THE GLAZE FOUNDARY

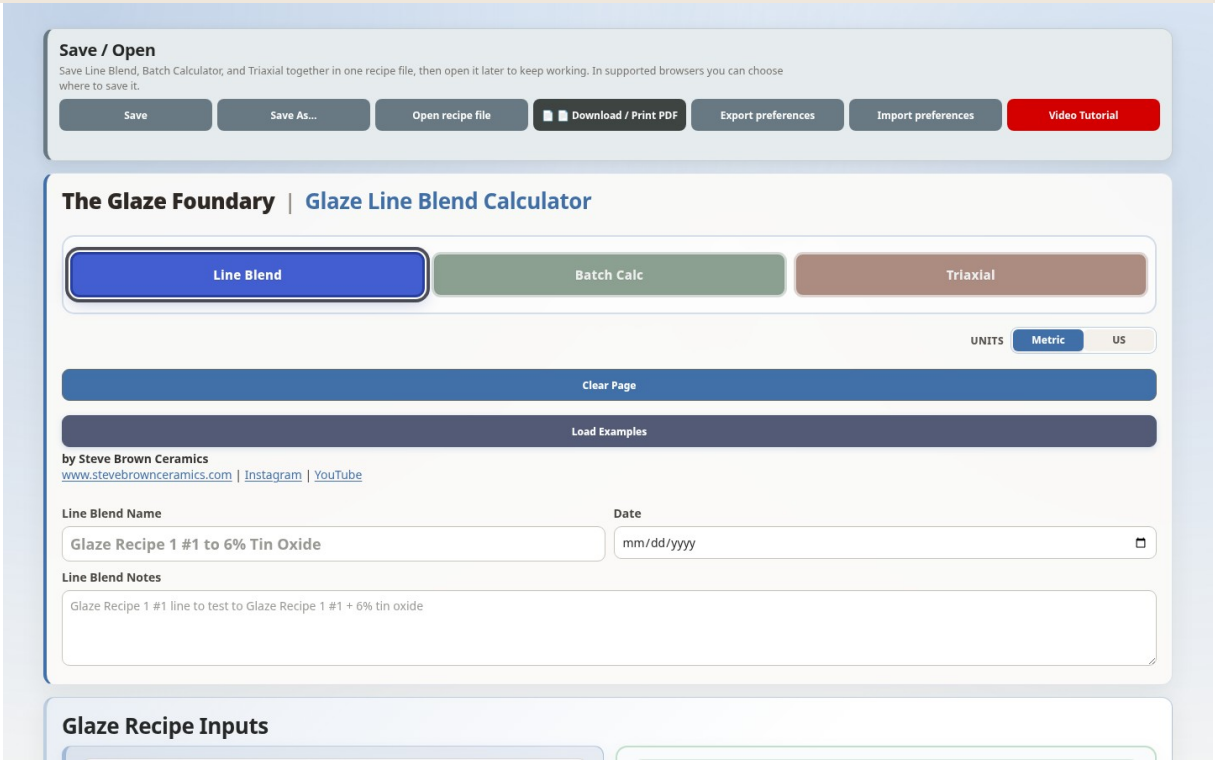
In-Depth Illustrated User Guide

Patreon Tier 2 & Tier 3 Members

Line Blend • Batch Calc • Triaxial • Chemistry • Results • Saving & PDFs

What this guide is for

This is the longer, illustrated version of the member guide. It walks through the actual software screens and explains not only what each control does, but how the three calculators can be used artistically for colour and surface development or technically for structured glaze testing.



The main calculator header: choose Line Blend, Batch Calc or Triaxial, switch units, clear the page, or load the worked examples.

1. What the Software Is Designed to Do

The calculator is a testing and studio-record tool. It takes care of the repetitive measuring maths so you can concentrate on the question you are trying to answer with the glaze.

Two different ways to use the same software

- **Artistically:** build a colour run, move from one surface quality to another, explore opacity, iron response, rutile effects, or create a family of related glazes.
- **Technically:** compare glaze bases, alter a flux source, move silica and alumina, compare three corners in a triaxial, or scale a successful test into a practical studio batch.

