



# ACBrewingCalculator

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# Our Project

- ACBrewingCalculator is a Chrome Extension that provides easy, free access to calculators for several aspects of brewing.
- Released under GPL 3.0
- Github: <https://github.com/averyscottnorris/ACBrewingCalculator>
  - Bug tracker: [ACBrewBug@hotmail.com](mailto:ACBrewBug@hotmail.com)
  - Dev Contact: [avnorris@pdx.edu](mailto:avnorris@pdx.edu) and [cleytham@pdx.edu](mailto:cleytham@pdx.edu)

# What does it do?

- Basic brewing calculations:
  - Bitterness unit calculations
  - Unit conversions: metric to imperial and vice versa
  - Alcohol calculator based on starting and final gravity (level of sugar)
  - Hydrometer adjustment for temperature
  - Priming sugar needed for carbonation
  - pH adjustment for mash

# How does it work?

- Install as a Chrome extension
- Click on icon to open drop-down menu
- Choose a calculator and it will open it in a new page



*IBU Calculator*

Ounces of hops:

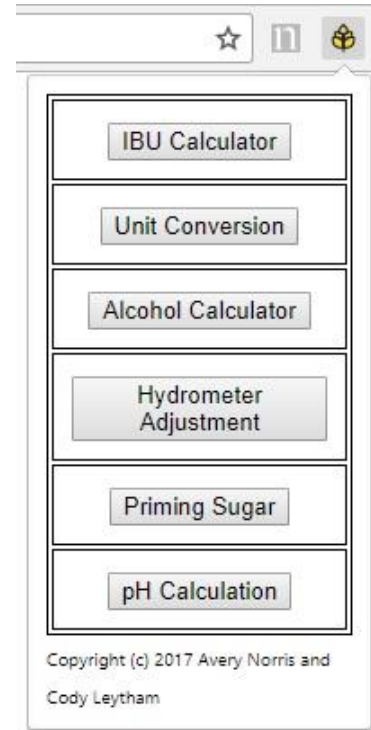
Alpha Acid Percentage:

Final volume (gallons):

Boil length (minutes):

Boil Gravity (1.XXX):

55.3 IBUs



# Why did we choose this project?

- We both enjoy beer and brewing
- Wanted to try out a Chrome extension
- Free, super-easy access alternatives are sparse

# What difficulties did we face?

- Efficiently collaborating as a team
  - Dealing with multiple people pushing to git simultaneously
- Working within the confines of Chrome
  - No inline Javascript
    - Must all be in separate .js file
  - Fonts not correctly displaying
  - Finding reliable information (formulas)
    - Lots of digging through reference books and old blogs

# What did we learn?

We had to relearn some things and then learn some new things

- Relearn
  - HTML
  - CSS
- Learn
  - Javascript
  - How to make a chrome extension
  - How work within the limitations of the extension
  - GIT functionality

# The Competition

- Paid Options
  - BeerSmith
  - BrewBot
- Free Options
  - Brewer's Friend
  - Calculate by hand



# BeerSmith

- Desktop application
  - Windows or Mac
- Pros
  - TONS of functionality
  - No internet required to use
  - Can manage recipes and inventory as well as calculations
- Cons
  - Complicated to use at first
  - Costs money (\$27.95)

The screenshot displays the BeerSmith software interface for a recipe named 'Flanders Red'. The interface is organized into several sections:

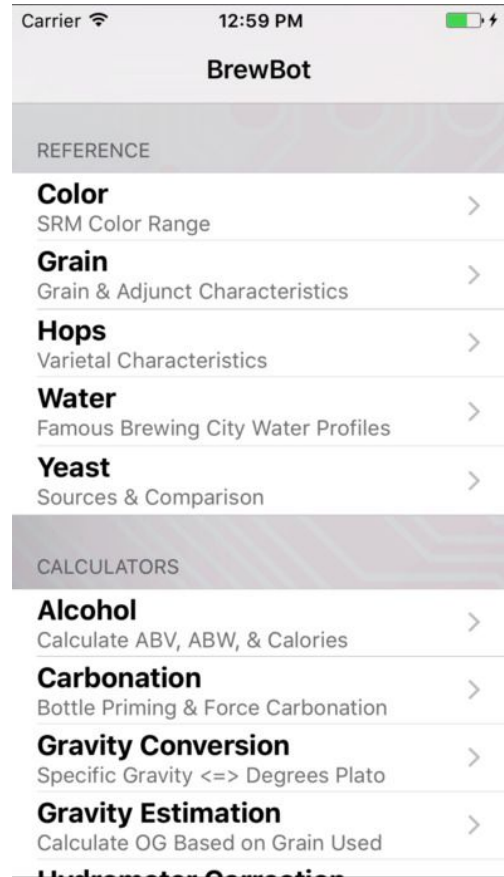
- Header:** Includes tabs for Design, Starter, Mash, Timer, Fermentation, Vols, Notes, Help, Save, Save As, Cancel, and Ok. The recipe name 'Flanders Red' is prominently displayed.
- Recipe Information:** Fields for Name (Flanders Red), Type (All Grain), Boil Time (60 min), Date (7/22/2017), Brewer (Avery Norris), Batch Size (5.50 gal), Est Pre-Boil Vol (6.63 gal), Version (1.0), Equipment (Avery's 5 Gallon), Tot Efficiency (65.00 %), Est Mash Eff (66.8 %), and a checked 'Calc Boil Vol' option.
- Ingredient List:** A table listing ingredients with columns for Name, Amt, Type, #, %/IBU, Inventory, and Cost.

