

66: HGP leaching – 2000s research in New Jersey



Figure 138. HABER GOLD PROCESS
 A mobile test unit for the Haber Gold Process (HGP).
 (photo: courtesy of Haber Inc – www.habercorp.com)

The Haber gold process (HGP) was developed by Norman Haber of New Jersey for hardrock gold ores, but it has potential for placer gold recovery. The HGP is a chemical leaching process using a non-toxic lixiviant (extracting solution) of proprietary composition. Haber Inc (www.habercorp.com) says the chemicals used are “readily available”.

About 100 tons of different types of gold ore have been processed in small-scale HGP pilot plants which are claimed to extract gold in bulk in “significantly less time” than with cyanide. The tested ores responded much faster with the HGP. Reagent costs are similar to cyanide but the costs of the HGP are claimed to be “an order of magnitude lower” than for a cyanide system.

Haber Inc. claims the following advantages of HGP leaching over cyanide leaching:

- ✘ routinely recovers more gold;
- ✘ processing rates are significantly faster;
- ✘ effective with more types of gold ore; and
- ✘ overall cost of processing is same or less.

Operation

The Haber gold process (HGP) is, in many respects, similar to the cyanide method in the recovery of hardrock gold, but acting faster and without raising any significant environmental issues. Both methods rely on chemically-based gold extraction technology that makes use of a lixiviant (extracting solution) to leach gold into solution from the ore.

Having rapidly and efficiently leached the gold into solution, the HGP uses essentially the same gold-capturing method as the cyanide method in order to recover the gold by precipitation, such as the well-known Merrill-Crowe and carbon methods.

- ✘ **hardrock ore** – the rock is first crushed and milled to 80-120 mesh (130-200µ) – an advantage over using cyanide that typically requires milling to at least 200 mesh (74µ). Therefore it seems highly likely that HGP will prove effective at recovering gold less than 200µ in size.
- ✘ **placer ore** – with placers there is no requirement to mill the ore, as the commercial gold content is ‘free’ gold. The Haber Gold Process should be effective for placer concentrates screened at 1mm or even 5mm, for a spherical gold particle of 200µ diameter has hydraulic equivalence to a spherical magnetite particle twice this diameter and a quartz particle several times this diameter. The Haber Gold Process should be effective at recovering fine gold in the tailings of conventional wash-plants.

Adoption by placer gold miners

The Haber gold process (HGP) is undergoing commercialisation trials in Ghana for applications to combat and replace mercury usage by thousands of artisanal and small-scale gold miners (ASM). Initial progress has been very encouraging and publication of detailed results is awaited with interest.

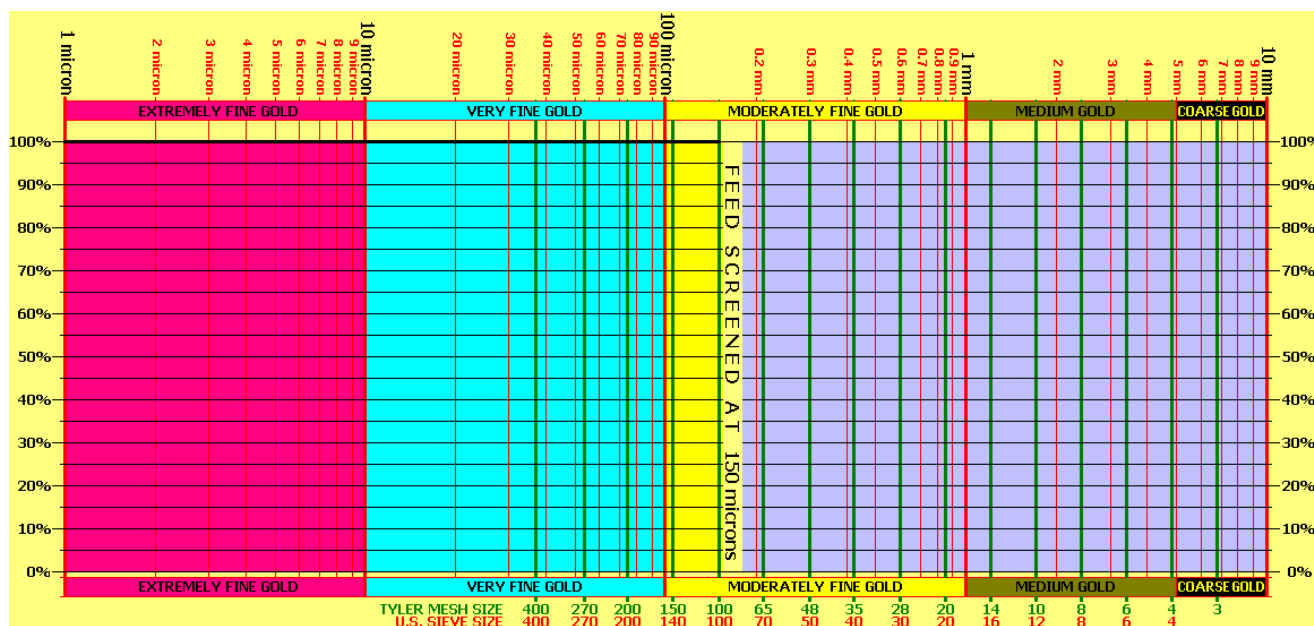


Figure 139. GOLD RECOVERY BY HGP LEACHING – generalised
 Recovery of placer gold by the Haber gold process (HGP) based on information from Haber Inc. (compiler: Robin Grayson)