

# BICEP Class 1

## The BJCP, How to Judge, Troubleshooting (Cheesy, Oxidation, Serving Temperature), Light Lagers and Pilsners

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### Key to Abbreviations and Text

**Bolded Text** (except for headers) is important information which you should know for the exam.

*Italic Text* is “just for fun” and won’t be covered on any of the exams.

\* This material might appear on the Online Qualifier Exam.

† This material might appear on the Tasting Exam.

‡ This material will be (or might be) tested on the Written Proficiency Exam.

## Part 1: The BJCP

This section summarizes information found on pp. 5-15 of the BJCP Beer Exam Study Guide, as well as information found in the BJCP Judging Procedures Manual and the BJCP First Time Judging Packet.

### A. The Three Purposes of the BJCP\*

The BJCP has three purposes (according to the mission statement at the top of its web page):

1. **Promote Beer Literacy.**
2. **Promote the Appreciation of Real Beer.**
3. **Recognize Beer Tasting & Evaluation skills.**

**Mnemonic:** “ProPeR Beer Literates Appreciate Real Beer and Beer Tasting and Evaluation Skills.” Where “ProPeR” is an acronym for “Promote, Promote and Recognize.” To remember it better, say it aloud in the snobbiest voice you can manage.

**Alternate Mnemonic:** “PaPeR LATE” = “Promote, Promote, Recognize” + “Literacy, Appreciation, Tasting and Evaluation skills.” Just don’t forget the “beer” and “real beer” parts of the answer!

### B. The BJCP Exams

In 2012, the BJCP switched from a single combined written and tasting exam to a three-tiered exam system.

**1. Online Qualifier Exam:** This is a pass/fail online exam. It takes 1 hour and consists of 200 multiple choice, single answer, multiple choice, multiple answer and short answer questions. It costs \$10 per attempt, with 24 hours of waiting required between attempts. It is accessed from the CourseWebs web site:

<https://secure.coursewebs.com/bjcp/Default.aspx>

A free 20 question exam, where you have 6 minutes to complete the test is available from the same web site. Details on how to set up both exams are available here:

[http://www.bjcp.org/docs/BJCP\\_Entrance\\_Exam.pdf](http://www.bjcp.org/docs/BJCP_Entrance_Exam.pdf)

As of 2013, all new BJCP judges must pass this exam. Judges who have passed the old “legacy” exam do not have to take this exam in order to retake either of the other exams.

**Warning:** Once you take and pass this exam, you have a year to take the tasting exam; otherwise you must retake the qualifier exam. Get a confirmed seat for a tasting exam first and THEN pass the qualifier.

**2. Tasting Exam:** This is the exam that most people think of as being THE BJCP exam. It consists of writing scoresheets for a flight of 6 beers, served over a period of 90 minutes. Your scoresheets are graded based on their Scoring Accuracy, Perceptions, Descriptive Ability, Feedback and Completeness, as compared to the scoresheets written by the exam proctors, and the grading standards set by the BJCP.

If you are a new judge, your score on this test determines the maximum judge level you can achieve within the BJCP. If you have taken the written proficiency exam, your tasting exam score makes up 50% of your total score.

**3. Written Proficiency Exam:** This is an advanced exam designed for experienced judges who are attempting to achieve the top judging levels in the BJCP structure. **To qualify to take it, you must have gotten a score of 80% or better on the tasting exam and you must have at least 10 experience points.** It consists of 20 T/F questions which subtract points from your score if you miss them and 5 essay questions. You must answer all the questions within 90 minutes. Your score on the Written Proficiency exam counts as 50% of your overall exam score, along with your score on the tasting exam.

### C. BJCP Experience Points\*‡

To keep track of how much experience individual judges have, and what level they are qualified to achieve, the BJCP assigns experience points based on judging activity.

Experience points are divided into **Judging Experience Points** and **Non-Judging Experience Points**. Some activities also carry **Grand Master Service Requirement (GMSR)** points.

**1. Judging Experience Points:** Gained for actually judging beer, mead or cider. They can be earned by judging (at the rate of 0.5 point per flight), sitting on a Best of Show panel (0.5 point) or serving as an exam proctor (1 point). Judges earn a minimum of 1 judging point per competition, and can earn a maximum of 1.5 judging points per day.

**2. Non-Judging Experience Points:** Gained for stewarding (0.5 points per day - maximum 1 point per competition), organizing or attending continuing education events (variable), organizing exams (2 points) or competitions (variable, depending on the number of entries), or assisting at competitions (variable).

**Grand Master Service Requirement Points:** Gained for service to the BJCP, either sitting on committees, serving as an officer, working on special projects or grading exams. GMSR points convert to Non-Judging Experience Points at a 5:1 ratio (i.e., 0.2 Non-Judging Experience Points per 1 GMSR).

Grand Master Service Points are only required to achieve the various Grand Master judge levels.

