

Understanding Beer

By Jon Griffin

What is Beer?

Beer in its basic form is an alcoholic beverage made from barley, hops, water and yeast. In fact the Reinheitsgebot German Purity Law adopted in 1516, states “*the only ingredients used for the brewing of beer must be barley, hops, yeast and water*”. This is the oldest provision that protects consumers in the world.

Before and even after that time outside of Germany, many other ingredients were added to beer and some of them were poison. Many of these optional ingredients are still used today in other styles of beer and are called “adjuncts”. Some common adjuncts used are sugar, rice, corn and molasses. Wheat is also technically an adjunct and the Reinheitsgebot has been amended to allow this adjunct.

Ale v Lager

One of the biggest misconceptions about beer is that ale is strong and lager is light. The real definition is that ale is made with a top fermenting yeast and lagers are made with a bottom fermenting yeast. Also, in general, ales are fermented between 64° F and 74° F (17° C – 23° C), whereas lagers are fermented between 45° F and 55° F (7° C – 12° C).

Light v Dark

Another big misconception is that light colored beers are lower in alcohol than dark beers. In fact, the only difference between dark and light color is the type of barley used. Dark beers use dark roasted grains and darker malts and light colors use primarily lightly malted grains.

Some commercial examples will spell this out:

Guinness Stout is very dark and is 3.4% ABW or 4.2% ABV

Westmalle Tripel is a Belgian Golden Ale and is 7.6% ABW or 9.5% ABV

Ingredients

Barley Malt

Barley is the most common source of sugars in beer. To create malted barley you first sprout a kernel to a desired modification (length). Then the rootlets are stripped and it is kilned (dried) to achieve a specific color.

There are two types of barley that are used in brewing, they are two row and six row, which are distinguishable by the number of fertile flowers in the stem.

Two row barley has bigger kernels, which also have less husk as well as lower protein and nitrogen. Beers made with two row tend to be less grainy tasting. Two row also has a higher yield per plant. Six row barley has a higher yield per acre, more husk and also much better

enzyme potential. American brewers traditionally used six row because the higher diastatic (enzyme) power was needed to help with converting the adjuncts used in their beers.

Hops

Wort is very sweet and to counteract that, hops are added. Hops (*Humulus lupulus*) are the “bitter” component and can add many specific characters to a beer. Before hops were used many brewers used whatever bitter herbs and flowers were around. Dandelion, burdock root, marigold and heather were often used prior to the discovery of hops.

Hops also add a preservative aspect to the beer as well. One of the reasons hops were first used in beer was because they were found to have an antibacterial function. Bitterness was a great by-product.

There are many varieties of hops. The “noble” hops are generally used for aroma and are valued for their aromatic properties. These include names like, Saaz, Hallertauer, Tettnanger and Spalt. Other hops are prized for their bittering component. These include, Brewers Gold, Nugget and Galena. Others straddle the fence and are frequently used for both aroma and bittering. These include, Perle, Centennial and Northern Brewer.

Yeast

Yeast is arguably the most important single ingredient to create a beer's character. Beer yeasts generally fall into the ale (*Saccharomyces cerevisiae*) or lager (*Saccharomyces carlsbergensis*) (or the old, *Saccharomyces uvarum*) types.

As you saw above, ale yeasts are called top fermenters and lager yeasts bottom fermenters. This basically is a function of where they like to colonize after they eat. Ale yeast clump together at the top of the fermenting vessel and hang out. Lager yeast are anti-social and just fall to the bottom after they are done eating. All yeast flocculate or drop to the bottom at different rates and the clarity of the beer is directly related to this fact. Some beers, like German Hefeweizen, have yeast that take a long, long time to flocculate, thus imparting the trademark cloudiness.

Yeast can impart many flavors that you would never equate to a single cell organism. Smokiness, pepper, clove, banana and butter are all flavors imparted by certain strains. Taking the German Hefeweizen again, the trademark banana and clove flavor and smell is actually the strain of yeast.

Water

Water makes up almost all of beer. Therefore it makes sense that water can play a big role in a beer's flavor. Some cities are especially noted for how their water contributed to their beers.