The three calculators

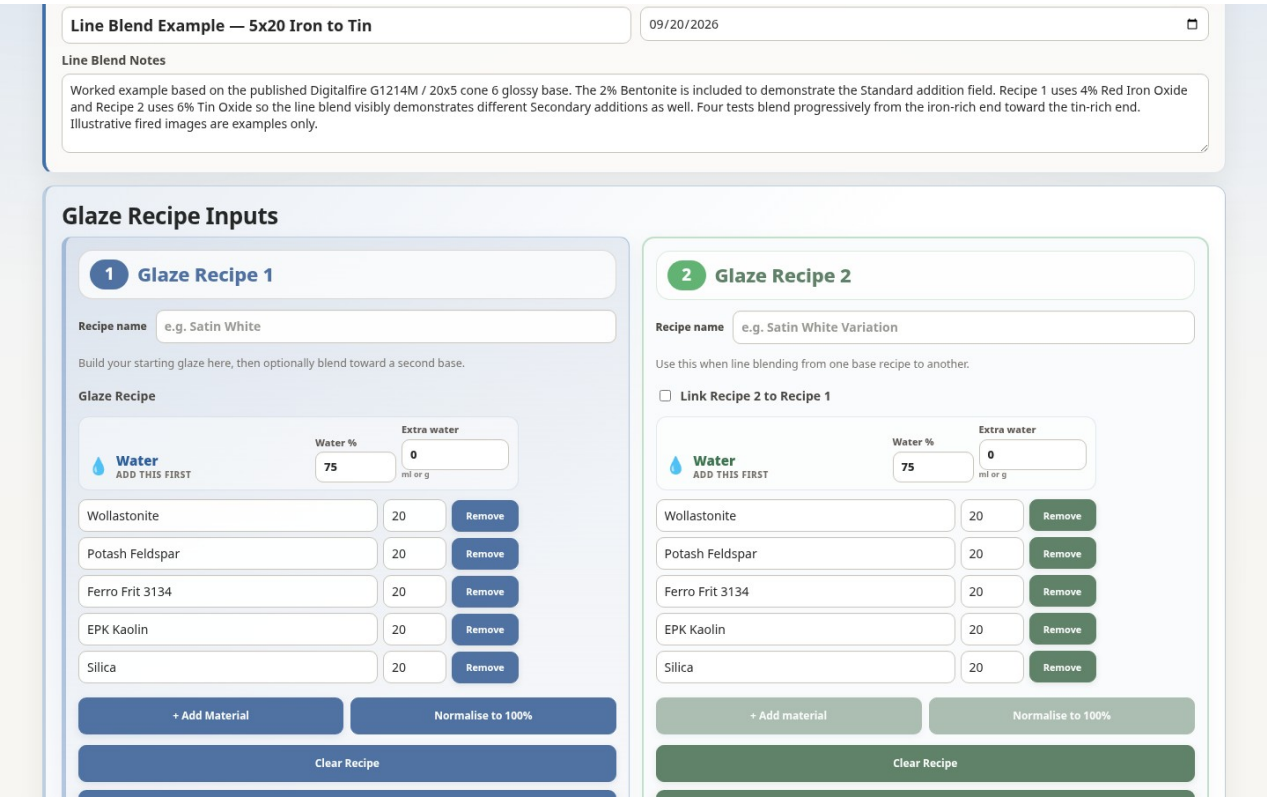
Calculator	Best used for	Typical question
Line Blend	A controlled progression between two ends	What happens between Recipe A and Recipe B?
Batch Calc	Scaling one recipe into a practical amount	How much of each material do I weigh to make this batch?
Triaxial	Exploring three complete recipe directions	What happens across the space between three corner recipes?

Before you start

- **Base recipe = 100%:** the main dry materials should total 100%. Additions sit on top of that base.
- **Water is separate:** Water % and Extra water are practical mixing controls and are not part of the 100% dry recipe.
- **Use measured SG where possible:** a measured specific gravity makes the volume-to-dry-weight estimates more useful.
- **Material autocomplete:** start typing a material name and pause briefly. The calculator will help suggest or complete a known material. If the material is new, it can be saved for future use.
- **Load Examples:** each calculator mode has a worked example. This is the quickest way to understand the flow of the software before entering your own recipe.

2. Line Blend

Line Blend makes a series of evenly spaced mixtures between two ends. The two ends can be different base recipes, or the same base with different additions.



Worked Line Blend example: Recipe 1 and Recipe 2 are shown side-by-side. Each recipe has its own water controls, base materials and additions.

Recipe 1 and Recipe 2

- **Recipe 1:** your starting end of the line.
- **Recipe 2:** the finishing end of the line.
- **Link Recipe 2 to Recipe 1:** keep this on when Recipe 2 should mirror Recipe 1. Turn it off when the second end needs a different base recipe, water setting or additions.
- **Normalise to 100%:** use this when the entered base recipe needs rescaling to exactly 100%.

