Beer Styles Study Material for BJCP Written Exam

This material was put together by me while studying for my own written exam. Note that some of my answers are much longer than they have to be. If time permits I will go back and give an appropriate size answer based on the last example in this document which is a German Pilsner recipe from the sheets of a judge who scored an 84. Notice the word count on his brewing procedure + explain the beer(70% of the score) is only 175 words where some of mine are clocking 500-600 words. I found his after I started writing mine and will target about 200-250 words in explanations moving forward. They need to be a little larger than his 175 because the graders only really criticized him on needing a little more.

Recipes use Gorilla math. Not for actual use in real life but seem like they’ll keep me in the ball park for this exercise. Really not comfortable with my current bitterness calculations compared to wort but haven’t been able to find any better quick math yet. I’m not one to memorize formulas well. I just need something I can memorize about 12 of so that I can get about an 80 on this thing.

75% utilization

5 gallons, 5.5 final volume in boil.

1.1 point gravity for 2 pounds of grain

1 point gravity for 1 pound of raw sugar

IBU in Tinseth

7 gallon pre-boil, 5.5 to fermenter.

1 ounce of 10% AA hops at 60 = 30-32IBUs in 1.05 wort

1 ounce of 10% AA hops at 60 = 29-22IBUS in 1.08 wort

<http://www.twobeerdudes.com/beer/srm>

<http://www.brewersfriend.com/brewing-water-target-profiles/>

<http://howtobrew.com/book/section-3/understanding-the-mash-ph/reading-a-water-report>

# German Pils Example From Actual BJCP Written Exam: Scored an 84

I tried typing it almost word for word to illustrate partial sentences or thought breaks that appear acceptable to graders.

German Pils – All-Grain Recipe

SG: 1.050

FG: 1.010

IBU: 50

SRM: 5

5 Gallon Batch Size

10 lbs German Pislner Malt(I Like Weyerman ☺) – 1.8 Lovibond

2oz tetnang @ 60 Min

1oz Tetnang @ 15 Min

1 oz Tetnang @ Flame out

German Lager Yeast Pitched @ 1.5 Million Cells / ml /degrees Plato or about a 3 Liter starter.

Fairly Soft water adjusted to

750 ppm calcium

< 20 ppm Magnesium

< 20 ppm Na

About 50 ppm Sulfate

< 20 ppm chloride

That has been carbon filtered or treated with Cambden tablet to remove impurities and chlorine or chloramine.

Mashed w/ 1.5 q/lb of water at 163F for a 150F single infusion mash for 90 minutes and, if possible, raised to 168F for 10 minutes to mashout.

Run off about 7 gallons via spargin and boil for 60 minutes with a 1.25 gallon per hour boil off rate.

After boil, cool to 48 F and pitchyeast letting it rise to 50F over 48 hours. Hold at 50F for 3 weeks and if diacetyl is detected do diacetyl rest by raising temperature to 60F for 3 days.

Rack to clean lagering vessel and lower 2F a day to 32F and hold for 6 weeks.

Rack to serving vessel and force carb to 2.5 volumes which is 13PSI at 40F or bottle condition with about 120 grams of corn sugar.

Beer should showcase German pilsner malt (grainy, malty, sweet) and German Noble Hops(Herbal, Floral, Earthy) with a very clean fermentation profile that is further cleaned up by solid lagering(4+ weeks)

**Grader Feedback: Overall:** Good looking recipe with a fairly good chance of turning out like a tasty German pilsner. Note that 50IBU target is slightly out of style and make sure to give AA% of your hops and preferably a utilization or how you are calculating IBU. Also, while Tetnang is a good choice, considering the other information in your recipe. the AA%(not provided) it would take to create 50 IBU is a little higher than normal for this hop varietal. Very good discussion of your brewing procedures, but be sure to detail the “why” - what the procedures bring to the beer – As well as a little more of the A/A/F/M

Provide a complete ALL-GRAIN recipe for a <STYLE\*>, listing ingredients and their quantities, procedure, and carbonation. Give volume, as well as original and final gravities. Explain how the recipe fits the style’s characteristics for aroma, flavor, appearance, mouthfeel, and other significant aspects of the style.

