman Pale Ale, and proceeded to get busy figuring out how to brew our own tasty craft beers. This was just the beginning! →





Over the next 10 years, we brewed a lot of beer. First in that little kitchen, and then in the spacious backyard of my brother's first house, the brewing operation progressed from stovetop extract batches to a three-vessel, pieced-together, Igloo-cooler, all-grain setup. During those years, our kettle-scrubbing thirsty friends came and went, and my role as assistant brewer fell off a bit in favor of starting a family and working on becoming an elementary school teacher. But my big brother kept brewing strong and even stepped up his equipment to a 15-gallon MoreBeer! Tippy-Dump rig and a conical fermenter.

In 2006, my wife and I decided it was time to step away from our native Long Beach and gain a new perspective. So, we packed up and moved our three young daughters to Oregon. The Willamette Valley had plenty to offer our young family, including a new teaching position for me at our neighborhood school, all the outdoor adventure activities we could handle, and a house with a big backyard that we could not possibly have afforded in Southern California on a teacher's salary. The Pacific Northwest also had an amazing craft beer scene, along with a bounty of locally grown hops, fresh yeast, and the cleanest Cascadian water. Since I was still pretty thirsty, I decided to start piecing together a homebrewing system that I could work with at my new place, and the brewing journey continued.

Over the next 5 years, my brewing knowledge progressed from that first trusty Papazian book to studying and learning even more from homebrewers like John Palmer, Gordon Strong, Jamil Zainasheff, and Randy Mosher. In 2011, after a solid run as a classroom teacher, I decided to step away from education and focus on running a small web-based business that my parents built from scratch. This was quite an adjustment for me since I was used to face-to-face contact with students, parents, and coworkers, with tons of community involvement, to now communicating mostly through email and phone calls in our small home office. I really missed being an active participant in my community, but I didn't yet know how to fill that void. My girls and I volunteered at our local humane society walking dogs, and since I'm an avid cyclist, we also helped build trails with our local trail alliance. This was a super rewarding way to stay connected to the community, but I still wanted to do more.

In 2017, a local brewery was expanding and looking to hire more staff for their larger brewpub. I decided to apply and was hired as a beertender and to help educate their new staff on beer styles and the brewing process. This new role checked all the boxes—community involvement, teaching, and working in the beer industry. I was quickly nicknamed the “beer professor” at the pub and started planning and teaching evening classes on beer styles, ingredients, and the brewing process. The classes were a success and filled up each month. During this time, I was also expanding my own homebrewing operation with a new three-vessel electric hot-side, a pair of stainless conicals, and a small glycol chiller. I was also trying to come up with a name to represent who I was around town within the beer and brewing community. I liked the idea of being a trusted and reliable resource for homebrewers to turn to when they had questions about the brewing process or how to improve one of their favorite beers. This is when Old Standby Brewing was established.

I quickly applied for a trademark, secured the domain name, and had a local artist create a high-quality logo for my new brand. I hired a neighborhood printing company to make shirts and stickers, another to embroider my logo on a batch

of fresh hats, and one more for proper glassware. With the help of my daughter, we created an Old Standby Brewing website through which I could tell my story, share award-winning recipes, and showcase some of the brands I was using in my homebrewery. I also started selling my merchandise and donating the proceeds to local charities. This was a great way for me to connect with my community and support local nonprofits. To date, my website sales have generated over \$1,500 for local charities.

In 2020, during the height of the pandemic, I was contacted by a homebrewing friend to see if I was interested in participating in a collaborative brewing project in support of the Black Is Beautiful initiative. I teamed up with 11 other homebrewers, and we created 40 mixed 12-packs of unique stouts. Community members then



Understudy ESB supports Oregon Children's Theater.





had a chance to donate directly to six local charities that supported the Black community, and we rewarded supporters with one of our mixed 12-packs. The “Black Is Beautiful Homebrew PDX Brewing Project” organized by the fabulous, beer-loving Michele Wonder, raised over \$10,000 for charity and put smiles on people’s faces during a very grim year.

Nearing the end of 2021 and still feeling the isolating effects of COVID-19, I couldn’t help but feel the need to get back to my community. After reaching out to a friend who owned a local nanobrewery, we hatched a plan to brew a collaborative beer for charity. I got in touch with my friends at Yakima Valley Hops (YVH) in hopes that they might be willing to donate some Idaho Gem hops for the 3-barrel batch benefiting breast cancer research, and surprisingly enough,

they responded with their absolute support. Once “She’s a Real Gem” IPA was brewed and released, it sold out in record time, and suddenly a whole bunch of ideas were ready to burst out of my head. What if I started approaching more commercial breweries about collaborating on beers that would support local nonprofit charities? And (so I had some sort of incentive) what if I had the support of brands that would supply the raw ingredients? Could a homebrewer actually pull this off? I decided to go for it and see where the idea would go.

First, I approached YVH with my wild idea: six possible charity collaborations throughout the year of 2022. I asked if they’d consider donating the hops if I could set up the collaborations, and I got an immediate and enthusiastic YES! After that, Imperial Yeast was next on my list of

trusted brands. I “pitched” them my idea, and they were instantly on board to provide the yeast.

“When Ryan contacted us to participate in his charity brew series, it was a no-brainer to join in. We love to support our community in whatever way we can, and Ryan made it easy with his attention to detail, excellent communication, and never-ending enthusiasm for the beer industry. It’s amazing to see what kind of power a few small businesses joining together can initiate, and we look forward to continuing our support of this series and the causes that it supports,” says Casey Helwig, sales manager at Imperial Yeast.

With the hops and yeast covered, I reached out to LINC Malt in Spokane, Wash., and found more community-minded people. By the end of our first conversations, they were asking where they could send the first pallets of grain.

Brian Estes, director of partnerships at LINC Malt says, “Ryan’s idea to partner with breweries to support local nonprofits was a natural fit for LINC’s involvement, because we are a company that is rooted in the community and highly focused on our relationships in the industry.”

With the support of three industry brands, I was prepared to begin contacting breweries to see if my Brewlanthropy idea could become a reality. Since the brewing industry was still recovering from the difficult pandemic years, I wanted to be sure that my plan was organized and streamlined, so that I could minimize any added stress to the breweries. It went something like this:

- How do you feel about brewing a beer for charity?
- We’ll choose a beer style and collaborate on a recipe together.
- Then we’ll select a local nonprofit that we are passionate about supporting.
- I’ll supply all the raw materials and have them delivered directly to the brewery.
- We’ll brew the beer and invite the community to support our collaboration.
- Once the pints have been sold, the brewery makes a donation to our selected charity, and everyone feels proud of the work we’ve done.

First, I reached out to my friend Matt Dakopolos, head brewer at Xicha Brewing in Salem, Ore., the Pacific Northwest’s first

Brew This!


# Dortmunder for Doernbecher

**German Helles Exportbier**

Old Standby/Zoiglhaus charity collaboration

<b>Batch volume:</b> 5.5 US gal. (20.8 L) <b>Original gravity:</b> 1.054 (13.3°P) <b>Final gravity:</b> 1.012 (3.1°P) <b>Efficiency:</b> 70%	<b>Color:</b> 4 SRM <b>Bitterness:</b> 30 IBU <b>Alcohol:</b> 5.5% by volume
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**MALTS**

9.75 lb. [4.42 kg] Francin Pilsner malt (84.8%) 1 lb. [454 g] Lyon Light Munich malt (8.7%) 0.5 lb. [227 g] chit malt (4.3%) 0.25 lb. [113 g] acidulated malt (2.2%)	
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**HOPS**

0.25 oz. [7 g] Magnum, 14.5% a.a. @ 60 min 0.65 oz. [18 g] German Hallertau Tradition, 5% a.a. @ 30 min 0.5 oz. [14 g] Triskel, 8.5% a.a. @ 15 min	
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**YEAST**

1.5M cells/mL/P Imperial Yeast - L17 Harvest	
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**ADDITIONAL ITEMS**

1 tsp. gypsum in mash 1 tsp. calcium chloride (anhydrous) in mash	
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**BREWING NOTES**

Mash at 140°F (60°C) for 60 min, 162°F (72°C) for 20 min, and 172°F (78°C) for 5 min. with a mash thickness of 1.75 qt./lb. (3.7 L/kg). Target a mash pH of 5.4 and a pre-boil gravity of 1.046 (11.4°P). Boil 90 min. Ferment at 58°F (14°C). Package with 2.25 vol. (4.5 g/L) CO<sub>2</sub>.

Photos courtesy of Ryan Holt

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Latine brewery and a company with a deep commitment to their community. He loved the idea, and we brewed 15 barrels of "Cerveza Común," a beer for the people, by the people, which raised \$3,500 for Family Building Blocks, a Salem nonprofit that supports children and families in need.

Tanya Hamilton, the early childhood program director at Family Building Blocks says, "We were able to use the funds donated from Ryan's collaboration for one child and their family to receive home visiting for one year, which included hands-on parent skill-building to strengthen the bond between parent and child. Our Home Visitors bring age-appropriate information and activities to engage the family. They also provide referrals to ensure access to medical services and resources for meeting basic needs, and help parents identify and accomplish goals leading to self-sufficiency. Families also have access to wrap-around supports such as a clothing closet,

food pantry, family mental health family nights, access to respite care, and referrals to the community."

Next, I was in Portland to brew 20 barrels of "Understudy ESB" with Ex Novo Brewing, raising \$2,115 in support of the Oregon Children's Theater. Michael Hammerstrom, Director of Marketing & Development for the nonprofit said, "The money donated to OCT last year contributed to a scholarship fund that helped send over 250 public school students to see a live production in downtown Portland as part of a class field trip. For many of these students, it was their first experience seeing live theatre and directly tying theatre to literacy. We are so grateful to local businesses like Ex Novo who support the arts in meaningful, lasting ways."

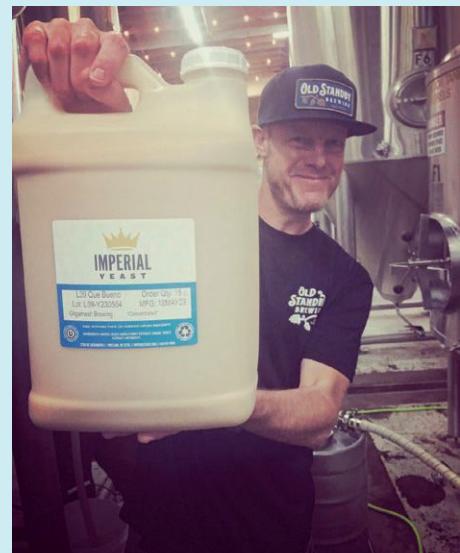
Then, I was in Southern California at Bearded Tang Brewing to brew 15 barrels of "Dream Street IPA," which raised \$2,500 in support of the Dream Street

Foundation, a nonprofit that provides summer camp opportunities for children with disabilities. "Ryan has been a long-time friend and is a phenomenal home-brewer," says head brewer, Jerrod Larsen. "So when he approached me to do the charity collaboration, it was a no-brainer."

Next, I was in Eugene, Ore., with Ninkasi Brewing to collaborate on a Mexican-style lager in support of the CAHOOTS street crisis response team.



Dortmunder for Doernbecher supports Doernbecher Children's Hospital.





We brewed this beer on Ninkasi's 5-barrel pilot brewery and raised \$960 for the Eugene community. "Many thanks to Ryan for organizing the charity portion of this collab. By far the easiest charity collab I've ever done," says Daniel Sharp, director of brewing operations at Ninkasi.

Soon after, I was at Parallel 45 Brewing in Independence, Ore., to collaborate on 10 barrels of "Homies Help," a session IPA to support families and children with developmental disabilities. "Ryan's plans brought in the component of contributing to a charity of our choice! From the very beginning of our business creation, we've always held being an active participant in our community as a major part of our identity. This collaboration to support the Creating Opportunities nonprofit was particularly personal, since their mission is to provide support for

families of children with autism. I actually have a child on the autism spectrum, who was diagnosed right around the time of the brew. We strived on this charity brew to not only find a charity that supports autistic children, but also have it be local to our local community," says Ryan Booth, head brewer and co-owner at Parallel 45 Brewing.

Later in the year, after catching my breath from the first five charity collaborations, I teamed up with Silver Falls Brewery in Silverton, Ore. We brewed "Javine Baltic Porter," which was released at the Silverton Stout & Ale Festival. So far, this beer has raised over \$1,000 for the Jason Franz Foundation, which supports, mentors, and encourages local kids through skateboarding and mountain biking. Andrew Fox, co-founder of Silver Falls Brewing says, "We had a great time

brewing with Ryan, and enjoyed the process of making all the donations. We also enjoyed working with some manufacturers that we hadn't used before."

After meeting my goal of six charity collaborations for 2022, I decided to do it all over again in 2023. With the continued support from YVH, LINC, and Imperial, I reached out to Alan Taylor, brewmaster at Zoiglhaus Brewing in Portland. We hit it off right away and decided to brew "Dortmunder for Doernbecher," which raised \$1,400 in support of the amazing Doernbecher Children's Hospital in Portland.

Next, I drove over snowy Santiam Pass to the beer-loving, outdoor adventure town of Bend to brew "Helles for Habitat" with Cascade Lakes Brewing in support of the Bend-Redmond Habitat for Humanity. Cascade Lakes Brewing is Central Oregon's only not-for-profit brewery, so our partnership was a perfect fit. Working with owner Andy Rhine and head brewer Ryan Schmiege was a great opportunity, and during brew day we even had a visit from the Habitat for Humanity team, which was such an amazing community experience. The charity beer was released in July during the grand opening of Cascade Lakes' new pub in southeast Bend.

The following month, I was back in Bend to brew a saison with Paul Arney at Ale Apothecary. Brewing with Paul at his brewery in the woods above Bend was truly an incredible experience. Here is what Paul said about our partnership:

"The reason I agreed to brew a collaboration with Ryan is very simple, and has a couple of components. Running a small brewery business is extremely busy and, for us, not very lucrative. My ethos often has me struggling as to why I'm working so hard at something that doesn't have a direct impact on making the world a better place for the less fortunate. It's easy to listen to the news or see hardship in the streets as I'm rushing to complete an errand around town, and I dwell on this frequently. Turning that sentiment into action is actually quite difficult if I'm really intent on doing something with meaning instead of marketing. Ryan's whole concept makes it obvious the reasons he is doing these collaborations, so it was incredibly easy to agree to do the brew. I wasn't concerned that the brew was a gimmick for boosting sales, since his entire business

Brew This!



## Under Study ESB

*Strong bitter*

Ex Novo/Old Standby charity collaboration

**Batch volume:** 5.5 US gal. [20.8 L]  
**Original gravity:** 1.051 [12.6°P]  
**Final gravity:** 1.012 [3.1°P]  
**Efficiency:** 70%

**Color:** 12 SRM  
**Bitterness:** 40 IBU  
**Alcohol:** 5.1% by volume

### MALTS & ADJUNCTS

9.25 lb.	(4.2 kg) Baronesse English Pale (84.9%)
0.75 lb.	(340 g) Baronesse Crystal 60L (6.9%)
0.25 lb.	(113 g) Baronesse Crystal 120 (2.3%)
0.65 lb.	(295 g) torrefied wheat (6%)

### HOPS

1.1 oz.	(31 g) Challenger, 5.7% a.a. @ 60 min
0.75 oz.	(21 g) Challenger, 5.7% a.a. @ 20 min
0.75 oz.	(21 g) Sonnet, 4.5% a.a. @ 20 min

### YEAST

0.5M cells/mL/P Imperial Yeast - A09 Pub

### ADDITIONAL ITEMS

0.5 oz.	(14 g) gypsum in mash
0.5 oz.	(14 g) calcium chloride in mash
1 tablet	Whirlfloc @ 15 min

### BREWING NOTES

Mash at 152°F (67°C) for 60 min. and 170°F (77°C) for 30 min. with a mash thickness of 1.5 qt./lb. (3.1 L/kg). Target a mash pH of 5.44 and a pre-boil gravity of 1.043 (10.7°P).

Boil 60 min. Ferment at 67°F (19°C). Package with 2.25 vol. (4.5 g/L) CO<sub>2</sub>.



model is dedicated to making a meaningful contribution to the communities around you. Plus, with our daily buzz of to-dos, having someone come in with the focus on a collaboration for charity takes away the decision-making around what makes a collaboration meaningful, which has often been a challenge for me for the same reason I mentioned earlier. Basically, Ryan sifted out all the crap and distractions so we could simply focus on making beer for a good cause! For that, I thank you."

Our barrel-aged saison is set to be released later this year, and will benefit The Bethlehem House homeless shelter in Bend, Ore.

For my 10th charity collaboration, I partnered with Gilgamesh Brewing in Salem, Ore. Logan Williams, assistant brewer says, "I'm always open to the idea of collaboration, as I feel it helps bring our small community of local brewers together even closer. When Ryan began his collaborations for charity, I thought that was possibly the best thing a small brewery can do, and honestly what larger breweries should be doing more often."

We brewed a Vienna lager in support of the Marion Polk Food Share, whose mission is to bring people together to end hunger and its root causes. On brew day, the Gilgamesh brew team and I were joined by Josh Gwin, the community partnerships coordinator from the Marion Polk Food Share and Eben Waggoner from Imperial Yeast.

Waggoner says, "Partnering with Ryan was an easy decision because his vision

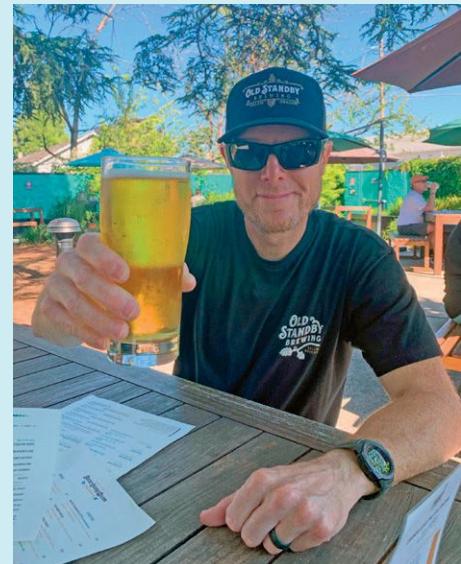
matched our values, and we were already familiar with his enthusiasm for beer and brewing. We knew that his plan to use that passion to positively impact his community through collaboration was a winning proposition for everyone involved."

