

DILUENT SELECTION AND ITS IMPACT ON PERFORMANCE

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ABSTRACT

The diluent is an important component in the solvent extraction process. While its main role is to solubilize and carry the extractant, the composition and physical properties of a diluent can have a significant impact on the overall performance of the system. The choice of diluent can potentially optimize the solvent extraction process by improving extraction efficiency, phase disengagement, crud formation and diluent losses. In selecting a diluent, trade-offs that exist between the diluent properties should be considered to come to an optimum solution.

In addition, diluents constitute a large proportion of the mining chemicals used in a solvent extraction plant and hence its impact on the safety, health, and environmental aspects of plant operations cannot be understated. Over the years, diluent requirements have changed together with the continuous evolution of safety and environmental standards in the mining industry. The right diluent will enable a safe working environment without compromising on technical performance.

ExxonMobil's Escaid[™] fluids have developed over the years to meet the evolving needs of the mining industry. They have been used globally in the extraction of copper, nickel, cobalt, uranium and other valuable metals. The Escaid fluids portfolio feature product grades with a range of volatilities and chemical types to support mining operations. The presentation will compare several diluents to provide insights on how the composition and properties of the diluent influence the solvent extraction process. The safety, health and environmental characteristics of the diluents will also be examined to show how the choice of diluents can help enhance industrial hygiene, improve personnel safety and potentially reduce environmental impacts.

Keywords: Solvent extraction, diluent, workers' exposure, safety, environment