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# Section 2.23. Weights

## A. Application

A.1. General. – This code applies to commercial weights; that is, weights used in connection with commercial weighing devices.

A.2. Exceptions. – This code does not apply to test weights or to other “standards” of mass.

A.3. Additional Code Requirements. – In addition to the requirements of this code, Weights shall meet the requirements of Section 1.10. General Code.

## S. Specifications

S.1. Material. – The material used for weights shall be as follows:

(a) Weights of 6 g or 100 gr and larger shall be made of a metal, or a metal alloy, not softer than brass.

(b) Weights of less than 6 g or 100 gr may be made of aluminum, but shall not be made of iron or of unplated steel, except stainless steel.

### S.2. Design.

S.2.1. Surface. – The surface of a weight shall be smooth and shall not be coated with thick, soft, or brittle material. A weight of more than 2 g or 30 gr or shall not have sharp edges, points, or corners.

S.2.2. Ring. – A ring on a weight shall not be split or removable.

S.3. Adjusting Material. – Adjusting material shall be securely positioned and shall not project beyond the surface of the weight.

### S.4. Marking Requirements.

S.4.1. General. – A weight shall be marked to show clearly its nominal value, which shall include identification of the unit; however, the nominal value of a weight of 30 gr or 2 g, or less, may be designated by dots, lines, figures, distinctive shape, or other appropriate means.

S.4.2. Apothecaries’ Weights. – On apothecaries’ dram, ounce, and pound weights, the letters “ap” shall be used in combination with the nominal value and the appropriate abbreviation of or symbol for the unit.

S.4.3. Troy Weights. – On troy ounce and pound weights, the letter “t” shall be used in combination with the nominal value and the appropriate symbol of the unit.

S.4.4. Metric Weights. – On metric weights, the symbols “kg,” “g,” and “mg” shall be used in combination with the nominal value of kilograms, grams, and milligrams, respectively.

S.4.5. Carat Weights. – On carat weights, the letter “c” shall be used in combination with the nominal value.

S.4.6. Counterpoise Weight. – A counterpoise weight shall be marked to show clearly both its nominal value and the value it represents when used on the multiplying-lever scale for which it is intended.

## N. Notes

N.1. Testing Procedures. – Commercial weights should be tested on a precision balance using standard weights, the errors of which, when used without correction, do not exceed 1/3 of the smallest tolerance to be applied. (Also see Appendix A, Fundamental Considerations, paragraphs 3.2. Tolerance for Standars and 3.3. Accuracy of Standards.)

## T. Tolerances

T.1. In Excess and In Deficiency. – The tolerances hereinafter prescribed shall be applied equally to errors in excess and errors in deficiency.

T.2. On Avoirdupois Weights. – The maintenance tolerances shall be as shown in Table 1. Maintenance Tolerance for Avoirdupois Weights. Acceptance tolerances shall be one-half the maintenance tolerances.

