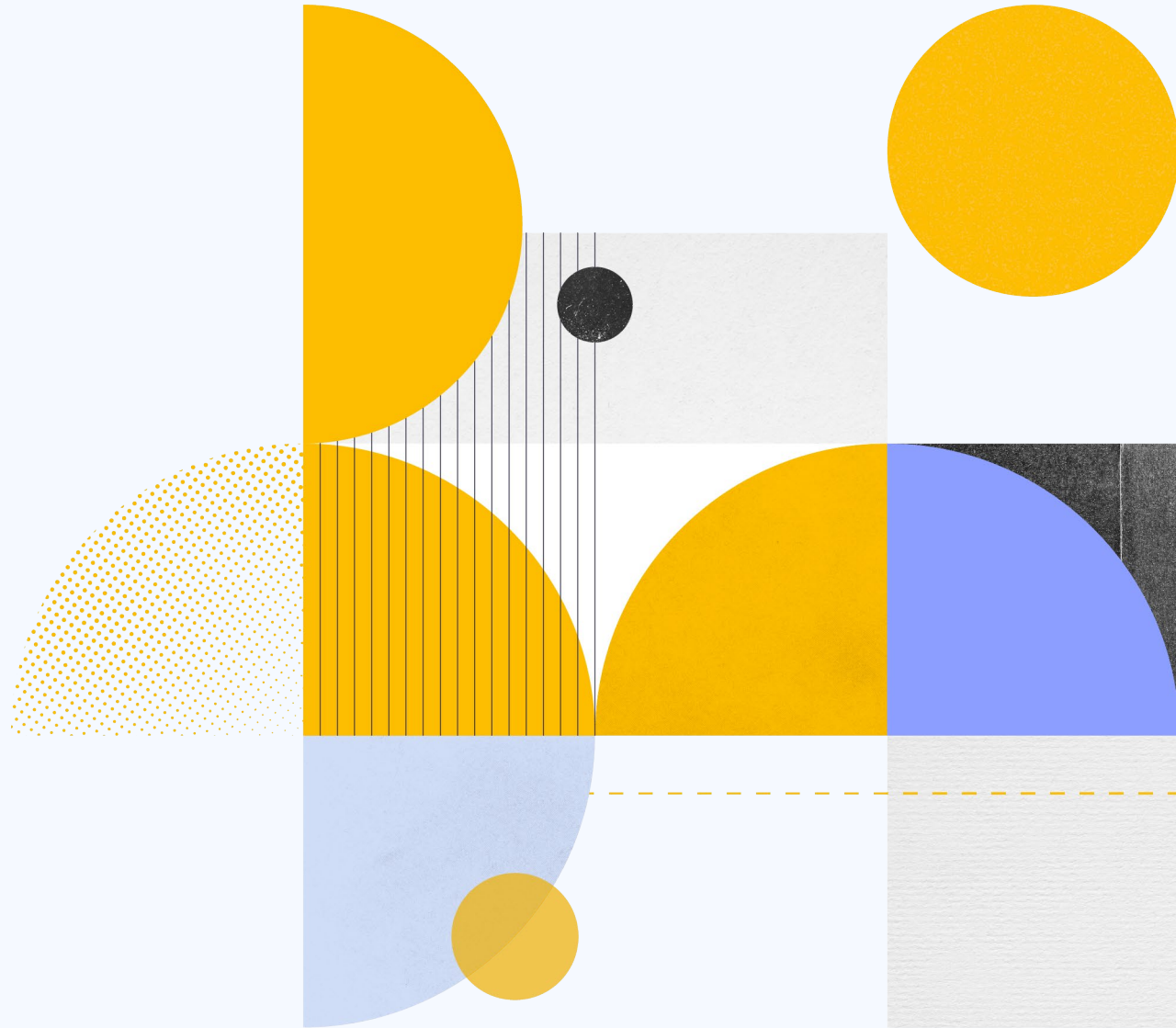




# Cobalt Price Assessment Methodology

Updated February 2026

[benchmarkminerals.com](http://benchmarkminerals.com)



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# Introduction

## Benchmark Mission Statement

Benchmark Mineral Intelligence (Benchmark Minerals) strives to create methodologies that accurately reflect the market dynamics of the industries we cover and allow for independent data collection, free of distortion or misrepresentation.

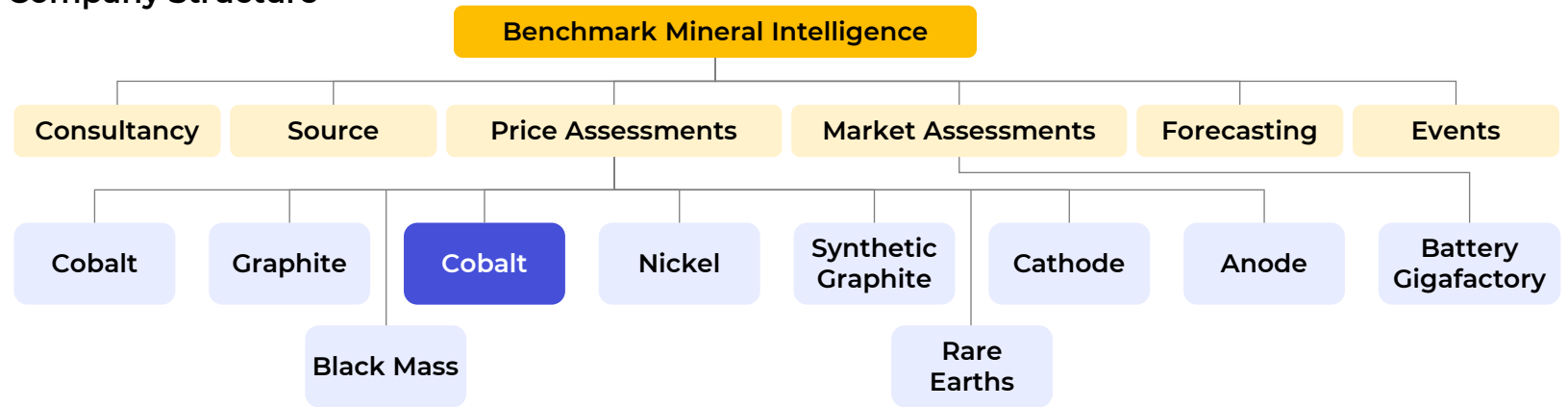
In the cobalt market, we have identified 6 prices that best reflect the existing balance of production and trade flows, details of which can be found in the Price Definitions section of this document (section 4).

These prices include the most commonly traded cobalt feedstock material, cobalt hydroxide, as well as the primary chemical products used in the battery supply chain, cobalt sulphate.

Prices for each of these products have been broken down into the geographies across which they are most commonly traded in order to provide a comprehensive global picture of pricing, encompassing the specific market dynamics across regions where notable differences in pricing exist.

Cobalt is traded on one exchange outside of China, the LME, but due to liquidity problems the majority of contracts in the supply chain are negotiated privately between buyer and seller. In addition, unlike traditional commodities, a large part of the price discovery process is centred around the downstream conversion and refining of these products for specific end-users.

## Company Structure



Benchmark Minerals has developed a robust price discovery mechanism which focuses on primary data collection from different sources throughout the supply chain in order to build an informed and robust perspective of the market. Due to the opaque nature of the industry, Benchmark Minerals employs expert analysts to collect and interpret this information, using editorial expertise to assess the information received.

This methodology describes the process by which Benchmark Minerals assesses cobalt market prices, the definitions and specifications used in each of the prices/indexes we publish, the standards our analysts adhere to in price collection, and our compliance, security and complaints process.

The information we publish is distributed directly to subscribers and also made available via our website for authorized users/licensors. The timing and delivery of this

information is outlined in section 1.3.

To ensure the data we publish is accurate, delivered on time and compliant with regulatory principles, Benchmark Minerals applies a number of failsafe processes that are outlined in this document to allow problems to be rectified when and if they occur.

Benchmark Minerals methodologies are created and updated in line with developments in each of the specific markets we cover. As the industries we follow evolve, we update the prices we publish and the process we adhere to in order to ensure the most accurate and relevant prices are made available to the market. A full history of revisions to our methodology can be found in section 8.

All Benchmark Minerals methodologies are tailored to the markets they cover and reflect Benchmark Minerals' commitment to independent and accurate price reporting.

# Introduction

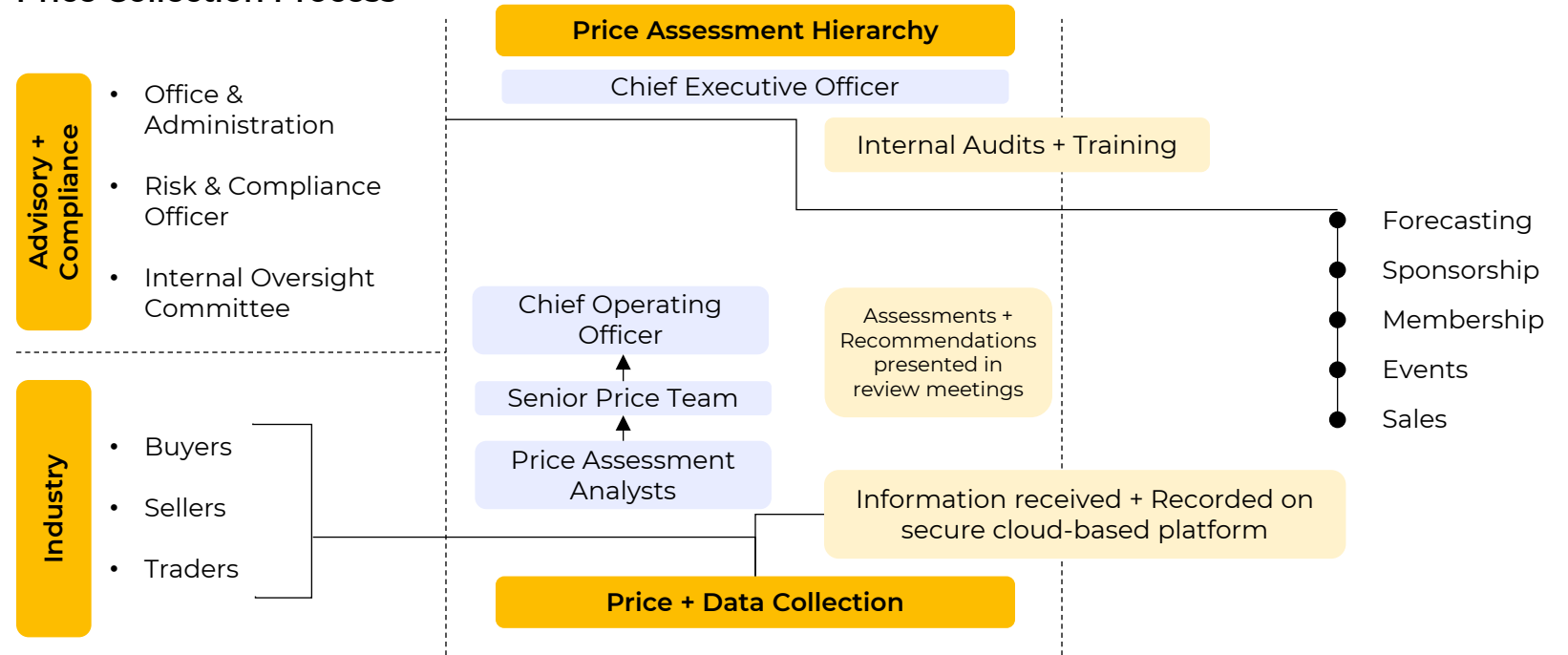
## Methodology Structure

This methodology has been structured to provide a detailed description of our price collection processes and procedures, the rationale behind this process in relation to the cobalt market, and the compliance process we adhere to in order to ensure clear and transparent price reporting.

