

# Brett Beer: Style Profile

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American wild ale is a new specialty style category (category 28) in the 2015 Beer Judge Certification Program (BJCP) Style Guidelines, reflecting its popularity with both homebrewers and craft brewers. While the category has its roots in traditional Belgian wild brews, it originated with experimentation by American craft brewers attempting to produce beers inspired by their Belgian favorites. Brett beer (style 28A) is one of three styles within the American wild ale category, along with mixed-fermentation sour beer and wild specialty beer. Note that Brett is short for *Brettanomyces*, the yeast genus responsible for much of the wild flavor of this class of beers, and is the common name used when referring to them.

As we've seen with other specialty-type beers, Brett beer is a fairly broad style that can encompass many different variations. The first major variation is in how the Brett is used. A Brett beer may use normal brewing yeasts (*Saccharomyces cerevisiae* or *S. pastorianus* – ale or lager yeast) for primary fermentation with a Brett strain used in secondary or at bottling, or it may use a 100% Brett fermentation. The second major variation is in the type of Brett used; a pure Brett species can be used, or a blend of many Brett strains, or a Brett and *Saccharomyces* blend. The final variation is in the underlying beer; it can be a classic style (saison and IPA are two popular examples) or it can be described by its general characteristics (alcohol level, color, bitterness). For competition purposes, Brett beers aged in wood are entered in the wild specialty beer style, and Brett beers using additional yeast or bacteria (*Lactobacillus*, *Pediococcus*, etc.) are entered in the mixed-fermentation sour beer style.

All specialty-type beers need to have a good balance of the special character with the base style, while not being a totally one-dimensional "Brett bomb." The difficulty in understanding this style is that it can be made with virtually any style of beer, fermented in any manner, then finished with one or more strains of Brett; or it can be any style of beer fermented using only Brett.

## Sensory Profile

Brett beers can vary significantly based on the three major choices previously mentioned (Brett in primary or secondary; strains of Brett used; base beer style). Often the brewer's art is best reflected in how these choices are made, such as how the particular aromatics of one strain of Brett meld with a certain base style (such as the dark cherry and plum qualities from *B. lambicus* melded with an amber or dark beer of similar character, such as a Belgian dubbel or an imperial stout).

If any generalizations can be made, it's that Brett beers tend to be drier (more attenuated), lighter-bodied, and fruitier than the base beer style would suggest. Brett beers can have noticeable funky notes (barnyard, horse blanket, wet hay, earthy, etc.) but this character is often lower in 100% Brett beers than in the more common case when Brett is used in a secondary fermentation (as in Orval, for example). Fruity notes can have a huge range, although many fall into the stone fruit, tropical fruit, and citrus fruit families. The strain or blend of Brett is the major driver in the character of Brett, with the fermentation method a close second. See the sidebar "Commercial Brett Strains" at the end of this story for the specific strains available to homebrewers and information about each strain's flavor, aroma and intensity.

Those who are familiar with Belgian lambics and other wild beers probably are familiar with some of the other Brett flavors, such as leather and wood notes, that are often present. Age of the beer plays a role, as younger versions are typically brighter and fruitier, with older versions developing more funk and often losing much of the base style.

An interesting model for discussing the character of Brett is the University of California-Davis (UC-Davis) *Brettanomyces* Aroma Wheel (pictured below). Introduced in 2013 primarily for wine, the wheel also is useful for describing Brett character in beer. It breaks down the types of aromas and flavors into 12 broad families (animal, savory, veggie, fruity, floral, spicy, fermentation, dairy, earthy, woody, putrid, and chemical/solvent) and then provides an additional three to eight descriptors within each family. For example, the animal family includes wet dog, sweaty/sour, urine, fecal, barnyard, and horse.

Re-printed with permission from Lucy Joseph, Department of Viticulture and Enology at UC-Davis. An aroma wheel can be bought with a donation to cover cost through Lucy, [cmjoseph@ucdavis.edu](mailto:cmjoseph@ucdavis.edu).

