AMBERSEP™ 91419 and AMBERSEP™ 91419 XL Chelating Resins
Gold-Selective Strong Base Anion Exchange Resin for the Recovery of Gold from Cyanidation Leach or Acid Chloride Leach Solutions

Description

Today, most gold is mined by the cyanide leaching, or cyanidation, process. Typically, gold is associated with cyanide-soluble copper minerals that can lead to some operational challenges during the gold extraction process. The advantages of using selective anion exchange resins to sorb the gold from the copper-containing pregnant leach solution are broadly recognized, making ion exchange more cost efficient than other alternative routes like activated carbon.

AMBERSEP™ 91419 and AMBERSEP™ 91419 XL Chelating Resins are gold-selective resins with a t-butylamine functional group. The rapid kinetics of these chelating resins help to improve the recovery of gold, particularly in the presence of carbonaceous preg-robbing ores that otherwise preferentially absorb gold and gold-cyanide complexes. Both resins also feature a very strong mechanical stability, reducing the generation of fines during the processing steps and consequently enhancing the gold recovery efficiency by minimizing Au-loaded resin losses.

AMBERSEP™ 91419 Chelating Resin, with its standard particle size, is designed for systems with fixed or fluidized beds.

AMBERSEP™ 91419 XL Chelating Resin, with its larger uniform particle size, is designed specifically for use in Resin-In-Pulp (RIP) processing, enabling an easy separation of the resin from the pulp. It is also a good choice for Resin-In-Leach (RIL) processes.

Applications

- Gold recovery from cyanide leach
- Separation of gold from PGM streams
Typical Properties

Physical Properties
- Copolymer: Styrene-divinylbenzene
- Matrix: Macroporous
- Type: Chelant
- Functional Group: Quaternary amine (t-butylamine)
- Physical Form: White to tan, hard, opaque, spherical beads

Chemical Properties
- Total Exchange Capacity
  - AMBERSEP™ 91419: 0.23 – 0.33 eq/L
  - AMBERSEP™ 91419 XL: 0.30 – 0.40 eq/L
- Dry Weight Capacity
  - AMBERSEP™ 91419: 0.8 – 1.2 meq/g
  - AMBERSEP™ 91419 XL: 0.8 – 1.2 meq/g
- Water Retention Capacity
  - AMBERSEP™ 91419: 49 – 59%
  - AMBERSEP™ 91419 XL: 45 – 55%

Particle Size
- Particle Diameter
  - AMBERSEP™ 91419: 760 – 1200 µm
  - AMBERSEP™ 91419 XL: 822 – 1445 µm
- Fine Beads
  - AMBERSEP™ 91419: < 768 µm ; ≤ 5%
  - AMBERSEP™ 91419 XL: < 822 µm ; ≤ 5%
- Coarse Beads
  - AMBERSEP™ 91419: > 1190 µm ; ≤ 2%
  - AMBERSEP™ 91419 XL: > 1445 µm ; ≤ 2%

Density
- Particle Density
  - AMBERSEP™ 91419: 1.08 g/mL
  - AMBERSEP™ 91419 XL: 1.08 g/mL
- Shipping Weight
  - AMBERSEP™ 91419: 670 g/L
  - AMBERSEP™ 91419 XL: 670 g/L

*Suggested Operating Conditions*

- Maximum Operating Temperature
  - OH⁻ form: 60°C (140°F)
  - Cl⁻ form: 100°C (212°F)
- pH Range: 0 – 14
- Bed Depth, min.: 800 mm (2.6 ft)
- Total Rinse Requirement: 2 – 4 BV*
- Regenerant: Thiourea, acidified

*1 BV (Bed Volume) = 1 m³ solution per m³ resin or 7.5 gal per ft³ resin

Product Stewardship

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Please be aware of the following:

- **WARNING:** Oxidizing agents such as nitric acid attack organic ion exchange resins under certain conditions. This could lead to anything from slight resin degradation to a violent exothermic reaction (explosion). Before using strong oxidizing agents, consult sources knowledgeable in handling such materials.

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**Have a question? Contact us at:**

[www.dupont.com/water/contact-us](http://www.dupont.com/water/contact-us)

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