

**Counterfeit Coin Detection**  
**August 13, 2009**  
**Wichita Coin Club**

Basic Techniques:

1. Magnet – a magnet is used to help determine the composition of the coin. Ferrous materials, such as iron and steel, will be attracted by the magnet. A good example is a 1943 steel cent that has been copper coated to be passed off as a rare 1943 copper cent. Most US coins are not attracted to a magnet.
2. Scale capable of measuring to a 0.1 of a gram - Many counterfeit coins do not weight the proper amount and this is a simple method to determine if a coin is struck on a plancet made from the wrong alloy. A quick measurement and comparison to the weights in Table 1 can give you a definitive answer on the authenticity of the coin. The Red Book also contains weight information for US coins. An electronic scale capable of measuring up to 50 grams with 0.01 gram accuracy can be purchased on-line for less than \$25.00. They are typically used in the jewelry business.
3. Vernier Caliper – this simple device is used to measure the diameter of the coins to +/- 0.1 mm. Plastic versions of this instrument cost less that \$10.00.
4. Visual examination using a 10X to 30X Magnifying Glass – Use the magnifying glass to examine the coin's surface and edges to look for irregularities. Things to check for: seam around the edge indicating a cast coin, small raised spots in the field of the coin, unrealistic or flawed styling of devices and legends. Compare the coin to the picture in the Red Book or on-line photos of the genuine coin to look for obvious mistakes made by the counterfeiters. Pay careful attention to the date and mint mark of the coin, an added or removed mint mark or altered date can make a large difference in the value of a coin.
5. Ring Test – A simple test can be performed to determine if a coin is silver. The coin to be tested is balanced on the tip of a finger. Strike the test coin lightly on the edge with a silver coin. If the coin is sliver it will ring for several seconds with a sweet, high-pitched sound. The higher the silver content, the longer the ring will last.
6. Specific gravity testing.

## Examples of Counterfeit Coins



Figure 1 – Counterfeit 1857 Half Dollar. Measured diameter: 30.5 mm (correct 30.61 mm). Measured weight 8.75 gm ( correct 12.441 gm).



Figure 2 – Counterfeit 1878-S Trade Dollar. Measured diameter: 37.9 mm (correct 38.1 mm). Measured weight: 22.22 gm (correct 27.216 +/- 0.097 gm)

Table 1 – Weight, Diameter, and Composition of US Coins

standards. In most cases the gram weight is given for coins in the very best condition available.

COIN/DATES OF ISSUE	GRAMS WGT.	TOL.	GRAINS WGT.	TOL.	DIAMETER (mm)	COMPOSITION	SPECIFIC GRAVITY
<b>HALF CENT</b>							
1793-1795	6.739		104.000		23.50*	Pure copper	8.92
1795-1836	5.443		84.000		23.50*	Pure copper	8.92
1840-1857	5.443	0.227	84.000	3.50	23.50*	Pure copper	8.92
<b>LARGE CENT</b>							
1793-1795	13.478		208.000		28.50*	Pure copper	8.92
1795-1837	10.886		168.000		28.50*	Pure copper	8.92
1837-1857	10.886	0.454	168.000	7.00	28.50*	Pure copper	8.92
<b>SMALL CENT</b>							
1856-1864	4.666	0.259	72.000	4.00	19.30*	88 Cu, 12 Ni	8.92
1864-1873	3.110	0.259	48.000	4.00	19.05	95 Cu, 5 Zn & Sn	8.84
1873-1942	3.110	0.130	48.000	2.00	19.05	95 Cu, 5 Zn & Sn	8.84
1943	2.689/2.754	0.130	41.500/42.500***	2.00	19.05	Zinc coated steel	7.80
1944-1946	3.110	0.130	48.000	2.00	19.05	95 Cu, 5 Zn	8.86
1947-1962	3.110	0.130	48.000	2.00	19.05	95 Cu, 5 Zn & Sn	8.84
1962-1982	3.110	0.130	48.000	2.00	19.05	95 Cu, 5 Zn	8.86
1982-	2.500	0.100	38.581	1.54	19.05	97.5 Zn, 2.5 Cu****	7.17
<b>TWO CENTS</b>							
1864-1873	6.221	0.259	96.000	4.00	23.00*	95 Cu, 5 Zn & Sn	8.84
<b>THREE CENTS (Cu-Ni)</b>							
1865-1873	1.944	0.259	30.000	4.00	17.90*	75 Cu, 25 Ni	8.92
1873-1889	1.944	0.130	30.000	2.00	17.90*	75 Cu, 25 Ni	8.92
<b>FIVE CENTS</b>							
1866-1873	5.000	0.130	77.162	2.00	20.50*	75 Cu, 25 Ni	8.92
1873-1883	5.000	0.194	77.162	3.00	20.50*	75 Cu, 25 Ni	8.92
1883-1942	5.000	0.194	77.162	3.00	21.21	75 Cu, 25 Ni	8.92
1942-1945	5.000	0.194	77.162	3.00	21.21	56 Cu, 35 Ag, 9 Mn	9.25*
1946-	5.000	0.194	77.162	3.00	21.21	75 Cu, 25 Ni	8.92
<b>TRIME (Silver)</b>							
1851-1853	0.802	0.032	12.375	0.50	14.00*	750 Ag, 250 Cu	10.11
1854-1873	0.746	0.032	11.520	0.50	14.00*	900 Ag, 100 Cu	10.34
<b>HALF DIME</b>							
1794-1795	1.348		20.800		16.50*	900 Ag, 100 Cu	10.34
1795-1805	1.348		20.800		16.50*	892.427+ Ag, 107.572 Cu	10.32
1829-1837	1.348		20.800		15.50*	892.427+ Ag, 107.572 Cu	10.32
1837-1853	1.336	0.032	20.625	0.50	15.50*	900 Ag, 100 Cu	10.34
1853-1873	1.244	0.032	19.200	0.50	15.50*	900 Ag, 100 Cu	10.34
<b>DIME</b>							
1796-1828	2.696		41.600		18.80*	892.427+ Ag, 107.572 Cu	10.32
1828-1837	2.696		41.600		17.90*	892.427+ Ag, 107.572 Cu	10.32
1837-1853	2.673	0.032	41.250	0.50	17.90*	900 Ag, 100 Cu	10.34
1853-1873	2.488	0.032	38.400	0.50	17.90*	900 Ag, 100 Cu	10.34
1873-1964	2.500	0.097	38.581	1.50	17.91	900 Ag, 100 Cu	10.34
1965-	2.268	0.091 □	35.000	1.40 □	17.91	75 Cu, 25 Ni on pure Cu	8.92