## D. BJCP Judging Levels\*‡

The “ranks” of judges within the BJCP are as follows:

**Apprentice:** Someone who has passed the online qualifier exam, but failed to score at least 60 percent on the Tasting Exam. *This not a permanent rank. Apprentice judges have two years to retake and pass the tasting exam or else they must retake both the online qualifier and Tasting exams.*

**Recognized:** Someone who has passed the online qualifier exam and passed the tasting exam with a score of 60 or better (or gotten at least a combined score of 70 on the Legacy exam), but who doesn’t have the experience points to advance to a higher level if qualified to do so. *This is the “entry level” for most judges. About 30% of active judges are at this level.*

**Certified:** Someone who has passed the online qualifier exam and passed the tasting exam with a score of 70 or better (or gotten at least a combined score of 70 on the Legacy exam), and who has earned at least 5 experience points, including at least 2.5 judging experience points. *This is maximum level that most judges attain; about 45% of all active judges are at this level.*

**National:** Someone who has passed the online qualifier exam and passed the tasting exam with a score of 80 or better and passed the Written Proficiency exam with a high enough score that the combined written and tasting scores average to at least 80 (or gotten at least a combined score of 80 on the Legacy exam), and who has earned at least 20 experience points, including at least 10 judging experience points. *National level judges are the most common “upper level” judge rank and represent about 13% of all active judges. National judges are sometimes picked to judge Best of Show and are qualified to both grade or proctor the BJCP exams.*

**Master:** Someone who has passed the online qualifier exam and passed the tasting exam with a score of 90 or better and

passed the Written Proficiency exam with a high enough score that the combined written and tasting scores average to at least 90 (or gotten at least a combined score of 90 on the Legacy exam), and who has earned at least 40 experience points, including at least 20 judging experience points. *Master judges are the rarest “upper level” judge rank and represent about 0.5% of all active judges. Master judges are often picked to judge Best of Show and are qualified to both grade or proctor the BJCP exams. If they are active in the BJCP, they usually quickly become Grand Master judges, hence their rarity.*

**Grand Master I:** The same testing requirements as for Master, but with at least 100 experience points, 50 of which must be judging points. A grading and service requirement for the BJCP must also be fulfilled; rules for the Grand Master Service Requirement can be found at: <http://www.bjcp.org/gmsr.php>. *Various ranks of Grand Master represent about 1% of all active judges.*

**Grand Master - Additional Levels (II, III, IV, etc.):** Additional Grand Master levels can be earned in 100 experience point increments with additional grading and service requirements following the rules for the Grand Master Service Requirement. *Currently, the highest Grand Master level is Grand Master VII, held by Gordon Strong.*

**Other BJCP Titles:** In addition to actual judge levels, there are also two honorary “ranks.” **These are not actual judge levels, although they are prestigious.** (It’s similar to the difference between an honorary doctorate and an actual Ph.D.)

**Honorary Master:** *“Temporarily bestowed on judges who serve as operatives of the program (Regional Director, Exam Director, Program Administrator, etc.) at their discretion for the duration of their service if they have not already earned at least the Master rank. The rank may also be awarded, in special cases, to judges who have demonstrated Master judge proficiency but who have not necessarily taken the exam. This status is determined by the BJCP Board of Directors.”*

**Honorary Grand Master:** *“Created in 2005, this is a permanent rank bestowed upon individuals by the BJCP Board of Directors for extraordinarily long and meritorious service involving significant, meaningful and continuous work for the BJCP program. Individuals receiving this rank are authorized to wear and use the Grand Master pin and rank.”*

**Other BJCP Judge Terms: These are not actual judge levels. Don’t confuse them!**

**Provisional Judge:** *This term is used to describe someone who has passed the online qualifier exam, but who hasn’t yet taken the tasting exam, or whose score on the tasting exam is pending.*

**Novice:** *This term was formerly used to describe someone who hadn’t taken the BJCP exam but who judged in competitions. It is no longer used.*

**Mnemonic: A Real Chance Not Many Get = Apprentice, Recognized, Certified, National, Master, Grand Master (just don't forget that there are different levels of Grand Master!)**

## E. Judging Protocols\*‡

Like any other governing body, the BJCP has its own rules and conventions. Judging rules and regulations are found in the BJCP Beer Exam Study Guide and the BJCP Judging Procedures Manual and are always phrased as True/False questions. You might be tested on a few judging protocols on the online qualifier exam. You will be extensively tested on them if you take the written proficiency exam - and will have points subtracted from your score if you miss any of them! The full list of questions is on p. 28 of the Beer Exam Study Guide.

Most of these questions can be answered using common sense, but there are a few quirks.

► **The judging rules are mostly common sense, common courtesy and fairness.** When in doubt follow The Golden Rule: "Do unto others as you would have them do unto you," or, "Would I want someone to do this to me?"

\* **Be polite:** To anyone involved in the competition and to the entrants whose beers you're judging. If practical, higher-ranked judges should use judging as a chance to teach stewards and lower-ranked judges on the flight.

\* **Cooperate with other judges:** Get within 7 points (or less) of the other judges during "consensus judging." The head judge can't overrule the scores of other judges on the flight. If you can't get within 7 points, all the judges on the flight must agree to call in another judge as a "mediator."

