

Micron Mill Wave Tables TM and laboratory needs!



Why recovery gets simpler, not more complex...

Positive means of recovering microscopic gold using mechanical means! Standing waves, skin effect, inertia, and most importantly specific gravity, are all used in the recovery of gold, platinum, scheelite, copper, zinc oxide, and many other minerals from their ores. **Replaces: centrifugal concentrators, flotation cells, amalgamation, leaching, jigs, and a great deal more - Environmentally safer to use!**



In today's environmentally-conscious world, extreme attention is being paid to operations using "chemical means", including mercury, or even non-hazardous chemicals in the recovery of precious metals. Worldwide companies earnestly keep their operations clean and safe, as today's miners are just as concerned about contamination as the general public.

Action Mining, many years ago, joined the ranks of concerned miners and mining companies referencing the use of chemical means to extract precious metals. We felt that even the best concepts needed application, thus the Micron Mill Wave TableTM was born. The mining industry can now eliminate worries regarding hazardous products or waste material. Action Mining's Wave TablesTM use only water, and possibly some biodegradable surfactant. ***Again, everything is environmentally safe***, thus avoiding "chemical permits", arguments with government agencies, hazardous waste disposal costs, and most importantly, the headaches connected with chemical extraction of gold, or other metals. (See inside for more information or call toll free 1-800-624-1511)

See it work!!!
Wave Tables in action
...watch it ONLINE
www.actionmining.com



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Celebrating 45 years!



Phone: 406 826-9330 Order line: 800 624-1511
E-mail: sales@actionmining.com Website: www.actionmining.com

AMS ACTION[®]
Mining Services Inc.

Simple operation -

- adjustable water flow
- adjustable table top bump
- adjustable table tilt

How It Works: The picture below shows the wave theory of the table. Separating by specific gravity, the sand forms in drifts directly under the standing wave of water. Even light blond sand forms drifts, not washing away. Due to the Standing Wave principle, the heaviest particles remain through the low motion area of the Standing Wave. The wave itself moves; the water directly beneath the wave tends to stand still. The further from the top of the wave, the less motion is in the water. Thus, the heavier the particle the deeper it will ride and the less motion it will see. The "Riffle weir bar" attached to the top bar of the Riffle bar assists in dropping 'float

gold' to the table surface, enabling a faster production run without fear of losing gold or other metals that normally would be lost on most tables.

In view of the fact that the table top moves back and forth, the micron particles of heavy material (gold, PGMs, scheelite, copper, zinc oxide, etc.) sink to the bottom under the wave. The finer particles (-600 mesh and smaller) drop into a Skin Effect area. That area is directly against the skin of the table top. The water in this area does not move with the flowing water but rather sits almost still. The motion of the table causes this "Skin Effect" water to move in the opposite direction of the flow. Thus the fine gold or mineral moves 'up' the table and falls into the concentrate trough. The gold and/or concentrates can then be washed automatically into a concentrate bucket or a security safe, or vacuumed off the table. *Ore should be classified according to size for efficient results.*



The Secret lies at the Heart of the System:

Superior, top-of-the-line linear ball bearings: responsible for the precision back and forward motion of the table top, preventing up and down vibration that causes gold or heaviest materials to break loose and wash away. The bearings move back and forth on the 5/8" steel rods.

Highest Quality Fiberglass Top: vacuum-formed, sealed fiberglass top with a 1" thick base is built to give several years of satisfactory results, conducive to not warping (store out of direct sunlight). The finish blue color has been proven to be the best color contrast for gold viewing.

The Micron Mill Wave Table™ can be fed from an overhead tank, slurry fed by conveyor belts, or by pipe, depending on your setup requirements. Ask our design engineer for assistance.

The Micron Mill Wave Table™ is beyond question a new development in the recovery of micron particles or minerals of all kinds. ***This table can be adjusted to separate virtually anything since it cleanly separates by specific gravity.*** Under most circumstances it will replace flotation cells as well as other concentrating tables. Our theory of operation and use differs quite widely from other concentration equipment. The inertia bump is in one direction and the flow of precious metals is in the opposite direction. The recovery of micron particles as small as 5 microns (approx. 10,000 mesh) is happening daily!

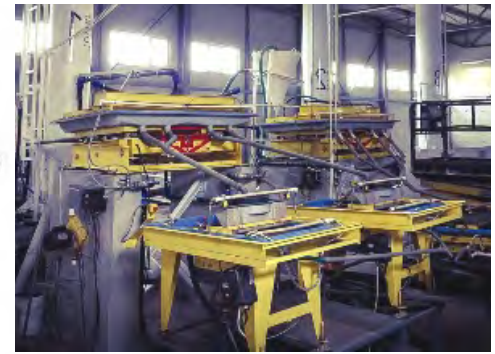
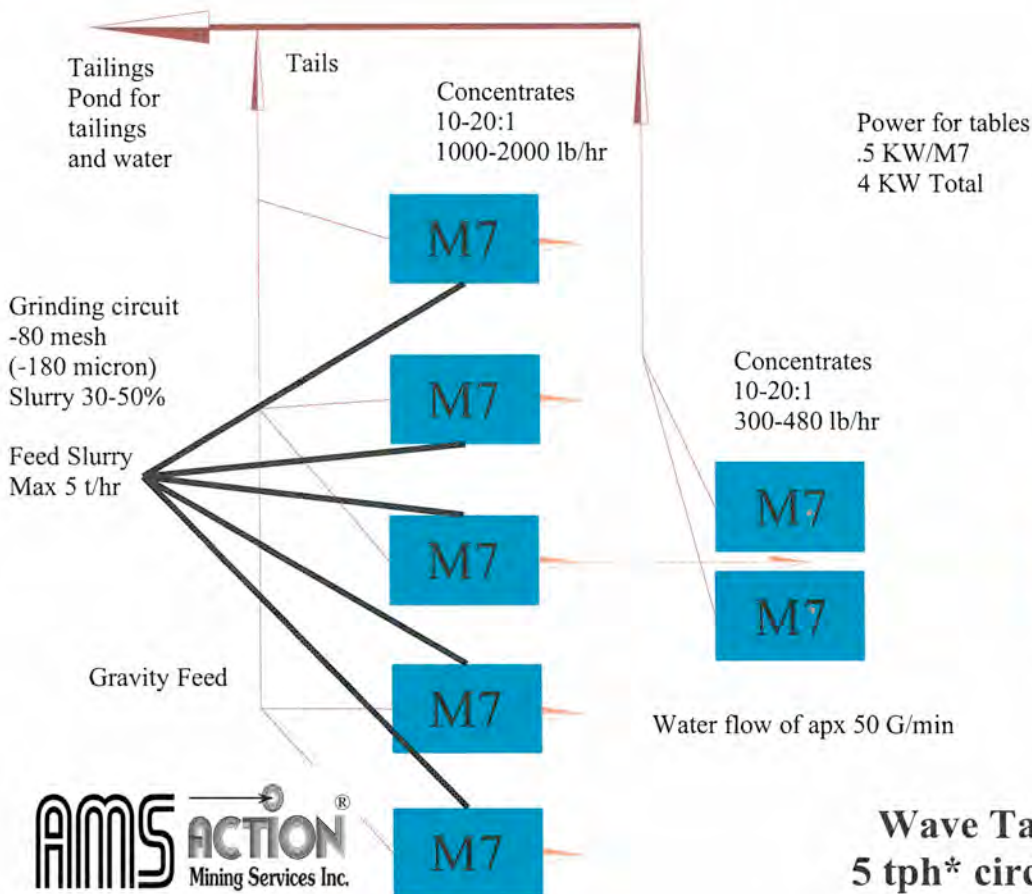
Our trailblazing Tables rank near the top in order of importance in the recovery of precious metal particles. Until the present, there has been no mechanical method of recovering particles of gold finer than 150 mesh (106 microns). The only workable methods for micron gold particles smaller than 150 mesh have been leaching and flotation. Now, recovery of finer particles can be accomplished without the environmental problems associated with leaching and flotation. Notably, the cost factor of the Micron Mill Wave Table™ recovery method is usually less than 1/10 the cost of leaching, flotation or amalgamation.



Light sands at top of picture, black sands in middle, gold moving forward & out of the black sands



The Tables must have all 4 legs bolted to a cement foundation and be level for best results, but may be mounted on a frame and weighted down, as long as the table frames do not move or vibrate and the tops are level.



2 M10 feeding 4 M7s

A concentration of
10,000-20,000 to 1

M7 Concentrates

Concentrates
100-200:1
3-4.8 lb/hr

Wave Table Flow sheet 5 tph* circuit using 8-M7s

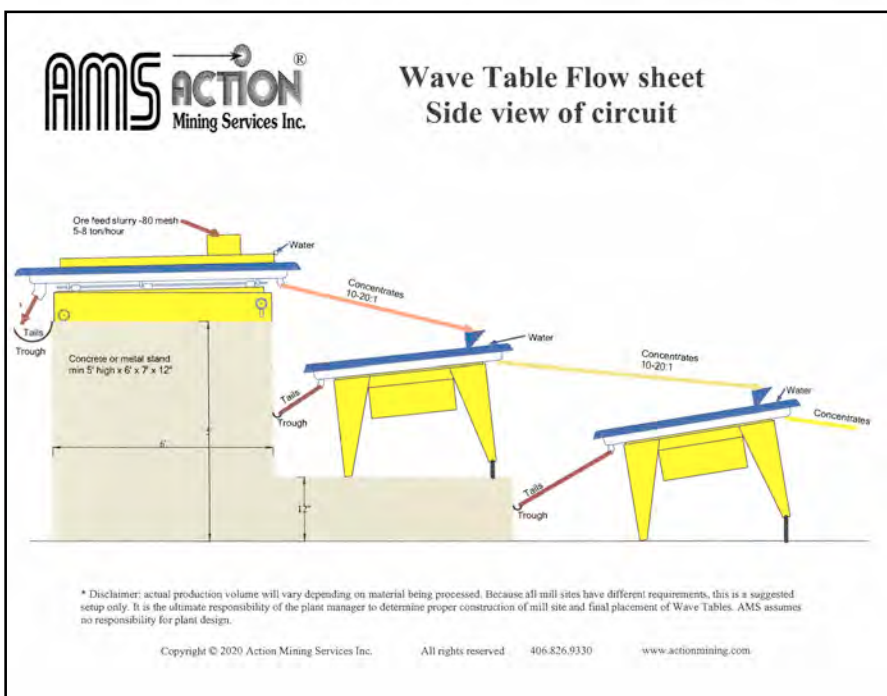
* Disclaimer: actual production volume will vary depending on material being processed. Because all mill sites have different requirements, this is a suggested setup only. It is the ultimate responsibility of the plant manager to determine proper construction of mill site and final placement of Wave Tables. AMS assumes no responsibility for plant design.

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Alternate Production Configuration
M7s in production series - final concentration
on last M7 table

Micron Mill Wave Table - M7 1 tph model, head ore material

4

The M7 is great for all types of material!



- Finishing
- Production
- Sampling
- Testing



Separation on the M7

While having the capability of acting as a production table for a smaller mill or pilot operation (concentrating approximately 1 ton of simple quartz ore per hour), the M7 can be used as a Finish Table producing a very high grade concentrate of precious metals. Gold will separate efficiently and at a high percentage from black sands - which is a statement unheard of in mechanical separation considering the specific gravity of black sands and gold are so close in proximity! This Table will separate them!



M7 table fed from overhead slurry tank

As a Production Table, the same table that is used for production can be used to clean the cons. The concentrates produced can be reloaded onto the table for the finish (cleanup) and can give almost pure gold or other metal when the water flow is properly adjusted.

As a Finish Table, the concentrates coming off of the Production Table can be run directly onto this table, offering a very efficient system for a mill operation.

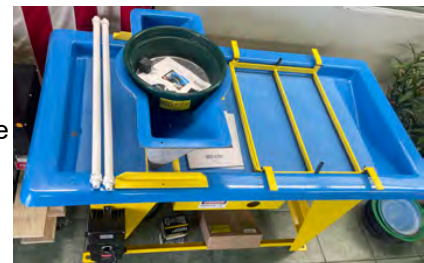


The variable speed control to the Wave Table enables the user to fine tune the separation. Mounted directly on the table stand (or optional wall mount), the user can quickly adjust the separation of the material with precision. This is especially helpful in a lab environment where testing of different ore bodies is performed. Minute changes in the speed of the table top movement are easily made to determine the most efficient and cost effective rate of speed and material feed. Once calculations have been made, the control will hold the position.

M7/8/9 Wave Table comes with:

- Specially designed Feed Hopper that holds a 20 mesh screen (included) to easily classify small batches of material while running the table. (Other mesh sizes available.)
- Riffle bar with weir bar for elimination of float material, two water pipe spray bars.
- Built-in hydraulic jack lift (jack included) to easily and quickly adjust the height of the concentrate end of the table.
- Risers so that you can adjust each concentrate end leg separately to level up the table from side to side for better recovery!
- Double the number of linear bearings improving performance & extending bearing life
- Variable Speed Control for precise separation adjustments w/standard leg mount
- Quick setup sheet, M7 instruction manual, box of plumbing parts & online videos

**39 years
of success!**



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M7 palletted and ready for crate top

**Experience the wonder of the
Micron Mill Wave Tables™**

Call 1.406.829.9330 to schedule your appointment! Receive a personal look at your own product run, in person or video & photos.

Micron Mill Wave Table

Model M7/8/9 specs:

600 - 2500 pounds of head ore material per hour, Examples are approximate recovery rates: 600 pph of copper/lead/zinc ore; 800 pph black sands; 2000+ pph of simple quartz ore
 Recovery of gold particles ranges between 10 mesh and microscopic
 Recovery of gold from classified black sand ranges from 80% to 99%.
 Recovery of gold from small batches of classified black sands ranges from 92% to 99%.
 Water requirements are 5 to 12 GPM, with 2 adjustable water spray bars
 1/2 HP, 50/60 cycle, 110/240 V at 600 watts, IP55 Class F
 Variable Speed Control 120/240V, 50/60C, NEMA 4X, LED display
 Steel frame construction is finished yellow with high corrosion-resistant baked-on, powder coat epoxy paint. Enclosed motor frame for safety.
 Features easy reach grease fittings.
 Table top and hopper are constructed of fiberglass, gel-coated in finish blue (proven to be the best color for color contrast for gold)
 Adjustable table top tilt & "bump"
 Weight is 416 lbs, Dimensions are 61"L x 32" W x 39" H. Crated weight 600 lbs; dimensional weight is 646 lbs.
 Crated dimensions are 66"L x 39"W x 43"H (64.05 cu.ft.). Can be shipped by LTL truck or air/ocean freight.

Cat #TABLE-M7VS Base price \$12,295.00 110V, 60C, IP55 Class F motor **(\$250 crating in U.S.)**

Cat #TABLE-M8VS Base price \$12,295.00 220V, 50C, IP55 Class F motor **(\$350 crating for international)**

Cat #TABLE-M9VS Base price \$12,295.00 220V, 60C, IP55 Class F motor **(\$350 crating for international)**

Accessories for M7/8/9 Wave Tables™

Service Parts Kits - (not shown) we've put together kits of wear parts.

M7/8/9 Kit Cat #M7SERVICEPARTS \$785.00



Vacuum System - available for vacuuming gold concentrates off the table. If you are doing many different runs, this vacuum system works simply and efficiently. Vacuum off the cons and smelt them or send to a refiner.