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COIN/DATES OF ISSUE	GRAMS WGT.	TOL.	GRAINS WGT.	TOL.	DIAMETER (mm)	COMPOSITION	SPECIFIC GRAVITY
<b>TWENTY CENTS</b>							
1875-1878	5.000	0.097	77.162	1.50	22.50*	900 Ag, 100 Cu	10.34
<b>QUARTER DOLLAR</b>							
1796-1828	6.739		104.000		27.00*	892.427+ Ag, 107.572 Cu	10.32
1831-1837	6.739		104.000		24.26*	892.427+ Ag, 107.572 Cu	10.32
1837-1853	6.682	0.065	103.125	1.00	24.26*	900 Ag, 100 Cu	10.34
1853-1873	6.221	0.065	96.000	1.00	24.26*	900 Ag, 100 Cu	10.34
1873-1947	6.250	0.097	96.452	1.50	24.26	900 Ag, 100 Cu	10.34
1947-1964	6.250	0.194	96.452	3.00	24.26	900 Ag, 100 Cu	10.34
1965-	5.670	0.227□	87.500	3.50□	24.26	75 Cu, 25 Ni on pure Cu	8.92
1976	5.750□	0.200□	88.736□	3.09□	24.26	40% silver clad**	9.53
<b>HALF DOLLAR</b>							
1794-1795	13.478		208.000		32.50*	900 Ag, 100 Cu	10.34
1796-1836	13.478		208.000		32.50*	892.427+ Ag, 107.572 Cu	10.32
1836-1853	13.365	0.097	206.250	1.50	30.61*	900 Ag, 100 Cu	10.34
1853-1873	12.441	0.097	192.000	1.50	30.61*	900 Ag, 100 Cu	10.34
1873-1947	12.500	0.097	192.904	1.50	30.61	900 Ag, 100 Cu	10.34
1947-1964	12.500	0.250	192.904	4.00	30.61	900 Ag, 100 Cu	10.34
1965-1970	11.500	0.400 □	177.472	6.17□	30.61	40% silver clad**	9.53
1971-	11.340	0.454 □	175.000	7.00□	30.61	75 Cu, 25 Ni on pure Cu	8.92
1976	11.500	0.400 □	177.472	6.17□	30.61	40% silver clad**	9.53
1982	12.500	0.400 □	192.904	6.17□	30.56	900 Ag, 100 Cu	10.34
<b>DOLLAR</b>							
1794-1795	26.956		416.000		39.50*	900 Ag, 100 Cu	10.34
1796-1803	26.956		416.000		39.50*	892.427+ Ag, 107.572 Cu	10.32
1840-1935	26.730	0.097	412.500	1.50	38.10	900 Ag, 100 Cu	10.34
1971-1978	22.680	0.907 □	350.000	14.00□	38.10	75 Cu, 25 Ni on pure Cu	8.92
1971-1976	24.592	0.984 □	379.512	15.18□	38.10	40% silver clad**	9.53
1979-1981	8.100	0.300 □	125.000	5.00□	26.50	75 Cu, 25 Ni on pure Cu	8.92
<b>TRADE DOLLAR</b>							
1873-1883	27.216	0.097	420.000	1.50	38.10	900 Ag, 100 Cu	10.34
<b>GOLD DOLLAR</b>							
1849-1854	1.672	0.016	25.800	0.25	13.00*	900 Au, 100 Cu & Ag	17.16
1854-1873	1.672	0.016	25.800	0.25	14.86*	900 Au, 100 Cu & Ag	17.16
1873-1889	1.672	0.016	25.800	0.25	14.86*	900 Au, 100 Cu	17.16
<b>QUARTER EAGLE</b>							