## Working with Brett

I discussed this topic with some good friends to get a broader perspective. My thanks go to Michael Tonsmeire, author of *American Sour Beers* and BYO's "Advanced Brewing" columnist; Kristen England, Brewmaster at Bent Brewstillery; and Jamil Zainasheff, Chief Heretic at Heretic Brewing Company. All provided helpful contributions for this article.

One main point that both Tonsmeire and England stressed was that Brett does not make beer sour. Brett can produce acetic acid in the presence of oxygen, but Brett does not produce lactic acid. Many people believe that Brett makes sour beers because Brett is often used in mixed fermentation sour beers and traditional Belgian styles such as lambic and gueuze.

Brett makes fruity and funky flavors in these beers, and actually helps clean up undesirable fermentation by-products (such as diacetyl produced by *Pediococcus*), but it does not make acid. Brett works better in a more acidic environment, however.

Tonsmeire mentioned that 100% Brett beers tend to be cleaner and less funky than Brett-finished beers. He mentions that the absence of phenols from a *Saccharomyces* fermentation gives the Brett less substrates to act upon, and thus less complexity is produced. England expanded on this, stating that the funky Brett character is produced more readily in acidic and phenolic environments, so Brett used in the secondary when the pH is around 4.2 is going to produce more character than in the primary when the pH is around 5.2. Primary fermentation yeast that are phenolic off flavor positive (POF+), such as many Belgian yeasts, will also produce a stronger Brett character.

In any event, a relatively acidic environment seems to produce more of the classic funky Brett character, and can be done so without making a sour beer. Simply using lactic acid or acid malt will produce a stable acidity level without the possibility of runaway sourness from *Lactobacillus*. Remember that if the pH of the finished beer is too low (generally below 3.8 to 4.0), the beer will begin to be perceived as sour on the palate.

A characteristic of Brett that makes it an interesting yeast to use is that it will ferment many things that *Saccharomyces* will ignore. Dextrins, which help form body in beer, are one such compound; a Brett beer will seem thinner because dextrins are fermented. Brewers desiring to provide plenty for Brett to ferment will often include more unmalted grains or mash at a higher temperature (this advice applies more to using Brett as a secondary strain). This is in addition to the yeast-related by-products that Brett can transform into esters and other compounds. An interesting side note to the discussion of fermentability is that most commercially-available strains of *B. anomalus* and *B. clausenii* do not ferment lactose<sup>1</sup>, which should be taken into account in recipe formulation.

Formulating a recipe in which to use Brett is wide open. Some of the best known examples start with an IPA or saison recipe, or use a pale Belgian ale. Something in the style of Orval is classic, and recipes abound. One of the better versions I've had in recent years was served at the National Homebrewers Conference in 2015, and was a collaboration between Mike Mraz (Brewmaster, Mraz Brewing Co.), Jamil Zainasheff, and Julian Shrago (Brewmaster, Beachwood BBQ and Brewing). Jamil told me that it had an original gravity (OG) of 1.049, final gravity (FG) of 1.002, and an IBU of 30. It was bittered with Magnum hops, Hallertauer hops were added in the whirlpool, and it was dry hopped with Czech Saaz. The grist was 87% Pilsner 10% spelt, and 3% sugar, and was mashed at 149 °F (65 °C). Wyeast 3711 (French Saison) was used in the primary (70 °F/21 °C pitch with free rise in temperature), and *B. bruxellensis* was added at bottling. I found the beer to be dry, fruity, and just starting to pick up funk.

My visit to Orval showed a beer of similar specs, perhaps a touch stronger and hoppier (6.8% ABV, 35 IBU), but using their house yeast<sup>2</sup> in the primary, and some light crystal malt (CaraVienne type) instead of spelt. I make a stronger version starting at 1.074, which makes it over 9% ABV. I chose *B. Bruxellensis Trois* as the secondary strain, but this was later shown to be a wild *Saccharomyces* strain<sup>3</sup>. Nevertheless, it produces a fruity, leathery, woody character very similar to Brett, which would likely be accepted by judges of this category.

