
From Mineral to Metal: Metallurgy and Electrolytic Refining

1. the science of extracting and refining metals from their ores 1. _____
2. "pyromet" is short for _____ 2. _____
3. "hydromet" is short for _____ 3. _____
4. _____ uses extreme heat in blast furnaces to roast the ore 4. _____
5. _____ uses chemicals to react and dissolve the metal from the ore 5. _____
6. the two elements to be produced at Voisey's Bay using pyromet or hydromet 6. _____

7. the name given to the primary treatment of chalcopyrite which involves grinding the ore to a fine powder and adding water, oil and detergent. 7. _____
8. a toxic gas produced by the pyromet process for both copper and nickel (contributes to acid rain) 8. _____
9. Use equations 5 and 6 to write the overall reaction for the hydromet process for copper. Use the E° values to determine the *minimum voltage* needed for this reaction.

10. Use equations 8 and 9 to write the overall reaction for the electrowinning reaction from the pyromet process for nickel.

11. What process should be used to process the metals at Voisey's Bay. Provide TWO reasons for your answer.