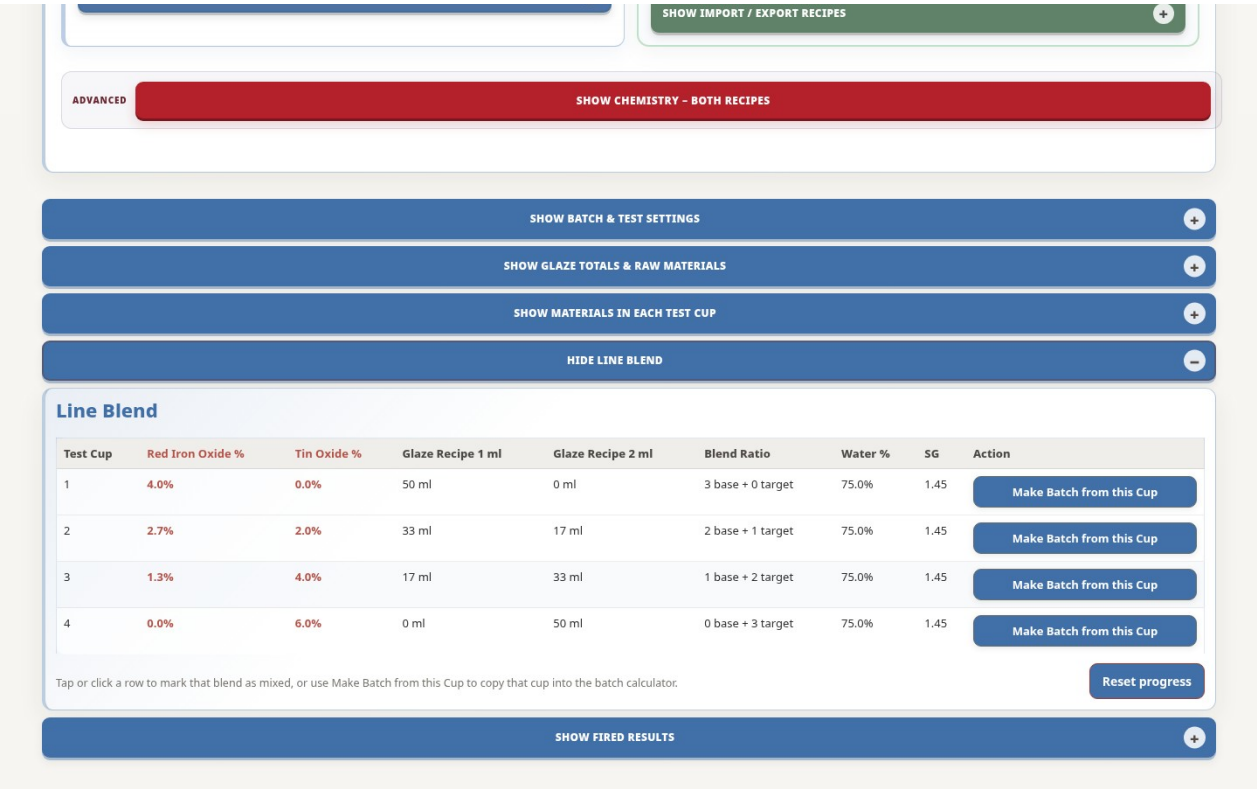
Standard vs secondary additions

Standard additions are intended for recipe additions that belong to the glaze itself, such as Bentonite. Secondary additions are useful for colourants, opacifiers and other test materials such as iron oxide, tin, rutile or zircon. Both are calculated on top of the 100% base recipe.

Artistic use

Keep the same base at both ends, but give Recipe 1 and Recipe 2 different colourant or opacifier additions. The calculator then makes the intermediate cups for you. This is an easy way to create a controlled colour palette rather than guessing at isolated percentages.

Reading the Line Blend table



The Line Blend table tells you exactly how much of each end recipe goes into every test cup. It also shows the changing additions, blend ratio, water and SG.

What each row means

- **Test Cup:** the cup number you will label and fire.
- **Addition columns:** the actual percentage of each changing secondary addition in that cup.
- **Recipe 1 / Recipe 2 ml:** the amount of each premixed end glaze to measure into the cup.
- **Blend Ratio:** a simple parts description of the same mix.
- **Water % / SG:** a practical guide to the changing slurry properties.
- **Make Batch from this Cup:** copies that exact blend into Batch Calc when you find a result worth scaling.

