



## Phosphates | Phosphoric Acid $P_2O_5$

### Summary

Millions of tons of phosphoric acid ( $H_3PO_4$ ) are produced globally each year. Eighty percent of the acid is used in the production of agricultural fertilizers, with the remainder being used for detergent additives, cleaning agents, insecticides, and animal feed additives. Phosphoric acid process and quality control requires an accurate and rapid determination of the  $P_2O_5$  content in phosphoric acid at several stages of the production process

Progression, Inc. has established a fast and easy method for the reliable determination of  $P_2O_5$  in phosphoric acid using the patented Magneflow® NMR products. Based on this method  $P_2O_5$  determinations can be made on-line or in the lab in several minutes allowing for better process control and higher throughput

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

### Benefits

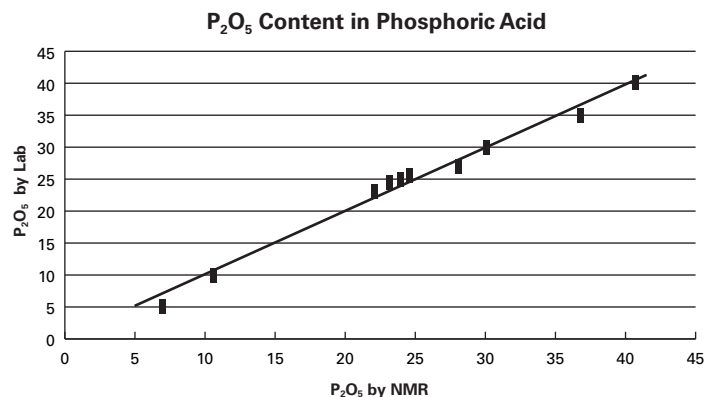
- Direct analysis of  $P_2O_5$
- Fast results in less than 5 minutes
- Non-destructive analysis
- No sample preparation necessary
- Highly repeatable analysis
- Operator independent
- Chemical-free analysis
- Pre-loaded method and calculations

### Sampling

Phosphoric Acid samples can be manually or automatically taken from the plant for Magneflow NMR analysis. The samples 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. Since the Magneflow NMR technology measures 100% of the sample in the testing probe, the analysis is not affected by color, vibration or impurities.

### 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 staff or by staff at the phosphate chemical 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 analysis of  $P_2O_5$ . In most cases, better quality reference data will result in better calibration results. The Magneflow NMR calibration stability is excellent in the short term, as well as long-term repeatability. A typical performance of  $<0.05\%$  is expected.