

## **Mining Chemicals - A Global Market Overview**

Market Report | 2025-04-08 | 348 pages | Industry Experts

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### **Report description:**

Mining Chemicals Market Trends and Outlook

Mining Chemicals comprise a class of specialty chemicals utilized by the mining industry for enhancing the efficiency and productivity of processes, such as mineral extraction, processing and water treatment. These chemicals play crucial roles in separating valuable minerals from ores, increasing the purity of metals & minerals and facilitating various stages of the mining process. Some of the most commonly used Mining Chemicals include frothers (for enhancing the flotation process by creating bubbles that help separate minerals), collectors (for helping minerals attach to the bubbles during flotation), flocculants (for assisting in the separation of solids from liquids & improving efficiency in water and wastewater treatment), solvent extractants (employed in solvent extraction, which is a process to separate metals from solutions), grinding aids (for improving the efficiency of grinding ores) and explosives (used for blasting tunnels and other excavation works).

The global market for Mining Chemicals is estimated at US\$11.8 billion in 2024 and is projected to reach US\$16.5 billion by 2030 at a CAGR of 5.8% between the two years. The demand for Mining Chemicals is being driven by a number of factors, which include growing demand for metals & minerals, expansion of mining activities, especially in emerging economies, technological innovations in mining techniques, such as hydrometallurgy and bioleaching, environmental regulations & sustainability initiatives, fluctuations in commodity prices, urbanization & infrastructure development and energy transition & a shift to electric vehicles.

The mining industry is increasingly adopting bio-based and renewable chemicals with a focus on sustainability. These eco-friendly alternatives, obtained from natural sources, such as plant extracts, microbes and bio-polymers, are comparable in performance to traditional chemicals and offer the scope to reduce dependence on fossil fuels and minimize carbon footprint. With mining companies seeking greener alternatives to conventional chemicals, the demand for bio-based flotation reagents, solvent extraction agents and flocculants has been growing.

Nanotechnology has opened new doors in the area of mining chemicals by enabling precise control over particle size, surface properties and reactivity. Nanoparticles, nanofibers and nanocomposites are some varieties of nanomaterials that are being incorporated into mining processes for improving mineral recovery and flotation kinetics, thereby minimizing ecological impacts. Efficient metal ion removal and wastewater treatment are being undertaken using nanostructured adsorbents and catalytic

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materials, resulting in higher selectivity and efficiency vis-a-vis conventional methods.

### Mining Chemicals Regional Market Analysis

Asia-Pacific represents the leading global market for Mining Chemicals, estimated to account for a share of 39% in 2024, which is also slated to post the fastest CAGR of 7.4% over the 2024-2030 analysis period. Countries, such as China and India are among the largest worldwide producers of coal, gold and other metals and minerals and the region is well supported with more than 10,000 mines and extensive mineral processing activities. Rapid industrialization, urbanization and growing demand for metals and minerals in several countries across the region are further boosting the market for mining chemicals needed to extract them.

### Mining Chemicals Product Type Market Analysis

With an estimated 2024 share of 23.6%, Grinding Aids form the largest category within the overall Mining Chemicals market. These chemicals primarily find application in enhancing the efficiency of the grinding process in mineral processing by reducing energy consumption and improving the release of valuable minerals from ores. In general, Grinding Aids comprise organic chemicals, such as polyols, amines or glycols (e.g., triethanolamine or ethylene glycol), which function by altering the surface properties of particles. This results in minimizing friction and enhancing mill throughput. On the other hand, the global market for Flocculants is likely to be the fastest growing, with a compounded annual rate of 6.6% during 2024-2030. Flocculants are a vital category of mining chemicals used mainly for solid-liquid separation processes, such as tailings management, water clarification and mineral concentrate thickening. Growing environmental regulations, need for conserving water and the push for sustainable management of tailings is propelling the market for Flocculants. Anionic, cationic and nonionic are the three major categories of Flocculants, among which Anionic Flocculants (often polyacrylamide-based) are expected to register fastest growth. This can be attributed to their extensive use in treating mineral processing slurries, specifically in high-volume applications, such as coal, copper, gold and iron ore mining, where they offer unparalleled performance in aggregating fine particles for efficient settling and dewatering.

### Mining Chemicals Mineral Type Market Analysis

The demand for Mining Chemicals used to extract Base Metals dominates the overall market with an estimated share of over 58% in 2024. These metals normally include copper, lead, zinc, nickel and at times aluminum or tin, all of which find wide-ranging applications in several key industries. Copper is the leading base metal for mining chemical consumption owing to its massive production volume and the extensive processing needed to extract it from its ores. Copper mining often involves complex sulfide ores (e.g., chalcopyrite), which require significant amounts of chemicals, such as xanthates for flotation, sulfuric acid for leaching and flocculants for tailings management. The mining of zinc and lead, often mined together from polymetallic deposits, also needs large quantities of mining chemicals, especially for flotation to separate the metals from gangue.