Some vital measurements in the water include, hardness, both temporary and permanent, calcium, magnesium, sulfate, bicarbonate and sodium. Bicarbonates neutralize the acids and tannins in dark and roasted malts. Calcium reduces pH, which allows for easier extraction of sugars and starches from the barley. It also helps prevent astringency and helps coagulate proteins. Yeast needs magnesium in a small amount, but if your water has too much, you will get a mineral taste in your beer, which is very harsh. Sodium can help accentuate the sweetness in

small amounts (just like table salt), but can taste salty in higher amounts. Sulfate's (SO_4^{-2}) primary role is accentuating hop bitterness and dry finish. Burton on Trent is very high in sulfate and it is no accident that they are known for Pale Ales, which are quite "hoppy".

For example, Pilsen, Dortmund, Burton on Trent, Edinburgh and Dublin all have water profiles that are famous.

Adjuncts

Cereal Adjuncts are grains other than barley. Some common adjuncts are oatmeal, wheat, corn, rice and nearly all the grains in the world.

Other Adjuncts include sugars, such as molasses, piloncillo, cane and honey, other starches like pumpkin, potato and etc. Almost anything that isn't barley and is used for sugar production is an adjunct, spruce tips, banana and mango all add a unique flavor and sugar to ferment. This is different than spices, herbs and other ingredients only imparted for flavor and not adding any significant amount of fermentable sugar.

Style Cities¹

Einbeck Germany – Known for bock beer, which was created in the Hanseatic League (14th to 17th century). A strong, dark lager in which decoction mashing and long boiling plays an important part of flavor development, as it enhances the caramel and melanoidin flavor aspects of the malt. Any fruitiness is due to Munich and other specialty malts, not yeast-derived esters developed during fermentation.

Commercial Examples are Einbecker Ur-Bock Dunkel, Aass Bock and Great Lakes Rockefeller Bock.

Dusseldorf Germany – Dusseldorf Alt is from here. A well balanced, bitter yet malty, clean, smooth, well-attenuated copper-colored German ale. "Alt" refers to the "old" style of brewing (i.e. making top-fermented ales) that was common before lager brewing became popular. Predates the isolation of bottom fermenting yeast strains, though it approximates many characteristics of lager beers. The best examples can be found in brewpubs in the Altstadt ("old town") section of Düsseldorf.

Commercial Examples do not exist in the USA, but if you are in Germany, Altstadt brewpubs: Zum Uerige, Im Füchschen, Schumacher, Zum Schlüssel, Diebels Alt, Schlösser Alt and Frankenheim Alt.

Koln Germany – Also know as Cologne. Kolsch is king here. Kölsch is an appellation protected by the Kölsch Konvention, and is restricted to the 20 or so breweries in and around Cologne (Köln). The Konvention simply defines the beer as a "light, highly attenuated, hop-accentuated, clear top-fermenting Vollbier."

¹ Much of this information was gratefully stolen from the BJCP Guidelines.

A clean, crisp, delicately balanced beer usually with very subtle fruit flavors and aromas. Subdued maltiness throughout leads to a pleasantly refreshing tang in the finish. To the untrained taster easily mistaken for a light lager, a somewhat subtle pilsner, or perhaps a blonde ale.

Commercial Examples are available in Cologne only: PJ Früh, Hellers, Malzmühle, Paeffgen, Sion, Peters, Dom; import versions available in parts of North America: Reissdorf, Gaffel; US versions: Goose Island Summertime, Crooked River Kölsch, Harpoon Summer Beer and Capitol City Capitol Kölsch

Munich Germany – The city that is known for Helles and Dunkel.

Helles was created in Munich in 1895 at the Spaten brewery by Gabriel Sedlmayr to compete with Pilsner-style beers, and thus is pale in color. Unlike Pilsner but like its cousin, Munich Dunkel, Helles is a malt-accentuated beer that is not overly sweet, but rather focuses on malt flavor with underlying hop bitterness in a supporting role.