|  |  |
| --- | --- |
| 10% | Target statistics (starting specific gravity, final specific gravity, and bitterness in IBUs or HBUs) and color (as SRM or a textual description of the color). |
| 20% | Batch size, ingredients (grist, hops, water, and yeast) and their quantities. |
| 35% | Mashing, boil, fermentation, packaging, and other relevant brewing procedures. |
| 35% | Explain how the recipe fits the style’s characteristics for aroma, appearance, flavor, mouthfeel, and other significant aspects of the style; and describe how the ingredients and processes used impact this style. |

# Belgian Tripel

## Target Statistics:

OG 1.080 (1.075-1.085)

FG 1.012

ABV: 9%

SRM: 5

IBU: 20 tinseth

Deep Yellow to Bright Gold in Color

2.4 volumes

## Batch Quantities:

5 gallon calculation at around 70% efficiency

12lbs Best or Weyermann Pilsen Malt. Or another authentic continental brand.

1 lb Cane Sugar(added at end of boil)

1 lb Belgian Aromatic malt

Single Infusion Mash to reach 150-152F.

1oz 10%AA German Magnum at 60minutes.

Belgian Yeast Strain. Trappist or Abbey yeast from Wyeast/White Labs. 500/530

Water treated to acquire:

* 75ppm Calcium
* 10ppm Magnesium (don’t add any it will come from grain.)
* 30 ppm Sodium
* 100 ppm chlorides
* 50ppm sulfate
* 0 bicarbonate
* PH of 5.2-5.6 by use of common brewing acids
* Treat with campden tablet if necessary for city water.

Perform a 90 minute single infusion mash at 150 F. I choose 150F because Tripel should be quite dry and I like to stay on the high end of the Beta Amylase temperature range. Then perform a 20 minute mash out step at 169F. This step will stop starch conversions which should be complete at this time. Recirculate & sparge the wort(step or batch) to draw off the appropriate 6 gallon pre-gallon boil volume. After you’ve lautered the appropriate amount you are done with the mash.

Boil for 90 minutes. Due to the use of Pilsen malt we boil for 90 minutes to reduce any of the precursors to DMS. Bring it to a boil quickly to encourage a vigorous hot break to encourage clarity. Add magnum hops at appropriate time. Add whirfloc if desired to clarify. Cool quickly to encourage cold break. Transfer in to fermenter leaving as much break material behind as possible. Cool down to 65F and pitch your yeasts. Allow to ferment for 3 days at this temperature then raise temperature slowly around a degree per day until you reach 75F. Beer should ferment out at this temp. I suggest fining with gelatin a week after fermentation has complete. Chill and then transfer to keg or bottle. If bottling make sure you use appropriate amount of priming sugar to attain the 3-4 volumes of CO2. You probably will need bottles which can handle the higher carbonation of Belgians. Consult local homebrew shop for those.

This beer should be quite bright, quite clear, and brilliantly gold. It should be lively with CO2 and a pronounced spicy Belgian yeast spice aroma with light herbal and lemony hop aroma from the noble hops. A lovely Pilsen maltiness with honey notes. Flavor should be a pilsner and Belgian spice showcase with notes of honey, lemon and herbal. Carbonation should dance and enhance the aromas and the crispness of this beer. A light and refreshing mouthfeel that ends crisp, dry and refreshing.

# Doppelbock

## Target Statistics:

OG 1.090 (1.072 – 1.112)

FG 1.020

ABV: 9.5%

IBU: 20

SRM: 15

Deep Amber with Ruby red highlights.

CO2: 2.5 volumes

## Batch Quantities:

5 Gallons at about 75% brew house efficiency.

Use German maltsters if available for the following 3.(Best or Weyermann)

8lbs Pilsner Malt

4lb Vienna Malt

4lbs Munich 10L Malt.

1 / 4 Lb of English Crystal 60.

1 / 8 Lb of English Crystal 80.

1 ounce 10%AA Magnum at 90 minutes for about 22-25 IBUs. Boil for total of 90 minutes.

Water treated to acquire:

* 100 ppm Calcium
* 10 ppm Magnesium (don’t add any it will come from grain.)
* 10 ppm Sodium
* 10 ppm chlorides
* 20 ppm sulfate
* 320 biCarbonate
* PH of 5.2-5.6 by use of common brewing acids
* Treat with campden tablet if necessary for city water.

For this style I prefer a single infusion mash at around 155-156F to help promote a bigger body beer but still promote enough beta amylase as to not make the beer cloyingly sweet. I typically hold this for about 75 minutes to ensure complete conversion. I then perform a mash out to 169F to promote the ease of lautering and increase efficiency on this bigger beer. This step is 15 minutes. At this point slowly perform your lautering process to move the wort in to the boil kettle. Boil this beer for 90 minutes to drive off any precursors to DMS which may come from the pilsner malt. Don’t forget to add hops when the boil starts.