\* **Provide the highest quality feedback you can and be willing to stand by it:** Fill out score sheets quickly (10-15 minutes or less per entry). Fill out score sheets completely. Provide helpful, polite feedback, regardless of the beer's score. Don't make blanket statements; instead phrase your comment as a question. Put your name, rank and email address on each score sheet. Judge each entry from a small sample, don't drink to excess.

\* **Protect your sense of smell and taste before and during judging:** No greasy or spicy food, smoking, decongestants, strong cologne or perfume or unpleasant body odor either before or during judging. Don't judge unless you're fit to do so. You may remove foul-smelling entries from the table after they've been judged.

\* **Don't interfere with others' ability to judge:** Don't talk loudly, talk to judges judging other flights, make rude comments about the beers you're judging or pollute the air in the judging room with strong smells.

\* **Give each entry as much of a chance as possible:** Judges can't disqualify entries. Taste every entry, no matter how it looks or smells. Smell the beer immediately after it's poured to catch delicate volatile compounds. Retaste the beer as it warms to determine how it "develops." Judge each beer according to the

style guidelines. Make sure you taste the beer at the right temperature. If the beer is badly flawed, request a second bottle. Judge just one beer at a time, finish judging each entry before you move on to the next one.

\* **The head judge for a flight is responsible** for the paperwork and other decisions affecting the steward and the order in which the flight is tasted. If practical, stewards may sample beer with judges.

\* **Protect the anonymity of entries.**

\* **Avoid conflicts of interest:** Don't judge your own beers. Don't influence other judges judging your beer.

\* **Non-BJCP ranked judges serve at the whim of the competition director and should be paired with a BJCP-ranked judge.**

\* **The minimum conventional courtesy score is 13** no matter how foul the beer (*Mnemonic: "unlucky 13"*).

## Part 2: How to Judge†

Beer judging is a learned skill like anything else. There's a lot to learn, it mostly boils down to these 7 rules.

### 1. Protect Your Senses

► Don't eat hot, spicy or garlic-heavy foods before you judge. (Preferably 24 hours, more reasonably at least 2 hours.)

► Don't wear cologne, perfume or other scents.

► Don't wear lipstick or lip balm - it can interfere with your sense of taste and it will kill the beer's head.

► Take breaks as needed to refresh your sense of smell and taste, especially when judging strong or hoppy beers.

► Drink water and perhaps chew in a cracker or some bread between beers.

► Sniff something neutral-scented (e.g., your sleeve) to refresh your sense of smell.

► Judge the beer using small (1-2 oz.) samples so you don't get intoxicated - it can interfere with your senses of smell and taste and it will certainly impair your judgment!

► If you smoke, go far enough outside that smoke doesn't waft back into the judging area.

### 2. Be Polite

► **Always be polite and objective when discussing a beer or giving feedback.** Be considerate of the brewer's feelings - even the beer you're judging or writing about is seriously flawed. After all, someone went to a lot of trouble to give you free beer! When you discuss the beer, discuss it as if the brewer was in the room - s/he might be judging at the next table!

► When writing scoresheets, give the sort of descriptions and feedback you'd want to receive yourself - fair, complete and useful. The more information you can provide, the better,

► When you're done, don't bother people who are still judging - go elsewhere if you want to talk.

### 3. Be Fair

► **Don't judge beer in a category you've entered.** If you're accidentally assigned to judge a category in which you have entries, tell the judge director so he can assign you to judge another category.

► **Don't Guess.** Review the appropriate section of the guidelines before you start judging the flight and consult them as you judge. If you don't know how to describe something, or if you have a question, ask another judge.

► If you get a bad bottle of beer, ask the stewards to bring out the second bottle. (But sample it sparingly and recap it immediately after your pour it, just in case it wins and has to go on to mini-Best of Show or Best of Show.)

► If you think that a beer has been entered in the wrong category, tell the judge director. He will be able to find out if your suspicions are correct.

► Even if you think you know who brewed a particular beer, remain neutral - don't let your opinions of the brewer influence your perceptions, scoring or feedback.

► If you can't reach a consensus with the other judges on a beer's merits, agree to disagree and move on, or call in the judge director to resolve disputes.

### 4. Learn How to Smell and Taste

► First, sniff the beer using just your nose. Notice any fleeting aromas. Then hold the glass so that you can inhale the beer's aroma through both your mouth and nose, so you get the aroma into the back of your mouth and high into your nasal passages.

► Sip the beer so that just a bit gets on your tongue. Note any initial taste sensations. Take another sip and swirl it around in your mouth. Let it sit in your mouth for a couple of seconds and swallow. Note mouthfeel and any flavors that develop as the beer warms in your mouth.

► Let the flavor linger in your mouth for a few seconds before you take another sip. Notice any lingering flavors or aftertaste.

► Practice using your sense of smell and taste when you're not judging beer. Savor your food. Stop and smell the flowers. Try to analyze tastes and smells you can't identify. Imagine different smell and taste combinations. Eventually, you'll find yourself recalling certain aromas and flavors when you judge beer, which will improve both your perceptions and your descriptions.