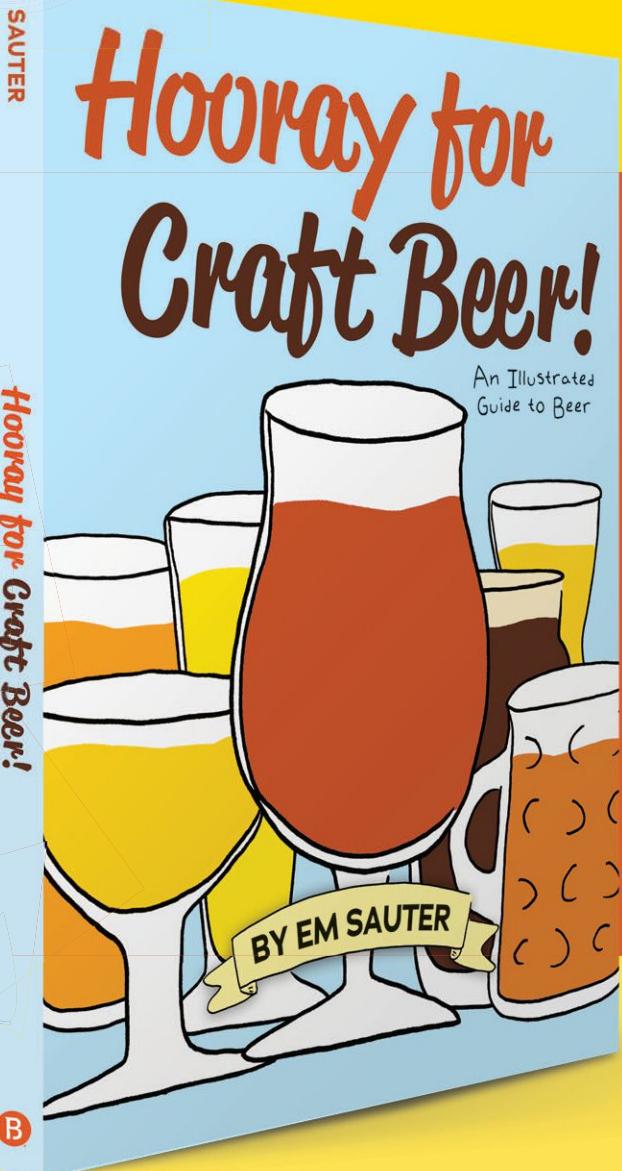
This tasty lager was tapped at all three of the Gilgamesh locations.

Organizing charity collaborations in support of local nonprofits has been an incredibly rewarding experience that allows me to use my passion for brewing to connect with my community and help people who need it most. With the amazing support from three industry brands, breweries that are passionate about their communities, and a wild idea from a local homebrewer, it really is incredible what we can do when we come together to brew some good.

Cheers to Brewlanthropy!

*Ryan is a former K-8 educator and small-business owner who has been in and around the brewing industry for more than 25 years. When he's not brewing or organizing charity collaborations, he can be found in the Pacific Northwest riding his bike through the Willamette Valley and drinking lagers.*





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# JAPAS CERVEJARIA ARTESANAL





**O**n Christmas Day, my brother-in-law gifted me a four-pack of beer. The label art—four Japanese masks on a solid background with Japanese writing—fascinated me, so I looked up the brewery's profile online. That's how I discovered Japas Cervejaria, which is operated by four Nipo-Brazilian women: Maíra Kimura, Fernanda Ueno, Yumi Shimada, and Tânia Matsuoka.

Brazil is home to the largest Japanese population outside Japan. Nipo-Brazilians are culturally integrated, either Japanese immigrants living in Brazil or Brazilians of Japanese heritage. Japas Cervejaria incorporate their shared culture into the brewing and branding of their beers. Their transition from homebrewing to professional brewing highlights the role of gender in a male-dominated profession, and the amalgamation of Japanese and Brazilian ingredients and cultures they bring to craft beer.

Head brewers Fernanda Ueno and Maíra Kimura have always been craft beer fans. Having never met, they both homebrewed their first batch in 2009 and immediately fell in love with brewing. Fernanda started an internship at a local craft brewery, while Maíra studied abroad, formalizing her professional training in Europe and obtaining her brewer's certificate before returning to Brazil in 2012.

Their meeting was inevitable, as they would frequent the same beer cafés and craft beer festivals, and at one of these festivals they also met Yumi Shimada, who has a background in creative and digital design. All having a shared love of brewing and admiration for their Nipo-Brazilian heritage, Fernanda, Maíra, and Yumi became friends.

One of their first projects was a collaborative homebrew incorporating ingredients from both Japanese and Brazilian cultures. They brewed four trial batches, their favorite of which was a wasabi pale ale, and posted about the project through various social media platforms. The project piqued the interest of Cervejaria Nacional, a brew pub in São Paulo, which invited Fernanda, Maíra, and Yumi to scale up their homebrew to 700 liters. The release party was full capacity, and the beer sold out in two days.



*By Alexander Gashti*

Coming off this success, they hatched the idea of Japas Cervejaria, Nipo-Brazilian women brewing together with a deep appreciation of their shared heritage. They would fuse influences from both cultures by incorporating ingredients such as jasmine, yuzu, matcha, wasabi, and tropical fruit. Their commitment goes beyond brewing beer. Japas Cervejaria actively seeks to foster a sense of community, promote diversity and inclusivity in the brewing industry by empowering women, and highlight their shared heritage.



# SESSION, LAGERS, FRUIT- INFUSED SOURS

## THE MASK SERIES

Japas Cervejaria started professionally brewing in Brazil in 2014. They currently brew beer at Dadiva Cervejaria in Varzea Paulista near São Paulo. Craft beer has gained popularity in Brazil in recent years, especially in urban areas like São Paulo, where locals embrace craft beer and are increasingly open to trying new beer styles and supporting local breweries. The brewery's United States operations began in 2019 at Great Central Brewing Company in Chicago through a company called Beerternational. Their beers are distributed in several markets in the United States thanks to established partnerships with distributors and retailers. Japas Cervejaria beers are currently available in California, Colorado, Florida, Massachusetts, Michigan, New York, Oregon, Pennsylvania, Rhode Island, and Wisconsin. I was lucky enough to be given the four pack of the mask series.

Japas Cervejaria tends to make session beers, lagers, and fruit-infused sours. Their flagship is a Bohemian Pilsner with jasmine flowers. They also brew a lot of seasonals, including a Russian Imperial stout with miso. The Mask Series are all strong beers featuring four Japanese masks on each label, each having significant cultural value, representing themes from Japanese folklore and myth.

Kitsune is a fox, symbolizing wisdom and intelligence. Seen as a smart animal, Kitsune is mystical, immortal, and capable of transforming into human beings. This is a Belgian tripel brewed with coriander and bitter orange peel. It is a complex, full bodied, subtly citrusy interpretation of the style.

Hannyah is a Japanese mask that represents a human's most difficult feelings such as anger and jealousy, feelings so terrible they can turn anyone into a monster. However, Hannyah also has good meanings. Its power can drive away evil

and negative influences. This is a Russian imperial stout, sweet, but not cloying, very chocolatey, very fruity with a cotton-candy mouthfeel. Like all the other Mask Series beers, Hannyah is easy to drink despite its high alcohol content.

The greatest challenge Japas Cervejaria faces is brewing their own beer consistently between two countries. It is also hard to source ingredients that may be seasonal or have limited availability in the countries where they are being brewed. The key is finding specialty produce markets and establishing working relationships with suppliers. Below are five featured ingredients, though there are many others.



## BREW THIS!

# WASABI PALE ALE

Recipe by Alexander Gashti.



## FEATURED INGREDIENTS

Jasmine is a shrub in the olive family with subtly sweet, highly fragrant blossoms. Whole jasmine flowers are seasonal and harvested in early spring. Whole flowers are available at specialty produce markets, and dried flowers are also available at specialty tea and spice markets. Read the labels carefully when purchasing this ingredient to ensure it includes only jasmine and not a tea mixture. Since jasmine shares some of the same essential oils with aroma hops, including linalool and alpha-farnesene, it is recommended to add the fresh or dried flowers to secondary after most of the yeast has flocculated. Either whole or dried jasmine flowers can also be added to the keg.

Yuzu is an East Asian citrus fruit. Both the flowers and the zest can be used, although yuzu is not commonly eaten as fruit. Rather, the zest is used in much the same way as that of the lemon. Les vergers Boiron sells a yuzu puree available for both home- and craft brewers through their 2023 catalog. The puree contains both zest and peel to balance between the acidity of the citrus fruit with the aromatics of the zest. The puree is tart and fragrant, resembling grapefruit or mandarin orange. It is recommended that yuzu be added in secondary two to three days before packaging. Japas Cervejara brews a sour ale and a dry rice lager with yuzu.

Koji is a traditional Japanese fermented food made from steamed grain containing the mold *Aspergillus oryzae*. It is used to manufacture other fermented foods such as sake, soy sauce and miso, but its use is gaining popularity among brewers. The mold contains protease and amylase enzymes that convert proteins and starches into amino acids and glucose and provides a natural source of citric acid. Koji can be used in the mash and the fermentation vessel to adjust fermentability, mash pH, and kettle pH. It can even be used to produce kettle sours if desired. Koji helps dry out beer styles like Pilsner and saison. White kome koji (rice inoculated with koji) is available through MoreBeer! →

This recipe is loosely based off the Women's Powered Hibiscus Ale, one of my favorite beers during San Diego Home Brew Con 2023. The base beer is called Best Pale Ale Ever (Talus Edition) originally designed by homebrewers at the Home Brew Mart, Ballast Point, San Diego. The hibiscus ale was brewed by three women during Pride Month. For the Wasabi Ale, I substituted the hop varieties, omitted the dry hop and the hibiscus addition, and replaced hibiscus with a "dry wasabi" addition. I owe a huge thanks to Jason, Matt, and the three women who inspired me to design this recipe.

**Batch volume:** 5 US gal. (18.9 L)

**Original gravity:** 1.048 (12°P)

**Final gravity:** 1.010 (2.5°P)

**Color:** 14 SRM

**Bitterness:** 33 IBU

**Alcohol:** 5.1% by volume

## MALTS

6 lb. 2.4 oz. (3.4 kg) pale malt

2 lb. 12.3 oz. (1.26 kg) Maris Otter

12.3 oz. (349 g) Carapils malt

12.3 oz. (349 g) caramel malt, 10°L

5 oz. (142 g) corn sugar

## HOPS

0.62 oz. (18 g) Columbus/Tomahawk/Zeus, 12.9% a.a. @ 60 min [24 IBU]

1.2 oz. (34 g) Pacifica, 8.9% a.a., hop stand, 20 min @ 170°F (77°C)

## YEAST

1 L starter Wyeast 1056 American Ale

## ADDITIONAL ITEMS

1 tablet Whirlfloc @ 15 min

3 oz. (85 g) wasabi at packaging

## BREWING NOTES

Mash at 152°F (67°C) for 60 minutes. Boil 60 minutes.

Pitch yeast at 67°F (19°C). After 36 hours, allow fermentation temperature to rise to 75°F (24°C). Hold the beer here for 14 days.

Reconstitute wasabi in 1/4 cup (60 mL) boiled and cooled water. Add this solution along with priming sugar to bottling bucket, or add to keg without additional sugar. Carbonate the beer to 2.5 vol. (5 g/L) of CO<sub>2</sub>.

Wasabi

## BREW THIS!

# KOJI PILSNER

Recipe by Alexander Gashti.



Miso is a traditional Japanese ingredient made from fermenting soybeans with salt and koji. Sometimes rice, barley, or seaweed are added. The flavor and aroma of miso depend on the fermentation and ingredients used. Different varieties are described as salty, sweet, earthy, fruity, and savory. Miso is high in protein. Japas Cervejaria uses miso at the end of boil for their miso beers. Miso is widely available in Asian markets as well as in online specialty shops, or ferment your own—see “You Can Ferment That” in the March/April 2021 issue of *Zymurgy*.

Wasabi is a root native to Japan that is similar to horseradish. It is ground into a paste and commonly served as a pungent accompaniment to sushi. Wasabi is known to produce an initial nasal pungency, which wears off quickly. When used in beer, it is recommended to reconstitute wasabi powder into boiled and cooled water and then add this solution along with priming sugar to the bottling bucket, or with no sugar into the keg at packaging. Because true wasabi is in high demand and challenging to cultivate, conventional horseradish, dyed green, is generally used as a substitute. Buyers seeking the authentic product should try to determine the source and then research the wasabi seller carefully before making the purchase.

The included homebrew recipes are inspired by Japas Cervejaria and include some of these flavorful ingredients. The recipes assume 6 gallons (22.7 L) of wort remain in the kettle at the end of the boil, 5.5 gallons (20.8 L) of wort make it to the fermenter, and 5 gallons (18.9 L) of beer remain after fermentation is complete, i.e. 0.5 gallons (1.9 L) lost from kettle to fermenter and another 0.5 gallons (1.9 L) lost from fermenter to packaging.

## MAKING HISTORY

Japas Cervejaria symbolizes more than excellent craft beer or the coming together of cultures. It provides its brewers a platform to explore their shared past, family history, and to raise awareness in the brewing community by empowering women. Click the content collaboration link on their website home at [japascervejaria.com](http://japascervejaria.com), and you’ll begin to understand the transcendent nature of

These two koji recipes are based off sample recipes Choryo Shuzo gave to me during San Diego Home Brew Con 2023. At the *More Flavor* booth, cans of koji Saison brewed by Rockaway Brewing Company and koji Lager brewed by Fifth Hammer Brewing were being poured. Both were excellent examples of style, some of the best beers I had at the home brew expo and made me consider koji as a brewing ingredient. I reduced the koji additions to the mash to less than the original calculations (requiring 113 grams,) but I decided to be conservative for trial batches.

**Batch volume:** 5 US gal. (18.9 L)

**Original gravity:** 1.046 (11.5°P)

**Final gravity:** 1.010 (2.5°P)

**Color:** 4 SRM

**Bitterness:** 22 IBU

**Alcohol:** 4.6% by volume

## MALTS

8 lb. 3.2 oz. [3.72 kg] German Pilsner malt

1 lb. 8 oz. [680 g] German wheat malt

8 oz. [227 g] caramel malt, 10°L

## HOPS

0.3 oz. [8.5 g] Sorachi Ace, 12% a.a., FWH

0.6 oz. [17 g] Sorachi Ace, 12% a.a. @ 10 min

0.2 oz. [6 g] Sorachi Ace, 12% a.a., hop stand, 20 min @ 170°F (77°C)

## YEAST

2 L starter White Labs WLP833 German Bock Lager Yeast

## ADDITIONAL ITEMS

50 g white koji, 10 min into mash

50 g white koji, end of mash (once saccharification is complete)

1 tablet Whirlfloc @ 15 min

## BREWING NOTES

Mash at 150°F (66°C) for 90 minutes. Boil for 90 minutes.

Pitch yeast at 50°F (10°C). After 36 hours, let fermentation temperature rise to 60°F (16°C) and hold beer at that temperature for 14 days. Carbonate to 2.5 vol. (5 g/L) of CO<sub>2</sub>.



BREW  
THIS!

# KOJI WITBIER WITH JASMINE



Recipe by Alexander Gashti.

Japas Cervejaria. Deeply feeling the contributions of their forbears, the brewery's founders draw attention to early women's rights as pioneers during colonial-era Japan. Here you will meet three women who changed the history of Japan: Higuchi Ichiyō, Toshiko Kishida, and Fukuda Hideko. These women called for the financial, educational, and political equality of women in an era when the state forbade them from having these discussions, attending political meetings, and when the educational opportunities of women in society were very limited. Through the reading of these biographies, we gain an appreciation for what inspires brewing at Japas Cervejaria.

It is true that Japas Cervejaria has occasionally experienced stereotypes, that beer is a beverage primarily brewed for men, and a profession dominated by men, but these women prove passion, knowledge, and dedication to our craft transcend gender. They are proud to challenge these stereotypes, much the same way as their forbears did a century ago. They showcase their skills and expertise as brewers contributing to the industry as equals. I have a great admiration for their work, and hope these brief pages bring attention to them as models for the transcendent nature of beer and brewing.

Alexander (Alex) Gashti lives in Tampa, Fla., and has been homebrewing since 2009. Alex's formal education includes a BS in biochemistry from Indiana University and a Doctor of Pharmacy from the University of Maryland. He enjoys learning about drugs and alcohol.

**Batch volume:** 5 US gal. (18.9 L)

**Original gravity:** 1.050 (12.5°P)

**Final gravity:** 1.011 (2.8°P)

**Color:** 4 SRM

**Bitterness:** 15 IBU

**Alcohol:** 5.1% by volume

## MALTS & ADJUNCTS

6 lb. 8 oz.	(2.95 kg) German Pilsner malt
3 lb.	(1.36 kg) white wheat malt
1 lb. 8 oz.	(680 g) flaked rice
2.4 oz.	(68 g) acid malt

## HOPS

2 oz.	(57 g) Hallertauer Hersbrucker, 4% a.a. @ 15 min
1.5 oz.	(43 g) Hallertauer Hersbrucker, 4% a.a. @ 5 min

## YEAST

1 L starter	Wyeast 3944 Belgian Witbier
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## ADDITIONAL ITEMS

100 g	white koji, 10 min into mash
100 g	white koji, end of mash [once saccharification is complete]
85 g	jasmine flowers

## BREWING NOTES

Mash at 150°F (66°C) for 90 minutes. Boil for 90 minutes.

