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Why calculations for % and ppm are the same if units needed match units of ingredients - MLT

Example for %

1. Diet is short 5 percentage units in CP.

2. Substitute SBM (50% CP) for corn (10% CP) so difference for SBM is 40%:

5 lb CP/100 lb diet × 100 lb SBM/40 lb CP = 12.5 lb SBM/100 lb diet

Example for ppm

3. Premix is short 40 ppm in I, which is 40 parts I/1,000,000 parts premix.

4. Substitute Calodate (591,110 ppm) for CGF (no I) so difference for Calodate is 591,110 ppm:

Method 1 (correct units)

a) 40 lb I / 1,000,000 lb premix × 1,000,000 lb Calodate / 591,110 lb I = **0.0000676693** lb Calodate/1 lb premix

Note that 1,000,000 in denominator is cancelled by 1,000,000 in numerator, but that answer is then amount per pound of premix so the next step is needed to get the answer to be amount per 100 lb of premix.

b) 0.0000676693 lb Calodate / 1 lb premix × 100 lb premix / 100 lb premix = **0.00676693** lb Calodate/100 lb premix

Method 2 (incorrect units but cancel out; computer method)

a) 40 lb I / 100 lb premix × 100 lb Calodate / 591,110 lb I = **0.00676693** lb Calodate/100 lb premix

Note that 100 lb is not cancelled by 100 lb in numerator so that answer is in amount per 100 lb premix.

Check:

0.00676693 lb Calodate / 100 lb premix × 591,110 lb I / 1,000,000 lb Calodate = **40** lb I/1,000,000 lb premix

Items highlighted in yellow cancel each other during the calculation.

Numbers in red are used in the calculation and end up as **bold red** in the answer.

Items in blue are units that end up as units in the answer.

Arithmetic operations are in **bold black**.