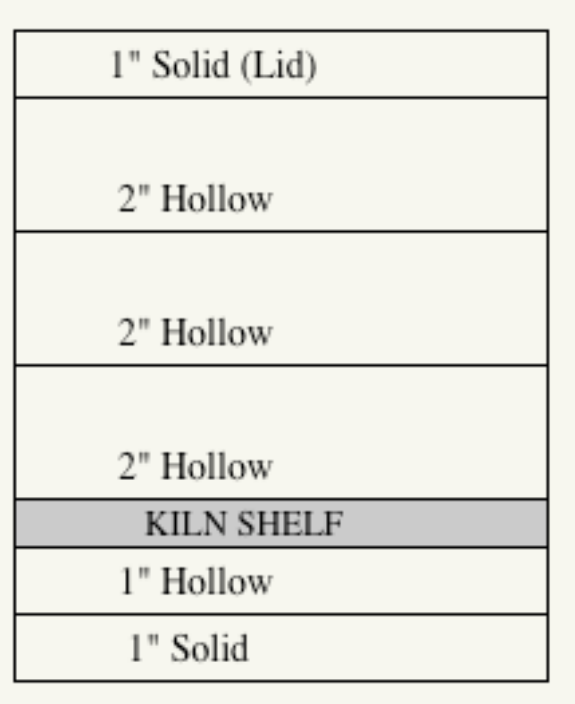
Looking for a different way to separate fine gold from your black sand concentrates? Burn it with the new Microwave Kiln Gold Processing Kit! Before using your Kiln or Kit, please read all instructions thoroughly!

TO STACK KILN

Beginning at the bottom, start with one 1" solid 8" x 8" square of kiln insulating material. Add one 1" hollow 8" x 8" square on top. Center the provided 8" x 8" ceramic square kiln shelf on top of the first two pieces. Center an empty crucible on the kiln shelf. Stack the remaining three 2" hollow kiln squares around the crucible high enough to provide approximately 1" of clearance over the top of the crucible. Place the 1" solid kiln square lid on top and make sure all pieces are aligned with each other and that the crucible is in the center of the kiln.



The kiln acts as a thermal insulator to prevent the microwave from being damaged and overheating during the process. The crucible inside the kiln will ultimately reach temperatures in excess of 2300 degrees Fahrenheit during the firing process and those temperatures are not exactly "microwave friendly."

"SEASONING" THE KILN & CRUCIBLE PRIOR TO USE

Place the stacked kiln, containing an empty crucible, into the microwave and set the timer for 15 minutes on high. At the end of the 15-minute cycle, remove the kiln from the microwave and allow the kiln and crucible to cool to ambient temperature. Repeat the process again, setting the timer for 15 minutes. This process will drive off any moisture absorbed by the kiln, kiln shelf and/or the crucible from the atmosphere. New crucibles should also be "seasoned" using the above method for 15 minutes before use. Moisture absorbed from the atmosphere can cause the crucibles and or kiln shelf to crack or break during the firing process if not "seasoned" properly prior to use. It's a good practice to repeat the "seasoning" process after extended periods of non-use of the kiln prior to firing. You've got a lot of time and effort invested in your black sands concentrates, so don't get in a hurry and skip this "seasoning" process.

CHARGING THE CRUCIBLE

Place 3 parts flux to 1 part of your dry black sand concentrates into a quart jar. Place the lid on the jar and roll the jar until the materials are thoroughly mixed and homogenous. Pour the mixture into the crucible, leaving an inch space from the top of the crucible. Never pack a crucible with the mixture or use wet or damp black sand concentrate, as the material can rapidly expand upon heating and can crack the crucible or spill over the top. Lesser amounts of the black sands and flux mixture will work just as well as filling the whole crucible. If, in your experience after firing, the flux is thick and viscous and doesn't want to pour readily using the 3 to 1 mixture, you can increase the mixture to 4 parts flux to 1 part black sand concentrate or 5 to 1 and it will thin out the flux and make pouring easier. Your experience will ultimately determine the best ratios for your concentrates. Remember, the more fine gold contained in your black sands concentrates, the bigger the "button" of gold will be at the end, and the better the process works. Keep the nuggets and pickers out of your black sand concentrates and smelt the rest.

