

Equivalent Weights of Grain and Oilseeds

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Grain weight varies with the amount of water in the grain. Knowing the effect of water on the weight of grain can help better estimate the amount of shrinkage to expect as you dry grain, the adjustments required when marketing wet grain, or the amount of penalty there is for overdrying grain.

The standard weight of grain is the amount of grain that would fill a bushel container (1.244 cubic feet) when the grain is at a standard moisture content. Usually that moisture content is the level specified in the U.S. grading standards.

The table at the end of this information gives the weight of grain required to equal one bushel at the standard moisture content. It is computed using the following formula:

$$EW = DW + (M \times DW) \div (100 - M) \text{ where:}$$

EW = equivalent weight at moisture M

M = percent moisture content (wet basis)

DW = weight of dry matter (0 percent moisture)

- = 51.90 pounds per bushel for wheat
- = 90 pounds per cwt for sunflower
- = 41.04 pounds per bushel for barley
- = 27.52 pounds per bushel for oats
- = 47.32 pounds per bushel for corn
- = 48.16 pounds per bushel for rye
- = 52.20 pounds per bushel for soybeans
- = 50.96 pounds per bushel for flax

A few examples using the table are:

To compute the amount of water that must be removed from a bushel of wheat at 18 percent moisture while drying it to 13.5 percent:

1. Check the weight of a bushel at 18 percent. (63.29 pounds)
2. Determine the weight of a bushel at 13.5 percent (60 pounds)
3. Subtract the dry weight from the wet weight. $(63.29 - 60.00) = 3.29$ pounds

If a truck load of wheat at 18% M.C. weighs 9585 pounds, how many bushels will there be when the wheat is dried to 13.5 percent?

1. Check the equivalent weight of a bushel of 18 percent moisture. (63.29 pounds)
2. Divide this weight into the weight of the truckload. $(9585 \div 63.29) = 151.45$

This truck would have 151.45 equivalent bushels of wheat in it. If you dried the wheat, the truckload would weigh 9087 pounds (151.45×60) .

NOTE: These values only adjust for the difference in moisture content. Many operators will add a handling loss to this value to account for the material that always seems to disappear as grain is handled.

Weight to Equal One Bushel at Standard Moisture Contents

(Number that is underlined is the standard weight/bu)

Moisture Content	Wheat	Sunflower	Corn	Barley	Oats	Rye	Soybean	Flax	Sorghum
5.00	54.63	94.74	49.81	43.20	28.97	50.69	54.95	53.64	49.79
5.50	54.92	95.24	50.07	43.43	29.12	50.96	55.24	53.93	50.05
6.00	55.21	95.74	50.34	43.66	29.28	51.23	55.53	54.21	50.32
6.50	55.51	96.26	50.61	43.89	29.43	51.51	55.83	54.50	50.59
7.00	55.81	96.77	50.88	44.13	29.59	51.78	56.13	54.80	50.86
7.50	56.11	97.30	51.16	44.37	29.75	52.06	56.43	55.09	51.14
8.00	56.41	97.83	51.43	44.61	29.91	52.35	56.74	55.39	51.41
8.50	56.72	98.36	51.72	44.85	30.08	52.63	57.05	55.69	51.69
9.00	57.03	98.90	52.00	45.10	30.24	52.92	57.36	<u>56.00</u>	51.98
9.50	57.35	99.45	52.29	45.35	30.41	53.22	57.68	56.31	52.27
10.00	57.67	<u>100.00</u>	52.58	45.60	30.58	53.51	58.00	56.62	52.56
10.50	57.99	100.56	52.87	45.85	30.75	53.81	58.32	56.94	52.85
11.00	58.31	101.12	53.17	46.11	30.92	54.11	58.65	57.26	53.15
11.50	58.64	101.69	53.47	46.37	31.10	54.42	58.98	57.58	53.45