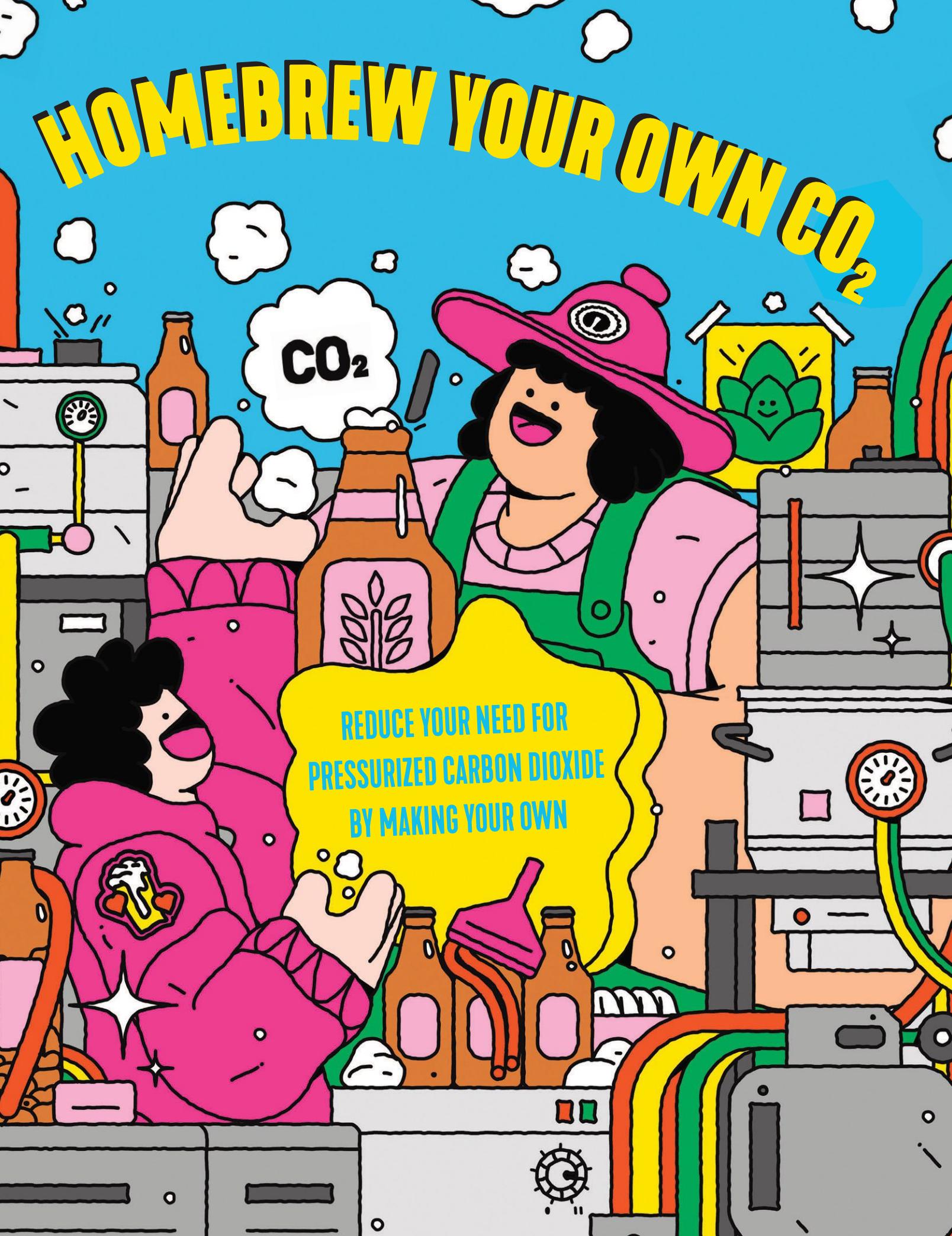
Pitch yeast at 68°F (20°C). After 36 hours, allow fermentation temperature to rise to 75°F (24°C).

When most of the yeast flocculates, rack the beer to a secondary fermenter and add the jasmine flowers. Allow the beer to mature on jasmine for one week before packaging. Carbonate the beer to 2.5 vol. (5 g/L) of CO<sub>2</sub>.

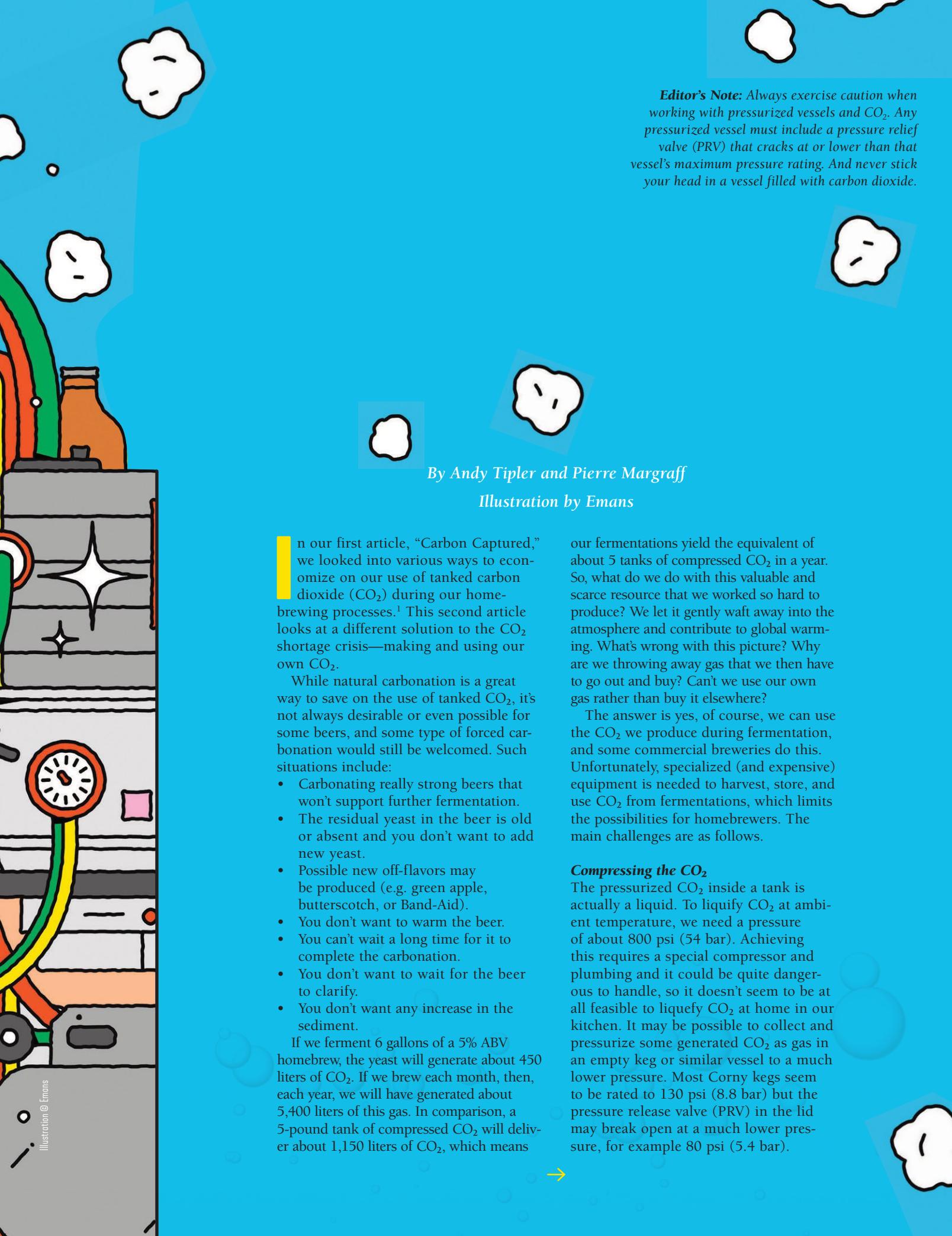


Jasmine

# HOMEBREW YOUR OWN CO<sub>2</sub>



REDUCE YOUR NEED FOR  
PRESSURIZED CARBON DIOXIDE  
BY MAKING YOUR OWN



**Editor's Note:** Always exercise caution when working with pressurized vessels and CO<sub>2</sub>. Any pressurized vessel must include a pressure relief valve (PRV) that cracks at or lower than that vessel's maximum pressure rating. And never stick your head in a vessel filled with carbon dioxide.

By Andy Tipler and Pierre Margraff

Illustration by Emans

In our first article, "Carbon Captured," we looked into various ways to economize on our use of tanked carbon dioxide (CO<sub>2</sub>) during our homebrewing processes.<sup>1</sup> This second article looks at a different solution to the CO<sub>2</sub> shortage crisis—making and using our own CO<sub>2</sub>.

While natural carbonation is a great way to save on the use of tanked CO<sub>2</sub>, it's not always desirable or even possible for some beers, and some type of forced carbonation would still be welcomed. Such situations include:

- Carbonating really strong beers that won't support further fermentation.
- The residual yeast in the beer is old or absent and you don't want to add new yeast.
- Possible new off-flavors may be produced (e.g. green apple, butterscotch, or Band-Aid).
- You don't want to warm the beer.
- You can't wait a long time for it to complete the carbonation.
- You don't want to wait for the beer to clarify.
- You don't want any increase in the sediment.

If we ferment 6 gallons of a 5% ABV homebrew, the yeast will generate about 450 liters of CO<sub>2</sub>. If we brew each month, then, each year, we will have generated about 5,400 liters of this gas. In comparison, a 5-pound tank of compressed CO<sub>2</sub> will deliver about 1,150 liters of CO<sub>2</sub>, which means

our fermentations yield the equivalent of about 5 tanks of compressed CO<sub>2</sub> in a year. So, what do we do with this valuable and scarce resource that we worked so hard to produce? We let it gently waft away into the atmosphere and contribute to global warming. What's wrong with this picture? Why are we throwing away gas that we then have to go out and buy? Can't we use our own gas rather than buy it elsewhere?

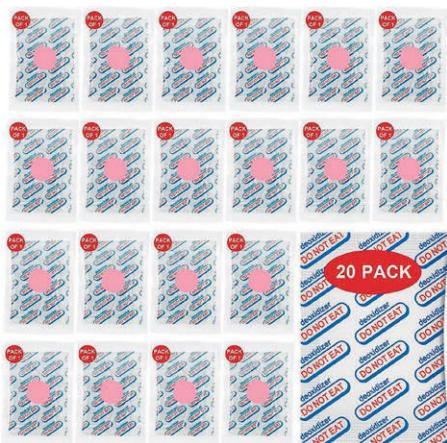
The answer is yes, of course, we can use the CO<sub>2</sub> we produce during fermentation, and some commercial breweries do this. Unfortunately, specialized (and expensive) equipment is needed to harvest, store, and use CO<sub>2</sub> from fermentations, which limits the possibilities for homebrewers. The main challenges are as follows.

#### **Compressing the CO<sub>2</sub>**

The pressurized CO<sub>2</sub> inside a tank is actually a liquid. To liquefy CO<sub>2</sub> at ambient temperature, we need a pressure of about 800 psi (54 bar). Achieving this requires a special compressor and plumbing and it could be quite dangerous to handle, so it doesn't seem to be at all feasible to liquefy CO<sub>2</sub> at home in our kitchen. It may be possible to collect and pressurize some generated CO<sub>2</sub> as gas in an empty keg or similar vessel to a much lower pressure. Most Corny kegs seem to be rated to 130 psi (8.8 bar) but the pressure release valve (PRV) in the lid may break open at a much lower pressure, for example 80 psi (5.4 bar).

## Oxygen Abstraction

To be useful, any harvested CO<sub>2</sub> needs to be oxygen free. The fermenter, compression system, and tank will be full of air at the start of the process, so some means of removing it is needed. One way would be to continually pass the generated CO<sub>2</sub> through the system until any oxygen is naturally purged out; we covered this exponential dilution process in our first article<sup>1</sup>. A second method, which we found to be very effective, is to use food-deoxygenating pouches as shown below.



Deoxygenating pouches are included with some foods to maintain freshness.

We tested these in sealed, clean dry vessels full of air and found that the oxygen (O<sub>2</sub>) concentration quickly falls below 1% by volume. Suppliers claim that levels below 100 ppm (0.01%) by volume are possible with these pouches. The difficulty in using these is that they are only applicable to small volumes – the largest we could find online had a capacity of 2.5 liters, so at least 8 would be needed to remove O<sub>2</sub> from an empty 5-gallon keg. Also, although the contents of these pouches are claimed to be safe (they use catalyzed rusting iron powder to absorb oxygen), they probably shouldn't make direct contact with beer. They should, however, be great to use in bags of stored hops to prevent aging through oxidation.

## Odor Elimination

During fermentation, the generated CO<sub>2</sub> may also contain various organic compounds that would be also collected and could cause off-odors in the carbonated beer. An in-line charcoal filter is very effective at removing almost all organic compounds from a stream of gas. We have been using the inexpensive filter shown above and to the right with great success—no apparent odors seem to get through this device. Although intended

for reverse osmosis water clean-up, it also does a great job with a stream of CO<sub>2</sub> gas. One potential problem with using a filter like this is that, initially, it will be full of air, which will need to be purged out before collecting any CO<sub>2</sub>. We found it took about 5 liters of CO<sub>2</sub> to purge out all the oxygen from this filter (measured with our oxygen gas sensor). The filter can be capped after use to prevent air from re-entering.



A charcoal filter can remove odors from gas.

## Bacteria Elimination

Because we're dealing with the generation and movement of gas, the risk of bacterial (or other micro-organismic) transfer into our beer as it carbonates is low. However, to be safe, we should use fine-pore (0.5 micron or smaller) inline gas filters to reduce this possibility.



An inline fine-pore filter is helpful for sanitation.

We can address most of these challenges with simple, off-the-shelf solutions. The main challenge is still the compression and storage of the generated CO<sub>2</sub>. So, is it even worth trying to generate and use our own? The answer is, of course, yes! Things become much, much, easier if we don't store the gas but rather use it as it's being produced during fermentation; practical options then become much more feasible. In the remainder of this article, we consider some of these options and give examples of their use. Note that these methods will effectively eliminate the need for tanked CO<sub>2</sub>. Not only will they save on the cost of the gas itself but also on the initial cost of the tank and a suitable regulator.

## FERMENTATION CONSIDERATIONS

Let's first consider the nature of the fermentation we're going to use to generate our CO<sub>2</sub>.

If a beer is put into bottles too early before the primary fermentation has fin-

ished, what happens? We've all seen this: the result is spectacular, messy, and sometimes downright dangerous. We all know that fermenting beer is capable of creating very high pressures, much more than is needed to carbonate a beer. If we ferment beer under pressure, as many of us do these days to reduce ester formation, we can make use of the CO<sub>2</sub> generated under that natural pressure for carbonation. So, that is one method we could consider.

However, fermenting beer under pressure needs more specialized and expensive equipment and many of us still ferment our beers at low pressure in a bucket, carboy, or conical fermenter. So now, the pressure of the CO<sub>2</sub> being generated is close to atmospheric pressure. Is there some way we can still harvest this CO<sub>2</sub> and pressurize it to a level suitable for beer carbonation, without the risk of exploding or imploding the fermenter or the keg? The answer is yes, and we have built a device to do just that. That's the second approach we will discuss.

## Delivering CO<sub>2</sub> to the Keg of Beer to Be Carbonated

Before looking at the various carbonation methods we've developed, we should first consider how best to deliver CO<sub>2</sub> to the keg. Using fermentation to deliver CO<sub>2</sub> is much slower than just setting the pressure on a regulator fitted to a pressurized tank. Also, unlike a regulator, fermentation is difficult to stop—it just keeps going, pressure increases, and the risk of over-pressurization and even vessel rupture becomes a real possibility unless steps are taken to avoid it. The basic rules are that the CO<sub>2</sub> should dissolve in the beer faster than the rate at which it's generated. If not, then the excess gas should be vented using something like a spunding valve.

Figure 1 on the facing page illustrates methods we've used to introduce CO<sub>2</sub> to a keg from an active fermentation. These options are shown in order of efficiency and should be chosen accordingly. For instance, if CO<sub>2</sub> is being generated quickly, then the first option is not a good choice—dissolution of CO<sub>2</sub> in the beer will be far too slow to keep up, and a huge pressure inside the keg may result.

Note that a check valve is used for all connections to a keg to prevent the back-flow of beer out of the keg should the supply of CO<sub>2</sub> be interrupted. The spunding valve makes things much more efficient, but it will waste gas. Finally, any agitation will produce the best results even if applied only every few hours.

## CARBONATION METHODS USING SIMULTANEOUS FERMENTATION

### Surrogate Natural Conditioning in a Soda Bottle

We've been using this method to carbonate kegged beer quickly and successfully. It works with beer or any other beverage, including seltzer. It's a bit like natural conditioning, but rather than add the priming sugar to the beer, it's added to a 2-liter soda bottle. Water, nutrients, and yeast are also added, and a small fermentation is effectively kicked off. Rather than just venting the generated CO<sub>2</sub>, it's connected to the keg of beer. Pressure builds up in the soda bottle and in the keg, causing the beer to carbonate. Very little equipment is required for this easy method.

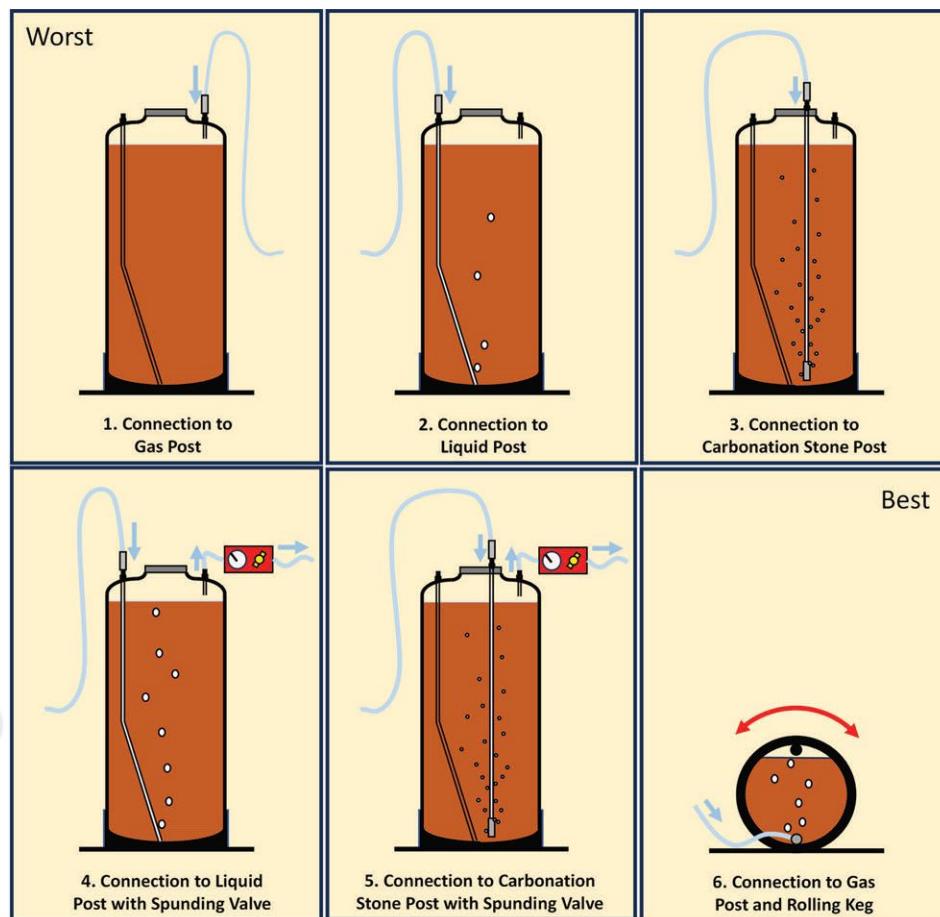
The procedure we've used is as follows:

1. Boil some simple sugar in clean water. Dextrose (glucose) is good, but if using table sugar (sucrose), consider inverting it first to enhance fermentability.<sup>2</sup> To carbonate 5 gallons of beer in a keg, the amount should be adjusted in the

same way as for priming a natural carbonation but add an extra ounce or two because some of the CO<sub>2</sub> will be left dissolved in the liquid in the soda bottle. About 8 oz. (227 g) of sugar costing about 50 cents (about the same cost as using tanked CO<sub>2</sub>) would be typical, and about 1 liter (33.8 fl. oz.) of water should be used.