Commercial Examples are Hacker-Pschorr Münchner Helles, Paulaner Premium Lager, Spaten Premium Lager, Andechser Hell, Augustiner Lagerbier Hell, Weihenstephaner Original and Stoudt's Gold Lager

Dunkel is characterized by depth and complexity of Munich malt and the accompanying melanoidins. Rich Munich flavors, but not as intense as a bock or as roasted as a schwarzbier. The classic brown lager style of Munich which developed as a darker, malt-accented beer in part because of the moderately carbonate water.

Commercial Examples are Ayinger Albairisch Dunkel, Hacker-Pschorr Alt Munich Dark, Paulaner Alt Münchner Dunkel, Weltenburger Kloster Barock-Dunkel, Penn Dark Lager, Capital Munich Dark, Harpoon Munich-type Dark Beer, Gordon Biersch Dunkels and Dinkel Acker Dark

Dortmund Germany – Known for Dortmunder Export. A style indigenous to the Dortmund industrial region, Dortmunder has been on the decline in Germany in recent years. This is a pale lager known for extraordinary balance between malt and hops.

Brewed to a slightly higher starting gravity than other light lagers, providing a firm malty body and underlying maltiness to complement the sulfate-accentuated hop bitterness. The term “Export” is a beer strength category under German beer tax law, and is not strictly synonymous with the “Dortmunder” style. Beer from other cities or regions can be brewed to Export strength, and labeled as such.

Commercial Examples are DAB Export, Dortmunder Union Export, Dortmunder Kronen, Ayinger Jahrhundert, Great Lakes Dortmunder Gold, Saratoga Lager, Dominion Lager and Gordon Biersch Golden Export

Berlin Germany – A tangy, light wheat ale, Berliner Weiss, is very highly carbonated. A regional specialty of Berlin; referred to by Napoleon's troops in 1809 as "the Champagne of the North" due to its lively and elegant character. Only two traditional breweries still produce the product.

In Germany, it is classified as a *Schankbier* denoting a small beer of starting gravity in the range 7-8°P. Often served with the addition of a shot of sugar syrups ('mit schuss') flavored with raspberry ('himbeer') or woodruff ('waldmeister') or even mixed with Pils to counter the substantial sourness. It has been described by some as the most purely refreshing beer in the world.

Commercial Examples are Schultheiss Berliner Weisse, Berliner Kindl Weisse and Nodding Head Berliner Weisse.

Plzen Czechoslovakia – Also known as Pilsen. Known for Bohemian Pilsner, the original light-colored beer that was first brewed in 1842.

It uses Moravian malted barley and a decoction mash for rich, malt character. Saaz hops and low sulfate, low carbonate water provides a distinctively soft, rounded hop profile. Traditional yeast sometimes can provide a background diacetyl note. Dextrins provide additional body, and diacetyl enhances the perception of a fuller palate.

Commercial Examples – Pilsner Urquell, Budweiser Budvar (Czechvar in the US), Czech Rebel, Staropramen, Gambrinus Pilsner and Dock Street Bohemian Pilsner

Edinburgh Scotland – The colder climate creates very clean, malty flavors in the Scottish Ales and Strong Scotch Ales.

Scottish ales are cleanly malty with a dry finish, perhaps a few esters, and on occasion a faint bit of peaty earthiness (smoke). Most beers finish fairly dry considering their relatively sweet palate, and as such have a different balance than strong Scotch Ales.

Commercial Examples are Orkney Dark Island, Belhaven 80/- (Belhaven Scottish Ale in the US), Belhaven St. Andrews Ale, McEwan's IPA, Caledonian 80/- Export Ale, Broughton Merlin's Ale and Three Floyds Robert the Bruce

Scotch Ales are much stronger, have more peaty, smoky aroma and more caramel.

Commercial Examples are Traquair House Ale, Orkney Skull Splitter, McEwan's Scotch Ale, MacAndrew's Scotch Ale, Belhaven Wee Heavy, Broughton Old Jock, Scotch du Silly, Gordon Highland Scotch Ale and Founders Dirty Bastard.