The methodology is structured as follows:

- **Section 1:** An overview of the prices we report, details of the data collection process and Benchmark Minerals' price assessment principles. This includes how and when prices are distributed.
- **Section 2:** How we calculate our prices using the information received from the market. This section gives a detailed account of Benchmark Minerals' editorial process, the prioritisation and limitations of data and how we normalise data to produce grade-specific market prices.
- **Section 3:** The process we use to calculate composite indexes using our grade specific price ranges to create the Benchmark Minerals Cobalt Index
- **Section 4:** A detailed description of each cobalt price we publish, including a review of the significance of each price in relation to global trade flows.

## Price Collection Process



**Section 5:** A description of our compliance and security procedures, including how we adhere to regulatory principles relating to price reporting and benchmarking.

**Section 6:** How we identify and substantiate corrections to published price data, including how any corrections are reported to the market.

**Section 7:** Details of Benchmark Minerals' complaints process and our service commitments.

**Section 8:** A record of all previous changes and updates to the Cobalt Methodology.

# 1. Data Collection and Price Reporting

The objective of the Benchmark Minerals Cobalt Price Assessments is to provide an accurate and independent evaluation of the prevailing market prices for the cobalt grades outlined in section 3 of this methodology.

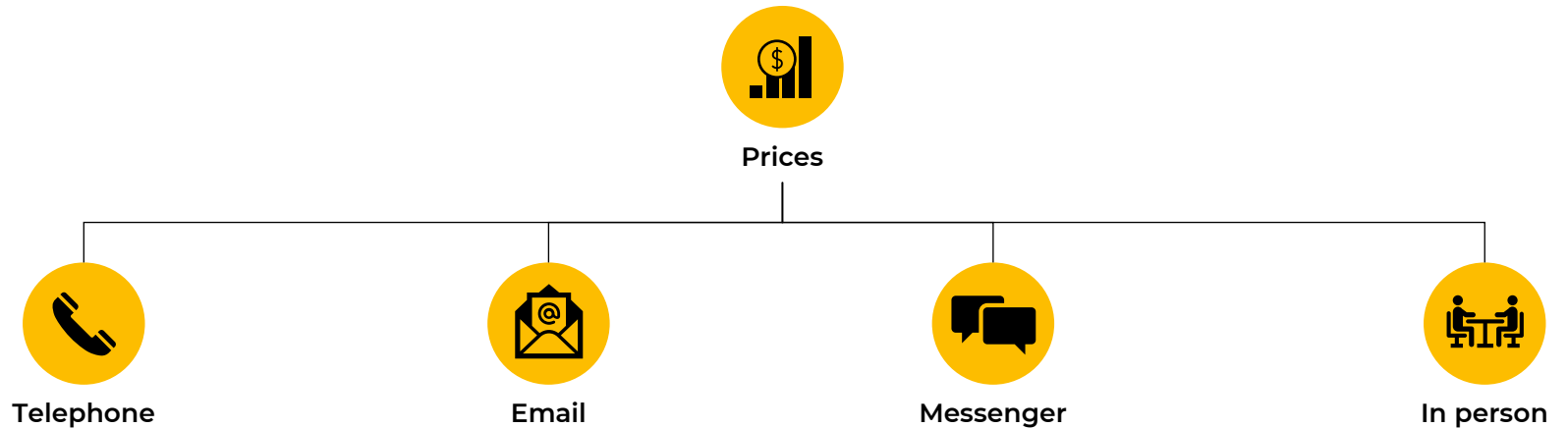
The data that is used in our price assessments is collected directly from the market, and we encourage our sources to report any supplementary information possible in order to determine accurate price ranges, normalised for price-related variables.

In order to protect the integrity of our assessments, Benchmark Minerals conducts regular reviews of the sources providing market information. These sources are also kept private in order to allow for open and honest information exchange.

In this section we detail how this information is collected, used and reported to the market via Benchmark Minerals Price Assessments.

## 1.1 How We Collect Price Data

Benchmark Minerals price data is collected by polling a cross-section of active market participants. Our team of analysts verify and substantiate this information through a range of primary and secondary sources.



Our primary process involves a dedicated team of experienced market analysts communicating regularly with the industry via phone, email, messenger services and direct meetings in person.

All information received is logged on our internal secure cloud-based system by the analyst upon receipt of the data, along with any accompanying information that can assist in verifying or normalising the prices.

This data is cross-referenced and analysed in relation to other relevant data points received from the market.

As a secondary method of verifying this information, the data is checked against public sources such as trade statistics, company reports, and government data. Due to the timing of this type of reporting it largely serves as a method of identifying anomalies in data that has already

been published.

Any unclear or incomplete information received is reviewed and assessed in the price assessment meetings to ensure independence and neutrality is applied to the value of this information in the price calculation.

Benchmark Minerals analysts continually seek to increase the number of price points (contacts) surveyed. Although the number of contacts for any one price point can vary, the insight and experience of our analysts ensure that all data published can be authenticated and supported by market intelligence.

If at any time the number of contacts for any one price falls to a point where data cannot be sufficiently verified, the grade is reviewed by the Senior Price Team.

# 1. Data Collection and Price Reporting

## 1.2 Typical Transactions

Types of transactions in the cobalt market can vary considerably based on the type of cobalt, volumes, specifications and delivery terms. Details of these variables in relation to specific prices Benchmark publishes is outlined in the Price Definitions section of this methodology (Section 4).

The primary information included in Benchmark Minerals Price Assessments is confirmed trades and firm bid/offers that are open to the market as a whole.

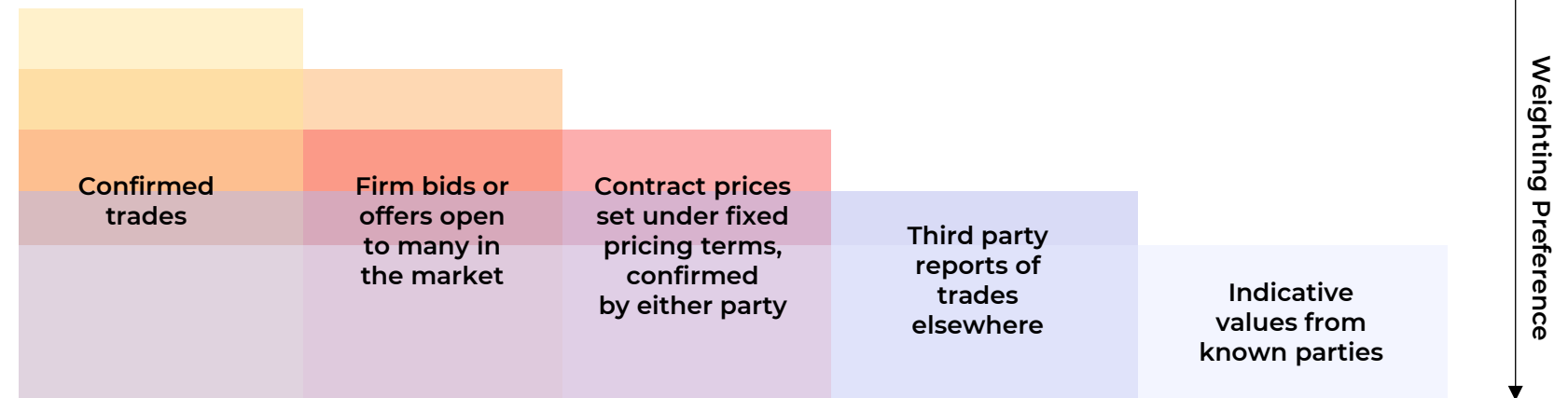
This information is supplemented by:

- Expressions of interest to trade at published levels
- Contract prices set under fixed pricing terms, confirmed by either party
- Third-party reports of market activity
- Other non-transactional data

These data points are used to verify and corroborate the price information received to determine a prevailing market price.

In order to protect the confidentiality of our price sources, specific transactional information is not disclosed to the market.

### Input Data Hierarchy



### Data preference

Benchmark Minerals prioritises information received relating to confirmed trades and transactional volumes when making its price assessments. Given the structure of the cobalt market and the lack of openly traded contracts, price providers are often unable to provide trade-specific details and instead provide an average value or range for their transactions in a given period. For the purposes of including information from these sources, which represent a large proportion of the market, this information is classified as a confirmed trade.

In the instance that confirmed trades are not provided, we then give preference to firm bid and offers that are open to

more than one party in the market, provided all other variables are equal.

In many cases, particularly in the supply of feedstock material into cobalt chemical converters, prices can also be derived as a function of the value of other products in the supply chain. As a result, these are also taken into account in Benchmark Minerals' price assessments, in lieu of confirmed transactions or bid/offers. Finally, Benchmark Minerals also records third party reports of trades elsewhere in the market that they have not had direct involvement in and uses indicative values from active market participants or prices into other areas of the world as way of verifying other information received.

# 1. Data Collection and Price Reporting

## Assessment thresholds

As Benchmark plays a role in bringing price transparency to opaque markets, in some cases trading and market information can be sporadic and therefore not conducive to minimum data thresholds.

As a result, Benchmark Minerals makes its assessments and assigns weightings to the information it receives based upon estimates of the respective market share each source represents.

This information is used in collaboration with external market commentary, source test validation and our process of editorial judgement to analyse the relevance of any piece of information.

In the instance that one price provider accounts for a substantial proportion of the market volumes traded across one individual price, deemed to be more than 50% for both weekly and two-weekly assessments, Benchmark Minerals seeks to verify the information received with counterparts to avoid key submitter dependency.

Should Benchmark rely on transaction data from one provider representing more than 50% of the data received, this will be outlined in the Price Assessment commentary.

Whilst rare, in some cases, due to the illiquid nature of some of the markets covered by the assessment, as well as forecasted supply deficits limiting trading activity, it is realistically possible that no transaction data will be received for an assessed period.

Similarly, particularly in China during national holidays, where strict industry shutdowns are often observed, there is a realistic possibility that no transaction data will be received for the weekly EXW China grades.

Where no information is received for a price, or the information received is judged to fail to be representative, Benchmark Minerals analysts can infer price changes dependant on information received in other regions or from other actors in the supply chain.

Where trade or supplementary data (as defined in the input data hierarchy on Pg. 6) is not available or does not provide a conclusive reason to edit the price, the assessment remains unchanged.

## Prevailing market price

Benchmark Minerals assesses global cobalt prices through a prevailing market price process which aims to identify the value of material traded within a stated time period.