### Homebrew Example

Since my favorite Brett recipe turned out to use a wild *Saccharomyces* strain, I asked Michael Tonsmeire for one of his favorites that used a 100% Brett fermentation. Ironically, his favorites also used that *B. Bruxellensis Trois* yeast (so now you have two recommendations that this makes a great Brett-like beer), but he offered his first all-Brett beer recipe as a reliable and quick example that showcases a fruity Brett character.

The recipe uses *B. clausenii*<sup>4</sup> as the primary fermentation strain; he recommends the White Labs version (WLP645) fermented on the warmer side to produce a great peach character. He ferments this yeast at about 80 °F (27 °C), to produce more character; at cooler temperatures, it's quite mild for Brett.

The base beer is a relatively neutral pale beer using Belgian malts (Pilsner and wheat malt) and noble (Saazer-type) hops. You can substitute Czech Saaz for Sterling, and Hallertauer for Mt. Hood, if desired. I think an interesting variation would be to use fruity New World hops, such as Amarillo and Citra. With the peach-like esters, I think the apricot of Amarillo would be a good combination. I would leave the Pilsner malt alone (although German or French malt could be substituted), and possibly vary the wheat. Maybe try rye malt (Weyerermann makes a good version), or use other unmalted grains instead.

### Footnotes

1 Lee, et al. *Mycotaxon* 23 (1985):275-78

2 This strain has been isolated and is available as White Labs WLP510 (Bastogne) yeast.

3 First available on the market as White Labs WLP644 (*Brettanomyces bruxellensis Trois*), this strain is now available as WLP644 (*Saccharomyces* "bruxellensis" *Trois*). White Labs now also sells WLP648 (*Brettanomyces bruxellensis Trois Vrai*). For the full story visit [www.whitelabs.com/news/wlp644-background](http://www.whitelabs.com/news/wlp644-background).

4 *B. clausenii* and *B. anomalus* are two names for the same yeast species (which is not a *B. Bruxellensis* species), although yeast strains from different yeast suppliers can produce different characters in beer. Check supplier descriptions for specific strains of yeast; choosing a yeast with the same name from a different supplier may not give the same results.

Pure Strain	Source	Flavor/Aroma	Intensity
<u>B. bruxellensis</u>	BSI, WLP, WY, Omega	sweaty, spicy, characteristic 'BRETT'	+++
<u>B. bruxellensis</u> var. <u>Drei</u>	BSI	Williams pear, Squishy fruit (mango, passion fruit, guava)	+++
<u>B. bruxellensis</u> var. <u>Trois Vrai</u>	WLP BSI, WLP, WY, Omega	(similar to <u>drei</u> , but less fruity)	+++
<u>B. lambicus</u>	Omega	horsey, sweet dark cherries	+++
<u>B. claussennii</u>	BSI ECY, WLP, Omega	Mild funk, raw leather	+
<u>B. anomalus</u>	Omega	unripe peach, pineapple, mild funk	++
<u>B. custersianus</u>	ECY	Racy, white peach, hay	+
<u>B. naardenensis</u>	ECY	overripe 'berries', red apple skins	+

### Blends

Where da funk?	Omega	Squishy fruit (mango, passion fruit, guava), pineapple	++
Bit O' Funk	Omega	Light fruit, horse, funk takes time to develop	++
Bring on da funk	Omega	Cornucopia of funk and fruit.	+++
Farmhouse Brett	ECY	Spicy, citrus, lemon, musty	+
Saison/Brettanomyces Blend	YB	Tart, spicy, tangerine, white grapefruit	+++
American Farmhouse Blend	White Labs	Hay, Funk, Horsey, Spicy	+++
Saison-Brett Blend	Wyeast	Squishy fruit, white peaches, nectarines, funk	++
Dirty Dozen	ECY	Barnyard, red apple skins, ripe berries, funk	++