2. Add the sugar solution to a regular sanitized 2-liter soda bottle. Add nutrients and yeast—2 g diammonium phosphate or Fermaid K would be suitable nutrients. For the yeast, we normally use about 50 mL of the slurry left from the primary fermentation of the beer being carbonated. If this is not viable, use some fresh yeast.
3. Make up the volume of liquid in the soda bottle to about 1.5 liters with further boiled water.
4. Fit a soda bottle carbonating cap.
5. Shake the contents of the bottle to mix and aerate.

**FIGURE 1:**  
**CONNECTION OPTIONS FOR INTRODUCING CARBON DIOXIDE TO A CORNY KEG.**



6. Loosen the cap and squeeze the soda bottle to expel any air and reseal the cap.
7. Put the bottle in a dark place and wait for fermentation to start in the soda bottle. This will re-inflate the bottle and build up a bit of pressure which can be used to purge air out of the connecting line. ***Don't forget it, or the bottle will eventually explode and make a horrible mess!***
8. Once fermentation is underway, connect a transfer line to the bottle carbonation cap. This transfer line should have a Corny keg gas connector on each end and an inline check valve to prevent anything flowing back out of the keg. This transfer line should be fully sealed. Check it for leaks before using it.
9. Before connecting the transfer line to the keg, vent it with the gas already building up in the soda bottle to clear air out of the transfer line.
10. Connect the transfer line to the keg. This can be to the gas post, the liquid post, or a cap with a carbonating stone. If connecting to the gas post, it's best to turn the keg on its side to increase the surface area of the beer in the keg and to at least enable some bubbling through the beer (see the figure below). It also helps if the keg is occasionally "rolled" to accelerate the dissolution of gas into the beer.
11. Leave the system for a few days to complete the carbonation. A pressure gauge fitted to a keg gas connector is a good way to check that things have gone properly.



Creating CO<sub>2</sub> in a soda bottle and delivering to a Corny keg.

Because we're only fermenting sugar, there should be no build-up of foam in the bottle during this fermentation. The fermentation of simple sugars is likely to be "cleaner" than with malt or other fermentables, so the risk of off-odors should be reduced, especially as this will be a high-pressure fermentation.

We were surprised at how effective this method of carbonation was—fermentation was left to completion, which took about 2 days for the tests we conducted. For reference, natural carbonation within the keg can take 2 or 3 weeks. By day 2, the kegged beer was fully carbonated and ready to serve.

Note that when the fermentation has finished, the contents of the bottle will be under high pressure—***don't open this bottle indoors or you will have a glorious fountain and another horrible mess!*** If you successfully open the bottle and manage to keep its contents inside, you will have good starter yeast for your next batch of beer (frugality reigns here).

### High-Pressure Beer Fermentation

While using a soda bottle fermentation is a very effective way of carbonating a keg of beer, a primary fermentation of beer is going to generate much more CO<sub>2</sub> so why waste that? High-pressure fermentations are being used by both homebrewers and commercial breweries for several reasons including:

- To help keep out air.
- To allow higher fermentation temperatures and speed up fermentation.
- To retain volatile aroma compounds.
- To reduce ester and other off-flavor formation.
- To carbonate the beer.

The last point is particularly important to this discussion. Some fermenters are designed to let the beer self-carbonate in the fermenter and serve it directly from that. The trub, which can cause autolysis, can usually be easily drained from the bottom of a pressurized fermenter.

Even if the self-carbonating method is being used, there will still be a vast excess of CO<sub>2</sub> gas produced that must be vented from the fermenter or it will explode. Rather than waste it, we can use this gas to pressurize and carbonate a previously brewed beer. A suggested system for high-pressure fermentation is shown in Figure 2.

Various fermenters are capable of being pressurized, and many homebrewers pressure ferment in kegs. One very important safety factor to keep in consideration is to allow at least 20 percent headspace—as much as 50 percent in some cases—as the kräusen should never be allowed to ride above the keg's upper weld.

A few key components should be included to safely recover CO<sub>2</sub> from an active fermentation:

- Two pressure relief valves, one on the fermenter and one on the receiving keg.

This is standard on most keg lids and is not adjustable; it is a critical safety venting device.

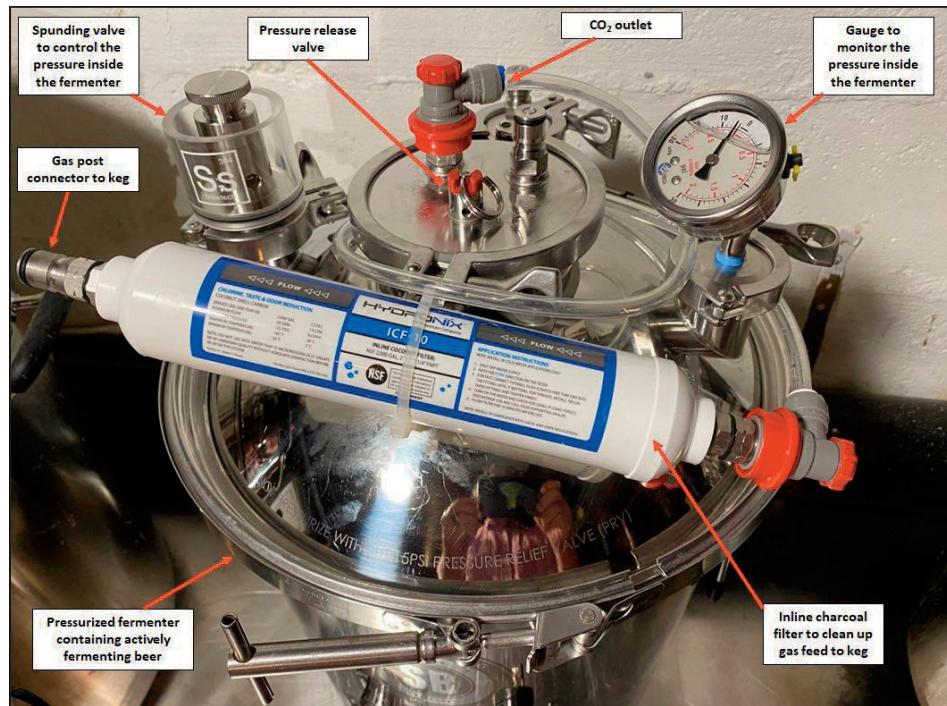
- An adjustable spunding valve on the fermenter, which is used to set the receiving keg's carbonating pressure. Wide-port spunding valves are a bit more foolproof.
- A pressure gauge rated preferably from -15 psi to +30 psi (-1 to +2 bar) to monitor fermentation and carbonation activity on the fermenter side.
- A gas post on the fermenter, from which to connect a jumper to the keg's gas post.
- A liquid post on the fermenter, preferably tethered to a floating dip tube, to remove fermented beverage without opening the fermenter and rousing sediments by opening the lid after venting the fermenter.
- A gas jumper with clear vinyl to ensure no liquid contaminants flow from one vessel to the other receiving end, which should be equipped with a check-valve gas post disconnect.
- A carbon water filter cartridge, used to purify CO<sub>2</sub> in line with the jumper. We used the one described earlier in this article.
- Refrigeration for the keg is optional, however, the receiving keg will absorb CO<sub>2</sub> at a faster rate if kept cold during this process.

We used the following suggested process to carbonate our beer:

1. For the first 12 hours of fermentation, the carbon dioxide is vented. This step purges all the oxygen out of the system without loading the charcoal filter with unwanted compounds. The spunding valve is set to a couple of psi to provide an acceptable phenolic profile and yeast propagation. Next, the spunding valve is adjusted to 12 psi as observed on the gauge. It will take a couple of hours to build up to that pressure.
2. Once the pressure setting is met, the gas jumper with carbon filter output can be connected to the fermenter gas post. At first, the output is discharged to a small jar of sanitizer to flush the oxygen present on the carbon filter. After 2 hours, the gas output is redirected to the keg to be carbonated for 48 hours if refrigerated, more if the keg is at ambient temperature. These parameters are a starting point. Sensory evaluation of the kegged beverage carbonation is needed to adjust to system requirements.

In our test, a 5-gallon batch of Kölsch was fermented at 60°F (16°C) in a Spike

**FIGURE 2:  
SUGGESTED SYSTEM FOR HIGH-PRESSURE FERMENTATION.**



FLEX+ fermenter, leaving 2 gallons of headspace. As described above, this fermenter is equipped with a 15 psi pressure relief valve, pressure and vacuum gauge, a corny gas post, a spunding valve set to 13 psi, and a liquid post. A gas post was then piped to the carbon cartridge.

An olfactory sample test was performed multiple times as the fermentation was ramping up. On this subjective test, no odor was ever detected after the filter. Test results on the quality of gas produced were like a commercial tank, CO<sub>2</sub> burns the nose a little bit, but no smell. Next to the fermenter, in another fridge set to 38°F (3°C), was a full 5-gallon keg of still cider in need of carbonation. Cider was selected to make any potential hop or fermentation flavors easily detectable (we could also have used water, but where is the fun in that?). The keg was connected using a gas jumper to the carbon filter, then to the fermenter in the adjacent refrigerator.

It took a couple of days for the cider to fully carbonate. We tasted the cider both at the beginning of carbonation and during carbonation. It started crystal clear, and no changes in clarity, color, or oxidative indicators were observed. The acidity and tannin profile remained consistent and improved as the cider carbonated with the kinds of bubbles you would obtain with natural carbonation.

On the third day, excess fermentation pressure was evacuated via the spunding valve. These unfiltered bubbles on the other hand smelled like hops and Kölsch yeast. Another 2.5 volumes of CO<sub>2</sub> was further recovered when another 2.5-gallon keg of Belgian pale ale was carbon-

ated as well. Consistent with the cider, the Belgian pale ale's flavors and aromas were improved with the very fine carbonation after a couple of days. For brewers already fermenting under pressure, this method is easy and does not require many additional components.

### Low-Pressure Beer Fermentation

Whereas carbonation from a pressurized fermentation is fairly straightforward with minimal specialized equipment, carbonation from a fermentation in a bucket, carboy, or low-pressure conical fermenter is much more involved. Such fermentation vessels cannot be pressurized by more than about 2 psi, so the CO<sub>2</sub> needs to be additionally pressurized as it enters the keg of beer to be carbonated.

Some sort of gas compression pump is needed, and the pressure at each side of this pump needs to be carefully controlled. The fermentation pressure at the pump inlet can't be allowed to increase above the pressure limit of the fermentation vessel; neither can a vacuum be created, or the beer inside may start to froth, and air may be pulled in from outside. The keg pressure at the pump outlet needs to be set to the required beer carbonation pressure—no more, no less. In particular, care must be taken not to greatly over-pressurize the keg.

To achieve such precise control, a system comprising a pressure sensor, valves, pump, and microcontroller was assembled. Software was developed to monitor the fermentation pressure and control a compressor pump accordingly. Figure 3 shows the complete system.

When the fermentation pressure hit a user-adjustable threshold (typically 1.5 psi), the compressor pump was turned on to deliver pressurized CO<sub>2</sub> into the keg and reduce the pressure in the fermenter. The fermenter pressure was monitored while the pump was running, and when it had reduced to a second user-settable pressure (typically 0.2 psi), the pump was turned off.

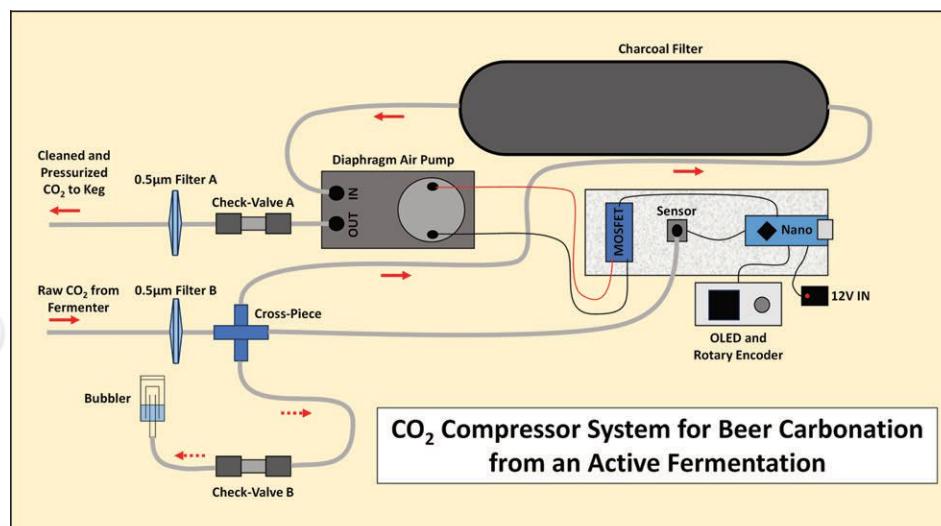
A charcoal filter (described earlier) was connected between the pump and the keg. A keg lid fitted with a carbonation stone on a dip tube was used to introduce the CO<sub>2</sub> at the bottom of the keg as a fine stream of bubbles for efficient transfer into the beer. It was important to fit a non-return valve on the gas supply to the keg to prevent beer from being pushed back from the now-pressurized keg.

The pump chosen was a food-safe, fully sealed diaphragm pump with a maximum output of about 30 psi, which is more than enough for the carbonation pressure for almost any beer. A spunding valve was fitted to the destination keg gas post to set the carbonation pressure. In this way, when the pump was active, CO<sub>2</sub> would bubble continually through the carbonation stone and out through the spunding valve at the set pressure. Without the spunding valve, the pressure would build up in the keg to a very high level, at which point the pump would be unable to pump any further gas into the keg. A continual flow through the carbonating stone under pressure gives a very efficient rate of carbonation. We have plenty of CO<sub>2</sub> to waste.

A check valve was fitted into the input line from the fermenter. This was chosen to have a forward break-pressure of 1.8 psi. So, if the fermentation pressure ever reached this level, the check valve (which is now being used as a low-pressure spunding valve) would open and vent the gas preventing the possibility of the fermenter becoming over-pressurized if the system should fail for any reason (or was simply turned off). For our tests, we fitted a standard airlock to the output of this check valve so we could monitor the fermentation activity when not harvesting any CO<sub>2</sub>. Note that if this airlock is replaced by a spunding valve, this system can be used to manage the pressure inside a pressurized fermenter in situations where the desired carbonation pressure is higher than the fermentation pressure.

The final components in this system were 0.5-micron inline gas filters plumbed into the system inlet and outlet lines to help prevent bacteria and other microorganisms

**FIGURE 3:**  
**COMPRESSOR SYSTEM FOR BEER CARBONATION.**



from either entering the compressor system from the fermenter or entering the destination keg from the compressor system.

The overall method we used to carbonate a 5-gallon keg of beer was as follows:

1. Put the (destination) beer to be carbonated into a suitable keg with a lid that has a carbonating stone attached.
2. Refrigerate that keg.
3. Brew another (source) beer as normal and kick off the fermentation in a suitable vessel (conical fermenter, plastic bucket, glass carboy, or plastic carboy).
4. Fit a normal airlock to the fermentation vessel and monitor the progress of the fermentation.
5. Wait until the initial yeast frenzy has died down and there's no further risk of blow-off and all the air will have been blown out of the fermenter. This normally takes one or two days after the fermentation has started.
6. Remove the airlock from the fermenter and connect it to the compressor system as shown in the figures below and turn on the pump control. Let the system purge itself of air for 2 or 3 hours.
7. Connect the compressor system outlet to the carbonation stone post in the lid of the destination keg. Although the compressor system has a check valve at the outlet, it's prudent to use an integrated check valve in the keg post connector.
8. Monitor the pressure inside the destination keg on the spunding valve gauge and adjust the spunding valve to vent at the desired carbonation pressure.
9. Leave the system to fully carbonate the beer. This takes about 12 hours.
10. The beer should now be ready to drink—huzzah!

See Figure 4 showing connections for extracting carbon dioxide.

Note the 3D-printed retaining clip<sup>3</sup> holding in the carboy bung; without this, the bung had a habit of popping out, particularly when under pressure. This clip was not needed on the conical fermenter and a gas post could be used instead if there was concern.

While the conical fermenter and carboys worked well with the on- and off-pressure thresholds of 1.5 psi and 0.2 psi, respectively, a different approach had to be taken with a plastic bucket. A typical lid on a 6-gallon plastic bucket has an area of about 115 square inches. If a 1.5 psi pressure is allowed to build up inside the bucket, the

force applied to the lid will be about 170 pounds. The seal most definitely will leak at even this low pressure.

Putting a heavy concrete brick onto the lid helped, but not much. We tested our extensive collection of plastic buckets and lids, and the best we could find was a set that could just about tolerate a pressure of 0.6 psi for a few hours. We used this bucket

with an upper threshold of 0.6 psi instead of the 1.5 psi used for the other fermentation vessels. It should also be noted that the bucket lid was flexible and could "inflate" slightly under pressure thus increasing the amount of CO<sub>2</sub> that could be extracted during each cycle. This effectively offset the pressure limitation and made the use of a plastic bucket just about a viable approach.