Burton on Trent England – Known for pale ales and lots of hops. Strong bitters can be seen as a higher-gravity version of best bitters (although not necessarily "more premium" since best bitters are traditionally the brewer's finest product). Since beer is sold by strength in the UK, these beers often have some alcohol flavor, perhaps to let the consumer know they are getting their

due. In England today, “ESB” is a brand unique to Fullers; in America, the name has been co-opted to describe a malty, bitter, reddish, standard-strength (for the US) English-type ale. Hopping can be English or a combination of English and American.

Commercial Examples are Fullers ESB, Adnams Broadside, Shepherd Neame Bishop's Finger, Samuel Smith's Old Brewery Pale Ale, Bass Ale and Whitbread Pale Ale.

London England – This is where porter was developed in 1722 by Ralph Harwood as a way to simplify a blend of beers or gyles known as “Entire”. A precursor to stout, porter is said to have been favored by porters and other physical laborers.

Commercial Examples – (Robust) Anchor Porter, Great Lakes Edmund Fitzgerald Porter, Sierra Nevada Porter. (Brown) Samuel Smith Taddy Porter, Fuller's London Porter.

London is also known for Sweet Stout. Historically known as “Milk” or “Cream” stouts, legally this designation is no longer permitted in England (but is acceptable elsewhere). The “milk” name is derived from the use of lactose, or milk sugar, as a sweetener. : A very dark, sweet, full-bodied, slightly roasty ale. Stout often tastes like sweetened espresso.

Commercial Examples are Mackeson's XXX Stout, Watney's Cream Stout, St. Peter's Cream Stout, Marston's Oyster Stout, Samuel Adams Cream Stout and Left Hand Milk Stout.

Dublin Ireland – Stout was invented here in 1722 by Arthur Guinness at the St. James Gate Brewery. It is also called dry stout to distinguish from the other stouts. This is a very dark, roasty, bitter and creamy ale.

The style evolved from attempts to capitalize on the success of London porters, but originally reflected a fuller, creamier, more "stout" body and strength. When a brewery offered a stout and a porter, the stout was always the stronger beer. It was originally called a “stout porter”. Modern versions are brewed from a lower OG and no longer reflect a higher strength than porters.

Commercial Examples are Guinness Draught Stout (also canned), Murphy's Stout, Beamish Stout, O'Hara's Celtic Stout, Dorothy Goodbody's Wholesome Stout, Orkney Dragonhead Stout, Brooklyn Dry Stout, Old Dominion Stout, Goose Island Dublin Stout and Arbor Brewing Faricy Fest Irish Stout.

Senne Valley, Brussels Belgium – Known for Lambics. These are complex, sour/acidic, pale, wheat-based ale fermented by a variety of Belgian microbiota. Home-brewed and craft-brewed versions are more typically made with pure cultures of yeast. Commonly including *Saccharomyces*, *Brettanomyces*, *Pediococcus* and *Lactobacillus* in an attempt to recreate the effects of the dominant microbiota of Brussels and the surrounding countryside of the Senne River valley. Cultures taken from bottles are sometimes used but there is no simple way of knowing what organisms are still viable.

Straight lambics are single-batch, unblended beers. Since they are unblended, the straight lambic is often a true product of the “house character” of a brewery and will be more variable than a

gueuze. They are generally served young (6 months) and on tap as cheap, easy-drinking beers without any filling carbonation. Younger versions tend to be one-dimensionally sour since a complex Brett character often takes upwards of a year to develop. An enteric character is often indicative of a lambic that is too young. A noticeable vinegary or cidery character is considered a fault by Belgian brewers. Since the wild yeast and bacteria will ferment ALL sugars, they are bottled only when they have completely fermented. Lambic is served uncarbonated, while gueuze is served effervescent.

Commercial Examples are not readily available. The only bottled version readily available is Cantillon Grand Cru Bruocsella of whatever single batch vintage the brewer deems worthy to bottle. De Cam sometimes bottles their very old (5 years) lambic. In and around Brussels there are specialty cafes that often have draught lambics from traditional brewers/blenders such as Boon, De Cam, Cantillon, Drie Fonteinen, Lindemans and Girardin.