Ferment with WLP837 Bock Yeast or other German Yeast. (make an appropriate starter) 55F for 5 days or slowing activity. Raise temperature to 60-65F for one week. Check gravity. If still too high go for 3 days. I prefer this raised temperature method because in my experience it reduces the chance of an incomplete fermentation. Slowly cool down to 40F and lager for 4-8weeks.

If you bottle do so with the amount of priming sugar necessary to get 2.5 volumes. You probably will want to add new yeast post lagering to ensure carbonation. If kegging then transfer and keg to 2.5 volumes. I prefer this beer after a year or more of aging which tends to bring out the malt aroma and subtle dark fruit flavors. So even if I keg I typically move it to bottles for aging.

Aroma will be bready/toasty with notes of chocolate and low dark fruit aroma. Color will be a deep ruby color, quite clear and beautiful with a low white head due to alcohol. This beer should have a nice medium but firm mouth feel and great drinkability. Flavor is a smooth bready and toasty maltiness with melanoidin chocolate like flavor. Just enough bitterness to support the malt showcase but with pretty much no hop flavor. It’ll develop the low dark fruit character especially after a year and a few months. Won gold at Dixie with this recipe.

# American Porter

## Target Statistics:

OG: 1.065

FG: 1.016

IBUS: 30

SRM: 25 Tin

Co2: 2.25 volumes

Very dark brown with amber/ruby highlights on edges.

## Batch Quantities:

5 Gallons at about 75% efficiency

10lbs American Pale Malt

1.5lbs White Wheat Malt

0.75lb American Crystal 80

.3 lbs American Chocolate Malt

.3 lbs English Chocolate Malt

.75 lb black patent

English Ale Yeast WLP002

1.5-ounce Northern Brewer 90 minutes 8.5%AA

0.25 Cascade at 15 minutes

0.25 Tettnanger at 5 minutes

Water treated to acquire:

* 100 ppm Calcium
* 10 ppm Magnesium (don’t add any it will come from grain.)
* 20 ppm Sodium
* 50 ppm chlorides
* 50 ppm sulfate
* 300 biCarbonate
* PH of 5.2-5.6 by use of common brewing acids
* Treat with campden tablet if necessary for city water.

Prepare brewing water for a single infusion mash targeting 155F for a 60 minute mash. Lauter off the appropriate pre-boil volume and boil for 90 minutes. Add hop additions as necessary. Cool rapidly, transfer to fermentation vessel and ferment at 70F until terminal gravity is reached.

Transfer in to bottling bucket and apply priming sugar if bottling. If kegging transfer in to a keg. For either be sure you perform calculations to reach 2.25 volumes of CO2. This may seem higher than traditional English porters but Americans don’t seem to appreciate low CO2 beers.

The beer recipe should appear a dark brown with some red highlights. Aroma should be burnt, caramel coffee with notes of citrus and floral character of the American variety. The different chocolate malts and patent should produce a rich mixture of burnt and dark chocolate flavors. The Crystal 80 will give dark caramel flavors with hints of dark fruits. It’ll also give you the reddish highlights that look nice in a porter. Carapils, wheat and mash temperature will lend a well-rounded, smooth, medium full mouthfeel which is enjoyable in a porter. Light roasted grain astringency may be present. Finish will be dry to medium sweet. Probably not sweet as the brown/robust porters you’ve had due to American beers being a little more hoppy and a little less sweet in the finish in general. English yeast is used so we don’t get too much on the dry end of the spectrum and the light ester notes are pleasant compliments to the burnt/roast flavors.

# Irish Stout

## Target Statistics:

OG: 1.042

FG: 1.010

IBUS: 28

SRM 30

Should be black.

CO2: 2 volumes

## Batch Quantities:

5 Gallons at about 75% efficiency.

5 lbs maris Otter

1 lb roasted malt

1 lb flaked barley

.5 lb english chocolate malt

.25 lb English crystal 20

2 ounces 5% EKG at 60

Irish Ale yeast WLP004

Water treated to acquire:

* 100 ppm Calcium
* 10 ppm Magnesium (don’t add any it will come from grain.)
* 20 ppm Sodium
* 50 ppm chlorides
* 50 ppm sulfate
* 300 biCarbonate
* PH of 5.2-5.6 by use of common brewing acids
* Treat with campden tablet if necessary for city water.