2.5 gallon size Cat#TABLE-VACSYSTEM \$ 125.00

"Mike, the two M7 Micron Wave tables™ that we are using have performed flawlessly for about a year now. Due to the density of the feed and the continuous operation, we had to make a few very minor changes to the tables. One table is being used to recover metal values that our other recovery processes missed. The other M7 is being used to clean up the mids from a full size Diester table. **Both tables have been running 24 /7 since 1996 with no breakdowns!** The M7 tables are very efficient as far as low water consumption and are able to recover metal in the range of 5 to 44 microns, something that our large tables have trouble doing. The tables are very operator friendly and inexpensive to maintain. I enjoyed working with you and the folks at Action Mining and look forward to doing so in the future." **Bill McCuskey, Asst. Process Engineer, Kennametal Inc. , Nevada**

"The M7 is an amazing piece of equipment. It does everything you said it would .. It now makes a lot of other pieces of equipment obsolete and is going to change the way we (sample) the ground. We are seeing stuff that we could not get with the pan. Even using the table to say yes/no as to if its worth sending any sample to the lab justifies its use." **Australia**

"I ran the old type tables and they just frankly, didn't inspire me. Your table does! Not only is the theory fabulous...it makes the operator strive to get the BEST separation possible. So...not only do you have a successful run...you feel damn good about it" **Cheryl C, Oregon**

"Since I unpacked my table, I've run it for about 4 or 5 hours getting used to it. I am quite satisfied with the first results and the first recovery tests are positive. I am certain already that your table is the right recovery system that I was looking for and this equipment will be very useful in my gold room. As you probably remember, I need your table for daily "clean ups" of about 350 lbs of cons coming from my concentrator. The separation is effective and rapid, quite surprising I must say." **French Guyana**

Testimonials

IN-HOUSE Table Testing Services

All tests must be accompanied by a check, money order, or credit card number with expiration date. Ore samples cannot be processed without advance payment. Upon receipt of ore and payment, we will expedite your sample testing.

Table lab is seasonal, please call for availability

Micron Mill Wave Table Testing - We run your pulverized ore, estimating the gold present with a report. Concentrates will be returned and tails can be returned, if requested. Maximum 20 lbs.

Cat#TEST-TABLE Price \$96.00 + \$1.00/lb.

Grinding / Impact mill wet only - We pulverized ore sample prior to running table test, maximum 20 lbs

Cat#TEST-TABLE Price \$75.00 + \$1.00/lb.

All lab services are by appointment.

PLEASE Call 406 826-9330 PRIOR to sending in samples.

LABORATORY PRICE LIST

Broad Spectrum ICP-AES -(a) 33 elements, suitable for trace metals in soil and rock samples by nitric-aqua regia digestion. The technique involves dissolving the ORE sample in aqua regia and analyzing the liquid by vaporizing it in the very hot "flame" of an argon Induced Coupled Plasma. **Cat#TEST-ICP34.....\$145.00**

(b) 34 elements plus gold, platinum, palladium. To ensure an accurate reading for the precious metal analyses, a fire assay is done and the bead is then dissolved in aqua regia and read by the ICP. The balance of the sample is dissolved and processed as in (a) above. **For ore samples Cat #TEST-ICP.....\$230.00**
For concentrates Cat #TEST-ICPCons.....\$299.00

Rare Earth Element - REE has the major advantage of being suitable for low grade samples. All analyses include chondrite plots. The ICP is run after fusing the sample with metaborate. It provides the best overall detection limits of 33 elements. **Cat #TEST-REE \$164.00**



AMS Surfactant

A special formula developed by Action Mining to help break the surface tension of water and break down clay in your ore. Makes tabling, amalgamating and leaching easier with less loss of precious metals. *Concentrated!* Use 1 cup to 1 gallon for 350 gallons of water (strength depends on amount of clay). Use one to several drops when testing or cleaning up on the table as needed. Formula available, call for details.

1 liter Cat#SURFACTANT \$35.00

5 gallon Cat#SURFACTANT5GAL \$285.00

Basic Fire Assay Instructions

1. Be sure that your ore is a representative sample of your ore vein. Take chips and rocks from the entire surface of the vein and drill the vein if possible.
2. Pulverize the ore into a powder (80 mesh or finer) and stir the powdered ore thoroughly.
3. Measure out 29.16 grams of ore (this is an Assay Ton).
4. Mix 90 grams (3 ounces) of the proper assay formula with the ore and place into a 30 gram crucible. (See page 13 for instructions concerning the proper assay formula and page 14 for a picture of a crucible).
5. Furnace crucible at 1850°-2000°F for 45 minutes to 1½ hours (The crucible must remain in the furnace for at least 45 minutes after the furnace reaches temperature - until it is done & quits smoking).
6. Using tongs remove the crucible from the furnace and pour its entire contents into a pouring mold. (See page 12 for a picture of tongs and page 20 for a picture of a pouring mold).
7. When the slag in the pouring mold has cooled, there will be a lead button at the bottom of the slag. Break this loose from the slag.
8. Pound the lead button with a hammer until the slag is broken off. Most assayers pound the lead button into a cube. A small amount of slag will adhere to the lead as powder. This will give no trouble.
9. Place the lead on a cupel (See page 14 for picture) and place the cupel into the furnace at 1750°F. until the lead has all been absorbed into the cupel or volatilized into the air, leaving the gold and silver as a small bead in the cupel.
10. Weigh the bead, or measure its size. (See page 17 for picture of a balance; or if you measure the bead, (See page 16 for a picture of a comparator and a chart to determine the weight from the size of the bead.) **NOTE:** For each milligram your bead weighs, there is 1 ounce of gold and silver in your ore. But remember at this point the bead is gold and silver so you must go on to step 11 before you will know the exact gold (and silver) content.
11. You must now determine how much gold and silver is in the bead. If there is any slight yellow coloring in the bead, it is at least 77% gold. Dark yellow indicates up to 99% gold. If the bead is silver color then it should be dropped into (25% nitric + 75% distilled water) warm nitric solution. (See page 16 for details on determining the gold and silver content of the assay beads.

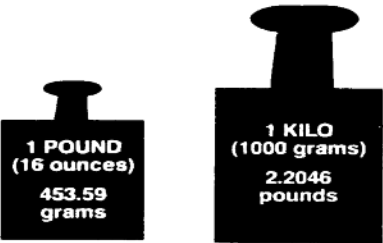
WARNING: Assay lead fumes are poisonous. An assay furnace must not be used indoors unless under a ventilated metal hood.

NOTE: Wear gloves and goggles when doing assays.

Goggles or face shield must be worn at all times. Hot slag can spatter.

Always add ACID TO WATER, not water to acid!

Please refer to any of our books or our video on assaying for complete instructions!

Conversion Chart		Comparative Size of Kilo and Pound Weights	
Capacity			
1 milliliter	0.03382 ounce (U.S. liquid)		
1 ounce (U.S. liquid)	29.573 milliliters		
1 milliliter	0.2705 dram (U.S. Apothecaries)		
1 dram (U.S. Apothecaries)	3.6967 milliliters		
1 liter	1.05671 quarts (U.S. liquid)		
1 quart (U.S. liquid)	0.94633 liter		
1 liter	0.26418 gallon (U.S. liquid)		
1 gallon (U.S. liquid)	3.78533 liters		
Mass			
1 gram	15.4324 grains		
1 grain	0.0648 gram		
1 gram	0.03527 ounce (Avoirdupois)		
1 ounce (Avoirdupois)	28.3495 grams		
1 gram	0.03215 ounce (Troy)		
1 ounce (Troy)	31.10348 grams		
1 kilogram	2.20462 pounds (Avoirdupois)		
1 pound (Avoirdupois)	0.45359 kilogram		

WARNING: Assay lead fumes are poisonous. Assay Furnaces must not be used indoors-unless under a ventilated hood.

Advanced Fire Assay Kit

Cat #ASSAYKITPROF
Price \$9,995.00(crating \$98.00)

Kit with 11" Laboratory Impact Mill
Cat #ASSAYKITPROF+IMP
Price \$10,115.00 (crating \$118.00)



The Advanced Fire Assay Kit offers additional equipment and supplies to the Beginners Fire Assay Kit, including the Automatic Temperature Control for the Furnace. The Analytical Balance is an easy-to-read digital unit. An excellent laboratory setup for any operation striving towards professional results.

(You may substitute the #9 furnace with a larger one for the difference in the price.)

Flux restrictions - Ask which ones we can ship to your location.

KIT EQUIPMENT/SUPPLIES

Assay furnace 9"x10"x6.5"
Auto Temp. Control
30 gm 64 Crucibles
100 Cupels, 1.5" mgo
Weighing boats, 3x3 lot of 25
Assay Gloves, cuff length
1 lb. Gold Ore
Analytical Balance VWR
Complete Set of Weights
Wash Bottle, 250 ml
Evaporating Dish 3"
Assay Manual
Pouring Mold 6 depression
Furnace Tongs
Assay Gram Scale - NEW (not shown)
Mortar & Pestle, 3" cast iron;
Mortar & Pestle, 3" ceramic, Face Shield

Due to continuing improvements, actual product may differ slightly from photo.

5 Roasting Dishes
3 Fire Bricks
100 Assay Report Ceramic
Crayon
Lead wool 1 lb
Lead test 1 lb
40 lbs. Standard Ore Flux
40 lbs. Sulfide Ore Flux
25 lbs Gold/Silver Flux
Tweezers
Video & Fire Assay Home Study Course

See back cover
for info on
Beginner's Fire
Assay Kit

Propane Furnaces

Completely portable, lightweight and fast, melts gold in 15 minutes. The design eliminates blowers and regulators, only requirement a propane tank. Fuel is controlled by the valve on the fuel tank. Fuel hose and crucible pedestal included. Dual injection (DI) and Triple injection (TI) models heat up faster and hotter. Furnaces are made of castable furnace cement.



Furnace, #5 Cat #FURNACE5 \$649.00* 6.5"x8"ID
 Furnace, #6DI Cat #FURNACE6DI \$949.00* 8.5"x9"ID
 Furnace, #10TI Cat #FURNACE10TI \$1299.00* 10"x12"ID
 * plus crating charge \$35.00



Model	Ports	Max Temp	Weight	Crucible Cap	Inside Dim	Avg Fuel Use
#5	1	2500F	40lb	#5 FC60	6.5"x8"	2hr/gal
#6DI	2	2900F	80lb	#6 FCG6	8.5"x9"	1.5hr/gal
#10TI	3	3000F	115lb	#12 FSC12	10"x12"	0.75hr/gal

Tilt and Pour Furnace

A bench top electric Tilt and Pour using a #16 heavy wall graphite crucible with spout. Perfect for smaller smelting jobs. With automatic temperature control for precise heat and braking winch and safe pouring. *Larger sizes available.*

Cat #FURNACETILT16 \$5,575.00 crating \$115.00

TL-16 crucible w/pour spout Cat#Crucibletl16 \$494.00

Electric Furnaces & Parts

These furnaces have 4" thick side walls, floors, and ceilings. The frame is built of sturdy angle iron, and the outside is stainless steel. Plain and simple to rebuild the insides, also replace elements. Inserting crucibles or cupels is done easily, without heavy heat loss...

These are some of the reasons we've been selling this furnace, almost exclusively, for the past 25 years. The temperature rating is 2300° F. continuous operation, which means you will have a little extra margin for those unusual experiments. We have seen some of these furnaces that have lasted for many years. The extra thick walls make this furnace very energy efficient. Our belief is that you can not find a better built electric furnace for assay purposes at any price. All models are now furnished with a digital temperature control. With a little practice the operator can set the control to maintain any given temperature. *Temperature is maintained within 2° using the Automatic Control.*

ID	W	D	H	MODEL#	CAT#	PRICE	CRATING
9"	10"	6.5"	120V	9	FURNACE9	\$2,195.00	\$73.00
12"	12"	6.5"	120V	12	FURNACE12	\$2,239.00	\$85.00
12"	12"	8"	240V	13	FURNACE13	\$2,393.00	\$85.00
16"	16"	11"	240V	16	FURNACE16	\$2,999.00	\$98.00
16"	16"	15.5"	240V	30	FURNACE30	\$4,688.00	\$105.00

OTHER
SIZES
AVAILABLE!



Model 9
shown





Digital Temperature Controller Keeps furnace at an even temperature within 1% of the degree YOU set it on.
Cat #TEMPCONTROL Price \$595.00

Rebuild Kits

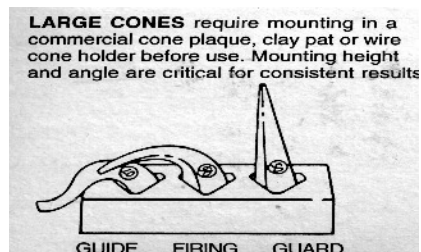
Sooner or later it is necessary to rebuild the entire inside of your furnace, from top to bottom. These kits now include all the bricks (grooved and cut), top plate, bottom plate, door bricks, elements and thermocouple unit.

Description	Cat #	Price
For Cat #FURNACE9	FURNACEREB9	\$684.00
For Cat #FURNACE12	FURNACEREB12	\$778.00
For Cat #FURNACE13	FURNACEREB13	\$898.00
For Cat #FURNACE16	FURNACEREB16	\$1,407.00
For Cat #FURNACE30	FURNACEREB30	\$1,719.00

Pyrometric Cones

Cone bends at the known temperature. Place the appropriate cone in your furnace. When the cone bends, you know you're at the temperature you want.

	Cat #	Price
#06 1830°F	5 for PYROCONES06-5	\$5.50
	Box/50 PYROCONES06	\$32.00
#05 1915°F	5 for PYROCONES05-5	\$5.50
	Box/50 PYROCONES05	\$32.00
#04 1940°F	5 for PYROCONES04-5	\$5.50
	Box/50 PYROCONES04	\$32.00
#03 2014°F	5 for PYROCONES03-5	\$5.50
	Box/50 PYROCONES03	\$32.00
Plaques - 4 hole	Cat#PYROPLAQUE4	\$4.00



7 Furnace Cement

This cement will quickly repair all pits and breaks. It is also used on furnace floors in the powdered form. In this case, spills can just be raked out and new powder sprinkled on. In case of pits, just mix with a little water.

Castable Cement 2500°F (powder form) for making a furnace or repairing large patches.

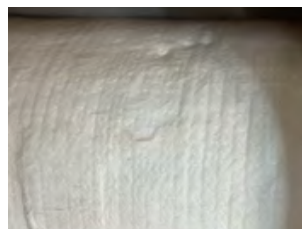
1# Cat#CEMENTCAST1 \$8.00



Furnace Blanket Insulation

Insulation liner 24" wide, 1" thick, 8 lb density. Sold by the square foot, minimum 2sq ft (2' x 1').

Cat#FURNACEBLANKET \$7.95/SQ FT.



Furnace Floors

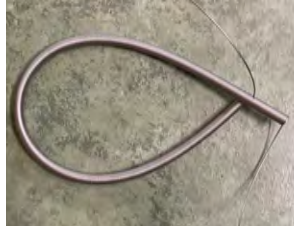
These ceramic plates (when placed on the floor of your furnace) are impervious to assay spills and reduce the necessity of replacing the bricks.

Description	Cat#	Price
8"x 8"x 1/2"	FURNFLOOR8X8	\$29.00
10"x 10"x 1/2"	FURNFLOOR10X10	\$58.00



Heating Element for Furnaces

The heating elements last according to the amount of use and types of assays done - roasting sulfide ores in your furnace can reduce the life of your heating element to only a few hours.