### 5. Write a Good Scoresheet

► Your description gives the brewer a "snapshot" of what the beer was like on the day of the competition, how well it hit the style guidelines, whether there were flaws, and how good it was. If you do a good job describing the beer, an experienced brewer can use the information to improve his recipe or brewing technique.

► **Don't rush.** Take the time you need to do a good job. Fill out the scoresheet completely. Try to write neatly.

► **JUST DESCRIBE THE BEER YOU'RE DRINKING.** Describe the beer first, and then decide whether it's to style or if it's got problems. Don't assume that some characteristic is, or isn't, present just because the guidelines say so.

► There are 21 "sensory descriptors" listed on the scoresheet. You should try to mention them all. This means that you should write a minimum of 21 words describing each beer you judge. Remember, "malt" includes base malt and possibly specialty malts, and hops have both bitterness and flavor in the flavor.

► Mention the most important aspects of the beer first.

► Don't forget to mention the important things that *aren't* there. For example, an IPA without bittering hops isn't much of an IPA!

► Notice how the beer changes as you drink it. Does the head fall quickly? Does haze clear as the beer warms? Do aromas fade out after just a few moments or after a few minutes? Do aromas and flavors develop or fade as the beer stands or warms?

► Use the list of common beer descriptors on the scoresheet as an aid to memory, but don't assume that every beer will have every descriptor listed, even if it's badly flawed. Most defective beers just have one or two things wrong with them. Note that the descriptors aren't necessarily faults! Smooth alcoholic notes in strong beers are often good, as are fruity esters in ales. *Remember, the sensory descriptor keywords won't be on the exam scoresheets, you'll need to learn to identify and describe them!*

► **Don't be afraid to make corrections.** The beer might change as it warms or as it lingers in your mouth. Discussion with the other judges might make you realize that your initial perceptions were incorrect.

### 6. Give Good Feedback

► Briefly state whether you enjoyed or didn't enjoy drinking the beer, and how much. A single word like, "Good" or "OK" is fine.

► If the beer isn't "to style" briefly say so. If it is to style, scoring and feedback will tell the brewer as much.

► *Politely address the beer's faults.* Mention the most serious problems first.

► Try to give at least two points of feedback on how to improve the beer. For an amazing beer, one point of general feedback might be all that's needed, since there's not much the brewer can do to improve it.

► The more detailed the feedback, the better. If you're familiar with how the style should be brewed, share brewing tips. For example, instead of "More hops" write, "Add 5-10 IBU for firmer hop bitter" or "Add 1 oz. for 5 gallons of assertive

citrusy hop (e.g., Amarillo) 15-20 min. before flameout to get proper hop flavor.”

► Don’t assume that you know how the beer was made. It could be extract or all-grain. It might or might not be dry hopped. In such cases, qualify your feedback. E.g., “If you mash or steep your grains filter your runoff to keep grain particles from getting into the wort boil.”

► Don’t assume that you know how old the beer is. It could be a decade old but in great condition. It could be a month old but in terrible shape. In such cases, discuss specific faults and qualify your feedback. E.g., “Dark fruit, soy sauce and sherry notes indicate extreme oxidation - either lots of age or severe process faults.”

► Saying what style the beer really is also good feedback. E.g., “Dark amber color, moderate hop bitterness and relatively chewy body make this beer much more like American amber ale.”

► Work with the other judges to give multiple points of feedback, especially when dealing with a badly flawed beer. For example, one judge might address lack of sanitation, while the other writes about ingredient problems.

## 7. Give an Appropriate Score

► Judge according to the style guidelines. Even if you don’t like a particular style of beer, you can still tell if it’s well made and to style. Likewise, even if you love a beer, you can’t give it a high score if it’s not to style.

► *Don’t rely on memory.* Read the relevant section of the style guidelines before you start judging. Refer to the guidelines, and your description of the beer, as necessary when giving feedback and assigning a score.

► *Adjust your score* with the other judges so that everyone’s scores are within 7 points of each other. Ideally, you should be even closer than that, at 3-4 points.

► *Don’t sweat the exact score* unless you think a beer is a potential winner. Focus more on the correct “scoring band” than the exact score.

► *Be flexible.* If another judge has a score much higher or lower than your own, you might be missing something. Reevaluate your perceptions first, and then defend your score.

► *Don’t be afraid to hold your ground.* Even as a new judge you bring your own perspective to the judging table. If you’re certain that a particular beer has a fault that the other judges aren’t getting, say so.

## Scoring Ranges

Note that these ranges vary a bit from the scoring ranges given on the Beer Scoresheet, but are more typical of the scoring ranges that experienced judges use.

**13: Minimum courtesy score;** the BJCP version of the Mercy Rule. Only assign this score for beers that are truly

undrinkable. (Even then, be polite and try to describe the beer as best you can.)

**14-19: Very Bad Beer:** Multiple or extremely serious flaws. Very hard to drink. Most really bad beers fall into this range.