1796-1808	4.374		67.500		20.00*	916.667 Au, 83.333 Cu & Ag	17.45
1821-1827	4.374		67.500		18.50*	916.667 Au, 83.333 Cu & Ag	17.45
1829-1834	4.374		67.500		18.20*	916.667 Au, 83.333 Cu & Ag	17.45
1834-1836	4.180	0.008	64.500	0.13	18.20*	899.225 Au, 100.775 Cu & Ag	17.14
1837-1839	4.180	0.016	64.500	0.25	18.20*	900 Au, 100 Cu & Ag	17.16
1840-1873	4.180	0.016	64.500	0.25	17.78*	900 Au, 100 Cu & Ag	17.16
1873-1929	4.180	0.016	64.500	0.25	17.78*	900 Au, 100 Cu	17.16
<b>THREE DOLLARS</b>							
1854-1873	5.015		77.400		20.63*	900 Au, 100 Cu & Ag	17.16
1873-1889	5.015	0.016	77.400	0.25	20.63*	900 Au, 100 Cu	17.16
<b>FOUR DOLLARS (Pattern issue)</b>							
1879-1880	7.000*		108.026*		21.59*	857 Au, 43 Ag, 100 Cu*	16.67*
<b>HALF EAGLE</b>							
1795-1829	8.748		135.000		25.00*	916.667 Au, 83.333 Cu & Ag	17.45
1829-1834	8.748		135.000		22.50*	916.667 Au, 83.333 Cu & Ag	17.45
1834-1836	8.359	0.017	129.000	0.26	22.50*	899.225 Au, 100.775 Cu & Ag	17.14
1837-1840	8.359	0.016	129.000	0.25	22.50*	900 Au, 100 Cu & Ag	17.16
1840-1849	8.359	0.016	129.000	0.25	21.54*	900 Au, 100 Cu & Ag	17.16
1849-1873	8.359	0.032	129.000	0.50	21.54*	900 Au, 100 Cu & Ag	17.16
1873-1929	8.359	0.016	129.000	0.25	21.54*	900 Au, 100 Cu	17.16
<b>EAGLE</b>							
1795-1804	17.496		270.000		33.00*	916.667 Au, 83.333 Cu & Ag	17.45
1838-1849	16.718	0.016	258.000	0.25	27.00*	900 Au, 100 Cu & Ag	17.16
1849-1873	16.718	0.032	258.000	0.50	27.00*	900 Au, 100 Cu & Ag	17.16
1873-1933	16.718	0.032	258.000	0.50	27.00*	900 Au, 100 Cu	17.16
<b>DOUBLE EAGLE</b>							
1850-1873	33.436	0.032	516.000	0.50	34.29	900 Au, 100 Cu & Ag	17.16
1873-1933	33.436	0.032	516.000	0.50	34.29	900 Au, 100 Cu	17.16

\* — Unofficial data.

\*\* — Consists of layers of 800 Ag, 200 Cu bonded to a core of 209 Ag, 781 Cu.

\*\*\* — Cents struck on steel planchets produced in 1942 weighed 41.5 grains, while those struck on planchets produced later in 1943 weighed 42.5 grains.

\*\*\*\* — Consists of a planchet composed of 99.2 percent Zn and 0.8 percent Cu, the whole plated with pure copper.

□ — Not specified by law, established instead by the Director of the Mint.

Au = Gold; Ag = Silver; Cu = Copper; Mn = Manganese; Ni = Nickel; Sn = Tin; Zn = Zinc.