A useful practical workflow

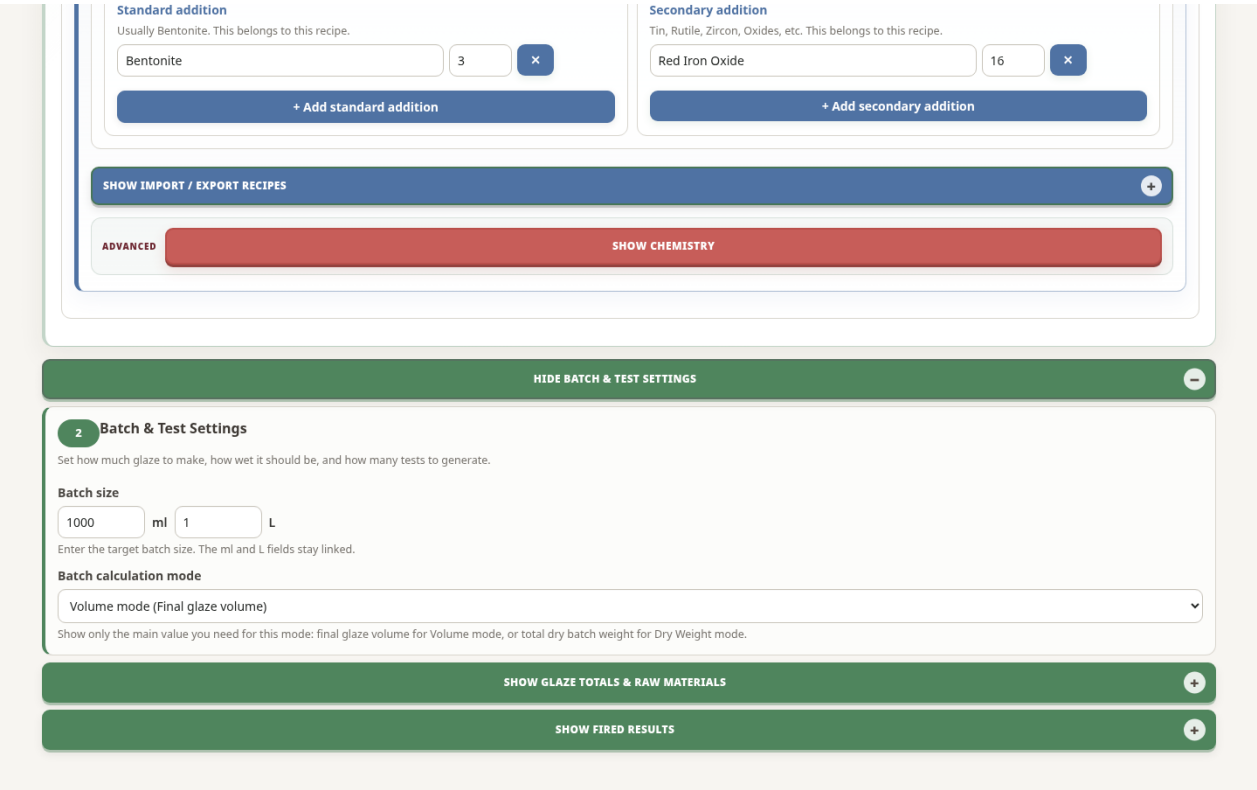
1. Make enough Recipe 1 and Recipe 2 premix for the whole test, including the spare allowance.
2. Label your test cups before mixing.
3. Work down the Line Blend table one row at a time.
4. Click a row when you have mixed it; the progress marker helps avoid skipping or repeating a cup.
5. Fire the whole line together when possible so the results are comparable.
6. Photograph the fired cups and record clay body, firing and result notes.

Technical use

Use Recipe 1 as your current base and Recipe 2 as one controlled variation - for example a different flux source or feldspar/frit balance. The middle cups show where the behaviour begins to change.

3. Batch Calc

Batch Calc scales a single recipe into a practical amount of glaze. Use it for a successful test, a favourite recipe, or any glaze that needs converting into a working batch.



Batch & Test Settings: choose how much glaze to make and whether the calculation is based on final glaze volume or dry batch weight.

Volume mode vs Dry Weight mode

- **Volume mode (Final glaze volume):** enter the amount of finished glaze you want. The calculator uses the selected specific gravity, water setting and additions to estimate the dry material weights needed.
- **Dry Weight mode:** enter the dry base batch weight you want. The calculator then works forward to additions, water and an approximate finished glaze volume.