Perform a single infusion mash at about 155F. This beer should not be bone dry but it should not be too sweet. The effect of dryness is enhanced by the roast malt so we don’t need it to finish too dry and become acrid. Mash for about an hour, begin your lautering process by performing a vorlauf step until the wort runs very clear. Perform either batch or continuous sparge until you’ve run off about 6 gallons of pre-boil volume.

Bring wort to a rapid boil as quick as possible. Boil for one hour adding the hops at the appropriate time. After you’ve boiled for your hour, quickly cool the beer down as quickly as you can. I use an immersion chiller and a recirculating pump to whirlpool the beer around the chiller and make it cool quicker. Rapid boiling to get a healthy hot break and rapid cooling to promote a healthy cold break improves overall clarity.

Transfer beer in to a sanitized fermentation vessel. Pitch yeast at around 65-72F but never over 80F. If you need to let it cool in a room or freezer for a little extra time(6ish hours) that’s ok also as long as it’s sealed up to prevent bacteria from getting in. Once you pitch yeast, aerate the beer with Oxygen by shaking vigorously or using an oxygen stone.

Beer will ferment for 5-7 days. It is complete when there is no more airlock activity and the yeast appears to have settled. Take a sample using a wine thief and check the gravity to see if it’s about done fermenting. If you feel it needs to ferment a couple more days, then you can do that and take another sample. If nothing has changed its time to transfer the beer to a keg or bottling bucket for packaging.

Whether using a keg or bottles make sure they are well sanitized. Transfer the beer to them being careful not to splash it around and introduce oxygen. If using bottles and a bottling bucket be sure to add appropriate priming sugar in the bottling bucket. Target CO2 volumes of around 2 for this beer.

This beer should appear very dark and pretty much black/opaque. When poured a nice off white head should form and persist. Aroma should be clean and not overly sweet but should be very apparent of coffee, acrid and somewhat burnt notes. Chocolate and light caramel. Flavor should be clean with apparent acrid sensations and roast. Like a dark roast coffee with a supporting cast of bready, toasty type flavors with caramel and chocolate. These flavors should not be heavy and should only support the roast. Bitterness is firm but should not clash or create a biting effect with the roast. Hop aroma is low. Mouthfeel is medium but never heavy. It should be an overall refreshing yet roast beer.

# Märzen

## Target Statistics:

OG 1.055

FG: 1.012

ABV: 5.75%

IBUs : 25 tinseth

SRM 7

Deep Golden in color

CO2: 2.5 volumes

## Batch Quantities:

5.0 Gallons at about 75% efficiency

Pilsner 5 lbs

Munich 5 lbs

1.5 ounce hallertauer mittelfrueh 4%AA at 60

0.5 ounce hallertauer mittelfrueh 4%AA at 10

Water treated to acquire:

* 50 ppm Calcium
* 20 ppm Magnesium (don’t add any it will come from grain.)
* 10 ppm Sodium
* 80 ppm chlorides
* 50 ppm sulfate
* 30 Bicarbonate
* PH of 5.2-5.6 by use of common brewing acids
* Treat with campden tablet if necessary for city water.

To mash for this beer I like a 3 step mashing process over 90 minutes. The first step being a protein rest at 125 for 20 minutes to promote a good head retention. Next raise the temperature to 152F for 60 minutes. Mash out at 168F for 10 minutes If you are capable you may want to do a decoction but it’s not necessary.

Perform your lautering process using a continuous sparge to draw off 5.5 gallons of wort. Bring to a boil quickly to promote a healthy hot break. And boil 90 minutes rigorously and add your hop additions. Cool rapidly to promote a healthy cold break. Transfer the beer, leaving as much break material and hop material behind, in to a sanitized fermentation vessel. Cool the wort down to pitching temperature before adding the yeast. Add the yeast a few degrees below the pitch temperature if possible and bring up to fermentation temperature. Ferment for 2 weeks at 50F. Sample for gravity. If necessary ferment another week. If diaceytl detected perform a 3 day rest at 60F.

Transfer to serving vessel. Either carbonating in bottle with appropriate corn sugar or transferring to keg and force carbonating.