**20-25: Bad Beer:** One moderate flaw or several minor flaws. Hard to drink *OR* out of style with minor flaws.

**26-29: Average Beer:** Minor flaw or several trivial flaws. Drinkable, but not great *OR* great but out of style.

**30-34: Good beer.** Good homebrew or run-of-the-mill commercial brews. Possibly good enough to get a 2<sup>nd</sup> or 3<sup>rd</sup> place finish in small field on a good day.

**35-39: Great beer.** The sort of beer you’d want to buy. Well-made craft beer. Typical homebrew competition winner. Typical Best of Show contender.

**40-45: Amazing beer.** A world class beer, worth a special trip. Medal contender in big competitions with lots of entries. Typical Best of Show winner.

**46-49: Best of the best.** A beer worth planning a vacation to get. Most beer judges can go for years without assigning a score in this range.

**50: God’s Own Beer.** A beer that’s truly faultless and rocks your world when you taste it. Most beer judges never assign a 50, even if they’ve been judging for decades.

## Part 3: Troubleshooting - Cheesy, Oxidation and Serving Temperature††

As you begin to taste beer critically, you should be aware that not all commercial beer is sold at the peak of freshness, nor is it always made with the best ingredients. To a greater or lesser extent, homebrew suffers from the same faults as commercial beer.

**A. Oxidation:** Back in the 1980s, Sam Adams nearly got sued by Heineken when they ran an ad featuring the Statue of Liberty and the caption, “When They Said Give Us Your Tired and Your Poor, They Didn’t Mean Your Beer.” Thirty years later, that sentiment is just as true as ever. Too many ignorant or unscrupulous beer merchants will sell old, badly damaged beer - especially imported beer - as if it were brewery fresh. Ignorant or careless homebrewers can also incorporate oxygen into their beer with disastrous effects.

While oxidation is typically described as being “cardboard” or “paper-like” it is actually much more complex. The phases of “beer death” due to oxidation are roughly as follows:

**1. Dullness:** Hops and esters fade out. This can happen in just a few days or weeks for delicately flavored or highly hopped beers which are stored incorrectly. Chemically, this occurs because oxygen binds to esters turning them into higher alcohols, and converts highly volatile chemicals into less volatile ones.

**2. Staleness:** Malt seems dull and vaguely rancid due to increased fatty acids. This is particularly evident in light-colored (amber or lighter) malt-focused beers.

**3. Nuttiness.** Amber or darker beers can pick up nutty or marzipan-like notes due to reactions between melanoidins in the malt and oxygen.

**4. “Catty” Notes:** Hops smell like cat urine, tomato plants, black currant leaves or “oxidized beer” due to interactions between hop compounds and oxygen. This is common in hoppier beers.

**5. Papery Notes:** The beer has a distinct aroma reminiscent of cardboard. At low levels, the aroma can be reminiscent of “ball-point pen,” or seem inky, musty, peppery or prickly. Less commonly, it is perceived as smelling like cucumbers, fat, honey, “library,” “old people,” orris root, soy sauce or stale bread crumbs. In dark beers it might be detected as “tomato juice” notes. Chemically, papery notes occur when lipids (fats) naturally found in malt oxidize. This effect is very distinct in badly-handled delicately-flavored, light-colored beers.

**Causes and Controls for Oxidation:** In all cases, there is no cure for oxidation, only prevention. The solution is to store beer cold (at freezing or near-freezing temperatures) and to avoid picking up oxygen at all phases of the brewing and conditioning process except yeast aeration (because the yeast scavenges the free oxygen).

Hot Side Aeration during mashing and sparging is a particular problem for homebrewers, since oxygen can bind to various products in the wort so it isn’t boiled off during the wort boil and only comes out later, during storage.

For commercial beer stored at room temperature, the industry standard rule of thumb is that it will be completely oxidized after just 100 days, with oxidation first appearing in a few weeks and significant oxidation occurring after about six weeks. High temperatures, such as storage in hot warehouses, will rapidly accelerate oxidation, with significant oxidation occurring in just a couple of days at temperatures of 120 °F.

The solution is insist on buying only fresh, cold-stored beer and to keep your stock of commercial beer cold.

**Benefits of Oxidation:** In a few cases, however, oxidation due to prolonged storage can be a good thing. This happy event only occurs when the beer is a) At or above 6% ABV, b) is Amber or darker in color, and c) has been in storage for a while (at least a few months). In these instances, reactions between alcohol, oxygen and malt melanoidins result in two desirable products of oxidation: Sherry and Dark Fruit Esters.

These notes are desirable in aged strong dark and amber beers, such as Russian Imperial Stouts, Old Ales, or English Barleywines.

**B. Cheesy:** Cheesiness is a cousin to oxidation. It comes from using old or improperly stored hops. The aroma and flavor of “cheesy” hops is quite distinct and is reminiscent of blue or Rochefort cheese. At higher levels it can seem rancid, goaty, putrid or sweaty (reminiscent of stinky feet or dirty laundry). Chemically, cheesiness occurs when alpha acids in hops react with oxygen to produce isovaleric acid.

Similar processes produce Grassy notes, which are sometimes described as fresh leaves, grass clippings, hay or sagebrush. Grassiness can occur when fresh, undried hops are used in beer, or when compounds in hops are oxidized in the presence of alcohol.

