

Beer Education Series: Armored Cow Brewing

About Armored Cow Brewing:

At Armored Cow Brewing Co., we're passionate about great beer and cultivating a family-friendly, welcoming environment. Not only do we have a dedication to creating the best craft beer, but we also strive to offer a place where everyone can drink, and have fun. We have something for everyone from cider, kombucha, and other non-alcoholic beverages and all the wine for the wine lovers out there!! Plus our gluten-free beer is safe for those who have celiac disease since it's brewed with 100% gluten-free grains.

The Beers We Are Sampling:

1. **Hell Yeah!** [Gluten Free East Coast IPA, 6.5%]: We paired buckwheat, millet, and rice with Mosaic and El Dorado hops to create a show stopping gluten free IPA. Its hazy, citrusy, and will you want another? HELL YEAH! No gluten grains & separate equipment.

BJCP Analysis of Hazy Pale Ale:

Aroma: Intense hop aroma, with stone fruit, tropical fruit, citrus, or other fruity qualities; not grassy or herbal. Clean, neutral, grainy, or lightly bready malt in the background; no caramel or toast. Absence of any malt character is a fault. Neutral to fruity fermentation character. Esters from yeast and hops should not clash. A creamy, buttery, or acidic aroma is inappropriate. Light alcohol aroma optional.

Appearance: Color ranging from straw to very light amber, sometimes with an orange hue. Hazy, often opaque, clarity; should not be cloudy or murky. The opacity can add a 'shine' to the beer and make the color seem darker. Any visible floating hop matter, yeast clumps, or other particulates is a fault. Medium to rocky, meringue-like white head with high to very high retention.

Mouthfeel: Medium to medium-full body. Medium carbonation. Smooth. No harshness. Light warmth optional. The beer should not have a creamy or viscous mouthfeel, an acidic twang, or a raw starch texture.

Taste: High to very high fruity hop flavor, same descriptors as aroma. Low to medium malt flavor, same descriptors as aroma. Low to medium-high perceived bitterness, often masked by the fuller body and soft, off-dry to medium finish. The hop character in the aftertaste should not be sharp or harsh. Neutral to fruity fermentation profile, supportive of the hops. Should not be sweet, although high ester levels and lower bitterness may sometimes give that impression. Background alcohol flavor optional.

2. **Bang Bang IPA** [East Coast IPA, 7.3%]: New England style IPA brewed with Citra, Mosaic, El Dorado, and Idaho 7 hops. Lots of flavor and little bitterness. Fruity notes of citrus, mango, tropical fruits, and good weed. 2-row malt, light wheat and lots of oats for that silky smooth mouth feel. Very easy to drink but don't bogart it please.

BJCP Analysis of Hazy Pale Ale:

Aroma: Intense hop aroma, with stone fruit, tropical fruit, citrus, or other fruity qualities; not grassy or herbal. Clean, neutral, grainy, or lightly bready malt in the background; no caramel or toast. Absence of any malt character is a fault. Neutral to fruity fermentation character. Esters from yeast and hops should not clash. A creamy, buttery, or acidic aroma is inappropriate. Light alcohol aroma optional.

Appearance: Color ranging from straw to very light amber, sometimes with an orange hue. Hazy, often opaque, clarity; should not be cloudy or murky. The opacity can add a 'shine' to the beer and make the color seem darker. Any visible floating hop matter, yeast clumps, or other particulates is a fault. Medium to rocky, meringue-like white head with high to very high retention.

Mouthfeel: Medium to medium-full body. Medium carbonation. Smooth. No harshness. Light warmth optional. The beer should not have a creamy or viscous mouthfeel, an acidic twang, or a raw starch texture.

Taste: High to very high fruity hop flavor, same descriptors as aroma. Low to medium malt flavor, same descriptors as aroma. Low to medium-high perceived bitterness, often masked by the fuller body and soft, off-dry to medium finish. The hop character in the aftertaste should not be sharp or harsh. Neutral to fruity fermentation profile, supportive of the hops. Should not be sweet, although high ester levels and lower bitterness may sometimes give that impression. Background alcohol flavor optional.

3. **Interrogating Gingy** [Imperial Porter, 8.3%]: Do you know the Muffin Man? The Muffin Man? THE MUFFIN MAN!! Lord Farquaad interrogated Gingy and we are reaping all of the benefits. For the new 2023 version, we added gingerbread spices to our imperial porter to create the perfect winter holiday beer.

BJCP Analysis of Porter:

Aroma: Medium-light to medium-strong roast aroma, often with a chocolate, light coffee, or lightly burnt character, sometimes with a background caramel or toffee sweetness, or a malty richness. The resinous, earthy, or floral hop character can vary from low to high. Moderate fruity esters optional. Should not seem sharp, acrid, or acidic. The malt-hop balance can vary, but it should always have a roasted malt aroma.

Appearance: Medium brown to very dark brown, often with ruby- or garnet-like highlights. Can approach black in color. Clear, if not opaque. Full, tan-colored head with moderately good head retention.

Mouthfeel: Medium to medium-full body. Moderately low to moderately high carbonation. Stronger versions may have a slight alcohol warmth. May have a slight dark malt astringency, but this character should not be strong.

Taste: Moderately strong roasted flavor, often with a chocolate and lightly burnt character, sometimes with a sweet caramel or malty richness in support. Medium to high bitterness, and a dry to medium-sweet finish. Dark malts may sharpen this impression, but should not add an acrid, burnt, or harsh flavor. Low to high resinous, earthy, or floral hop flavor, which should not clash with the dark malt. Dry-hopped versions may have a fresh hop or resinous flavor. Moderate fruity esters optional. Should not have an acidic bite.

