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# How to Refine Gold From Electronic Scrap

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## Instructions

Difficulty: Moderate

1. Start by obtaining as many scrap electronics components to reclaim gold from. Generally speaking, older electronics work better because enhanced [manufacturing \(#\)](#) processes use less gold than older electronics, so an old 386 or 486 computer, for example, contains more gold than a modern [computer \(#\)](#). Old analog cell phones also contain more precious metal than newer digital phones. Of course, new electronics also have gold that can be refined, but never turn away old equipment.
2. Cut all of the gold-plated components out of the electronics. You do not want to waste your time treating the entire motherboard of a computer when all of the gold is plated on the connector pins, processors and or chips. Cut all of the gold-plated components off the circuit boards. Do not throw the boards away though, because there is still silver and other precious metals you may wish to reclaim later.
3. Prepare yourself for working with chemicals. You will be using one chemical process to remove the gold plating and another chemical process to refine the gold to pure 24k fine gold. Working with chemicals means taking safety precautions to prevent chemical burns and to block out toxic fumes. You should wear a rubber apron and thick rubber gloves any time you are handling chemicals. You should also wear a respiratory mask similar to what asbestos workers wear and a face shield to protect against splashing.
4. Make an electrolyte for your reverse electroplating process. The electrolyte is a solution that acts as a chemical bath for your precious metal, as well as a conductor of electricity. Make the electrolyte by pouring a mixture of 70 percent sodium cyanide (NaCN), 15 percent sodium hydroxide (NaOH) and 15 percent sodium meta nitro benzene sulphonate. Carefully pour these ingredients into a glass chemistry beaker and stir them with a glass wand.
5. Set up your power source so that it will be ready to be connected. Take two pieces of wire and strip about an inch of insulation off of the ends with a pair of wire strippers. On each piece of wire, connect a small alligator clip to one end of the wire. Connect the other end of the wire to a 9- or 12-volt battery. Use the large square batteries with spring-like posts on top. Connect one wire to the negative post and one wire to the positive post.
6. Prepare the anode. Take the wire that is connected to the positive post on the battery. Clip the alligator clip from that wire onto the gold plated scrap from your electronics. You may only be able to do small amounts at a time, but you can keep everything running in a continuous cycle for as long as the battery still has power. Once the alligator clip is connected to the electronics scrap, drop the scrap into your beaker of electrolyte solution.
7. Prepare the cathode. The remaining wire is attached to the negative terminal on the battery. Attach the alligator clip from this wire onto a piece of stainless steel. It will be easier to work with if the steel is in a cylinder shaped rod, shaped like a pencil, but any piece of stainless steel will work fine. Once the steel has been attached to the alligator clip, lower it into the solution. Your electric circuit is not active.
8. Wait it out. The battery will be charging your electronics scrap with a positive charge and the stainless steel with a negative charge. The electrolyte solution you made will dissolve the gold from the scrap, and the positive charge in the gold will cause it to attract to the negatively charged steel. All of the gold in the electronics scrap will form onto the steel, where it can be peeled off and set aside until you have enough to refine.
9. Mix a refining solution. Although you have recovered the gold from the electronics scrap, it may not be pure gold. It may be 12k or 18k gold, so now we will refine it to be pure 24k fine gold. Take a second beaker and pour it half full of Aqua Regina. Be very careful. Aqua Regina will burn through human tissue, so wear thick rubber gloves and take proper safety precautions.
10. Refine the gold. Drop the gold into the Aqua Regina, then fill the beaker the rest of the way with sodium meta bisulphite. This solution will eat away any copper or other metals that may have been smelted into the gold when it was manufactured. The remaining gold substance will collect in the bottom of the beaker and will be pure 24k gold.
11. Recover the pure gold. Drain your refining solution into a glass storage container for future use. Allow any remaining chemicals to evaporate off of the gold, then wash the gold thoroughly with water. Now you have successfully refined gold from electronics scrap.

### Things You'll Need:

Scrap electronics

Thick rubber gloves

Rubber apron

Face shield

Respirator mask

Glass beaker

Battery (9 or 12 volt)

Wires (any size)

2 alligator clips

Small stainless steel rod

2 glass beakers

Sodium hydroxide (NaOH)

Sodium cyanide (NaCN)

Sodium meta nitro benzene sulphonate

Aqua Regina

Sodium meta bisulphite

## Tips & Warnings

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- Instead of using a battery for the reverse electroplating, you can also use a rectifier, which will allow you to reverse plate for longer periods of time without worrying about your battery draining.
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## Resources

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- [MetalWorld: Electronics Scrap for Sale](#)

## Photo Credit

macro shoot of electronic components on motherboard image by dinostock from Fotolia.com

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# Comments

th777nguyen said

on 12/20/2009 U can contact me carmybayarea i will help you

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jadedragoninbc said

on 11/6/2009 I'm posting this over at realcent scrap metal forum.

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carmybayarea said

on 8/21/2009 i have been sitting on at least 75lbs.of clean comp.gold scrap,for 18yrs,its all old scrap,im wanting to smelt it somehow but each time i inquire they say dont trust anyone and to b there when they process it is there anyone out there that could help i live in ca,bayarea so it would b nice if it was somewhat near im just housewife an mom,that had a weird hobby 4 long time dont do comp.strip.anymore that really does number on fingers and wrist.thks carmy

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DirkMcFergus said

on 12/23/2008 Hey, this is really useful. I have a ton of old electronics. Do you know where to buy the chemicals?

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27ways said

on 12/23/2008 this is by far my favorite article so far. thanks

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