FIRING THE KILN

Place the charged crucible on top of the kiln shelf in the center of the shelf. Stack the hollow kiln squares around the crucible, centering them around it so that the crucible does not touch the kiln and there is approximately 1 inch of clearance between the lid and the top of the crucible. Place the 1" thick solid kiln square lid on the top of the kiln. Carefully set the kiln inside the microwave, centering it in the microwave. Close the microwave door tightly and gently - do not slam. Set the microwave power level on high and the timer for 30 to 45 minutes and start the microwave. During the microwaving process DO NOT peer into the microwaves' window to see what's going on inside the microwave. Temperatures inside the kiln are going to reach in excess of 2300 degrees Fahrenheit and you don't want your face in front of the glass door if the crucible fractures, boils over, or the kiln shelf cracks. Give this process of microwave smelting the respect it deserves and BE SAFE!

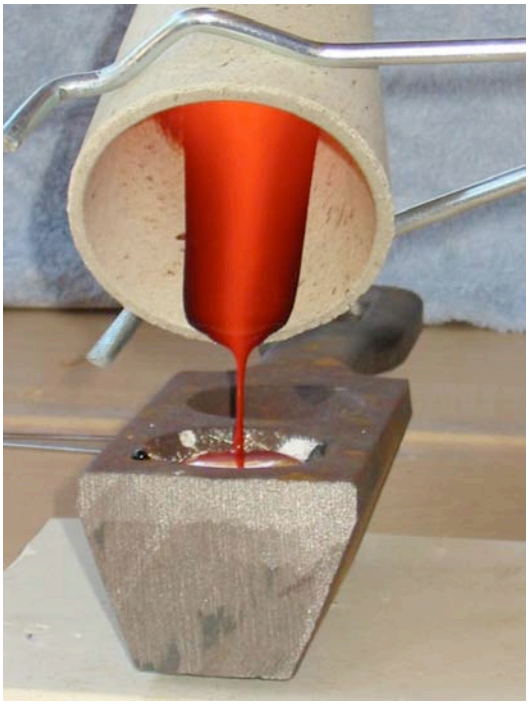
After 45 minutes, open the microwave door and, wearing heat proof gloves, safety glasses and apron, carefully lift the entire kiln out, holding it by the base. Hold the kiln with both hands

when moving from microwave to heat-resistant surface. The kiln shelf will be very hot, so be sure to use caution here. Place the hot kiln on a heat-resistant surface. A 12” x 12” clay tile will work well. Carefully lift the lid to check the color of the crucible and contents. They should be glowing yellow-orange. If they are not, replace the lid and return the kiln and contents to the microwave and continue microwaving for an additional 10 minutes. Typical microwaving times are from 45 to 60 minutes, depending upon the microwave you are using. Again, remove the hot kiln and place on a heat-proof surface. Lift the lid again carefully. Assuming that the crucible and contents are glowing yellow-orange by now, completely remove the lid with one or two layers of the kiln and place on another 12” x 12” tile or heat-proof surface. This allows for access to the heated crucible. Grasp the crucible with the tongs and pour the contents of the crucible into the conical mold.

USE EXTREME CAUTION when pouring the molten material from the crucible into the cast iron mold. The mold and tongs must be preheated in an oven or on top of a stove burner to prevent the molten glass and metal from splattering and erupting like a miniature volcano. The best way to pour into the molds is to pour a very small amount first, wait a half second, then pour the rest of the material into the mold. Remember to Pre-heat your mold and tongs and drive off any moisture before pouring our crucible contents into the mold. You don’t want liquid 2300 degree metal and glass splattering all over you or anything near you!

CAST IRON CONICAL MOLD

Prior to pouring the molten material into the mold, place the cast iron conical mold on a 16”x16”x1” clay type “paver stone” used for walkways. This provides a good fireproof surface for the mold to sit on and a place to set the hot crucible after you have poured the molten material into the mold. This is also a good fireproof surface, should you happen to spill any of the molten material during the pouring process, or overflow the mold itself with the molten flux. Remember that the 2300 degree plus liquid, if spilled onto a wooden bench, will immediately result in the bench bursting into flames. The crucible will cause the same thing if set upon any unprotected surface.



BUTTONS

After pouring the molten mixture into the conical mold, the cooling process begins. The molten flux is actually a form of borosilicate glass and, during the cooling process, the glass will shrink and crack. Often times during the cooling period, small shards of glass will fly outward from the cooling mass in the mold with high velocity, as well as from the small amount of flux coating the inside of the crucible. These flying pieces of glass obviously present a hazard when within range of them. Always wear safety goggles and your protective clothing while in the immediate area of the cooling mold and crucible.