Heating element 220V
Heating element 120V
single-hole insulators

Cat#HEATINGEL220	Price	\$92.00
Cat#HEATINGEL110	Price	\$62.00
Cat#INSULATOR1HOL	Price	\$1.25 each



Fire Bricks

Our fire bricks are rated to 2300° F. These bricks are very light and when white hot on the inside, they can still be touched on the outside. They can be used to build furnaces, hold white hot materials, and replace bricks in old furnaces, or just set hot things on. They are soft enough to cut with a hack saw. 2.5"x4.5"x9
Cat#FIREBRICK Price \$ 12.50

Thermocouple Cat#THERMOCOUPLEAMS \$38.00

2-hole insulators Cat#INSULATOR2HOL .75
Thermo yellow wire Cat#THERMOWIRE 7.00/3 ft.



110Volt Cat#SWITCH110 \$52.00
220Volt Cat#SWITCH220 \$52.00

Switches

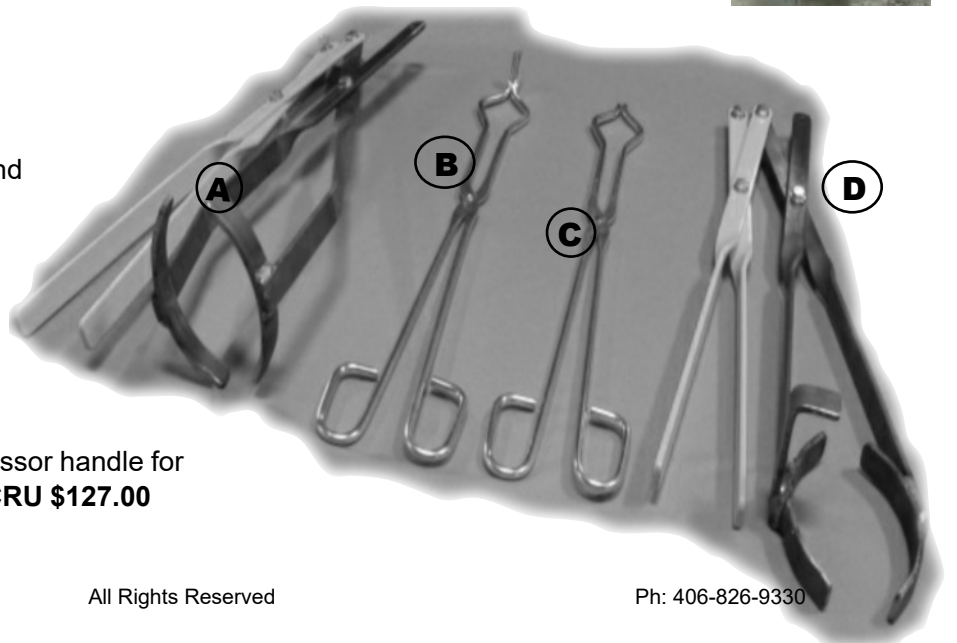


A Tongs
Vertical lift tong / one size
Cat #TONGS5 \$157.00

B 18" general scissor tong for cupels and
assay crucibles
Cat #TONGSFUR
\$ 32.00

C 18" scissor cupel tongs
Cat#TONGSCUPEL \$32.00

D 36" heavy duty horizontal lift tong, scissor handle for
secure grip / one size Cat #TONGSCRU \$127.00



**** Ships by truck as hazardous or pick up only *Ships Ltd qty UPS only**



Pre-Mixed Flux Formulations

There are new restrictions on pre-mixed fluxes. Most contain litharge as a collector and can only be shipped within the US and Canada. We now have non-

hazardous International Fluxes available. Ask for details.

Standard Ores Flux

This is the most often used Assay Flux formula -contains lead for a collector. Just add this flux to any standard type ore and fire in any fire furnace. A 25 gram lead button will be produced with most standard ores. If the lead button is smaller than 20 grams one should redo the assay and add 5 grams of whole wheat flour (standard food flour). Use 3 times as much flux formula as ore. Guaranteed silver-free. International flux contains NO litharge - lead must be obtained locally.

Sulfide Ores Flux

This formula will produce all of the free gold, silver, and platinum in sulfide ores. **This is important - one must use four 8 penny nails with each assay in addition to this flux.** Bend the nails in a U-shape in order for them to sit completely into the flux and drop them into the crucible. The iron will unite with the sulfur and other impurities and reduce the litharge to lead. Always check to see if some portion of the nails are still present when you finish the assay. If all the nails are gone, you didn't use enough nails so you must redo the assay using more nails. Use 3 times as much formula as ore. Silver-free.

Gold Chlorides Flux

Specially formulated for ores suspected to have gold chlorides present to keep it from vaporizing.

Gold/Silver Bullion Smelting Flux

For material containing 70+% gold or silver content to get it clean. To put your gold or silver into the shapes or forms you wish, just mix equal parts flux with your gold or silver powder, heat in a crucible, pour hot flux mixture into your mold and break off slag when cooled. It comes off nice and clean.

International Au/Ag Smelting Flux

Non-hazardous flux for gold/silver material containing 70+% Au or Ag content.

Silver Chloride Smelting Flux

Specially formulated for smelting silver chloride. If you don't use a special flux, you will lose a lot of your silver as it will go into the flux and air.

Platinum Group Metals Flux

Formulated to pull & hold onto the PGMs for improved smelting recovery. **Now available for Sulfides!** Please specify if you have sulfides in your ore!

Standard Flux	Cat #	Price
1 lb **	FLUXSTD1	\$16.00
40 lbs pail **	FLUXSTD40	\$305.00
160 lbs rate **	FLUXSTD160	N/A

Sulfide Ore Flux	Cat #	Price
1 lb **	FLUXSUL1	\$16.00
40 lbs pail **	FLUXSUL40	\$294.00
160 lbs rate **	FLUXSUL160	N/A

Gold Chloride Flux	Cat#	Price
1 lb **	FLUXGOLDCL1	\$18.00

Gold/Silver Bullion Flux	Cat #	Price
1 lbs *	FLUXGOLD1	\$14.00
25 lbs pail *	FLUXGOLD25	\$189.00

International Gold/Silver Smelting Flux	Cat #	Price
1 lb	FLUXGOLDSMELTI NG1	\$14.00
25 lbs pail	FLUXGOLDSMELTI NG25	\$189.00

Silver Chloride Flux	Cat#	Price
1 lb	FLUXSILCHLOR1	\$14.00

Platinum Group Metals Flux	Cat#	Price
10 lbs **	FLUXPGM10	\$85.00
40 lbs **	FLUXPGM40	\$280.00

All formulas are available for purchase. Call or email for pricing.

Shipped by UPS at buyer's risk.
UPS will not guarantee
Some sizes can only be sent by
truck. Inquire when ordering.

The Science of Cupelling



Cupelling is a part of assaying, however it can also be used at any time to prove or disprove precious metals. In other words, cupelling can be used as a mini-assay. If you have anything in which you believe might be gold, silver or platinum, it is simple to) grind a small amount of your substance, mix it with some powdered lead or wrap some lead wool around it, put it in a cupel and place it in the furnace. In about 40 minutes you will have a bead of precious metals or no bead as the case may be. This has been an absolute test of gold, silver, and platinum for over 2000 years.

The heated lead oxidizes creating hot litharge, a liquid that destroys all minerals except the precious metals. Everything is destroyed and dissolved and the precious metals are drawn into

the lead. The cupel acts as a blotter for the litharge and soon all of the lead has oxidized leaving only the precious metals as a bead on the center of the cupel.

Bone Ash Cupels



Description	Quantity	Cat #	Price
1.5"	EACH	CUPELS1.5BA	\$3.00
Absorbs 30g of lead!	LOT OF 20	CUPELS1.5BA20	\$38.00
	BOX OF 100	CUPELS1.5BA100	\$135.00
1.75"	EACH	CUPELS1.75BA	\$3.25
Absorbs 50g of lead!	LOT OF 20	CUPELS1.75BA20	\$48.00
	BOX OF 100	CUPELS1.75BA100	\$185.00
2"	EACH	CUPELS2BA	\$4.00
Absorbs 85g of lead!	LOT OF 20	CUPELS2BA15	\$65.00
	BOX OF 100	CUPELS2BA100	\$254.00
2.5"	EACH	CUPELS2.5BA	\$6.50
Absorbs 170g of lead!	LOT OF 14	CUPELS2.5BA14	\$72.00
	BOX OF 80*	CUPELS2.5BA80	\$288.00

MgO (magnesium oxide) Cupels



Description	Quantity	Cat #	Price
1.5"	EACH	CUPELS1.5MGO	\$1.50
	LOT OF 20	CUPELS1.5MGO20	\$25.30
Absorbs 50g of lead!	BOX OF 100	CUPELS1.5MGO100	\$97.75
	BOX OF 300	CUPELS1.5MGO300	\$181.00
1.75"	EACH	CUPELS1.75MGO	\$1.65
	BOX OF 20	CUPELS1.75MGO20	\$29.00
Absorbs 69g of lead!	LOT OF 100	CUPELS1.75MGO96	\$98.50
	BOX OF 200	CUPELS1.75MGO180	\$178.00
2"	EACH	CUPELS2MGO	\$2.82
	LOT OF 20	CUPELS2MGO20	\$52.90
Absorbs 85g of lead!	BOX OF 160	CUPELS2MGO108	\$178.25
2.25"	EACH	CUPELS2.25MGO	\$5.00
	LOT OF 14	CUPELS2.25MGO14	\$64.00
Absorbs 150g of lead!	BOX OF 84*	CUPELS2.25MGO84	\$266.00

Clay Crucibles

*ship by LTL truck only

Description-OD	Quantity	Cat #	Price
15 gram	EACH	CRUCIBLE15G	\$5.75
3 13/16"h x 2 13/16"w (Multi-run)	LOT OF 16	CRUCIBLE15G16	\$84.00
	BOX OF 64 *	CRUCIBLE15G64	\$226.00
30 gram	EACH	CRUCIBLE30G	\$6.50
4 1/8"h x 3 5/8"w (One shot)	LOT OF 16	CRUCIBLE30G16	\$80.00
	BOX OF 64 *	CRUCIBLE30G64	\$256.00
(Multi-run)	FULL BOX ONLY **	CRUCIBLE364	-
40 gram	EACH	CRUCIBLE40G	\$7.00
5 3/8"h x 3 1/2"w (One shot)	LOT OF 16	CRUCIBLE40G16	\$94.00
	BOX OF 48 *	CRUCIBLE40G48	\$226.00
(Multi-run)	FULL BOX ONLY **	CRUCIBLE40G4	-
50 gram wide	EACH	CRUCIBLE50G	\$7.50
5 1/4"h x 4"w (Multi-run)	LOT OF 16	CRUCIBLE50G16	\$108.00
	BOX OF 48 *	CRUCIBLE50G48	\$248.00
5 ASSAY TON	EACH	CRUCIBLE5AT	\$19.95
5 3/4"h x 4 5/8"w (Multi-run)	LOT OF 12	CRUCIBLE5AT12	\$210.00
	BOX OF 24 *	CRUCIBLE5AT24	\$359.00



A professional assayer uses a clay crucible one time, but in a private lab most crucibles can be re-used a few times (even the one-shot ones). If you use a crucible more than once, be sure that the next assay will not be contaminated with gold from the first assay. To be sure of this, do not use a crucible that had a high assay or even one that had an assay near what you are looking for in the next assay. If you find assay flux is dissolving part of your crucible, preventing you from reusing it, add 1/2 spoonful of silica to your assay flux, This will prevent the assay formula from attacking the silica in the crucible. 30 gram crucibles are the standard assay size. They are rated at 1950°F but we have used these crucibles up to 2300°F.

***LTL truck / **special order only
OOS=out of stock**



Crucible Cover, for 30 or 40 gram crucible to protect your furnace from fumes and 'spitting'
CRUCIBLECOVER Price \$11.00

Graphite & Silica Carbide Crucibles

These are smelting crucibles which can be reused many times

# 0 Graphite	-----	CRUCIBLEGRAF0	\$48.00
OD-2 7/8"(H) x 2 1/2" (Wide at mouth)			
# 2 Graphite	-----	CRUCIBLEGRAF2	\$62.00
OD-4 1/2" (H) x 3 3/4" (Wide at mouth)			
#3 Graphite	-----	CRUCIBLEGRAF3	\$65.00
OD-4 1/4" (H) x 4 7/8" (Wide at mouth)			
# 4 Graphite	-----	CRUCIBLEGRAF4	\$102.00
OD-5 3/4" (H) x 4 1/2" (Wide at mouth)			
# 6 Graphite	-----	CRUCIBLEGRAF6	\$132.00
OD-6 3/4" (h) x 5 1/4" (Wide at mouth)			
# 8 Graphite	-----	CRUCIBLEGRAF8	\$OOS
OD-7 1/4" (H) x 6 1/2" (Wide at mouth)			
# 16 Graphite	-----	CRUCIBLEGRAF16	\$219.00
OD-9"(H) X 8" (Wide at mouth)			



OTHER SIZES AVAILABLE!



***Silica Carbide are special order items. Other sizes available - call for pricing.**

Scorification Assay One usually works with 1/10th Assay Ton (2.9 grams) when doing scorification assays. It is a cheap and quick assay, but it is also less accurate than the standard fire assay. Nevertheless many assayers use scorification often. It can also be used in conjunction with a standard assay to increase the accuracy. Our Assay Manual gives complete details; however, the instructions below are complete enough for scorification assays.

- 1) Measure 2.9 grams of ore.
- 2) Use approximately 30 grams of lead.
- 3) Place the ore and the lead in a Scorification (Roasting) Dish.
- 4) Place in a furnace at 1800° F.
- 5) The ore will float on the molten lead. Some of the lead will turn to lead oxide and saturate the ore.
- 6) Ore slag will form a crust around the edge of the lead pool.
- 7) Finally the slag will close over the lead pool. It is now time to pour the entire contents of the dish into a Pouring Mold.
- 8) Wait until the slag has cooled; then break the slag off the lead button and pound the lead into a cube to remove the remaining slag.
- 9) Cupel the lead button.

Email for current catalog, prices or if you have questions, we'll be glad to help!

Scorification & Roasting Dishes

These Roasting & Scorification Dishes are cast of fire clay materials and will stand the full heat of your furnace. They are used for scorification assays as well as roasting.

Description	Quantity Cat	Price	
3" Dish	Each	ROASTING3	\$7.50
	Lot/10	ROASTING310	\$70.00
	Lot/25	ROASTING325	\$155.00
	Box/90	ROASTING390	\$485.00
Roasting Dish, 6" Rd		ROASTING5	\$19.50
Roasting Dish, 8" Rd		ROASTING8	\$22.90
Roasting Dish, 10" Rd		ROASTING10	\$39.25



Assay Beads, Parting of

Porcelain Evaporating Dish

Used for parting and drying, impervious to acids and can be used on a hot plate.

3"

Cat # EVAPDISH3

Price \$17.00



Porcelain Crucible

We use these easy-to-handle cups for small beads.

15 ML Cat # PORCELAIN15 Price OOS

30 ML Cat # PORCELAIN30 Price \$11.50

60 ML Cat # PORCELAIN60 Price \$18.80



The Parting and Drying Dish is a necessary part of the assay. The gold bead from the cupel is placed in the dish along with nitric acid and water. Use distilled water only, 2 parts water to 1 part acid. Heat on a hot plate or over an alcohol flame. Heat long enough to permit fumes to rise from the acid. If the bead begins to bubble and react, allow the action to continue until there is more action. If the bead simply discolors after the first fumes, add enough water to cool the acid and stop any further action. Compare the color of the bead to the color chart below to determine gold content.

If the bead bubbled, when the bubbling stops, pour off the diluted acid carefully and add distilled water and pour off several times. Finally drain the water off and dry over heat. The black residue left is the gold (99% pure). It will turn gold color when annealed at 1000°F for 3 minutes. This gold is carefully removed from the parting dish and weighed.