Marzen is a showcase of fine German munich, Vienna and Pilsen malts. It’s malt forward and delicately balanced by just enough bitterness to support the fine bready, toasty character of this festival season German brew. This will be a a deep golden amber as opposed to the lighter Festbier that is served during modern Oktoberfest. The Hallertau adds a lovely background of delicate floral hoppiness to compliment the maltiness which is the focus of this beer. The mouthfeel should be medium but should finish dry and very smooth lingering of rich maltiness.

# American IPA

## Target Statistics:

OG: 1.07

FG: 1.014 6.5%

IBUS: 55

SRM: 9

Deep gold to Pale Amber in color

CO2: 2.5 Volumes

## Batch Quantities:

5 Gallons at 75% efficiency

13lbs American 2 Row

1 / 2 lb Crystal 20 American

1 / 4 lb English Crystal 60

1.5 ounces 10% AA magnum at 90 minutes boil.

2 ounces centennial 10%AA at 10.

2 ounces Simcoe at flame out

2 ounces of Mosaic dry hop

WLP 001 American yeast or Safale 05

Water treated to acquire:

* 100 ppm Calcium
* 5 ppm Magnesium (don’t add any it will come from grain.)
* 10 ppm Sodium
* 50 ppm chlorides
* 200 ppm sulfate
* 0 biCarbonate
* PH of 5.2-5.6 by use of common brewing acids
* Treat with campden tablet if necessary for city water.

Using a single infusion mash process. Mash in 1.25 quarts prepared water per pound grain to hit 151F mash temperature. AT this temperature the Beta Amylase and Alpha Amylase both work quite well but should produce a wort which will ferment out enough to be quite dry for an ale which is a desirable quality of this style. Mash for about an hour and perform a vorlauf step. At this point the worth should be quite clear and not cloudy at all. If it’s still cloudy after you’re thoroughly recirculated the wort then consider letting it mash a little longer.

Optional step: Raise the temperature to 169F to perform a mash out step. This warmer temperature will ensure sugars are dissolved and flow easily. It will also denature the enzyme activity.

Bring wort rapidly to a rolling boil to promote a healthy hot break. Be mindful you don’t get a boil over in the first 10-15 minutes when the hot break is occurring. Cut the flame strength back to produce a low activity boil. Add your 90 minute hops at this point and other hop additions as necessary during the boil. Optionally add Whirfloc in the last 10 minutes for fining. Cut the flame off and cool as rapidly as possible to encourage a healthy cold break to prevent chill haze. Once cooled as far as you can go transfer your beer in to a fermenter leaving as much of the break material and hop material as possible behind in the fermenter. Optionally I usually transfer it again in to a different fermenter before pitching the yeast if I feel I transferred too much break material in to the first fermenter. Pitch your yeast or yeast starter once you’re satisfied your wort is close to fermentation temperature.

Ferment at 70F for about a week. Once activity has almost completely stopped add your dry hop addition directly to the fermenter. Alcohols in the beer will extract the essential oils and add flavor to the beer. At about 2 weeks the beer should be complete. Take a gravity reading to ensure so. Possibly wait another couple of days if not happy with the gravity reading. Cold crash the beer and add gelatin as a fining. Transfer beer to keg and carbonate by force carbonation or if bottling add appropriate amount of priming sugar to fermented beer before bottling.(1/2 cup to ¾ cup depending on target volumes.) I shoot for about 2.5 volumes as good CO2 levels allow the aromatics to shine.

This beer really fits the American IPA style as it is just strong enough in alcohol and has a big enough body to be an IPA but not so high that it’s not still extremely easy drinking and finishing dry. It should be refreshing The malt backbone will be just firm enough to be a stage for the very high level or aromatic and flavor hops you’ll get. You’ll get a good bit of citrus and floral from the centennial. Spicy/pineapple from the simcoe and mosaic is a wonderful dry hop covering all ranges which will offer tropical, citrus and fruity notes in the beer. 150F mashing is at a lower end of the typically

# Weissbier

## Target Statistics:

1.050: OG

1.014: FG

IBUs: 14

SRM: 3

straw colored

CO2: 3 volumes.

## Batch Quantities:

5 Gallons brewed at around 75% efficiency

5 lbs Light Munich

5 lbs German Red Wheat

German Weizen Yeast

.5 ounce 10% Magnum at 60 minutes.

Water treated to acquire:

* 50 ppm Calcium
* 10 ppm Magnesium (don’t add any it will come from grain.)
* 0 ppm Sodium
* 10 ppm chlorides
* 10 ppm sulfate
* 20 biCarbonate
* PH of 5.2-5.6 by use of common brewing acids
* Treat with campden tablet if necessary for city water.

