

## Products & Applications

# EMPOWER THE DEVELOPMENT OF THE INDUSTRY WITH CHEMICAL TECHNOLOGY AND BUILD A HEALTHY INDUSTRIAL ECOLOGICAL CHAIN.

Welcome to

**KOPPERCHEM**

*Made in Chongqing - Metal extractant, leading  
the country and going global.*

Kopper Chemical Industry Corp., Ltd is a international renowned manufacturer of special surfactants, focusing on the research and development of copper metal, new energy battery metal extraction technology, mineral flotation technology, electrolytic electroplating acid mist treatment technology, etc., producing special surfactants products such as copper metal extractant, new energy battery metal extractant, mineral flotation agent and acid mist suppressant. At present, we provide technical solutions and customized products for global customers that are mainly used in mining hydrometallurgy (chemical metallurgy), new energy battery metal regeneration and recovery, urban mineral resource recycling, etc.,

## Service

### Focus on sustainable development



#### Special Surfactant

We customize professional technical services and products in order to meet customer expectations and achieve win-win cooperation.



#### Metal extractant

We use extraction technology to recycle target metals, reduce consumption and emission, and realize an efficient and low-cost green production line.



#### Mineral flotation agent

We use chemical technology to develop a variety of products with high selectivity and high collection capacity to meet the flotation requirements of various minerals.



#### Acid mist suppressant

We use innovative technology to independently research and develop products, with the characteristics of low usage and high inhibition efficiency, optimize the environment, and achieve green and environmentally friendly operation.



#### Surfactant

Relying on our professional advantages, we research and develop a variety of products to improve oil exploitation efficiency, reduce costs and improve production safety.



#### Special Surfactant

We use chemistry to change production and life, and we are committed to providing the industry with a more environmentally friendly, more beautiful, more durable and more sustainable product portfolio.

<https://en.kopperchem.com/>

# MINE

## 01 METAL EXTRACTANT

### Copper Extractant

- Mextral® 54-100
- Mextral® CLX50
- Mextral® AN-200
- Mextral® AN-100
- Mextral® 5050H
- Mextral® 5887H
- Mextral® 9890H
- Mextral® 5850H
- Mextral® 5540H
- Mextral® 5530H
- Mextral® 5510H
- Mextral® 9790H
- Mextral® 622H
- Mextral® 5910H
- Mextral® 5774H
- Mextral® 5640H
- Mextral® 860H-IC
- Mextral® 84-IC
- Mextral® 984H-C
- Mextral® 860H
- Mextral® 84H
- Mextral® 973H
- Mextral® 984H

### LITHIUM EXTRACTANT

- Mextral® 3938H
- Mextral® 3939H

### COBALT AND NICKEL EXTRACTANT FOR SPECIAL EFFECT

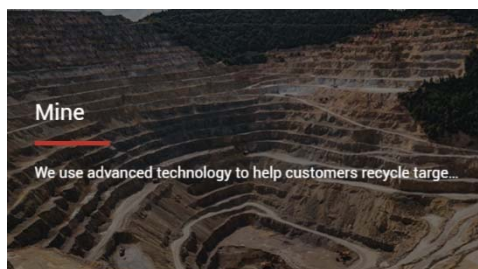
- Mextral® 6104H
- Mextral® 6103H
- Mextral® 63H

### OTHER EXTRACTANT

- Mextral® DT100
- Mextral® 272P
- Mextral® 336A
- Mextral® 20PP
- Mextral® 50PP
- Mextral® V10

## 02 MINERAL FLOTATION TECHNOLOGY

- Flotilla® 103
- Flotilla® 102
- Flotilla® 704
- Flotilla® 601
- Flotilla® 701
- Flotilla® 703
- Flotilla® 402
- Flotilla® 501
- Flotilla® 303
- Flotilla® 304
- Flotilla® 401
- Flotilla® 106
- Flotilla® 201