**FIGURE 4:  
CONNECTIONS FOR EXTRACTING CARBON DIOXIDE.**

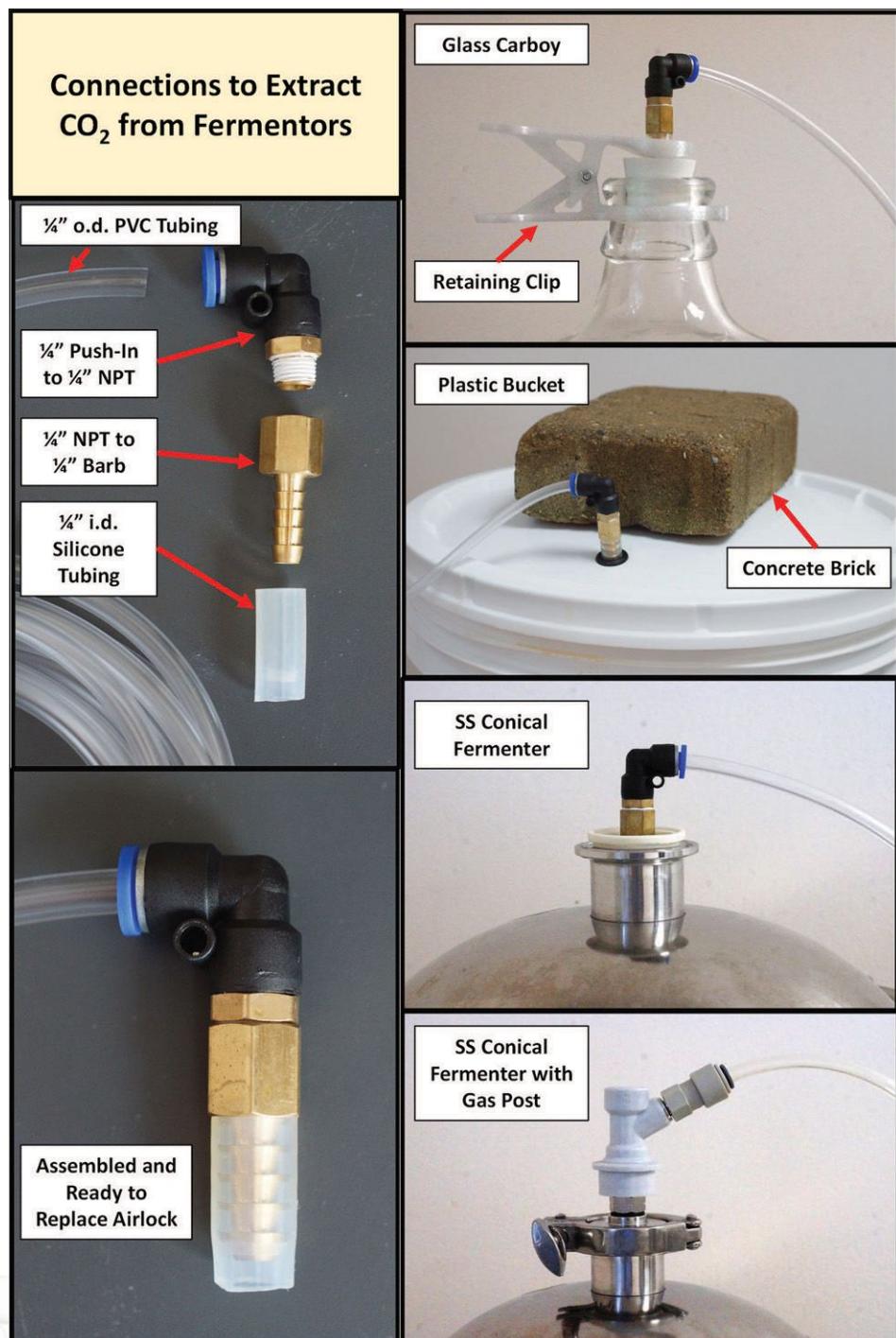


Figure 5 shows the complete system to carbonate a keg from an active fermentation in a conical fermenter.

In use, this compressor system worked surprisingly well. It took about 12 hours to fully carbonate a 5-gallon keg of beer. Of course, this timing depends on several factors: wort strength, type of yeast, temperature, etc. We made a few measurements on the rate of CO<sub>2</sub> generation, and, for a 6-gallon fermentation, the rate

**FIGURE 5:**  
**CARBONATING A KEG USING ACTIVE FERMENTATION IN A CONICAL FERMENTER.**



## IMPORTANT NOTES

- ❑ Check very carefully for leaks—some of these methods can take a few days, and a small leak can be disastrous. Our first article covered this topic in detail.<sup>1</sup>
- ❑ Use food-grade lubricant on all O-rings, especially those in push-fittings.
- ❑ Use plumber's (PTFE) tape on all threaded fittings, even if the threads have been pre-coated.
- ❑ Don't use silicone tubing to transfer CO<sub>2</sub>—it's very permeable to oxygen.
- ❑ Pre-rinse all tubing and fittings with sanitizing solution.
- ❑ Don't omit the check valves or spunding valves where mentioned; they are there to stop disasters from occurring.

was between about 1 and 5 liters of CO<sub>2</sub> per hour. Once the target beer had been carbonated, the system continued to act as a source of clean, pressurized CO<sub>2</sub>, which we used to top up the kegs of beer being dispensed, flushing out empty kegs, and so on. This availability lasted as long as the primary fermentation was active, sometimes as long as a week or two.

While this system is still very much experimental and beyond what many homebrewers would consider putting together, it does demonstrate that such an approach could offer a useful and practical way to get pressurized CO<sub>2</sub> on tap for various purposes during an active fermentation, which could last a week or two. If any masochists out there want to try their hand at building one of these devices, construction details are given on our website.<sup>4</sup> If any company wants to commercialize this system as a product for homebrewers, we would be pleased to work with them.

## USING THE ACID DROP METHOD TO CARBONATE KEGGED BEER

In one of our more creative moments, we came up with another way of force carbonating a keg of beer without using tanked or fermentation-generated CO<sub>2</sub>. This simple method uses cheap and easily available ingredients and materials to quickly carbonate a beer.

If we think back to our high school days, we might remember the science experiment in which we dropped acid (often vinegar) onto sodium bicarbonate (baking soda), resulting in a lot of exciting and spectacular fizzing, which was so impressive that it turned some of us into career chemists. This fizzing was, of course, due to the release of carbon dioxide gas—the stuff we want to force into our beer. We can use this same experiment as a basis for a new method of carbonation, which we will term the *acid-drop* method. We will be using sodium bicarbonate and citric acid, both of which are cheap, food safe, non-volatile, and readily available. We make a solution of each of these ingredients and then mix them together to generate the CO<sub>2</sub>. The big problem is that this reaction will be almost instantaneous, and we probably wouldn't have time to get the cap on the vessel before everything pours out, makes a huge mess, and turns us all into career chemists.

The clever solution to this problem is to freeze one of the solutions before adding the other. This approach works surprisingly well, and a good steady, but controllable, release of carbon dioxide is produced, which is well suited for our purposes.

Before becoming over-crazy chemists, it's important to establish how much of these materials we need to mix. Without getting too much into the science, it's worth looking at the equation for this chemical reaction.



Based on molar masses, we can use this equation to tell us that if we added 210 g citric acid (monohydrate) to 252 g sodium bicarbonate, we would end up with 132 g of carbon dioxide. This weight of gas would occupy  $22.4 \times (132/44) = 67.2$  liters at 0°C and 1 atmosphere of pressure. For a 5-gallon keg of beer, this is about 3 volumes.

So, for example, if we wanted a carbonation level of 2 volumes, we would assume that the beer already has about 1 volume already left in from the primary fermentation, so we would need a further 1 volume. Some CO<sub>2</sub> will be left in the carbonating vessel after the beer has been carbonated, so we need to increase the weight of the reagents slightly.

Using 100 g of sodium bicarbonate and 100 g of citric acid (slight excess) should give a good carbonation level. If these chemicals are bought in bulk, the cost of each of these amounts could be as low as 32 cents and 1 dollar respectively.

The suggested procedure is as follows:

1. Add 100 g of sodium bicarbonate to a clean, sanitized 2-liter soda bottle.
2. Add 1.2 liters of warm (not hot) preboiled water to the bottle.
3. Put the cap on the bottle and shake to dissolve the bicarbonate.
4. Put the bottle in a freezer overnight, swirling occasionally to keep things mixed. The bicarbonate will drop out of solution, and a solid block of white ice should result.
5. Dissolve 100 g citric acid in 300 mL preboiled water in a suitable jug.
6. Put the jug in a refrigerator or freezer until the solution is close to freezing.
7. Pour the citric acid solution into the bottle with the frozen sodium bicarbonate solution.
8. Put a carbonation cap onto the bottle.
9. Loosen the cap slightly and squeeze the top of the bottle to expel all the air and then retighten the cap.
10. Connect the carbonation cap to the keg of beer as described earlier for the surrogate natural carbonation method. The cooler is just there to help keep the soda bottle upright (or else a fizzy solution of citric acid and sodium bicarbonate will be injected directly into your beer).



Acid drop setup.

11. Wait for a few hours and then your beer should be well carbonated – huzzah!

We were pleasantly surprised that this method was so quick, easy, and cheap. We've now carbonated a few kegs of beer and cider this way. If the brewer has no tanked CO<sub>2</sub> available and is short of time, this is a good way to go.

## CONCLUSIONS

When we started work on this, our second article in this series, we focused on how to collect and store the CO<sub>2</sub> we could generate from fermentation. We very quickly faced insurmountable problems—we just couldn't pressurize the gas to the level we needed, and, if we could, we couldn't find anything strong enough to store it in.

Changing the focus to using CO<sub>2</sub> as it

was being generated turned out to be a complete epiphany, and we quickly came up with several options for using this. Not only that, but each of these methods was practical and we've brewed (and enjoyed) a lot of beer during this work while we refined these methods.

No pressurized tank of CO<sub>2</sub> was used during the course of this work. We hope that some of these ideas will appeal to other brewers, in particular, those who don't already have a kegging system. It's completely possible to eliminate the purchase of a CO<sub>2</sub> tank and pressure regulator, which together can cost 200 dollars or more. In comparison, a 2-liter soda bottle costs 2 or 3 dollars and includes a free fizzy drink.

Another benefit of using the methods listed here is the impact of gas leaks. With a tank of pressurized CO<sub>2</sub>, any leak will eventually empty the tank, which costs money, time, and inconvenience. Using fermentation as a source of this gas won't be impacted nearly as much. A soda-bottle carbonation can be repeated easily, and if there's a leak when carbonating from a primary beer fermentation, who cares if there's a bit of wastage?

Some of the content describes systems we made that can't be described in detail

in this article. Please visit our website for further details.<sup>4</sup>

## RESOURCES

1. Tipler, Andrew and Pierre Margraff. "Carbon Captured," Zymurgy, July/August 2023.
2. HomebrewersAssociation.org/beer-food/invert-syrups-making-simple-sugars-complex-beers
3. HomebrewersAssociation.org/nd23
4. CheapskateHomebrewer.com

*Born and raised on Tafelbier in Belgium, Pierre Margraff moved to the States 25 years ago and learned to homebrew shortly after tasting his first American beer. Andy Tipler grew up in England and moved to the United States 30 years ago for his job as a research chemist. He has been homebrewing (legally) for more than 50 years and is a certified beer, mead, and cider judge. Andy is active in competitions as a judge and as a contestant, and he enjoys talking and writing about brewing. He is a member of the Underground Brewers of Connecticut (the second oldest homebrew club in the USA). He would very much like to have an English pub next door.*



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BREWING WITH HEMP

# BREWING WITH HEMP

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# SMaSH!

## EMBRACE YOUR EXPERIMENTAL SIDE

By Dan Jablow

Whether you are an experienced homebrewer or just getting started on your brewing adventure, chances are you've brewed a SMaSH beer at some point, and probably haven't given it much thought. Compared to a brew with a more complex grain bill and hop schedule, such

as an oatmeal stout or hazy IPA, it can be easy to overlook the beautiful simplicity that lies in a beer made from only one kind of grain and one hop variety (Single Malt and Single Hop). It doesn't represent a specific style as much as a blueprint, or starting point that truly embodies a "less is more" approach, and therein lies its beauty.





books, magazines, YouTube, Facebook. The list goes on and on.

As a formally trained chef who ran a smoked meats and catering business using recipes of my own design, I knew that it was only a matter of time until I'd be ready to try my hand at creating my own beer recipes. At the very beginning, I wasn't sure where and how to start. It was in Mike Kurnowski's *Homebrew Beyond the Basics*, a fantastic and seemingly overlooked homebrewing book, where I first heard the term *SMaSH* and was intrigued. Could it really be this simple to create a custom brew by following this blueprint?

My early brews served to calibrate my stovetop brewing system, determining among other things what equipment I really needed on brew and packaging days, how to control temperature, and how to avoid boil-overs (I speak from experience here). Sometimes I even brewed the same recipe kit multiple times just to see if I was able to achieve the same results consistently. As I became intimately familiar with my brewing system over these initial ten or so brews, I was ready to take another step forward by creating my own recipe from scratch. Enter the *SMaSH* ale...

In developing my first custom brew recipe, I knew that I'd need to first answer an important question: how much grist would I need for a single-gallon batch? I scoured my collection of homebrewing books and the internet and the range was pretty broad. I'd need anywhere between 1.6 and 3 pounds of grain, with my gravity numbers also influenced by the efficiency of my system.

Last year, I wrote an article for *Zymurgy* on brewing beer in single-gallon batches ("Small-Batch Brewing," Jan/Feb 2023). In that article, I discussed the logic behind that approach, described the equipment needed, and included an all-grain recipe perfectly suited for a first-time or relatively new brewer. It just so happened that this recipe was for a *SMaSH* ale.

While that article was written with the novice homebrewer in mind, experienced homebrewers can also find value in small-batch brewing. Brewing small batches of *SMaSH* beers can unlock tons of brewing potential. In my early days of homebrewing, this practice aided my growth and development as a brewer by allowing me to fine-tune my systems and figure out how best to approach recipe development. This article represents the second part of my small-batch journey.

The simplicity of *SMaSH* brewing allows for a greater understanding of how each ingredient contributes to the overall character of the beer. While I'd argue that a single-gallon size is perfect for *SMaSH* trials, there's no hard and fast rule that says *SMaSH* beers can only be brewed one gallon at a time. So, let's dive in here and learn all we can about using this format to unlock our brewing potential.

When I first started homebrewing, I brewed exclusively from recipe kits that were prepackaged with the correct amount of hops, yeast, and milled grain (grist) required to make single-gallon batches. No extract here—I started with all-grain brewing and have only brewed a handful of extract-based kits to satisfy my own curiosity. As a beginner, whether you're an all-grain or extract brewer, brewing from kits is a fantastic way to get started. Kits offer a fairly risk-free way to get your brewing reps in and are offered in a wide variety of styles. The same goes for adopting recipes other brewers have created. These recipes can be found across numerous platforms—

The lower end of 1.6 pounds felt a bit light to me. Why? Because I had weighed out the grist a few times when I initially brewed some of those recipe kits and none of them were packaged with less than 2 pounds of grain. That felt like a good starting point, so I built a recipe for a West Coast-inspired pale ale using 2 pounds of pale malt. I wasn't sure what this would yield in terms of specific gravity or alcohol, so I also wanted a second brew to compare. I brewed the same exact recipe the next day, keeping everything constant except the grist, which I increased to 2.5 pounds. My final results looked like this:

2 lb. recipe:  
OG 1.050, FG 1.008, ABV 5.5%

2.5 lb. recipe:  
OG 1.068, FG 1.010, ABV 7.6%

Interestingly, both brews tasted very much the same. I conducted an informal taste panel using a few of my neighbors as guinea pigs (I really had to twist their arms!) and they seemed to slightly favor the brew with a bit more base malt, though none of them could really discern why. I also seemed to pick up more bitterness from the bigger brew.

These were interesting results for sure and very helpful to have. For a "production" version of this brew, I'd want the ABV to be somewhere right in the middle of these two test brews and I figured that I'd get there by settling on a final amount of 2.25 pounds of base malt per finished gallon of beer, which has now become the standard amount of grist I use for single-gallon stove top brews. Certainly, there are times when the style I brew dictates less

“  
**The simplicity of *SMaSH* brewing allows for a greater understanding of how each ingredient contributes to the overall character of the beer.**

Brew  
This!



# Super SMaSH Bros.

Super SMaSH Bros. is a pair of all-grain SMaSH ales to help you dial in your brewing system.

Once you've completed a brew or two using an ingredient kit, it's time to brew your own beer using a custom, "scratch-built" recipe. This recipe doesn't come from a box; instead, you put it together using ingredients you source from your local homebrew shop or elsewhere. I recommend that everyone's first scratch-built beer be a SMaSH ale.

This SMaSH ale consists of pale malt, Cascade hops, and a West Coast ale yeast. It's a classic combination that yields an ideal brew for testing different variables and will be easy drinking with a good

hop balance. You may brew this and decide you want to use more hops, a different variety of hops, a different yeast, or a different base malt. That's the beauty of the SMaSH ale—the possibilities are endless! Also, by brewing two beers side-by-side you'll really be able to determine how a single variable changed in isolation affects the final beer.

We'll brew two versions of this beer, A and B with the difference being that A will use 2 lb. of base malt and B will use 2.5 lb. Everything else will remain the same. Batch A will be on the lower end of the indicated recipe statistics; Batch B will be on the higher end.

<b>Batch volume:</b>	1 US gal. [3.8L]
<b>Original gravity:</b>	1.048–1.070 [12–17°P]
<b>Final gravity:</b>	1.006–1.012 [1.5–3.1°P]
<b>Color:</b>	3 SRM
<b>Bitterness:</b>	Varies with hops
<b>Alcohol:</b>	5.3–7.8%

## MALTS

2 lb. (907 g) pale malt, milled (Batch A)  
—OR—  
2.5 lb. (1.13 kg) pale malt, milled (Batch B)

## HOPS

0.5 oz. (14 g) Cascade @ 60 min  
0.25 oz. (7 g) Cascade @ 15 min  
0.25 oz. (7 g) Cascade @ 0 min

## WATER

1 gal. (3.8 L) mash water  
0.75 gal. (2.8 L) sparge water

## YEAST

2.2 g Lallemand West Coast Ale dry yeast

## BREWING NOTES

Heat 1 gal. (3.8 L) of water to 165°F (74°C). Add the milled malt and stir well to combine, breaking up any dough balls. Mash at 150°F (66°C) for 60 minutes. Stir the mash and check its temperature every 10–15 minutes, heating or cooling as necessary to maintain 150°F. After 60 minutes, increase the mash temperature to 170°F (77°C) and hold for 10 minutes (mash out).

