

## Conversion Factors<sup>1</sup>

Several methods exist for expressing units of weight, concentration and volume in swine nutrition. The objective of this factsheet is to show how to perform unit conversions for weight (Table 1), concentration (Table 2) and volume (Table 3).

For example, assume a diet you are evaluating contains 75 mg/lb of iron. You want to know the iron concentration in ppm. Find the line in Table 2 that indicates “mg/lb to ppm (line 17). The conversion factor is 2.2. Multiply 2.2 by 75. The diet contains 165 ppm of iron.

Line no.	To convert:	Multiply by:
1	g to mg	1,000
2	mg to g	0.001
3	g to µg	1,000,000
4	µg to g	0.000001
5	kg to g	1,000
6	g to kg	0.001
7	kg to mg	1,000,000
8	mg to kg	0.000001
9	kg to lb	2.2046
10	lb to kg	0.4536
11	lb to g	453.6
12	g to lb	0.0022
13	mg to µg	1,000
14	µg to mg	0.001

<sup>a</sup>g = gram; mg = milligram; µg = microgram; kg = kilogram; lb = pound.

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<b>Table 2. Concentration conversion factors<sup>a</sup></b>		
<b>Line no.</b>	<b>To convert:</b>	<b>Multiply by:</b>
1	g/lb to %	0.220
2	% to g/lb	4.536
3	g/ton <sup>b</sup> to ppm	1.102
4	ppm to g/ton	0.907
5	Mcal/lb to kcal/lb	1,000
6	kcal to Mcal	0.001
7	Mcal to MJ	4.184
8	MJ to Mcal	0.239
9	mg/g to mg/lb	453.6
10	mg/lb to mg/g	0.0022
11	mg/g to ppm	1,000
12	ppm to mg/g	0.001
13	mg/kg to %	0.0001
14	% to mg/kg	10,000
15	mg/kg to ppm	1
16	ppm to mg/kg	1
17	mg/lb to ppm	2.2
18	ppm to mg/lb	0.4536
19	mg/lb to g/ton	2
20	g/ton to mg/lb	0.5
21	ppm to %	0.0001
22	% to ppm	10,000
23	µg/g to mg/g	0.001
24	mg/g to µg/g	1000
25	% to lb/ton	20
26	lb/ton to %	0.05

<sup>a</sup>g = gram; lb = pound; % = percent; ppm = parts per million; Mcal = Megacalorie; kcal = kilocalorie; MJ = megajoule; mg = milligram; kg = kilogram; µg = microgram.

<sup>b</sup>One ton = 2000 lb.

<b>Table 3. Volume (fluid) conversion factors<sup>a</sup></b>		
<b>Line no.</b>	<b>To convert:</b>	<b>Multiply by:</b>
1	c to L	0.237
2	L to c	4.227
3	c to gal	0.063
4	gal to c	16
5	gal to L	3.785
6	L to gal	0.264
7	mL to cc	1
8	cc to mL	1
9	mL to tsp	0.203
10	tsp to mL	4.929
11	mL to tbs	0.067
12	tbs to mL	14.787
13	oz to mL	29.574
14	mL to oz	0.034
15	qt to L	0.946
16	L to qt	1.057

<sup>a</sup>c = cup (US); L = liter; gal = gallon (US); mL = milliliter; cc = cubic centimeter; tsp = teaspoon (US); tbs = tablespoon (US); oz = ounce (US); qt = quart (US).

## References

1. NRC. 1988. Nutrient Requirements of Swine. 9th ed. National Academy Press, Washington, DC.
2. Online Conversion. 2009. <http://www.onlineconversion.com/volume.htm>. Accessed February 10, 2009.