

# Maximising potential returns

## Chemicals Application Note

Precious metal recovery for high volume manufacturers

## About PhosponicS

At PhosponicS, our scientists relish the challenge presented by the bulk and fine chemical industries to recover value from product, process and waste streams. We specialise in designing simple solutions to complex metal recovery problems using the smartest silica technology to optimise results.



## Optimum value recovery

- Best return on investment
- Most effective results
- Smartest technology



## Introducing PhosphonicS Precious Metal Recovery Products

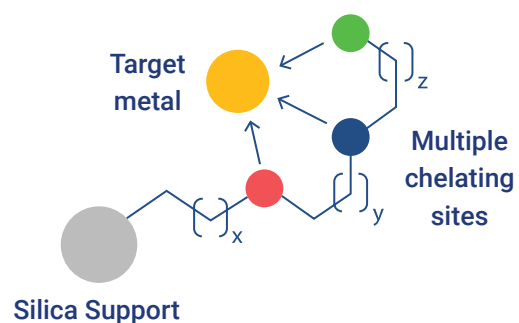
The Phos series of silica products are designed to recover precious metals from your process and waste streams.

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

You can order your Phos Screening Kit in a convenient 10g size. Please refer to Phos-Kit 10 when ordering.

## What Makes PhosphonicS Unique?

PhosphonicS 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 the Phos series

- 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 a Phos-Kit 10 to [sales@phosphonics.com](mailto:sales@phosphonics.com)

## Case Studies

### PhosponicS in the chemical industry

Precious metals are widely used in homogeneous catalysis throughout the chemical industry.

Most companies have systems in place to recover the value from their spent catalysts, but with authorities across the globe tightening laws regarding shipment of hazardous materials, this is becoming increasingly difficult. From fine chemicals to bulk chemicals, this complex problem is universal.

PhosponicS offers a simple and effective solution, enabling fast, environmentally sustainable value recovery to maximise potential returns.

### Recovering precious metals in the agrochemical industry

As the agrochemical industry evolves, there is a trend for ever increasing molecular complexity.

Precious metal catalysts allow chemists to dial-in these complex structures quickly and efficiently. With market demand for large volumes of agrochemical products compared to pharmaceutical ingredients, the need for low cost synthetic routes is absolutely critical in this industry.

To help producers of agrochemicals maximise their potential returns, PhosponicS offers a value recovery solution applicable to all stages of production.



#### Result

- >90% Pt recovery
- 20-25g/kg loading

#### Stream

- Pt (40-50 ppm)
- Organic
- Multi-tonnes p.a.

Recovering spent Pt from silane production



#### Result

- >95% Rh recovery
- 30-35g/kg loading

#### Stream

- Rh (25 ppm)
- Organic
- 360 m<sup>3</sup> p.a.

Recovering Rh from a hydroformylation process



#### Result

- >99% Pd recovery
- 70g/kg loading

#### Stream

- Pd (30 ppm)
- THF/toluene
- Pilot plant scale

Recovering Pd from an agrochemical process stream

## Contact PhosponicS

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