**C. Serving Temperature:** Have you ever wondered why many cheaply-made light lagers are served at near-freezing temperatures? Serving beer at extremely cold temperatures, as opposed to letting it warm up to serving temperature (approximately 40 °F for light-colored lagers, 45 °F for most craft beer, and 50-55 °F for darker, full-flavored beers) disguises off flavors and aromas.

Colder temperatures affect a beer’s aroma in several important ways. First, the cold temperature allows the beer to hold more carbon dioxide, so that the beer doesn’t out-gas as much when poured, meaning that it forms a smaller head and fewer aroma compounds are carried out of the beer by the escaping carbon dioxide bubbles.

Secondly, naturally volatile aroma compounds in the beer don’t escape as easily. This both helps to mask undesirable sulfury compounds (as a rule of thumb, if it stinks, it’s probably a sulfur compound) and more desirable alcohols, esters and phenols.

Thirdly, extremely cold temperatures tend to numb the mouth and tongue and slow chemical reactions, making your sense of smell and taste less sensitive to subtle notes in the beer. The cold sensations will also make the beer seem lighter-bodied, drier and crisper than it otherwise would be.

By contrast, extremely warm temperatures will drive off carbon dioxide and volatile compounds more quickly, making the beer seem flatter, fuller-bodied and sweeter than it would otherwise.

**Causes and Controls for Serving Temperature:** While beer should be stored cold, it shouldn’t be served cold. When judging beer, make sure that the beer is brought up to proper serving temperatures before you start tasting it.

As the beer sample warms towards room temperature, pay attention to any aromas and flavors which evolve. Cupping the glass in your hands while inhaling deeply is one way to warm the beer and evaluate the aromatics. Another way is to do this is to hold a sip of the beer in your mouth to let it warm and then suck a bit of air into your nose while your mouth is still closed. In both cases, subtle flavors and aromas will sometimes pop right out.

On the other hand, care must be taken to not let a beer get too warm, especially if it must go on to “mini-Best of Show.” Immediately after you pour a sample from a bottle of beer entered in competition, recap it as best you can and put it back into the refrigerator or cooler. This helps to preserve the beer’s carbonation and aromatics.

## Part 4: Light Lagers (BJCP Category 1) AKA The Triumph of the Swill\*†‡

*Light lager is the culmination of a centuries-long trend towards lighter-colored, lighter-flavored beers. Just as brown beers were prized over dark beers in the 17<sup>th</sup> and 18<sup>th</sup> centuries, and amber-colored beers were preferred to brown beers in the early 19<sup>th</sup> century, by the late 19<sup>th</sup> century, golden beers were preferred to amber and by the middle of the 20<sup>th</sup> century, the vast majority of beer sold around the world was straw or pale-gold colored. By the end of the century, some industrial breweries were actually trying to market colorless beer!*

Most homebrewers, and many craft brewers, look down on light lagers, precisely because we seek more flavorful, more unusual beers. To beer aficionados, light lager is the Rodney Dangerfield of beer styles - it gets no respect. It's easy to take cheap shots at light lager (like the heading of this section) just because it is so ubiquitous. Instead, it should be considered the "bikini of beers" - because there's almost nothing there, it shows everything you've got. And, like wearing a very revealing outfit, not everyone can do it successfully. For this reason, some advanced homebrewers brew batches of American light lagers just to prove their technical skill. It is a tremendous challenge to get a good balance of malt and hops in a beer which is light in color, taste and body.

**History:** *Light Lagers only became technically feasible in the middle of the 19<sup>th</sup> century, when inexpensive pale malt was first developed, but they were only created in the late 19<sup>th</sup> century, once maltsters could reliably produce pale malt, and once brewers had modern equipment and a full understanding of the biochemistry of the brewing process.*

*The first light lager to be brewed was Munich Helles, which was invented in Munich in 1895 at the Spaten Brewery by Gabriel Sedlmayer III (the nephew of the original Gabriel Sedlmayer) to compete with Pilsner-style beers. This style was so successful that it spawned imitators both in Munich and in other cities such as Dortmund.*

*The Dortmund style, popular in the rapidly industrializing Ruhr valley, was brewed a bit stronger so that it would last longer when exported outside the city limits. Stronger and maltier than Munich Pils, the style was once popular among German coal miners, steelworkers and factory workers in the area. Like other European beers which were once popular with the working classes, Dortmunder has lost much of its popularity in recent years and is a rare style in its home country.*

*In the U.S., German immigrant brewers imitated the Munich Helles style as well, often adapting local ingredients, such as 6-row malt, rice and corn, as they did when brewing Classic American Pilsner. Such beers were probably more like an all-malt Pre-Prohibition lager, however, rather than a modern industrial light lager. The rise of "macro" "industrial" or "international" Light Lager is directly related to American military might and worldwide cultural dominance. In turn, light*

*lager's rise to U.S. dominance is the result of three events in 20<sup>th</sup> century U.S. history – Prohibition, the Great Depression and World War II.*