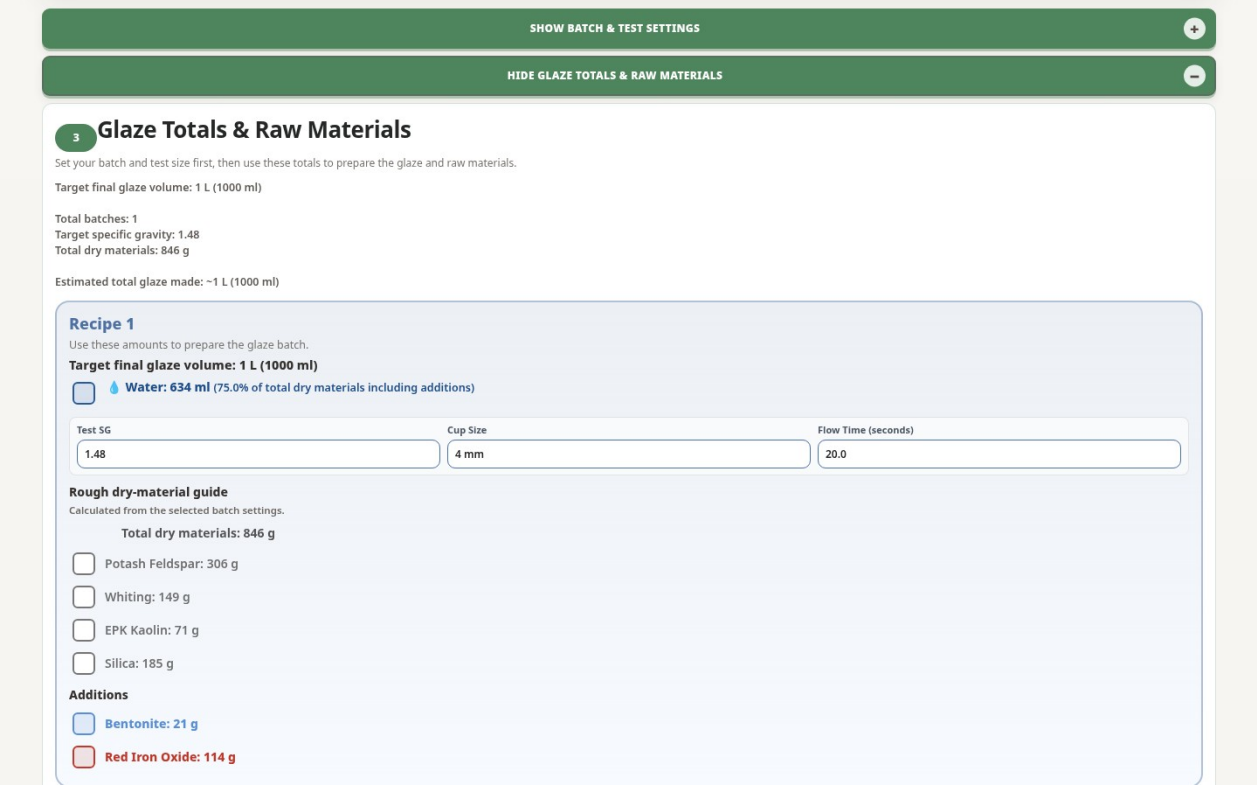
Why SG matters in Volume mode

A litre of glaze does not simply equal a kilogram of dry material plus water. Specific gravity describes the relationship between slurry volume and slurry weight. By entering the SG you actually use in the studio, the calculator can give a more realistic dry-material guide.

Practical tip

If you are repeating a glaze regularly, record its normal working SG and flow time along with the recipe. That makes later batches easier to compare, especially when application thickness matters.

Glaze Totals & Raw Materials



The Batch Calc raw-material panel turns the recipe into a practical checklist: water, dry materials, additions, SG and flow information are kept together.

How to use the checklist

1. Set the batch size and calculation mode first.
2. Confirm the recipe total is 100%.
3. Check Water %, Extra water and additions.
4. Enter or confirm the target SG.
5. Use the displayed dry-material weights as the weighing list.
6. Tick items as you weigh them so the calculator doubles as a mixing checklist.
7. Record the actual SG and flow time you finish with; these are often as useful as the recipe itself when trying to repeat a glaze.

Worked Batch example

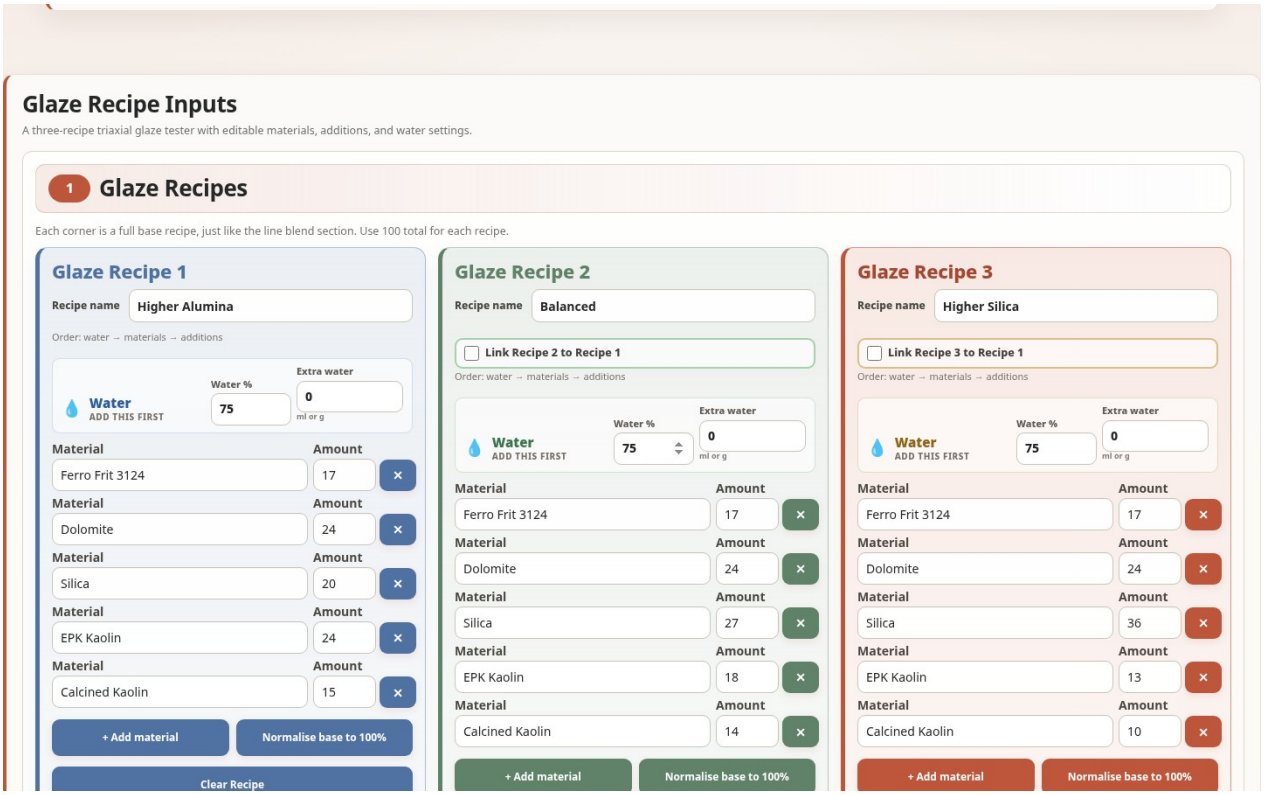
The built-in Batch example uses a 43 Potash Feldspar / 21 Whiting / 10 EPK Kaolin / 26 Silica base with 3% Bentonite and 16% Red Iron Oxide. It is set up as a 1 L volume-mode teaching example so you can see how the software moves from a final glaze volume to actual weighing amounts.

