

Table 5. Weight equivalents.

1 pound (lb) = 453.6 grams (gms) = 0.4535 kilograms (kg) = 16 ounces (oz)
1 kg = 2.2046 lbs, or rounded to 2.2 lbs = 1000 gms
1 oz = 28.35 gms
1 gm = 1000 milligrams (mg) = 1,000,000 micrograms ( $\mu$ g)
1 mg = 1000 $\mu$ g = 0.001 gm
1 $\mu$ g per gm or 1 mg per kg is the same as ppm (50 mg/kg = 50 ppm)

### Conversion Notes

- ppm = parts per million (convert to percent)  
100 ppm = .0001 or .01%  
To convert to parts per unit (as parts per pound), move the decimal place six places to the left. To convert to percent, move four places to the left. Percent means parts per 100 (as the fraction of a pound per 100 pounds).
- Convert 54 ppm to mg/lb  
54 ppm = .000054 (must convert to grams and then to milligrams)  
.000054 x 453.6 = 0.02449 grams/pound  
.02449 x 1000 = 24.49 mg/pound
- Conversion from as fed basis to Dry Matter Basis (DM)  
Example: 3.0% Crude protein + 30% Dry Matter = 10% CP (DM)
- Conversion from dry matter basis to As Fed Basis  
Example: 10% CP x 30% Dry Matter = 3.0% CP As Fed Basis  
3.0% CP + 30% Dry Matter = 10.0% CP DM Basis
- Calculate the nitrogen-sulfur ration in a ration containing 14.4% crude protein and 0.15% sulfur.  
Example: 14.4% ÷ 6.25 = 2.3% nitrogen (amount of nitrogen in protein = 6.25%)  
2.3% nitrogen ÷ 0.15% sulfur = 15.3:1.0 ration or approximately 15:1 ratio.

### REFERENCES

- Beede, D.K., G.G. Davalos and E.M. Hirschert. 1992. Comparison of four magnesium oxide sources, each fed at three dietary concentrations to lactating cows. Proc. Florida Dairy Prod. Conference. p.85.
- Brondani, A., R. Towns, K. Chou and R.M. Cook. 1991. Effects of isoacids, urea, and sulfur on ruminal fermentation in sheep fed high fiber diets. J. Dairy Sci. 74:2724-2727.
- Henry, P.C., C.B. Ammerman and R.C. Littell. 1992. Relative bioavailability of manganese from a manganese-methionine complex and inorganic sources for ruminants. J. Dairy Sci. 75:3473
- Jenkins, K.J. and J.K.G. Kramer. 1991. Effects of excess dietary manganese on lipid composition of calf blood plasma, heart and liver. J. Dairy Sci. 74:3944-3948.
- Lopez-Guisa, J.M. and L.D. Satter. 1992. Effect of copper and cobalt addition on digestion and growth in heifers fed diets containing alfalfa silage or corn crop residues. J. Dairy Sci. 75:247-256.
- Lough, D.S., D.K. Beede, and C.J. Wilcox. 1990. Lactational responses to and in vitro solubility of magnesium oxide or magnesium chelate. J. Dairy Sci. 73:413-424.
- Martz, F.A., A.T. Belo, M.F. Weiss, and R.L. Belyea. 1990. True absorption of calcium and phosphorus from alfalfa and corn silage when fed to lactating cows.
- McDowell, L.R., J.H. Conrad, and F.G. Hembry. 1993. Minerals for grazing ruminants in tropical regions. Second edition. Bulletin of the Center for Tropical Agriculture. University of Florida. Gainesville, FL.
- Miltenburg, G.A.J., T. Wensing, J.P.M. van Vliet, G. Schuijt, J. van de Brock, and H.J. Breukink. 1991. Blood hemoglobin, plasma iron, and tissue iron in dams in late gestation, at calving, and in veal calves at delivery and later. J. Dairy Sci. 74:3086-3094.