|  |
| --- |
| Table 1.Maintenance Tolerance for Avoirdupois Weights |
| **Maintenance Tolerance** |
| **Nominal Value** | **Equal-Arm****Weights** | **Counterpoise Weights** |
| **For scales with multiples of less than 1000** | **For scales with multiples of 1000 or over** |
| **oz** | **Grains** | **mg** | **grains** | **mg** | **grains** | **mg** |
| 1/64 | 0.1 | 6 |  |  |  |  |
| 1/32 | 0.3 | 19 |  |  |  |  |
| 1/16 | 0.4 | 26 |  |  |  |  |
| 1/8 | 0.5 | 32 |  |  |  |  |
| ¼ | 1.0 | 65 |  |  |  |  |
| ½ | 1.5 | 97 | 1.0 | 65 |  |  |
| 1 | 1.7 | 110 | 1.0 | 65 |  |  |
| 2 | 2.0 | 130 | 1.0 | 65 |  |  |
| 3 | 2.0 | 130 | 1.5 | 97 |  |  |
| 4 | 3.0 | 190 | 1.5 | 97 | 1.0 | 65 |
| 5 | 3.5 | 230 | 1.5 | 97 | 1.0 | 65 |
| 6 | 3.5 | 230 | 1.5 | 97 |  |  |
| 8 | 4.0 | 260 | 2.0 | 130 | 1.5 | 97 |
| 10 | 4.0 | 260 | 2.5 | 160 | 2.0 | 130 |
| 12 | 5.0 | 320 | 2.5 | 160 | 2.0 | 130 |
| **Lb** | **Grains** | **mg** | **grains** | **mg** | **grains** | **mg** |
| 1 | 5.0 | 320 | 3.0 | 190 | 2.5 | 160 |
| 2 | 7.0 | 450 | 6.0 | 390 | 4.0 | 260 |
| 3 | 9.0 | 580 | 9.0 | 580 | 5.0 | 320 |
| 4 | 11.0 | 710 | 11.0 | 710 | 6.0 | 390 |
| 5 | 15.0 | 970 | 12.0 | 780 | 6.5 | 420 |
| 6 | 17.0 | 1190 |  |  |  |  |
| 7 | 19.0 | 1200 |  |  |  |  |
| 8 | 21.0 | 1400 | 15.0 | 970 | 9.0 | 580 |
| 9 | 23.0 | 1500 |  |  |  |  |
| 10 | 25.0 | 1600 | 18.0 | 1160 | 10.0 | 650 |
| 15 | 28.0 | 1800 |  |  |  |  |
| 20 | 30.0 | 1900 |  |  |  |  |
| 25 | 35.0 | 2300 |  |  |  |  |
| 30 | 40.0 | 2600 |  |  |  |  |
| 40 | 45.0 | 2900 |  |  |  |  |
| 50 | 50.0 | 3200 |  |  |  |  |

T.3. On Metric Weights. – The maintenance tolerances shall be as shown in Table 2. Maintenance Tolerances for Metric Weights. Acceptance tolerances shall be one-half the maintenance tolerances.

T.4. On Carat Weights. – The maintenance tolerances shall be as shown in Table 2. Maintenance Tolerances for Metric Weights. Acceptance tolerances shall be one‑half the maintenance tolerances.

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| Table 2.Maintenance Tolerances for Metric Weights |
| **Nominal****Value****(mg)** | **Maintenance****Tolerance****(mg)** | **Nominal****Value****(g)** | **Maintenance****Tolerance****(mg)** |
| 5 or less10203050100200300500 | 0.10.30.40.60.81.01.52.03.0 | 123510203050100200300500 | 468101520304070100150175 |
| **Nominal****Value****(kg)** | **Maintenance****Tolerance****(mg)** | **Nominal****Value****(carats)** | **Maintenance****Tolerance****(mg)** |
| 12351020 | 250400500800 1000 1500 | 0.25\*0.5\*\*1.02.03.05.010.020.030.050.0100.0 | 0.61.01.52.03.04.06.010.012.015.025.0 |
|  |  | \*25 points or less\*\*50 points |  |

T.5. On Apothecaries and Troy Weights. – The maintenance tolerances shall be as shown in Table 3. Maintenance Tolerances for Apothecaries’ and Troy Weights. Acceptance tolerances shall be one-half the maintenance tolerances.

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| Table 3.Maintenance Tolerances for Apothecaries’ and Troy Weights |
| **Nominal****Value** | **Maintenance Tolerance** | **Nominal****Value** | **Maintenance Tolerance** |
| **grains** | **grains** | **mg** | **oz** | **grains** | **mg** |
| 12351020 | 0.010.020.030.030.040.06 | 0.61.32.02.02.54.0 | 12345 | 0.40.61.01.51.6 | 25.040.065.0100.0105.0 |
| **scruples** | **grains** | **mg** | **oz** | **grains** | **mg** |
| 12 | 0.060.10 | 4.06.5 | 678910 | 1.81.92.02.12.2 | 115.0125.0130.0135.0145.0 |
| **dr** | **grains** | **mg** | **oz** | **grains** | **mg** |
| 0.51.02.03.04.05.06.0 | 0.070.100.200.300.400.500.60 | 4.56.513.020.025.030.040.0 | 1112203050 | 2.42.52.93.75.4 | 155.0160.0190.0240.0350.0 |
| **dwt** | **grains** | **mg** | **oz** | **grains** | **mg** |
| 1234510 | 0.060.100.150.200.300.40 | 4.06.510.013.020.025.0 | 1002003005001 000 | 7.712.315.423.138.6 | 500.0800.01 000.01 500.02 500.0 |

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