Mash in 1.5 gallons/pound grain at 165F targeting around 152F mash temperature for about 1 hour. If possible perform a mash out step at 168F for 20 minutes and then lauter off about 7 gallons to the boil kettle.

Boil for about 1 hour at 1.25 gallon per hour boil off rate, adding hops at the appropriate time. Cool wort down rapidly to 70F and transfer to clean fermentation vessel. If possible you would preferably ferment this beer at about 67F.

Pitch yeast and ferment until complete. 7-14 days depending on yeast.

 If kegging then transfer to clean keg and carbonate to about 2.8 volumes. If bottling, transfer to bottling bucket and add appropriate corn sugar. 125grams estimated.

The red wheat is an authentic aspect of a German Weizen. This beer should appear rather hazy from wheat with a red hue from the red wheat as well. It should be quite effervescent with a long lasting rocky white head. Locks of bready, cracker, toasty malt coming through in the aroma and flavor of this beer with spicy wheat character. Cloves, banana esters and bubble gum should be in a wonderful balance in this beer. Mouthfeel should be medium full bodied, no astringency, no detectable alcohol, medium-high carbonation. Well rounded with a surprisingly dry finish given it’s complexity.

# Strong Bitter

## Target Statistics:

1.055 OG

1.014FG

35 IBUs

SRM 8

Pale Amber or Deep Gold

CO2: 1.75 Volumes

## Batch Quantities:

5 gallons. At 75% efficiency

9 lbs Maris Otter

1 lb English Crystal 20

.25 lb English Crystal 80

2 ounces 5% AA EKG at 60

.5 EKG at 5

Any English Ale Yeast. I like London Ale Yeast from white labs or wyeast. Regular WP002 or safale 04 works also.

Water treated to acquire:

* 100 ppm Calcium
* 20 ppm Magnesium (don’t add any it will come from grain.)
* 120 ppm Sodium
* 25 ppm chlorides
* 200 ppm sulfate
* 20 biCarbonate
* PH of 5.2-5.6 by use of common brewing acids
* Treat with campden tablet if necessary for city water.

Mash your grain with treated water 165F at 1.5 quart/pound to achieve a mash temperature of about 152F. Hold this mash temperature for about an hour and if possible bring the mash temperature up to 168F to mash out. Lauter off about 7 gallons of clear wort in to your boil kettle.

Bring wort to a rapid boil quickly to promote a health hot break. Boil 1 hour at 1.25 gallons per hour boil off rate. Add hops at appropriate times. Cool rapidly with immersion chiller to ensure a healthy cold break.

Rack wort to a clean and sanitized fermentation vessel. Pitch yeast once wort is at about 70F, oxygenate and close with an airlock. Allow beer to ferment for a week or two until fermentation is complete. Cold crash if possible once complete.

Rack beer in to either a clean keg if kegging or clean bottling bucket if bottling. Add 90 grams of priming corn sugar if bottling. Carbonate to achieve about 1.75 volumes of CO2.

This beer should appear an inviting deep gold to amber, quite clear with a low but standing head. Aroma should be quite bready, toasty, nutty, some esters from English yeast, low impression of sweetness from the caramel malts in the English form of toffee. Hop aroma of herbal, earthy and flor. Flavor should be very much like the aroma. A well balanced, firmly bitter beer with toasty, bready, nutty supporting malt character. Hop flavor and aroma should be evident but not dominant, esters can be moderate to none depending on fermentation. Finishes medium dry. Medium bodied, low carbonation, no astringency, smooth alcohol if any. All authentic English ingredients is key to hitting this style. English crystal is more rich and less candy sweet than American. Maris Otter or English pale malt are critical to the bready/nuttiness expected.

# Festbier

## Target Statistics:

OG: 1.06

FG: 1.011FG

IBUS: 24

SRM: 5

Should be gold to pale gold

CO2: 2.5 volumes

## Batch Quantities:

5 Gallons at about 75% efficiency

Water treated to acquire:

* 50 ppm Calcium
* 20 ppm Magnesium (don’t add any it will come from grain.)
* 10 ppm Sodium
* 80 ppm chlorides
* 50 ppm sulfate
* 30 biCarbonate
* PH of 5.2-5.6 by use of common brewing acids
* Treat with campden tablet if necessary for city water.

