

Doppelbock

Method: **All Grain**
 Style: **Doppelbock**
 Boil Time: **90 min**
 Batch Size: **7.25 gallons** (*fermentor volume*)
 Boil Size: **10.25 gallons**
 Boil Gravity: **1.057** (*recipe based estimate*)
 Efficiency: **75%** (*brew house*)
 Source: **Me**

Original Gravity: **1.081** Final Gravity: **1.017** ABV (standard): **8.38%**
 IBU (tinseth): **16.38** SRM (morey): **20.37**

Fermentables

Amount	Fermentable	PPG	°L	Bill %
13.2 lb	American - Munich - Light 10L	33	10	57.8%
4.8 lb	German - Vienna	37	4	21%
1.9 lb	German - CaraMunich I	34	39	8.3%
1.34 lb	German - Melanoidin	37	25	5.9%
1 lb	American - Carapiis (Dextrine Malt)	33	1.8	4.4%
1.7 oz	German - Carafa III	32	535	0.5%
8.1 oz	American - Aromatic Malt	35	20	2.2%
22.85 lb	Total			

Hops

Amount	Variety	Type	AA	Use	Time	IBU
1.6 oz	Hallertau Hersbrucker	Pellet	3.8	Boil	60 min	16.37
0.2 oz	Hallertau Hersbrucker	Pellet	3.8	Boil	30 min	1.24

Hops Summary

Amount	Variety	Type	AA
1.8 oz	Hallertau Hersbrucker	Pellet	3.8
1.8 oz	Total		

Yeast

White Labs - German Bock Lager Yeast WLP833			
Attenuation (custom):	79%	Flocculation:	Medium
Optimum Temp:	48 - 55 °F	Starter:	Yes

This recipe is not shared.
 Last Updated: 2018-01-01 13:44 EST

Doppelbock (6 Gallons)

Ingredients

13 lb 3 oz German Munich Light	4 lb, 12.8 oz German Vienna	1 lb, 14.4 oz CaraMunich I
1 lb, 5.5 oz Melanoidin	1 lb Carapils	8.1 oz Aromatic
1.7 oz De-Husked Caraf III		
23.3mL Lactic Acid		
2 tsp Amylase		
1.65 oz Hallertau hop pellets (4.0 AA)		
1/2 tsp Gypsum, 2 tsp CaCl ₂		
1/2 Whirlfloc tablet		
1/2 tsp Wyeast Yeast Nutrient		
White Labs German Bock Lager Yeast WLP833 (5L starter)		

Directions

- 1. The Mash** Prepare 11.5 gallons of strike water. Add 5.75 mL Lactic Acid and 1/8 tsp of potassium metabisulfite. Heat to 135°F. Add to 25 gallon tun. When strike water hits 131°F Add crushed malt. Dough in to hit 125°F. Hold for 15 minutes, then pull 6.0 gallons of mash out for decoction. Bring decoction up to 156°F add 1 tsp Amylase and hold for 15 minutes, then raise to a boil and boil for 15 minutes. Add back to main mash to hit 156°F. Add 1 tsp Amylase and hold for 45 minutes. Remove 4.0 gallons for a second decoction. Bring decoction to a boil and boil for 15 minutes, then add back to main mash to hit mash out at 168°F (76°C) and hold for 10 minutes. Try to collect 7.7 gallons of first wort.
- 2. Batch Sparge.** Heat 2.75 gallons of water. Add 1.4 mL Lactic Acid and 1/16 tsp of potassium metabisulfite. Bring the water up to 175+ ° F. Calculate how much water to add using 2.5 gallons as amount needed if 7.7 gallons of first wort is collected. Sparge by pouring correct amount of sparge water over grains. Stir every 15 minutes for 60 minutes. Vorlauf 1 1/2 quarts 6 times, or re-circulate the runnings over the top until the runnings are free of husk. Collect total of 9.95 gallons wort.
3. Rolling boil: at 135 add 1/2 tsp Gypsum and 2 tsp CaCl₂
4. Rolling boil: at 60 minutes, add 1.5 oz Hallertau hop pellets (4.0 AA) into hop screen.
5. Rolling boil: at 30 minutes, add 0.15 oz Hallertau hop pellets (4.0 AA) into hop screen.
6. Rolling boil: at 10 minutes, add 1/2 tsp Wyeast yeast nutrients and 1/2 Whirlfloc tablet.
7. Rolling boil: at 0 minutes flame out.
8. Chill wort with plate chiller.
9. Allow wort to cool and cold break to drop out. Rack to 6 gallon fermenter.
10. Take hydrometer reading.
11. Oxygenate wort for 60 seconds with stone.
12. Place carboy in controlled environment 48°F.
13. Pitch yeast when wort reaches 48° F.