The process has been designed to provide a reliable reference price for the industry based on the receipt of a sufficient number of price points to allow for accurate market assessment. It also considers the reliability of the sources of information. Price data must be received by the end of the stated assessment period to be included in the respective price review.

Due to the nature of the cobalt market, a large proportion of material is traded on long-term supply contracts.

For the purposes of discounting data which may include a long-term bias, Benchmark Minerals excludes any transactions which have a fixed-price for longer than 3 months.

## Assessment period

Benchmark Minerals analysts evaluate all data received in the assessment period on the day prior to publishing during an initial review meeting with a member of the Senior Price Team.

These proposed price ranges are then submitted and reviewed on the day of publication by a member of the Senior Price Team.

The cutoff time for the initial assessment is 5pm (London) on the day prior to publication. If any information is received after this point it is included in the following assessment.

If we do not receive sufficient data points to make an assessment, then we do carry over relevant data received in previous assessments or information which can be used to extrapolate market prices.

## Spot vs Term Pricing

Whilst cobalt has an online trading platform, transaction levels on the LME are limited. This creates an opaque marketplace with many non-standard transactions.

Supply agreements are typically negotiated either on a contract or spot basis.

# 1. Data Collection and Price Reporting

Benchmark defines spot transactions to be defined as a single settlement at a negotiated price for delivery within 60 days Benchmark defines contract transactions to be defined as deals whereby more than one transaction is executed between buyer and seller over a contracted period, provided prices are not fixed for >12 months.

Supply agreements in the cobalt markets are typically negotiated on a short-term (<3 months) or long-term (>3 months) basis.

Although the majority of cobalt sold globally is on a long-term basis, these supply agreements will typically include pricing breaks which allow for renegotiation or adjustment as a function of external reference points.

As a result, Benchmark Minerals' prevailing market price process is inclusive of volumes being traded on a fixed-price basis for less than 3 months.

Fixed price deals of less than 3 months are included during the month in which they are entered. Benchmark Minerals conducts follow up discussions with price sources to ensure these deals are completed through the duration of the contract.

Fixed price contracts of over 3 months are excluded from Benchmark Minerals assessments as they fail to provide an accurate reflection of the existing volumes being traded in the market at that point in time.

Benchmark Minerals is working with the cobalt industry to distinguish these terms to provide more transparency and help the development of a market clearing price.

To prevent distortion of prices received throughout the collection period, Benchmark Minerals does not use volume-weighted price averages, however, volumes are used in our process of editorial judgement and source test to verify the legitimacy of information received.

In some cases, using a volume weighted average price (VWAP) could distort the true representation of market pricing as volumes are not always made available to Benchmark for specific trades due to the opaque nature of the market.

## Anomalies

Any pricing data received which is over 12.5% different from the average of the previous two weeks' assessment for prices assessed bi-monthly, or 6.25% different from the average of the previous week's assessment for prices assessed weekly, is highlighted and reviewed in the final review process by a member of the Senior Price Team to determine accuracy and relevance.

Benchmark has determined a 12.5% change between two-week assessments, or 6.25% week-on-week, as an appropriate value in price fluctuation as this represents a threshold which has infrequently been surpassed other than at a time of high market volatility.

When this type of information is received, price assessors will seek to verify the information with counterparts in the transaction in order to verify the transacted value.

If it is decided in the final review process that the information can not be independently verified or corroborated by other data points received in the same

period, then the data point is excluded from the assessment and an action point raised to investigate further for the following assessment period.

## 1.3 Information Sources

Benchmark Minerals conducts confidential interactions with market participants in order to source the data and market intelligence used for its price assessments. Due to the structure of the market and the position of companies within the supply chain, full transactional data is not always available.

Where possible Benchmark Minerals requests that all relevant data pertaining to the price is provided and individual data points are provided throughout the assessment period.

The private nature of transactions in the cobalt market today mean full disclosure is often not possible, however Benchmark Minerals does ask sources to meet a set of standards which confirm:

- i. Data is reported on an honest, timely and consistent basis
- ii. Data is reflective of the overall trend in pricing rather than selective deals submitted to influence the price assessment

# 1. Data Collection and Price Reporting

- iii. Data is supplied or approved by a commercial division of the source company
- iv. Data provided is from arm's length transactions only, from non-affiliated parties

Data providers do not enter into a formal agreement to provide prices to Benchmark Minerals. Instead, interactions with the market are conducted on a trust basis which require internal review and editorial judgement to assess the weighting of information.

Information sources are only added to our network of price providers after a review process between the analyst and the Senior Price Team.

## 1.4 Price Assessment Process

Benchmark Minerals cobalt prices are assessed on a two-week basis, or weekly basis for EXW China sulphate, EXW Europe metal, and CIF Asia hydroxide, to allow for a sufficient number of transactions to be made to identify a consistent market trend and range for prices.

Benchmark reserves the right to temporarily alter publishing dates, for example during UK national holidays, subject to providing the market with 30 days' notice via email.

Benchmark Minerals analysts conduct a price review meeting following the cut off for data collection for the assessment period. The price data is published on our website for subscribers and distributed to licensors by

4pm (London) every Wednesday for EXW China sulphate, EXW Europe, and CIF Asia hydroxide grades, plus every alternate Wednesday for all other two-week grades.

Due to the wide number of pricing variables for cobalt, analysts normalise the data received for shipping terms, specifications and any other applicable variables to match the price definitions as outlined in section 2 of this methodology.

The team of analysts then submit recommended price ranges based on the data collected in that period and these recommendations are confirmed by a member of the Senior Price Team who was not involved in the price collection process for the assessed grades.

All price assessments and editorial judgements made during the assessment review are recorded and logged internally by name and rationale within internal audit framework.

The size and frequency of transactions in the cobalt market dictate that price publication every two weeks is required in order to collect a sufficient number of data points within the framework of a robust and regulatory compliant methodology.

Due to the more liquid nature of spot transactions in some markets, the frequency of price publication can be more regular, where Benchmark prices are published weekly.

Benchmark Minerals works actively with the industry to increase the regularity and transparency of transactions, and as the industry evolves the frequency of the prices it

publishes will move towards weekly and eventually daily pricing across all grades where suitable.

## 2. Price Calculation

Benchmark Minerals provides two levels of cobalt pricing to the market, including grade-specific pricing, and a cobalt chemical index.

This section outlines how Benchmark Minerals uses the information it collects directly from the market to determine the final price assessments it publishes.

### 2.1 Grade-specific Prices

#### Editorial judgement

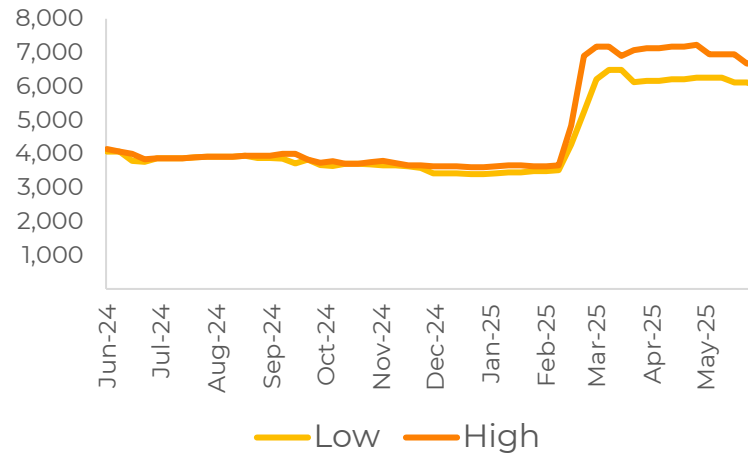
Benchmark Minerals employs a process of editorial judgement to calculate the price ranges for each of the grade-specific prices published.

This process originates from primary data collection which is logged and reviewed in regular team meetings involving the relevant market analysts as described in more detail in section 1.3.

After the data is reviewed and each relevant analyst makes their price recommendations, a member of the Senior Price Team will analyse the recommended price ranges in relation to supporting evidence and internal data logs to check for accuracy.

In the event that price recommendations do not correspond with the prices and supporting evidence which has been internally logged, a member of the

CoSO<sub>4</sub> (\$/tonne)



Source: Benchmark Mineral Intelligence

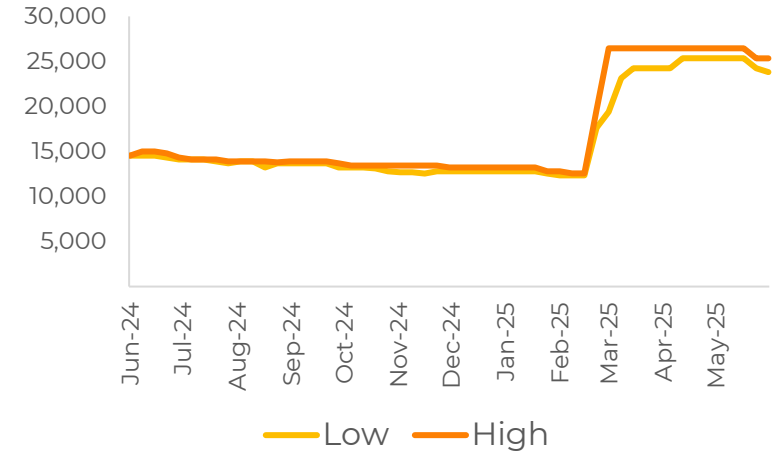
Senior Price Team will conduct a review of the data with the responsible analyst(s) directly.

A member of the Senior Price Team not involved with the price collection process for the assessed grades verifies the established price ranges before the data is published and distributed.

#### Price ranges

The way cobalt is traded dictates that prices are negotiated directly between buyer and seller. As such, there is no one price for cobalt and prices for the same

Co(OH)<sub>2</sub> (\$/tonne)



Source: Benchmark Mineral Intelligence

product in the market at any one time can often vary considerably dependent on volume, contract/delivery terms, impurity profiles and numerous other variables.

Benchmark Minerals grade-specific cobalt prices are therefore set as ranges. Where one value is shown this represents the mid-point of the price range unless otherwise stated.

The price range is not a direct function of the lowest/highest data points received but represents an average of where a majority of transactions are settled.

## 2. Price Calculation

### Input weightings

Benchmark Minerals' assessment of the value and weighting of information received is based on a process of expert ranking, whereby analysts analyse the information received with respect to the volumes traded where available, the position of the company in the market and the reliability of the source.

Benchmark Minerals' assessment team build an internal profile of price sources through our interactions with companies and other secondary sources of market information in order to rank the validity of received data points.

Price ranges are intended as an average spread of transactions throughout the assessment period and therefore data evaluation is not weighted on the time at which the price information is received within the price collection period.

### Units of measurement

Benchmark Minerals Price Assessments are published in the most common currencies and units of measurement.

In the cobalt market, global transactions are typically negotiated in US dollars (USD). The one exception to this is Chinese domestic transactions which are most commonly traded in Chinese yuan (RMB).

Where domestic Chinese prices are represented in USD, they are converted using the USD/RMB exchange rate, which is fixed via Finnhub at 9am (London) on the day of publication and can be made available to subscribers upon request. Grades are published by Benchmark in the currency in which they are traded. Prices are available on

the Benchmark website in both RMB and USD, based on the Finnhub exchange rate.

