



# Maximising potential returns

## Mining Refining Application Note

Precious metal recovery from mining and refining streams

## About PhosponicsS

At PhosponicsS, our scientists relish the challenge presented by the mining refining industry to recover value from precious metal containing streams. We specialise in designing simple solutions to complex metal recovery problems using the smartest silica technology to optimise results

## Optimum value recovery

- Highly effective performance
- Best return on investment
- Plant based solution



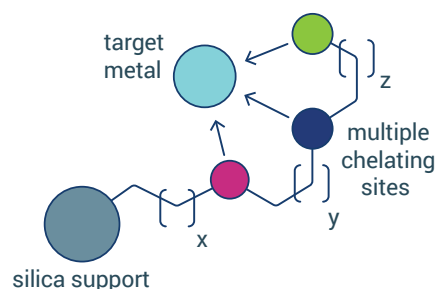
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# Introducing PhosponicS

## Precious Metal Recovery Products

The Phos series of silica products are designed to recover precious metals from your refinery streams.

| Product code | Product name                          |
|--------------|---------------------------------------|
| Phos-01      | Mercaptoalkyl 2 functionalised silica |
| Phos-02      | Aminoalkyl 3 functionalised silica    |
| Phos-03      | Aminoalkyl 1 functionalised silica    |
| Phos-04      | Mercaptoalkyl 1 functionalised silica |
| Phos-05      | Mercaptoalkyl 4 functionalised silica |
| Phos-06      | Alkyl thiourea functionalised silica  |



## What Makes PhosponicS Unique?

PhosponicS uses patented technology for attaching powerful ligands to a silica backbone. The ability to incorporate multiple chelating sites enables our silica products to outperform other solid supported products, at every concentration of precious metal in your stream.

### Advantages of PhosponicS metal recovery products

- More powerful than standard solid adsorbents
- Designed to only recover precious metals
- Superior recovery performance

### Advantages of silica as a support

- Highly porous for optimised stream flow
- Stable in both aqueous and organic media
- Larger surface area for higher loading

### Order Your Phos Screening Kit

To order your Phos Screening Kit send an email requesting this to:

[sales@phosponics.com](mailto:sales@phosponics.com)



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# PhosponicS

## Case studies



### PhosponicS in the mining refining industry

The extraction of precious metals from mining deposits is a long and complex process requiring significant capital investment.

At PhosponicS, our work in the mining refining industry has provided a deep understanding that, following the electrolytic refining operations, the key is in the sequential solution and precipitation processes to concentrate, extract and purify precious metals. The refining process gives rise to a barrens stream with high base metal and low precious metal concentrations which is not cost effective to treat using established metal extraction processes.

PhosponicS scavengers are highly selective for precious metals over base metals. By working closely with PhosponicS to treat their barrens streams, mining refineries are able to recover additional quantities of precious metals than are available using standard chemical and electrolytic methods thereby maximising their returns from their operations.



### Recovering precious metals in the mining refining industry

PhosponicS works closely with technical and production teams at precious metal mining refining companies to carry out comprehensive laboratory testing of refinery streams in order to identify the best scavenger product and operating conditions for treatment of their particular precious metal containing stream. We then support the detailed engineering design and implementation of a complete scavenging solution, from pilot plant scale through to a permanent installation, depending on customer requirements.

#### Stream

- Pd (0.1-5 ppm)
- conc. HCl
- 2.8 m<sup>3</sup> treated per hour

#### Result

- >98% Pd recovery
- 80g/kg Pd loading

Pd recovery from a PMR barrens stream

#### Stream

- Rh & Ru (1000 ppm each)
- conc. H<sub>2</sub>SO<sub>4</sub>
- Pre-plant scale

#### Result

- >99% Rh & Ru recovery
- >100 g/kg combined loading

Rh and Ru recovery from a BMR leach stream

#### Stream

- Pt and Pd (5-150 ppm)
- Au (1-2 ppm)
- conc. HCl
- In test

#### Result

- >98% Pt & Pd recovery
- >95% Au recovery

Pt, Pd and Au recovery from an Au refinery effluent stream





## Contact PhosponicsS



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