RAND REFINERY

Kr	**Krugerrand**
Testing the authenticity of a Krugerrand coin	
November 2014	

Ta	Testing authenticity of Krugerrand coin
Size, weight, magnetic, visual, x-ray, ultrasound, assay, sound	

Coin fraud has been an unfortunate reality in the investment market, as well as the coin collecting marketplace for decades and is very difficult to manage. Potential customers need to empower themselves by obtaining enough knowledge on how to identify a fake coin. Investing money in a fraudulent coin can be totally avoided by only buying from reputable and registered coin dealers.

It is very important to learn what the genuine coin looks like. Thereafter it is a matter of making some comparisons between the real coin and the possible counterfeit one. Testing the authenticity of the Krugerrand gold coins include the following:

1. Size

The coins are manufactured to exact standards and the true dimensions of the coin should be checked. To do this, it is advisable to buy a good-quality micrometer that can measure the diameter, thickness, or other dimension of the coin very precisely. The specifications of the Krugerrand coins are as follows:

	Diameter	Thickness	Serrations	Weight
1 oz	32.77 mm	2.84 mm	160	33.930 g
½oz	27.07 mm	2.215 mm	185	16.965 g
¼oz	22.06 mm	1.888 mm		8.482 g
$\frac{1}{10}$ oz	16.55 mm	1.35 mm		3.393 g

Gold is a very dense metal, so some counterfeiters may make a coin in a wider diameter, in order to compensate for a less dense metal. If you compare gold to iron, it takes twice the volume of iron to equal the same weight of gold. Plating other metals with gold still allows the producer to match the proper weight, but the size would be off. The difference could be very minor, but if you know what to look for, you can spot the fake coin quite easily.

Ta	Testing authenticity of Krugerrand coin
Size, weight, magnetic, visual, x-ray, ultrasound, assay, sound	

2. Weight

It is important to use a good quality, precise scale to determine how the coin measures up against the stated weight of the coin. Both the authenticity tests for size and weight can be done on specially developed gauges for 1 oz bullion coins. The gauges are called the Fisch, the Gold Coin Gauge or the Gold Coin Balance. When testing for authenticity, a counterfeit tungsten coin does however measure the correct mass, between 33,931 to 34 grams.

3. Magnetic

Gold is not magnetic. So if the coin sticks to a magnet, the gold is not real. To test this, a stronger than average magnet is needed and is available from specialized hardware stores. This test could however not be used in isolation as producers of counterfeit coins could typically use metals that aren't magnetic to avoid this type of detection.

4. Visual

Anything that looks odd or abnormal on the coin needs further investigation. Search for high-quality images of the Krugerrand coin from trusted websites and compare the detail on the two coins. The counterfeit coin can often be detected by being meticulous to check the fine detail on the coin.

The counterfeit coin gives the impression of a "polished coin". It has a "yellowish" colour when compared to the "red gold" colour that the more recent and current Krugerrands have. It must, however be remembered that in the 1970's and 1980's certain of the coins also had a "yellowish" colour.

Ta	Testing authenticity of Krugerrand coin
Size, weight, magnetic, visual, x-ray, ultrasound, assay, sound	

5. X-ray

Another way of checking the authenticity of the coin, is by using X-ray testers, which are often used by jewelers to test any gold they buy. The tester quickly performs chemistry analysis to determine what elements are present in the gold, as well as the purity and fineness of the metal.

X-ray testing does have a ±1% accuracy rating, so while minor, there is some chance for error. The other challenge is that it's essentially a surface test, so if there's a void or another material in the center of the coin, then X-ray testing won't detect it. On the plus side, it's non-destructive and non-intrusive, so the integrity of the gold won't be compromised. This test will at least determine if the surface of the coin is gold. Generally the readings on most X-ray testers indicate that the forgery is 22.85 carat to 23 carat. However, when scanned in different places on the obverse and reverse of the coin, the readings differ considerably and can read anything from 15 carat to 23 carat.

6. Ultrasound

Ultrasound testing is a way to "look into" your gold. It uses the same ultrasound technology that is used in the medical industry to "see" inside the body.

Essentially, this method scans the item, providing a digital image of the gold coin. It is the only way to detect a metal like tungsten inside the coin. A gold plated tungsten coin has the same density as gold and will pass the weight test. If there is an air gap or other material inside the gold coin, this will show up as a darker area on the screen's image.

If the instrument is calibrated or adjusted for the speed of sound in gold (3240 m/s) it will give a different thickness measurement than actually measured on the coin. It can only be used on the table of coins where there are parallel surfaces. This test can however damage or scratch proof coins.

Ta	Testing authenticity of Krugerrand coin

Size, weight, magnetic, visual, x-ray, ultrasound, assay, sound
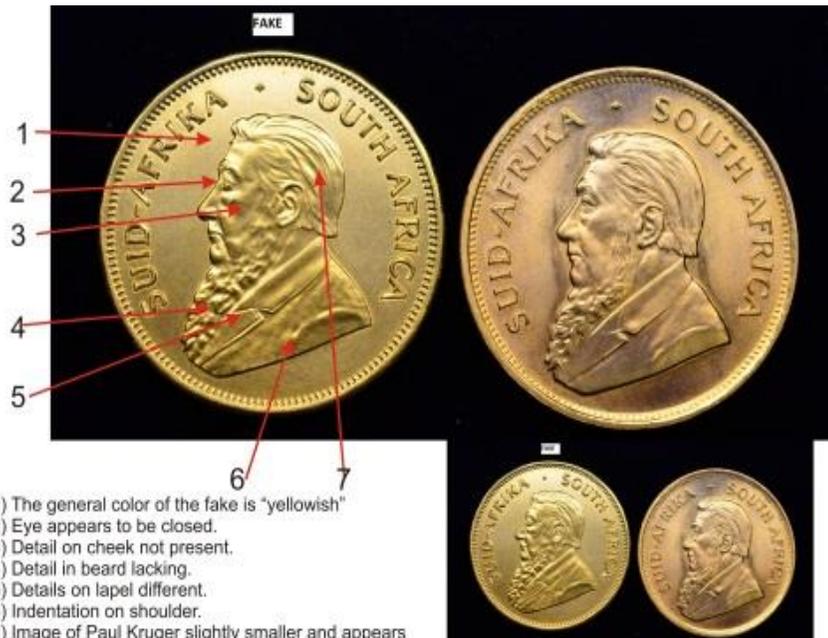
1) The general color of the fake is "yellowish"
2) Eye appears to be closed.
3) Detail on cheek not present.
4) Detail in beard lacking.
5) Details on lapel different.
6) Indentation on shoulder.
7) Image of Paul Kruger slightly smaller and appears to have been polished.
8 The diameter of the fake is slightly bigger than the genuine article..

1) The general color of the fake is "yellowish"
2) Detail of the buttock is not present.
3) Detail on tail different.
4) Hoof is bigger.
5) Details on ground cover different
6) Detail of "stripe" not present.
7) Rings on horns and head details not present.
8) Coin appears to have been polished.