Cobalt volumes are negotiated on a kg or metric tonne basis. Benchmark Minerals prices are represented in metric tonnes.

Benchmark also assesses both a cobalt payable (%) MHP price, published as a payable to Benchmark's cobalt metal EXW Europe price. In addition to a cobalt payable MHP price, Benchmark assesses an aggregate MHP price.

This price captures the value of the cobalt and nickel contained within MHP, based on the payable collected from the market on a regular basis, and the mineral content outlined in the methodology. The aggregate price is determined based on the numerical average of low payable and the low content, and the high payable with the high content.

### Shipping terms

Benchmark Minerals uses three industry standard incoterms to represent the location/destination of the material.

Cost, Insurance and Freight (CIF) – used to represent the delivered price going into a particular region/country

Ex Works (EXW) – used to represent a domestically traded price with minimal shipping or transportation costs

### Normalisation

The specialist nature of cobalt production means these specifications are not always consistent across the

market and Benchmark Minerals therefore aims to align the variables of any pricing data received with the most relevant price assessment.

A normalisation process is undertaken when dealing with this type of non-standard data.

Benchmark Minerals standardises the varying costs of shipping from/to different ports within the regions outlined in its assessments.

Grade and impurity profiles can also vary, and Benchmark Minerals seeks to normalise these specifications to industry standard levels by applying discounts or premiums to prices received dependent on the individual material specifications.

The level of normalisation is dependent on analyst judgement based on interactions with the market and observed variance in market value from a base standard.

Taxes, tariffs and duties are also included in the published prices, unless otherwise stated in the price definitions section of this methodology.

Finally, shipping terms are also normalised to meet the shipping/destination port specified for each price in section 4.

### Editorial judgement

The nature of the cobalt market dictates that a process of editorial judgement is necessary to interpret the various data points in the market and normalise the information received to the grade specifications, outlined in section 4 of this methodology.

## 2. Price Calculation

To ensure consistency of this editorial judgement across various assessments, Benchmark Minerals has established an internal review process whereby we ensure that all calculation variables are applied in a fair and even manner.

This review process includes reference to historical data points, industry knowledge and the use of publicly available information to judge appropriate premium/discount levels.

### 2.2 Testing Our Price Integrity

As part of our data collection process Benchmark Minerals also conducts regular reviews of our sources and the data received to analyse the information published against external metrics and verify accuracy.

#### Price verification

When pricing information is received by Benchmark Minerals, we seek to verify this information directly with other parties involved in the transaction, or companies at other levels of the supply chain that would be privy to data relating to the transaction.

The preference for term agreements within the cobalt market require Benchmark Minerals to stay in regular contact with the industry to monitor that these contracts are completed or if any terms are changed during the term of the agreement.

Any information received from sources which have been shown to provide inaccurate or misleading data is excluded from the assessment. Also, if there is a notable

disparity on the price from different parties reporting on the same transaction then this information is discounted from the assessment.

Benchmark Minerals' policy is to assess, affirm and verify all data for accuracy and reliability. If data fails to meet our quality standards, then our price assessors will initiate procedures to either rectify or reject a specific data submission. If data is rejected, our price assessors may notify the providers of this action should the price be deemed to have been purposely misrepresenting the market.

Certain standard tests are also carried out to apply:

- Checks on internal transfers, offtake agreements or deals with affiliated parties
- Restrictions on the weight a single party can have on a price
- Individual case assessment of outliers and anomalies
- Checks on price discrepancies between buyer and seller
- Secondary verifications when there are a lack of reportable transactions

#### Source Tests

All information received during our data collection process is weighted upon the credibility of the information source. Benchmark Minerals therefore judges the validity of the information received based upon:

- Proximity – the position of the source within the industry and in relation to the transaction being discussed
- Vested interest – the motivation of the source in discussing the information
- Track record – the previous reliability of information obtained from the source
- Date received – when the information was shared in relation to the date of publishing

#### Comparative metrics

Often, the nature of surrounding markets can be used as a point of reference for contract negotiations between buyer and seller. Subsequently these data points are employed as comparative metrics in measuring the state of the market in question. Comparative metrics include:

- Comparison to the price of the same product in another area of the market
- Comparison to a slightly different specification product in the same area of the market
- Comparison to transactions completed for the same product in another relevant time period
- Comparison to the material's feedstock or primary derived product(s)
- Comparison to transactions for different volumes or trade routes

## 2. Price Calculation

Use of transactions involving material outside of standard specifications will be assessed and normalised, where viable, for contribution to price data. This can include transactions of anomalous sizes, locations or involving multiple contingencies which may distort price.

### 2.3 Governance

Benchmark Minerals employs a number of governance checks to ensure the suitability and application of the

methodology and to consult with the market as to any changes in our processes and procedures.

A full employee code of conduct is available upon request and outlines the standards employees are obligated to adhere to in terms of antitrust, confidentiality and data protection policy.

#### Operational checks and balances

Benchmark Minerals imposes professional walls between areas of the business where a conflict of interest may arise to ensure our price assessments are conducted independently, and without any prejudice or bias.

The four areas of the Benchmark Minerals business are outlined on pg. 3 of this methodology:

- Benchmark Membership: News & analysis
- Benchmark Price Assessments: Price reporting
- Benchmark Forecasting: Long-term supply, demand &

price forecasting

- Benchmark Events: Conferences and seminars

Benchmark Price Assessments are operated by a team of analysts that operate independently to the other areas of the business.

This team is managed by the Head of Prices who, alongside Senior Analysts, coordinate the price assessment reviews and makes the final appraisal of price data received ahead of publishing.

The Head of Prices reports directly to the Director of Indexing and Derivatives and the COO, who alongside the Risk and Compliance Officer, oversees regularly monitors the proper implementation of the methodology.

The company also employs a Company Secretary to act as external counsel on any issues pertaining to legal disputes.

#### Internal governance meetings

Benchmark Minerals holds annual governance meetings with all senior management members to review price collection processes and ensure data collection adheres to the standards outlined in this methodology as well as regulatory principles.

Benchmark Minerals also holds bi-annual consultation meetings with management and the price collection team to consult on any amendments or changes to the methodology.

This meeting serves as a review of the methodology relevance in relation to industry developments and ensures the price reporting process is robust to industry requirements and regulatory standards.

#### Methodology Public Consultation

Benchmark Minerals holds a period of public consultation to allow for comment on its mineral specific Price Assessment Methodologies.

This is held via a free to view article on the Benchmark website and notification is made to its contact database.

This public consultation will typically be held in August, and for no fewer than 28 days, exact dates may change as market factors define.

Benchmark will review all comments and seek to make public all non-confidential comments/responses within 10 working days of the closure of the public consultation.

If any comments result in a material change to its methodology, Benchmark will undertake process defined in its Benchmark Methodology Review Process.

#### External audits

Benchmark Minerals employs an external auditor to confirm the company's compliance with IOSCO principles with reasonable assurance.

Annual external audits will be held once IOSCO certification is received to ensure all processes and procedures are being followed in a regulatory compliant manner within the structure of this methodology.

## 2. Price Calculation

### Industry briefings and conferences

Benchmark Minerals also engages the industry to consult on updates and developments to its price collection process through its series of annual events. These events include:

- **Benchmark World Tour**
- **Benchmark Gigafactories events**
- **Benchmark Week**
- **Webinars**

### 2.4 Review Process

Ahead of publication of our prices, Benchmark Minerals conducts a thorough review process to ensure all information received has been logged internally and reviewed in line with the principles set out in this methodology.

#### Initial review

Benchmark Minerals analysts hold reviews the day prior to price publication to collate information received from various price providers and interpret this information in order to make an informed and consistent assessment of market prices during the period in question.

This meeting is chaired by a member of the Senior Price Team and is attended by a member of the Senior Price Team not involved with the price collection process for

the assessed grades. All relevant analysts involved in the price assessment process are also present in the meeting, where possible, or are given the opportunity to review the final prices after the meeting but before publication. Analysts present the information they have received, as well as their interpretation of this information in alignment with the price definition and our guidance for suspicious or anomalous data.

In conjunction with a member of the Senior Price Team, this information is used to provide a set of suggested price ranges for each of the grades using the processes set out above.

Notes are made of this assessment process, including the details of suggestions from each analyst involved in the price collection process, information but log the rationale used in the assessment. This rationale is not made public due to the confidential nature in which Benchmark Minerals collects market information but is stored for external audit purposes.

These notes, along with the individual price assessment audit trails of each price analyst are saved on a secure system and stored for a minimum of 10 years after the assessment is made. These files are password protected and restricted to senior management and compliance access.

#### Final review

The final review of each price assessment is made on the day of publication by a member of the Senior Price Team.

This review involves a detailed analysis of the suggested

assessments from the initial review, during which a member of the Senior Price Team checks the assessments are in accordance with the methodology principles.

This review is documented and saved on a secure system as above.

### Internal checks and compliance

All information relating to the price assessment process, including audit trails and supporting rationale are saved on a secure system for compliance purposes.

Benchmark Minerals' Compliance officer conducts periodic reviews of this information to ensure it is being stored, maintained and interpreted in accordance with the principles set out in this methodology.

# 3. Composite Indexes

## 3.1 Benchmark Minerals Cobalt Index

Benchmark Minerals publishes a cobalt chemical price index every week with a base month of June 2023.

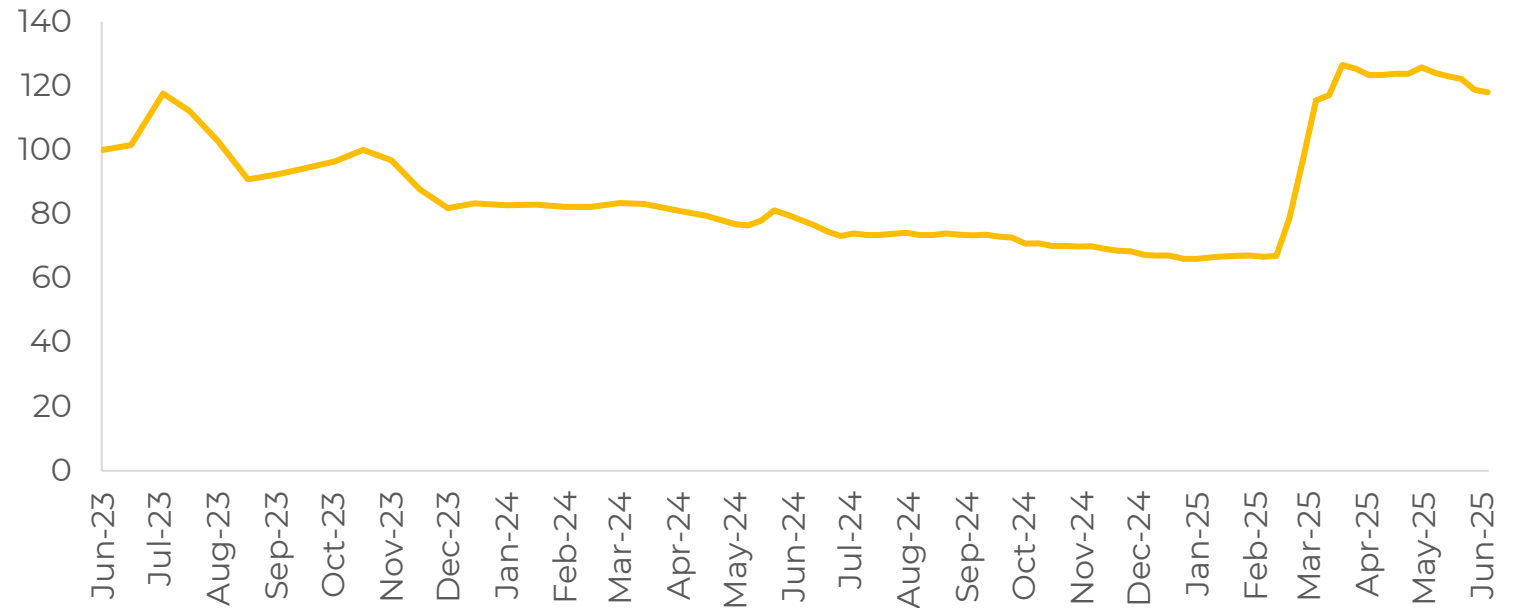
The index is tied to the EXW China cobalt sulphate and cobalt oxide prices.