Fermentation

1. Slowly ferment at 48°F and slowly raising to 55°F for 14 days, or until fermentation stops.
2. Oxygenate after 12 hours of fermentation.
2. Diacetyl rest, allow temperature to rise to 65°F for 36 hours.

3. Cold crash to 34°F 3°F per day.
4. Logger at 34°F for 40 days.
5. Rack to keg.

Brew Day Schedule

1. Start Boil, 0 Minutes (0 Minutes total) (135 Minutes countdown)
2. Boil 75 Minutes (75 Minutes total) (60 Minutes countdown)
4. Add 1.5 oz Hallertau hop pellets (4.0 AA) into hop screen.
5. Boil 30 Minutes (105 Minutes total)(30 Minutes countdown)
6. Add 0.15 oz Hallertau hop pellets (4.0 AA) into hop screen.
7. Boil 20 Minutes (125 Minutes total)(10 Minutes countdown)
8. Add 3/4 tsp Wyeast yeast nutrients and 1/2 Whirlfloc tablet.
9. Boil 10 minutes (135 Minutes total) (0 Minutes countdown)
10. Terminate Boil.

Liquefaction Temperature _____ Volume _____
 Saccharification Temperature _____ Volume _____
 Mash Out Temperature _____ Volume _____
 First Wort Volume _____ (7.7 Gallons) - 9.95 Gallons = Sparge Volume Needed _____
 Sparge Temperature _____ Volume _____

Target Volume 9.95 Gallon

SG Preboil Wort _____ (1.059) Total Wort pH _____ (5.2-5.4)

Wort Volume = 9.95 gallons

Target Volume = 6.5 gallons including wort absorbed by hops (Actual Volume = 6.25 gallons)

Adjusted SG _____

Target OG = 1.090

Original Gravity (OG) _____ (1.072-1.112)

Original pH _____ (Between 5.2-5.4)

Final Gravity (FG) _____ (1.016-1.024(Beer))

Final pH _____ (Between 4.25-4.6)

Notes:

EZ Water Calculator Spreadsheet 3.0

Step 1: Enter Starting Water Profile

A. Profile

	Calcium (Ca ppm)	Magnesium (Mg ppm)	Sodium (Na ppm)	Chloride (Cl ppm)	Sulfate (SO ₄ ppm)	<input type="radio"/> Bicarbonate (HCO ₃ ppm) <input checked="" type="radio"/> Alkalinity (CaCO ₃ ppm)
Starting Water Profile: <small>(ppm = mg/L)</small>	43	13.5	93.3	33	45	245

B. Volume

	Mash Water	Sparge Water
Volume (gallons):	13.85	0
% that is Distilled or RO:	0%	0%

If your water report gives Sulfate as Sulfur (SO₄-S) such as a Ward Lab's report, multiply by that by 3 to get SO₄

Step 2: Enter Grain Info

	Select Grain Type	Weight (lb)	Color (°L) <small>(Crystal Malts Only)</small>	Distilled water Mash pH <small>(from chart)</small>		grain types	dist water pH
Crystal Malt: Caramel malts, Cara Munich, Cara Aroma, etc.	Base - Munich	11.6		5.43		1 - Select Grain -	
	Base - Vienna	4.8		5.58		2 Base - 2-Row	5.70
	Crystal Malt	1.9	39	5.02		3 Base - 6-Row	5.79
Roasted/Toasted Malt: Roasted Barley, Black Patent, Carafa, etc.	Crystal Malt	1.85	25	5.09		4 Base - Merit Otte	5.77
	Crystal Malt	1	1.8	5.21		5 Base - Munich	5.43
	Roasted/Toasted	0.1		4.71		6 Base - Pilsner	5.75
Acidulated Malt: Enter in Step 4a.	- Select Grain -	0		0.00		7 Base - Wheat	6.04
	- Select Grain -	0		0.00		8 Base - Vienna	5.56
	- Select Grain -	0		0.00		9 Base - Other	5.70
						10 Crystal Malt	calculated
						11 Roasted/Toasted	4.71

Total Grain Weight (lb): 21.05
Mash Thickness: 2.63 qt/lb

The above values are used to calculate mash pH. They may vary depending on maltster or other factors - for example Rahr 2-Row has been found to be 5.56. Modify if necessary.

Step 3: View Mash pH

Effective Alkalinity (CaCO ₃ ppm)	Residual Alkalinity	ESTIMATED Room-Temp Mash pH	Desired Room-Temp Mash pH
88	18	5.41	5.4 - 5.6

Note: When measuring actual mash pH with a meter, keep in mind that it can take up to 15 minutes for mash pH to stabilize.

There are varying opinions on the optimum range here. Consider doing your own research and/or experimentation to determine what's best for you.

Step 4a: Adjust Mash pH DOWN (if needed)

	Gypsum CaSO ₄	Calc. Chloride CaCl ₂	Epsom Salt MgSO ₄
add at dough-in or prior.			
Mash Water Additions (grams):	2	6.8	0
Adjusting Sparge Water? (y/n):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sparge Water Additions (grams):	0.0	0.0	0.0

add to boil, or to sparge water prior to sparging, or combine with mash salts when treating all water combined prior to brewing.

Acidulated Malt

acid content:

oz:

(0% of total wt)

Lactic Acid

acid content:

ml:

Typically 2.0%. Revise if necessary.

Some recommend keeping this under 3%.

Step 4b: Adjust Mash pH UP (if needed)

	Slaked Lime Ca(OH) ₂	Baking Soda NaHCO ₃	Chalk CaCO ₃
add at dough-in or prior.			
Mash Water Additions (grams):	0	0	0
Adjusting Sparge Water? (y/n):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sparge Water Additions (grams):	0.0	0.0	0.0

add to boil, or to sparge water prior to sparging, or combine with mash salts when treating all water combined prior to brewing.

Calculations for chalk's true affect on pH are very complex and may require an acid to fully dissolve. This spreadsheet uses half of chalk's full potential based on experimental data w/o acid addition. Results may vary.

Step 5: View Resulting Water Profile

	Calcium (Ca ppm)	Magnesium (Mg ppm)	Sodium (Na ppm)	Chloride (Cl ppm)	Sulfate (SO ₄ ppm)	Chloride / Sulfate Ratio
Mash Water Profile:	87	14	93	96	66	1.44
Mash + Sparge Water Profile:	87	14	93	96	66	1.44
Palmer's Recommended Ranges:	50 - 150	10 - 30	0 - 150	0 - 250	50 - 350	Above 1.3 may enhance maltiness

There are varying opinions on these ranges. Consider doing your own research and/or experimentation to determine what's best for you.



By donating \$5 or more you will be notified of any spreadsheet updates by email (unless of course you indicate not to be).

References:

Portions of the Alkalinity, RA, and pH calculations are based on information and experiments from:
[Kai Treaster, "The effect of brewing water and grist composition on the pH of the mash" 2009](#)
 Recommended mineral ranges are from:
[John Palmer, "How to Brew"](#)
 Recommended Cl to SO₄ ratio ranges are from:
[John Palmer's RA spreadsheet](#)

Created by: TH
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1/2 ML LACTIC A
 1 GAL H₂O

1/2 TSP GYPSUM
 2 TSP CaCl₂