Nickel is another important base metal that makes use of Mining Chemicals, such as sulfuric acid in high-pressure acid leaching (HPAL) for laterite ores. As regards growth, though, the Mining Chemicals for Rare Earth Metals (REMs) is expected to be the fastest with a forecast 2024-2030 CAGR of 7.2%. This category comprises a group of 17 elements, including lanthanides, scandium and yttrium, which are crucial for high-tech applications, such as magnets for electric vehicles (EVs), wind turbines and electronics. The growth in demand for Mining Chemicals for REMs is being driven by their chemically intensive mining and beneficiation processes. Moreover, the production of REMs has surged by about 85% over the last five years because of rising demand for clean energy and advanced technologies. The processing of REMs involves complex steps, including flotation (using collectors, such as hydroxamates), leaching (often with sulfuric acid or ammonium sulfate) and solid-liquid separation using flocculants. Compared to base metals or coal, these steps are more chemical-intensive, since REMs are usually found in low concentrations and mixed with radioactive elements, such as thorium, which requires additional reagents for separation and purification.

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## Mining Chemicals Application Market Analysis

Estimated to corner a share of 60.9% in 2024, Mineral Processing is the largest application area for Mining Chemicals globally. This application is concerned with extracting valuable minerals from ores via processes that include grinding, flotation, leaching and dewatering, each of which relies heavily on specialized chemicals for enhancing efficiency and yield. In Mineral Processing, the process of flotation uses collectors (e.g., xanthates), frothers and modifiers to separate valuable minerals, such as copper and zinc sulfides from gangue. Leaching involves use of acids, such as sulfuric acid for copper or cyanide for gold to dissolve target minerals from their ores, forming a key component of hydrometallurgy. Flocculants, such as anionic polyacrylamides aggregate fine particles in tailings or concentrates to enable water recovery and waste management.

Water & Wastewater Treatment, however, is anticipated to be the fastest growing application for Mining Chemicals, the demand for which will likely post a CAGR of 6.5% over the 2024-2030 analysis period. Stringent environmental regulations, water scarcity concerns and the mining industry's push toward sustainability are some of the factors contributing to this growth. Mining processes, such as tailings management, acid mine drainage (AMD) and coal washing generate considerable quantities of wastewater that is often laden with heavy metals, sulfates and suspended solids. This water needs to be treated prior to discharge or reuse, for which chemicals, such as flocculants, coagulants, pH adjusters and biocides are required. The use of flocculants, especially of the anionic varieties, is very extensive to settle tailings and clarify water, which supports the trend of thickened tailings and dry stacking to minimize water loss.

## Mining Chemicals Market Report Scope

This global report on Mining Chemicals analyzes the market based on product type, mineral type and application for the period 2021-2030 with projections from 2024 to 2030 in terms of value in US\$. In addition to providing profiles of major companies operating in this space, the latest corporate and industrial developments have been covered to offer a clear panorama of how and where the market is progressing.

### Key Metrics

Historical Period: 2021-2023

Base Year: 2024

Forecast Period: 2024-2030

Units: Value market in US\$

Companies Mentioned: 40+

### Mining Chemicals Market by Geographic Region

North America (The United States, Canada and Mexico)

Europe (France, Germany, Italy, Russia, Spain, United Kingdom and Rest of Europe)

Asia-Pacific (Australia, China, India and Rest of Asia-Pacific)

South America (Argentina, Brazil, Chile, Peru and Rest of South America)

Middle East & Africa (South Africa and Rest of Middle East & Africa)

### Mining Chemicals Market by Product Type

Collectors

Depressants

Dilutants

Flocculants

Frothers

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- Grinding Aids
- Solvent Extractants
- Other Product Types (Incl. Antiscalants, Biocides, Coatings, Defoamers, Dust Suppressants, Lubricants & Modifiers)

#### Mining Chemicals Market by Mineral Type

- Base Metals
- Non-Metallic Minerals
- Precious Metals
- Rare Earth Metals

#### Mining Chemicals Market by Application

- Explosives & Drilling
- Mineral Processing
- Water & Wastewater Treatment
- Other Applications (Incl. Mine Haul Roads, Exploration & Analysis)

### **Table of Contents:**

#### PART A: GLOBAL MARKET PERSPECTIVE

##### 1. Introduction

- Mining Chemicals Outline
- Mining Chemicals Defined
- o□ Types of Mining Chemicals
  - Collectors
  - Depressants
  - Dilutants
  - Flocculants
  - Frothers
  - Grinding Aids
  - Solvent Extractants
  - Other Product Types
- o□ Mining Chemicals Mineral Types
  - Base Metals
  - Non-Metallic Minerals
  - Precious Metals
  - Rare Earth Metals
- o□ Mining Chemicals Applications
  - Explosives & Drilling
  - Mineral Processing
  - Water & Wastewater Treatment
  - Other Applications