Gueuze is traditionally produced by mixing one, two, and three-year old lambic. “Young” lambic contains fermentable sugars while old lambic has the characteristic “wild” taste of the Senne River Valley. A good gueuze is not the most pungent, but possesses a full and tantalizing bouquet, a sharp aroma, and a soft, velvety flavor.

Commercial Examples are Boon Oude Gueuze, Boon Oude Gueuze Mariage Parfait, De Cam Gueuze, De Cam/Drei Fonteinen Millennium Gueuze, Drie Fonteinen Oud Gueuze, Cantillon Gueuze, Hanssens Gueuze, Lindemans Gueuze Cuvée René, Girardin Gueuze (Black Label), Mort Subite (Unfiltered) Gueuze and Oud Beersel Oude Gueuze.

Fruit-based lambics are often produced like gueuze by mixing one, two, and three-year old lambic. “Young” lambic contains fermentable sugars while old lambic has the characteristic “wild” taste of the Senne River Valley. Fruit is commonly added halfway through aging and the yeast and bacteria will ferment all sugars from the fruit. Fruit may also be added to unblended lambic. The most traditional styles of fruit lambics include kriek (cherries), framboise (raspberries) and druivenlambik (muscat grapes).

Please note that overly sweet lambics (e.g., Lindemans or Belle Vue clones) would be better described as belgian specialty beers since these beers do not describe beers with lambic character.

Commercial Examples are Boon Framboise Marriage Parfait, Boon Kriek Marriage Parfait, Boon Oude Kriek, Cantillon Fou’ Foune (apricot), Cantillon Kriek, Cantillon Lou Pepe Kriek, Cantillon Lou Pepe Framboise, Cantillon Rose de Gambrinus, Cantillon St. Lamvinus (merlot grape), Cantillon Vigneronne (Muscat grape), De Cam Oude Kriek, Drie Fonteinen Kriek, Girardin Kriek, Hanssens Oude Kriek and Oud Beersel Kriek.

San Francisco USA – Yes, we do have a famous style city (we also have revived several dead styles i.e. Sierra Nevada Porter). Whether you call it steam beer (which is a trademark) or the more generic California common, it is a true American west coast original style. Large shallow open fermenters (coolships) were traditionally used to compensate for the absence of refrigeration and to take advantage of the cool ambient temperatures in the San Francisco Bay

area. Fermented with lager yeast, but one that was selected to thrive at the cool end of normal ale fermentation temperatures. It derives its name from the vapor clouds of CO² that escaped from the kegs when they were tapped.

Commercial Examples are Anchor Steam, Southampton West Coast Steam Beer, Old Dominion Victory Amber are Flying Dog Old Scratch Amber Lager.

Other Styles

There are obviously many more styles of beer. In fact, home brewers have a much narrower definition than pro brewers in competition. Some beers don't even really fall into categories, as they are unique amongst themselves.

One of the best online resources available to everyone is the Beer Judge Certification Program website. It is at <http://www.bjcp.org/>. Not only is there information on beer styles, there is also information on the entire beer making process.

What do you Like?

You now have an understanding of beers, the ingredients, some classic styles and even a list of some commercial examples. The next phase starts with understanding what you like and don't like. This is an ongoing process, and with experience, you will have some idea of what a new beer you never have had should probably taste like. You also need to know if there are any problems with the beer so you don't judge the style on a flawed example! And don't be afraid to keep a notebook with your notes or use the beer judging sheets from the bjcp.org website.

In Appendix 1 is a copy of the Meilgaard Beer Flavor Wheel, created by Dr. Morton Meilgaard.

Aroma

When you smell a beer, just like smelling a wine, you are searching for the essence of the beverage. Do you smell malts, hops, nothing? Sometimes you may smell something and not really know what it is. Therefore one of the main things you need to develop is relating a smell to a property in the beer.

The initial aroma is where the dominant scent is released when the bottle is opened. This can be malty or bread-like, maybe some citrus or piney hop scents. You will also begin to notice any flaws like paper, green apple, skunk or vinegar.