To determine the weighting between the two chemical products, Benchmark Minerals assesses the estimated volumes produced/consumed as part of its analysis of total traded volumes.

This information is used to make an average weighted price for the grade-specific cobalt sulphate and cobalt oxide prices published by Benchmark Minerals.

Each index value represents the change in the weighted average cobalt chemical price against a base of 100 in June 2023.

**Benchmark Minerals Cobalt Price Index**

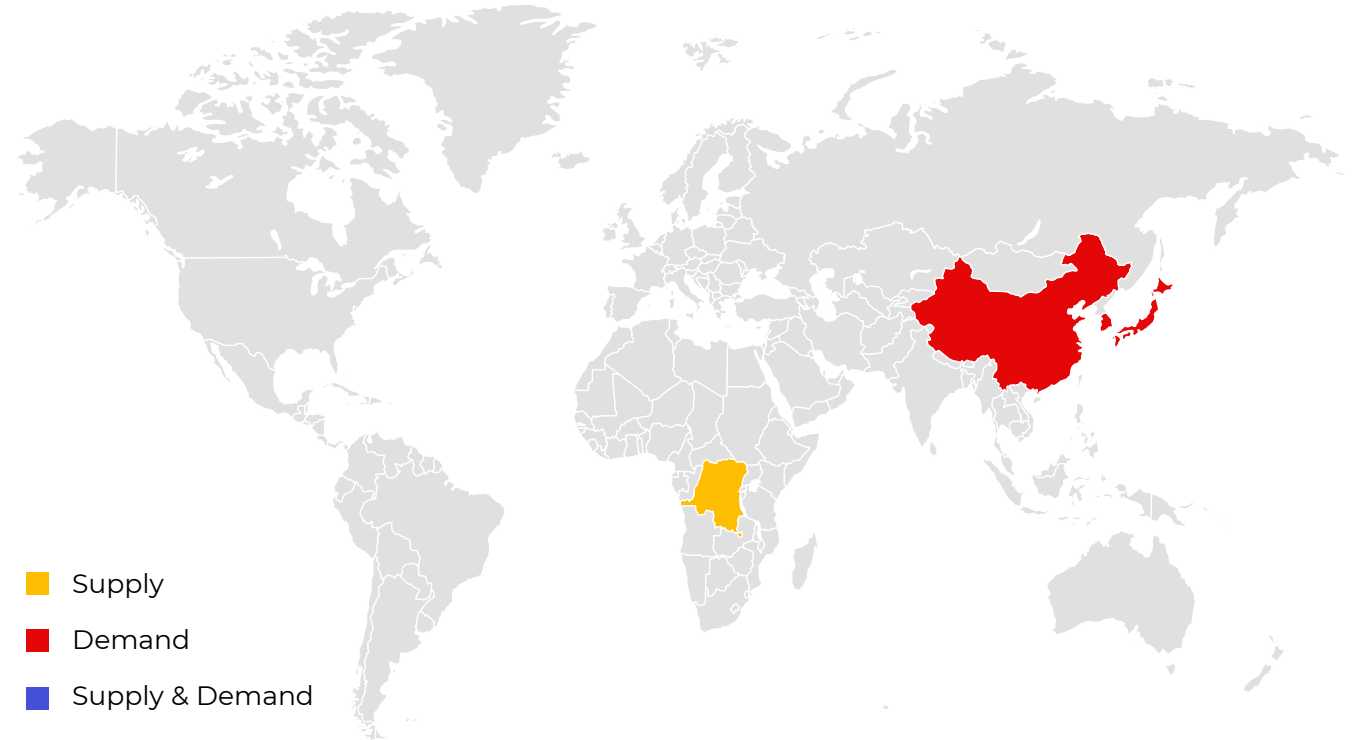


Source: Benchmark Mineral Intelligence

# 4. Price Definitions

## 4.1 Cobalt Hydroxide, CIF Asia

<b>Location:</b>	Asia
<b>Contract Basis:</b>	CIF
<b>Currency:</b>	USD
<b>Shipping Port:</b>	Main Chinese, Japanese & South Korean Ports (other ports normalised)
<b>Form:</b>	Crystalline
<b>UOM:</b>	Tonnes
<b>Delivery Window:</b>	60 days
<b>Min Size:</b>	1 tonne
<b>Max Size:</b>	1,000 tonnes
<b>Main Consumers:</b>	China, Japan, South Korea
<b>Production (2024):</b>	207,000 tonnes
<b>Publication:</b>	Weekly by Wednesday 4pm (London)
<b>Benchmark Code:</b>	BMICH001



Cobalt Hydroxide	
Formula	Co(OH) <sub>2</sub>
Typical cobalt content	20-40%
Common impurities	Cu <10%; Fe <2%; Mn <5%; Mg <10%

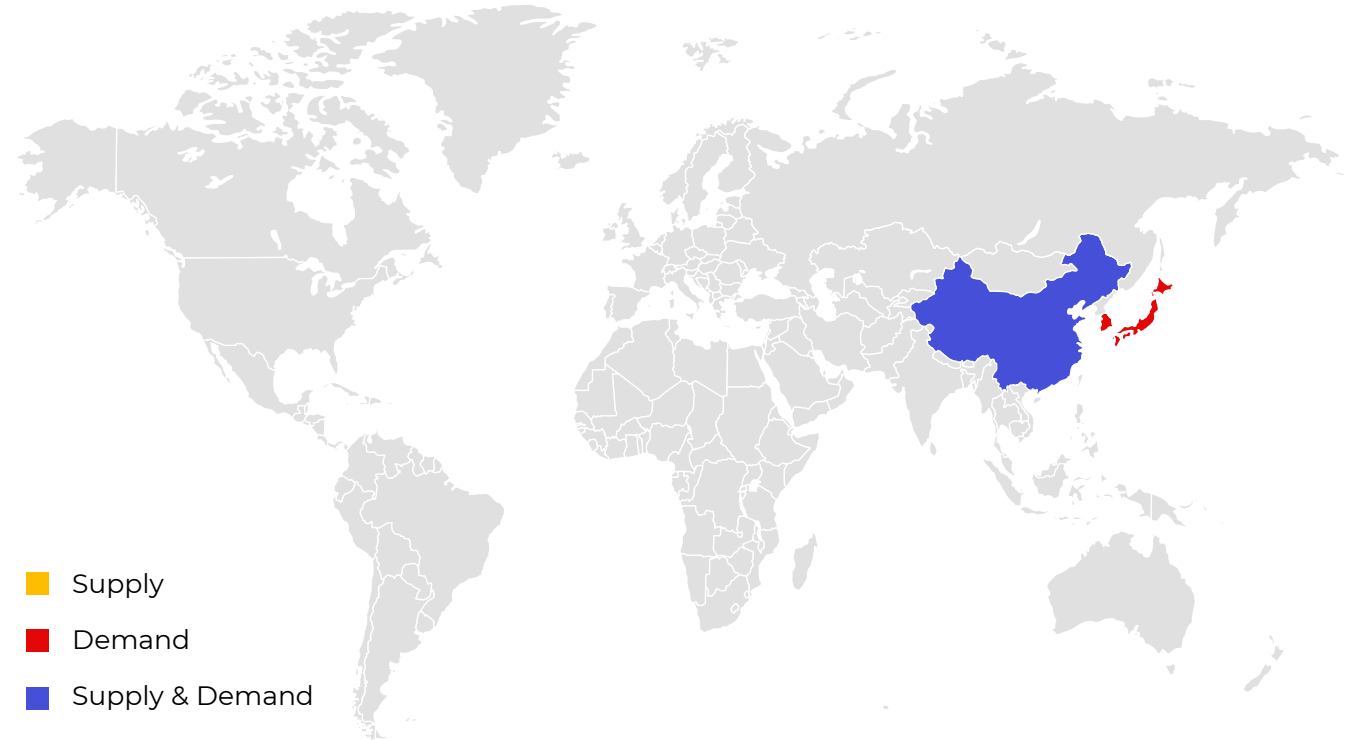
**Cobalt Hydroxide Supply (2024)**



# 4. Price Definitions

## 4.2 Cobalt Sulphate, EXW China

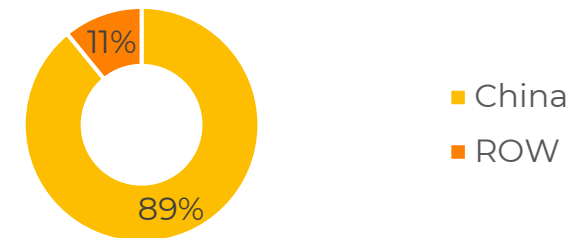
<b>Location:</b>	China
<b>Contract Basis:</b>	EXW
<b>Currency:</b>	RMB
<b>Destination Port:</b>	Domestic
<b>Form:</b>	Crystalline
<b>UOM:</b>	Tonnes
<b>Delivery Window:</b>	60 days
<b>Min Size:</b>	1 tonnes
<b>Max Size:</b>	1,000 tonnes
<b>Main Consumers:</b>	Japan, South Korea, China
<b>Regional production (2024):</b>	107,000 tonnes
<b>Publication:</b>	Weekly by Wednesday 4pm (London)
<b>Benchmark Code:</b>	BMICS001



### Cobalt Sulphate

Formula	CoSO <sub>4</sub>
Cobalt content	Min 20.5%
Common impurities	Ni <0.002%; Cu <0.001%; Mn <0.001%; Fe <0.001%