*After almost 15 years of Prohibition, the American public had lost its taste for beer, and was more familiar with soft drinks and hard liquor. At the same time, due to the exigencies of the Depression, people couldn't afford expensive beer, which meant that brewers had to brew beer with less malt and hops and more adjuncts in order to keep prices down.*

*Finally, during World War II, the traditional beer-drinking demographic, young men, were conscripted into the military, where their opportunities to buy alcohol were restricted, to say the least. And, while the men were away, the women who replaced them in the work force were making good money due to wartime labor shortages. This meant that U.S. brewers had to cater to women's tastes, which tended towards lighter-bodied, lighter-flavored, less alcoholic beers. At the same time, brewers were also shipping beer to troops overseas. Canned light lager traveled well and it was the only type of beer many American troops got during the war.*

*When they returned home, many ex-G.I.s retained their taste for the sort of beer they'd gotten in the service, and the trend towards lighter and less flavorful brew continued. By the 1950s, breweries were competing to make their beer as pale and light-flavored as possible. In the 1950s, a brewer for Rheingold Breweries, named Joseph Owades, developed a process of using enzymes to break down carbohydrates in the mash, making the finished beer less calorific. The idea was that the beer would appeal to women, who had told repeatedly told marketers that they didn't drink beer because they didn't want to get fat. To the public's credit this new product, called Gablinger's Diet Beer, failed miserably.*

*Thinking the idea dead, Owades shared his enzyme process with a brewing chemist at Meister Brau, and when Miller Brewing Co. bought out Meister Brau, they got the light beer brewing process as well. The rest, unfortunately, is history. In 1975, Miller inflicted Miller Lite on the nation, using incessant marketing by big-name athletes and the slogan "Tastes Great, Less Filling" to convince male sports fans that not only was the beer good for them (because it was "Lite"), but they could also drink more of it (because it was "less filling").*

*Since then Miller, Budweiser, Coors, Molson and their ilk have made Lite American Lager and Standard American Lager the most popular beer styles in the world, prompting European brewers to create their own light-colored beer styles in self-defense. In some cases this has been good (as in the case of American Wheat Beers, Belgian Blonde Ales and Belgian Strong Golden Ales), but the overall trend from the 1960s to the 1990s was discouraging for craft beer drinkers. Mercifully, in the new millennium the craft beer movement seems to be gaining momentum, prompting the big brewers to dabble in the craft*

*beer market and in some cases to even reformulate their beer recipes to make them tastier.*

**A Note About the BJCP Style Names:** *Although the BJCP Style Guidelines refer to Light American Lager, Standard American Lager, and Premium American Lager, and these styles did originate in the United States, these styles are now brewed worldwide and it would be more accurate to call them “Industrial lager” or “International lager.” Arguably, American-style light lagers brewed overseas are a different style, deserving of their own category, since they are brewed using less corn and more rice and barley, making them taste better than their North American counterparts.*

**Brewing Light Lagers:** Light Lagers are made using the palest possible malt. Unfortunately, caramelization makes it very difficult to brew a light lager using extracts, so light lagers usually demand all-grain technique. It is possible to significantly lighten the color and flavor of a beer by brewing a concentrated batch of beer (7-9% ABV or so) and then diluting it to 4-6% ABV at packaging. This technique is widely used by industrial brewers, since it is more efficient to brew concentrated beer and then add water at the last moment.

German light lagers are brewed using pale lager or pilsner malt and noble hops, using traditional German lager yeasts and lagering techniques. American and international light lagers use some percentage of rice and/or corn, with the percentage of corn to rice and adjunct grains to malt increasing as the quality of the beer goes down. Rice is considered to be a premium ingredient since it doesn't produce the distinctive, sweet and DMS (dimethyl sulfate notes) that corn does. Some tropical versions substitute glucose or similar sugars for some or all of the corn or rice.

Industrial light lagers are typically flavored with hop extracts, which allows them to be packaged in green or clear bottles without becoming light-struck, since the hop oil fractions which are responsible for the light-struck phenomenon aren't present in the extracts used.

The base hops used for the hop extracts are typically, but not always, high alpha acid “dual use” hops, although some brewers use extracts made from aroma hops.

Yeast is American lager yeast. Each major brewery has its own strain, but these are readily available from various sources. Charlie Papazian brewed for years using a yeast strain obtained from Anheuser-Busch!

Historically, a cereal mash was used, but flaked maize or rice (or similar material, such as corn grits) can be added directly to the mash.

**Brewing Lite Beer:** Lite beer is brewed either by giving the mash a very long beta-glucanase rest to break down amylopectins, allowing them to be converted into fermentable starches, or by adding amylopectinase directly to the mash, or even to the fermenting beer. Homebrewers have reported some success adding amylase enzyme or products such as Beano®

(which contains raffinose – which breaks down amylopectins) to the primary fermenter.

Both of these techniques convert unfermentable starches into fermentable sugars, producing a thin-bodied higher-alcohol beer. The problem, however, is that these enzymes work slowly, providing a constant food source for the yeast. The result is that the beer ferments constantly and the beer never clears. Even the alcohol level eventually kills the yeast, the enzyme activity can still add sugars to the beer, resulting in a thin and sugary brew.