12.00	58.98	102.27	53.77	46.64	31.27	54.73	59.32	57.91	53.75
12.50	59.31	102.86	54.08	46.90	31.45	55.04	59.66	58.24	54.06
13.00	59.66	103.45	54.39	47.17	31.63	55.36	<u>60.00</u>	58.57	54.37
13.50	<u>60.00</u>	104.05	54.71	47.45	31.82	55.68	60.35	58.91	54.68
14.00	60.35	104.65	55.02	47.72	<u>32.00</u>	<u>56.00</u>	60.70	59.26	<u>55.00</u>
14.50	60.70	105.26	55.35	<u>48.00</u>	32.19	56.33	61.05	59.60	55.32
15.00	61.06	105.88	55.67	48.28	32.38	56.66	61.41	59.95	55.65
15.50	61.42	106.51	<u>56.00</u>	48.57	32.57	56.99	61.78	60.31	55.98
16.00	61.79	107.14	56.33	48.86	32.76	57.33	62.14	60.67	56.31
16.50	62.16	107.78	56.67	49.15	32.96	57.68	62.51	61.03	56.65
17.00	62.53	108.43	57.01	49.45	33.16	58.02	62.89	61.40	56.99
17.50	62.91	109.09	57.36	49.75	33.36	58.38	63.27	61.77	57.33
18.00	63.29	109.76	57.71	50.05	33.56	58.73	63.66	62.15	57.68
18.50	63.68	110.43	58.06	50.36	33.77	59.09	64.05	62.53	58.04
19.00	64.07	111.11	58.42	50.67	33.98	59.46	64.44	62.91	58.40
19.50	64.47	111.80	58.78	50.98	34.19	59.83	64.84	63.30	58.76
20.00	64.88	112.50	59.15	51.30	34.40	60.20	65.25	63.70	59.13
21.00	65.70	113.92	59.90	51.95	34.84	60.96	66.08	64.51	59.87
22.00	66.54	115.38	60.67	52.62	35.28	61.74	66.92	65.33	60.64
23.00	67.40	116.88	61.45	53.30	35.74	62.55	67.79	66.18	61.43
24.00	68.29	118.42	62.26	54.00	36.21	63.37	68.68	67.05	62.24
25.00	69.20	120.00	63.09	54.72	36.69	64.21	69.60	67.95	63.07
26.00	70.14	121.62	63.95	55.46	37.19	65.08	70.54	68.86	63.92
27.00	71.10	123.29	64.82	56.22	37.70	65.97	71.51	69.81	64.79
28.00	72.08	125.00	65.72	57.00	38.22	66.89	72.50	70.78	65.69
29.00	73.10	126.76	66.65	57.80	38.76	67.83	73.52	71.77	66.62
30.00	74.14	128.57	67.60	58.63	39.31	68.80	74.57	72.80	67.57
31.00	75.22	130.43	68.58	59.48	39.88	69.80	75.65	73.86	68.55
32.00	76.32	132.35	69.59	60.35	40.47	70.82	76.76	74.94	69.56
33.00	77.46	134.33	70.63	61.25	41.07	71.88	77.91	76.06	70.60
34.00	78.64	136.36	71.70	62.18	41.70	72.97	79.09	77.21	71.67
35.00	79.85	138.46	72.80	63.14	42.34	74.09	80.31	78.40	72.77
36.00	81.09	140.63	73.94	64.13	43.00	75.25	81.56	79.63	73.91
37.00	82.38	142.86	75.11	65.14	43.68	76.44	82.86	80.89	75.08
38.00	83.71	145.16	76.32	66.19	44.39	77.68	84.19	82.19	76.29
39.00	85.08	147.54	77.57	67.28	45.11	78.95	85.57	83.54	77.54
40.00	86.50	150.00	78.87	68.40	45.87	80.27	87.00	84.93	78.83
41.00	87.97	152.54	80.20	69.56	46.64	81.63	88.47	86.37	80.17
42.00	89.48	155.17	81.59	70.76	47.45	83.03	90.00	87.86	81.55
43.00	91.05	157.89	83.02	72.00	48.28	84.49	91.58	89.40	82.98
44.00	92.68	160.71	84.50	73.29	49.14	86.00	93.21	91.00	84.46
45.00	94.36	163.64	86.04	74.62	50.04	87.56	94.91	92.65	86.00

46.00	96.11	166.67	87.63	76.00	50.96	89.19	96.67	94.37	87.59
47.00	97.92	169.81	89.28	77.43	51.92	90.87	98.49	96.15	89.25
48.00	99.81	173.08	91.00	78.92	52.92	92.62	100.38	98.00	90.96
49.00	101.76	176.47	92.78	80.47	53.96	94.43	102.35	99.92	92.75
50.00	103.80	180.00	94.64	82.08	55.04	96.32	104.40	101.92	94.60

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