4. Choose 1 WILDCARD for your final Ladies Choice Selection!

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Dropping Some Beer Knowledge:

Malts: Base vs Specialty:

- **Base Malt:** The larger percentage of a grain bill used to make a beer. These malts provide enzymes to convert malt starches into sugars. Provides extra enzymes to convert specialty malts/adjuncts without enough enzymes of their own to convert into sugars. Includes: Pale Malt, Pilsner Malt, Vienna Malt, Munich Malt, Rye Malt, & Wheat Malt. 2-Row vs 6-Row: Differentiates based on the formation of corns on the barley stalk rows.
 - o **Pilsner Malt:** type of pale lager malt made from two-row spring barley that is always highly modified (i.e., good protein degradation) during malting and is kilned to an exceptionally blonde color value of no more than 2.5 to 4 European Brewery Convention (EBC; approx. 1.5° to 2.1° Lovibond).
 - o **Carolina Gold Malt:** local malt bringing beautiful golden color and a delicately balanced, sweet and clean flavor. Kilned to a 2.5°-3.0° Lovibond color.
 - o **Wheat Malt:** a specialty malt with sweet, malty, mild bread dough characteristics, that contribute a light straw color and can be used as a specialty or base malt for wheat beers. Kilned to a 2.5°-3.5° Lovibond color.
- **Specialty Malt:** Smaller percentage of a grain bill used to make a beer. These malts are cracked & steeped to release the sugars and flavor compounds. The color of a beer typically comes more from the Specialty Malts. Includes: Roasted Malts, Chocolate Malt, Crystal/Caramel Malts, Smoked/Peated Malts, Acidulated Hops – **Oils, Acids, and Regions:**
- **Hop Oils:** Main source of flavor and aroma from hops; provide non-bitter tastes/aromas for hops.
 - o **Myrcene:** natural organic compound that is classified as a hydrocarbon. In thyme, bay, parsley, lemongrass, cannabis. Used in the perfume industry.
 - o **Humulene:** named after the scientific name for hops, *Humulus lupulus*, it's an isomer of Caryophyllene. Key part of hops that gives the "hoppy" aroma. It's been found to possess anti-inflammatory properties, and is being studied.
 - o **Caryophyllene:** one of the oils that help to give black pepper its spiciness. Gives a strong dry wood, pepper, earthy flavor, and an herbal character. This compound has been seen to reduce inflammation & been in anti-cancer studies. Used in the perfume industry.
- **Bittering:** During longer boil times hop oils evaporate, so they're added at beginning of boil to impart bitterness.
- **Aroma:** During shorter boil times and dry hopping, hop oils don't evaporate as much, so get the non-bitter aspects of the hops during shorter boil times and/or flameout/dry-hopping additions.
- **Alpha Acid:** Basis of bittering; quick breakdown: Humulone, Cohumulone, Adhumulone, Posthumulone, Prehumulone.
- **Beta Acid:** Slow breakdown: Lupulone, Colupulone, Adlupulone.
- **Noble Hops [original Hops, Central Europe]:** Terranger, Spalt, Hallertauer, Saaz; *Spalt, Styrian Goldings, Perle, Hersbrucker*

Examples of Hops:

- **Mosaic Hops:** Released in 2012 by the Hop Breeding Company, LLC, Mosaic hops feature complex but clean flavor characteristics and are known for their triple-use profile encompassing bittering, flavor and aroma. They have high alpha acids but low cohumulone which makes them pleasantly hoppy, carrying flavors of mango, pine, citrus and herbs and aromas of tropical and stone fruit. Mosaic is the first daughter of Simcoe and Nugget as has been humorously referred to by some as "Citra on steroids".
 - o **Alpha Acid Composition:** 11.5%-13.5%
 - o **Beta Acid Composition:** 3.2%-3.9%
 - o **Co-Humulone Composition:** 24%-26%
 - o **Retains 75% alpha acid after 6 months storage at 20°C (68°F)**
 - o **Myrcene Oil Composition:** 47%-53%
 - o **Humulene Oil Composition:** 13%-16%
 - o **Caryophyllene Oil:** 5%-8%
 - o **Farnesene Oil:** None
 - o **Substitute Hops:** Citra
- **Azacca Hops:** named after the Haitian god of agriculture. It is big in Alpha Acids (14-16%) and has a bright and refreshing aroma with juicy mango, tropical fruits, and citrus. Azacca® is a dual-purpose hop that produces sensational single-hopped beers. Whirlpool after flameout to maximize the juicy flavors and sweet aroma. Aroma: Fresh citrus, lemon, piney, tropical fruit.
- **Idaho 7 Hops:** first hop release from Jackson Farms just outside of Boise. This hop is ripe with zesty tangerine flavor that is reminiscent of marmalade. Its uniqueness shows up as a pleasant herbal character that melds with the citrus to come across like fine earl grey tea. A dual purpose hop capable of carrying a recipe, but it works best in conjunction with Citra or a bittering hop like Warrior. Mainly used as a late addition hop with a distinct tangerine flavor.
- **HBC 586 Hops:** HBC 586 is an experimental hop variety from the [Hop Breeding Company](#), which is a joint venture between John I. Haas and Yakima Chief Ranches. It is the result of a hybrid pollination of the mother YCR 21 and male #01239-2. The aroma of HBC 586 has been described as "a large medley of fruit flavors... Mango, guava, lychee, citrus, with slight sulfur and herbal notes."

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