

# EXTRACT CALCULATION & CORRECTION

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PREDICTED SPECS FROM RECIPE:	DEFINITIONS:
Assumed Efficiency _____ %	<b>OG</b> = Original Gravity in Specific Gravity Units (SG) Example: 1.040
Target Original Gravity _____ SG	<b>GU</b> = Gravity Units. Examples: 1.040 SG = 40 GUs, 1.100 = 100 GUs
Mash Thickness _____ qt/lb	<b>Extract GU Values</b>
Sparge Rate _____ qt/lb	Corn Sugar.....37 GU/lb
Pre-Boil Volume _____ gal	Table Sugar.....46 GU/lb
Post-Boil Volume _____ gal	Dry Malt Extract.....45 GU/lb
Boil Length _____ min	Liquid Malt Extract.....35 GU/lb
Evaporation Rate _____ gal/hr	Honey.....32 GU/lb

## PREBOIL GRAVITY CALCULATIONS:

**A.**  $\frac{\text{_____}}{\text{(Target OG in GU)}} \times \frac{\text{_____}}{\text{(Beer Vol in Gal)}} = \text{_____ Total Required GUs}$

**B.**  $\frac{\text{_____}}{\text{(Vol in Kettle)}} \times \frac{\text{_____}}{\text{(Pre-boil SG in GU)}} = \text{_____ Total GUs in Kettle}$

**C.**  $\frac{\text{_____}}{\text{(A. Total GU Req'd)}} - \frac{\text{_____}}{\text{(B. Total GU in Kettle)}} = \text{_____ GU Differential}^1$

<sup>1</sup> Positive numbers indicate that the post-boil OG will be low, negative numbers indicate that the post-boil OG will be high.

## CORRECTING FOR A LOW GRAVITY:

### OPTION 1: ADDING ADDITIONAL FERMENTABLES

$\frac{\text{_____}}{\text{(Added Fermentable Name)}} : \frac{\text{_____}}{\text{(C. GU Differential)}} \div \frac{\text{_____}}{\text{(Extract GU/lb)}} = \text{_____ Weight Required (lbs)}$

### OPTION 2: REDUCING FINAL VOLUME

$\frac{\text{_____}}{\text{(B. Total GU in Kettle)}} \div \frac{\text{_____}}{\text{(Target OG in GU)}} = \text{_____ Corrected Volume (gal)}$

$\frac{\text{_____}}{\text{(Corrected Vol in Gal)}} \div \frac{\text{_____}}{\text{(Planned Vol in Gal)}} = \text{_____ Hop Scale Factor}^2$

<sup>2</sup> Multiply each hop addition by this factor to get a reduced weight to be added that is proportional to the recipe's original hop additions.

$\left( \frac{\text{_____}}{\text{(Vol in Kettle in Gal)}} - \frac{\text{_____}}{\text{(Corrected Vol in Gal)}} \right) \div \frac{\text{_____}}{\text{(Evap Rate in Gal/Hr)}} = \text{_____ New Boil Length (hours)}^3$

<sup>3</sup> Adjusted hop additions should still be added at the appropriate time, i.e. the 60 min addition still goes in with 60 min left in the boil.

# CORRECTING FOR A HIGH GRAVITY:

## OPTION 1: REPLACING WORT IN THE KETTLE WITH WATER (DILLUTION)

$$\frac{\text{_____}}{\text{(C. Inverse GU Differential)}} \div \frac{\text{_____}}{\text{(Sample SG in GU)}} = \text{_____} \text{ Volume of Wort to Replace with Water (gal)}$$

## OPTION 2: INCREASING FINAL WORT VOLUME

$$\frac{\text{_____}}{\text{(B. Total GU in Kettle)}} \div \frac{\text{_____}}{\text{(Target SG in GU)}} = \text{_____} \text{ Revised Final Target Volume (gal)}$$

$$\frac{\text{_____}}{\text{(Corrected Volume in Gal)}} \div \frac{\text{_____}}{\text{(Planned Volume in Gal)}} = \text{_____} \text{ Hop Scale Factor } ^4$$

<sup>4</sup> Multiply each hop addition by this factor to get an increased weight to be added that is proportional to the recipe's original hop additions.

$$\left( \frac{\text{_____}}{\text{(Revised Vol in Gal)}} - \frac{\text{_____}}{\text{(Planned Vol in Gal)}} \right) + \frac{\text{_____}}{\text{(Recipe Pre Boil Vol in Gal)}} = \text{_____} \text{ New Pre Boil Volume (gal)}$$

## CALCULATE BREWHOUSE EFFICIENCY:

**D.**  $\frac{\text{_____}}{\text{(A. Total GU Req'd)}} \div \frac{\text{_____}}{\text{(Assumed Efficiency as a Decimal)}} = \text{_____} \text{ Potential GU}$

**E.**  $\frac{\text{_____}}{\text{(B. Total GU in Kettle)}} \div \frac{\text{_____}}{\text{(D. Potential GU)}} = \text{_____} \text{ Extract Efficiency}$

BREWDAY STATS:	POST FERMENTATION STATS:
Brew Date _____	Packaging Date _____
Initial Mash pH * _____ (mash temp / room temp)	Terminal Gravity _____ SG
Mash Lactic Acid Addition _____ ml	Apparent Attenuation _____ %
Adjusted Mash pH * _____ (mash temp / room temp)	Alcohol _____ % ABV
Sparge Water Lactic Acid _____ ml	Primary Fermentation _____ days
Sparge Water pH * _____ (sparge temp / room temp)	Average Temperature _____ ° F
Boil Length _____ min	Yield into Packaging _____ gallons
Active Whirlpool Time _____ min	
Whirlpool Rest _____ min	
Temp From Heat Exchanger _____ ° F	
Yeast Pitch Temperature _____ ° F	
Oxygenation Time _____ seconds	
Yield into Fermenter _____ gallons	
Original Gravity _____ SG	
Extract Efficiency (E.) _____ %	

\* For pH values measured at mash temps add 0.3 to compare with room temp ranges. Target 5.2-5.4 room temp mash pH.