After the mold and the borosilicate glass have cooled, invert the mold and the conical shaped glass will drop out of the mold. The smelted metal "button" will be on top of the conical shaped glass. The glass splinters shooting from the "button" and glass can occur at any time until the metal "button" is completely free of the glass. So, keep everyone, pets included, out of the area. Hold the metal "button" in your gloved hand and tap the glass on the button with a suitable tool to remove the glass from the button. Once again—always wear your goggles and protective clothing when working with the glass and metal "buttons" until the buttons are free of the glass.

After the "button" is clean, you may want to break up the glass and inspect it carefully for any small metallic beads or slivers of metal that didn't pour out of the melt. By following the directions given here, there should be very little, if any, remaining metal beads in the flux. However, if something was not quite right, or the flux was thick and viscous during the pour, ultimately nothing need be lost. Just save the glass and when you've collected enough of it, crush it to minus 10 mesh, using a mortar and pestle. Pan the glass down to a concentrate, then dry it, charge a crucible with the glass concentrates and a 1 oz. shot glass of flux, and fire the mixture in the kiln.

SCRAP GOLD OR SILVER JEWELRY, BULLION, COINS, ETC.

Yes, you can smelt scrap gold or silver jewelry, old coins, etc., in your microwave kiln. If you find old silver coins while metal detecting that are in very bad condition, and not worth anything over spot, smelt them. Any unwanted pieces of old gold and silver jewelry that are in bad condition can be smelted. Save the stones, smelt the rest.

The purpose of the flux during the smelting process is to hold the impurities contained in the mixture being smelted in suspension and to protect the crucible during the firing process. When firing the black sands concentrates, the iron oxides, etc., are held in suspension by the flux, so that the precious metals can be separated and poured into the mold as liquid metal. Scrap gold and silver jewelry, etc., actually contain much smaller amounts of impurities compared to an ore or black sand concentrate, therefore the amount of flux necessary is much less overall. Use this recipe:

1. 1 oz. shot glass of flux added to the crucible.
2. Scrap gold and or silver placed on top of the flux (up to 3 ounces).
3. 1 oz. shot glass of flux poured on top of the scrap gold or silver.

Place the kiln into the microwave and microwave on high power for 35 to 45 minutes. If you use a two depression conical mold, the above recipe will completely fill one of the depressions with the metal and molten flux. As with the black sand concentrates, experiment to ultimately determine the best recipe when you are smelting your particular scrap gold and silver. You may be able to re-use the crucible several times when smelting scrap gold and silver. Since there are few impurities contained in the scrap, the process is much "friendlier" to the crucible. Always inspect your crucible carefully after each firing for erosion or cracks prior to reusing the crucible.

IMPORTANT SAFEGUARDS

- Set up your workspace away from your home, in a well ventilated area, such as the garage with the door open, or outside.
- Keep your workspace free of flammable materials.
- Do not use the microwave kiln in the house. The temperatures achieved during the process are in excess of 2300 degrees Fahrenheit and the danger of fire is too much of a risk. Also, there are fumes coming off of the crucible during the smelting process that can be hazardous if not properly ventilated.
- Use a separate, dedicated 1200 watt microwave with turntable removed. The microwave must have at least 10" inside clearance height. A microwave with the magnetron on the side or rear is recommended over a microwave with a magnetron on the top (it just seems to work better). Using a microwave with less than 1200 wattage is not recommended, as smelting times would take much longer.
- Allow at least 1 inch space between the top of the kiln and the ceiling of the inside of your microwave oven.
- Allow the microwave to cool at least 20 minutes between firings.
- Keep microwave door open between multiple firings, for effective cooling. Always remove the kiln from the microwave after firing, to prevent heat from building up in the microwave and damaging it.
- Do not try to heat a crucible in the microwave alone, without Ceramic Fiber Kiln in place around it.
- Do not leave microwave unattended while the smelting process is underway.
- Immediately turn off the microwave if any sparking occurs or if a crucible breaks. If you cannot reach the control panel, pull the plug.
- Allow the microwave and kiln to cool before trying to deal with any type of spill.
- Always clean microwave after use.
- Do not attempt to fire materials other than listed in these directions.
- Use common sense during this process, and always wear your protective gear!
- No guarantee is given on the amount of gold or silver obtained from this process, as it depends upon the quality of your material to begin with.
- Sellers and manufacturer are not responsible for accidents or injuries caused by hot kilns and your using one purchased from this seller acknowledges that you use it at your own risk.