While mashing out, in a separate pot, heat 0.75 gal. (2.8 L) of water to 170°F (77°C). Set a large mesh strainer over a 12-quart Cambro, third pot, or other large vessel. Separate the spent grain from the wort by pouring the mash through the strainer, collecting the spent grain. Slowly pour the hot sparge water over the spent grain until you've collected 5.5–6 qt. (5.2–5.7 L) of wort.

Rinse out the pot used for mashing. Pour the wort into this pot and bring to a boil, watching it closely to avoid boil-over. Once the wort comes to a boil, add the 60-minute hop addition. Maintain a rolling boil for 60 minutes. Add the second hop addition with 15 minutes remaining and add the final hop addition at the end of the 60-minute boil.

Place the entire pot of wort into an ice bath in your sink to chill it down to the recommended yeast-pitching temperature. Transfer the wort to a cleaned and sanitized fermentation vessel once the yeast-pitching temperature has been reached. At this point, anything that touches the wort must be clean and sanitized.

Add yeast to the wort, seal the fermentation vessel, and shake the whole thing vigorously for 30–45 seconds. This will aerate the wort, an important step to ensure a healthy fermentation. In the first few days of active fermentation, run a blow-off tube from the fermenter into a small jar or pot filled with sanitizing solution. This allows CO<sub>2</sub> to escape the fermenter while keeping oxygen from entering it. Once fermentation settles down, usually after day 3 or 4, the blow-off tube and jar can be replaced by an airlock.

Fermentation will usually finish within two weeks. At this point the beer can be kegged or bottled.



or more grist, but I know that 2.25 pounds of base malt will yield a wort with an original gravity of around 1.060. Interestingly, that “2.25 pounds of base malt per gallon” doesn’t exactly apply when I brew on my 30-liter Brewzilla—generally speaking, I need to use a bit more base malt to achieve my targets. How do I know? I used similar SMaSH testing!

The next step here is all about unlocking the creative potential that a SMaSH beer can enable by helping us unleash our inner brewing mad scientists.

Think of all of the different variables that we can control when we brew: mash time, mash temperature, water chemistry, mash thickness, boil time, quantity of hops to add, timing of hop additions, fermentation time, dry hopping schedule. The list goes on and on, and we haven’t even begun to wrap our heads around the infinite combination of malt and hops we can manipulate when devising our own custom beer recipes. SMaSH brewing provides us with a basic blueprint to follow as we brew beers of our own design. I like to pair the SMaSH framework with another mantra that became ingrained in my mind back in the days of culinary school and my internship

at America’s Test Kitchen: change only one variable at a time. That mantra makes side-by-side comparisons much easier when testing for certain things.

By following the SMaSH blueprint, we can run many different tests. Here are just a few questions these tests can answer:

- Are there any differences in taste or mouthfeel between a beer made using pale malt sourced from a large company versus a small, regional maltster?
- What base malt is preferable to use in an English-style pale ale: Maris Otter or Golden Promise?
- Is there a difference in an English-style pale ale brewed with London Fog versus London Ale III yeast?
- Is there a difference in an English Style Pale Ale fermented at 65°F (18°C) versus 75°F (24°C)?
- Which hop variety is better in an English-style pale ale: Fuggles or East Kent Goldings? What flavors and aromas do I pick up in the finished beer?
- What’s the sensory difference in two West Coast-style IPAs, one targeting 50 IBUs and the other aiming for 100 IBUs?
- I came across some samples of experimental hops. Which one do I like

better, and how do they compare to each other?

All of these different questions can be easily answered with a few different side-by-side SMaSH brews. Sure, there are other ways to perform some basic sensory testing (i.e. malt tea) but for me, nothing replaces having a completed brew to use as the basis for conducting a more thorough evaluation.

*Dan Jablow is a self-taught all-grain homebrewer with a passion for brewing beer in single-gallon batches. He is a graduate of the Beer Brewing Professional Certificate program at the University of Richmond, as well as a formally trained chef and a graduate of the Cambridge School of Culinary Arts. Dan's first business, a smoked meat company called Jablow's Meats, was voted in 2012 by the SF Weekly as having one of the best sandwiches in San Francisco (pastrami!). Today, Dan can be found tinkering with recipes, experimenting with ingredients, and sharing a behind-the-scenes look into small batch brewing at home on his Instagram feed (@small.batch.brewing) and his blog, Welcome to Homebrewing.*



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# SUPER SAISON



# EXPLORING SAISON'S UPPER LIMITS

By Ryan Pachmayer

My introduction to super saison came years ago at the Bull & Bush Brewery Christmas party when I used some of my beer tokens on Brasserie Dupont's Avec Les Bons Vœux. Dupont's classic saison was one of my favorite beers, but I'd never tried this larger, 9.5% offering. The party was centered around vintage beer, and this version was about five years old.

From the first sip, I knew this would be a winner. The beer was strong, but not boozy. It had amplified characteristics of the classic saison, but it felt like a totally different beer. It was dry, yet rounded and infinitely complex. I bought several more samples that night and it became one of my fondest memories of the festival, next to some of the vintage Thomas Hardy's and Samichlaus beers.





**W**e're looking for warmth, not a big boozy beverage."

*Josh Pfriem*

For the next few years, I would skim the shelves of the import section at my local liquor stores and pick up a few bottles at a time, usually reserving them for occasions where I could introduce fellow enthusiasts to this beer.

So, what makes super saison super? For one thing, the strength level is classified as super, most notably by the BJCP. These beers begin at 7% ABV (again, BJCP), and go all the way to 10% and even beyond.

Beyond the alcohol level, though, and partially because of it, super saisons also hold a certain mystique. A puffy, white head leaves lacing around the glass. Bubbles furiously race to the surface. It's as visually inviting as any beer, just begging you to take a whiff. That whiff results in aromas of pepper, lemon, and orange, followed by a dash of herbal, earthy hops to further intrigue the senses. The taste that follows confirms the rich complexities from the nose, and a dry finish, accentuated by those bubbles, asks you to repeat the process all over again, a request you'll happily oblige.

A snifter is the perfect vessel for these beers, and a cold night is the ideal setting. Large-format 750 mL bottles invite small groups to partake together, diving into these liquid treats over lively conversation.

After plenty of bottles, tastings, and conversations with like-minded friends, I was

determined to make my own version. Early attempts were too hot and too thin. I'd read about Dupont fermenting warmer than 90°F (32°C). That was too high. Even the 80s Fahrenheit (upper 20s Celsius) seemed to result in too hot of a beer. I started co-pitching French saison yeast, and while that improved things, it just didn't land where I wanted it to.

Trial and error, tips from various professionals and hobbyists, as well as pieces picked up online and in books, eventually resulted in a friend and I pitching multiple Belgian saison strains at around 65°F (18°C), and allowing the temperature to free rise to 75°F to 80°F (24–27°C).

A touch of slightly darker kilned base malt, Vienna or Munich, seemed to provide some of the softer, rounded, bready malt complexity that was missing. High carbonation was always a key component, and as long as fresh hops were used, it seemed like batches could be differentiated by their hopping rates, both in flavor and bitterness.

Throughout these trials and over the years, I began to enjoy other high-alcohol saisons. Boulevard's Tank 7 is one that I probably had prior to Avec Les Bons Vœux, but only after drinking the Dupont beer did I start to appreciate Tank 7 for what it was. Later, Blackberry Farms' Anniversary Imperial Saison, Funkwerks' Tropic King, and pFriem's Super Saison were all inspiring.

Along the way, I also enjoyed several standout homebrewed versions from well-respected local brewers. As I began to examine how each brewer made their super saison, some patterns emerged, but so did distinct differences.

One commonality is that just about every brewer was inspired by the same beer that I was. Avec Les Bons Vœux loosely translates to "Best Wishes." It was originally brewed as a gift for the brewery's best customers. It became so well loved that the beer was eventually sold worldwide. It's not a stretch to imagine that this beer has, one way or another, inspired most of the beers made in this category.

So how are other brewers making these beers? Let's dive in.

## HOOD RIVER MAGIC

Josh Pfriem hadn't tried many domestic examples, but he was fascinated by Avec Les Bons Vœux on his travels overseas. The former brewer at Chuckanut Brewery and Full Sail Brewing, and current owner of pFriem Family Brewers, set out to make his own. "I loved the story of the beer, the history," he says.

"With a lot of our beers, we take a historical approach. We look at a beer like Dupont's, what we like about it, and it's a very simple grain base with some rustic adjunct malts. And then a big hop emphasis."

"We started with the historical node, then we asked, how do we make it pFriem? What do we want to do to make it our own?" In the original pFriem farmhouse beers, which were standard-strength saisons, traditional noble varieties of European hops were used.

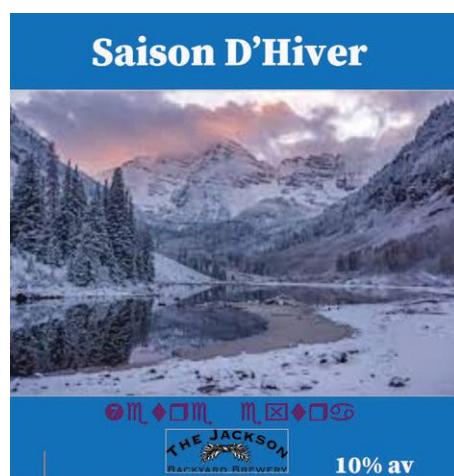
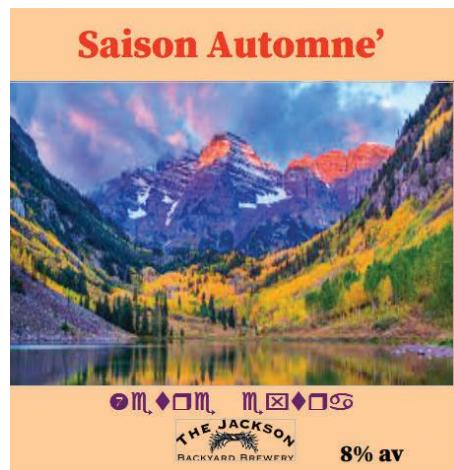
"So very early on [with the super saison], we started using American, and then Southern Hemisphere hops, and then dry hopping it as well," says Pfriem.

"We wanted to turn the fruitiness that we were getting out of the yeast expression itself," he says.

So he started searching for alternative hop varieties for the beer. "We didn't want it to taste like farmhouse IPA; we wanted to work within the fermentation structure," he adds. Eventually, the team at pFriem found success leaning towards softer, fruitier hops and using them at a level in both the whirlpool and dry hop that didn't overtake the beer.

Pfriem believes that carbonation, dryness, and acid are all critical points to making these beers. "Without those," he says, "it really doesn't adhere well to the story, style or history."

For carbonation, Pfriem carbs its super saison to around 3.8 volumes in the bottle, or more than 7.5 grams per liter. "That gives it a bright, tight carbonation and makes a really effervescent beer with beautiful foam," says Pfriem.



Brew This!



Scott Jackson is a prolific homebrewer from Thornton, Colo. Jackson makes saisons year-round, usually of the super strength variety. He uses a different recipe for each season, something reflected in the labels, which depict the famous Maroon Bells mountains in Colorado during each of those seasons. Jackson has had good results with Omega Yeast's Saisonstein (OYL-500) in recent years. It brings together both Belgian and French strains, providing a vigorous fermentation and a very dry finish. Below are Jackson's recipes for his Automne (fall) and d'Hiver (winter) versions.

## SAISON AUTOMNE

<b>Batch Size:</b>	12 US gal. [45.4 L]
<b>Original gravity:</b>	1.071 (17.2°P)
<b>Final gravity:</b>	1.010 (2.6°P)
<b>Efficiency:</b>	90%
<b>Color:</b>	13 SRM
<b>Bitterness:</b>	40 IBU
<b>Alcohol:</b>	8% by volume

### MALTS & ADJUNCTS

19 lb.	[8.62 kg] UK pale malt
1 lb.	[454 g] German wheat malt
1 lb.	[454 g] Belgian biscuit malt
1 lb.	[454 g] Belgian aromatic malt
12 oz.	[340 g] Belgian Special B malt
1 lb.	[454 g] Belgian amber candi syrup, 90°L
1 lb.	[454 g] beet sugar

### HOPS

1.5 oz.	[43 g] Magnum, 14% a.a. @ 90 min
1 oz.	[28 g] First Gold, 9.2% a.a. @ 2 min

## SAISON D'HIVER

<b>Batch volume:</b>	12 gal [45.42 L]
<b>Original gravity:</b>	1.083 (19.9°P)
<b>Final gravity:</b>	1.011 (2.8°P)
<b>Efficiency:</b>	90%
<b>Color:</b>	26 SRM
<b>Bitterness:</b>	35 IBU
<b>Alcohol:</b>	10% by volume

### MALTS & ADJUNCTS

24.5 lb.	[11.11 kg] American pale malt
1 lb.	[454 g] Belgian Special B malt
0.5 lb.	[227 g] Weyermann Carafa Type III
0.5 lb.	[227 g] Briess Midnight Wheat
1 lb.	[454 g] Belgian extra-dark candi syrup, 90°L
2 lb.	[907 g] beet sugar

### HOPS

1.5 oz.	[42 g] Magnum, 14% a.a. @ 75 min
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### YEAST

Omega Yeast OYL-500 Saisonstein

### BREWING NOTES

Mash grains for 90 minutes at 149°F (65°C). Lauter, sparge, and collect enough wort to yield 12 gal. (45.4 L) after the 90-minute boil.

Boil 90 minutes, adding hops as indicated. Add the amber candi syrup and beet sugar with 5 minutes left in the boil.

Chill wort to 68°F (20°C), pitch yeast, and ferment until specific gravity stabilizes at or near indicated final gravity. Bottle or keg with 3 vol. (6 g/L) CO<sub>2</sub>.

### YEAST

Omega Yeast OYL-500 Saisonstein

### BREWING NOTES

Mash grains for 90 minutes at 149°F (65°C). Lauter, sparge, and collect enough wort to yield 12 gal. (45.4 L) after the 90-minute boil.

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Chill wort to 68°F (20°C), pitch yeast, and ferment until specific gravity stabilizes at or near indicated final gravity. Bottle or keg with 3 vol. (6 g/L) CO<sub>2</sub>.



**S**aïson is a fairly simple, straightforward beer. It's all in the fermentation."

*Charlie Gottenkieny*



## HARVESTER IMPERIAL SAISON

*Charlie Gottenkieny Denver, Colo.*

Before founding Bruz Beers with Ryan Evans, Gottenkieny was the AHA Homebrewer of the year in 1997 and 1999. Gottenkieny says his recipe produces a simple, clean, high-gravity saison in the Wallonian style.

**Editor's Note:** Depending on the saison strain you use, you might get a far lower final gravity. If you're using a saison strain with the STA1 gene, expect to see a final gravity below 1.010. Adjust your starting gravity (and scale back your grains to do so) in this scenario.

**Batch volume:** 5 US gal. (18.9 L)

**Original gravity:** 1.091 (21.8°P)

**Final gravity:** 1.021 (5.3°P)

**Bitterness:** 33 IBU

**Color:** 7 SRM

**Alcohol:** 9.2% ABV

### YEAST

White Labs WLP566 Belgian Saison II

### ADDITIONAL ITEMS

2 tablets Whirlfloc @ 10 min

### BREWING NOTES

Mash at 152°F (67°C) for 60 minutes then sparge, aiming for a pre-boil gravity of 1.071 (17.3°P). Boil 90 min. Knock out at 65°F (18°C). Allow fermentation temperature to rise to or above 72°F (22°C).

### INGREDIENTS

14 lb. (6.35 kg) Belgian Pilsner Malt

2 lb. (907 g) Belgian Wheat Malt

1 lb. (454 g) German Dark Munich Malt  
(20°L)

1 lb. (454 g) German Carafoam Malt

### HOPS

23 IBU Styrian Aurora or other high-alpha hop,  
8% a.a. @ 60 min

10 IBU Hallertau Mittelfrüh or other noble hop,  
3.4% a.a. @ 10 min

Most draught systems don't have as high a capacity for high-carbonation beers, so the brewery targets the upper CO<sub>2</sub> threshold of most systems for its saison, which is about 2.7 volumes (5.4 g/L).

Pfriem also uses rustic grains to add depth and complexity to its super saison. "We don't use a ton of unmalted wheat, but it gives a little more depth and creaminess and a silky texture that is so intriguing," says Pfriem, who notes that using malted wheat gives the beer a bit of structure.

Pfriem doesn't personally like using caramel malts in these beers, and feels that the esters and phenols can clash with the yeast, though he doesn't rule them out for those looking to experiment—after all, there are few rules in Belgium, particularly in the world of saison.

The mash for super saison at Pfriem is pretty straightforward. "We mash as low as 146°F (63°C) for single infusion," says Pfriem. "For a lot of our farmhouse ales, we're going for a very basic, simple approach."

The water profile calls for fairly aggressive additions of calcium sulfate, giving the beer a harder water profile, which is traditional to the Wallonia region.

Fermentation starts on the higher end and stays there. Pfriem knocks out at 75°F (24°C) and ferments at 78°F (26°C). Many yeasts have been used over the years, but Brewing Science Institute's BSI-565 Saison is the current favored strain.

Pfriem feels that 9.5% ABV is about the high end of where he wants to be. "It just starts getting kind of hot and really challenging the yeast," he says. "Especially with how dry the beer is, we're looking for warmth, not a big boozy beverage."

The beer is intended to be enjoyed fresh, but with months of aging, as the hops fall off, there is a supporting malt character that starts coming through more and more. And as the malt emerges, some of the esters become a little more integrated, says Pfriem. "It becomes a nicer, softer beverage." Still, he says, for the pFriem version, intentionally aging it more than a year may be interesting, but some of that nuance that was there originally is probably lost.

## THE BRUZ WAY

Charlie Gottenkieny knows a thing or two about saisons. Before co-founding Belgian-style brewer Bruz in Denver, Gottenkieny was a two-time AHA Homebrewer of the Year in 1997 and 1999.