##### 2. Key Market Trends

##### 3. Key Global Players

- 3M
- AECI Ltd
- Air Products and Chemicals, Inc.
- AkzoNobel NV

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- Arkema SA
- ArrMaz
- Ashland Global Holdings, Inc.
- BASF SE
- Beijing Hengju Chemical Group Corp
- Betachem (Pty) Ltd
- Charles Tennant & Co
- Cheminova A/S
- Chevron Phillips Chemical Co LLC
- Clariant AG
- Coogee Chemicals Pty. Ltd.
- CTC (Tennant Consolidated Group)
- CTC Mining (Tennant Chemicals Company Limited)
- Cytec Solvay Group
- Dyno Nobel
- Ecolab, Inc.
- Evonik Industries AG
- ExxonMobil Corp
- FMC Corp
- Huntsman Corp
- Hychem, Inc.
- Indorama Ventures Public Ltd
- Kemira Oyj
- Kimleigh Chemicals SA Pty Ltd
- Nalco Water
- Nasaco International Ltd
- Nouryon Chemicals Holding BV
- Nowata
- Orica Ltd.
- Qingdao Ruchang Mining industry Co Ltd
- Quaker Chemical Corp
- Sasol Ltd.
- Shell Chemicals
- SNF Floerger
- Solenis International LLC
- Solvay SA
- The Dow Chemical Co
- Wacker Chemie AG
- Zinkan Enterprises, Inc.

#### 4. Key Business & Product Trends

#### 5. Global Market Overview

- Global Mining Chemicals Market Overview by Type
  - o□Mining Chemicals Product Type Market Overview by Global Region
- Collectors
- Depressants
- Dilutants
- Flocculants

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- Frothers
- Grinding Aids
- Solvent Extractants
- Other Product Types (Incl. Antiscalants, Biocides, Coatings, Defoamers, Dust Suppressants, Lubricants & Modifiers)

o□ Mining Chemicals Market by Mineral Type

- Base Metals
- Non-Metallic Minerals
- Precious Metals
- Rare Earth Metals

o□ Mining Chemicals Market by Application

- Explosives & Drilling
- Mineral Processing
- Water & Wastewater Treatment
- Other Applications (Incl. Mine Haul Roads, Exploration & Analysis)

PART B: REGIONAL MARKET PERSPECTIVE

- Global Mining Chemicals Market Overview by Geographic Region

REGIONAL MARKET OVERVIEW

6. North America

- North American Mining Chemicals Market Overview by Geographic Region
- North American Mining Chemicals Market Overview by Product Type
- North American Mining Chemicals Market Overview by Mineral Type
- North American Mining Chemicals Market Overview by Application
- Country-wise Analysis of North American Mining Chemicals Market

o□ The United States

- United States Mining Chemicals Market Overview by Product Type
- United States Mining Chemicals Market Overview by Mineral Type
- United States Mining Chemicals Market Overview by Application

o□ Canada

- Canadian Mining Chemicals Market Overview by Product Type
- Canadian Mining Chemicals Market Overview by Mineral Type
- Canadian Mining Chemicals Market Overview by Application

o□ Mexico

- Mexican Mining Chemicals Market Overview by Product Type
- Mexican Mining Chemicals Market Overview by Mineral Type
- Mexican Mining Chemicals Market Overview by Application

7. Europe

- European Mining Chemicals Market Overview by Geographic Region
- European Mining Chemicals Market Overview by Product Type
- European Mining Chemicals Market Overview by Mineral Type
- European Mining Chemicals Market Overview by Application
- Country-wise Analysis of European Mining Chemicals Market

o□ France

- French Mining Chemicals Market Overview by Product Type
- French Mining Chemicals Market Overview by Mineral Type
- French Mining Chemicals Market Overview by Application

