

How to Make & Use Gold Test Solutions

Potassium dichromate salts and nitric and hydrochloric acids are needed to mix test solutions. Use a graduate measure for mixing required proportions. In larger cities the potassium dichromate salts and acids are available from chemical supply houses and in smaller cities from local drug stores.

Solutions: Mark bottles 1, 2, 3 - DO NOT INTERCHANGE TOPS

(Bottle 1) BELOW 14K AND BASE METAL

Mix 10 grams potassium dichromate salts with the $\frac{3}{4}$ oz. nitric acid plus $\frac{1}{4}$ oz. distilled water.

(Bottle 2) 14K-18K

Mix one part hydrochloric acid to 50 parts nitric acid and 12 parts distilled water.

(Bottle 3) ABOVE 18K

Aqua regia - Mix one part nitric acid to 3 parts hydrochloric acid.



To Test

File a notch in test piece, apply a drop of solution #1 - watch for color reaction.

Brass -- Dark brown

Copper -- Brown

Gold -- None

Nickel -- Blue

Lead -- Yellow

Tin -- Yellow

Silver:

Pure -- Bright red

(.925) -- Dark red

(.800) -- Brown

(.500) -- Green

Palladium -- None

To Determine Karat

File a spot on a test piece and rub it on a test stone to leave a definite mark. Choose a test needle nearest to the test mark color and rub the needle on the stone next to the mark. If the needle mark reacts sooner than that of the test piece mark, the piece is of higher karat than the needle used. Trial and error will bring you close to the correct karat. Use bottle 3 for most testing.

Testing for Precious Metal

Silver: Pure silver is almost perfectly white, very ductile and malleable. Pure silver is too soft for general use. It is combined with copper to harden it. Sterling silver is 92½% silver and 7½% copper. Mexican silver is generally less than 90% pure silver. To test for silver: file a notch in the piece to be tested and apply a drop of #1 solution. Sterling silver turns cloudy cream. In plated ware, the base metal will turn green.

Gold: Pure gold is very soft and is combined with other metals to harden it. 24 karat is pure gold, thus 14 karat is by weight $\frac{14}{24}$ fine gold and the balance an alloy metal. To test for gold: the gold testing items shown above are required. File a notch in the piece to be tested. Apply a drop of #1 solution. A bright green reaction indicates gold plate on copper or brass. A pinkish cream color indicates gold plate on silver. Ten karat gold will show a slight reaction; over ten karats, little or none.

Platinum-Palladium: Use bottle #3. If platinum, there will be no change. If palladium, it will turn red after application of Aqua Regia #3. If the reaction to any test is too rapid, dilute with distilled water.

CAUTION: - AVOID BREATHING FUMES AND DIRECT CONTACT WITH SKIN. KEEP OUT OF REACH OF CHILDREN.