

Weight Conversions

To convert one unit of measure to another, use our online weight conversion tool located with our resources found at ScaleTools.ricelake.com

Units of Mass Not Greater Than Pounds and Kilograms

(All Underlined Figures Are Exact) Multiply by the Conversion Factor Below the Ending

Units	Grains	Apothecaries Scruples	Pennyweights	Avoirdupois Drams	Apothecaries Drams	Avoirdupois Ounces
1 grain =	1	0.05	0.04166667	0.03657143	0.01666667	0.002285714
1 apoth. scruple =	20	1	0.8333333	0.7314286	0.3333333	0.04571429
1 pennyweight =	24	1.2	1	0.8777143	0.4	0.05485714
1 avdp. dram =	27.34375	1.3671875	1.139323	1	0.4557292	0.0625
1 apoth. dram =	60	3	2.5	2.194286	1	0.1371429
1 avdp. ounce =	437.5	21.875	18.22917	16	7.291667	1
1 apoth. or troy oz. =	480	24	20	17.55429	8	1.097143
1 apoth. or troy pound =	5760	288	240	210.6514	96	13.16571
1 avdp. pound =	7000	350	291.6667	256	116.6667	16
1 milligram =	0.01543236	0.0007716179	0.0006430149	0.0005643834	0.0002572060	0.00003527396
1 gram =	15.43236	0.7716179	0.6430149	0.5643834	0.2572060	0.03527396
1 kilogram =	15432.36	771.6179	643.0149	564.3834	257.2060	35.27396

Units	Apothecaries or Troy Ounces	Apothecaries or Troy Pounds	Avoirdupois Pounds	Milligrams	Grams	Kilograms
1 grain =	0.002083333	0.0001736111	0.0001428571	64.79891	0.06479891	0.00006479891
1 apoth. scruple =	0.04166667	0.003472222	0.002857143	1295.9782	1.2959782	0.0012959782
1 pennyweight =	0.05	0.004166667	0.003428571	1555.17384	1.55517384	0.00155517384
1 avdp. dram =	0.5696615	0.004747179	0.00390625	1771.8451953125	1.7718451953125	0.0017718451953125
1 apoth. dram =	0.125	0.01041667	0.008571429	3887.9346	3.8879346	0.0038879346
1 avdp. ounce =	0.9114583	0.07595486	0.0625	28349.523125	28.349523125	0.028349523125
1 apoth. or troy ounce =	1	0.08333333	0.06857143	31103.4768	31103.4768	0.0311034768
1 apoth. or troy pound =	12	1	0.8228571	373241.7216	373.2417216	0.3732417216
1 avdp. pound =	14.58333	1.215278	1	453592.37	453.59237	0.45359237
1 milligram =	0.00003215075	0.000002679229	0.000002204623	1	0.001	0.000001
1 gram =	0.03215075	0.002679229	0.002204623	1000	1	0.001
1 kilogram =	32.15075	2.679229	2.204623	1000000	1000	1

Units	Avoirdupois Ounces	Avoirdupois Pounds	Short Hundredweights	Short Tons	Long Tons	Kilograms	Metric Tons
1 avoirdupois ounce =	1	0.0625	0.000625	0.00003125	0.00002790179	0.028349523125	0.000028349523125
1 avoirdupois pound =	16	1	0.01	0.0005	0.0004464286	0.45359237	0.00045359237
1 short hundredweight =	1600	100	1	0.05	0.04464286	45.359237	0.045359237
1 short ton =	32000	2000	20	1	0.8928571	907.18474	0.90718474
1 long ton =	35840	2240	22.4	1.12	1	1016.0469088	1.0160469088
1 kilogram =	35.27396	2.204623	0.02204623	0.001102311	0.0009842065	1	0.001
1 metric ton =	35273.96	2204.623	22.04623	1.102311	0.9842065	1000	1

Based on NIST Handbook 44, Appendix C - General Tables of Measurement



Weight Tolerances

Tolerance for weights of denominations between those listed can be determined as follows:

- If the unit of measure is non-metric, convert the nominal value to a metric unit.
- For weights that are between those listed, the tolerance for the next lower weight shall be applied.