- Flotilla® 105

### 03 ACID MIST SUPPRESSANT

- Famigo® FS-101

## Oil Field



## New Energy

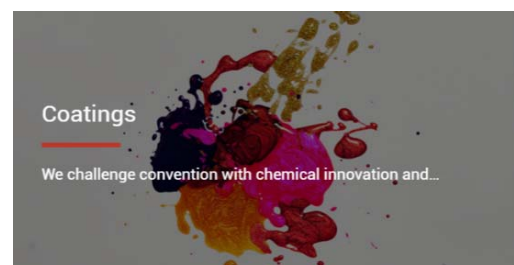
### LITHIUM EXTRACTANT

- Mextral® 3936H
- Mextral® 3989H



## Coating

- Gemibola® 1000
- Gemibola® 700
- Gemibola® 800
- Gemibola® 941

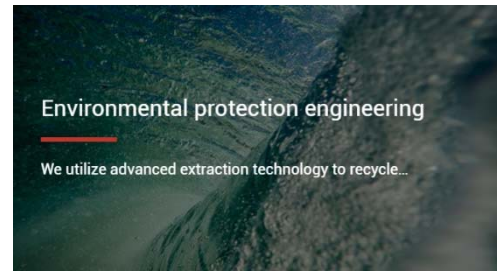




# Enviromental Protection Engineering

## COPPER EXTRACTANT

- Mextral® CLX50
- Mextral® AN-200
- Mextral® 54-100
- Mextral® AN-100
- Mextral® 5050H
- Mextral® 9890H
- Mextral® 5887H
- Mextral® 5530H
- Mextral® 5540H
- Mextral® 9790H
- Mextral® 5510H
- Mextral® 5520H
- Mextral® 5774H
- Mextral® 622H
- Mextral® 984H-C
- Mextral® 84-IC
- Mextral® 860H-IC
- Mextral® 5910H
- Mextral® 860H
- Mextral® 5850H
- Mextral® 84H
- Mextral® 5640H
- Mextral® 984H
- Mextral® 973H



# MINE

Professional customization, technology innovation, consumption & emission reduction, green and environmental protection.

We utilize advanced extraction and mineral flotation technology to help customers recover target metals from minerals, and customize extraction agents, flotation agents and professional technical services to achieve efficient and low-cost green production line and solve the problems of high energy consumption, high pollution and high cost problems existing in current pyrometallurgy and traditional technologies.

We have a variety of mining functional chemicals. The types of extractants cover copper, nickel, cobalt, lithium, zinc, germanium, molybdenum, tungsten, gallium, dilute gas, manganese, magnesium etc., and the corresponding extraction technology has been developed to help customers improve efficiency. For copper ore, copper sulfide ore, scheelite, black tungsten ore, tin ore, rare earth ore, lead-zinc ore, pyrite and other minerals that are difficult to be extracted, we have developed efficient flotation agents and technology. A new generation of acid mist suppressant has been developed, which can effectively eliminate acid mist and improve the electrowinning working environment.

## **01 METAL EXTRACTANT**

According to the situation and requirements of different mining enterprises, a series of metal extractants and extraction technologies have been developed to help customers achieve green production, improve efficiency and develop in a coordinated way.

We drive industry development by extraction chemistry, helping customers extract metals from mines and recover metals from urban mines with leading extraction technology, solving the problems of high energy consumption, high pollution and high costs in the traditional smelting industry. While helping customers obtain rich interests reward, we practice the spiritual concept of national green and environmental protection development.

We provide a complete range of extractants, including dozens of metal extractants such as copper, nickel, cobalt, zinc, uranium, germanium, molybdenum, tungsten, manganese, magnesium, gallium, lithium, etc.

## **COPPER EXTRACTANT**

Mextral® copper extractants are compounded by active ingredients, modifiers, surfactants, diluents, etc. They have the advantages of good performance, fast speed, high selectivity, large capacity, and good phase separation effect. It is widely used in the extraction of copper in mine acid leaching solution, electroplating waste solution, alkaline etching solution industrial wastewater.

### **Mextral® 54-100**

The extractant has the characteristics of low viscosity, large extraction capacity and easy stripping. It is suitable for the extraction of copper under ammonia conditions. It can effectively extract copper from mine ammonia leaching solution and alkaline etching solution of circuit board, which has good environmental protection and economic benefits.

### **Mextral® CLX50**

It is suitable for the extraction of copper and palladium in chloride solutions. The extraction efficiency is independent of the pH value of the feed solution. It is especially suitable for the extraction of copper in acidic etching solution. It can be stripped with water, and has the advantages of high stripping efficiency, less loss of extractant, and good phase separation.

### **Mextral® AN-200**

It is a special anti-nitrification extractant with stable performance. It can be applied to the extraction of copper from mine acid leaching solution, especially suitable for the extraction of copper from leaching solution containing nitrate under the condition of medium-high pH conditions.