If the bead did not bubble and you wish for a more accurate indication than the color chart, then the answer is to inquart with silver. Just add 4 times as much silver by weight as there is gold in the bead to the bead with about 10 times as much lead and re-cupel. The silver will alloy with gold and allow the nitric to dissolve the silver leaving the gold. Be sure to weigh the bead before adding the silver, then when you have

weighed the gold you will know how much silver actually came out of the assay.

Determine approximate weight of Assay Beads by comparator measurement

Bead size	100% Gold	50% Gold	100% Silver
0.005"	.02 mg	.015 mg	.01 mg
0.008"	.076 mg	.056 mg	.038 mg
0.010"	.152 mg	.12 mg	.087 mg
0.012"	.26 mg	.20 mg	.145 mg
0.015"	.50 mg	.395 mg	.288 mg
0.017"	.73 mg	.58 mg	.42 mg
0.018"	.87 mg	.69 mg	.49 mg
0.020"	1.45 mg	1.13 mg	.68 mg
0.023"	1.77 mg	1.40 mg	1.09 mg
0.025"	2.26 mg	1.79 mg	1.30 mg
0.027"	2.79 mg	2.24 mg	1.64 mg
0.030"	3.79 mg	3.05 mg	2.24 mg
0.033"	4.69 mg	3.99 mg	2.95 mg
0.035"	5.89 mg	4.76 mg	3.52 mg
0.040"	8.4 mg	6.91 mg	5.18 mg
0.045"	11.62 mg	9.63 mg	7.24 mg
0.050"	15.52 mg	12.96 mg	9.89 mg
0.060"	24.99 mg	21.60 mg	16.57 mg

Comparator 7X

This high quality Japanese 7X comparator is used for measuring the size of assay beads or other small object.

There are graduations every .002" making it easy to get the exact size of the bead weight using the chart below. This is an inexpensive method of determining weights of small spherical objects



Cat #COMPARATOR7X

Price \$ 124.00

Comparator 40X

Back on the market! Pencil style for measuring your beads. Available in inches only.



Scale: .001 inches

Cat#

COMPARATOR40X

Price \$ 61.00

When taken from the Cupel:

Dark yellow.....92 to 100% gold
Bright yellow.....85 to 92% gold
Slight yellow (greenish).....77 to 84% gold

Silver assay beads are often partly gold. They should be dropped into a nitric acid solution.

Content of Gold in Assay Beads

If the bead doesn't bubble after being dropped into nitric, then silver isn't being dissolved. Use this color chart to determine gold content or inquart:

Yellow 65 to 77% gold
Bright bronze..... 50 to 65% gold
Dark Bronze..... 45 to 55% gold
Brown..... 35 to 50% gold
Black shiny..... 25 to 35% gold
Black dull..... 10 to 25% gold
Black crumbly..... 0 to 10% gold

Scales & Balances



Analytical Balance, The VWR® T-Series balances

These balances provide accuracy and precision for any laboratory environment. Featuring internal calibration, IR proximity sensors for hands free operation, a multitude of communication options, and built in data protections, and provides advanced features for any application. The large 5" color touch screen allows for easy viewing of results and navigation through the balances menus. Data safety is provided via the internal memory allows for recording up to 500000 weighings. The analytical models feature a spacious 3-door draft shield that allows for tool-free assembly and disassembly of the weighing chamber. With its 5-year warranty, this balance will provide reliable results for years to come.

T-160	160 g capacity	\$4,125.00
Dims	205.5W×351D×348W mm (8.1×13.8×13.7")	
Linearity	0.2 mg	
Pan size	Ø 90 mm	
Readability	0.1 mg (.0001 g)	
Stabilization time	2 s	
Voltage	100–240V, ±5%, 50/60 Hz, 0.3 A / C-UL (US) and CE.	

Assay Scales



An excellent pocket-sized (picture enlarged to show detail) digital scale with readability of 0.01 grams at 100 grams. Capacity 500 grams with readability of 0.1 gram. Reads in gm, oz, ozt, dwt, ct, gn. Very accurate at 100 grams and easy to calibrate at 50 grams with the weight set featured on the next page. This amazing easy-to-use scale is now included with our Assay Kits, replacing the counter-balance Assay Scale. You'll love it!

Cat#SCALEASSAY Price \$ 66.95

Due to continuing improvements, actual product may differ slightly from photo.

***Remember,
there are many other scales available - we have
picked out the most versatile for lab work ! Just
call or email us with your measuring requirements
if you are looking for something more specific!***

Stainless Steel Milligram Weight Set 1 mg to 100 g

A 21 piece stainless steel weight set. The oak storage box is double hinged with a clasp and a pair of forceps are included. OIML, Class M2 calibration weight. Class M2 calibration weights are for general laboratory, technical and educational use.

Cat #WEIGHTSET

Price \$133.50



Weight Set, Economy

Set is OIML, Class M2 (same as above set) but smallest mg weight is 10 mg. Set includes mg weights (10 to 500 mg weights) and grams weights (1 to 50 gm weights). Includes plastic tweezers.

Cat #WEIGHTSETECON Price \$51.75



Weight Set, Milligram

This set of calibration weights will make up any weight from 1 milligram to 1 gram. Includes tweezers. It is generally used with an Analytical Balance or calibrating a very sensitive scale.

Cat #WEIGHTSETMG Price \$98.00



Weighing Boats

Extremely lightweight plastic boats for holding chemicals while weighing them out.

3"x3" Each	Cat #WEIGHBOAT3	\$.50
	Lot/25 Cat #WEIGHINGBOAT325	\$ 8.50
5"x5" Each	Cat #WEIGHINGBOAT5	\$.60
	Lot/25 Cat #WEIGHINGBOAT525	\$12.00



Assay Report Forms

If you do assays for anyone else, you will want to have an official assay form. If you do assays for yourself, you should always keep records. You may not think the data important now, but often you need it for reference. 100 forms **Cat #ASSAYREP Price \$8.95**



Misc. Supplies

Ceramic Crayon

This crayon will mark crucibles and other items that reach high temperatures. The heat has no effect on the markings. **Cat #CRAYON Price \$ 7.00**



Stir Bars, Magnetic

Size	Cat #	Price
1"x5/16"	STIRBAR1.16	15.99



Mortar & Pestle, Cast Iron

These mortars are useful for pulverizing ore as well as breaking rocks. The 3" size can be used to break 2" rocks and the 4" size can be used to break 3" rocks. Use these mortars to break the rocks into smaller pieces before pulverizing in the ore pulverizers listed.

3" mouth	Cat#MORTARCI3	Price \$ 60.00
4" mouth	Cat#MORTARCI4	Price\$ 88.00
1 quart	Cat#MORTARQT	Price \$132.00



Mortar & Pestle, Ceramic

Ceramic mortars are used for extra fine grinding. When grinding ore very free, it is possible to cause minute particles of gold to adhere together thus making larger particles. Sometimes, after grinding, gold can be seen in an ore when it could not be seen before grinding.

3" mouth Cat#MORTARCER3 Price \$ 45.00



Pouring Mold

Made of cast iron. Our design-30 years old. When the assay crucible is removed from the furnace the molten slag and ore is poured into this mold. The molten lead button immediately goes to the bottom. When the slag has cooled merely break off the lead, beat it clean of slag and cupel.

Cat #POURMOLD6 \$ 72.00 6 depression for std assay

Cat #POURMOLD1 \$OOS for large pours (7"Hx7"ID)



Mold Release for cast iron molds

Teflon dry film **Cat #MOLDRELEASE Price \$42.00**

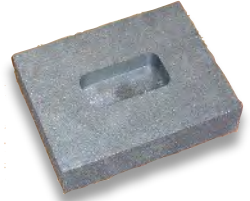




Molds, Gold and Silver & Large Smelts

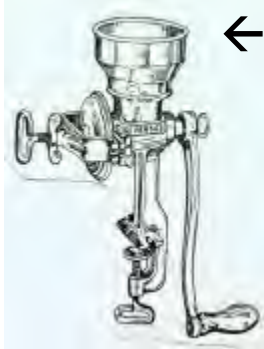
Cast iron mold for pouring ingots. Other sizes available

Gold 1 toz to 5 toz	Cat #INGOTMOLDAU1-5	\$ 49.50
Silver 5 toz to 10 toz	Cat#INGOTMOLDAG5-10	\$54.00
Gold 5 toz to 10 toz	Cat#INGOTMOLDAU5-10	\$54.25
Gold 50toz	Cat #INGOTMOLDAU50	\$87.00



Graphite molds for very clean, smooth pours.

20oz. Gold (.625x1.25x2.5)	Cat #GRAPHITEMOLD20	\$75.00
50 oz Gold (1 1/8x2 3/8x4 7/8)	Cat #GRAPHITEMOLD50	\$126.00



Ore Pulverizer, hand operated

This pulverizer will handle any hard rock ores broken down to 1/2" or smaller, and works best with 1/4" ore. This unit will pulverize enough ore for an assay in 3 minutes. It takes several passes to reach -30 mesh size, but it can be done.

Cat # PULVERIZER Price \$ 65.00

Ore Pulverizer, adapter chuck for drill

Forget the tedious hand cranking! The same pulverizer has been adapted with a gear chuck for use with 1/2" drill as a power source. For Lab use only; not for production.

Cat # Adapterchuck Price \$22.00

Screen cloth, Stainless Steel

We carry many different sizes of stainless steel screen so that you can make your own mesh pans. Other sizes available. Minimum 3 sq ft per mesh size. Volume discounts on 12 sq ft + (mixed sizes ok)



Size	Cat	Price/Sq. Ft.	Size	Cat #	Price/Sq. Ft.
6 mesh	SCREEN6	18.00	60 mesh	SCREEN60	16.23
10 mesh	SCREEN10	15.00	80 mesh	SCREEN80	18.60
12 mesh	SCREEN12	15.00	100mesh	SCREEN100	19.63
16 mesh	SCREEN16	16.25	150mesh	SCREEN150	21.63
20 mesh	SCREEN20	18.00	200mesh	SCREEN200	27.67
30 mesh	SCREEN30	16.00	250mesh	SCREEN250	27.67
40 mesh	SCREEN40	16.00	325mesh	SCREEN325	32.80
50 mesh	SCREEN50	17.40	400mesh	SCREEN400	45.10



Screen Pans

It is important to classify your ore when testing to determine the ore mesh size that will give you the best gold and silver recovery in production. It is best to classify when doing assays, tabling, spiral wheeling, whatever. All of our mesh screen pans are made of stainless steel.

Size	Cat #	Price	Size	Cat #	Price
2 mesh	SCREENPAN2	\$29.00	20 mesh	SCREENPAN20	\$29.00
4 mesh	SCREENPAN4	\$29.00	30mesh	SCREENPAN30	\$29.00
8 mesh	SCREENPAN8	\$29.00	50mesh	SCREENPAN50	\$29.00
12 mesh	SCREENPAN12	\$29.00	100 mesh	SCREENPAN100	\$29.00



Classifier Set

This is the niftiest set of economical screens! Stainless steel screen welded into lightweight plastic 4 1/2" pots makes for fast classifying of your ore sample. Set includes 10, 20, 40, and 60 mesh pots, plus bottom solid pot. (30, 50 & 100 mesh available for \$12.00 each).

Cat#CLASSIFIERSET Price \$45.00

Sieves sold separately, available in brass or stainless steel, range in mesh size #8 - #400.
Call for sizes and prices.



Tweezers, Stainless Steel, Non-magnetic

Sharp Point - these precision tweezers with "splinter-removal" capability are perfect for picking up tiny assay beads.

Cat#TWEEZERS Price\$ 12.50



Wash Bottles

These are wide mouth, polyethylene wash bottles, no color coded dispenser

250ml Cat #WASHBOT250 Price \$10.52

500ml Cat #WASHBOT500 \$16.95

1000ml Cat #WASHBOT1000 \$18.00

These wash bottles come with color coded dispenser caps which provide quick, safe identification of special solutions or reagents used in your lab. Standard coding uses red for nitric acid, yellow for sulfuric acid, blue for hydrochloric acid and green for ammonia hydroxide. Size is 250 ml.

		Price
Red	Cat #WASHBOTRED	\$13.90
Blue	Cat #WASHBOTBLUE	\$13.90
Yellow	Cat #WASHBOTYELLOW	\$13.90
Green	Cat #WASHBOTGREEN	\$13.90



Dropper Bottle

With polypropylene dropping closure and spout plug. Bottles dispense one drop at a time. Captive spout cap won't pop out or leak when bottle is squeezed. Leakproof. **Cat#DROPPERB Price \$ 15.00**

Stereo Microscopes

Still the best microscope on the market for the price! This is the one we use in our lab. 13" high with rugged metal construction. 10X wide-field eyepieces triple to 30X. The binocular head is inclined for ease of viewing and rotatable 360°. Built-in illumination system which includes lighting from above or below the field or both. Replacement Bulbs available!

More powerful microscope with LED light built-in for better imagery of bead. 20x-40x. This is the one we use in our lab!



Cat# MICROSC20

Price \$575.00



Glassware



Beakers

Pyrex glass - Can be used on hot plates or for measuring acids and solutions.

Size	Cat #	Price	Size	Cat #	Price
50ml	BEAKER50	6.50	600ml	BEAKER600	\$9.95
100ml	BEAKER100	6.50	1000	BEAKER1000	26.80
150ml	BEAKER150	6.50	2000	BEAKER2000	32.20
250ml	BEAKER250	6.50			

Polypropylene - These will hold acids.

Size	Cat #	Price
30ml (lot/ 10)	BEAKER30-10	4.00
400ml	BEAKER400PL	12.10
50ml (lot/ 10)	BEAKER50-10	5.80

Acid Bottle, 300ml w/glass stopper

Safe & easy storage of nitric acid on your lab shelf.

Cat #BOTTLEACID Price \$22.50



Beaker Tongs

For gripping hot beakers. Cat#TONGSBEAKER

Price \$28.00



Graduated Cylinder

A useful tool for your lab. Measures out small amounts of liquid accurately. Polymethylpentene, shatterproof, temperatures 32-248°F. Size 25ml

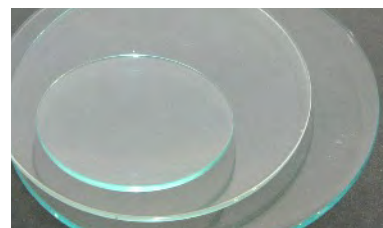
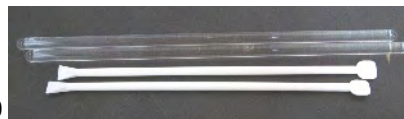
Cat #GRADUATEDCY Price \$ 12.80

Stirring Rods

12" in length, 3/8" diameter glass rod Cat #STIRRINGR Price \$3.48

10" polypro Nalgene, paddles on each end. Cat #STIRRODPOLY \$9.10

12" in length, 3/8" diameter polypro rod Cat #STIRRAMS Price \$5.00



Watch Glasses

Used to avoid evaporations of liquids being heated in glass beakers.

Size 4"	Cat #WATCHGLASS4	Price \$ 7.20
Size 7"	Cat #WATCHGLASS7	16.08
Size 8"	Cat #WATCHGLASS8	18.60

Pipets, Polypropylene

Allows you to use drops of solutions or liquids. Very pliable, considered disposable but can be reused many times.

w/1ml GRADUATION Cat #PIPET1ML Price \$.25



Sample Bottle, glass

Size	Cat #	Price
6ml (5/8"x1.75")	SAMPLEB6, black cap	\$.66
20ml (1"x2")	SAMPLEB20, white cap	.75

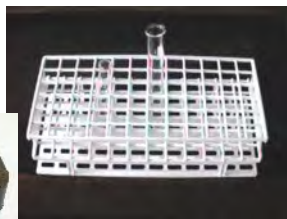
Test tubes

Pyrex test tubes will withstand heat.