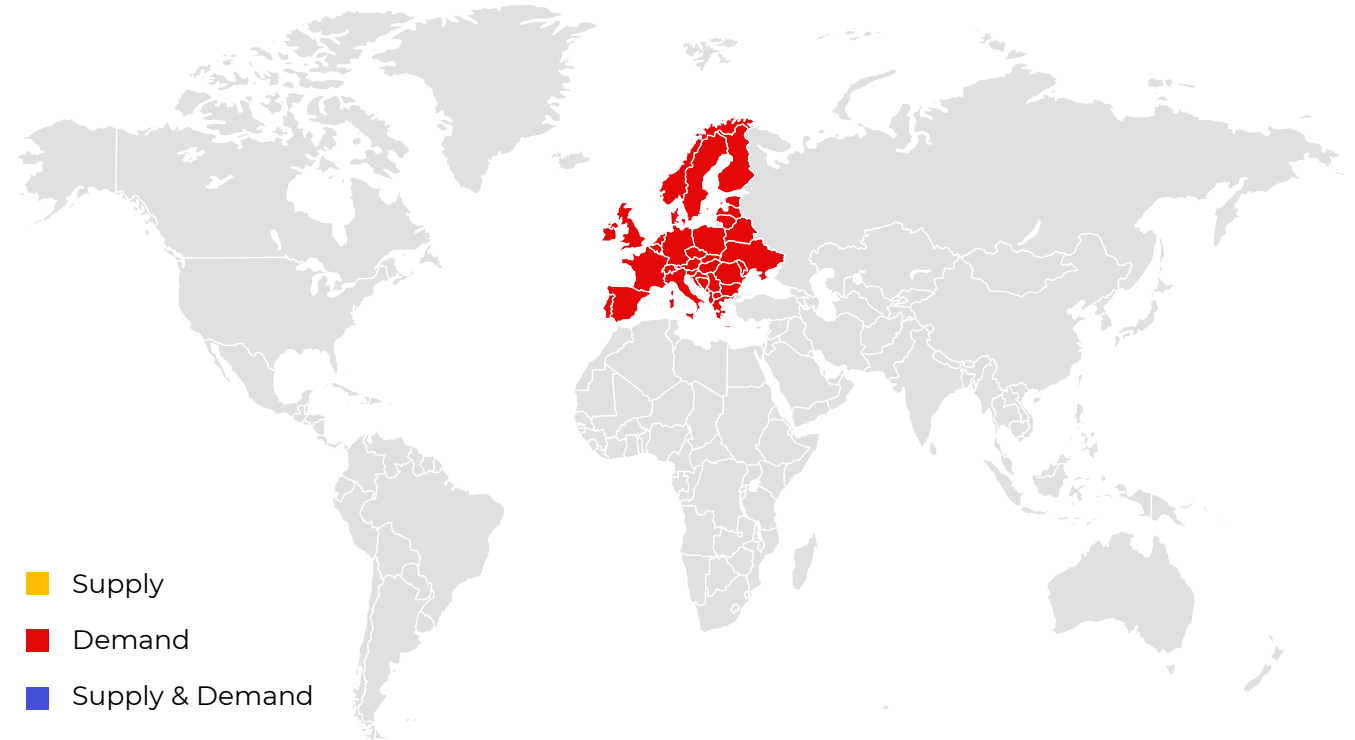
### Cobalt Sulphate Supply (2024)



# 4. Price Definitions

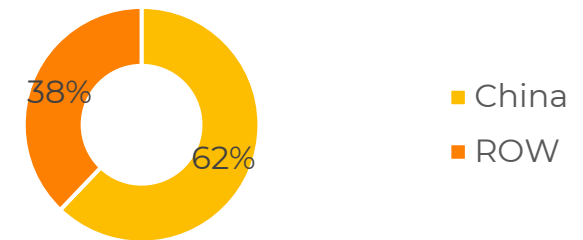
## 4.3 Cobalt Battery Metal, EXW Europe

<b>Location:</b>	Europe
<b>Contract Basis:</b>	EXW
<b>Currency:</b>	USD
<b>Destination Port:</b>	Main European ports, all other ports normalised
<b>Form:</b>	Briquettes, cut cathode, and broken cathode, excluding metal from Sumitomo and Nikkelverk, which are typically destined for the superalloy market and usually priced differently to material used in alternative end markets
<b>UOM:</b>	Tonnes
<b>Delivery Window:</b>	60 days
<b>Min Size:</b>	1 tonnes
<b>Max Size:</b>	1,000 tonnes
<b>Main Consumers:</b>	US, Europe, China
<b>Regional production (2024):</b>	33,000 tonnes
<b>Publication:</b>	Weekly by Wednesday 4pm (London)
<b>Benchmark Code:</b>	BMICM001



Cobalt Metal	
Formula	Co
Cobalt content	Min 99.8%
Common impurities	Na <0.025%; Mg <0.008%; Ca <0.005%; Fe <0.001; Si <0.003% (Na <0.15%; SO <sub>4</sub> <0.35%; Ca <0.04; Cl <0.02 for Sustainable Cobalt)

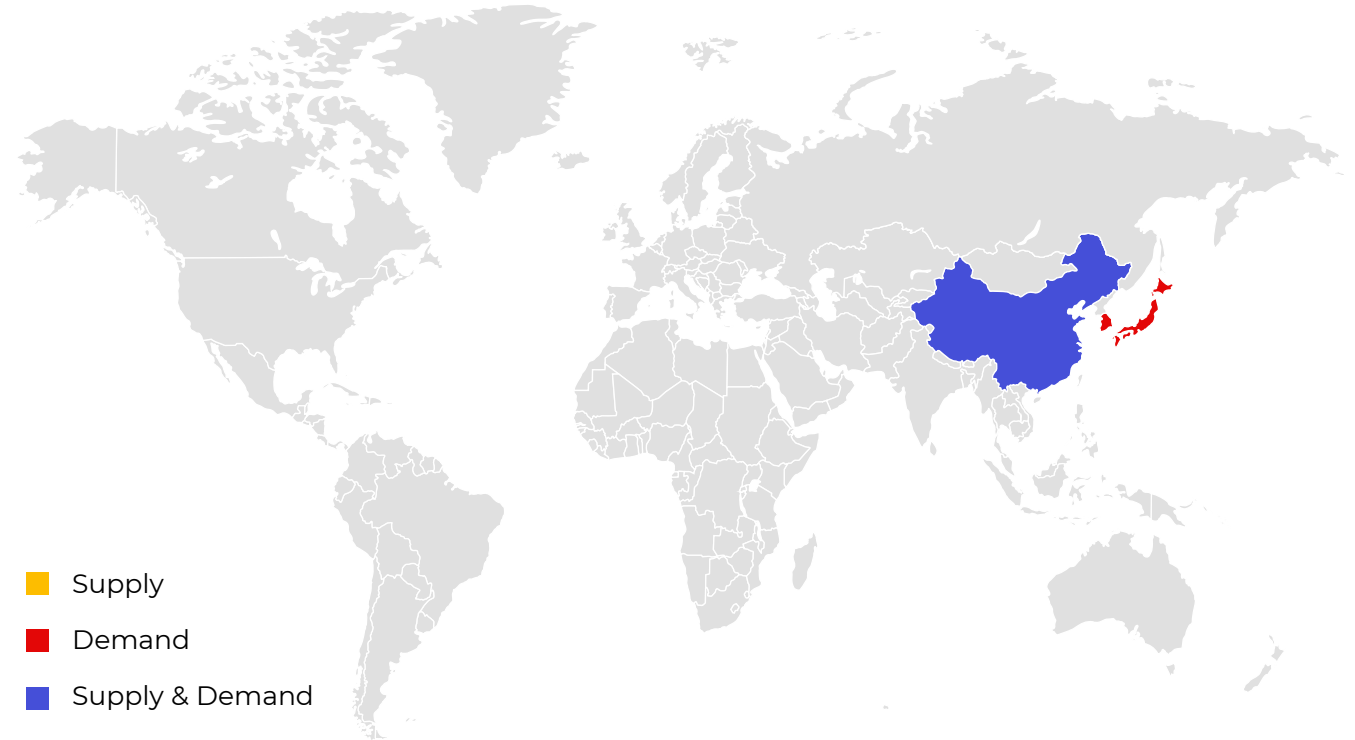
**Cobalt Metal Supply (2024)**



# 4. Price Definitions

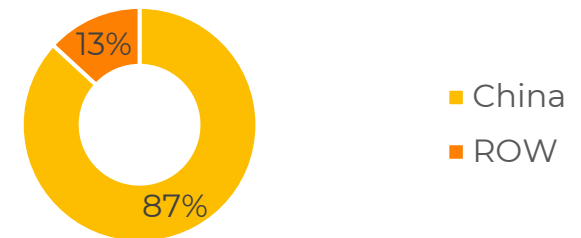
## 4.4 Cobalt Oxide, EXW China

<b>Location:</b>	China
<b>Contract Basis:</b>	EXW (VAT included)
<b>Currency:</b>	RMB
<b>Destination Port:</b>	Domestic
<b>Form:</b>	Crystalline
<b>UOM:</b>	Tonnes
<b>Delivery Window:</b>	60 days
<b>Min Size:</b>	1 tonnes
<b>Max Size:</b>	1,000 tonnes
<b>Main Consumers:</b>	Japan, South Korea, China
<b>Regional production (2022):</b>	42,000 tonnes
<b>Publication:</b>	Every two weeks, alternate Wednesdays by 4pm (London)
<b>Benchmark Code:</b>	BMICO001



Cobalt Oxide	
Formula	Co <sub>3</sub> O <sub>4</sub>
Cobalt content	Min 72.8%
Common impurities	Ca <0.01%; Mg <0.01%; Na <0.03%