To purchase the Microwave Gold Smelting Kiln or Kits, or watch a how-to video, please visit http://goldrushtradingpost.com/gold_smelting_kits

SMELTING TIPS

Flux: Understanding how the Flux works can help everyone with their smelting experience. The flux's purpose is to conduct the microwave energy, suspend the impurities contained in the smelted concentrates and allow the precious metals to separate from them. A non-lead based flux is included in the kits for home use due to the health and environmental concerns raised when using conventional lead based fluxes. Lead based fluxes can be successfully used with the kits, however, the manufacturer is not providing them.

The Process: When your black sand concentrate is thoroughly mixed with the flux and put into the microwave, the flux conducts the electrical energy contained in the microwaves emitted by the magnetron. Most of us understand what happens when a fork is placed into a microwave and then turned on: plasma type arcing occurs and sparks fly. This same type of arcing occurs within the crucible, as the kiln and crucible are all microwave transparent and the flux is electrically conductive of the microwave energy. The crucible then acts as an electrical insulator so that the electrical arcing cannot escape the inside of the crucible and fry the microwave itself. So what you have is electrical plasma arcing occurring within the crucible, which generates very high temperatures. As the flux and precious metals melt, the impurities are taken up by the flux and suspended so we can pour the smelted precious metals from the mixture when sufficient temperatures are reached inside of the crucible.

Black Sand Concentrates to Flux Ratios: The formulas provided in the manufacturer's instructions are guidelines for everyone to work with, not absolutes. An easy mistake to make is to start out with an excessive amount of black sand concentrate to flux. The purpose of the flux is to conduct the microwave energy, to suspend and trap the impurities contained in your concentrates during the smelting process, then allow the precious metals to be poured into a button in your mold. If the ability of the flux to suspend and take up the impurities contained within in the crucible are overloaded by adding too much black sand concentrates, good recovery of your precious metals is compromised.

What happens instead is that some of the precious metal will be bound up within the remaining sands or concentrates in the crucible. Therefore, add less of the concentrates or more flux to the crucible to get the correct ratios. If you start with small amounts of your concentrate and provide an excess amount of flux, the process is much easier to get a handle on. You can then ramp up the amount of concentrates to flux as your successful experiences allow, and within a few smelts, you will have arrived at a ratio that provides good recovery and also provides a small amount of excess flux in the smelt to deal with the impurities. The good thing about this smelting process is that you can always crush your flux after it has cooled and do it over.

A simple rule of thumb to remember is to start small and ramp up as your smelting experience grows. Once you get a handle on things, the 1 part concentrate to 3 or 4 parts flux is going to be pretty close and works well with most black sand concentrates. Note: the fewer impurities contained in the concentrates to begin with, the more concentrates can be added to a given amount of flux and still get a good precious metal recovery.

Grinding Black Sands: Often, the very fine gold contained in black sand can be literally locked up inside the sand particles, called micro-encapsulation, or simply stuck to the sand particle itself. The following tip for use prior to roasting seems to work really well: Take a trip to the thrift store and pick up a used blender. Put your black sand into the blender and grind the heck out of it. This can help liberate the micro-encapsulated particles and free up the stuck gold particles so they can be smelted more readily. Start small and ramp up so you don't overload the blender with your black sand. You want it to flow around and contact the blender blades as much as possible. The finer your black sand, the better it is for smelting.

Roasting Your Concentrates: If you have sulfide and partially oxidized ore concentrates, try this tip, keeping in mind that the less junk in your crucible, the easier it is to smelt out your precious metals from the concentrates, and the better your flux will work during the smelting process. You need a metal gold pan and a propane fired stove burner to accomplish this roasting step:

Put your metal gold pan on your propane burner and turn the burner up on high. Spread a thin layer of your black sand in the metal gold pan and heat it up. Stir it occasionally and keep roasting it until it stops smoking and smelling. Obviously, this needs to be accomplished outdoors with good ventilation on a calm weather day, and please don't inhale the smoke and the fumes coming off the roasting concentrates. Don't worry—your gold is not going anywhere. Once the concentrates are roasted, let the gold pan cool off and put your roasted concentrates in a suitable container. When you have enough of the roasted concentrates, you can then smelt them as outlined in the instructions. These steps can really enhance the effectiveness of the smelting process. Even if you don't grind your black sand, the roasting step will definitely help your recovery. Another benefit of the grinding process is that it will help increase the homogenous mixture of your black sand with the flux that is necessary prior to microwaving. If your mixture is not homogenous, and there is an excess of black sand contacting your crucible during microwaving, a thermite type reaction can take place and burn a hole in the side of your crucible.

