

عنوان مقاله:

Development of Geometallurgical Indices for Semi-Autogenous Grinding at Sarcheshmeh Porphyry Copper Mine

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خلاصه مقاله:

Geometallurgy tries to predict the instability the behavior of ores caused by variability in the geological settings, and to optimize the mineral value chain. Understanding the ore variability and subsequently the process response are considered to be the most important functions of an accurate geometallurgical study. In this paper, the geometallurgical index is presented as a new tool to optimize the mining activities. Geometallurgical index is described as any geological feature that makes a footprint on the process performance of ores. In a comprehensive research work at the Sarcheshmeh porphyry copper mine, the geological features that affect the main process responses including the product grade and recovery and plant's throughput are subjected to investigation. In the current report, the rock hardness variability in terms of semi-autogenous grinding power index (SPI) and its effects on the mill throughput and energy consumption are presented. Ninety samples are collected based on the geological features including lithology, hydrothermal alteration, and geological structures. The samples are mineralogically characterized using XRD, XRF, and electron and optical microscopy. The Starkey laboratory mill, commercialized by Minnovex, is used to perform the SPI comminution test. The SPI results show a wide range of hardness, varying from ۱۲ to ۴۷۳ minutes. The correlation between the SPI results and the geological features show that lithology is a key geological feature that defines the hardness variability. In addition, the hydrothermal alteration would be an effective parameter in .the period that the plant is fed with a single lithology

کلمات کلیدی:

geometallurgy, geometallurgical index, ore variability, SPI, Porphyry copper

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