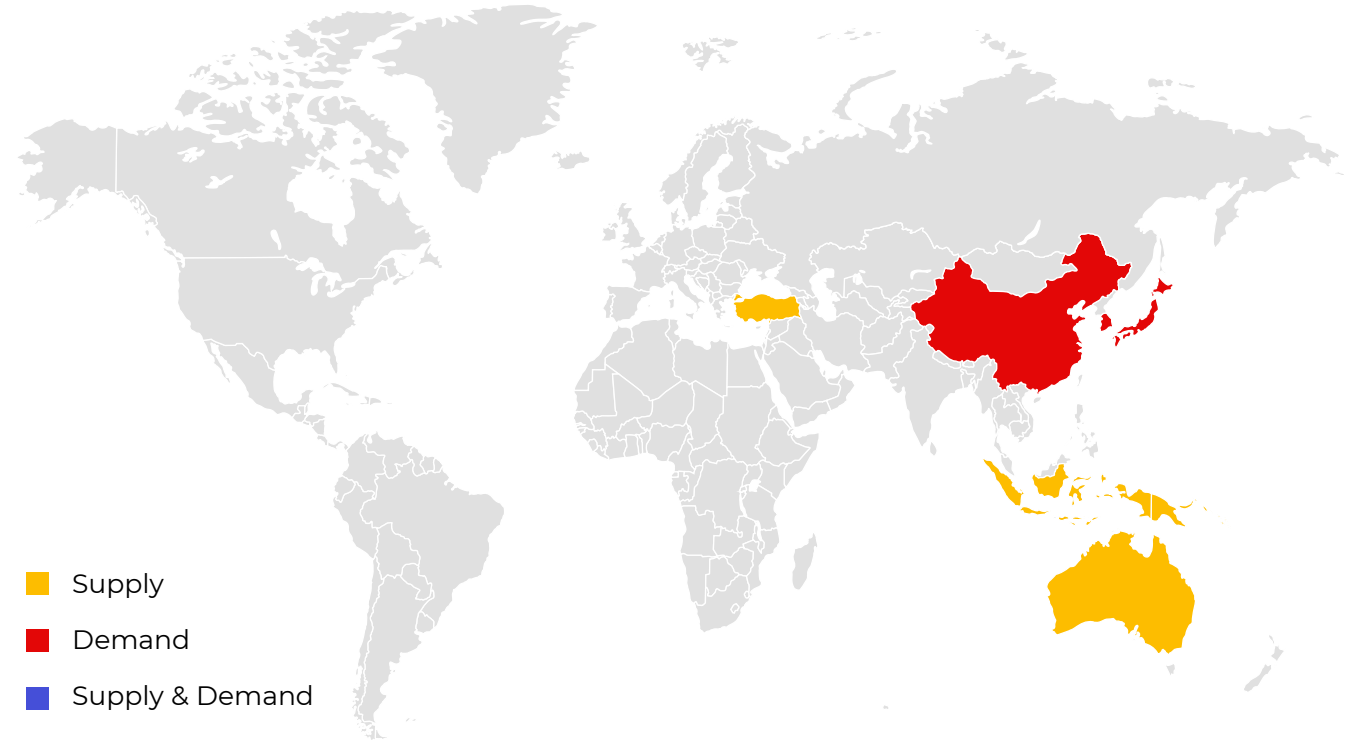
**Cobalt Oxide Supply (2024)**



# 4. Price Definitions

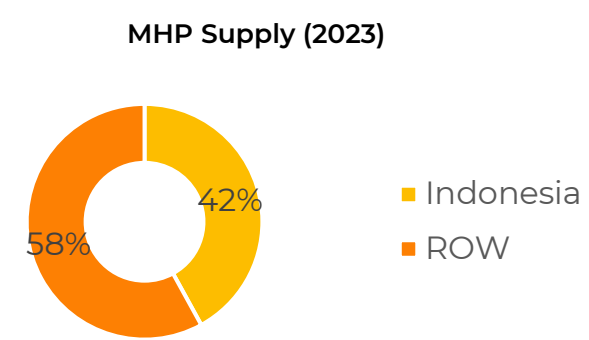
## 4.5 Mixed Hydroxide Precipitate, CIF Asia

<b>Location:</b>	Asia
<b>Contract Basis:</b>	CIF
<b>Currency:</b>	USD
<b>Shipping Port:</b>	Main Chinese, Japanese & South Korean Ports (other ports normalised)
<b>Form:</b>	Crystalline
<b>UOM:</b>	Tonnes
<b>Delivery Window:</b>	60 days
<b>Min Size:</b>	1 tonne
<b>Max Size:</b>	1,000 tonnes
<b>Main Consumers:</b>	China, Japan, South Korea
<b>Production (2023):</b>	24,100 tonnes (Co contained)
<b>Publication:</b>	Every two weeks, alternate Wednesdays by 4pm (London)
<b>Benchmark Code:</b>	BMIMHP002



- Supply
- Demand
- Supply & Demand

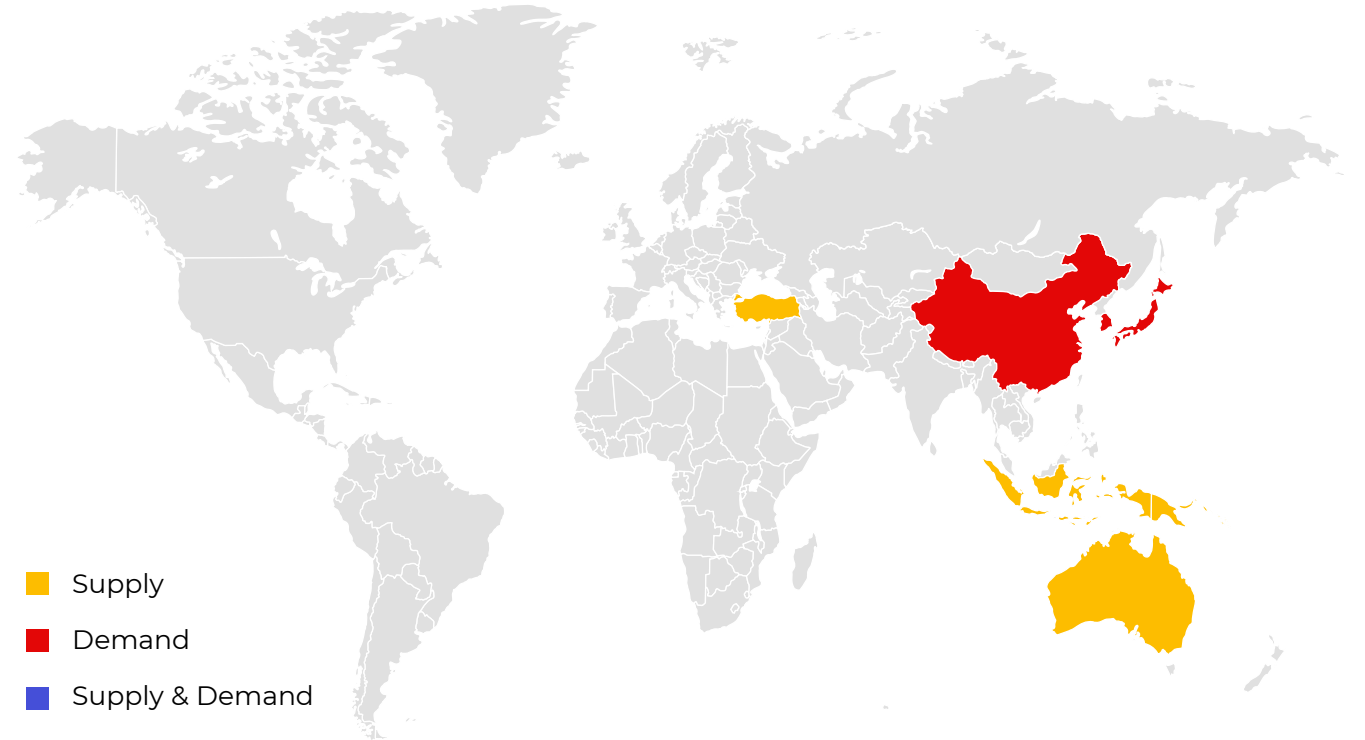
MHP	
Nickel Content	Min 35%; Max 55%
Cobalt content	Min 1%; Max 4.5%
Common impurities	S <4.29%; Mn <3.5%; Fe <0.5%; Zn <0.5%



# 4. Price Definitions

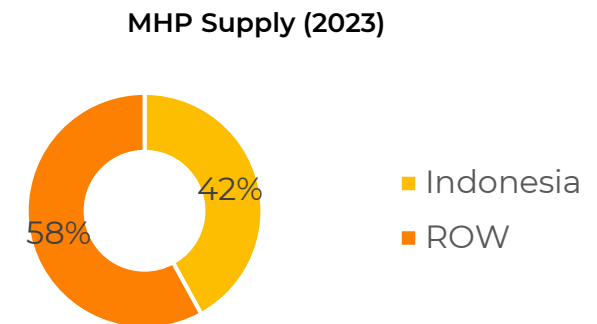
## 4.6 Aggregate Mixed Hydroxide Precipitate, CIF Asia

<b>Location:</b>	Asia
<b>Contract Basis:</b>	CIF
<b>Currency:</b>	USD
<b>Shipping Port:</b>	Main Chinese, Japanese & South Korean Ports (other ports normalised)
<b>Form:</b>	Crystalline
<b>UOM:</b>	Tonnes
<b>Delivery Window:</b>	60 days
<b>Min Size:</b>	1 tonne
<b>Max Size:</b>	1,000 tonnes
<b>Main Consumers:</b>	China, Japan, South Korea
<b>Production (2023):</b>	24,100 tonnes (Co contained)
<b>Publication:</b>	Every two weeks, alternate Wednesdays by 4pm (London)
<b>Benchmark Code:</b>	BMIMHP003



- Supply
- Demand
- Supply & Demand

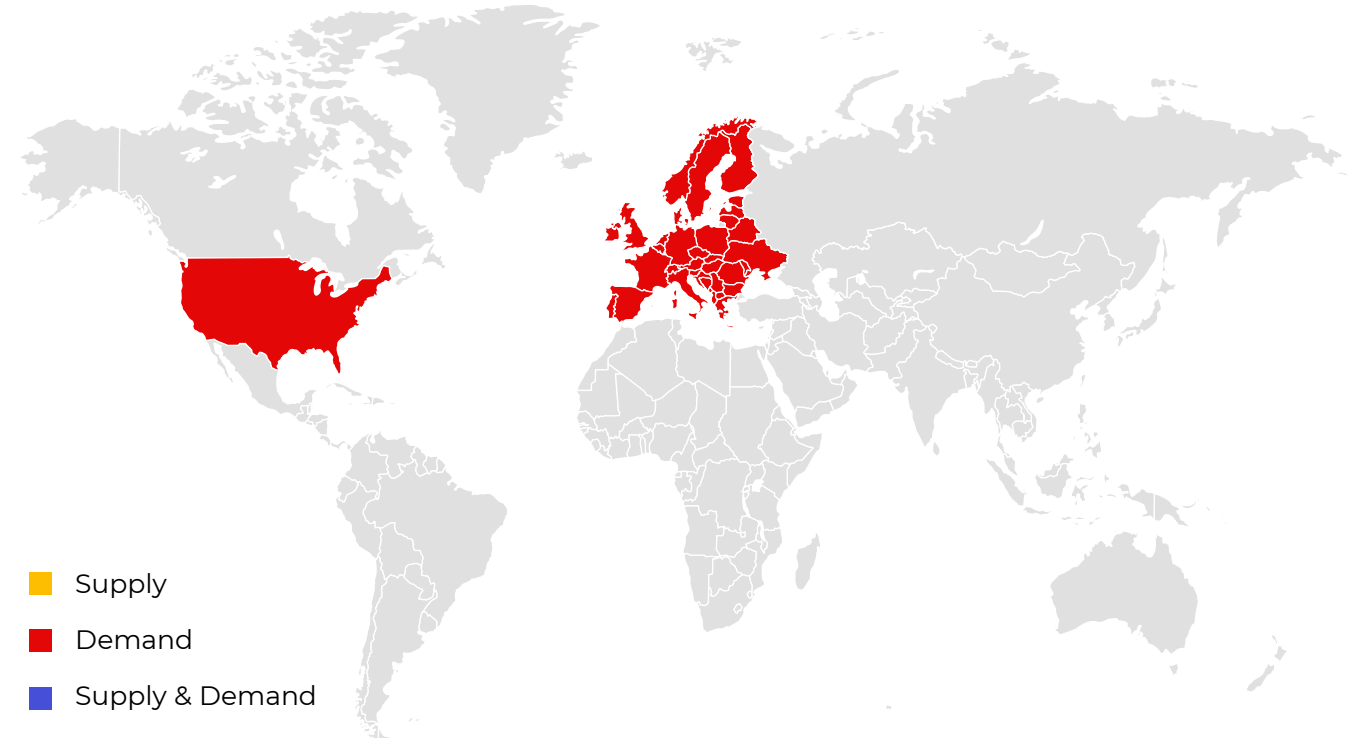
MHP	
Nickel Content	Min 35%; Max 55%
Cobalt content	Min 1%; Max 4.5%
Common impurities	S <4.29%; Mn <3.5%; Fe <0.5%; Zn <0.5%