Roasting Sulfides: Roasting your sulfide and partially oxidized ores prior to smelting is pretty much the same as roasting black sands, with some exceptions. Obviously, your concentrates need to be concentrated. Panning your crushed ore or some other method of removing as much of the gangue material prior to smelting or roasting is absolutely necessary. The next step is to take your propane burner and metal gold pan outdoors where no one else is around. Roasting a sulfide ore and driving the sulfur off to oxidize the ore smells really terrible! As with the black sands, spread them out in your metal gold pan, turn the burner on high, and stir them occasionally until they stop smoking and smelling like brimstone. Again, don't inhale the smoke and the fumes! Roasting sulfide ore prior to smelting is absolutely necessary. If not done, the driving off of the sulfur causes acidic reactions in the smelting process, raising heck with the crucible and the ph of the flux itself.

Stirring your Crucibles Contents: Stir the contents of your crucible about half to two thirds of the way through a smelt to homogenize the contents and observe the process. By stirring the crucibles contents, you allow the precious metal beads to contact one another, which encourages them to flow together into a single button. Stirring also allows you to judge the thickness of the flux and the status of the black sand concentrates contained in the crucible. Sometimes the black sand concentrates have a tendency to stick to the bottom of the crucible and you can dislodge them if they are not fused into the bottom of the crucible. After stirring, put the kiln in the microwave for about 30 minutes and then take the kiln out of the microwave. Remove the lid and carefully, by looking from above and to the side of the kiln, look into the crucible and see how the smelt is doing. If the contents are liquid yet still bubbling or rolling, use a graphite stir rod and carefully stir the contents of the crucible to help homogenize the smelt. Then replace the lid and place the kiln back into the oven and continue the microwaving for another 10 to 15 minutes. The final stirring allows you to judge the completed viscosity of the flux as it reaches its final temperature, and the state of the impurities in the smelt at its end stage. Your crucibles contents and the crucible itself should be a yellow/orange color at the end stage of the smelt, which is approximately 2000 to 2200 degrees Fahrenheit. Next, take the kiln out of the microwave and carefully observe the smelt again. If the smelt is calm or still, it is about ready to pour. Stir the crucible contents a final time to help homogenize the precious metal beads and allow them to collect into a button and place the kiln back into the microwave for about another 10 minutes. After the time is up, remove the kiln and remove the top cover and first layer together and grasp the crucible with the tongs and pour it into the mold. Obviously, always wear all of your protective gear!

Amalgam: The microwave smelting kiln is a tool for smelting only. It does not separate out the precious metals that are in your concentrates. You still need to have your buttons assayed to determine their purity and content.

Carbon: Can gold be smelted out of carbon from a leach pad? No— microwave smelting cannot break the carbon bond with any loaded precious metals. Burning the carbon off can take temperatures up to 4000 degrees Fahrenheit.

PC Boards: Yes, you can smelt precious metals from computer parts. Get rid of as much base metals as possible first. Cut the pins off and plated parts, then do a nitric acid digest to dissolve and get rid of as much of the base metals as possible before smelting.

Platinum: The microwave smelting kiln is not designed to smelt platinum, as it requires temperatures in excess of 3000 degrees Fahrenheit to melt platinum. However; you can use silver to catch platinum. Silver, which melts at a lower temperature (1700 Farenheit), acts as a collector metal and will amalgamate with platinum during microwaving. You can then do a nitric acid digest, since platinum is not susceptible to the acid. The silver can be precipitated from the nitric acid after recovering the platinum by adding salt to the nitric solution. Add salt and stir the nitric solution vigorously, then allow the solution to sit overnight. The silver will precipitate as silver chloride and will grow the crystals in the bottom of your vessel.

Sterling Silver: Yes, you can smelt silver out of old silverware. Just be aware that sterling silver is only .925 pure. To go to .999 pure is an involved refining process beyond microwave smelting. Do NOT try to smelt silver-plate. There is simply not enough silver on a silver-plated fork or other utensil to be worth it.