### **Mextral® AN-100**

It is a special anti-nitrification extractant with stable performance. It can be applied to the extraction of copper from mine acid leaching solution, especially suitable for the extraction of copper from leaching solution containing nitrate under the condition of medium-low pH conditions

### **Mextral® 5050H**

Strong extraction capacity and good Cu/Fe selectivity, it can be applied to the extraction of copper from mine acid leaching solution, and is more suitable for copper extraction under medium-low pH conditions.

### **Mextral® 5887H**

With excellent anti-oxidation capacity, it is used to extract copper from acidic solutions containing oxidizing substances, reducing the loss of extractants and prolonging service life.

**Mextral® 9890H**

It has good stability in use, and strong net copper transfer capacity. It can be used to extract and separate copper from mine acid leaching solution, and is more suitable for copper extraction under medium pH conditions.

**Mextral® 5850H**

It has good extraction effect, fast phase separation, less entrainment, high Cu/Fe selectivity, and good stability. As the special extractant for copper, it is mainly used for the extraction of copper from the mine acid leaching solution and electroplating waste solution. It is more suitable for copper extraction under medium pH conditions.

**Mextral® 5540H**

It has the advantages of fast extraction kinetics, good phase separation, high Cu/Fe selectivity, strong copper transfer ability, and good stability in use. It can be used for copper extraction from mine acid leaching solution and suitable for copper extraction under medium-low pH conditions.

**Mextral® 5530H**

Strong extraction capacity, fast extraction kinetics, good phase separation, and Cu/Fe selectivity. It can be used for copper extraction from mine acid leaching solution, and is suitable for medium-low pH feed solution.

**Mextral® 5510H**

It has the advantages of strong extraction capacity, good stripping performance, high copper transfer rate, good stability, high Cu/Fe selectivity, less organic phase loss, low aqueous phase entrainment. It is suitable for copper extraction under medium acidity.

**Mextral® 5520H**

Good extraction effect, fast extraction kinetics, good stability, fast phase separation. It is suitable for copper extraction under medium-low pH conditions.

**Mextral® 9790H**

It combines the advantages of high extraction efficiency and high stripping efficiency, with good stability and strong net copper transfer capacity. It is widely used for the extraction of copper from mine acid leaching solution, and more suitable for the extraction of copper under the medium-high pH conditions.

**Mextral® 622H**

It can form water-insoluble complex with copper ions and is mainly used for the extraction of copper in acidic medium. It has stable performance in use, high Cu/Fe selectivity, and is suitable for copper extraction under medium-low pH conditions.

**Mextral® 5910H**

Stable performance in use, high Cu/Fe selectivity, fast phase separation, less entrainment, strong copper transfer ability, It is widely used in the extraction of copper from mine acid leaching solution, especially suitable for medium-low concentration feed solution and leaching solution with low acidity.

**Mextral® 5774H**

Good extraction effect, fast phase separation, less entrainment, high net copper transfer, good extraction performance under medium pH conditions, high Cu/Fe selectivity. It is widely used for the extraction of copper from mine leaching solution.

**Mextral® 5640H**

It has high Cu/Fe selectivity, strong extraction ability, stable performance, fast phase separation and less entrainment. It is a special extractant for copper and is widely used in the extraction of copper from acid leaching solutions of copper mines. It is more suitable for copper extraction under medium-low pH conditions.

**Mextral® 860H-IC**

It is a strong copper extractant, capable of extracting copper at lower pH. It can also be used to extract zinc from ammoniacal solutions. Used in conjunction with Mextral 84H or Mextral 84-IC, it can meet the needs of copper extraction from various leaching solutions.

**Mextral® 84-IC**

It has good stability, strong copper transfer ability, and easy to strip. Used in conjunction with Mextral860H or Mextral860H-IC, it can meet the needs of copper extraction from various leaching solutions. It can also be used to extract metals such as nickel and zinc, and is more suitable for the extraction of copper under higher pH conditions.

#### **Mextral® 984H-C**

It is widely used for copper extraction from mine acid leaching solution and electroplating sludge leaching solution, and also for copper recovery from industrial wastewater. It is more suitable for the extraction of copper under medium pH conditions.

#### **Mextral® 860H**

As the copper extractant with strong extraction ability, it is especially suitable for extracting copper at low Ph. Used in conjunction with Mextral 84-IC or Mextral 84H, it can meet the needs of copper extraction from various leaching solutions.

#### **Mextral® 84H**

It is mainly used for the extraction of non-ferrous metals such as copper and nickel. It has the advantages of high stripping efficiency, low stripping acidity, large copper transfer, and good stability in use.