When to switch from testing to batching

Scale promising tests in sensible stages. Keep SG and application comparable, and record the larger firing as its own batch result.

4. Triaxial

Triaxial testing blends three complete recipes at once. The three recipes form the corners of a triangle, and every test inside that triangle is a different combination of those corners.



Triaxial recipe setup: three corner recipes can each have their own base materials, water controls and additions.

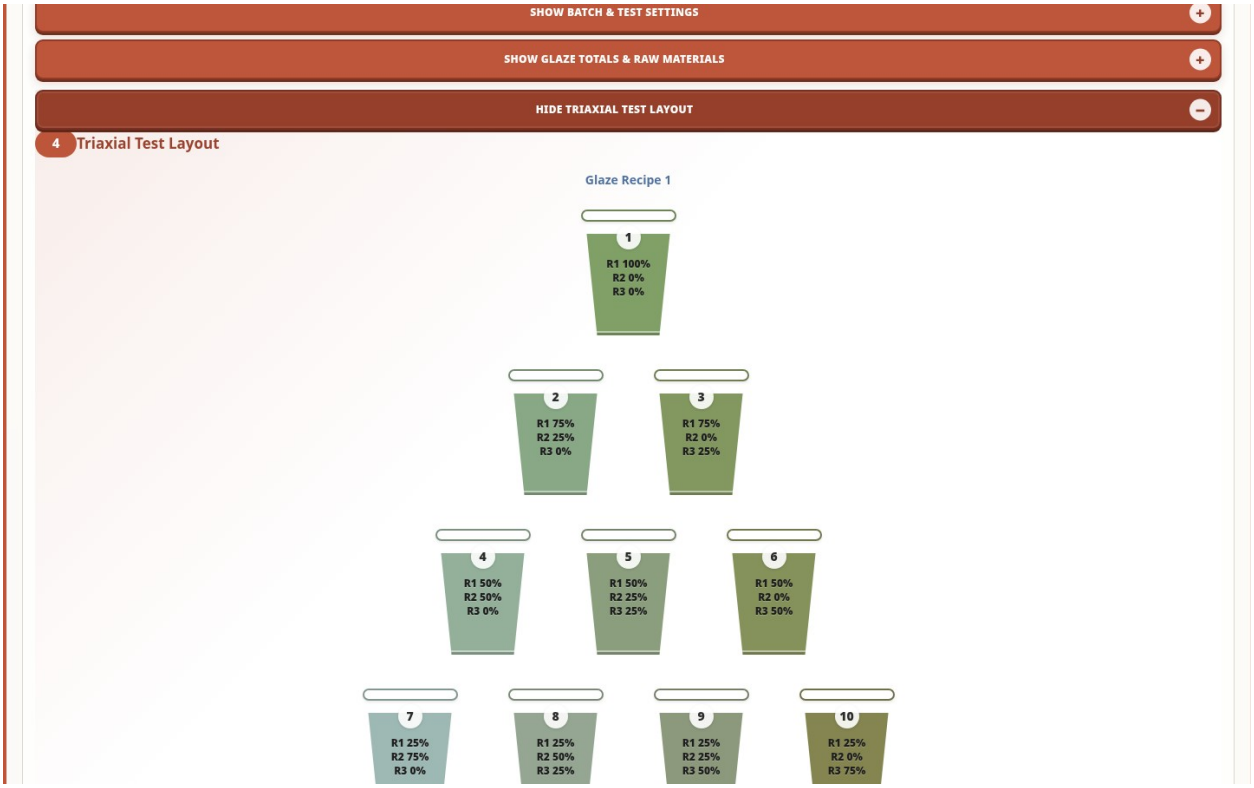
Setting the three corners

- **Recipe 1:** the first corner.
- **Recipe 2:** the second corner.
- **Recipe 3:** the third corner.
- **Linked corners:** Recipes 2 and 3 can begin linked to Recipe 1 so you can duplicate the starting recipe before making controlled changes.