Size	Cat#	price
13m x 100m	TESTUBE13	1.11
16m x 150m	TESTUBE16	1.39

**Test Tube Holder**

For 13mm tubes Cat #TESTTUBEH3 22.00

**Stoppers (Rubber)**

No hole#0	STOPPER0	2.15	
No hole#4	STOPPER4	4.42	
No hole#5	STOPPER5	4.35	
No hole#6	STOPPER6	4.02	No hole#10 STOPPER10 11.57
No hole #7	STOPPER7	4.19	No hole#11 STOPPER11 10.80
No hole #8	STOPPER8	4.50	No hole#12 STOPPER12 15.21
No hole #9	STOPPER9	9.99	No hole#13 STOPPER13 14.80

**Erlenmeyer Flasks**

Size	Cat#	Price
250ml	FLASK250	8.75
500ml	FLASK500	15.33
1000	FLASK1000	22.50
2000	FLASK2000	38.31

**Standard Vacuum Procedure:**

This method is the most efficient procedure and will yield a more complete removal of the filtering agent.

1. Place the paper in the funnel and moisten with a few drops of solvent. This prevents any solid passing under the paper.
2. Pour a small amount of liquid through the funnel and apply gentle vacuum. if all is functioning properly continue with gentle vacuum, as as a greater vacuum will cause smaller particles to pass through the paper, making further filtering necessary.

Vacuum Supplies**Buchner Funnels** (other sizes available)

Polypropylene Funnel - This has a flat bottom on the inside that is perforated with small holes. The filter lays flat against the bottom and is held in place with the weight of the liquid and the vacuum of the system. The smallest one is the easiest to use in most lab tests; increase size with volume done in each test.

Size	Cat#	Price
90mm	BUCHNER90	47.00
150mm	BUCHNER150	86.37
240mm	BUCHNER240	169.00

**Filter Flasks**

These thick-walled flasks have tubulation in order to draw a vacuum.

Size	price
500ml	\$ 60.32

Rubber Seal Adapters (Crucible Holders)

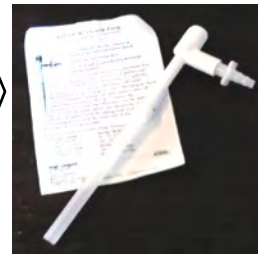
These hold the funnels in place and create a tight seal. They can be used singly, or in a combination with adjacent sizes.

Size	cat	Price
For 500ml flask	ADAPTER500	9.65
For 1000ml flk	ADAPTER1000	11.25
For 2000ml flk	ADAPTER2000	11.25
For 4000ml flk	ADAPTER4000	19.75



Vacuum Pumps

Vacuum Pump - Nalgene aspirator With the Nalgene aspirator vacuum need is a water pump, a bucket, and hose that leads to your filtering flasks - you can set circulate on 1 gallon of water. Good for 1 flask. **Cat #VACUUMPU Price \$ 22.00**



Vacuum Hose -

1/4" ID, PVC clear for 500ml flask	Cat#VACUUMHOS1/4	2.15/ft.
3/8" ID, PVC clear for 1000ml+ flask	Cat#VACUUMHOSE3/8	3.90/ft.
1/4" ID, Nalgene PVC, clear, heavy wall	Cat#VACUUMHOS1/4NAL	18.00/ft
3/8" ID, Nalgene PVC, clear, heavy wall	Cat#VACUUMHOS3/8NAL	27.50/ft.



Vacuum Filter Papers

Size		Cat#	Price (box of 100)
Grade # 1 Filter	for 90mm funnel	FILTERPA1-90	34.00
medium fast	for 150mm funnel	FILTERPA1-150	59.00
	for 240mm funnel	FILTERPA1-240	99.00
Grade #2 Filter	for 90mm funnel	FILTERPA2-90	48.00
medium	for 150mm funnel	FILTERPA2-150	85.00
	for 240mm funnel	FILTERPA2-240	99.00
Grade #5 Filter	for 90mm funnel		
slow	for 150mm funnel		

**CALL FOR PRICING,
MANY SIZES AVAILABLE!**

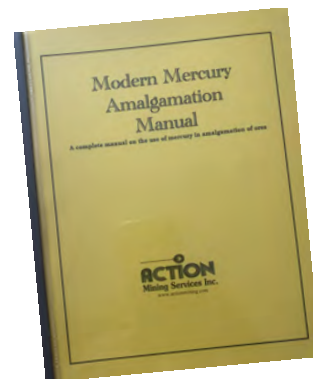


Amalgamation Supplies

Using mercury in production mining is quickly be outlawed in many countries, including the US, Canada, Colombia and other So. American countries, Germany and other European and Asian countries. For those who are interested in experimenting with amalgamation or are in an area where mercury amalgamation is allowed, we are still offering books for historical purposes, formulas for the MCCs, plans to build your own amalgamator (based on the unit we manufactured and sold for 30 years, the Air Press & Charging Unit.

Modern Mercury Amalgamation Manual

Written by Jim V. Humble, who has the ability to get across technical material in a straight-forward manner that anyone can follow! Updated in 2006 by Michael Glenn, president of Action Mining. This book gives all of the latest data on amalgamation and represents the "state of the art" in mercury amalgamation. 13 chapters on Safety, Pretreatment of Ores, Treatment and Pretreatment of Mercury, Charged Mercury, Lab Procedures, Complex Ores, Recovery of Gold and Silver from Mercury and Nitric Acid Solutions, and more! PDF DOWNLOAD AVAILABLE!



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Price \$ 29.63

EN ESPAÑOL

Cat #BOOK-MODSPAN

Price \$29.63

Amalgamator Plans - Build It Yourself

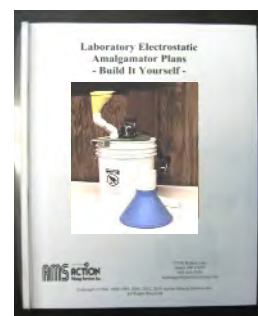
Now available! Detailed plans to make your own AMS amalgamator.

Cat#BOOK-MODPLANS Price \$ 24.95



Special Bundle: Modern Mercury Manual & Plans

Cat#BOOK-MOD2 Price \$47.95 (save \$6.63)



Air Press (Air Tort)

We developed this years ago for safer handling of mercury amalgam! Made of PVC which you attach to an air compressor or bicycle pump, using only 12 lbs. of pressure. It pushes the mercury out and leaves the amalgam on the filter. Safer to use than retorting as there are no mercury vapors. Comes with a 4 micron polypropylene filter and stainless steel screen. Holds 15 lbs. of Mercury.

Cat #AIRPRESS1

Price 44.00

Replacement parts:

Air press end cap parts **AIRPRESSEND \$ 12.50**

4 micron poly filter **AIRPRESSFIL \$ 3.50**



Bottle Roll Tester

Do your own amalgamation or leach lab tests, 6 at a time (includes glass containers).

Cat#BOTTLEROLL Price \$295.00

Due to continuing improvements, actual product may differ slightly from photo.



Mercury Charging Unit™

A simple system for charging your Mercury ... Plastic bucket with carbon rod and parts. Can charge from a few pounds to 20 lbs at a time. Hooks up to any power supply. Let it run overnight and away you go. Now includes the MCC-50 formula!

Charged Mercury turns mercury into the negative pole of a battery. The precious metals in the ore then become the positive pole of the battery and when they touch the mercury, a high current flows that is equivalent to many hundreds of amps per sq. ft. This powerful current cleans the precious metals and covers them with mercury. This process will often work to make gold, silver and platinum amalgamate when they will not do so under other methods. A very important point! We have received many reports that ores, (even those that do amalgamate easily), have greater yield of precious metals by using Charged Mercury™.

Cat#MERCURYCHARGER Price \$45.00

Carbon Rod 12"x1" diameter Cat#CARBONROD1 Price \$26.50 EACH

Carbon Rod 12"x1/2" diameter Cat#CARBONROD1/2 Price \$12.50 EACH



MCCs (Mercury Cleaning & Charging Chemicals™)

Formulas are available for purchase at \$75.00 each. NDA is required. Please call for more information.

MCC-40™ Polishes the mercury after using MCC-40™. Gives an extra boost to get the last bit of corrosion from the surface of mercury.

MCC-41™ Similar to MCC-40 but is used only for polishing the mercury to get the last few bits of corrosion from the surface of the mercury. It also cleans base metals from within the mercury.

MCC-42™ Use for acidic ores such as sulfide ores, also helps keep mercury from flourishing.

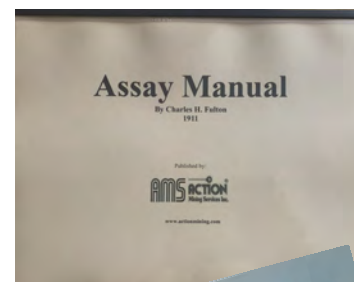
MCC-43™ Recovery of Micron Gold from Mercury.

MCC-50™ Charging of Mercury & R-36™ Cleaning of Mercury

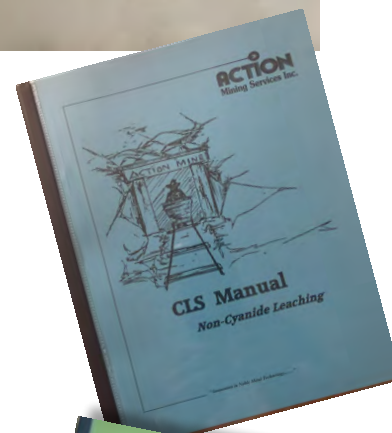
Books

Assay Manual

By Chas. Fulton, published in 1911, 215 pages, soft bound high quality copy of out-of-print book. Contains the assay mixtures and full information on each step of the assay including some data on assaying platinum. Fire assays have been the method of detecting gold for the last 5000 years. Chapters are on tools, sampling, weighing, reduction, crucible assays, cupellation and parting, special methods and errors in the assay. An advanced book on assaying. PDF DOWNLOAD AVAILABLE! **Cat #BOOK-ASSAY Price \$34.45**



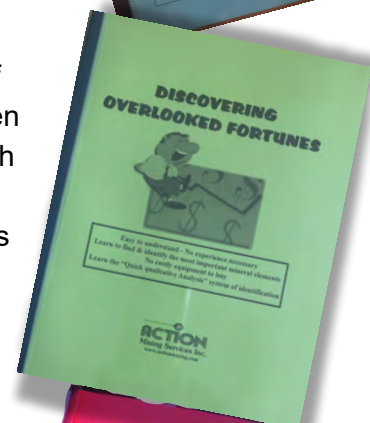
CLS Manual see pages 35-37 on leaching, for more info. PDF DOWNLOAD AVAILABLE! **Cat #BOOK-CLS Price \$35.99**



Discovering Overlooked Fortunes

Compiled in 1990 by Action Mining Services, this is the fourth edition based on the original work of R. H. Maulsby. It offers a systematic approach to prospecting, teaches the elementary facts of mineral identification and familiarizes the reader with basic laboratory skills. All of the original Qualitative Analyses for over forty valuable minerals have been included as well as a wealth of new material resulting from recent research and studies. Newcomers in particular, will benefit from this basic introduction to mineral prospecting written in clear, simple language that is easy to understand. PDF DOWNLOAD AVAILABLE!

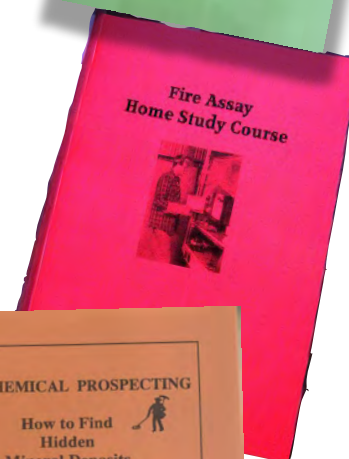
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Fire Assay Home Study Course

By Jim V. Humble, and updated in 2006 by Mike Glenn, president of Action Mining, soft bound, 16 lesson course on different aspects of fire assaying, sampling, pretreatments, roasting, special methods of assaying, chemical assaying, and more. Each lesson has questions at the end to answer and many have actual tests you can do to earn a certificate in assaying by sending in your result test papers. PDF DOWNLOAD AVAILABLE!

Cat#BOOK-FIR Price \$31.54

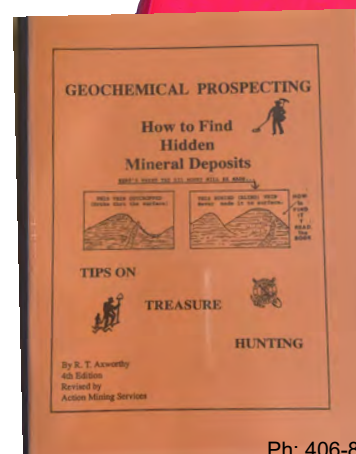


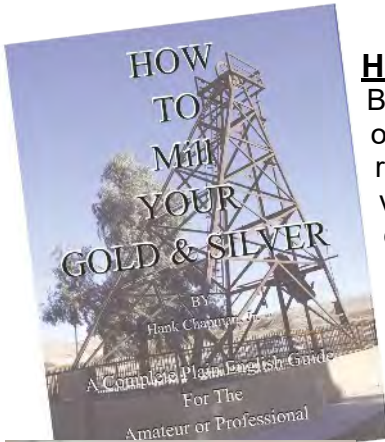
Geochemical Prospecting, The Story Of See

Geochemical section for details.

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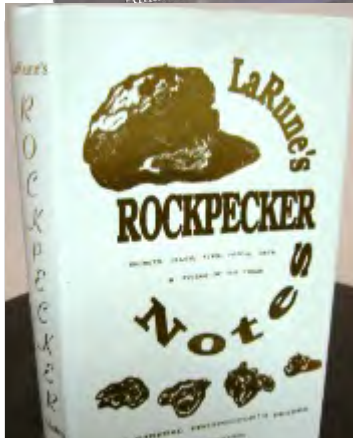




How to Mill Your Gold and Silver

By Hank Chapman, Jr. Over 100 pages with color photos of his experience and insight on determining if a mining property will be profitable for you and then how to actually run it. He describes proper sampling, assaying and identifying your ore, calculating values, the difference between fire assay, ICP, AA, DCP and XRF, milling with various circuit equipment like crushers, tables, metal detectors, and roasters. He details circuit design, concentrating, leaching and recovery methods and much more. This book is a must for anyone with an interest in mining and milling procedures.

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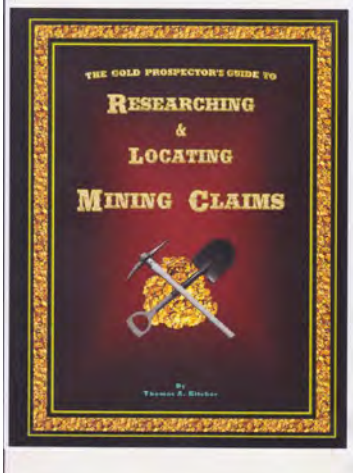


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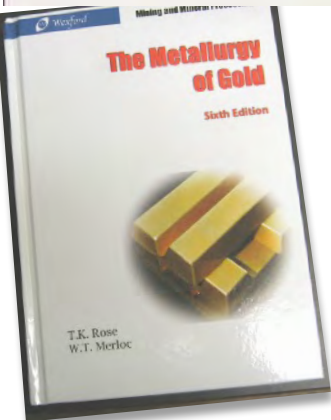
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Modern Mercury Amalgamation Manual

See Amalgamation section for details. PDF DOWNLOAD AVAILABLE!