Gottenkieny, above all else, wants a super saison to be dry. "All the bad Belgian-style beers I've had are too sweet," he says. "Saison is a fairly simple, straightforward beer. It's all in the fermentation," he adds.

When Bruz head brewer Dave Olson was hired in 2019, Gottenkieny says that he was more into the rustic style of saison, using spelt. "And I have to agree with him," says Gottenkieny, "because I've come to like them myself."

Gottenkieny says that spelt is basically a more primitive form of wheat, and that wheat, for various reasons, "won out" over the years. While the Bruz mash tun has a powerful motor with rakes that helps it avoid stuck mashes, Gottenkieny says that on the old 4-barrel system, and on many homebrew systems, he'd recommend using some rice hulls when working with a lot of wheat or spelt.

Gottenkieny has another piece of advice for brewers: don't skimp on ingredients. "That's been one of our core philosophies since day one," he says. "The big silos of domestic two-row that I see outside of breweries are fine for an IPA brewery, but not if you're making saisons and Pilsners."

Locally, Bruz uses grains from Loveland, Colorado's Root Shoot Malting, a maltster that just took home Best in Show at the 2023 Malt Cup, along with its sixth, seventh, and eighth medals in the contest. For Pilsner malts, Weyermann and Dingemans are usually on hand in the brewhouse. Gottenkieny also likes Franco-Belges.

Gottenkieny has been to Belgium many times, and he loves to talk about the history of saison—how farmers would serve low-alcohol table saisons to their workers and competition between farmers for who had the best beer was akin to modern-day healthcare competition between businesses. He enjoys the history of the super saison, and how it was, and still often is, a special winter treat.

From recent travels, he's noticed that Belgian breweries are dry hopping more and more. "They didn't do that until IPAs started getting popular," he says. "You see more dry hopping over there now."

For the more rustic saisons that Bruz sometimes makes, Strisselspalt is a commonly used hop. "We'll also use some German hops," says Gottenkieny, adding that Hallertau Blanc is really nice for late additions.

For bittering, Gottenkieny often likes to keep it simple, using a high-alpha-acid hop to avoid getting too much vegetal

matter in the kettle. "For a long time, we used one bittering hop, CTZ [Columbus/Tomahawk/Zeus], from a small, local grower," he says.

Gottenkieny waxes poetic about the beauty of Dupont's yeast. "They say it's touched by the hand of God," he muses. "It's a fantastic yeast, but it does have its idiosyncrasies."

Gottenkieny is referring to the reputation that the 565 strain has had for stalling out. He suggests opening the fermenter and knocking some of the CO<sub>2</sub> out to reduce pressure on the yeast and hopefully avoid the notorious stall.



## pFriem SUPER SAISON

*Recipe courtesy of pFriem Family Brewers, Hood River, Ore.*

pFriem's Super Saison is a thoughtful rendition of Belgian saison, with a pFriem twist, namely in the hop varieties. The beer has notes of pineapple, papaya, and kiwi. Josh Pfriem says that the beer is always released around the same time, near the winter holiday season, to kick off the new year. "It's a nod to the history of these beers," he says.

<b>Batch volume:</b>	5 US gal. (18.9 L)
<b>Original gravity:</b>	1.076 (18.4°P)
<b>Final gravity:</b>	1.004 (1°P)
<b>Efficiency:</b>	72%
<b>Color:</b>	8 SRM
<b>Bitterness:</b>	30 IBU
<b>Alcohol:</b>	9.5% by volume

**INGREDIENTS**

12 lb.	(5.44 kg) Gambrinus Pilsner Malt
14 oz.	(397 g) Weyermann Wheat Malt
7 oz.	(198 g) Weyermann Spelt Malt
6 oz.	(170 g) unmalted wheat
6 oz.	(170 g) dextrose (in the kettle)

**WATER**

Target Wallonia water profile.

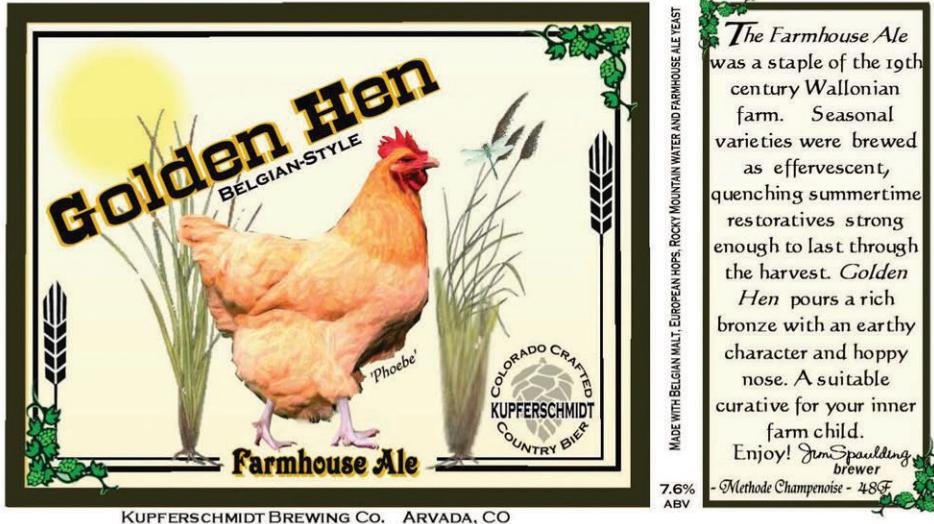
**HOPS**

1.2 oz.	(34 g) Perle, 7.5% a.a. @ 60 min
0.8 oz.	(23 g) El Dorado, whirlpool 30 min
0.8 oz.	(23 g) Cashmere, whirlpool 30 min
1.2 oz.	(34 g) El Dorado, dry hop
1.2 oz.	(34 g) Cashmere, drop hop
2.6 oz.	(74 g) Citra, dry hop
1.2 oz.	(34 g) Cashmere, dry hop

**YEAST**

BSI 565 or other Belgian Saison strain





Brew This!



## THE GOLDEN HEN

*Recipe courtesy of Jim Spaulding, Kupferschmidt Brewing.*

Jim Spaulding is a homebrewer of forty years residing in Arvada, Colorado. His Golden Hen saison is a favorite of the local homebrew club, the Mash Paddlers. It was named after his late hen, Phoebe, a Buff Orpington hen. Spaulding has hit about 8% ABV on occasion with this beer. He loves how the De Blaugies yeast ferments, leaving a nice ester profile and, combined with the Denver area's soft water, a smooth character. Spaulding also notes that the yeast clears up well prior to bottling, something he appreciates because he feels it important to avoid excessive dead yeast in the bottle.

**Batch volume:** 5 US gal. (18.9 L)

**Efficiency:** 72%

**Original gravity:** 1.065 (16°P)

**Final gravity:** 1.006 (1.5°P)

**Color:** 6 SRM

**Bitterness:** 37 IBU

**Alcohol:** 7.6% by volume

### INGREDIENTS

10 lb. (4.54 kg) Castle Pilsner Malt

0.5 lb. (227 g) Crisp Light Crystal Malt

0.5 lb. (227 g) acidulated malt

0.5 lb. (227 g) torrefied wheat

0.75 lb. (340 g) Belgian Amber Candi Syrup  
(added just before first hops)

### HOPS

2.5 oz. (71 g) Styrian Goldings @ 60 min

1 oz. (28 g) Hallertau Tradition @ 20 min

2 oz. (57 g) Hallertau Tradition @ 10 min

### YEAST

Wyeast 3726 Farmhouse Ale

### DIRECTIONS

Mash for 60 minutes at 150°F (66°C). Ferment at 68–70°F (20–21°C) until terminal gravity. Bottle at 3.5 volumes pressure. Spaulding has a warm room where his bottle conditioned beers sit for three weeks post-bottling, to fully carbonate, before going into cold storage.



Gottenkieny has also learned over the years, from many trips to Belgium, that Dupont uses multiple yeast strains in its beers, and what is being used in the Avec is different from the regular strength saison. He suggests blending strains, a technique Propagate Labs, where Bruz sources most of its yeast, endorses and even suggests on its website.

Speaking of Propagate, Bruz has cultured its own saison strain through the lab. "It started with the De Dolle yeast," says Gottenkieny. "Propagate pulled some stuff out of there and then introduced some wild yeast, among other strains." Gottenkieny says that the strain works well for Bruz and it's more in the style of Fantôme Saison.

### CLOSING THOUGHTS

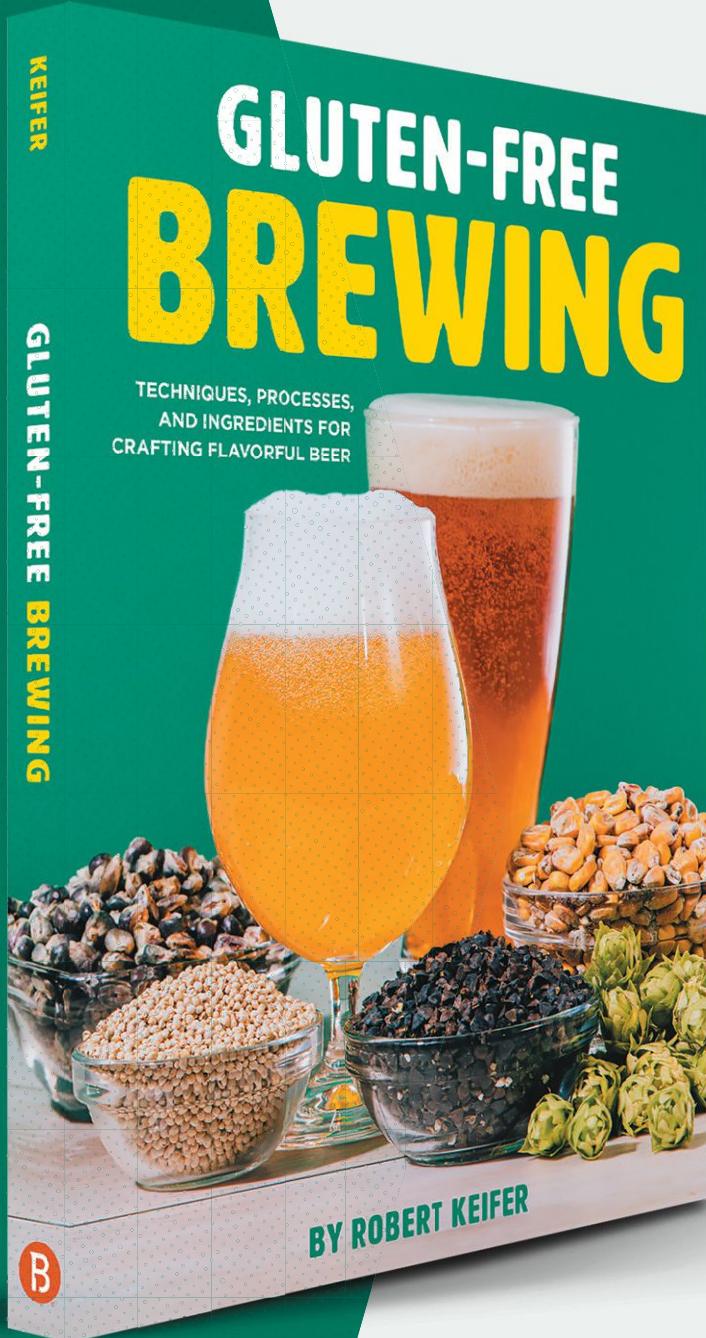
These aren't exactly beginner-friendly beers to make, but the flaws in the beers are rather obvious, so I'd encourage anyone who doesn't succeed on the first try, to research possible causes, brew it again, and address the problem on batch two.

If you're not truly happy with your beer, grab one of the commercial examples cited in this article and drink them side-by-side—the shortcomings should become more obvious. You don't need to necessarily replicate those commercial examples—in fact, I'd encourage you not to. Instead, make something that is your own, unique to you.

Perhaps the best compliment I've ever received on my super saison was while sitting with a friend on my back patio in the early summer of 2020. We were sampling super saisons in outdoors in the heat of summer, during COVID. We were tasting my super saison next to Dupont's and a third, and my friend remarked that the beers were all different, the Dupont a clearly hoppier product, and wonderful in its own right. He said that mine was great too and not diminished by being sipped next to such a fantastic beer. Coming from a respected brewer who doesn't offer compliments out like candy, I was satisfied.

As we talked away the afternoon, I noticed my friend finished the snifter of my saison before the Dupont, and before the third beer as well. That is a level of compliment that you can't express with words.

Ryan Pachmayer is the marketing and events director at New Image Brewing in Wheat Ridge and Arvada, Colo. He's the former head brewer at Yak and Yeti Restaurant and Brewpub in Arvada. He is also a BJCP Certified beer judge. He can be reached at ryanwritesbeer@gmail.com.



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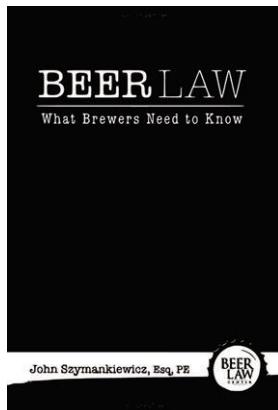
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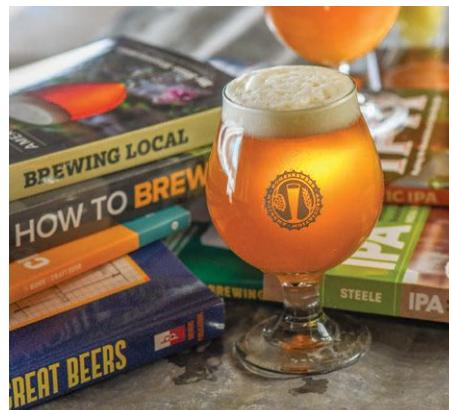
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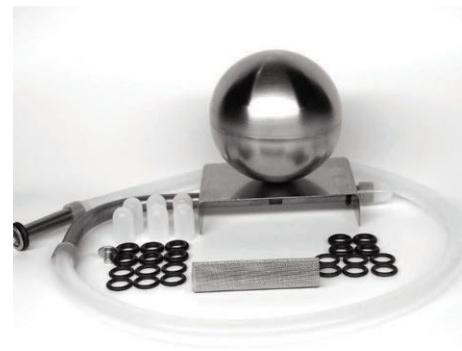
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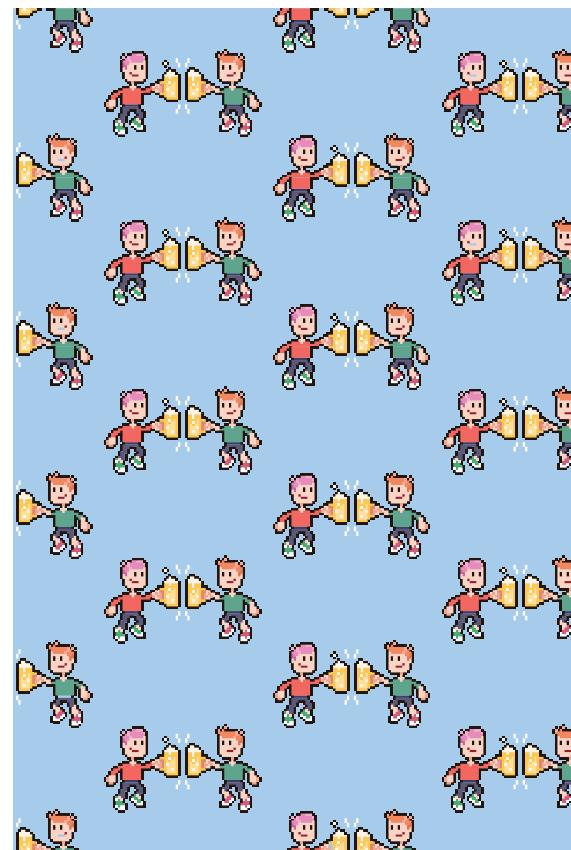


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# Doing Good by Brewing Good

## BREW FOR, AND WITH, A VET

By Ryan Kriesch

The brewing community is home to many veterans, but you might not recognize those who have served the nation and their communities. It isn't something we always talk about. Also deserving of recognition are our frontline community workers, our first responders,

the ones who are there at every car accident, fire, and medical emergency. Many veterans are or were also first responders.

Veterans Day, originally called Armistice Day, was declared by President Woodrow Wilson upon his issued statement on November 11, 1919, to honor fallen and

returning service members following World War I. In 1954, President Eisenhower signed into law that November 11 should be a national holiday to recognize past and present members of our armed services, and that it should be called Veterans Day. In response to this, many veterans organizations have risen to assist deployed, injured, and disabled veterans from all branches, as well as their families.

### DOING GOOD

Every veterans organization is unique in its own mission to support veterans and their families. Many of these foundations also support first responders. These organizations largely consist of volunteers who choose to spend their time looking after

our veterans at home and abroad. Some volunteers stay up all night to monitor crisis hotlines, to listen and speak to veterans who are in despair or thinking of taking their own lives. These volunteers selflessly give back to those who gave themselves to this country and their communities.

Our nation has countless organizations to support veterans and first responders, and it can be hard to decide which one or few to support. Many do not do advertise, instead preferring to work through word of mouth to remain focused on their missions without using funds for marketing. Facebook and other social media tools have been valuable for learning about these foundations, which provide a variety of services that include mental health,

disability, housing support, transportation, service animals, and job training.

These organizations serve our veterans just as our veterans have served our nation, and they don't ask for a thank you in return. They just do. What follows are a few organizations that, in my opinion, deserve a little more attention for the work they do.

In 2009, three friends, soldiers stationed at an outpost in Afghanistan, asked themselves how more veterans could spend time enjoying the outdoors. What emerged was The Fallen Outdoors, an organization that invites vets to go fishing, hunting, biking, or hiking. A call goes out for someone to join in on a day in the wilderness to forget reality for a small period of time and live in the moment. In many cases, volunteers supply any needed equipment, and they even host training events to teach others how to enjoy the outdoors. It is about making

Brew This!



## Patriots Pale Ale

Recipe by Ryan Kriesch.

In honor of the fallen Americans and our Veterans, Patriots Pale Ale supports Yakima Chief hops using their Veterans blend. An addition of Warrior goes first into the boil to say thank you to all the warriors who have served. There will be no crystal malt in here, instead we are going to bring in some Ashburne Mild Malt for some sweetness and dextrin as well as some wheat. I traditionally dough in the grain at 90°F (32°C) and let it rise to 150°F (66°C) for my mash.