Next you will get some secondary aromas, swirling the glass can help bring these out. Here you may notice spiciness, floral notes maybe some fruit. These scents are the easiest for a novice to identify.

If you put down the beer (or better yet analyze it for appearance and flavor) and then come back to smell it (again swirl the glass), you will get some lingering scents that may be unusual. Some of these may be candy apple, wet grass, horse blanket, earthiness or nuttiness.

Appearance

Looking at your beer you will gain a new appreciation of this complex beverage. A German Hefeweizen's huge, thick long lasting snow-white head, the absolute clarity of Pilsners and German Lagers. The dark, tan head and ruby highlights on a German Schwarzbier. And how about the "Belgian Lace" that sticks around on a nice Abbey Dubbel.

Taste²

When tasting beer it is important to begin in the right order. First take a slight amount and wet your lips. Yes your lips have receptors, so that your nose will also get another bit of scent. Then sip about 1oz and swirl lightly to make sure all of your taste receptors are coated.

It is always best to start with the lightest, sweetest beers when you are evaluating more than one beer at a session. The reason for this is that alcohol and "hoppiness" (bitter) tend to linger on the palette much longer and also fatigue the taste buds.

Meilgaard categorized beer flavors to include 6 general categories (fullness, mouthfeel, bitter, salt, sweet, and sour), and these 6 categories contain 14 flavors. Again see the wheel in Appendix 1.

Mouthfeel

Mouthfeel is important because it also affects tasting. Meilgaard has a section on the wheel for this (mainly alkalinity and mouth coating), but other factors are included. Take note of the carbonation level, bubble size, how much foam and if there is a bite. These are usually the first things that are noticeable.

Next you will notice the density or fullness of the body, the astringency also called crispness or dryness in the finish. Hoppy beers tend to "dry out" the palette. You will also notice if the beer has slickness on the roof of the mouth (this usually indicates diacetyl).

Flaws³

Firstly these are general flaws. So the lesson is, make sure that it is really a flaw (e.g. in barleywines alcoholic is a part of the style).

Acetaldehyde – This compound has the taste and aroma of fresh-cut green apples, and has also been compared to grass, green leaves and latex paint. *Acceptable in American Lagers, and some Belgian styles.*

Alcoholic – This flavor may be detected as a spicy, vinous character in the aroma and taste and is often accompanied by a warm or prickly mouthfeel. *Acceptable in Barleywines, Bock's and other high alcohol beers.*

² See Appendix 2 for a diagram of the tongues receptors

³ Again, shamelessly stolen from BJCP

Astringent – Puckering, lingering harshness and/or dryness in the finish/aftertaste; harsh graininess.

Diacetyl – Artificial butter, butterscotch, or toffee aroma and flavor. Sometimes perceived as a slickness on the tongue. *Acceptable in some Ales and Bohemian Pils.*

DMS (dimethyl sulfide) – At low levels a sweet, corn-like aroma and flavor. At higher levels it may be perceived as cooked, canned, or rotten vegetables.

Estery – Aroma and/or flavor of any ester. Many are similar to various fruits, fruit flavorings, or roses. At high levels esters take on solvent notes. *Fruity esters are acceptable in some ales, Hefeweizen and Belgian Ales.*

Light-Struck – Similar to the aroma of a skunk. *Not ever acceptable, Heineken and other “Green Bottle” beers not withstanding.*

Metallic – Tinny, coinny, blood-like flavor.

Oxidized/Stale – Any one or combination of winy, cardboard, papery, or sherry-like aromas and flavors.

Phenolic – Any one or combination of medicinal, plastic, smoky, plastic adhesive strip, or clove-like aromas and flavors. *Clove and smoke are acceptable in certain Belgian Ales, Rauch (Smoke) Beers and Hefeweizen.*

Solvent – Aromas and flavors of higher alcohols (fusel alcohols). Similar to acetone or lacquer thinner aromas.