How many tests?

Rows in triangle	Number of tests
3 rows	6 tests
4 rows	10 tests
5 rows	15 tests
6 rows	21 tests

Reading the Triaxial Test Layout



The Triaxial Test Layout shows the percentage of Recipe 1, Recipe 2 and Recipe 3 in every cup. The corner cups are pure recipes; the interior cups are blends.

What the triangle is showing you

The top corner is 100% Recipe 1. The two lower corners are the pure Recipe 2 and Recipe 3 ends. The cups between them contain increasing or decreasing proportions of the three premixes. The software calculates those proportions and the practical measuring amounts for you.

A technical example

The built-in Triaxial example is a 5-row / 15-test study using three related matte bases labelled Higher Alumina, Balanced and Higher Silica. It is designed so you can compare movement in chemistry/UMF while the overall study remains structured.

A more artistic example

Use one reliable base at all three corners, then give each corner a different secondary-addition direction. The triangle becomes a colour/surface map: each interior cup combines the three ends in a different proportion.

Keep the question clear

A triaxial becomes hard to interpret if every corner changes in too many unrelated ways. Decide what you want the triangle to teach you, then make the three corners deliberately different in ways that answer that question.

5. Chemistry, Water, Additions and Materials

Chemistry and UMF

The advanced Chemistry controls give you a live oxide / UMF view of the base recipe. This is most useful as a comparative tool: change the recipe, then watch how the silica, alumina and flux picture moves. Material analyses are reference values and real supplier materials vary, so the chemistry should support your fired testing rather than replace it.

Water controls

- **Water %:** the main water ratio used by the practical mixing calculation.
- **Extra water:** a small manual adjustment when the recipe needs more or less water than the standard ratio.
- **Why both exist:** two recipes can have the same dry composition but need different practical water settings, especially if clay content or additions differ.

Additions

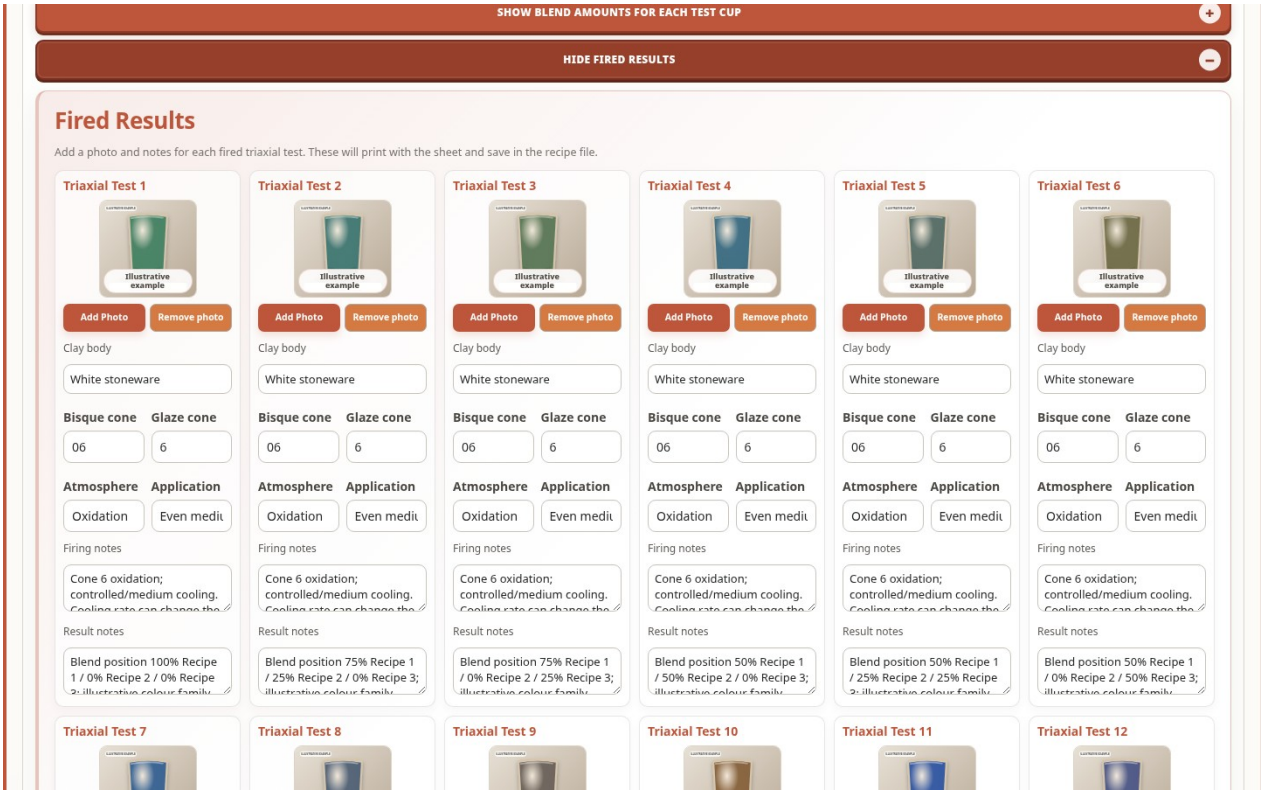
- **Standard additions:** normally part of the way the glaze is prepared, such as Bentonite.
- **Secondary additions:** materials you may deliberately vary or track as colourants/opacifiers/test additions.
- **Important:** additions are on top of the 100% base recipe rather than renormalising the base.