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En español "Manual Moderno para la Amalgamación de Mercurio"

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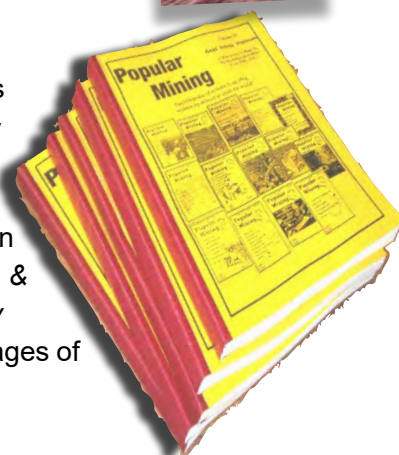
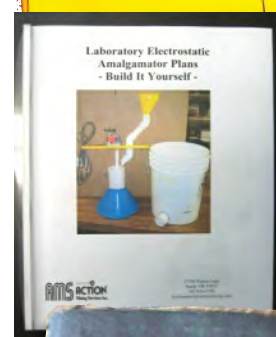
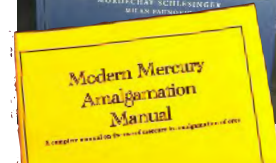
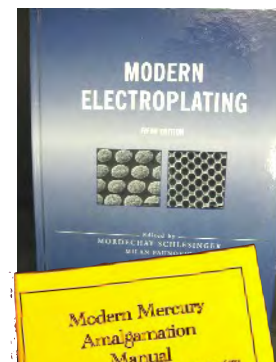
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Video - Leaching Process for Catalytic Converter Material (see page 37 for details) DVD 2005 copyright.

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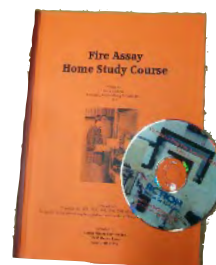


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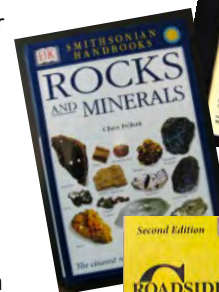
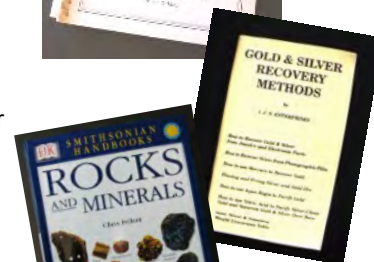
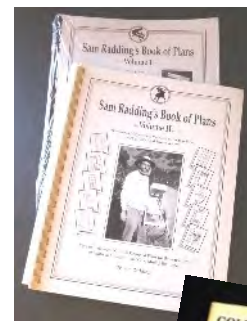
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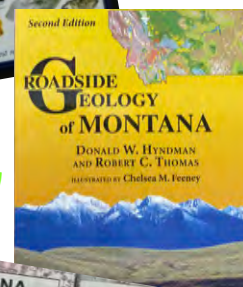
Gold & Silver Recovery Methods By I. J. S. Enterprises, 44 pages, chapters on how to use mercury to recover gold, fluxing and firing of gold and silver ore, how to use Aqua Regia to purify gold, how to use nitric acid to purify silver, clean gold, and separate gold and silver dore bars, recovering silver from photograph film, recovering gold and silver from jewelry and electronic parts and gold/silver/gemstone conversion table. **Cat #BOOK-G&S Price \$ 9.95**

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How to Prospect for Pocket Gold By Verne H. Ballantyne, 22 pages. One of the old-time prospector's best kept secrets of how to find pocket gold is revealed, and a step-by-step method of finding it is given. The personal experience of an old-time hunter is told. **Cat#BOOK-HOWPOCKET Price \$ 9.95**



Gold Panner's Guide to Idaho

By Tom (T.H.) Bohmker, spiral bound, 200 pages, fold out full color maps. Contains history, how to pan and sluice, gold geology primer, information on how to pan and test lode and pocket gold, maps showing 100's of locations, stories about small time gold mining, and a complete reprinting of the 1946 classic reference work "Gold in Idaho".

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Pockets Rocks & Minerals By Sue Fuller, 160 pages, softbound, *pocket size!!* Great color photos & descriptions. Perfect for your backpack. **Cat#BOOK-POCKETROCKS Price \$ 6.99**

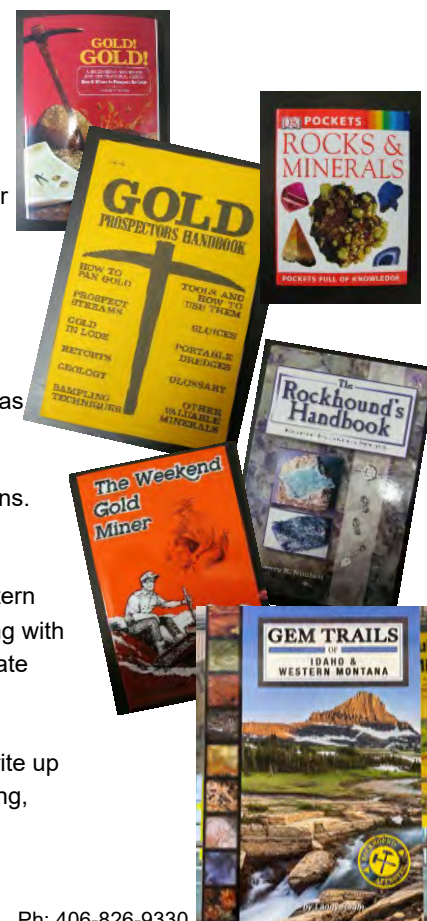
Gold Prospectors Handbook By Jack Black, 176 pages. How to pan & prospect, sluices, tools, sampling and a glossary. **Cat #BOOK-GOLDPROS Price \$10.95**

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Weekend Gold Miner By A H Ryan, Ph.D, 79 pages. A good beginner's book with illustrations. **Cat #BOOK-WEEKEND Price \$7.95**

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BONE ASH, 20 MESH 55#bulk rate.....	BONEASH.....	BY LB.....	5.90
BORAX (DECAHYDRATE).....	BORAXANH1.....	1 LB.....	9.20
BORAX (DECAHYDRATE).....	BORAXANH8.....	6 LB.....	39.90
BORIC ACID.....	BORICAC5.....	4 LB.....	29.31
BORIC ACID.....	BORICAC100.....	1 LB.....	9.50
CALCIUM HYDROXIDE.....	CALCIUMHYD3.....	3 LB.....	15.80
CALCIUM NITRATE.....	CALCIUMN1.....	1 LB.....	OOS*
CAUSTIC SODA.....	SEE SODIUM HYDROXIDE		
FERRIC SULFATE.....	FERRICSULFATE4.....	8LB.....	20.52
FERROUS SULFATE.....	FERROUSSULFA1.....	1 LB.....	6.85
FERROUS SULFATE.....	FERROUSSULFA8.....	7 LB.....	33.34
FLUORSPAR - CALCIUM FLUORIDE.....	FLUORSPAR1.....	1 LB.....	13.20
FLUORSPAR - CALCIUM FLUORIDE, 10#.....	FLUORSPAR10.....	10 LB.....	52.50
HYDROCHLORIC ACID (TRUCK) REAG 36-38%.....	HYDROCHLORIC2.5L6.....	6X2.5L BOTTLES.....	856.00**
HYDROCHLORIC ACID (TRUCK) REAG.....	HYDROCHLORIC2.5L.....	2.5L BOTTLE.....	145.00**
LEAD FOIL (ULTRA LOW SILVER).....	LEADFOIL1FT.....	1 FT.....	3.12
LEAD FOIL (ULTRA LOW SILVER).....	LEADFOIL.....	.5 lb. ROLL.....	111.96
LEAD,TEST GRANULE (ULTRA LOW SILVER).....	LEADTEST.....	1 LB.....	22.00
LEAD,TEST GRANULE (ULTRA LOW SILVER).....	LEADTEST5.....	5 LB.....	71.55
LEAD WOOL.....	LEADWOOL.....	1 LB.....	12.00
LITHARGE, ASSAY GRADE, 55# bulk rate.....	LITHARGE100.....	BY LB.....	10.50**
NITRIC ACID (TRUCK ONLY) REAGENT.....	NITRICA2.5L.....	2.5L BOTTLE.....	78.00**
NITRIC ACID (TRUCK ONLY) REAGENT.....	NITRICA2.5LX6.....	CASE OF 6.....	390.00**
POTASH (POTASSIUM CARBONATE), 1 lb.....	POTASSIUMCAR100.....	1 LB.....	OOS
POTASSIUM CARBONATE.....	SEE POTASH		
POTASSIUM CHLORIDE.....	POTASSIUMCHLOR1.....	1 LB.....	5.95
POTASSIUM CHLORIDE.....	POTASSIUMCHLOR7.....	8 LB.....	20.25
POTASSIUM CHLORIDE.....	POTASSIUMCHLORIDE.....	4 LB.....	14.00
POTASSIUM HYDROXIDE.....	POTASSHYDRA4.....	4 LB.....	42.00*
POTASSIUM NITRATE.....	POTASSNIT8.....	8 LB.....	OOS*
SILICA -30 MESH.....	SILICA8.....	8 LB.....	39.50
SILICA -30 MESH, 1 lb.....	SILICA1.....	1 LB.....	7.00
SILVER SHOT, 99.99%.....	SILVERSHOT.....	BY TOZ.....	68.00
SODA ASH (SODIUM CARBONATE).....	SODIUMCARB1.....	1 LB.....	10.50

SODIUM BICARBONATE.....	SODIUMBICARB8.....8 LB.....	28.20
SODIUM BISULFATE.....	SODIUMBISULA8.....8 LB.....	OOS
SODIUM BISULFITE (SODIUM METABISULFITE).....	SODIUMBISUL8.....8 LB.....	OOS
SODIUM BROMIDE.....	SODIUMBROMIDE1 1 LB.....	OOS
SODIUM BROMIDE.....	SODIUMBROMIDE5.5 LB.....	OOS
SODIUM CARBONATE.....	SEE SODA ASH	
SODIUM CHLORATE	SODIUMCHLORATE5 5 LB.....	48.45**
SODIUM HYDROXIDE (CAUSTIC SODA).....	SODIUMHYDROXIDE8 7 LB.....	37.55*
SODIUM NITRATE.....	SODIUMNIT1.....1 LB.....	13.50*
SODIUM NITRATE.....	SODIUMNIT5.....5 LB.....	44.00*
SODIUM SULFATE.....	SODIUMSULFA1.....1 LB.....	3.50
SODIUM SULFATE.....	SODIUMSULFA5.....8 LB.....	20.00
SODIUM SULFITE.....	SODSULFITE10.....8 LB.....	25.00
SODIUM SULFITE, 100# bulk rate.....	SODSULFITE100..... BY LB.....	1.40
SODIUM THIOSULFATE.....	SODTHIO1.....1 LB.....	6.50
SODIUM THIOSULFATE.....	SODTHIO5.....5 LB.....	OOS
STANNOUS CHLORIDE, REAGENT.....	STANNOUSCHLORIDE10 10 GRAM.....	18.65*
STANNOUS CHLORIDE, REAGENT.....	STANNOUSCHLORIDE500 100 GRAM.....	111.15*
SULFAMIC ACID, 5lbs.....	SULFAMIC5.....	35.00**
SULFURIC ACID - REAGENT 95-98% (TRUCK).....	SULFURIC2.5L.....2.5 L BOTTLE.....	79.50**
SULFURIC ACID - REAGENT 95-98% (TRUCK).....	SULFURIC2.5L.....CASE OF 6.....	345.00**
THIOUREA.....	THIOUREA4.....4 LB.....	47.50*
TIN CHLORIDE	SEE STANNOUS CHLORIDE	
TIN SHOT - REAGENT.....	TINSHOT10.....10 GRAM.....	12.90
TIN SHOT - REAGENT.....	TINSHOT100.....100 GRAM.....	59.95
ZINC ANODES.....	ZINCANODE.....1 LB BALL.....	10.50
ZINC ANODES.....	ZINCANODE5.....LOT OF 5.....	42.50
ZINC FOIL.....	ZINCF1FT.....BY FOOT.....	1.95
ZINC FOIL.....	ZINCFROLL.....4.3# ROLL 50'.....	49.30

PLEASE NOTE: 16 oz bottles are by volume of chemical. In most cases that is 1 lb. of chemical by weight. Some of the lighter chemicals may be slightly less than 1 lb. in weight. The 5-10# bottles of chemicals are 1 gallon containers. All chemicals in "Grams" are Reagent grade. Hydrochloric, Nitric, and Sulfuric acids are all ultra-pure electronic cleanroom reagent grade. All others are technical grade. OOS=out of stock

***LIMITED QUANTITY APPLY FOR UPS SHIPMENTS, if permitted**

**** HAZARDOUS SHIPPING - TRUCK ONLY OR WILL CALL ONLY**

(* and ** ITEMS CAN ONLY BE SHIPPED BY GROUND TRANSPORTATION IN CONTINENTAL U.S. WHEN PERMITTED. No hazardous chemicals can be shipped internationally.

All chemicals, prices, package quantities and shipping methods are subject to change.

Leaching Supplies



pH Paper

Used to check the pH of your solutions. Indicator chart with each roll. State which pH readings you want.

Roll of pH 1-6 **Cat #PHPAPER2 Price \$11.00**
 Roll of pH 6-11 **Cat#PHPAPER6 Price \$11.00**
 Roll of pH 1- 12 **Cat #PHPAPER1 Price \$11.00**
 Jumbo roll of pH0-13 **Cat #PHPAPER013 Price \$29.00**



pH Buffer Capsules

pH 4 **Cat#PHBUFF4 \$24.00**
 pH 7 **Cat#PHBUFF7 \$24.00**
 pH10 **Cat#PHBUFF10 \$24.00**

pH Buffer kit \$52.00

Solution Test Kit

This is a kit for any solution for gold, silver, platinum, or palladium. The chemicals supplied are J.T. Baker analyzed reagent grade for purity assurance. Enough chemicals to test for many, many weeks. The only thing you need is analytical HCl. Instructions come with the kit telling you how to test for each of the precious metals.

Cat#SOLUTION Price \$ 21.45



Porcelain Plate

This plate is glazed on top & has 12 depressions; 112x92mm - for accurate solution color testing

Cat#PORCEPLATE Price \$ 29.50



CLS Leaches™ - formulas available for purchase

CLS 20, 21 and 22 were developed in the 1970s designed to work at room temperature (60 - 80° F.) It has become increasingly difficult to ship chemicals, especially internationally. Therefore, we have ceased to mix these CLSes but offer the formulas for purchase so that the necessary chemicals can be obtained locally and mixed in-house by the consumer. Our leach products are acidic leaches, that can be re-used, getting better results in most cases than single compound leaches. Any complex ore can be tested with CLS-20, 21, and 22. Each leach has different oxidizers and leaching components. One of these combinations may work better on your ore. They are not for concentrates. Concentrates should be tested with CLS-25, a gold leach. If you are interested in purchasing the formulas, please contact us.

NOTE: IT IS POSSIBLE TO LEACH TOO LONG. ALL LEACHES KNOWN WILL BEGIN TO PRECIPITATE GOLD BACK INTO THE ORE AT SOME POINT. This usually doesn't happen for as many as 72 hours, but in some ores it can happen in a few hours. WATCH FOR IT!



CLS 26P

CLS 26P is our leaching compound for the platinum group metals in ores or catalytic converter material. As with all our leaching compounds, the solutions are re-usable by 'strengthening' with additional powder. **Formula available for purchase**

Available pre-mixed:

CLS 25

CLS 25 is a very reactive leach for gold and silver concentrates.

