DuPont™ AmberSep™ M4195 and M4195 UPS Chelating Resins

Industrial-grade Chelants for Copper, Nickel, and Cobalt Processing

Description

DuPont™ AmberSep™ M4195 and DuPont™ AmberSep™ M4195 UPS chelating resins are specially designed to selectively capture transition metal ions—such as copper and nickel—from acidic solutions (pH < 2) or those containing homogeneous chelating agents like EDTA. Their unique chemistry is based on a multidentate amine ligand, partially quaternized with sulfuric acid. In this conjugate sulfuric acid salt form, the resin is fully swollen, hydrated, and ready to scavenge metals from acidic media.

While standard chelating resins (iminodiacetic acid or aminophosphonic types) are suitable for most metal separation and purification processes, more complex electrolytes benefit from the higher selectivity of DuPont™ AmberSep™ M4195 and DuPont™ AmberSep™ M4195 UPS chelating resins.

DuPont™ AmberSep™ M4195 chelating resin: Standard grade with screened particle size (through 20 U.S. Mesh, on 50 U.S. Mesh).

DuPont™ AmberSep™ M4195 UPS chelating resin: Uniform particle size for enhanced performance in continuous ion exchange systems.

Key Applications

- Electroplating
- Microelectronic etching solutions
- Cobalt electrolyte purification
- Copper/nickel recovery from nickel laterite
- Copper/nickel recovery from raffinates

Typical Properties

Physical Properties	
Copolymer	Styrene-divinylbenzene
Matrix	Macroporous
Type	Chelant
Functional Group	Bis-Picolylamine
Physical Form	Tan to dark brown to dark green, opaque, spherical beads

Density		
	AmberSep™ M4195	AmberSep™ M4195 UPS
Shipping Weight	670 g/L	670 g/L

Chemical Properties		
	AmberSep™ M4195	AmberSep™ M4195 UPS
Ionic Form as Shipped	Weak base/Partial H_2SO_4 salt	Weak base/Partial H_2SO_4 salt
Copper Loading ‡	≥ 35 g/L	≥ 35 g/L
Water Retention Capacity	40 – 60%	40 – 60%

Particle Size §		
	AmberSep™ M4195	AmberSep™ M4195 UPS
Particle Diameter	297 – 841 µm	~ 410 µm
< 300 µm	≤ 1%	
> 1180 µm	≤ 3%	

‡ 6 g Cu/L feed, pH 2

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

Form No. 45-D00810-en, Rev. 3
January 2026

Application Information

Relative loading values of various metals for DuPont™ AmberSep™ M4195 and DuPont™ AmberSep™ M4195 UPS chelating resins are shown in Figure 1, and selected values of the same are shown in Table 1. The resin exhibits an extremely strong affinity for copper, even at low pH, whereas other metals have higher loading values at higher pH.

Complexed metals can be removed with strong acid (10N H_2SO_4) or ammonium hydroxide. Sometimes selective elution can be accomplished using varying strengths of acid.

Figure 1: Selectivity vs. pH

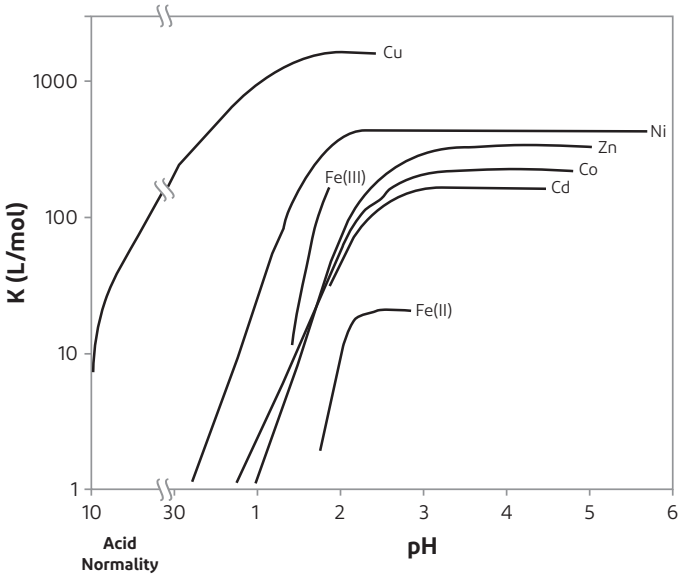

Table 1: Conditional absorption constants (K) for DuPont™ AmberSep™ M4195 and DuPont™ AmberSep™ M4195 UPS chelating resins

Metal Ion	pH	K (L/mol)
Cu^{2+}	2.0	1280
Ni^{2+}	2.0	375
U^{6+}	2.0	190
Fe^{3+}	2.0	181
Zn^{2+}	2.0 2.7	82 184
Co^{2+}	2.0 3.2	51 280
Cd^{2+}	2.0 2.8	43 196
Fe^{2+}	2.3	23

Product Stewardship

DuPont has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with DuPont products—from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

DuPont strongly encourages its customers to review both their manufacturing processes and their applications of DuPont products from the standpoint of human health and environmental quality to ensure that DuPont products are not used in ways for which they are not intended or tested. DuPont personnel are available to answer your questions and to provide reasonable technical support. DuPont product literature, including safety data sheets, should be consulted prior to use of DuPont products. Current safety data sheets are available from DuPont.

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.

DUPONT™

Have a question? Contact us at:
dupont.com/water/contact-us

Form No. 45-D00810-en, Rev. 3
January 2026