



STATE OF ARIZONA

DEPARTMENT OF MINES AND MINERAL RESOURCES

Mineral Building • State Fairgrounds • Phoenix, Arizona 85007

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TREATING BLACK SANDS

Testing Sequence

1. Measure amount of Material
2. Sample - Carefully
3. Fire Assay
4. Determine total value from 1 & 3. At this point it may become evident that you should abandon the project. If not, go on.
5. Pan very thoroughly about 10 pounds. If gold can be recovered by panning perhaps gravity separation is all that is required. Assay both concentrate and tails to check recovery.
6. Remove Magnetics. Assay both magnetic fraction and non-magnetic fraction. If the magnetic fraction is essentially barren a magnetic separator may be indicated.
7. Screen (At this time use full sample-- later it may be advisable to do only non-magnetic fraction) Although size of black sands vary, generally 10 mesh, 35 mesh, and minus 35 mesh will suffice. Weigh and assay each fraction to determine if values can be concentrated by screening.
8. Sample Amalgamation. Use rock tumbler - gallon can on rollers or cement mixer. Add caustic soda at rate of 3 to 4 pounds per ton of ore and mercury at 5 times the amount of gold. Pan out amalgam (copper pan if available). Assay tails. If sufficient gold is left in tails continue.
9. Grind sample (90% passing 48 mesh to start) and repeat step 8. If so indicated continue to grind finer until tail assay shows negligible gold.
10. You now know how much gold is contained in each easily separated fraction and if grinding is required to recover the gold. Each step must now be analysed to determine if it makes economic sense.



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