6 pounds German pilsner 2SRM

2 pounds German Vienna 3.5SRM

2 pounds German Munich 9SRM

.6 ounces Hallertau Magnum 10%AA at 90

.25 ounces Hallertau Mittelfruh 4%AA at 3 minutes

German Lager Yeast. WLP830/WLP833 large starter

Mash in with your prepared brewing water at 1.5 quarts/lb at 163F to hit a target mash temperature of 150F. Hold this temperature for 90 minutes or until the conversation has completed. Start your lauter process and run off 7 gallons in to your boil kettle.

Boil for 90 minutes at a boil off rate of a little less than a gallon per hour(0.8ish gallons per hour) bring to a boil as quickly as possible and cool as quickly as possible to promote healthy hot and cold break in this beer. Add hop additions appropriately and any boil finings for clarity during the boil.

Once wort is as cool as possible, transfer the wort leaving the trub behind to a clean/sanitized fermentation vessel. Seal with a airlock and cool wort down to pitching temperature.(50F) Pitch yeast, aerate and ferment for 2 weeks. Check gravity and taste for diacetyl. If necessary ferment for 3 additional days at 60F. Chill down to 40F and lager on yeast cake for a month.

Transfer beer to sanitized keg or bottling bucket if using bottles. If using bottles you may want to pitch healthy yeast to support carbonation. 125 grams of corn sugar or force carbonation to 2.5 volumes of CO2.

This beer will be a clean, malty and fairly strong German lager with a brilliant golden color and a large white head. Aroma will be lightly bready, toasty, rich yet clean and not overpowering. Noticeable but not overpowering floral German hop character. Flavor should be bready/toasty with a medium bitterness and light floral, herbal hop character. Medium body, smooth, slightly creamy, medium carbonation and hint of warmth given the clean character and 6% alcohol. This clones the style of beer sold at modern Oktoberfest because the traditional Marzen was thought too filling. High drinkability.

# Czech Premium Pale Lager

## Target Statistics:

5 gallons

OG: 1.055

FG: 1.013 5.5% ABV

IBUS: 40 tinseth

SRM: 4

gold

CO2: 2.5 volumes

## Batch Quantities:

8 lbs continental pilsner malt. (Czech if possible otherwise just Belgian/German)

1 lb Vienna

1 lb Carapils

2 oz Czech Saaz at 60 min 4% AA

Czech Pilsner Yeast WLP800 Urquel 3 liter starter.

5 GALLONS AT ABOUT 75% EFFICIENCY

Water treated to acquire:

* 10 ppm Calcium historically. I usually have over 50ppm in the mash for mashing, yeast health, flocculation, fining clarity
* 10 ppm Magnesium (don’t add any it will come from grain.)
* 10 ppm Sodium
* 10 ppm chlorides
* 10 ppm sulfate
* 25 biCarbonate
* PH of 5.2-5.6 by use of common brewing acids
* Treat with campden tablet if necessary for city water.

Mash in at 165F 1.6 quart/lb of your treated mash water to hit 152F mash temperature.

 Hold for 60-90 minutes until conversion complete. Start your lautering process and run off 7 gallons of wort to your boil kettle. Bring rapidly to a boil to promote a healthy hot break and cool rapidly to promote a healthy cold break.

Transfer wort in to clean, sanitized fermentation vessel, seal with airlock and cool down to pitching temperature of 50F. Pitch your yeast, aerate and allow to ferment at this temperature for about 2 weeks. At the end of the two weeks take a sample, check final gravity and if not terminal or diacetyl is detected, raise to 60F and hold for 3 more days. Cold crash to 40F and lager beer for about a month.

Transfer beer in to clean and sanitized keg or bottling bucket. If kegging set regulator for appropriate temp/PSI ratio to attain 2.5 volumes. If bottling then add about 125 grams of corn sugar to the beer in the bottling bucket before bottling.

As per style, this recipe should have a beautiful slightly gold shine to it, be quite lively with bubbles, great clarity and a nice lasting creamy white head. Moderate bready-rich maltiness supported by a floral spicy note in the aroma. Finish is long and neither dry nor sweet but is well balanced and refreshing. Flavor is rich, bready maltiness with a firm but smooth bitterness and floral/sipcy notes from the Saaz. Mouthfeel with be medium with moderate carbonation.

# German Pils

## Target Statistics:

OG 1.05

FG 1.005

IBUs 35

SRM 3

pale yellow

CO2: 2.5 volumes

## Batch Quantities:

10 pounds German Pilsner malt.

