

## 08 Orange Wheat IPA

### Step 1: Enter Starting Water Profile

A. Profile	Calcium (Ca ppm)	Magnesium (Mg ppm)	Sodium (Na ppm)	Chloride (Cl ppm)	Sulfate (SO <sub>4</sub> ppm)	<input checked="" type="radio"/> Bicarbonate (HCO <sub>3</sub> ppm) <input type="radio"/> Alkalinity (CaCO <sub>3</sub> ppm)
Starting Water Profile: <small>(ppm = mg/L)</small>	0	0	0	0	0	0

  

B. Volume	Mash Water	Sparge Water
Volume (liters):	3	6,1
<small>(gallons):</small>	0,79	1,61
% that is Distilled or RO:	100%	100%

*If your water report gives Sulfate as Sulfur (SO<sub>4</sub>-S) such as a Ward Lab's report, multiply by that by 3 to get SO<sub>4</sub>*

### Step 2: Enter Grain Info

	Select Grain Type	Weight (kg)	Color (°L) <small>(Crystal Malts Only)</small>	Distilled water Mash pH <small>(from chart)</small>	grain types	dist water pH
	<b>Crystal Malt:</b> <i>Caramel malts, Cara Munich, Cara Aroma, etc.</i>	Base - 2-Row ▼	0,4		5,70	1 - Select Grain -
	Base - Wheat ▼	0,3		6,04	2 Base - 2-Row	5,70
	Base - Wheat ▼	0,3		6,04	3 Base - 6-Row	5,79
<b>Roasted/Toasted Malt:</b> <i>Roasted Barley, Black Patent, Carafo, etc.</i>	- Select Grain - ▼	0,15		0,00	4 Base - Maris Otte	5,77
	- Select Grain - ▼	0		0,00	5 Base - Munich	5,43
	- Select Grain - ▼	0		0,00	6 Base - Pilsner	5,75
	- 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
	- Select Grain - ▼	0		0,00	10 Crystal Malt	calculated
	- Select Grain - ▼	0		0,00	11 Roasted/Toasted	4,71
Total Grain Weight (kg):		1,15				
		<small>(lbs):</small> 2,5				
Mash Thickness:		2,61 l/kg				
		1,25 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 <sub>3</sub> ppm)	Residual Alkalinity	ESTIMATED Room-Temp Mash pH	Desired Room-Temp Mash pH
-312	-417	4,74	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 <sub>4</sub>	Calc. Chloride CaCl <sub>2</sub>	Epsom Salt MgSO <sub>4</sub>	Acidulated Malt acid content: grams: oz:	Lactic Acid acid content: ml:
add at dough-in or prior.				2,0%	80%
Mash Water Additions (grams):	0	1,15	1,66	0	1
Adjusting Sparge Water? (y/n):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0,0	
Sparge Water Additions (grams):	0,0	0,0	0,0	Typically 2.0%. Revise if necessary.	
<small>(0% of total wt) Some recommend keeping this under 3%</small>					

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

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

	Slaked Lime Ca(OH) <sub>2</sub>	Baking Soda NaHCO <sub>3</sub>	Chalk CaCO <sub>3</sub>
add at dough-in or prior.			
Mash Water Additions (grams):	0	0,22	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 <sub>4</sub> ppm)	Chloride / Sulfate Ratio
Mash Water Profile:	104	52	20	184	216	0,85
Mash + Sparge Water Profile:	34	17	7	61	71	0,85
Palmer's Recommended Ranges:	50 - 150	10 - 30	0 - 150	0 - 250	50 - 350	.77 to 1.3 = Balanced

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