o□ Germany

- German Mining Chemicals Market Overview by Product Type

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- [ ] German Mining Chemicals Market Overview by Mineral Type
- [ ] German Mining Chemicals Market Overview by Application
- o [ ] Italy
- [ ] Italian Mining Chemicals Market Overview by Product Type
- [ ] Italian Mining Chemicals Market Overview by Mineral Type
- [ ] Italian Mining Chemicals Market Overview by Application
- o [ ] Russia
- [ ] Russian Mining Chemicals Market Overview by Product Type
- [ ] Russian Mining Chemicals Market Overview by Mineral Type
- [ ] Russian Mining Chemicals Market Overview by Application
- o [ ] Spain
- [ ] Spanish Mining Chemicals Market Overview by Product Type
- [ ] Spanish Mining Chemicals Market Overview by Mineral Type
- [ ] Spanish Mining Chemicals Market Overview by Application
- o [ ] The United Kingdom
- [ ] United Kingdom Mining Chemicals Market Overview by Product Type
- [ ] United Kingdom Mining Chemicals Market Overview by Mineral Type
- [ ] United Kingdom Mining Chemicals Market Overview by Application
- o [ ] Rest of Europe
- [ ] Rest of Europe Mining Chemicals Market Overview by Product Type
- [ ] Rest of Europe Mining Chemicals Market Overview by Mineral Type
- [ ] Rest of Europe Mining Chemicals Market Overview by Application

## 8. Asia-Pacific

- [ ] Asia-Pacific Mining Chemicals Market Overview by Geographic Region
- [ ] Asia-Pacific Mining Chemicals Market Overview by Product Type
- [ ] Asia-Pacific Mining Chemicals Market Overview by Mineral Type
- [ ] Asia-Pacific Mining Chemicals Market Overview by Application
- [ ] Country-wise Analysis of Asia-Pacific Mining Chemicals Market
- o [ ] Australia
- [ ] Australian Mining Chemicals Market Overview by Product Type
- [ ] Australian Mining Chemicals Market Overview by Mineral Type
- [ ] Australian Mining Chemicals Market Overview by Application
- o [ ] China
- [ ] Chinese Mining Chemicals Market Overview by Product Type
- [ ] Chinese Mining Chemicals Market Overview by Mineral Type
- [ ] Chinese Mining Chemicals Market Overview by Application
- o [ ] India
- [ ] Indian Mining Chemicals Market Overview by Product Type
- [ ] Indian Mining Chemicals Market Overview by Mineral Type
- [ ] Indian Mining Chemicals Market Overview by Application
- o [ ] Rest of Asia-Pacific
- [ ] Rest of Asia-Pacific Mining Chemicals Market Overview by Product Type
- [ ] Rest of Asia-Pacific Mining Chemicals Market Overview by Mineral Type
- [ ] Rest of Asia-Pacific Mining Chemicals Market Overview by Application

## 9. South America

- [ ] South American Mining Chemicals Market Overview by Geographic Region
- [ ] South American Mining Chemicals Market Overview by Product Type

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- South American Mining Chemicals Market Overview by Mineral Type
- South American Mining Chemicals Market Overview by Application
- Country-wise Analysis of South American Mining Chemicals Market
  - o□Argentina
    - Argentine Mining Chemicals Market Overview by Product Type
    - Argentine Mining Chemicals Market Overview by Mineral Type
    - Argentine Mining Chemicals Market Overview by Application
  - o□Brazil
    - Brazilian Mining Chemicals Market Overview by Product Type
    - Brazilian Mining Chemicals Market Overview by Mineral Type
    - Brazilian Mining Chemicals Market Overview by Application
  - o□Chile
    - Chilean Mining Chemicals Market Overview by Product Type
    - Chilean Mining Chemicals Market Overview by Mineral Type
    - Chilean Mining Chemicals Market Overview by Application
  - o□Peru
    - Peruvian Mining Chemicals Market Overview by Product Type
    - Peruvian Mining Chemicals Market Overview by Mineral Type
    - Peruvian Mining Chemicals Market Overview by Application
  - o□Rest of South America
    - Rest of South American Mining Chemicals Market Overview by Product Type
    - Rest of South American Mining Chemicals Market Overview by Mineral Type
    - Rest of South American Mining Chemicals Market Overview by Application
- 10. Middle East & Africa
  - Middle East & Africa Mining Chemicals Market Overview by Geographic Region
  - Middle East & Africa Mining Chemicals Market Overview by Product Type
  - Middle East & Africa Mining Chemicals Market Overview by Mineral Type
  - Middle East & Africa Mining Chemicals Market Overview by Application
  - Country-wise Analysis of Middle East & Africa Mining Chemicals Market
    - o□South Africa
      - South African Mining Chemicals Market Overview by Product Type
      - South African Mining Chemicals Market Overview by Mineral Type
      - South African Mining Chemicals Market Overview by Application
    - o□Rest of Middle East & Africa
      - Rest of Middle East & Africa Mining Chemicals Market Overview by Product Type
      - Rest of Middle East & Africa Mining Chemicals Market Overview by Mineral Type
      - Rest of Middle East & Africa Mining Chemicals Market Overview by Application
- PART C: GUIDE TO THE INDUSTRY
  - North America
  - Europe
  - Asia-Pacific
  - South America
  - Middle East & Africa
- PART D: ANNEXURE
  - RESEARCH METHODOLOGY
  - FEEDBACK

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