Weight Tolerance, Metric*

Nominal Size	ASTM E617-23									
	Class 000 mg	Class 00 mg	Class 0 mg	Class 1 mg	Class 2 g and mg	Class 3 g and mg	Class 4 g and mg	Class 5 g and mg	Class 6 g and mg	Class 7 g and mg
5 000 kg					25 g	50 g	100 g	250 g	500 g	750 g
3 000 kg					15 g	30 g	60 g	150 g	300 g	450 g
2 000 kg					10 g	20 g	40 g	100 g	200 g	300 g
1 000 kg					5.0 g	10 g	20 g	50 g	100 g	150 g
500 kg					2.5 g	5.0 g	10 g	25 g	50 g	75 g
300 kg					1.5 g	3.0 g	6.0 g	15 g	30 g	45 g
200 kg					1.0 g	2.0 g	4.0 g	10 g	20 g	30 g
100 kg					500 mg	1.0 g	2.0 g	5.0 g	10 g	15 g
50 kg	13 mg	25 mg	63 mg	120 mg	250	500 mg	1.0 g	2.5 g	5.0 g	7.5 g
30 kg	7.5	15	38	75	150	300	600 mg	1.5 g	3.0 g	5.1 g
25 kg	6.25	12.5	31	62	125	250	500	1.3 g	2.5 g	4.5 g
20 kg	5.0	10	25	50	100	200	400	1.0 g	2.0 g	3.8 g
10 kg	2.5	5.0	13	25	50	100	200	500 mg	1.0 g	2.2 g
5 kg	1.3	2.5	6.0	12	25	50	100	250	500 mg	1.4 g
3 kg	0.75	1.5	3.8	7.5	15	30	60	150	300	1.0 g
2 kg	0.5	1.0	2.5	5.0	10	20	40	100	200	750 mg
1 kg	0.25	0.5	1.3	2.5	5.0	10	20	50	100	470 mg
500 g	0.13	0.25	0.60	1.2	2.5	5.0	10	35	70	300
300 g	0.075	0.15	0.38	0.75	1.5	3.0	6.0	30	60	210
200 g	0.05	0.10	0.25	0.50	1.0	2.0	4.0	20	40	160
100 g	0.025	0.05	0.13	0.25	0.50	1.0	2.0	10	20	100
50 g	0.015	0.030	0.060	0.12	0.25	0.60	1.2	5.0	10	62
30 g	0.014	0.026	0.037	0.074	0.15	0.45	0.90	3.0	6.0	44
20 g	0.013	0.025	0.037	0.074	0.10	0.35	0.70	2.0	4.0	33
10 g	0.010	0.020	0.025	0.050	0.074	0.25	0.50	1.0	2.0	21
5 g	0.005	0.010	0.017	0.034	0.054	0.18	0.36	0.75	1.5	13
3 g	0.005	0.010	0.017	0.034	0.054	0.15	0.30	0.64	1.3	9.4
2 g	0.005	0.010	0.017	0.034	0.054	0.13	0.26	0.56	1.1	7.0
1 g	0.005	0.010	0.017	0.034	0.054	0.10	0.20	0.45	0.90	4.5
500 mg	0.002	0.003	0.005	0.010	0.025	0.080	0.16	0.36	0.72	3.0
300 mg	0.002	0.003	0.005	0.010	0.025	0.070	0.14	0.31	0.61	2.2
200 mg	0.002	0.003	0.005	0.010	0.025	0.060	0.12	0.27	0.54	1.8
100 mg	0.002	0.003	0.005	0.010	0.025	0.050	0.10	0.22	0.43	1.2
50 mg	0.002	0.003	0.005	0.010	0.014	0.042	0.085	0.17	0.35	0.88
30 mg	0.002	0.003	0.005	0.010	0.014	0.038	0.075	0.15	0.30	0.68
20 mg	0.002	0.003	0.005	0.010	0.014	0.035	0.070	0.13	0.26	0.56
10 mg	0.002	0.003	0.005	0.010	0.014	0.030	0.060	0.10	0.21	0.40
5 mg	0.002	0.003	0.005	0.010	0.014	0.028	0.055	0.083	0.17	
3 mg	0.002	0.003	0.005	0.010	0.014	0.026	0.052	0.071	0.14	
2 mg	0.002	0.003	0.005	0.010	0.014	0.025	0.050	0.062	0.12	
1 mg	0.002	0.003	0.005	0.010	0.014	0.025	0.050	0.050	0.10	
0.5 mg	0.002	0.003	0.005	0.010	0.014	0.025	0.050	0.0540	0.080	
0.3 mg	0.002	0.003	0.005	0.010	0.014	0.025				
0.2 mg	0.002	0.003	0.005	0.010	0.014					
0.1 mg	0.002	0.003	0.005	0.010						
0.05 mg	0.002	0.003	0.005	0.010						

