

# THE PRODUCTION OF BATTERY GRADE NICKEL SULPHATE FROM VARYING FEED SOURCES

By

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## ABSTRACT

The increasingly rapid growth of the electric vehicle market has led to an exponential increase in the demand for battery materials such as nickel, cobalt, manganese, and lithium. The safety and performance of lithium-ion batteries is greatly affected by impurities in the precursors and hence it is imperative that these chemicals are produced to the highest purity. The specifications for the impurities are becoming more stringent which has driven innovation in the refining and purification processes.

The impurity profile of the feed to the nickel sulphate crystallisation plant is dependent on the ore type and the purification steps (solvent extraction & ion exchange) involved upstream of the process. Crystallisation is an important final step in producing battery grade products. The crystallisation process flow sheet and the equipment design are dependent on the impurities in the feed to the crystalliser and the operating conditions that can produce the desired form of the product.

This paper discusses typical feed chemistries from varying sources, factors affecting the product purity, and the fundamental balance between purity and operating conditions versus capex and opex during flowsheet development.

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