Problematic Thick & Viscous Flux: Occasionally, you may get to experience having good precious metal recovery from your concentrates; however the flux has become overly thick and viscous and won't pour readily into the mold, trapping the smelted precious metal within the flux in the mold and along the side of the crucible poured from. Add a small amount of sodium tetraborate (Borax) to the flux prior to charging the crucible to slightly thin the flux. Twenty Mule Team Borax found at your local grocery store works fine, however most of the store borax has been exposed to moisture and is clumpy when the box is opened. So, before use, take a portion of the borax and sift it through a wire mesh strainer, breaking up the clumps and then dry it in a Pyrex type glass dish in your oven at 300 degrees for 10 or 15 minutes to remove any moisture prior to using it for thinning the flux. Thinning the flux is a pretty much a case by case basis and the ratios for thinning the flux are dependent upon your situation. Be cautious! Over thinning can reduce the electrical conductivity of the flux, increase smelting times and potentially reduce final achievable temperatures during your smelting. Start slowly, dilute no more than 25% by volume of the flux with borax and do so prior to charging the crucible. A better solution is to reduce slightly the amount of concentrates used when charging the crucible. Don't try to add Borax to the melt when it is hot. If you prefer to use silica sand rather than borax to thin the, you will need pure silica sand sized to 70 mesh. Both will work, but the Borax is definitely recommended with this microwave process.

Scrap Gold & Silver Jewelry: Ok guys, if you want to pour a big button and your concentrates just arent doing it for you, go out and scrounge up some scrap gold or silver and pour a really big button. The GPK kiln and flux work great for that. The biggest gold buttons Ive poured have been with scrap jewelry. I take a pair of wire cutters and cut the jewelry up into pieces to about of an inch, add 3 shot glass measures of the flux and smelt it. Ive poured buttons over 5 ounces using this method with great success. We financed a great metal detecting trip by going through

our jewelry boxes, smelting the broken and unwanted items into a button and then sold that button to a scrap dealer. He tested the fineness of the button on the spot and paid me cash for it. Theres not nearly the amount of impurities contained in the jewelry as when smelting black sand concentrates, so the flux doesnt get loaded up with them. The gold buttons come out with a mirror finish on them and theyre just amazing.

No Button: If you did not get a metal "button" when the smelted material was poured into the mold, remember you MUST have gold or silver in your concentrates to begin with— and the more of it the better. For example, in a standard gravimetric fire assay, the lab will place 29.17 grams of the ore in a crucible along with their assay flux. After the fire assay has been completed by their method, they will recover the metallic bead and weigh the bead. Once the lab has determined the weight of the bead, they use a basic calculation that 1 milligram is representative to approximately 1 oz. of precious metal to a short ton of 2000 lbs. You probably have a pretty good idea of what the size of a 1 gram gold nugget is — a nice picker in your gold pan — so we would need 1000 of the 1 milligram beads to make up that 1 gram nugget in our gold pan. A single 1 milligram bead is pretty small, especially when we take into the consideration the specific gravity of gold. If you're looking at your black sand concentrates with a 10 power hand lens or a 30 power pocket microscope, and you believe that you can see fine gold in there, just keep in perspective how small those gold particles actually are and how many it takes to add up to a gram or even just a milligram.

The photo below on the left is from an extremely rich sample of silver concentrates that fire assayed at 9000 ounces per ton. The button is approximately 9 grams and a dime is shown as a size reference. If that assay button was gold rather than silver and the button came from a 29.17 gram sample of your black sands, a single ton of your black sand would be worth approximately $11,000,000 at today's prices. The photo below on the right is of an assay button that weighs 375 milligrams, representative of 375 ounces per ton. If that button came from a 29.17 gram sample of your black sands, a single ton of your black sand would be worth approximately $450,000 dollars at today's prices.

The cupels in the two photos above are approximately 1 inch across. If you could pour a button the size of the one in the above photo to the right, out of approximately 30 grams of panned concentrates, 50 lbs of that concentrate is worth about $12,000 at today's prices.

Look for those small and hard-to-find beads in your pours— you may have to crush the flux to find them. If there's gold in your black sand concentrate, the beads are there somewhere. Experiment with the process and see what works best for you. If you're finding beads at all, you're looking at potentially rich concentrates. Keep the nuggets and large pickers out of your concentrates and smelt the rest of the fine gold and black sands together. Remember to keep your expectations in the proper perspective when smelting your concentrates.

To purchase the Microwave Gold Smelting Kiln or Kits, or watch a how-to video, please visit http://goldrushtradingpost.com/gold_smelting_kits

DISCLAIMER

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