

OIML and ASTM Tolerances

International Organization of Legal Metrology Recommendation R111

	E1	E2	F1	F2	M1	M2	M3
	mg	mg	mg	mg	mg	mg	mg
5000 kg			25000	80000	250000	800000	2500000
3000 kg							
2000 kg			10000	30000	100000	300000	1000000
1000 kg		1600	5000	16000	50000	160000	500000
500 kg		800	2500	8000	25000	80000	250000
300 kg							
200 kg		300	1000	3000	10000	30000	100000
100 kg		160	500	1600	5000	16000	50000
50 kg	25	80	250	800	2500	8000	25000
30 kg							
25 kg							
20 kg	10	30	100	300	1000	3000	10000
10 kg	5	16	50	160	500	1600	5000
5 kg	2.5	8.0	25	80	250	800	2500
3 kg							
2 kg	1	3	10	30	100	300	1000
1 kg	0.5	1.6	5	16	50	160	500
500 g	0.25	0.8	2.5	8.0	25	80	250
300 g							
200 g	0.1	0.3	1.0	3	10	30	100
100 g	0.05	0.16	0.5	1.6	5.0	16	50
50 g	0.03	0.10	0.3	1.0	3.0	10	30
30 g							
20 g	0.025	0.08	0.25	0.8	2.5	8.0	25
10 g	0.020	0.06	0.20	0.6	2.0	6.0	20
5 g	0.016	0.05	0.16	0.5	1.6	5.0	16
3 g							
2 g	0.012	0.04	0.12	0.4	1.2	4.0	12
1 g	0.010	0.03	0.10	0.3	1.0	3.0	10
500 mg	0.008	0.025	0.08	0.25	0.8	2.5	
300 mg							
200 mg	0.006	0.020	0.06	0.20	0.6	2.0	
100 mg	0.005	0.016	0.05	0.16	0.5	1.6	
50 mg	0.004	0.012	0.04	0.12	0.4		
30 mg							
20 mg	0.003	0.010	0.030	0.10	0.30		
10 mg	0.003	0.008	0.025	0.08	0.25		
5 mg	0.003	0.006	0.020	0.06	0.20		
3 mg							
2 mg	0.003	0.006	0.020	0.06	0.20		
1 mg	0.003	0.006	0.020	0.06	0.20		

ANSI/ASTM E617

0	1	2	3	4	5	6	7
mg	mg	mg	mg	g/mg	g/mg	g/mg	g/mg
				100 g	250 g	500 g	750 g
				60 g	150 g	300 g	450 g
				40 g	100 g	200 g	300 g
				20 g	50 g	100 g	150 g
				10 g	25 g	50 g	75 g
				6 g	15 g	30 g	45 g
				4 g	10 g	20 g	30 g
				2 g	5 g	10 g	15 g
63	125	250	500	1 g	2.5 g	5 g	7.5 g
38	75	150	300	600 mg	1.5 g	3 g	4.5 g
31	62	125	250	500	1.2 g	2.5 g	4.5 g
25	50	100	200	400	1.0 g	2 g	3.8 g
13	25	50	100	200	500 mg	1 g	2.2 g
6	12	25	50	100	250	500 mg	1.4 g
3.8	7.5	15	30	60	150	300	1.0 g
2.5	5	10	20	40	100	200	750 mg
1.3	2.5	5	10	20	50	100	470
0.6	1.2	2.5	5	10	30	50	300
0.38	0.75	1.5	3	6	20	30	210
0.25	0.5	1	2	4	15	20	160
0.13	0.25	0.5	1	2	9	10	100
0.06	0.12	0.25	0.6	1.2	5.6	7	...
0.037	0.074	0.15	0.45	0.9	4	5	44
0.037	0.074	0.1	0.35	0.7	3	3	33
0.025	0.05	0.074	0.25	0.5	2	2	21
0.017	0.034	0.054	0.18	0.36	1.3	2	13
0.017	0.034	0.054	0.15	0.3	0.95	2.0	9.4
0.017	0.034	0.054	0.13	0.26	0.75	2.0	7
0.017	0.034	0.054	0.1	0.2	0.5	2.0	4.5
0.005	0.01	0.025	0.08	0.16	0.38	1	3
0.005	0.01	0.025	0.07	0.14	0.3	1	2.2
0.005	0.01	0.025	0.06	0.12	0.26	1	1.8
0.005	0.01	0.025	0.05	0.1	0.2	1	1.2
0.005	0.01	0.014	0.042	0.085	0.16	0.5	0.88
0.005	0.01	0.014	0.038	0.075	0.14	0.5	0.68
0.005	0.01	0.014	0.035	0.07	0.12	0.5	0.56
0.005	0.01	0.014	0.03	0.06	0.1	0.5	0.4
0.005	0.01	0.014	0.028	0.055	0.08	0.2	...
0.005	0.01	0.014	0.026	0.052	0.07	0.2	...
0.005	0.01	0.014	0.025	0.05	0.06	0.2	...
0.005	0.01	0.014	0.025	0.05	0.05	0.1	...

The nominal weight values in this table specify the smallest and largest weight permitted in any class of R 111 (for OIML weights), and E617 (for ASTM weights), and the maximum permissible errors and denominations shall not be extrapolated to higher or lower values. For example, the smallest nominal value for a weight in OIML class M2 is 100 mg while the largest is 5000 kg. A 50 mg weight would not be accepted as an R 111 class M2 weight and instead should meet class M1 maximum permissible errors and other requirements (e.g. shape or markings) for that class of weight. Otherwise the weight cannot be described as complying with R 111.



International Prototype Kilogram (IPK) at BIPM, a cylinder made of 90% platinum and 10% iridium.