### Legend

BSI	Brewing Science Institute
WLP	White Labs
WY	Wyeast
ECY	East Coast Yeast
YB	The Yeast Bay

Source: Kristen England, personal correspondence

## RECIPE

### Sebastian God Damn

(5 gallons/19 L, all-grain)

OG = 1.049 FG = 1.009

IBU = 22 SRM = 3 ABV = 5.3%

#### Ingredients

8.3 lbs. (3.8 kg) Belgian Pilsner malt

1.7 lbs. (0.77 kg) wheat malt

4.2 AAU US Sterling hops (50 min.) (0.6 oz./17 g at 7% alpha acids)

1.4 AAU US Mt. Hood hops (10 min.) (0.3 oz./9 g at 4.5% alpha acids)

1.4 AAU US Mt. Hood hops (5 min.) (0.3 oz./9 g at 4.5% alpha acids)

2.1 AAU US Sterling hops (5 min.) (0.3 oz./9 g at 7% alpha acids)

0.5 oz (14 g) US Sterling hops (0 min.)

0.5 oz (14 g) US Mt. Hood hops (0 min.)

White Labs WLP645 (*Brettanomyces claussenii*) yeast

3/4 cup corn sugar (if priming)

#### Step by Step

Two or three days before brew day, make a 1-qt. (1-L) yeast starter, aerating the wort thoroughly (preferably with oxygen) before pitching the yeast.

On brew day, mash the malts at 153 °F (67 °C) in 15 quarts. (14 L) of water, and hold this temperature for 60 minutes. Raise to 168 °F (76 °C) for 15 minutes to mashout. Fly sparge with 168 °F (76 °C) water until 6.5 gallons (25 L) of wort is collected.

Boil the wort for 90 minutes, adding the hops at the times indicated in the schedule.

Once the boil is complete, chill to 80 °F (27 °C). Pitch yeast starter and ferment at that temperature until gravity is stable, which should take about 2 to 4 weeks. Fermenting at 80 °F (27 °C) will produce more character; at cooler temperatures, it's quite mild for Brett. Prime and bottle condition, or keg and force carbonate to 2.6 volumes.

### Sebastian God Damn

(5 gallons/19 L, extract only)

OG = 1.049 FG = 1.009

IBU = 22 SRM = 5 ABV = 5.3%

#### Ingredients

3.3 lbs. (1.5 kg) Pilsen liquid malt extract

4.2 AAU US Sterling hops (50 min.) (0.6 oz./17 g at 7% alpha acids)

1.4 AAU US Mt. Hood hops (10 min.) (0.3 oz./9 g at 4.5% alpha acids)

1.4 AAU US Mt. Hood hops (5 min.) (0.3 oz./9 g at 4.5% alpha acids)

2.1 AAU US Sterling hops (5 min.) (0.3 oz./9 g at 7% alpha acids)

0.5 oz (14 g) US Sterling hops (0 min.)

0.5 oz (14 g) US Mt. Hood hops (0 min.)

White Labs WLP645 (*Brettanomyces claussenii*) yeast

3/4 cup corn sugar (if priming)

#### Step by Step

Two or three days before brew day, make a 1-qt. (1-L) yeast starter, aerating the wort thoroughly (preferably with oxygen) before pitching the yeast.

Use 6 gallons (23 L) of water in the brew kettle; heat to 158 °F (70 °C). Add the liquid malt extract and stir thoroughly to dissolve the extract completely. You do not want to feel liquid extract at the bottom of the kettle when stirring with your spoon. Boil the wort for 60 minutes, adding the hops at the times indicated in the recipe.

Chill to 80 °F (27 °C). Pitch yeast starter and ferment at that temperature until gravity is stable, which should take about 2 to 4 weeks. Prime and bottle condition, or keg and force carbonate to 2.6 volumes.