#### **Mextral® 973H**

It has strong extraction ability, good Cu/Fe selectivity, and fast phase separation. It has the advantages of strong extraction ability and good stripping performance, and is more suitable for copper extraction under medium-low pH conditions.

#### **Mextral® 984H**

It is a high-efficiency copper extractant with good stability. It has the advantages of strong extraction ability, good stripping performance, and strong transfer ability of net copper. It is more suitable for copper extraction under moderate acidity conditions.

#### **LITHIUM EXTRACTANT**

Following the trend of the times, KopperChem has developed a series of lithium extractants based on previous work.

We are committed to solving problems of phase separation and extractant loss in the lithium extraction process, and help customers to improve production efficiency and reduce costs.

#### **Mextral® 3938H**

It's designed for the extraction of lithium from other alkalis after earth alkalis, for example magnesium and calcium, are removed.

#### **Mextral® 3939H**

It has less water solubility and better stability, whose lithium extraction is performed in neutral aqueous solutions, which can decrease the operating cost of the SX plant, mainly applied to the special extraction of low concentration lithium in the waste solutions.

#### **COBALT & NICKEL EXTRACTANT FOR SPECIAL EFFECT**

Mextral® cobalt and nickel extractants for special effect can selectively extract cobalt and nickel from weakly acidic solutions containing manganese, magnesium, and calcium to achieve efficient separation and solve technical problems that are difficult for traditional extractants. It can significantly simplify the production process and obtain better product indicators and economic benefits.

#### **Mextral® 6104H**

It can be used for the separation of cobalt, nickel and impurities such as calcium, magnesium and manganese. It has good cobalt and nickel stripping performance, simplifies the separation process, and can obtain high-purity nickel and cobalt products. It is a new generation of nickel and cobalt special extractant.

#### **Mextral® 6103H**

It can be used to extract cobalt, nickel, zinc, germanium, molybdenum, uranium and other metals. It has the advantages of fast extraction kinetics, good selectivity, fast phase separation and less entrainment. It can significantly improve the separation coefficient of cobalt, zinc with calcium, manganese and magnesium.

#### **Mextral® 63H**

It can be used to extract nickel, cobalt, zinc, germanium, molybdenum, uranium and other metals. As a kinetic additive and synergistic extractant for other chelating extractants, it has the advantages of high extraction efficiency, fast extraction kinetics, and can significantly improve the separation coefficient of nickel, cobalt, zinc with calcium, manganese, and magnesium.

#### **OTHER EXTRACTANT**

#### **Mextral® DT100**

It is a special diluent for extraction, which can effectively improve the physical properties of the organic phase, reduce the viscosity of the organic phase, and improve the phase separation effect. It is environmentally friendly and non-toxic, a special diluent for extraction with excellent comprehensive indexes.

#### **Mextral® 272P**

It has a good Co/Ni separation coefficient, and is often used for Co/Ni extraction and separation; it can also be used for the extraction of rare earth, molybdenum, etc.

#### **Mextral® 336A**

It is widely used in the extraction of cadmium, cobalt, hafnium, iron, niobium, tungsten, uranium, vanadium, zinc, or the extraction of organic or inorganic acids such as bisphenol A, amino acids, p-aminobenzene sulfonic acid, etc. from industrial wastewater, production of various anionic oil-soluble salts and intermediates for the preparation of surfactants, dyes, pigments, etc. This extractant can extract a variety of complex anions, so it can be applied to the extraction and separation of tungsten, molybdenum, vanadium, sulfuric acid, phosphoric acid, arsenate, etc.

#### **Mextral® 20PP**

It can be used for extraction and separation of nickel and cobalt and rare earth elements, zinc, molybdenum, indium, germanium, gallium, etc. and is also commonly used for removal of impurities before nickel and cobalt extraction. It has stable performance in use. It is an industrial extractant widely used in rare earth element separation and nonferrous metal extraction.

#### **Mextral® 50PP**

It can be used for extraction and separation of cobalt and nickel; extraction of rare earth metals and non-ferrous metals such as indium, rhodium and vanadium; extraction of zirconium and hafnium in hydrochloric acid medium.

#### **Mextral® V10**

It can be used for the extraction of copper, cobalt, nickel, zinc, cesium, rare earth and other metals, and can also form a synergistic extraction system with other extractants to improve the separation coefficient and extraction rate between metal ions.

### **02 MINERAL FLOTATION TECHNOLOGY**

Flotilla® series flotation agents are specifically designed for mining customers by KopperChem which include collectors, depressants and other chemical reagents. They are formulated according to different properties of mines, showing high selectivity and collection capacity. It can meet the flotation requirements of various ores, and can be used for the flotation of copper sulfide, lead, zinc, nickel, precious metal ores and the flotation of tin, titanium, tungsten, rare earth oxide ores, and at the same time, KopperChem provides solution for preferential flotation of copper molybdenum, copper lead, etc. by its special non-toxic depressants.

We utilize the cutting-edge knowledge of chemistry to provide high-efficient and environmentally friendly flotation agents and technology, reduce energy consumption and carbon emissions, improve production efficiency, and improve customers' profit with low cost.

Product portfolio covers flotation agents for various minerals including metallic ores such as malachite, chalcopyrite, scheelite, galena, sphalerite, molybdenum and pyrite, etc.

#### **Flotilla® 103**

It is a chelating collector, suitable for oxide minerals such as scheelite, stannite, fluorite and ilmenite. The selectivity is the same as that of conventional sodium alkyl hydroxamate, but the collecting ability is improved, and the foam is not viscous and easy to defoam.

#### **Flotilla® 102**

It is a coal collector with strong collecting ability with low dosage, and high flash point (>160 °C). It is not a dangerous chemical, safe and environmentally friendly to use.

#### **Flotilla® 704**

It is an efficient pyrite and pyrrhotite depressant for semi massive and massive sulfide ores, and can replace lime at low dosage, only 1/100-1/30 of lime, suitable pyrite depressant in low pH sulfide flotation.

#### **Flotilla® 601**

It is a frother and widely used in flotation with strong and stable froth.

#### **Flotilla® 701**

It is an efficient copper depressant in Cu-Mo separation, which could replace ~40% of sodium sulfide or sodium thioglycolate. It does not affect the collection of molybdenum, and it is a non-hazardous chemical.

#### **Flotilla® 703**

It is an efficient depressant in Cu-Pb separation, which could replace dichromate. Basically it does not affect the collection of copper, and it is a non-hazardous chemical.



**Flotilla® 402**

It is a novel and environmentally friendly thiocarbamate collector with superior selectivity for pyrite, suitable for low pH flotation and can reduce the dosage of lime, having a strong ability to collect copper sulfide with low dosage.

**Flotilla® 501**

It is a white crystal and suitable collector for galena flotation at high pH, and collecting ability is stronger than xanthate and DTP with faster flotation kinetics and higher selectivity.

**Flotilla® 303**

It is an effective collector for gold, silver, copper and zinc sulfide minerals with low collecting ability for pyrite in alkaline circuit. It only has very weak foaming properties.

**Flotilla® 304**

It is a new and high-efficiency collector for gold, silver, copper and zinc sulfide minerals with low collecting ability for pyrite in alkaline circuit, having weak foaming properties.

**Flotilla® 401**

It is an excellent collector for sphalerite, galena and chalcopyrite minerals with high selectivity and special separation efficiency.

**Flotilla® 106**

Carboxylic collector is used in flotation of oxide minerals such as fluorite, phosphate, etc. with higher selectivity.

**Flotilla® 201**

It is widely used in flotation of easy-to-process sulfide minerals and differential flotation of complex sulfide minerals, also can be used as precipitant in hydro-metallurgy and vulcanizing accelerator of rubber.

**Flotilla® 105**

Molybdenum collector shows higher Mo recovery (2-4% recovery increase) with high flash point. It is not a dangerous chemical, safe to store and ship than conventional diesel collector.

**03 ACID MIST SUPPRESSANT**

During the electrowinning process of chromatic metals such as copper and zinc, the gas generated will rupture on the liquid surface and bring out a large amount of acid mist, which will cause serious results to the health of workers, the surrounding environment and production equipment. The Famigo® acid mist suppressant series independently developed by KopperChem is a special surfactant, which can effectively reduce the acid mist generated during the electrowinning process, and the acid mist suppression rate at very low dosage over 80%, the effect is remarkable and better than that of similar overseas products. It has the advantages of extremely low cost, no adverse impact on the quality of electrowinning products, and no toxicity to the environment, providing users with a perfect acid mist solution.

We apply chemistry to safe production and help customers maximize the creation of a safer, more efficient and sustainable production environment, reducing environmental pollution and protecting the health of employees. We do our best to help customers turn the acid-smoked electrowinning workshop into a fresh and beautiful production line.

