

Metric Weight Tolerances



INTERNATIONAL ORGANIZATION OF
LEGAL METROLOGY RECOMMENDATIONS
OIML R 111



Denomination Metric	E1 mg	E2 mg	F1 mg	F2 mg	M1 mg	M2 mg	M3 mg
5000 kg							
3000 kg							
2000 kg							
1000 kg							
500 kg							
300 kg							
200 kg							
100 kg							
50 kg	25	75	250	750	2500	7500	25,000
30 kg							
25 kg							
20 kg	10	30	100	300	1000	3000	10,000
10 kg	5	15	50	150	500	1500	5000
5 kg	2.5	7.5	25	75	250	750	2500
3 kg							
2 kg	1.0	3.0	10	30	100	300	1000
1 kg	0.5	1.5	5	15	50	150	500
500g	0.25	0.75	2.5	7.5	25	75	250
300g							
200g	0.1	0.30	1.0	3.0	10	30	100
100g	0.05	0.15	0.5	1.5	5	15	50
50g	0.03	0.10	0.30	1.0	3.0	10	30
30g							
20g	0.025	0.080	0.25	0.8	2.5	8	25
10g	0.020	0.060	0.20	0.6	2.0	6	20
5g	0.015	0.050	0.15	0.5	1.5	5	15
3g							
2g	0.012	0.040	0.12	0.4	1.2	4	12
1g	0.010	0.030	0.10	0.3	1.0	3	10
500mg	0.008	0.025	0.08	0.25	0.8	2.5	
300mg							
200mg	0.006	0.020	0.06	0.20	0.6	2	
100mg	0.005	0.015	0.05	0.15	0.5	1.5	
50mg	0.004	0.012	0.04	0.12	0.4		
30mg							
20mg	0.003	0.010	0.03	0.10	0.3		
10mg	0.002	0.008	0.025	0.08	0.25		
5mg	0.002	0.006	0.020	0.06	0.20		
3mg							
2mg	0.002	0.006	0.020	0.06	0.20		
1mg	0.002	0.006	0.020	0.06	0.20		

0 mg	1 mg	2 mg	3 mg	4 g & mg	5 g & mg	6 g & mg	7 g & mg
				100g	250g		750g
				60g	150g		450g
				40g	100g		300g
				20g	50g		150g
				10g	25g	50g	75g
				6.0g	15g	30	45g
				4.0g	10g	20	30g
				2.0g	5g	10	15g
63	125	250	500	1.0g	2.5g	5	7.5g
38	75	150	300	600mg	1.5g	3	4.5g
31	62	125	250	500mg	1.2g		4.5g
25	50	100	200	400mg	1.0g	2	3.8g
13	25	50	100	200mg	500mg	1	2.2g
6	12	25	50	100mg	250mg	500mg	1.4g
3.8	7.5	15	30	60mg	150mg	300mg	1.0g
2.5	5.0	10	20	40mg	100mg	200mg	750mg
1.3	2.5	5.0	10	20mg	50mg	100mg	470mg
0.60	1.2	2.5	5.0	10mg	30mg	50mg	300mg
0.38	0.75	1.5	3.0	6.0mg	20mg	30mg	210mg
0.25	0.50	1.0	2.0	4.0mg	15mg	20mg	160mg
0.13	0.25	0.50	1.0	2.0mg	9mg	10mg	100mg
0.060	0.12	0.25	0.60	1.2mg	5.6mg	7mg	
0.037	0.074	0.15	0.45	0.90mg	4.0mg	5mg	44mg
0.037	0.074	0.10	0.35	0.7mg	3.0mg	3mg	33mg
0.025	0.050	0.074	0.25	0.5mg	2.0mg	2mg	21mg
0.017	0.034	0.054	0.18	0.36mg	1.3mg	2mg	13mg
0.017	0.034	0.054	0.15	0.30mg	0.95mg	2mg	9.4mg
0.017	0.034	0.054	0.13	0.26mg	0.75mg	2mg	7.0mg
0.017	0.034	0.054	0.10	0.20mg	0.50mg	2mg	4.5mg
0.005	0.010	0.025	0.080	0.16mg	0.38mg	1mg	3.0mg
0.005	0.010	0.025	0.070	0.14mg	0.30mg	1mg	2.2mg
0.005	0.010	0.025	0.060	0.12mg	0.26mg	1mg	1.8mg
0.005	0.010	0.025	0.050	0.10mg	0.20mg	1mg	1.2mg
0.005	0.010	0.014	0.042	0.085mg	0.16mg		0.88mg
0.005	0.010	0.014	0.038	0.075mg	0.14mg		0.68mg
0.005	0.010	0.014	0.035	0.070mg	0.12mg		0.56mg
0.005	0.010	0.014	0.030	0.060mg	0.10mg		0.4mg
0.005	0.010	0.014	0.028	0.055mg	0.080mg		
0.005	0.010	0.014	0.026	0.052mg	0.070mg		
0.005	0.010	0.014	0.025	0.050mg	0.60mg		
0.005	0.010	0.014	0.025	0.050mg	0.50mg		

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.

