

# Maximising potential returns

## Metal Recovery & Recycling Application Note

Precious metal recovery from industrial waste streams

## About PhosponicS

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

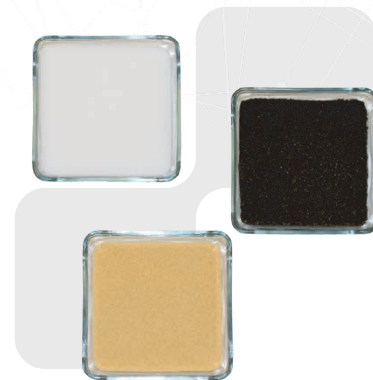


## Optimum value recovery

- Easy to install
- Rapid return on investment
- Minimal maintenance

## Introducing PhosponicsS Precious Metal Recovery Products

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

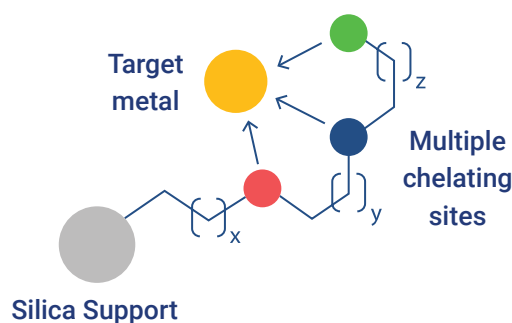


Product code	Product name
Phos-01	Mercaptoalkyl 2 functionalised silica
Phos-02	Aminoalkyl 3 functionalised silica
Phos-03	Aminoalkyl 1 functionalised silica
Phos-04	Mercaptoalkyl 1 functionalised silica
Phos-05	Mercaptoalkyl 4 functionalised silica
Phos-06	Alkyl thiourea functionalised silica

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

## What Makes PhosponicsS Unique?

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

## Case Studies

### Recovering Pt and Pd from a silver refining process

The unique physical and chemical properties of precious metals have led to their use in a wide range of applications across many industries. However, increasing global competitive forces are driving the need to improve both operational efficiency and return on investment. Combining this with political and social pressure to reduce the environmental impact of manufacturing activities, many companies are seeking new ways to maximise their returns from their operations whilst at the same time reducing their impact on the environment.

Meeting the challenge of recovering valuable precious metals both from solid metal scrap and liquid waste streams to be recycled into industrial use forms the basis for a thriving precious metal refining industry. By working closely with PhosponicS to recover more precious metals from scrap and liquid waste streams, companies can further increase their returns from such operations.

### Recovering precious metals in the precious metal refining industry

Many precious metal refining plants use well established extractive metallurgical techniques to recover and purify the precious metals from a wide range of sources, including scrap jewellery and other domestic items, scrap from electronics and aerospace manufacturers as well as solid and liquid waste from the chemical and pharmaceutical processing industries. These refining plants will often produce a liquid waste stream which contains low concentrations of precious metals.

PhosponicS offers a range of cost effective, easy to use solutions, tailored to your recovery needs and helps you further increase your returns.



#### Result

- > 95% Pt and Pd recovery
- 78 g/kg combined loading

#### Stream

- Pt (60 ppm); Pd (200 ppm)
- Nitric acid matrix
- 20,000 L p.a.

Recovering Pt and Pd from a silver refining process



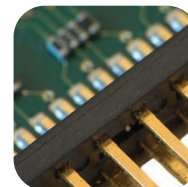
#### Result

- > 98% Pt recovery
- 35 g/kg loading

#### Stream

- Pt (500 ppm)
- Aqua regia matrix
- Pre-plant scale

Recovering Pt from a turbine blade recovery process



#### Result

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

#### Stream

- Pd (25 ppm)
- pH 5
- Continuous production

Recovering Pd from an etching process stream

## Contact PhosponicS

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