Exclusively acid mist suppressant: it can reduce the acid mist concentration in the electrodeposition workshop to an extremely low level, and can be used in the electrodeposition workshop of copper, zinc, nickel, cobalt, manganese and other metals to eliminate acid mist.

**Famigo® FS-101**

It is a fairly stable fluorocarbon, which is directly used in the electrowinning solution. By reducing the surface tension of the electrowinning solution, it suppresses the generation of acid mist, improves the air quality of the electrowinning workshop, provides occupational health protection, and increases the service life of the equipment. It is mainly used in the electrowinning section of copper hydrometallurgy, and can be used with floating plastic pellets. It will not produce large amount of foam on the surface of the electrowinning solution, avoids the loss of acid mist suppressant, and does not have any adverse effects on the solvent extraction and electrowinning process.

## Oil Field

Improve oil displacement efficiency, stabilize and increase crude oil production, reduce costs, and ensure safety

Relying on our professional advantages in chemistry, we have made achievements in oil field special chemicals, and developed a variety of oil field chemicals with special surfactants as the main raw materials, which can provide customers with efficient, reliable and convenient products and solutions.

It mainly covers displacement agents for oil production engineering used in tertiary oil recovery. It can improve the wettability, permeability, diffusivity of formation rocks and the fluidity of crude oil and further improve oil displacement efficiency on secondary oil recovery and increase crude oil production.

For the metal corrosion in the acidizing process of oil-water wells, we have developed "mesophase" inhibitor, which can be firmly adsorbed on the steel surface and it is difficult for high temperature and concentrated hydrochloric acid to destroy it. In addition, it can protect the equipment and pipelines from being severely corroded during the acidizing process, and the damage to the formation caused by the metal iron eroded by acid then becomes ions, so we can reduce the cost of oil production and help customers stabilize and increase production.

We use the mechanism of emulsification, demulsification and adsorption viscosity reduction to develop heavy oil gathering viscosity reducer that has good effect and simple process, and can help customers improve transportation efficiency, reduce costs, and improve production safety and reliability.

## New Energy

**Turn waste into wealth, utilize efficiently, reduce consumption and emission, promote development.**

Relying on experiences in extraction field, KopperChem devotes itself to the research and development of new energy related metals such as lithium, cobalt, nickel, vanadium and other mineral resources. We have unique technologies and strengths in lithium battery cascade utilization and recovery, catalyst metal recovery, resource recycling of waste electronic products, and synthesis of battery-related solvents and chemical reagents required for electrolytes.

### LITHIUM EXTRACTANT

Following the trend of the times, KopperChem has developed a series of lithium extractants based on previous work. We are committed to solving problems of phase separation and extractant loss in the lithium extraction process, and help customers to improve production efficiency and reduce costs.

#### **Mextral® 3936H**

It is suitable for extracting lithium from salt lake brine with low magnesium (calcium) lithium content ratio, ore leaching solution, lithium containing wastewater and waste lithium batteries.

#### **Mextral® 3989H**

It is suitable for extracting lithium from salt lake brine with high magnesium (calcium) lithium content ratio, ore leaching solution, lithium containing wastewater and waste lithium batteries.

### COBALT AND NICKEL EXTRACTANT FOR SPECIAL EFFECT

Mextral® series cobalt and nickel extractants for special effect can selectively extract cobalt and nickel from weakly acidic solutions containing manganese, magnesium, and calcium to achieve efficient separation and solve technical problems that are difficult for traditional extractants. It can significantly simplify the production process and obtain better product indicators and economic benefits.

#### **Mextral® 6104H**

It can be used for the separation of cobalt, nickel and impurities such as calcium, magnesium and manganese. It has good cobalt and nickel stripping performance, simplifies the separation process, and can obtain high-purity nickel and cobalt products. It is a new generation of nickel and cobalt special extractant.

#### **Mextral® 6103H**

It can be used to extract cobalt, nickel, zinc, germanium, molybdenum, uranium and other metals. It has the advantages of fast extraction kinetics, good selectivity, fast phase separation and less entrainment. It can significantly improve the separation coefficient of cobalt, zinc with calcium, manganese and magnesium.

#### **Mextral® 63H**

It can be used to extract nickel, cobalt, zinc, germanium, molybdenum, uranium and other metals. As a kinetic additive and synergistic extractant for other chelating extractants, it has the advantages of high extraction efficiency, fast extraction kinetics, and can significantly improve the separation coefficient of nickel, cobalt, zinc with calcium, manganese, and magnesium.