If you bottle your beer at the proper strength for a Lite Lager, the alcohol level is low enough that the yeast is still able to feed on the sugars released by the enzymes, making it impossible to bottle the beer without the danger of exploding bottles. If you use either of these products, you must pasteurize your beer to stop yeast and enzyme activity once the fermenting wort reaches the desired level of body and alcohol.

Cold pasteurizing will stop yeast activity, but it won't stop enzyme activity, so the beer can become too sweet if stored for long periods of time.

## Part 5: Pilsners\*†‡

**History:** *Pilsner beer was invented in 1842 by Joseph Groll at the Plzensky Prozdroj Brewery in Pilsen, Bohemia. (Today the brewery is called Pilsner Urquell, the town's name is spelled Plzen, and Bohemia is part of the Czech Republic.) This crisp, clear, golden beer was so revolutionary that clear stem glasses were developed just to show off its clarity and color (although this process was aided by a burgeoning Czech glass industry).*

*German brewers were quick to capitalize on the new trend and Pilsner-style beers soon dominated German markets. In turn, German immigrants introduced Pilsner-style beer to the American market. In both Germany and the U.S. brewers adapted the original recipe to use locally-available hops, grains and brewing techniques, creating variants of the original Bohemian style. For better or worse, Pilsners are the ancestors of today's Light Lagers.*

*The direct ancestor of American-style light lagers is a virtually extinct style called Classic American Pilsner (CAP). It was derived from Bohemian and German Pilsners in the late 19<sup>th</sup> century by immigrants to the United States, but adapted to use locally-available grains and hop varieties. From the 1870s to 1900s, Classic American Pilsner was very popular among America's large population of recent German and East European immigrants.*

*All the big American beer companies were once were small, local American Pilsner breweries. American Pilsner was the original “King of Beers,” the beer that really swept the competition at the 1904 St. Louis World's Fair, and the beverage that truly “Made Milwaukee Famous.” Sadly, today there are no “classic” examples of this style.*



**Ingredients:** Bohemian Pilsner is made using pale Moravian pilsner malt, Saaz aroma and flavor hops and extremely soft water with very low concentrations of dissolved ions, especially bicarbonate and sulfur. (Granite bedrock predominates around Plzen, so the local water has minimal levels of dissolved minerals. Similar water can be found in mountainous areas of the U.S.)

Saaz hops provide a slightly “spicy” hop flavor and aroma, while the soft water limits mineral harshness. Historically pilsners required elaborate decoction mashes due to under-modified malts and insufficient calcium levels.

German Pilsners are made using German or Belgian pilsner malt, but German “noble” hops (e.g., Spalt, Tettnanger, Hallertau, Hallertauer Mittlefrüh) can be substituted for Saaz. Water is still soft, but can have higher levels of dissolved minerals. Brewed using decoction mash, but mashing techniques not as elaborate as for Bohemian Pilsners due to higher local calcium levels.

Unlike continental pilsners, American Pilsner is made using 20-30% rice or corn and 70-80% 6-row pale malt (historically higher in protein than 2-row varieties, but good at converting non-fermentable starches to fermentable sugars). Hops are either Cluster (the oldest known U.S. hop cultivar) or American-grown German or Czech noble hops. Strong-flavored modern American hops such as Cascade should not be used, although modern developments of traditional hop varieties (e.g. Willamette) are acceptable. As with other Pilsners, soft water with relatively low mineral content is needed. Cereal or mixed mashing is necessary due to the use of 6-row malt and high level of adjuncts.

*There are actually four distinct variants of American Pilsners: Eastern vs. Western and Pre-Prohibition vs. Post-Prohibition. Eastern versions use corn. Western versions partially or completely replace corn with rice, since it was historically available on the West Coast. (American macro lagers are a development of Western style American Pilsners.) Pre-Prohibition recipes have a slightly higher O.G., hopping levels and ABV than Post-Prohibition recipes. Post-Prohibition recipes reflect ingredient shortages, public demand for lighter beers, and the fact that America was in a Depression (weaker beer is cheaper to brew and can be sold for less).*

**Lager, Pilsner, What’s the Difference?:** Stylistically, a lager is a light-bodied, mild-flavored beer. Light lager is the most popular beer style worldwide.

Light Lager (BJCP Style 1) is straw-colored, light-bodied and sometimes light-flavored. Pilsners are golden-colored and have a bit more body and flavor while retaining the “crispness” of light lagers. European Amber Lagers (BJCP Style 3) are amber or copper-colored, with maltier flavor and aroma.

In the technical sense, lager is any beer fermented at 40-50° F (4-10° C) using “bottom fermenting” yeast (*Saccharomyces Cerevesia* var. *Uvarum*) and then lagered (stored) for a period

ranging from 3 weeks to 6 months at a temperature between 35-40° F (2-10° C). The cool fermentation and storage temperatures produce “clean,” “crisp” flavors while inhibiting bacterial infection and oxidation.