| Name   | Amt          | Type   | # | %/IBU  | Inventory  | Cost   |
|--|--------------|--------|---|--------|------------|--------|
| Pilsner (2 Row) Ger (2.0 SRM)                  | 5 lbs 4.0 oz | Grain  | 1 | 38.9 % | 0.0 oz     | \$6.72 |
| Vienna Malt (3.5 SRM)                          | 5 lbs 4.0 oz | Grain  | 2 | 38.9 % | 0.0 oz     | \$6.72 |
| Munich Malt (9.0 SRM)                          | 1 lbs        | Grain  | 3 | 7.4 %  | 0.0 oz     | \$1.28 |
| Aromatic Malt (26.0 SRM)                       | 8.0 oz       | Grain  | 4 | 3.7 %  | 0.0 oz     | \$0.64 |
| Caramunich Malt (56.0 SRM)                     | 8.0 oz       | Grain  | 5 | 3.7 %  | 0.0 oz     | \$0.64 |
| Special B Malt (180.0 SRM)                     | 8.0 oz       | Grain  | 6 | 3.7 %  | 0.0 oz     | \$0.64 |
| White Wheat Malt (2.4 SRM)                     | 8.0 oz       | Grain  | 7 | 3.7 %  | 0.0 oz     | \$0.64 |
| Oak Chips (Secondary 75.0 weeks)               | 2.00 oz      | Flavor | 1 | -      | 0.00 oz    | \$0.50 |
| Roselare Belgian Blend (Wyeast Labs #3763) ... | 1.0 pkg      | Yeast  | 1 | -      | 0.0 pkg    | \$6.00 |
| Whirlfloc Tablet (Boil 15.0 mins)              | 1.00 Items   | Fining | 9 | -      | 0.00 It... | \$0.10 |
| Yeast Nutrient (Boil 15.0 mins)                | 1.00 tsp     | Other  | 1 | -      | 0.00 tsp   | \$0.25 |
- Style Guide Comparison:** A section for comparing the recipe to a style guide. It shows 'Flanders Red Ale' with sliders for Est Original Gravity (1.058 SG), Bitterness (IBUs) (25.1 IBUs), Color (15.4 SRM), and Est ABV (6.4 %). It also provides target ranges for these values.
- Profiles for Mash, Carbonation and Aging:** Includes settings for Mash (Single infusion, Light Body, No Mash Out), Carbonation (Keg), and Fermentation (Ale, Two Stage). It also has an 'Adjust Temp for Equip' checkbox and a 'Carb Level' field (2.3 vols).
- Select Fields:** A section on the right titled '- Choose the fields to display' with various fields and their units, many of which are selected with a blue dot.

| Field                | Unit         |
|----------------------|--------------|
| Total Grains         | 13.50 lb     |
| Total Hops           | 0.60 oz      |
| Bitterness Ratio     | 0.433 IBU/SG |
| Est Pre-Boil Gravity | 1.048 SG     |
| Est Final Gravity    | 1.009 SG     |
| Measured OG          | 1.058 SG     |
| Measured FG          | 1.008 SG     |
| Measured Batch Size  | 5.00 gal     |
| Measured Efficiency  | 59.2 %       |
| Total Cost           | 24.73 \$     |
| Carbonate with       | 4.3 5.4 psi  |
- Visuals:** A glass of beer is shown on the right side of the interface.

# Brewbot

- Mobile app for iPhone
- Pros
  - Mobile app is easy to access and use
  - Works without internet
  - Reference materials as well as calculations
- Cons
  - Less functionality than some web-based calculators
  - Costs money (\$1.99)



# Brewer's Friend

- Web-based brewing calculator
- Pros
  - Free
  - Lots of functionality
- Cons
  - Requires internet access

### Alcohol By Volume Calculator:

Gravity Unit:

☒ SG (1.xxx)  
☐ Plato °P

Original Gravity (OG):

Final Gravity (FG):

Equation:

☒ Standard  
☐ Alternate  
(see below for more information)

Alcohol By Volume:

5.25%

Apparent Attenuation:

79%

Calories:

163.7 per 12oz bottle

Original Gravity:

12.39 °P, 1.050

Final Gravity:

2.56 °P, 1.010

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## Alcohol By Volume Estimator

Original gravity:  Final gravity:

You can expect a ABV of 7.4%.

# The Low-Tech Option

- Do all calculations by hand with the assistance of a calculator
  - Difficult to find equations
  - Labor-intensive and time consuming



# Where may this project go?

- Just added ACBrewingCalculator to Google Chrome's web store
  - Allows for automatic updates, and easy installation for users
- Add additional functionality
  - Gravity calculation
  - Color estimation
  - Yeast starter cell count calculation
- Make it prettier
  - More CSS

# References and Borrowed Images

- [https://3.bp.blogspot.com/-7P6nvEaMP-4/URZcwWMRY1I/AAAAAAAAAqw/Nq\\_1WcJbK-g/s1600/calculations.JPG](https://3.bp.blogspot.com/-7P6nvEaMP-4/URZcwWMRY1I/AAAAAAAAAqw/Nq_1WcJbK-g/s1600/calculations.JPG)
- <https://itunes.apple.com/us/app/brewbot/id542237024?mt=8>