Veterans blend changes year to year, both the hops chosen and the alpha acid percentage. We are going to work in alpha acid units for consistency from one batch to another, which means there is some math involved. It is great to use this method when making any beer to maintain consistency.

$$\text{alpha acid percentage} \times \text{ounces of hops} = \text{alpha acid units}$$

$$\text{alpha acid units} \div \text{alpha acid percentage} = \text{ounces of hops}$$

$$\text{ounces of hops} \times 28.35 \text{ grams per ounce} = \text{grams of hops}$$

**Batch volume:** 5.5 US gal. (20.8 L)

**Original gravity:** 1.053 (13°P)

**Final gravity:** 1.011 (2.8°P)

**Color:** 5 SRM

**Bitterness:** 50 IBU

**Alcohol:** 5.6% by volume

### YEAST

1 sachet Lallemand Nottingham

### ADDITIONAL ITEMS

Yeast nutrient

Clarifier

### BREWING NOTES

Mash at 150°F (66°C) for 60 min. and 170°F (77°C) for 10 min., targeting a pre-boil gravity of 1.043. Boil 60 min. Ferment in the mid to low 60s Fahrenheit (mid-teens Celsius).

### EXTRACT VERSION

Replace the grain malts with 6.6 lb. (3 kg) Briess Golden Light liquid malt extract, 1 lb. (454 g) Munich dried malt extract, and 1 oz. (28 g) wheat dried malt extract. Dissolve extracts in hot water, top up to desired boil volume, and proceed with the boil.

### MALTS

7 lb. (3.18 kg) Maris Otter malt (60.9%)

2 lb. 12 oz. (1.25 kg) Briess Ashburne Mild Malt (23.9%)

1 lb. 12 oz. (793 g) white wheat malt (15.2%)

### HOPS

7 AAU Warrior @ 60 min (25 IBU)

11 AAU YCH Veterans Blend @ 20 min (25 IBU)

12 AAU YCH Veterans Blend, whirlpool 10 min at 160°F (71°C)

2 oz. (57 g) YCH Veterans Blend, dry hop in primary on day 5 or just after the kräusen drops, for 5–8 days

## BREW DAY FOR THE VETS

On December 7, 1941, Sunday just before 8 am, our nation came under attack at Pearl Harbor, Hawaii. It was a day that rocked the nation to its very core and changed the course of American history. In honor of the 83rd anniversary of that tragic day, on December 7, 2024, there will be a nationwide Brew Day for The Vets honoring all of our nation's veterans. Let us brew up a beer in memory of those who lost their lives that day serving their country.

Just like Big Brew, Brew Day for the Vets will offer recipes you can choose to brew. In total there will be four, two from Yakima Chief Hops using their Veterans Blend and two from Hops Direct using their Freedom Blend that supports Soldiers Angels. The hops will be available for purchase with the proceeds going to support those Veterans organizations.

Get prepared, requisition those needed supplies to brew up something special in honor of our many patriots. Show them how much we care and appreciate their sacrifice on December 7th, 2024. Roll Call is upon you, will you join the ranks?

new friends, enjoying the company we relied on in the service, and relating the bad jokes and stories we only tell to other service members.

K9forwarriors is another such organization, which provides service dogs to our veterans who struggle with mental health and disabilities. They rescue dogs from shelters across the country and train them to become part of a veteran's family. The process can take a year or more in some cases, and the amount of money it takes to train just one dog is not pocket change. Each case requires approximately \$30,000.

Soldiers Angels supports military members and their families on the front lines and at home. Started by the mother of a son who was deployed to Iraq in 2003, this organization has grown to support all branches and provide support through volunteering at VA hospitals. This may include running clinics, hosting luncheons, visiting patients, and giving families access to community resources. Soldiers Angels maintains branches in all 50 states as well as 31 countries abroad.

Missouri-based Freedom 13 started after 13 soldiers were lost on August 26,

2021, in the suicide bombing of Kabul. A father started The Freedom 13 to honor all veterans. The mission of this organization is to create and make available recreation facilities for veterans and their families to escape the reality of life and enjoy the outdoors. The goal is to purchase land, build facilities and offer the amenities of being together outdoors.

I am happy to report that after a year and a half of filing paperwork and checking all the boxes, The Freedom 13 finally received its not-for-profit classification. As of August 2023, this organization is off the ground and ready to soar to the heights it has set for honoring our service members.

## BREWING GOOD

Just as these organizations support the veterans, there is support within the brewing community to assist in the effort. Our homebrew community is full of veterans who share a passion for homebrewing, outdoors and recognizing our brothers and sisters in arms. It goes beyond just monetary support. It can be a simple phone call to check in and see how they are doing, or even a text message nowadays.



# South Pacific Stout

Recipe by Ryan Kriesch and Scott Kurtz.

The back story on this collaboration between Scott and me is that we both had grandfathers who fought in the South Pacific in World War II. This is our Tropical Stout to honor them and all those who serve the armed forces, past, present, and future.

Veterans blend changes year to year, both the hops chosen and the alpha acid percentage. We are going to work in alpha acid units for consistency from one batch to another, which means there is some math involved. It is great to use this method when making any beer to maintain consistency.

$$\text{alpha acid percentage} \times \text{ounces of hops} = \text{alpha acid units}$$

$$\text{alpha acid units} \div \text{alpha acid percentage} = \text{ounces of hops}$$

$$\text{ounces of hops} \times 28.35 \text{ grams per ounce} = \text{grams of hops}$$

The new NovaLager or even a Kölsch strain can be used, but we are going to use Wyeast 1007 German Ale yeast fermented at 60°F (16°C). If lagering, be sure to select a clean lager profile like 34/70. Since we need 260 billion yeast cells for this one, pitch a good, healthy yeast starter. A 2-liter starter gives us plenty of yeast to get the job done.

**Batch volume:** 5.5 US gal. (20.8 L)

**Original gravity:** 1.068 (16.5°P)

**Final gravity:** 1.010 (2.5°P)

**Color:** 36 SRM

**Bitterness:** 45 IBU

**Alcohol:** 7.7% by volume

## ADDITIONAL ITEMS

Yeast nutrient

Clarifier

## BREWING NOTES

Mash at 154°F (68°C) for 60 min. and 170°F (77°C) for 10 min., targeting a pre-boil gravity of 1.043. Boil 60 min. Ferment in the mid to low 60s Fahrenheit (mid-teens Celsius).

## EXTRACT VERSION

Replace the Maris Otter malt with 6.6 lb. (3 kg) pale ale liquid malt extract and 1.5 lb. (680 g) pale ale dried malt extract. Steep the crushed specialty grains (Simpsons Double Roasted Crystal malt, Special B malt, chocolate rye malt, and Weyermann Carafa III Special malt) in 150°F (66°C) water for 30 min., remove grains from steeping liquid, and fully dissolve malt extracts. Top up to desired boil volume and proceed with the boil.

## MALTS & ADJUNCTS

9 lb. (4.08 kg) Maris Otter malt (65.1%)  
1 lb. (454 g) Simpsons Double Roasted Crystal malt, 120°L (7.2%)  
1 lb. (454 g) Special B malt (7.2%)  
10 oz. (283 g) chocolate rye malt (4.6%)  
4 oz. (113 g) Weyermann Carafa III Special malt (1.8%)  
2 lb. (907 g) turbinado sugar @ 5 min

## HOPS

9 AAU YCH Veterans Blend @ 60 min (30 IBU)  
10 AAU YCH Veterans Blend @ 10 min (15 IBU)

## YEAST

2 L starter Wyeast 1007 German Ale Yeast



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In 2018, Yakima Chief Hops introduced Veterans Blend as their way to support the nation's veterans and our first responders. This blend was started by veterans and is selected by veterans each year. Over the past five years, and now into its sixth year, it has benefited many wonderful organizations, including the Semper Fi fund (2018), the Wounded Warrior Project (2019), the Gary Sinise Foundation (2020), K9forwarriors (2021), and the Hunter 7 Foundation (2022). The 2023 blend will benefit the Homes for the Troops foundation. For every pound of Veterans Blend sold, three dollars is donated to that year's beneficiary. So far, Veterans Blend has raised more than \$167,000 for veterans organizations.

Another hop blend that supports a veterans organization is Freedom Blend from Hops Direct, the proceeds of which support Soldiers Angels. In addition to offering the blend Hops Direct also supports a Hops for Heroes program, by which breweries are encouraged to brew for the troops, with net proceeds going to the foundation.

So, as you brew on and want to make something different or new, remember these hop blends and know that you can make a difference in a veteran's life by

using them. Remember that you are part of something bigger than the beer in the glass. Brew with a cause and make it special, remembering all those who make it possible for us to enjoy some suds.

Tell a story, name a beer to honor the fallen, or a fellow veteran. There is nothing greater for veterans to know that they are not forgotten, not just for us as a country, but also for the family and friends of that veteran that never made it home. So come brew day, invite a vet to brew with you and share some. You just might make a friend for life and brew day buddy, or even a new fishing partner.

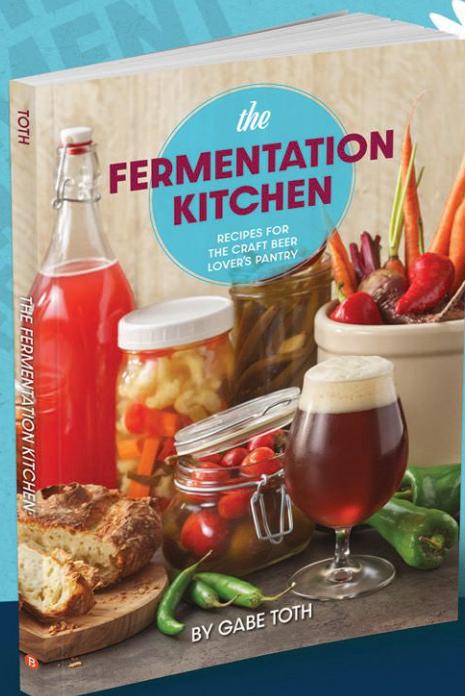
Make a call or send a text message, put the word out and invite a veteran to brew with you, it may be just what they need knowing that someone cares for them and wants to just hang out. If you are a veteran and you're having a rough time or possibly thinking of taking your life, call the Veterans crisis line at #988 followed by the number 1 to be connected to a person who cares and will listen. It costs nothing and the person answering the call is there because they care. You are worth being listened to.

For those wanting to get involved and support these wonderful organizations,

begin locally in your own community. They can always use the help. Remember, it is not just the service member or the first responder that may need someone to help or just listen, but also the family members who are just as much a part of their service.

"Go forth, bravely into the night dear brewers of the suds. Pick up your mash paddle, the time is upon us to unite. With each berry of grain, hop cone and yeast cell readily standing by for your command, the Lord of Ales and Lagers calls upon you to unleash what you have been taught and trained to do. Take your army, dive into the abyss and return with the elixir of unification, defeating separation and honoring our fallen. Raise the glass to the sky remembering the past, present and the future heroes to come. We shall never forget."

*Ryan D. Kriesch has made beer and wine for 13 years and mead for four. He is a passionate cook, brewer, and father with a touch of nerd to balance the natural jock—no board game is off limits. He encourages readers to brew what they want and remember that the best beers are brewed from the heart and not for a medal.*



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# Who Is Your Biggest Fan?



A good friend asked me a few weeks ago why I homebrew. She just couldn't understand why I go through all the work, time, and cost that comes with homebrewing when you can buy a 24-pack of decent beer at Costco for 20 dollars. I get her point. But then, why engage in any hobby? Why knit, sew, or garden?

People have hobbies for many reasons. For me, it is a combination of expressing my creativity and my passion for sharing and giving. I am also a hobby chef, and I love to make anything that is consumable. If there is a potluck somewhere, or someone is collecting dinners for a neighbor who just had a baby, I'm in! I love baking cakes for neighbors, but it would not cross my mind to buy a supermarket cake and gift it to someone, even if that cake might taste better.

Similarly, when I receive a homemade dish, I feel honored to know that so much more went into creating it than just the thought. The giver put more work and preparation into my gift. It also takes courage to share something homemade. You are exposed to a certain amount of critique, but you are also protected from it because you gifted it. Like my German grandma always said, *Einem geschenkten Gaul, schaut man nicht ins Maul!* Don't look a gift horse in the mouth. So there!

Some people homebrew, bake, or cook at home to avoid consuming unnecessary additives. In today's day and age, how can

you be sure of what you are really eating if you don't make it yourself from scratch? Who really knows how to read product labels, and who trusts that what they say is true, when nobody even understands what a Calorie measures?

We know, of course, that a Calorie is a unit of measure for energy, often used to express the nutritional value of foods. It's the heat energy needed to raise the temperature of 1 kilogram of water by 1 degree Celsius. But does this really help anyone?

Still, our overall focus is moving away from Calorie counting and paying more attention to what we put into our bodies. And this does not exclude what we drink, my friends. So, back to beer—for some people, homebrewing is a way to make sure that what they consume has really been brewed cleanly, perhaps following the German Reinheitsgebot, for example. You are what you drink and eat, after all.

In any case, I love to share my homebrews with my friends and neighbors. They are my biggest fans, and I love to get their feedback on my brews and hear what aromas and flavors they perceive. Sometimes their responses surprise me—I never even knew some of those aromas came through!

That said, my fan base is not big. Homebrewers usually share with a fairly small circle of family and friends. I like to compare a homebrewer to an amateur magician. If they were to present the same

magic show every Thanksgiving to their tryptophan-drowsy family, they would receive a snoring concert for their effort, not a standing ovation. A hobby magician needs to change things up, perfect old tricks maybe, but also learn new ones to keep their peeps awake, at least until the pumpkin pie is served.

Do your friends and family a favor and keep learning, keep striving to master that next beer style. Keep educating yourself, of course, but teach your fans as well. Encourage younger generations to put down the hard seltzer and learn to appreciate the endless varieties of beer so they may find one they like! Maybe you teach them about a new, trendy style or a very ancient one, like a rye saison with *Brettanomyces* that dates to the 17th century. Explain what they might be tasting so they don't get put off by that "horse blanket" aroma. And, if you leave a bottle at your neighbor's front door, add a nice label for each beer style you gift. I personally have a very original design (duh, I work in marketing!) where I add some back story about the beer I brewed.

Keep brewing, keep searching for that perfect beer, keep educating, and keep spreading the culture behind good beer. Prost!

**Stefanie Roedenbeck is communications manager for the Americas at Fermentis.**



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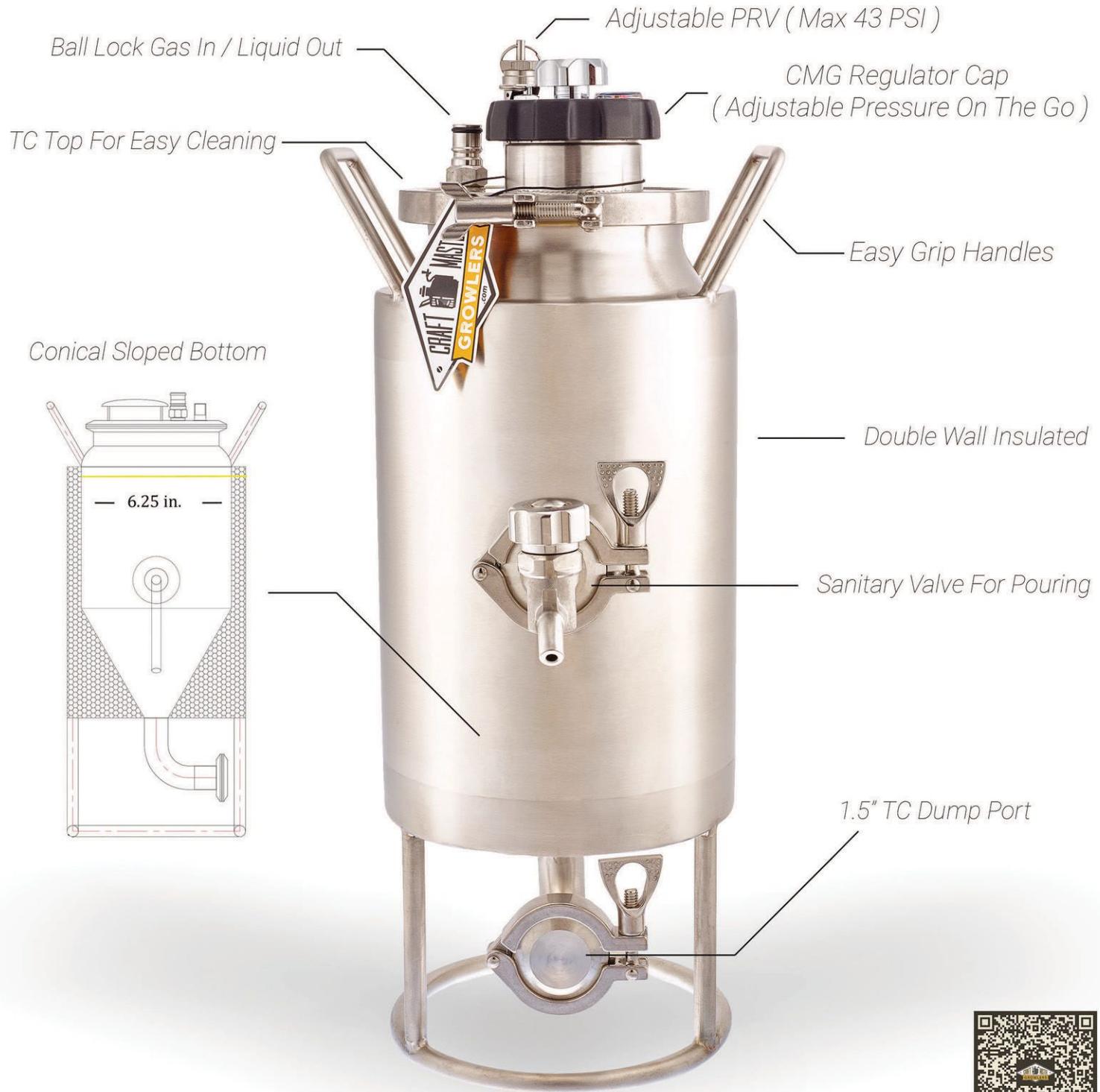
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