instrAction® SIL e

Selective resin for the removal of heavy metals or precious metals from drinking water or industry process streams with high stability and productivity.

General Description

instrAction® SIL e series resins are a newly developed coated silica resin dedicated to the selective removal of heavy or precious metals from aqueous media. The resin was designed and tested by instrAction. Its silica backbone along with its polyvinyl amine coating and iminodiacetic acid groups gives it a unique combination of mechanical stability along with a highly selective functional layer for heavy metal scavenging. SIL e type resins were developed for single-use PoU and industrial applications with a constant water flow and low back pressure.

Performance Benefits

General

- Homogeneous flow at low back pressure.
- Linear pressure drop gradient for the whole bed depth.
- Low rinse water demand.
- Mixing/combination with other filter media like activated carbon or ion exchange resins is possible.
- High physical and chemical stability.

Heavy Metal Removal

- SIL e resins with iminodiacetic acid groups for stable complexation of Pd^{2+}, Pt^{2+}, Ir^{2+}, Rh^{2+}, Ag^{+} and Ru^{2+} as well as Cu^{2+}, Pb^{2+}, Ni^{2+}, Zn^{2+} and Cd^{2+}.
- Heavy metals or precious metals are removed from tap water below the detection limit in a single filtration step.
- Reliable depletion rate with high capacities* because of stable bindings.
- Removal of precious metals, rare earth elements and base metals.
- Highly tolerant regarding aqueous matrices and organic solvents

* depending on cartridge dimension, particle size and bed height

About instrAction

instrAction has been committed to implementing breakthrough innovations for the water treatment industry. Since its founding, instrAction has been expanding its activity at a fast pace. The know-how combines the selectivity of absorber resins with the demands for modern water purification.

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Typical Application

instrAction® SIL e series resins are especially designed for the use in waste or drinking water systems and filters for domestic, commercial, and industrial applications. For fine-tuned selectivity or flow characteristics combination with other instrAction resins is possible. The main application of the instrAction SIL e resins is the removal of heavy or precious metals through irreversible binding, combined with longevity and robustness. The SIL e series resins are mainly used in single-use filtration systems. Precious metals can be recovered by incineration of the loaded SIL e resin followed by a refining step.

Resin Characteristics

Resin Type	instrAction® SIL e
Available Particle Sizes and Structures	• 30 – 70 µm, irregularly shaped resin • 100 – 300 µm, irregularly shaped resin • 315 – 500 µm, irregularly shaped resin • 600 – 1400 µm, irregularly shaped resin
Matrix	Crosslinked functionalized polyvinyl amine on silica gel support
Shipment Form	Wet bulk resin, flushed with 1 M NaCl
Appearance	tan
Functional Groups	Iminodiacetic acid
Support	Silica

Product Data

Applicable pH range	1.5 – 9.0 (drinking water)
Water Content	50 to 60 % (w/w)
Bulk Density	0.85 g/cm³
Operating temperature	4 – 60°C
Regeneration	not applicable
Volume Change	not applicable
Pre-Treatment:	Flush with 10 BV water at 10 BV/h
Storage Conditions:	at 10 - 30°C protected from light

Technical Integration

- Preferable separate packed layer of resin to guarantee constant water flow through the resin bed.
- Volume and particle size depend on allowed back pressure, required flow rate and cartridge dimension.
- Resin can be combined with any other filtration technology.

Additional Information & Regulations

Toxicity

The safety data sheet must be followed. It contains additional data on product description, transport, storage, handling, safety and ecology.

Disposal

In the European Community resins for water filtration have to be disposed of according to the European waste nomenclature which can be accessed on the internet-site of the European Union.

Storage

It is recommended to store resin at temperatures above the freezing point of water under the roof in dry conditions without exposure to direct sunlight.

Disclaimer

This document contains important information and must be read in its entirety.

The instrAction resins were developed for the purification of drinking water as well as industrial applications. They are dedicated to the binding of heavy metals or bacteria from solution. The resins exhibit a remarkable buffer capacity, therefore careful control of the pH value is strongly recommended, to ensure reproducible performance.

The instrAction resins are usually applied in cartridges, columns or stirred tanks. The use as bulk material is limited to exceptional cases.

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Our products are sold per the current version of our General Conditions of Sale and Delivery.

If any questions occur, please contact an instrAction specialist!

instrAction. Pioneering water filtration technology.