Sour/Acidic – Tartness in aroma and flavor. Can be sharp and clean (lactic acid), vinegar-like (acetic acid), or lemony (citric acid). Sensation experienced mostly on the side of tongue. *Acceptable in Belgian Lambics and Berliner Weiss.*

Sulfur (hydrogen sulfide) – The aroma of rotten eggs or burning matches.

Vegetal – Cooked, canned, or rotten vegetable aroma and flavor.

Appendix 1 - Meilgaard Beer Flavor Wheel

Glossary

Alcohol Content – This is the amount of alcohol in a given liquid. It is measured as ABV or ABW. The formula is:

ABW to ABV multiply ABW by 1.25

ABV to ABW multiply ABV by .8

ABV – Alcohol by Volume.

ABW– Alcohol by Weight.

Adjunct – Any fermentable not derived from malted barley. These include, wheat, rice, corn, sugar cane, flaked barley, oats etc.

Ale – Beer produced with a top fermenting yeast, *Saccharomyces cerevisiae*. Generally they ferment quicker and usually have fruity esters and a more “complex” character than a lager.

Base Malt – These are malts that need to be mashed and aren’t toasted. They also provide almost all of the sugar. Examples include, Pilsner Malt, Pale Malt, Munich and Vienna.

Belgian Beers – Typically an ale, but Belgian beers have significant taste profiles, as well as different brewing processes to warrant a separate style. Generally, the yeast is a major contributor to this style, and some styles such as Lambic actually use bacteria as well.

Fermentation – The anaerobic conversion of sugar to carbon dioxide and alcohol by yeast.

FG – Final Gravity or Ending Specific Gravity, when the yeast have done all the sugar conversion they are able to do.

Gravity – The amount of sugar in a solution. Also measured in Brix.

Hops - A twining vine (*Humulus lupulus*) used for bitterness and preservative power.

IBU - International Bittering Units; parts per million of isomerized hop resins in beer, related to the amount of alpha acid of the hops.

Lager – Beer produced with a bottom fermenting yeast, *Saccharomyces carlsbergensis* or the old *Saccharomyces uvarum*. These beers are known for their clean and mellow flavor profiles.

Lagering – Lagering is literally cold conditioning.

Lambic – Lambics are Belgian style beers that use several wild bacteria as well as a special yeast of the *Brettanomyces* genus. This makes a sour beer, but different than other sour styles such as Berliner Weiss, by the use of bacteria.

Light Struck – See Skunky

Malting – Steeping, germination and kilning of grains.

Mashing – The process of converting starch to sugar.

OG – Original Gravity or Starting Specific Gravity, refers to the amount of sugar in a wort. A higher number is denser and has more potential alcohol.

Pilsner - A pale lager with strong flavor of hops; first brewed in the Bohemian town of Plzen (Pilsen).

Proof – This refers to ABV and is double the ABV (i.e. 10% ABV = 20 proof).

Roast – Technically malting and roasting are the same, but in normal usage, roasted malts are dark malts such as Chocolate and Black Patent. These are dried to 5% moisture and then kilned at high temperatures until the desired degree of “roast” is achieved.

Skunky – Ah, that Heineken smell. This is actually a fairly significant flaw. It is caused by the interaction between ultraviolet light and hops. Specifically, when ultraviolet light cleaves an isohumulone molecule. This forms a free radical that combines with a sulfur compound. Almost all beer in green or clear glass bottles are subject to this, although darker beers seem less affected. Also note that Miller Brewing uses a form of stable hop essences and the beer they bottle in clear bottles is not affected either.

Specialty Malts – This is any malt that isn't a base malt, but many people refer to the caramel or crystal malts as specialty.

SRM – This is a standard for measuring beer color in the USA. In Europe, EBC is used. In both cases the lighter the color the lower the number.

Wort – The liquid that is produced after the brewer does his magic with the barley. This is beer before the yeast does it's thing, but since there is no alcohol, it is not technically beer yet.

Yeast - Any of various unicellular fungi of the genus *Saccharomyces*, especially *S. cerevisiae*, reproducing by budding and from ascospores and capable of fermenting carbohydrates.