1-ounce magnum 10% AA at 90-minute boil.

German Lager Yeast in 1-gallon starter.

0.25 ounces at Hallertau Mittlefruh at 5 minutes

5 Gallons at around 75% efficiency

Water treated to acquire:

* 10 ppm Calcium historically. I usually have over 50ppm in the mash for mashing, yeast health, flocculation, fining clarity
* 10 ppm Magnesium (don’t add any it will come from grain.)
* 10 ppm Sodium
* 10 ppm chlorides
* 10 ppm sulfate
* 25 biCarbonate
* PH of 5.2-5.6 by use of common brewing acids
* Treat with campden tablet if necessary for city water.

Mash In with 1.5 quarts/gallon of your prepared mash water which should give you a mash temperature of 150F. Hold that temperature for 90 minutes rather than 60 because pilsner sometimes needs more time to convert. If possible, raise to 168F and hold for about 10 minutes to mash out. Once conversion is complete, lauter off 7 gallons of wort in to your boiling kettle via sparge method of your liking.

Boil 90 minutes at just under 1 gallon per hour boil off rate, adding hops at appropriate times. Bring to the boil as rapidly as you can and cool down as rapidly as you can to ensure healthy cold and hop breaks to improve clarity. Once cool, rack to a fermentation vessel and cool in a fermentation chamber down to about 50F. Pitch your yeast at 50F and hold at that temperature for about 2 weeks until fermentation is complete. Check sample for complete fermentation and diacetyl. Raise temperature to 60F for 3 days if diacetyl is detected. Cold crash and lager for a month at 40F.

Transfer beer to sanitized/clean keg or to a bottling bucket if bottling. Force carbonate or add priming sugar 130 grams’ corn sugar to attain 2.5 volumes of C02.

German pilsner is a pilsner malt showcase with fine noble hop taste and aroma character and a firm bitterness. By using pilsner malt, German Hallertau and a fine German lager yeast you have all the ingredients necessary for a grainy sweet pils with a crisp finish and a firm but clean bitterness in the magnum. Notes of noble hops floral/herbal mostly. Fermenting at a low temperature and never pitching hot ensure a clean, smooth beer is produced.

# Double IPA

## Target Statistics:

OG 1.080

FG 1.015

IBUs 75 Tinseth

SRM 8

Pale Amber

CO2: 2.5 volumes

## Batch Quantities:

5 Gallons at 75% efficiency

13lbs American Pale malt

.5 lb American crystal 20

.5lb American Crystal 40

1lb Munich

2oz 10% AA magnum at 60

1oz Centennial 10% at 10

1oz Citra 10% at 5

2oz Simcoe 10% at 1

2oz Citra 10% at 1

Whirlpool 3 ounces of American hops.

Dry hop 2 ounces each of Citra and Simcoe after primary fermentation for 4-7 days.

Clean American Ale yeast. Safale 05, WLP001. 2Liter starter

Water treated to acquire:

* 100 ppm Calcium
* 20 ppm Magnesium
* 20 ppm Sodium
* 50 ppm chlorides
* 200 ppm sulfate
* 100ppm biCarbonate
* PH of 5.2-5.6 by use of common brewing acids
* Treat with campden tablet if necessary for city water.

Mash at 1.5 qt/lb at around 165F to target 152F mash temperature. Hold that mash temperature for around 90 minutes. If possible, raise to 168F for a mash out.

Run off about 7 gallons of wort and boil at 1.25 gallons per hour boil off rate. Add hops at appropriate steps. Cool and rack to fermentation vessel.

Once beer has cooled to around 70F, pitch yeast and ferment at 70F for two weeks, adding dry hops once fermentation appears to settle down. (about 1 week in)

Cold crash if possible and rack to clean keg or bottling bucket. If kegging, then apply appropriate PSI/Temperature to reach 2.5 volumes. If bottling, then mix appropriate amount of priming sugar gently in bottling bucket prior to bottling. 130ish grams of priming corn sugar.

This beer should big a big bold American hop showcase full of Citrus, Pine, passion fruit. It should be quite resinous and dank in hop flavor. The mouthfeel should be medium and finish quite dry with just enough clean American malt(grainy with hints of bready, light caramel and hone) to back up the bitterness and hoppiness of this beer. A light astringency may be apparent from the large dry hop. Alcohol may be apparent but hopefully it is restrained.