



Gold-Pyrite ores

Gold has varying modes of occurrence in sulphide ores ranging from being disseminated and interstitial in minerals such as lead and copper, in oxide ores particularly as disseminated particles, and as free milling gold or association with tellurides.

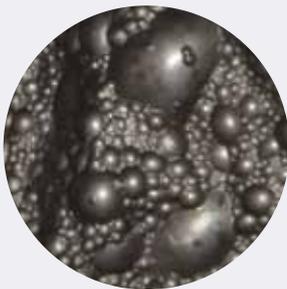
Where the gold is intimately associated with various sulphide minerals, especially iron sulphides which include pyrite, arsenopyrite and pyrrhotite, flotation recovery of the gold is dependent on recovery of the associated minerals. In this case gold follows the associated sulphide mineral recovery.

Free gold flotation fundamentally is not possible because gold is a noble element which means it is a chemically nonreactive metallic. Since sulphide flotation collectors chemisorb to the target mineral surfaces, because noble metals do not react, collector adsorption on a pure gold surface is not possible. Use of cresylic based dithiophosphates does provide some collection of gold particularly in gold-silver ore flotation. Alternatively, if there is significant metallic gold association with silver metal, because silver has a reactive

surface for collector bonding, collectors for silver indirectly also result in gold recovery.

Consequently, gold flotation recovery requires a focus on floating the associated base metals (predominantly lead, copper) and often pyrite minerals. While lime is often used in base sulphide mineral flotation, because excess lime also tends to depress gold flotation, a balance must be maintained between good base metal metallurgy and gold recoveries. Natural pH is recommended for gold flotation. Alternatively using soda ash for pH adjustment can reduce gold depression.

Where gold is associated with pyrite in base metal ores where iron sulphides are depressed and report to the tailings, a separate tailings pyrite flotation concentrate should be considered. Producing a pyrite concentrate with associated gold maximizes gold recovery.



The following Danafloat™ collectors should be initially considered for gold-pyrite ore flotation:

Danafloat™ 067
 Danafloat™ 068
 Danafloat™ 070
 Danafloat™ 245
 Danafloat™ 262E
 Danafloat™ 271
 Danafloat™ 468
 Danafloat™ 507E
 Danafloat™ 571
 Danafloat™ 871