



Copper-Zinc ores

Usually chalcopyrite, sphalerite and iron sulphides are present with this type of ore. Gangue minerals are typically various silicates, carbonates, and often talc the latter which presents flotation challenges.

The flotation separation and recovery approach is quite similar to the Pb-Zn sulphide separation process. Sphalerite is depressed with zinc sulphate addition to the grind with sodium sulphide as an option for enhancing pyrite depression. Copper is floated in the first differential flotation stage at a 10-11 pH with lime. Xanthate, dithiophosphate and thionocarbamate collectors are used as explained much more extensively in the copper flotation section.

The copper flotation tailings are the feed to the sphalerite flotation circuit where the zinc minerals are floated as explained in the lead-zinc flotation section. Sphalerite is first activated with CuSO_4 and floated typically at elevated pH for iron sulphide depression. Combinations of xanthate with either dithiophosphate and/or thionocarbamate are used in

combination with xanthate in the sphalerite flotation but often the collector selection tends to be toward weaker collectors. A similar frother strategy is used, although as always, circuit and ore conditions impact specific reagent selection.

If the talc levels are sufficiently high and negatively impact metallurgy, talc depressants can be used in both the copper and zinc flotation circuits. These depressants include carboxymethyl cellulose, dextrin, guar gum, and starch. Talc flotation interference can also be managed with proper frother selection.

The following Danafloat™ collectors are recommended for initial consideration in copper-zinc ore flotation:

Danafloat™ 067
 Danafloat™ 068
 Danafloat™ 070
 Danafloat™ 233
 Danafloat™ 245
 Danafloat™ 262E
 Danafloat™ 345
 Danafloat™ 507E
 Danafloat™ 871

Consider for ores that contain oxidized copper minerals:

Danafloat™ 271
 Danafloat™ 571

Selective Zn Float:

Danafloat™ 123
 Danafloat™ 233
 Danafloat™ 468
 Danafloat™ 245
 Danafloat™ 262E
 Danafloat™ 271
 Danafloat™ 571

