Calculating Extraction Yield

Percolation Brews

Includes: V60, batch brew, Kalita Wave, Chemex, Moka Pot, espresso

Syringe Filters: Most often not needed (except for espresso!).

Recommendations: Measure your beverage weight to use the better, simpler equation. Report concentration to 0.01% precision, average extraction yield to 0.1% precision with your dose weight, coffee dose/brew water ratio and your beverage weight.

Extraction Yield Equation (with beverage weight):

\[ E = \frac{C \cdot B}{D} \]

\( E \): Extraction yield (%)
\( C \): Beverage concentration (%)
\( B \): Beverage weight

Extraction Yield Equation (without beverage weight):

\[ E = \frac{C}{1 - C/100} \left( \frac{W}{D} - L \right) \approx C \left( \frac{W}{D} - 2 \right) \]

\( E \): Extraction yield (%)
\( C \): Beverage concentration (%)
\( W \): Weight of brew water
\( D \): Weight of coffee dose
\( L \): Liquid retained ratio (approx. 2 for filter brews)

VST application: Adjust the beverage weight directly (not the weight of brew water) and set both your CO\(_2\) and moisture to zero for easier comparison with others.
Immersion Brews

Includes: French press, cupping.

Syringe Filters: Needed.

Recommendations: Report concentration to 0.01% precision, average extraction yield to 0.1% precisions with your dose weight and coffee dose/brew water ratio.

Extraction Yield Equation:

\[ E = \frac{C}{1 - C/100} \cdot \frac{W}{D} \approx \frac{C \cdot W}{D} \]

- \( E \): Extraction yield (%)
- \( C \): Beverage concentration (%)
- \( W \): Weight of brew water
- \( D \): Weight of coffee dose

VST application: Adjust the weight of brew water ("BW") directly (not the beverage weight) and set both your CO₂ and moisture to zero for easier comparison with others.

Mixed Phases Brews

Includes: Siphon, Aeropress, Clever Dripper.

Syringe Filters: May be needed.

Recommendations: Measure your beverage weight, beverage concentration, and the concentration of the last few drops. Report both concentrations to 0.01% precision, average extraction yield to 0.1% precision with your dose weight, coffee dose/brew water ratio and beverage weight. Verify the accuracy of the immersion equation for your particular brew recipe, if the error is less than 0.1% then use the simpler immersion equation for that recipe.
Extraction Yield Equation:

\[
E = \left( \frac{C_{\text{bev}} - C_{\text{last}}}{1 - C_{\text{last}}/100} \right) \cdot \frac{B}{D} + \left( \frac{C_{\text{last}}}{1 - C_{\text{last}}/100} \right) \cdot \frac{W}{D}
\]

- **E**: Extraction yield (%)
- **C\text{bev}**: Beverage concentration (%)
- **C\text{last}**: Concentration of last few drops (%)
- **B**: Beverage weight
- **W**: Weight of brew water
- **D**: Weight of coffee dose

I know, this is a nasty equation! Mitch Hale also thought so, so he built an awesome web tool to calculate it more easily at [awasteof.coffee/tools/universal-extraction-calculator](awasteof.coffee/tools/universal-extraction-calculator)

**VST application**: These brew methods are not currently supported by the VST application.

You can use the immersion equation if a recipe generates similar concentrations in the beverage and last drops, such as:

\[
(C_{\text{bev}} - C_{\text{last}}) \cdot \left( \frac{W - B}{D} \right) < 0.1\%
\]

For more details on all equations above, please see the full blog post at [coffeadastra.com/2019/02/17/measuring-and-reporting-extraction-yields](coffeadastra.com/2019/02/17/measuring-and-reporting-extraction-yields)