

Converting from Volumetric Output to Shots Output

Introduction

Most formula values in Datacolor Paint are calculated in terms of shots. However, to maintain integrity if the shot value changes, the values are normally stored internally in terms of volume. Datacolor Paint uses a simple conversion to convert from Shots to Volume and back.

Converting From Shots To Volume

Converting from shots to volume is very straight forward. Simply add the whole units, the shots / the fractional denominator, and the partial shots / the fractional denominator * the partial denominator. So, it would look like this:

$$\text{Volume} = \text{Whole} + \frac{\text{Shots}}{\text{Fractional Denominator}} + \frac{\text{Partial Shots}}{\text{Fractional Denom.} * \text{Partial Denom.}}$$

Converting From Volume To Shots

Converting from Volume to shots is only slightly trickier.

The first thing we need to do is to assure proper rounding. We do this by adding ½ of a partial shot to the total volume. I.e. $\text{Volume}_{\text{adj}} = \text{Volume}_{\text{orig}} + 1 / (\text{Fract Denom.} * \text{Part Denom.} * 2)$. Because we do it this way, you should NEVER round up when using the following routine.

Once this is done, we can easily determine the whole units by taking the number to the left of the decimal point. (i.e. if the volume is 1.51042, the whole unit would be 1.) (NOTE: If you just want total shots and are not interested in the whole units, consider the whole unit to be 0 and skip to the next step.)

Next we subtract the whole unit from the total volume. (in our example, we subtract 1 from 1.51042 to get 0.51042. (If we were just finding shots and are not interested in whole units, then, since we are considering our whole units to be 0, we would have 1.51042 – 0 or 1.51042.))

Now, to determine the shots, we must next multiply our remaining number times the fractional denominator. (In our example, if we assume the fractional denominator to be 48, we get 24.50016.)

To determine the shots, we simply take the number to the left of the decimal place (24).

Next, we repeat the same process we used to find the shots to find the partial shots. Subtract the shots from the number, leaving us with 0.50016, then multiply by the partial shots and take the number to the left of the decimal point.

NOTE: The number remaining should be very close to 0.5 (give or take a hundredth internal rounding error). (REMEMBER NOT TO ROUND UP.) This number being very close to 0.5 indicates that the rounding went properly. If this number is not very close to 0.5, this indicates there was a rounding error, most likely do to changing your fractional or partial denominator or scaling your formula to another can size.