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How to Use a Triple-Beam Balance to Weigh Glaze Materials

Many ceramicists use inexpensive and readily available digital scales, but the standard glaze-room scale is still the triple-beam balance. The most popular is the Ohaus model 2610, which with the mandatory accessory weight set has a capacity 2610 grams. The best triple-beam balances have a fourth beam called a *tare beam* featuring a sliding accessory weight used to compensate for the weight of the measuring container, greatly simplifying all weighing tasks. On the Ohaus scales, the tare beam is behind the other beams and has a sliding cylindrical black weight. In use, zero all the regular sliding weights, set the weighing container on the platform, and adjust the tare weight until the indicator needle balances. Without the tare-beam, you must weigh the container separately and mathematically subtract that weight from every measurement.

In most cases you will pre-set the weight on the scale in order to weigh out specific amounts of material, as when mixing glazes or slips from a recipe. Occasionally you will also need to measure the weight of a pre-existing sample.

The standard Ohaus model 2610 triple-beam balance features three horizontal beams with sliding weights, the first beam divided into 1-gram, the second into 10-gram, and the third into 100-gram increments. The Ohaus accessory weight set that comes with this balance includes one 500-gram and two 1000-gram weights which can be suspended from two pegs on the swinging end of the balance beam to increase the capacity of the balance. To weigh out 585 grams of material (after placing your weighing container on the platform and adjusting the tare-beam weight), move the 100-gram sliding weight to 500 grams, the 10-gram weight to 80 grams, and the 1-gram weight to 5 grams. Add the desired material to the weighing container until the needle floats between the end points. There is no reason to get the needle to stop exactly on-center, because the difference in weight within the area of needle movement is minuscule. As long as the needle is fluctuating anywhere near center, the measurement is accurate and there is no reason to wait for the needle to stop moving.

To weigh 773 grams, hang the 500-gram accessory weight on one of the pegs, move the 100-gram sliding weight to 200 grams, the 10-gram weight to 70 grams, and the 1-gram weight to 3 grams and proceed as above. To weigh 1765 grams, hang a 1000-gram and a 500-gram accessory weight on the pegs, move the 100-gram weight to 200 grams, the 10-gram sliding weight to 60 grams, and the 1-gram weight to 5 grams. To weigh 2442 grams, hang the two 1000-gram weights on the pegs, move the 100-gram sliding weight to 400 grams, the 10-gram weight to 40 grams, and the 1-gram weight to 2 grams.

When measuring the weight of a pre-existing sample, if it can be placed directly on the weighing platform, proceed as explained below. If it is a liquid or powder that must be in a container, place the empty container on the scale platform, adjust the tare beam, and add the material into the container. Begin with all the sliding weights moved to the left extreme with no accessory weights hanging on the pegs. Move the 100-gram weight to the right a notch at a time until the balance beam swings to its

upper stop. If you get to 500 grams and it still hasn't moved, begin adding accessory weights by 500-gram increments until the beam swings to the upper stop. When that happens, move the 100-gram weight to the left a notch at a time until the beam swings back to its lower stop. Move the 10-gram weight to the right a notch at a time until the beam swings to its upper stop and move it back one notch to the left, causing the beam to swing back to its lower stop. Move the 1-gram weight to the right a little at a time until you get the beam to balance near the center-point. Read the weight by totaling all accessory weights and the settings on all three beams. For example, with a 1000-gram and a 500-gram accessory weight, the 100-gram weight on 400 grams, the 10-gram weight on 60 grams, and the 1-gram weight on 7 grams, the weight would be 1967 grams.