

TECHNICAL BULLETIN

1017

Calculating Percents from Ratios

Understanding mixing ratios and how they relate to percent of product in solution can be confusing. The key to understanding how ratios relate to percentages, is to remember that ratios describe the *individual components* of a mixture, whereas a percentage describes *the solution as a whole*.

Here's an example. A commonly misunderstood ratio is "1:10". A statement that reads "mix product 1:10 with water" means that you take 1 part product, 10 parts water and mix them. Many people assume that this 1:10 ratio makes a 10% solution. However, when you mix 1 part of product with 10 parts of water, you wind up with 11 total parts of *solution*. To find the percentage of a solution, you divide the product amount by the *total solution amount*. In our example above, we wind up with a 9% solution [$1/11 \times 100\%$] when we mix things at a ratio of 1:10. On the other hand, a 10% solution means that your ratio is really 1:9.

If by now you are thinking "There has to be an easier way to figure this out," you're right. The rule of thumb to calculate a percentage from a ratio [e.g., "1 part product to 3 parts water"] is to:

1. Add the ratio numbers [1:3=4, 2:5=7, etc.]
2. Divide the smaller number in the ratio by the sum from step #1 [$1/4=0.25$, $2/7=0.286$, etc.]
3. Multiply by 100% [25%, 28.6%, etc.]

For 'reverse ratios' [3 parts product to 1 part water]:

4. Follow the steps above, and subtract the answer you get in step 3 from 100

If you are still thinking "There has to be an easier way to figure this out," you're right again. You can just look it up on this table!

Ratio	%	Ratio	%	Ratio	%	Ratio	%	Ratio	%	Ratio	%	Ratio	%	Ratio	%	Ratio	%	Ratio	%
1:1	50																		
1:2	33.3	2:2	50																
1:3	25	2:3	40	3:3	50														
1:4	20	2:4	33.3	3:4	42.8	4:4	50												
1:5	16.6	2:5	28.6	3:5	36.5	4:5	44.5	5:5	50										
1:6	14.3	2:6	25	3:6	33.3	4:6	40	5:6	45.4	6:6	50								
1:7	12.5	2:7	22.2	3:7	30	4:7	36.4	5:7	41.7	6:7	46.2	7:7	50						
1:8	11.1	2:8	20	3:8	27.3	4:8	33.3	5:8	38.4	6:8	42.8	7:8	46.7	8:8	50				
1:9	10	2:9	18.2	3:9	25	4:9	30.8	5:9	35.7	6:9	40	7:9	43.8	8:9	47	9:9	50		
1:10	9.1	2:10	16.6	3:10	23.1	4:10	28.6	5:10	33.3	6:10	37.5	7:10	41.1	8:10	44.4	9:10	47.4	10:10	50

For further information, please contact Intercon Technical Service at 800.325.9218 ext. 580.