## COATING

- Water-based environmental protection
- Green development
- Excellent performance
- Wide application range

Based on the existing surfactants, we have developed a series of special surfactants, including Gemini surfactants and modified Gemini surfactants. It is mainly used in water-based coatings and inks, so it can promote environmental protection and green development.

Conventional products show excellent properties in wetting, defoaming and dispersion. In addition to the excellent performance of conventional products, the modified products have lower static and dynamic surface tension, can be used for high-speed and uniform construction, and broaden the application conditions of coatings and inks. It can also better wet low surface energy materials, increase the application scope of coatings and inks, and promote the development of the industry.

#### **Gemibola® 1000**

products are a series of modified Gemini super wetting agents. The static surface tension and dynamic surface tension are lower than those of conventional Gemini surfactants. It can effectively wet the substrate with low surface energy and solve the wetting problem in the process of high-speed and uniform construction, such as coating.

#### **Gemibola® 700**

products are a series of modified Gemini dispersing wetting agents. They provide dual functions of wetting and dispersion. They can adsorb to the interface between pigment and solvent quickly, form spatial effect, prevent pigment agglomeration and precipitation, and play the function of dispersion. Furthermore, they can improve the color development, prevent color floating and enhance color fastness.

#### **Gemibola® 800**

Products are a series of modified Gemini low foam wetting agents. The hydrophilic group of the products are increased, so their solubility in water is improved, and the wetting and defoaming function are better. According to customer demand, we can customize a series of low foaming and defoaming wetting agents. They mainly act on the wetting of the substrate and promotes the adhesion between the coating and the substrate.

#### **Gemibola® 941**

is a Gemini nonionic surfactant, wetting and defoaming agent. It can provide low dynamic surface tension, which is conducive to high-speed construction. It is good at foam control and flow promote. It can provide three functions of substrate wetting, defoaming and dispersing. It is used for coatings, inks, adhesives, printing fountain solutions, etc. in water system or alcohol system.

### **ENVIRONMENTAL ENGINEERING**

*Reduce resource loss, achieve emission standards, and create a better environment*

Mextral® series metal extractants can be used in the treatment of electroplating wastewater, pickling wastewater and PCB circuit board etching wastewater to recover valuable metals (copper, zinc, nickel, silver, gold, etc.) and toxic and harmful elements (chromium, cadmium, Lead, arsenic, etc.). It not only can discharge wastewater up to standard, but also make recycled metal into high-value products, and create good economic benefits for customers.

Famigo® series acid mist suppressants are used to inhibit the acid mist generated in the metal electrowinning and electroplating process, reducing the acid consumption of workshops, improving the working environment, and benefiting the health of operators. Eliminating acid mist emissions from workshops can also prevent acid rain and create a livable living environment.

#### **Copper Extractant**

Mextral® copper extractants are compounded by active ingredients, modifiers, surfactants, diluents, etc. They have the advantages of good performance, fast speed, high selectivity, large capacity, and good phase separation effect. It is widely used in the extraction of copper in mine acid leaching solution, electroplating waste solution, alkaline etching solution industrial wastewater.

#### **Mextral® CLX50**

It is suitable for the extraction of copper and palladium in chloride solutions. The extraction efficiency is independent of the pH value of the feed solution. It is especially suitable for the extraction of copper in acidic etching solution. It can be stripped with water, and has the advantages of high stripping efficiency, less loss of extractant, and good phase separation.

#### **Mextral® AN-200**

It is a special anti-nitrification extractant with stable performance. It can be applied to the extraction of copper from mine acid leaching solution, especially suitable for the extraction of copper from leaching solution containing nitrate under the condition of medium-high pH conditions.

#### **Mextral® 54-100**

The extractant has the characteristics of low viscosity, large extraction capacity and easy stripping. It is suitable for the extraction of copper under ammonia conditions. It can effectively extract copper from mine ammonia leaching solution and alkaline etching solution of circuit board, which has good environmental protection and economic benefits.

**Mextral® AN-100**

It is a special anti-nitrification extractant with stable performance. It can be applied to the extraction of copper from mine acid leaching solution, especially suitable for the extraction of copper from leaching solution containing nitrate under the condition of medium-low pH conditions.

**Mextral® 5050H**

Strong extraction capacity and good Cu/Fe selectivity, it can be applied to the extraction of copper from mine acid leaching solution, and is more suitable for copper extraction under medium-low pH conditions.

**Mextral® 9890H**

It has good stability in use, and strong net copper transfer capacity. It can be used to extract and separate copper from mine acid leaching solution, and is more suitable for copper extraction under medium pH conditions.