Weight Tolerance, Avoirdupois*

Nominal Size	ASTM E617-23								
	Class 0 mg	Class 1 mg	Class 2 mg	Class 3 g and mg	Class 4 g and mg	Class 5 g and mg	Class 6 g and mg	Class 7 g and mg	
10 000 lb				45 g	91 g	230 g	450 g	680 g	
5 000 lb				23 g	45 g	110 g	230 g	340 g	
3 000 lb				14 g	27 g	68 g	140 g	200 g	
2 500 lb				11 g	23 g	57 g	110 g	170 g	
2 000 lb				9.1 g	18 g	45 g	91 g	140 g	
1 000 lb				4.5 g	9.1 g	23 g	45 g	68 g	
500 lb				2.3 g	4.5 g	11 g	23 g	34 g	
300 lb				1.4 g	2.7 g	6.8 g	14 g	20 g	
200 lb				910 mg	1.8 g	4.5 g	9.1 g	14 g	
100 lb	57	110	230	450	910 mg	2.3 g	4.5 g	6.8 g	
50 lb	29	57	110	230	450	1.1 g	2.3 g	4.1 g	
30 lb	17	32	68	140	270	680 mg	1.4 g	2.7 g	
25 lb	14	28	57	110	230	570	1.1 g	2.4 g	
20 lb	12	23	45	91	180	450	910 mg	2.0 g	
10 lb	5.5	11	23	45	91	230	450	1.3 g	
5 lb	2.7	5.4	11	23	45	110	230	780 mg	
3 lb	1.7	3.4	6.8	14	27	68	140	580	
2 lb	1.2	2.3	4.5	9.1	18	45	91	440	
1 lb	0.55	1.1	2.3	4.5	9.1	35	70	270	
0.5 lb	0.27	0.54	1.1	2.3	4.5	23	45	170	
0.3 lb	0.17	0.34	0.68	1.4	2.7	14	27	120	
0.2 lb	0.12	0.23	0.45	0.91	1.8	9.0	18	97	
0.1 lb	0.055	0.11	0.23	0.57	1.1	4.5	9.1	59	
0.05 lb	0.037	0.074	0.11	0.36	0.77	2.3	4.5	37	
0.03 lb	0.029	0.059	0.083	0.32	0.59	1.4	2.7	26	
0.02 lb	0.024	0.047	0.070	0.23	0.45	0.91	1.8	20	
0.01 lb	0.017	0.034	0.054	0.16	0.34	0.73	1.5	12	
0.005 lb	0.017	0.034	0.054	0.14	0.27	0.58	1.2	7.8	
0.003 lb	0.017	0.034	0.054	0.11	0.22	0.50	0.99	5.4	
0.002 lb	0.015	0.030	0.049	0.091	0.19	0.44	0.87	4.2	
0.001 lb	0.0050	0.010	0.024	0.078	0.15	0.35	0.70	2.9	
0.0005 lb	0.0045	0.0091	0.023	0.064	0.13	0.28	0.56	2.0	

Weight Tolerance, Avoirdupois Ounces*

Nominal Size	ASTM E617-23								
	Class 0 mg	Class 1 mg	Class 2 mg	Class 3 mg	Class 4 mg	Class 5 mg	Class 6 mg	Class 7 mg	
10 oz	0.35	0.70	1.4	2.8	5.4	28	57	200	
8 oz	0.27	0.54	1.1	2.3	4.5	23	45	170	
5 oz	0.18	0.35	0.71	1.4	2.8	14	28	130	
4 oz	0.14	0.28	0.57	1.1	2.3	11	23	110	
3 oz	0.10	0.21	0.43	0.91	1.8	8.5	17	90	
2 oz	0.070	0.14	0.28	0.64	1.3	5.7	11	70	
1 oz	0.037	0.074	0.14	0.43	0.86	2.8	5.4	42	
1/2 oz	0.030	0.060	0.085	0.30	0.59	1.4	2.8	27	
1/4 oz	0.020	0.041	0.062	0.20	0.43	0.84	1.7	17	
1/8 oz	0.017	0.034	0.054	0.16	0.31	0.67	1.3	10	
1/16 oz	0.017	0.034							