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NIST 105-1 Class F Tolerances are based on the 1990 revised tolerance structure used by State Weights & Measures.

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Metric (Cont.)

NIST HANDBOOK
105-1 44

Denomination Metric	F g & mg	Accept mg	Maint mg
5000 kg	500g		
3000 kg	300g		
2000 kg	200g		
1000 kg	100g		
500 kg	50g		
300 kg	30g		
200 kg	20g		
100 kg	10g		
50 kg	5.0g		
30 kg	3.0g		
25 kg	2.5g		
20 kg	2.0g	750	1500
10 kg	1.0g	500	1000
5 kg	500mg	400	800
3 kg	300mg	250	500
2 kg	200mg	200	400
1 kg	100mg	125	250
500g	70mg	88	175
300g	60mg	75	150
200g	40mg	50	100
100g	20mg	35	70
50g	10mg	20	40
30g	6.0mg	15	30
20g	4.0mg	10	20
10g	2.0mg	8	15
5g	1.5mg	5	10
3g	1.28mg	4	8
2g	1.12mg	3	6
1g	0.90mg	2	4
500mg	0.72mg	1.5	3.0
300mg	0.61mg	1.0	2.0
200mg	0.54mg	0.8	1.5
100mg	0.43mg	0.5	1.0
50mg	0.35mg	0.4	0.8
30mg	0.29mg	0.3	0.6
20mg	0.26mg	0.2	0.4
10mg	0.21mg	0.15	0.3
5mg	0.17mg	0.05	0.1
3mg	0.14mg	0.05	0.1
2mg	0.12mg	0.05	0.1
1mg	0.10mg	0.05	0.1

Avoirdupois Weight Tolerances

POUNDS
NIST HANDBOOK
105-1 44

Denomination Pound	F g & mg	Accept g & mg	Maint g & mg
10,000 lb	450g		
5000 lb	230		
3000 lb	140		
2500 lb	110		
2000 lb	91		
1000 lb	45		
500 lb	23		
100 lb	4.5		
50 lb	2.3	1.6g	3.2g
40 lb		1.5	2.9
30 lb	1.4	1.3	2.6
25 lb	1.1	1.1	2.3
20 lb	910mg	970mg	1.9
15 lb		910	1.8
10 lb	450	810	1.6
9 lb		750	1.5
8 lb		680	1.4
7 lb		620	1.2
6 lb		550	1190mg
5 lb	227	490	970mg
4 lb		360	710
3 lb	136	290	580
2 lb	91	230	450
1 lb	70	160	320
0.5 lb	45		
0.3 lb	27		
0.2 lb	18		
0.1 lb	9.1		
0.5 lb	4.5		
0.3 lb	2.7		
0.02 lb	1.8		
0.01 lb	1.5		
0.005 lb	1.17		
0.003 lb	0.99		
0.002 lb	0.87		
0.001 lb	0.70		
0.0005 lb			
0.0003 lb			
0.0002 lb			
0.0001 lb			
0.00005 lb			
0.00003 lb			
0.00002 lb			
0.00001 lb			

OUNCES
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Denomination Ounce	F g & mg	Accept g & mg	Maint g & mg
12 oz		160	320
10 oz		130	260
8 oz	45	130	260
6 oz		110	230
5 oz		110	230
4 oz	23	97	190
3 oz		65	130
2 oz	11	65	130
1 oz	5.4	55	110
1/2 oz	2.8	49	97
1/4 oz	1.7	32	65
1/8 oz	1.3	16	32
1/16 oz	1.1	13	26
1/32 oz	0.87	9.7	19
1/64 oz	0.69	3.2	6
0.5 oz	2.8		
0.3 oz	1.8		
0.2 oz	1.6		
0.1 oz	1.3		
0.05 oz	1.0		
0.03 oz	0.85		
0.02 oz	0.75		
0.01 oz	0.60		
0.005 oz			
0.003 oz			
0.002 oz			
0.001 oz			
0.0005 oz			
0.0003 oz			
0.0002 oz			
0.0001 oz			

NIST Handbook 44 & NIST Circular 3 Tolerances have been converted from avoirdupois to metric and rounded to two significant figures.

NIST 105-1 Class F Tolerances are based on the 1975 revised tolerance structure used by State Weights & Measures.

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