4 lbs. Cat #CLS-25 \$ 65.00



Electrolytic Recovery Systems

For a hundred years at least, the recovery of precious metals from leach liquids has always been accomplished when the liquid has been filtered from the ore. The removal of the liquid from the ore has always been the most expensive operation when handling leaches and the filtration equipment has always been the most expensive equipment in the entire mining operation. System III™ changed that. System III™ recovers the precious metals directly from the ore totally eliminating the filtration system. System III™ is a method of electrolytic precipitation, not electroplating. The plate (cathode) is contained within a 4 micron polypropylene filter bag that sits in the ore/leach solution. Particles in the ore cannot penetrate the filter bag but the ions, which are really a part of the liquid, move freely through the bag and deposit the precious metals on the stainless steel cathode. System III™ is an efficient system. It works well, but like all other leaching systems it will not work on some ores and most ores take some time and work and experimenting to make them work with any system. If one is willing to take the time he will probably be rewarded with the best and the lowest cost system available. When you've completed your testing phase, you can make a larger system based upon your own results and budget.

5 GALLON SYSTEM III**5 Gallon System III™**

Power supply not included - use a manual battery charger or power supply that is 12V with 10+ amps capability.

(do up to 10# of ore) **Cat#SYSTEM1115 \$839.00**
 w/quartz heater- **Cat#SYSTEM1115W/H \$930.00**

Replacement Parts

Motor Unit	Cat#SYSTEM18	\$425.00
Replacement motor	Cat#SYSIIIMOTOR	\$178.40
Paddle Shaft	Cat#SYSTEM19	\$290.00
Carbon Rod	Cat#CARBONROD12x1"	\$ 26.50
Carbon Rod	Cat#CARBONROD12x1/2"	\$ 12.50
S.S. Plate	Cat#SYSTEM20	\$ 29.40
Filter Bag	Cat#FIILTERBAG	\$ 24.10

System III w/heater shown in picture.

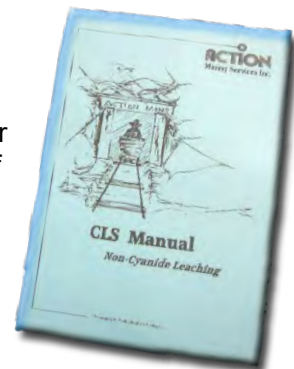
**Filter Material, for custom filter bags**

This polypropylene material is what our filter bags are made from. Impervious to acids. Make your own custom bags. Material is 52" wide. 52" w x 36" **Cat#FILTERMA Price \$ 45.00**

**CLS Leaching Manual**

This is a manual for every miner. A wealth of mining information including step-by-step instructions on how to do fire assays, special ore treatments, leaching, free milling ores, complex ores, electro-precipitation, gold and silver refining and more. Written in easy to understand language with a glossary of mining terms. Even if you don't use CLS, the book is valuable for its basics about mining.

Cat #BOOK-CLS \$ 35.99



Video - "The Leaching Process for Catalytic converter Material"

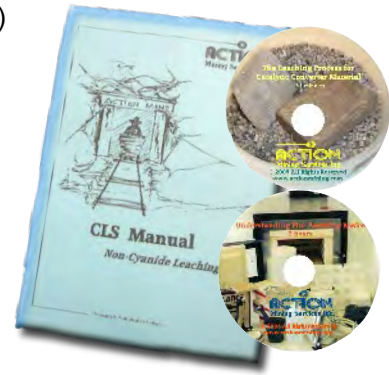
President, Mike Glenn, shares his 25 years of in-house processing experience, discussing the procedures for handling converter material. Presented in this 2 hour video are the basic steps necessary to profitably extract the platinum group metals from the various types of converter material, including the necessity of fire assaying before you start, pretreatments needed, safety precautions, the leaching process itself, and final cleanup of solutions.



Cat #VIDEO-CATCON Price \$ 129.95 intro price (reg. \$149.95)
DVD format only

BUNDLED with Fire Assaying DVD and CLS Manual

Cat #VIDEO-CATCON3 Price \$ 199.00 (\$265.89 value)

**Flux, for catalytic converter material**

Formulated specifically for converter material, due to matrix interference. Use this flux to assay your material before leaching to determine values present. Formula available for purchase.

Carbon plate, 12"x12"x1/4" Cat# carbonplate12 \$120.00

Geochemical Supplies

When looking for gold, don't look for gold, look for geochemicals

Basic Theory

The presence of geochemical haloes has been known and used for 59 years by many mining companies. All deposits of precious metals have associated geochemicals. Precious metals do not exist in deposits without geochemicals that are to some extent, water soluble. These geochemicals always wick their way out through solid rock and dirt over thousands of years. Such chemicals are detectable by our Geochemical Meter.

So when looking for gold, don't look for gold, look for geochemicals. The geochemicals spread out several hundred feet while the gold stays hidden. Most of the gold at the surface has already been located. Now the Geochemical Meter gives independent prospectors and miners higher technology for locating the 85% to 90% of gold that has not yet been found because it is beneath the ground surface.

In the past few years several of the larger mining companies have become discouraged with geochemical prospecting. They have made the mistake of looking for acid soluble geochemicals. Unfortunately, acid soluble geochemicals exist everywhere, and water soluble geochemicals exist only around mineralized veins and placers. Thus looking for acid soluble geochemicals can be very confusing and unproductive. When properly carried out, geochemical exploration is the best modern method available, regardless of price, when prospecting for precious metals.

What You Can Use It For

Preliminary Assays - If you want to know whether you should have a rock assayed or not, use this meter. A high reading should be assayed and a low reading indicates that it will be useless to assay the rock. The instruction manual gives details.

Placer Prospecting and Evaluation - All placers have geochemical haloes. Does a placer exist in the area? The ground will read high in the placer area and will gradually taper off as you leave the placer. High readings in the dirt indicate a 98% chance of a placer if you use the meter correctly.

Prospecting for Hard Rock Gold Veins - All mineralized veins have geochemical haloes. These geochemicals wick their way to the surface over the hundreds of years. They even go through solid rock. You can use them to detect mineralized veins hundreds of feet deep in the earth.

Testing Rivers and Streams for Precious Metals - This is a fast, sure way of locating placer and hard rock deposits of precious metals. The Geochemical Meter can detect both more than a mile downstream from the deposit.

Locating Buried Treasure - All buried treasure eventually creates haloes of metals around it. This halo sometimes extends 100 feet and more depending upon time in the ground. This is true even if the treasure is inside of a cave in a wooden box. Proper use of the Geochemical Meter can be of invaluable use in locating such treasures. The Geochemical Meter does not replace metal detectors, rather use it in conjunction with metal detectors for serious treasure hunting.

Laboratory Testing - The Geochemical Meter will test dissolved geochemicals and metals in water. Many uses can be made of the meter. One suggestion would be to use the meter to tell when the metals have been leached out of an ore when doing cyanide or non-cyanide leaching.

Geochemical Meter

The Geochemical Meter weighs less than one pound. It's approximately 4" x 4.5" x 5" in size and can easily be carried into the field. Most tests should be conducted at home because of the increased accuracy of allowing each test to soak for approximately one hour. 10 or 20 or 100 tests can be set up to soak and then all completed with about 1 minute per test. Uses 2 standard 9 volt batteries. Several thousand tests can be accomplished on one set of batteries making tests cost less than 1¢ each. The actual meter readings are in micro mho's. The scales on the meter represent 0-1, 0-100, 0-1000 and 0-10,000 micro mho's. In some cases a reading as low as 10 can indicate a mineralized vein is nearby. The instruction booklet gives complete details in translating the readings into probability of gold existing nearby and methods of locating same. Action Mining's Geochemical Meter makes geochemical prospecting both fast and accurate when done according to the 30 page instruction booklet which is included.

How To Use The Meter:

Pulverize your rock to 80 mesh (about the size of table salt) or screen any placer dirt to 50 mesh. Measure out 10 grams. Mix with 40 grams of distilled water and pour into the Geochemical Meter. Push the button on the meter and read the needle. Immediately wash out the meter. Testing streams and rivers is easier. Just pour the water in and push the button. NOTE: To use the Geochemical Meter properly one must first determine the background readings for the area in question. This is accomplished in a very short time through use of the Geochemical Meter.

Shown - Instruction Booklet, Geochemical Prospecting Manual, Geochemical Meter in Carrying Case with Range Extender



Geochemical meter only Cat #GEOCHEM Price \$ 575.00

Geochemical Meter Instruction Booklet Cat # GEOCHEM3 Price \$ 15.00

Carrying Case - Made of hard plastic outer shell with foam rubber inside to hold meter.

Cat # GEOCHEMCS Price \$ 95.00

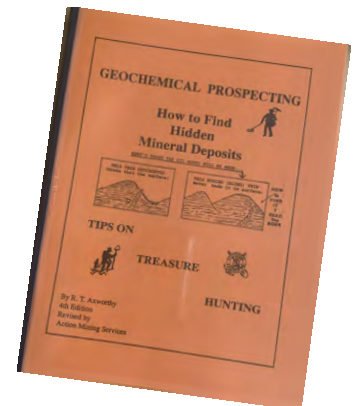
Range Extender - Increases the range by a factor of ten (X10) on all of the above ranges, i.e., the 10,000 range is extended to 100,000. Cat # GEOCHEMRANG Price \$ 48.00



BUNDLED PACKAGE - Meter, carrying case, range extender, and booklet Cat#GEOCHEMPK Price \$698.00

**The Story of Geochemical Prospecting**

by R. T. Axworthy, 4th edition revised & updated by Action Mining in 1992 - an in-depth coverage of geochemical prospecting including the University of Alaska's method using Dithizone. You learn how to take samples and do tests. There are also 3 chapters on tips for prospectors. "Must" reading for anyone getting into geochemical studies. Cat #BOOK-GEO Price \$ 32.33



Prospecting Supplies

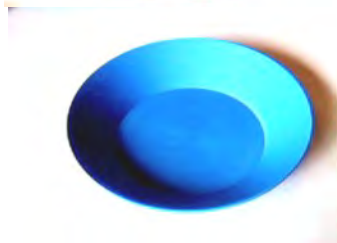


Green Pan

High quality, heavy duty pan by Keene with deeper grooves to catch the heavies.

14" Cat #PANGREEN14 Price \$ 15.00

12" Cat #PANGREEN12 Price \$ 15.00



Blue Pan

For panning and lab work. Fine gold and silver show up again: better than any other color. If you pan, always allow the water to wash into the pan and not out. This is a finishing pan with no riffles for clean up of micron gold. 11" Diameter

Cat #PANBLUE Price\$ 11.00



Black Plastic Gold Pans

These economical lightweight pans have riffles on 1/3 of the inside of the pan and a wide drop bottom.

10"diameter	Cat#PANBLACK10	8.00
14"diameter	Cat#PANBLACK14	10.00
17"diameter	Cat#PANBLACK16	11.00

Ore Bags

Collect your individual ore samples in these ore bags made of sturdy polypropylene material for durability, includes drawstring top for security and waterproof tag for labeling each sample.

7"x12", Each	Cat #OREBAGS1	Price \$ 1.75
Lot/25	Cat #OREBAGS25	Price \$ OUT
Lot/100	Cat #OREBAGS100	Price \$ OUT



Snuffer Bottle

Sucks tiny gold flakes from your pan. (aka: Sniffer Bottle, Sucker Bottle)

Cat #SNUFFERBOTTLE Price \$5.50



"MAGIVAC" Magnet

3" diameter power face, 6 pole, 6 oz. ceramic magnet eliminates the stringy drag-out encountered with other types of magnets. Does the job wet or dry. No batteries required. Plunger action enables you to collect up to 1/4 lb. concentrates in every load. Improves your concentrate with every pass. **Cat #MAGNET Price \$17.95**

**Rock Picks**

Estwing rock hammer square w/ Pointed Tip, full-polished, nylon-vinyl grip; wt. 14 oz. **Cat #PICKPT Price \$ 49.00**

**Loupe, 10x**

High quality refraction (doesn't distort), fold-out magnifier with large 23mm diameter lens in chromed metal holder.

Cat #LOUPE10X Price \$20.00

**Loupe, 15x/20x**

Double magnifiers, 15mm and 7mm diameter lens

Cat #LOUPE15X20X Price \$28.00

**60x-120x Magnifier**

A 60-120X microscope that is lightweight and portable.

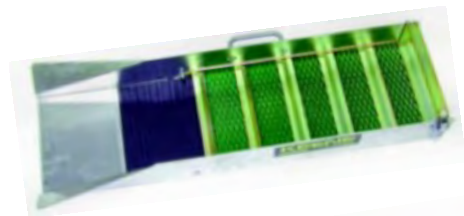
60X-120X magnification

Lightweight

Fits easily in a pocket

Built-in LED for a bright, clear image

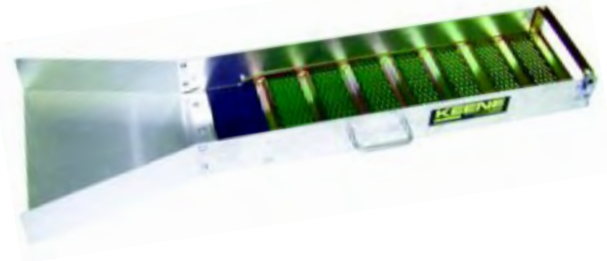
Cat #MAGNIFI60 Price \$39.00

**Sluice Boxes**

Keene Engineering sluice boxes feature newest matting material to capture fine gold.

36"Lx10"Wx4½"H Cat #SLUICE36 Price \$158.00

51"Lx10"Wx4½"H Cat #SLUICE51 Price \$178.00

**Miners Moss**

Perfect for catching the gold in your dredge or sluice.

This is top quality, 36" wide.Gray

1'x3' **Cat #MINERSMOSS1 Price \$ 32.50**



Safety Equipment

Aprons



Safety items available

Chemical Resistant Apron

Sturdy bib type apron made of lightweight white sheeting with an outside coating of acid and alkali resistant rubber. Size 29"x35"

Cat #APRONCHEM Price \$19.80

Economy Chemical Resistant Apron

Bib type apron made from vinyl, no lining. Still great for lab work.

Cat #APRONCHEMECONO Price \$ 9.50

**MORE CLOTHING
AVAILABLE!**

Protective Sleeve

Flame Retardant, 100% Treated Cotton Material 18" long. Wear with glove to help protect your arm from the heat when reaching into the furnace. Unlined pair. **Cat #PROSLEEVE Price \$22.90**



**18" Sleeve with Thumb hole - 100 % Kevlar Double-weight knitted Single sleeve
Cat#PROSLEEVEKEV Price \$9.50**



Assay Gloves



These gloves are made of a Kevlar blend, which is a non-asbestos material used in the space industry for heat resistance. All are lined. Aluminum topside adds additional protection from the heat.

Cuff length 10.5" Cat #GLOVES10.5 \$85.00

Elbow length 17.5" Cat #GLOVES17.5 \$92.00

Aluminum top, 14" Cat #GLOVESALUM \$94.10

Chemical Gloves



Nitrile Latex gloves offer superior resistance to abrasions, cuts & punctures, durable but flexible enough for delicate work. Flock lining gives extra comfort & absorbs perspiration. Green.

Specify size (8, 9, 10) when ordering.

Cat #GLOVESC Price \$7.50

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See our ad on page 46!