**Mextral® 5887H**

With excellent anti-oxidation capacity, it is used to extract copper from acidic solutions containing oxidizing substances, reducing the loss of extractants and prolonging service life.

**Mextral® 5530H**

Strong extraction capacity, fast extraction kinetics, good phase separation, and Cu/Fe selectivity. It can be used for copper extraction from mine acid leaching solution, and is suitable for medium-low pH feed solution.

**Mextral® 5540H**

It has the advantages of fast extraction kinetics, good phase separation, high Cu/Fe selectivity, strong copper transfer ability, and good stability in use. It can be used for copper extraction from mine acid leaching solution and suitable for copper extraction under medium-low pH conditions.

**Mextral® 9790H**

It combines the advantages of high extraction efficiency and high stripping efficiency, with good stability and strong net copper transfer capacity. It is widely used for the extraction of copper from mine acid leaching solution, and more suitable for the extraction of copper under the medium-high pH conditions.

**Mextral® 5510H**

It has the advantages of strong extraction capacity, good stripping performance, high copper transfer rate, good stability, high Cu/Fe selectivity, less organic phase loss, low aqueous phase entrainment. It is suitable for copper extraction under medium acidity.

**Mextral® 5520H**

Good extraction effect, fast extraction kinetics, good stability, fast phase separation. It is suitable for copper extraction under medium-low pH conditions.

**Mextral® 5774H**

Good extraction effect, fast phase separation, less entrainment, high net copper transfer, good extraction performance under medium pH conditions, high Cu/Fe selectivity. It is widely used for the extraction of copper from mine leaching solution.

**Mextral® 622H**

It can form water-insoluble complex with copper ions and is mainly used for the extraction of copper in acidic medium. It has stable performance in use, high Cu/Fe selectivity, and is suitable for copper extraction under medium-low pH conditions.

**Mextral® 984H-C**

It is widely used for copper extraction from mine acid leaching solution and electroplating sludge leaching solution, and also for copper recovery from industrial wastewater. It is more suitable for the extraction of copper under medium pH conditions.

**Mextral® 84-IC**

It has good stability, strong copper transfer ability, and easy to strip. Used in conjunction with Mextral®860H or Mextral®860H-IC, it can meet the needs of copper extraction from various leaching solutions. It can also be used to extract metals such as nickel and zinc, and is more suitable for the extraction of copper under higher pH conditions.

**Mextral® 860H-IC**

It is a strong copper extractant, capable of extracting copper at lower pH. It can also be used to extract zinc from ammoniacal solutions. Used in conjunction with Mextral®84H or Mextral® 84-IC, it can meet the needs of copper extraction from various leaching solutions.

**Mextral® 5910H**

Stable performance in use, high Cu/Fe selectivity, fast phase separation, less entrainment, strong copper transfer ability, It is widely used in the extraction of copper from mine acid leaching solution, especially suitable for medium-low concentration feed solution and leaching solution with low acidity.

**Mextral® 860H**

As the copper extractant with strong extraction ability, it is especially suitable for extracting copper at low Ph. Used in conjunction with Mextral 84-IC or Mextral 84H, it can meet the needs of copper extraction from various leaching solutions.

**Mextral® 5850H**

It has good extraction effect, fast phase separation, less entrainment, high Cu/Fe selectivity, and good stability. As the special extractant for copper, it is mainly used for the extraction of copper from the mine acid leaching solution and electroplating waste solution. It is more suitable for copper extraction under medium pH conditions.

**Mextral® 84H**

It is mainly used for the extraction of non-ferrous metals such as copper and nickel. It has the advantages of high stripping efficiency, low stripping acidity, large copper transfer, and good stability in use.

**Mextral® 5640H**

It has high Cu/Fe selectivity, strong extraction ability, stable performance, fast phase separation and less entrainment. It is a special extractant for copper and is widely used in the extraction of copper from acid leaching solutions of copper mines. It is more suitable for copper extraction under medium-low pH conditions.

**Mextral® 984H**

It is a high-efficiency copper extractant with good stability. It has the advantages of strong extraction ability, good stripping performance, and strong transfer ability of net copper. It is more suitable for copper extraction under moderate acidity conditions.

**Mextral® 973H**

It has strong extraction ability, good Cu/Fe selectivity, and fast phase separation. It has the advantages of strong extraction ability and good stripping performance, and is more suitable for copper extraction under medium-low pH conditions.

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