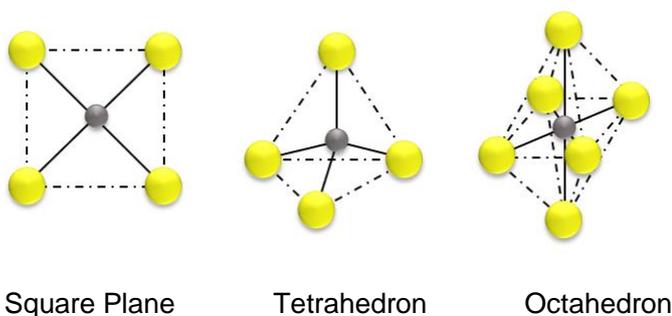


POLYTE® Clean Series Heavy Metal Chelating Agent

1. Principle of POLYTE® Clean Series Heavy Metal Chelating Agent

The POLYTE® Clean series heavy metal chelating agent form a planar tetragonal structure with metal ions of the dsp^2 valence bond orbital, and form a tetrahedral structure with a metal ion of the sp^3 valence bond orbital, and metal ions of d^2sp^3 valence bond orbital. Because the chelating agent forms a less spatial configuration with the metal ions of different valence bond orbital, the chelate formed by the reaction of the chelating agent with the heavy metal ions has higher stability. This kind of chelate has stable chemical property, difficult to dissolve in water, low dissolution rate, and low risk for secondary pollution. It is widely used in the removal of heavy metals such as zinc, lead, cadmium, arsenic, nickel, copper and chromium in wastewater and solid waste.



2. POLYTE® Clean 1000 Series Heavy Metal Chelating Agent for Water Treatment

Instruction

- Product Performance

POLYTE® Clean1000 series water treatment heavy metal chelating agents are homogeneous and stable compounds in which sulfur-containing oligomers are miscible with chain-like sulfur-containing polymers or cyclic sulfur-containing polymers and formed under certain reaction conditions. It has a good removal effect on heavy metal ions such as zinc, lead, chromium, cadmium, nickel and copper present in the water body and the removal rate can reach over 98%. The heavy metal sewage after treatment can meet the national emission standard.

- Product Features

- Strong chelation ability: It has good removal effect on monovalent and divalent heavy metal ions in water without affected by the concentration of heavy metal ions in water. It can remove almost all heavy metal ions at one time; it can be processed directly without break the heavy metal ions complex.
- High chelation efficiency and low dosage: The combination of large and small molecules effectively avoids the failure of effective groups caused by steric hindrance, improves the chelation efficiency and reduces dosing ratio.

- The property of chelate is stable without dissolve. It has been determined that the chelate formed has a very stable stability and is more stable than sulfides and hydroxides formed by the same metal element.
- The double effects of chelating flocculation: The macromolecular chain has the functions of bridging, net filling and sweeping at the same time while chelating, which can effectively reduce the dosage of subsequent flocculants.
- The operation method is simple. The agent can react at room temperature without heat or cool down requirement. Basic flocculation reaction conditions can be used and can be combined with other water treatment technologies.
- High comprehensive cost-effective: Reaction occur when the pH is adjusted to neutral, and the pH value of the wastewater after the reaction can basically meet the discharge standard. large amount of acid-base neutralizing agent can be saved in the entire reaction process.
- The amount of sludge produced is small, easy to dehydrate, and no secondary pollution.

- Physical Properties

Index	Tech Parameter	Note
Appearance	Colorless to pale yellow or yellowish green liquid	-----
Density (g/cm ³)	1.05±0.05	Stock Solution
pH Value	12 ~ 13	1% Aqueous Solution
Odor	N/A (Within 10cm)	-----
Solubility	Dissolved in water	-----

- Use Method

- The liquid medicament can dose directly, or dose after dilution. The dilution ratio is determined according to the specific water quality and site conditions.
- Calculate the dosage ratio according to the on-site water quality before use. The pH value was adjusted to around 7 and then dose according to the prescribed ratio, stirring 3 ~ 5min until the floc produced and dose a small amount of flocculant to remove heavy metals.
- Table of heavy metal ratio to pharmaceuticals dosage:

Index	Ratio (Heavy Metal: Pharmaceutical)
Zinc	1 : 4 ~ 1 : 8
Lead	1 : 2 ~ 1 : 4
Cooper	1 : 2 ~ 1 : 4
Chromium	1 : 4 ~ 1 : 8
Cadmium	1 : 2 ~ 1 : 8
Nickel	1 : 0.5 ~ 1 : 4
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Note: Above is only the processing usage ratio of pure heavy metal elements. The specific dosage will be

increased due to changes in water quality and changes in the form of heavy metals. Please consult your POLYMER's engineer for specific dosages.

- Storage Safety and Package

- 25kg plastic drum or 1000kg large drum.
- Avoid sunlight and rain during transportation of this product. Mix transport with strong oxidants and acidic substances is forbidden, pay attention to fire prevention.
- It should be stored in a clean, cool, ventilated, dark-proof warehouse.
- The expire date of this product is one year at room temperature.
- Please refer to MSDS (Material Safety Data Sheet) or COA (Certificate of Authenticity) for the use of this product.