Facegear

Protective Chemical Goggles - Indirect ventilation at top and sides provides cool comfort while avoiding entry of chemical splash. Very flexible sides for comfort. **Cat #PROGOGGLE Price \$11.25**

Protective Glasses - Lightweight molded plastic, transparent, integrated top and side shields. Can use over regular glasses. Remember, slag spatters as it cools, so protect your eyes! **Cat #PROGLASSES Price \$5.95**

Protective Shield - Complete headgear and face shield visor. Folds flat and assembles quickly. Use for protection from splash, spray and flying particles. **Cat #PROSHIELD Price \$33.00**



Protective Masks

Protective Mask - Acid Gas Respirator, disposable

Approved for acid gases; hydrogen chloride and sulfur dioxide gases up to 50ppm and chlorine gas up to 5 ppm.

Cat #PROACIDMASK Price \$62.00



Protective Dust & Particle Mask with Valve, disposable

NIOSH approved for dust and mist. Exhale valve lets wearer breathe out easily. Contoured for a perfect fit. Crush-resistant poly mesh outer shell. Won't absorb water or collapse.

Cat #PRODUSTMASK Price \$5.95



Protective Half-Mask Lightweight Facepiece

- Soft rubber provides comfortable fit and assures proper face seal for various Low profile design allows mask to be worn under welding helmet, face shield easy cleaning and maintenance. Specify size (s m l)

Cat #PROMASK Price \$68.65



Cartridges - pack of 2 (for above mask) sold separately Acid

Gases **Cat #PROCARTACID Price \$ 34.90**

Organic Vapors, Acid gases & highly toxic particulate, high efficiency **Cat #PROCARTORG Price \$ 49.00**

Dust Mist (PK OF 4) **Cat #PROCARTDUST Price \$ 38.90**

Mercury vapors **Cat #PROCARTMERC Price \$ 66.80**



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PO Box 807

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All returns must be received within 15 days of invoicing, unused and in original packaging (STRICTLY ENFORCED). Return items are subject to a 20% restocking fee with freight being Customer's responsibility. Chemicals cannot be returned. Books may be returned for in-store credit only. We value your business and would like every customer to be satisfied with each purchase. Some manufacturers require that their products be returned directly to them. No return parcels will be accepted freight collect or COD. Merchandise that is received damaged, or lost merchandise must be reported to us within 3 days. Electronic equipment must be returned to the manufacturer for repair or replacement.



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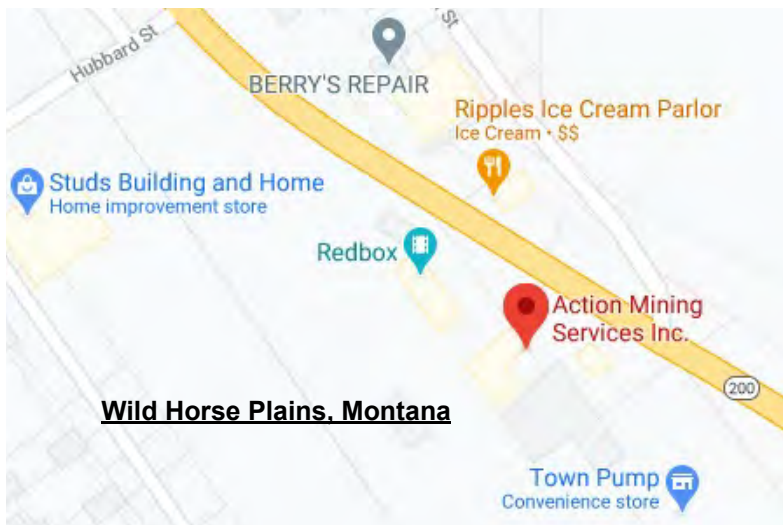
Tuesday - Thursday 10AM-3PM or online at
www.actionmining.com

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Wild Horse Plains, Montana

Celebrating 45 years in business!

As a company in business since 1979, we appreciate the interest from our new customers and also customers who have been with us since day one. We strive for customer satisfaction by shipping promptly, and following up on special requests.

We do our best to build equipment that is safer for the personnel using them and the environment.

We recycle packing material wherever possible and practice safety in the workplace.

To keep spam out of the environment, we only mail/email catalogs or flyers to those who request them, but please feel free to ask for them - there is no charge - or go online for even faster information!

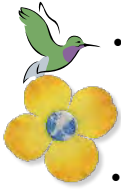
Sincerely,
AMS

Order Form

Ph: 406-826-9330

M7 Wave Table

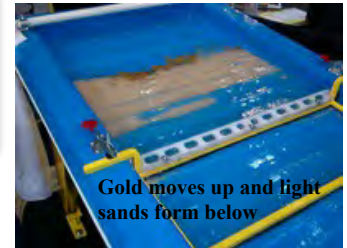
Environmentally Safer to Use:



- No chemicals needed
- Uses recycled water
- Recovers float material
- No waste disposal costs
- Safer for employees to operate
- Actually recovers mercury from ores & tailing piles



315 E. Railroad Ave.
Plains, MT 59859 USA
Tel: 406.826.9330



How It Works: The pictures show the results of the wave theory of the table. Separating by specific gravity, the sand forms in drifts directly under the standing wave of water. Even light blond sand forms drifts, not washing away.

Due to the Standing Wave principle, the heaviest particles remain through the low motion area of the Standing Wave. The wave itself moves; the water directly beneath the wave tends to stand still. The further from the top of the wave, the less motion is in the water. Thus, the heavier the particle the deeper it will ride and the less motion it will see. The “Riffle weir bar” assists in dropping ‘float gold’ to the table surface, enabling a faster production run without fear of losing gold or other metals that normally would be lost on most tables.

In view of the fact that the table top moves back and forth, the micron particles of heavy material (gold, PGMs, scheelite, copper, zinc oxide, etc.) sink to the bottom under the wave. The finer particles (-600 mesh and smaller) drop into a Skin Effect area. That area is directly against the skin of the table top. The water in this area does not move with the flowing water but rather sits almost still. The motion of the table causes this “Skin Effect” water to move in the opposite direction of the flow.

Thus the fine gold or heavy material moves ‘up’ the table and falls into the concentrate trough. The gold and/or concentrates can then be washed automatically into a concentrate bucket or a security safe, or vacuumed off the table. *Ore should be classified according to size for efficient results.*

Micron Mill Wave Table

Model M7/8/9

Price \$12,295.00*

M7 110V 60C, IP55

M8 220V, 50C, IP55

M9 220V, 60C, IP55

* Shipping/crating not included

Catalog & spec sheet available. Call for a quote!

While having the capability of acting as a production table for a smaller mill or pilot operation, the M7 can be used as a Finish Table producing a very high grade concentrate of precious metals; or even used in a lab for small samples without loss in efficiency. Gold will separate at a high percentage from black sands - which is a statement unheard of in mechanical separation considering the specific gravity of black sands and gold are so close in proximity!

Run 20-2000 pounds of head ore material per hour, depending on the material with recovery of particles ranging between 10 mesh and microscopic; recovery of gold from classified black sand ranges from 80% to 99%; recovery of gold from small batches of classified black sands ranges from 92% to 99%.

Water requirements are 5 to 12 GPM, with 2 adjustable water spray bars; power 1/2 HP 50/60C class F motor, IP55, 110/220V depending on customer requirements; steel frame construction is finished yellow with high corrosion-resistant baked-on, powder coat epoxy paint; table top and hopper are constructed of fiberglass gel-coated in finish blue to easily gravity feed from a slurry tank, trommel, chute, pipe, etc.; adjustable table top tilt & “bump”; equipped with variable speed control unit.



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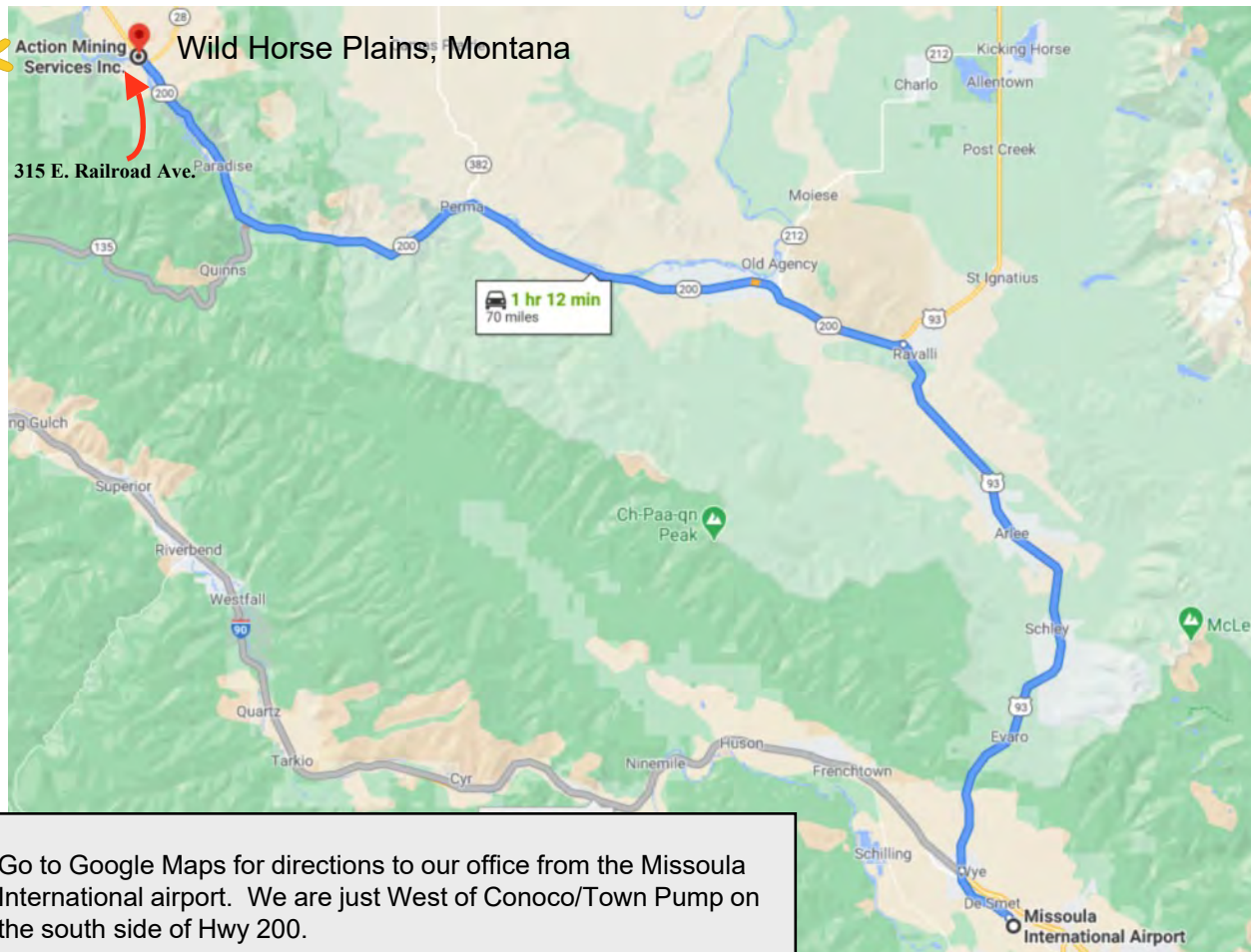
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**New features -
Run wet or dry ore!**

11" Impact Mill runs wet or dry material!

Our micro-grinding impact mill systems are designed to be fast, efficient, and long lasting. The 11" bench unit can produce 150 mesh fineness on the first pass!



The mill has 2 outlets for ore removal. These outlets allow you to run your ore wet or dry. For the 11" bench unit, the ore bin, with the vacuum bag attached, collects the dry ultra-fine powder as it exits through the top outlet down through the hose. To run your material wet, use the bottom outlet (cap the top outlet). The 11" Mill is designed to create minimal dust leakage for environmental air control. All impact mills come with carbide tipped hammers for greater wear ability and our **-10 mesh metal classifier insert for on-the-spot screening!**

11" Impact Mill, bench model

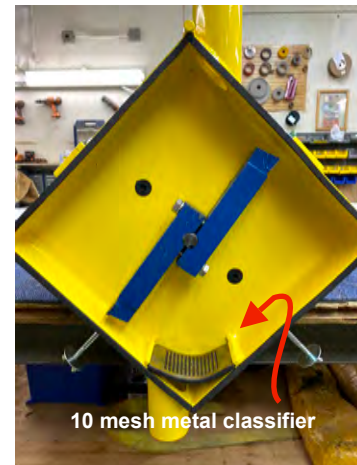
Designed to be fast, efficient, and long lasting with carbide tipped hammers as standard equipment. 2 outlets allowing you to customize running wet or dry material! Pulverize 1/2" rocks (maximum 3/4") down to 400 mesh material when run dry (with the pulverized material exiting through the top outlet); 100 mesh wet (with the pulverized material exiting from the bottom outlet). Fast and simple to clean out; increasing your production every time you use it! Grind - 80 to 400 mesh Automatic screening to -10 mesh. Volume -10 to 100 pph.

Cat #IMPACTMILL11 \$1,770.00* 1HP, 110 VAC, 60Hz 3450 RPM complete w/ore bin & hose attachments for discharging the pulverized material into a 5-gallon cyclone ore bin (when running dry material).

Replacement carbide tipped hammers (set of 2)

Cat #Impactmill11hammer \$128.00

Cat #IMPACTMILL11HEAD \$998.00* head unit only



The Original "Beginners Fire Assay Kit"

**NO FEAR!
YOU CAN DO IT
YOURSELF!**

Really?



KIT EQUIPMENT

Assay Furnace 9" x 10" x 6.5"
1 Ore Pulverizer, hand operated
1 Pouring Mold
1 Furnace Tongs
1 Assay Scale digital
1 Drying Dish
1 Comparator
1 Mortar & Pestle 3" cast iron
1 Assay Gloves 11"
1 Face Shield

KIT SUPPLIES

1 lb. Cupelling lead wool
1 lb. Gold ore
2 Fire Bricks
10 lbs. Std. Ore Assay Flux
10 lbs. Sulfide Ore Assay Flux
6 lbs. Gold/Silver Bullion Flux
8 Crucibles 30 gram
20 Cupels 1.5" Mgo
1 Ceramic Crayon
10 Weighing boat 3x3

Cat #ASSAYKIT1 Price: \$3,198.00 (price subject to change) crating \$103.00
Since 1981, Action Mining's Assay Kits have helped many miners with their lab startup. Probably the most important factor of success in prospecting and gold recovery mill operation is the number of assays completed - you can do up to 6 assays at a time with this popular Kit! **Flux shipping restrictions - require substitutions for international orders.**



**Ask about our
new 2½ hour video
"Investigating &
Understanding
Fire Assaying"**

Simply mix your ore with our Premixed Flux (available in the US and Canada - international orders please inquire as to type of flux we can ship) in a crucible. Place it in the furnace. In an hour, pour the entire batch into the pouring mold. When it has cooled, break off the lead button that has formed. Place the lead button on a cupel and back into the furnace. Soon any precious metals present will remain in the form of a small bead. All materials and equipment are included in this kit so that you can do your own assays and determine the weight of the bead, without other equipment. **Professional Assay Kits also available - ask for details!**

Searching the industry looking for low cost mining laboratory equipment, we are continually testing new items. Now the necessary equipment can be purchased for a fraction of the cost of past mining laboratories. Where low cost equipment could not be found, we have manufactured the equipment ourselves. Action Mining's Impact Mill is an example of this, selling for a fraction of the cost of similar items that do the same job.

If you are going into mining or if you are in mining, consider putting in your own lab. A small backyard facility can prevent the loss of a great deal of time and money. We always answer questions on the phone, and will help with setting up your lab. We believe that a miner without a lab is like a hospital without a MRI machine. Neither can really tell what is happening without the proper tools.

WARNING: Assay lead fumes are poisonous.

Assay Furnaces must not be used indoors - unless under a ventilated metal hood.

AMS ACTION
Mining Services Inc.

Mail to: