

From: <http://www.nuggethunters.org/smelting.html> **SMELTING GOLD**

A simple answer; The process of recovery of micro Gold from Concentrates

What do I need to do Smelting???

- Small furnace, gas or electric fired.
- crucible, preferably graphite will last longer.
- smelting flux.
- tongs, safety equipment.

Okay, what do I do???

1, Good clean black sand concentrates. Preferably dry and ground to #70 - #100 mesh in size.

2, Smelting Flux for precious metal, it's easy to make up a House flux for your needs.

You may have to make minor flux recipe adjustments depending on the concentrates you are planning to smelt.

Here is how.

- 1, anhydrous Borax, 5 parts.
- 2, #70 silica sand, 40 parts.
- 3, soda ash, 10 parts.
- 4, sodium nitrate, 20 parts [oxidizer].
- 5, Now mix all of this together and store for when needed in a closed container, "keep it dry".
- 6, When ready to smelt your cons, add 1-2 parts of Flux to each part of Concentrates. Mix well and put the heat to it.
- 7, Put flux/cons mix into crucible and put in cool furnace.
- 8, Fire up furnace and let it warm up slowly to about 500-600°F.
- 9, Once up to good hot temp [listed above] take it up to 2000°F and hold for at least 30 minutes.
- 10, Prepare pour [I use cast iron] mold by drying it out and heating it up [few hundred degrees].
- **Special Point, if the pour is to thick add some more borax to thin it out.**
- 11, Get on all of your safety gear, face mask, long sleeve gloves, apron also have a fire extinguisher.
- 12, Once ready to pour, put grabbing end of tongs into furnace for a few seconds to heat them up, [avoid thermal shock to crucible].
- 13, Now grab crucible and begin to pour into mold in one continuous pour. Make sure you have enough mold for "ALL" of the smelted material.
- 14, Once poured, set crucible on warm surface, not on cold [thermal shock].

Okay, what NOT to do???

- 1, Work over concrete, it explodes when hit with hot metal.
- 2, Never put hot on cold, thermal shock causes real problems.
- 3, Stay away from water also clear over head area from falling foreign material [boom].
- 4, Work area all cluttered up with obstacles. You drop it and its all over, burn to the bone even death.
- 5, Let spectators into your immediate working area.

Why is Smelting so important???

Its a known fact that there can be 4 - 10 times more Gold in your concentrates than the visible Gold that you can see and recover. There are several ways to recover this material including leaching, smelting and others. But one of the most practical and proven methods is to smelt the concentrates. Remember one thing, when smelting, you are now a chemist as well as a Gold Prospector. And careful attention must be paid to what you are doing at all times. A mistake can mean serious consequences too and include even death.

Now to finish up with the process.

- 1, Once cooled down [several hours] flip mold and pop out the cooled pour.
- 2, You will see a layer of precious metal on top and a layer of Borax/silica glass below melted together.
- 3, using a small hammer or mallet, strike the edge of the metal and it'll separate from the glass.
- 4, That is your Gold with possible silver and platinum mixed in.
- 5, All of the other metals will have either burned off or will be suspended in the Borax/Silica glass layer.