Phosphates | P_2O_5 Content in Concentrates

Summary

The global phosphate mining industry is the key provider of materials used for a wide range of products ranging from fertilizers, food ingredients, detergents and many others. Phosphate mines and beneficiation plants are adapting with more advanced technology to improve efficiency and yield. A key measure of this efficiency is the level P_2O_5 in concentrates. Improved recovery of P_2O_5 during the beneficiation process results in a direct economic improvement for plants. For example, a 2% recovery improvement in P_2O_5 in plant concentrates can result in savings of $500,000 per year in a typical beneficiation plant. Traditional analysis of P_2O_5 is time consuming, difficult and requires chemicals. New industrial NMR analysis from Progression, Inc. provides a better solution for the analysis of P_2O_5 in concentrates.

Progression, Inc. is the world's leading supplier of industrial NMR technology to the phosphate industry. The company provides on-line process equipment as well as robust lab instrumentation used by the world's most efficient phosphate mining companies.

Benefits

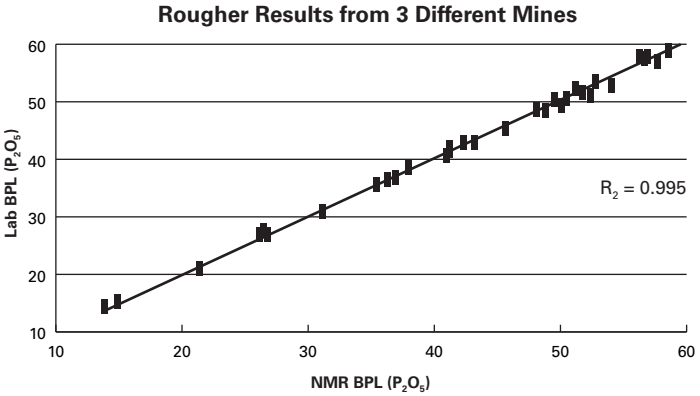
- Direct analysis of P_2O_5
- Fast results in less than 5 minutes
- Non-destructive analysis
- No sample preparation necessary
- Highly repeatable analysis
- Operator independent
- Chemical-free analysis
- Pre-loaded method and calculations

Sampling

Tailing samples can be manually or automatically taken from the plant for Magneflow® NMR analysis. The samples (40g) are then analyzed with the Magneflow NMR technology in less than 5 minutes to provide an accurate P_2O_5 determination. No sample preparation is required such as grinding, weighing or drying. Since the Magneflow NMR technology measures 100% of the sample in the testing probe, the analysis is not affected by color, particle size, or other matrix effects.

Calibration and Results

The lab or on-line Magneflow NMR technology is calibrated versus traditional lab analysis. The Magneflow NMR technology is calibrated by Progression, Inc. staff or by staff at the phosphate plant. The linear calibrations are easy to generate with a limited number of reference samples. The calibration models once established are very robust and do not require adjustment.



This graph demonstrates a typical performance for the Magneflow NMR technology compared with lab reference data for the P_2O_5 content in concentrates from three different locations. In most cases, better quality reference data will result in better calibration results. The Magneflow NMR calibration performance for stability is excellent in both the short term as well as long-term repeatability. A typical long-term repeatability of <0.05% is expected.