# 4. Price Definitions

## 4.3 Cobalt Alloy Metal, EXW Europe

<b>Location:</b>	Europe
<b>Contract Basis:</b>	EXW
<b>Currency:</b>	USD
<b>Destination Port:</b>	Main European ports, all other ports normalised
<b>Form:</b>	<ul style="list-style-type: none"> <li>• Nikkelverk cut cathodes,</li> <li>• Vale Port Colborne rounds,</li> <li>• Vale Long Harbour alloy grade rounds (99.9% cobalt),</li> <li>• SMM cut cathodes,</li> <li>• Jinchuan cut cathodes</li> </ul>
<b>UOM:</b>	Tonnes
<b>Delivery Window:</b>	60 days
<b>Min Size:</b>	1 tonnes
<b>Max Size:</b>	1,000 tonnes
<b>Main Consumers:</b>	US, Europe
<b>Publication:</b>	Weekly by Wednesday 4pm (London)
<b>Benchmark Code:</b>	BMICM002



Cobalt Metal	
Formula	Co
Cobalt content	Min 99.8%
Common impurities	Na <0.025%; Mg <0.008%; Ca <0.005%; Fe <0.001; Si <0.003% (Na <0.15%; SO <sub>4</sub> <0.35%; Ca <0.04; Cl <0.02 for Sustainable Cobalt)

# 5. Compliance & Security

All Benchmark Minerals analysts are obligated to sign a code of conduct upon employment in relation to data collection and assessment, to ensure independence and credibility.

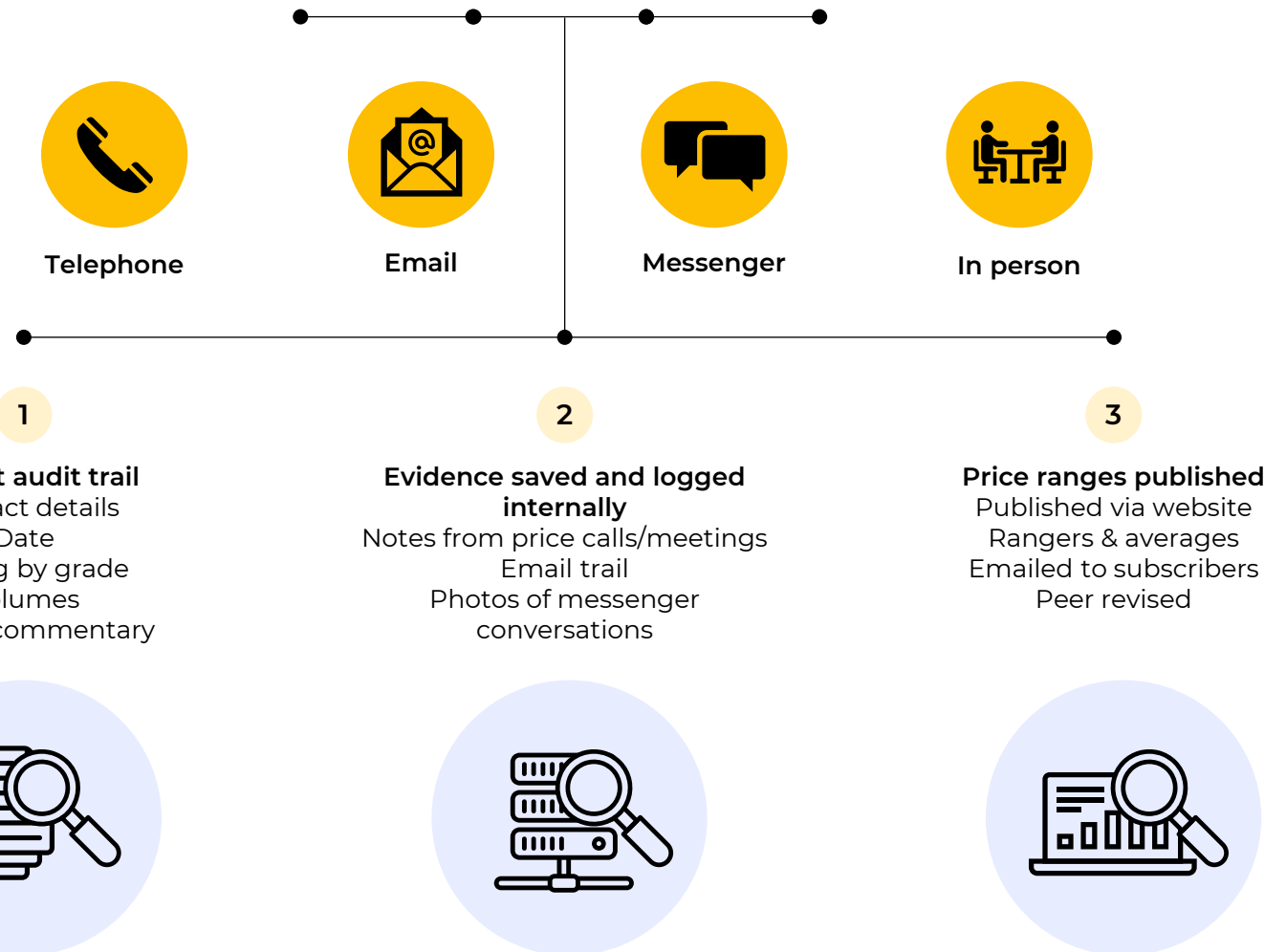
This code of conduct is enforced through annual appraisals by the Head of Prices where adherence to these principles is reviewed. All price analysts are also required to attend annual training sessions where the terms of the employee code of conduct are outlined in detail.

Benchmark Minerals also provides an employee handbook which outlines all company policies in relation to antitrust, conflicts of interest, anti-corruption and bribery.

Data and supporting information is stored on a secure cloud-based platform to ensure the information can only be accessed and edited by authorised Benchmark Minerals employees.

We treat the confidentiality of all our contacts and data with the utmost seriousness and information exchange is subject to ethical walls within the company in addition to complete confidentiality outside of the company. To allow for open and transparent price discussions, Benchmark Minerals does not publicly disclose the sources of its price data.

Benchmark Minerals analysts are required to log all price interactions, including supplementary market commentary in our internal audit system which details:



## 5. Compliance & Security

- Point/date of contact
- Company details
- Method of communication
- Pricing by grade
- Volume information
- Market commentary

All relevant data and information is stored on Benchmark Minerals internal systems for a period of 10 years following the date of publishing.

### IOSCO

Benchmark Minerals implements an accountable audit trail for its price collection and has created a robust price collection process, designed specifically for the cobalt market.

To assist in the introduction of financial derivatives into the cobalt industry, Benchmark Minerals adheres to an IOSCO compliant methodology, with strict governance to protect the reliability and accuracy of Benchmark Minerals cobalt pricing.

Benchmark Minerals also implements a strict employee code of conduct to prevent conflicts of interest and a

comprehensive complaints process to address any external queries or questioning of Benchmark Minerals prices.

### EU Benchmark Regulation

Benchmark Minerals will seek registration as a benchmark administrator under the EU Benchmark Regulation as its prices are adopted in financial derivatives.

## 6. Corrections

Benchmark Minerals is committed to providing accurate and reliable pricing information and as such any corrections to previously published data are reviewed internally and communicated to the market at the earliest opportunity.

Only data that was available when the price/index was published is used for subsequent corrections.

If a correction is identified, then the price assessment team conduct an internal verification process to ensure

the accuracy of the correction before notifying the market.

Notification of corrections is sent directly to users/licensors via email, updated on the following issues and also updated on the Benchmark Minerals online price database.

## 7. Complaints and Enquiries

Benchmark Minerals strives to provide the highest standards for any request for information or complaint in order to give the market full confidence in its price assessments.

Any complaints should be forwarded to our dedicated complaints mailbox at:

[complaints@benchmarkminerals.com](mailto:complaints@benchmarkminerals.com)

All complaints are acknowledged within 3 working days. For any other queries, contact details for price assessment analysts are provided on the front page of the Price Assessment reports and we encourage open and transparent dialogue to retain the highest levels of confidence in our prices.

If for any reason a client is unsatisfied with the response received in relation to their enquiry/complaint, this can be escalated to the Benchmark Minerals management team by contacting:

[complaints@benchmarkminerals.com](mailto:complaints@benchmarkminerals.com)

Complaints handling principles:

- Complaints can come from data providers, subscribers, as well as industry participants.
- Complaints can cover specific prices, how the data was compiled, proposed changes to methodology and other editorial decisions taken by BMI.
- BMI has set a timetable and will handle all complaints

in a timely and fair manner.

- The inquiry is conducted independently of any personnel who may be subject of the complaint.
- BMI will advise the complainant of the outcome in writing in a reasonable period.
- There is recourse to an independent 3rd party appointed by BMI if a complainant is dissatisfied with the outcome and seeks further recourse.
- All material concerning the complaint and its review are kept by BMI for five years.

## 8. Revision History

Benchmark Minerals is committed to consistency in data collection and reporting methodology. Benchmark Minerals regularly reviews its policies and procedures, at least annually, to affirm the appropriateness of its methodologies.

Benchmark Minerals has continual and regular dialogue within the industry which allows it to gather feedback, adjust and refine its policies that ensure:

- Appropriateness of data assessments
- Provide amendments and or removal of pricing conditions
- Initiate new price assessments to meet market needs

**April 2018:** Updated to reflect launch of new cobalt metal pricing

**February 2020:** Revision of methodology to follow IOSCO principles, cobalt hydroxide grade specifications published

**September 2021:** Updated to outline Methodology Public Consultation and include other minor changes

**February 2022:** Updated to include job title changes and to add all assessments to company structure chart

**May 2022:** Updated price assessment process to include Senior Analyst final price review authority

**February 2022:** Updated to include job title changes and to add all assessments to company structure chart

**January 2023:** Increased the frequency of publication to include mid-month pricing and assessment

**March 2023:** Added a cobalt sulphate to hydroxide premium and a hydroxide payable to cobalt sulphate to all cobalt assessments

**July 2023:** Cobalt Oxide grade specification published

**Jan 2024:** Cobalt payable MHP and aggregate MHP added

**May 2024:** Increased publication frequency to include weekly and two-weekly assessments, and expanded cobalt metal form specification

**November 2024:** Updated to include provision for modifications to publishing schedule

**July 2025:** Increased publication frequency of cobalt battery metal

**July 2025:** Updated to change FX rate provider and publication currencies.

**February 2026:** Updated to include Cobalt Metal Alloy specification



# Contact us:

For more information please contact:

**Prices & Data Division**

[prices@benchmarkminerals.com](mailto:prices@benchmarkminerals.com)

For complaints or compliance related questions,  
please contact:

**Risk and Compliance Officer**

[complaints@benchmarkminerals.com](mailto:complaints@benchmarkminerals.com)

[benchmarkminerals.com](http://benchmarkminerals.com)