Polyte[®] Clean2000 Series Heavy Metal Chelating Agent for Cr(VI) Instructions

1. Product Performance

POLYTE[®] Clean2000 series heavy metal chelating agent for cr(VI) is the chelating agent that developed according to the physical and chemical properties and the heavy metal form of hexavalent chromium sludge which capable of removing hexavalent chromium in sludge. It is a complex of organic sulfur can efficiently and purposefully dealing with the sludge containing hexavalent chromium, so that the heavy metal content of hexavalent chromium in the sludge meets the requirements of “GB 18597 2001 Standard for Pollution Control on Hazardous Waste Storage”.

2. Product Charateristic

- To target excessive hexavalent chromium in treated sludge with double effects of reduction and chelation. It needs to be used together with antidote.
- With great chelation ability. It is not only remove the hexavalent chromium metal ions in the sludge, but also remove the heavy metal ions such as monovalent and divalent in the sludge at one time.
- Good solubility, permeability and dispersibility. It can be miscible with water in any ratio and also can penetrate and disperse into the sludge quickly to chelate with heavy metal ions in the sludge and form a stable chelate.
- High chelation efficiency with low dosage. The combination of large and small molecules effectively avoids the failure of active groups caused by steric hindrance, improves the chelation efficiency and reduces the dosage ratio.
- The property of chelate is stable without dissolve. It has been determined that the chelate formed has a very stable stability and is more stable than sulfides and hydroxides formed by the same metal element.
- Easy for use, the sludge can be solidified separately, or it can be combined with the solidified substrate such as cement, both of them can be achieve the discharge standard.

3. Physical Property

Index	Tech Parameter	Note
Appearance	Colorless to pale yellow or yellowish green liquid	-----
Density (g/cm ³)	1.16±0.05	Stock Solution
pH Value	11 ~ 12	1% Aqueous Solution Within 10cm
Odor		
Solubility	Dissolved in water	-----
Crystallization Temperature (°C)	-4	-----

4. Use Method

Firstly, the water and the chelating agent are uniformly mixed according to the ratio, then take a certain amount of sludge which containing hexavalent chromium and dose a certain amount of antidote and stirred until uniformly. After 30mins reacting, dosing the hexavalent chromium sludge chelating agent and continuous stirring to uniform state, then add 2g cement and continuous stirring. After 48 hours, Measure the water content ratio and the water content was measured, and perform leaching experiment after standing for 48 hours.

Note: Please contact POLYMER's engineers for specific dosage ratio.

5. Storage Saving and Package

- 25kg plastic drum or 1000kg large drum.
- Avoid sunlight and rain during transportation of this product. Mix transport with strong oxidants and acidic substances is forbidden, pay attention to fire prevention.
- It should be stored in a clean, cool, ventilated, dark-proof warehouse.
- The expire date of this product is one year at room temperature.
- Please refer to MSDS (Material Safety Data Sheet) or COA (Certificate of Authenticity) for the use of this.

POLYTE® Clean3000 Series Heavy Metal Chelating Agent for Waste Incineration Fly Ash Instructions

1. Product Performance

POLYTE® Clean3000 series heavy metal chelating agent for waste incineration fly ash is the chelating agent developed for the physical and chemical properties of domestic fly ash and the presence of heavy metals. It is a kind of uniformity formed by alkali metal compounds and sulfur-containing polymers under certain reaction conditions. The stable compound can efficiently and purposefully deal with the generation of fly ash after waste incineration, so that the heavy metal content of fly ash meets the requirements of GB 16889 2008 “Standard for Pollution Control on the Landfill Site of Municipal Solid Waste”.

2. Product Features

- Targeted disposal of lead and cadmium in municipal solid waste incineration fly ash.
- Good solubility, permeability and dispersibility. It can be miscible with water in any ratio, can be quickly infiltrated and dispersed into waste incineration fly ash, and chelate reaction with heavy metal ions in fly ash to form a stable chelate.
- High chelation efficiency with low dosage. The combination of large and small molecules effectively avoids the failure of active groups caused by steric hindrance, improves the chelation efficiency and reduces the dosage ratio.
- The property of chelate is stable without dissolve. It has been determined that the chelate formed has a very stable stability and is more stable than sulfides and hydroxides formed by the same metal element.
- Waste incineration fly ash can be solidified separately, or it can be combined with such as cement solidified substrates, both of them can be achieve the discharge standard.

3. Physical Property

Index	Tech Parameter	Note
Appearance	Colorless to pale yellow or yellowish green liquid	-----
Density (g/cm ³)	1.05±0.05	Stock Solution
pH Value	11 ~ 12	1% Aqueous Solution
Odor	N/A	Within 10cm
Solubility	Dissolved in water	-----

4. Use Method

According to the gray matter of the site, firstly, the agent and water are uniformly mixed according to the ratio, then add it to the fly ash and mix well. The moisture content and heavy metal content were determined after standing for 24 hours.

Note: Please contact POLYMER's engineers for specific dosage ratio.

5. Storage Safety and Package

- 25kg plastic drum or 1000kg large drum.
- Avoid sunlight and rain during transportation of this product. Mix transport with strong oxidants and acidic substances is forbidden, pay attention to fire prevention.
- It should be stored in the warehouse that clean, cool, ventilated and protect from light.
- The expire date of this product is one year at room temperature.
- Please refer to MSDS (Material Safety Data Sheet) or COA (Certificate of Authenticity) for the use of this.