



DuPont™ AmberSep™ 91419 and DuPont™ 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.

DuPont™ AmberSep™ 91419 and DuPont™ 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 overall larger particle size, is designed for systems with fixed or fluidized beds and Resin-In-Pulp (RIP) processing.

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

	DuPont™ AmberSep™ 91419	DuPont™ AmberSep™ 91419 XL
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Chemical Properties

Total Exchange Capacity	0.23 – 0.33 eq/L	0.23 – 0.39 eq/L
Dry Weight Capacity	0.8 – 1.2 meq/g	0.7 – 1.2 meq/g
Water Retention Capacity	49 – 59%	45 – 55%

Particle Size §

Particle Diameter	760 – 1200 µm	822 – 1445 µm
Fine Beads	< 768 µm : ≤ 5%	< 822 µm : ≤ 5%
Coarse Beads	> 1190 µm : ≤ 2%	> 1445 µm : ≤ 2%

Density

Particle Density	1.08 g/mL	1.08 g/mL
Shipping Weight	670 g/L	670 g/L

§ For additional particle size information, please refer to the [Particle Size Distribution Cross Reference Chart](#) (Form No. 45-D00954-en).

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*

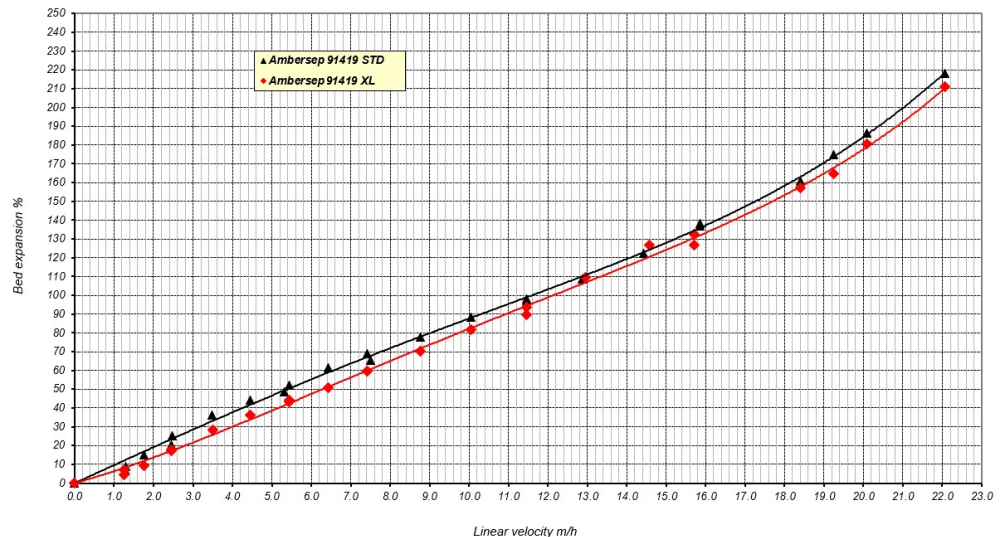
Regenerant Thiourea, acidified

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

Hydraulic Characteristics

Expansion curves of DuPont™ Ambersep™ 91419 STD vs Ambersep™ XL version water solution are shown in Figure 1.

Figure 1: Expansion Curves of Ambersep™ 91419 STD vs XL Version Water Solution



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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.

Have a question? Contact us at:

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