

Metals Content in Cogent HPS HPLC Stationary Phases - Tech Information

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Introduction

Cogent HPS™ silica is manufactured to meet exceptionally high purity standards, ensuring minimal trace metal content that could otherwise interfere with chromatographic performance.

By maintaining extremely low levels of metallic impurities, the silica surface becomes more inert and stable, providing enhanced reliability for sensitive analytical applications.

High-Purity Silica and Metal Specifications

The purity of Cogent HPS™ silica is defined by strict limits on trace metals known to affect chromatographic behavior. These metals—including sodium, aluminum, iron, titanium, and potassium—are maintained at exceptionally low concentrations to ensure consistent performance.

- Specification Level: Each listed metal is specified to be below 10 ppm, reflecting tight manufacturing controls.
- Actual Measured Levels: Testing indicates that these metals are often found at levels below 1 ppm, demonstrating performance significantly better than specification.
- Potassium: Frequently *not detected* in tested batches, indicating extremely low or negligible presence.

This combination of strict specification limits and superior actual performance underscores the material's high level of chemical cleanliness.

Analytical Benefits of Low Metal Content

Maintaining extremely low levels of trace metals provides direct benefits to chromatographic performance and method reliability.

- Reduced Secondary Interactions: Minimal metal content decreases unwanted ionic or coordination interactions with analytes, especially basic species that are prone to adsorbing onto metal sites.
- Improved Peak Shape and Reproducibility: A cleaner silica surface promotes sharper peaks, reduces tailing, and delivers more consistent retention behavior.
- Enhanced Method Robustness: Analysts can develop methods with greater confidence, knowing that surface contaminants are unlikely to introduce variability across batches or over the column's lifetime.

These advantages support high-precision analytical workflows and strengthen data quality in regulated environments.

Quality Assurance and Testing Transparency

Cogent HPS™ silica undergoes controlled testing to verify that metal concentrations remain well below the defined specification thresholds.

- Manufacturing checks ensure reproducibility from batch to batch.
- The consistency of “found” metal levels below 1 ppm reflects rigorous process control.
- Documentation, including downloadable data sheets, provides traceability and confidence in silica quality.

This high level of transparency helps laboratories maintain reliable system qualification, validation, and routine analytical performance.

Conclusion

Cogent HPS™ silica is engineered with exceptionally low trace metal content, surpassing already strict specifications to deliver high-purity chromatographic performance.

By minimizing metal-induced interactions, it enables reliable, reproducible analyses across a broad spectrum of applications, making it a dependable choice for laboratories that demand consistent silica quality and outstanding chromatographic results.

Metal ppm	Levels specification	Found
Na	<10	<1
Al	<10	<1
Fe	<10	<1
Ti	<10	<1
K	<10	None detected



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