Custom materials and autocomplete

Material fields use the built-in material list to speed up typing. After you pause, the calculator suggests the best match. If you type a material that is genuinely new, you can save it into your custom material list for future recipes.

> **Material naming matters**
>
> Try to use the same name for the same material every time. Consistent naming makes saved recipes, chemistry lookups and later comparisons easier to understand.

6. Fired Results and Studio Records



Fired Results keeps the visual result and the firing context with the test. Line Blend and Triaxial create a card for each test; Batch Calc keeps one finished-glaze record.

What to record

- **Photo:** a clear image of the fired test.
- **Clay body:** important because glaze colour, fit and surface can change dramatically between bodies.
- **Bisque and glaze cone:** the firing temperature context.
- **Atmosphere:** oxidation, reduction or your own firing description.
- **Application:** dip, brush, spray, layer count or dipping time.
- **Firing notes:** holds, slow cooling, reduction timing, kiln position or anything unusual.
- **Result notes:** colour, gloss/matte quality, texture, crawling, pinholing, crazing, fit and what you would change next.

Why this matters

A recipe without its firing and application context can be misleading. The aim is to build a record that lets you understand why a test worked - and gives you a realistic chance of repeating it.

7. Saving, Favourites, Import/Export and PDFs

Save / Save As

Use the main save controls when you want to preserve the fuller calculator project: recipe information, settings and the recorded test/result data can be reopened later.

Favourites

Favourites are for recipes you want to reach quickly. Save successful recipes, organise them into folders, load them back into recipe panels and export/import them when needed.

Preferences

Preferences can be exported and imported separately. This is useful when moving your working setup to another browser or device.

PDF output

- **Simple Mixing Sheet:** a compact studio sheet focused on what you need to weigh and mix.
- **Full Record:** a more complete archive including the recipe, settings, chemistry/UMF information, notes and fired-result records.

A sensible file-naming habit

Include the glaze name, the test type and a date or firing reference. For example: SatinWhite_LineBlend_2026-09-20. Consistent names become very valuable once you have dozens of tests.

8. Three Patreon Club Projects to Try

Project A - Build a colour family

1. Choose a glaze base you already know.
2. Open Line Blend.
3. Use the same base at both ends but different secondary additions.
4. Run 4-6 cups.
5. Photograph and label the fired line.
6. Send the best cup to Batch Calc and make a larger test batch.

Project B - Compare a material or flux direction

1. Choose your current base as Recipe 1.
2. Create a deliberate Recipe 2 variation.
3. Keep unrelated variables as consistent as practical.
4. Use Line Blend to examine the transition instead of comparing only the two extremes.
5. Use Chemistry/UMF as an extra comparison, then judge the fired tests.

Project C - Map three recipe directions

1. Open Triaxial and load your starting recipe into all three corners.
2. Unlink Recipes 2 and 3.
3. Make one clear controlled change at each corner.
4. Start with 4 rows / 10 tests if you want a manageable first triangle.
5. Mix, fire, photograph and make notes on all cups.
6. Use the triangle to decide where a second, tighter study should be made.

> **The main idea**
>
> The software is most useful when each test is answering a clear question. Let the calculator handle the arithmetic, but keep the ceramic decision-making deliberate: change something for a reason, fire it, record it, and use the result to decide the next test.

Quick troubleshooting

- **Recipe total is red:** check the base percentages or use Normalise to 100%.
- **A material name is not completing:** pause after typing; if it is genuinely new, add it as a custom material.
- **Batch weights look unexpected:** check your calculation mode, target size, additions, water and SG.
- **Triaxial feels too big:** reduce the number of rows; 3 rows gives 6 tests and 4 rows gives 10.
- **A result cannot be repeated:** compare clay body, SG, application, firing and cooling notes as well as the recipe itself.