

# **SMM Cobalt Sulphate Index Methodology Standards**

**Product: SMM Cobalt Sulphate Index**

**Last Formal Consultation Period: 2024/12/5 – 2024/12/20**

**This Document Expires: November 30, 2025**

**Last Updated: December 6, 2024**

## **1. SMM Price Assessment Methodology General Principles**

Shanghai Metals Market (hereinafter referred to as SMM) is a fully independent third-party service provider that does not participate in any substantive transactions. Instead, it acts as a market observer or organizer, maintaining close communication with buyers and sellers of transactions, and providing relevant services to the market. SMM continuously formulates, reviews, and revises its methodology through communication with industry insiders, adopting the most common product specifications, trade terms, and conditions in the industry. It equally values normal transactions that meet specification standards. SMM reserves the right to exclude from its price assessments any information deemed unreliable or unrepresentative.

SMM publishes metal prices (or indices, etc., including the Chinese market or markets outside China) daily, commonly known as SMM prices. SMM has established methodologies for all published SMM prices (which are available on SMM's official website [www.smm.cn](http://www.smm.cn) for reference). These methodologies specify the formation and publication methods and procedures for SMM prices, which are strictly followed to form and publish SMM prices.

To align with actual market conditions, SMM will make necessary revisions to the SMM price assessment methodology, and these revisions will be announced on SMM's official website [www.smm.cn](http://www.smm.cn) 23 days before their official implementation. For any questions or suggestions regarding SMM prices and their methodologies, please contact SMM customer service personnel (contact details can be found on SMM's official website [www.smm.cn](http://www.smm.cn)). This paragraph should be read in conjunction with SMM's methodology review and change policies, as well as SMM's complaint policy.

This document specifies the standards and management methods for the SMM Cobalt Sulphate Index. The purpose of SMM in establishing these standards is to create a transparent and verifiable SMM price formation mechanism, providing an important pricing indicator for market participants.

The SMM Benchmark Management Committee also regularly reviews the methodology and its assessment and publication processes. This committee maintains oversight of the SMM methodology and compilation process, ensuring that the prices or indices reflect the objective situation of the physical spot market for the relevant commodities as accurately

as possible. If the committee identifies any issues, it will immediately point them out and propose external consultations and modifications to the methodology or process being implemented, thereby improving the quality of the prices or indices published by SMM. The committee can only propose changes to the methodology and steps used for future price or index assessments; it cannot alter already published prices or indices.

## **2. Formation of the SMM Cobalt Sulphate Index**

### **2.1 Definition, Background**

Definition: The SMM Cobalt Sulphate Index is an indicative price formed and published by SMM according to this methodology, which can be used as a settlement reference by the cobalt sulphate industry chain (cobalt sulphate raw materials, cobalt sulphate smelting, ternary cathode precursor production, Co<sub>3</sub>O<sub>4</sub> production, ternary cathode, battery, etc.). This price reflects the most likely widely traded guidance price for each full working day. The price is based on the actual transactions and intended quotes of cobalt sulphate between both parties (cobalt sulphate smelters, ternary cathode precursor producers, Co<sub>3</sub>O<sub>4</sub> producers, etc.) on the day, calculated using a weighted average model with different weights assigned to each price submitter.

Background for Publishing the SMM Cobalt Sulphate Index:

The Chinese cobalt sulphate market is large, ranking first in the world. Changes in the domestic Chinese market's cobalt sulphate prices have a direct impact on global cobalt sulphate price trends. In analyzing the global supply and demand relationship for cobalt sulphate, the "China factor" is becoming increasingly important. Therefore, there is an urgent need to compile and publish an index that can fully reflect the domestic Chinese cobalt sulphate market prices, objectively, truthfully, and timely, reflecting the supply and demand situation of the Chinese cobalt sulphate market. By analyzing this price, patterns and reasons for cobalt sulphate price changes can be discovered, providing a reference for scientific decision-making by enterprises, research institutions, and government departments in the cobalt sulphate industry.

### **2.2 Brief Introduction to Formation Method**

The SMM Cobalt Sulphate Index reflects the price that best represents the widespread trading of cobalt sulphate on the day of the index release. The index is calculated as a weighted average of the most likely transaction prices provided by companies at various stages of the cobalt sulphate industry chain in China. This document, in accordance with IOSCO standards, clarifies the method for the SMM Cobalt Sulphate Index calculation model, the collection and processing of transaction sample data, and establishes an accurate, transparent, and verifiable mechanism for reporting the cobalt sulphate index.

## **2.3 Source of Raw Data Information**

### **2.3.1 Collecting Prices from Price Submitters**

Please note that the following standards and procedures should be read in conjunction with one of SMM's policies: the inclusion and exclusion policy for price submitters.

#### **2.3.1.1 Selection Criteria for Price Submitters**

SMM selects representative market participants from the tangible industry chain as target price submitters (i.e., data providers, including smelters and downstream enterprises, etc.) for the SMM Cobalt Sulphate Index according to the following criteria.

SMM takes all reasonable precautions to determine and verify the authenticity and reliability of each price submitter. SMM's procedures aim to minimize the risk of using any abnormal price data information and oppose any manipulation of the index.

SMM policies include, but are not limited to, the following steps:

Collecting and verifying the authenticity of relevant public documents (such as business licenses, etc.) for each price submitter

Ensuring that each price submitter is involved in the trading, purchasing, selling, or production of one or more related cobalt sulphate products within the industry chain

Ensuring that each designated contact person at a price submitter has the right to directly access relevant data within the company and has the necessary authority and capability to promptly submit the data to SMM's price analysts

Verifying the reputation of each price submitter by consulting other reputable market participants

##### **2.3.1.1.1 Requirements for Smelters**

- a. Cobalt sulphate production of over 600 mt (metal content) per year with stable production, standardized sales models, smooth sales channels, relatively stable sales volumes, a certain level of influence and recognition, lawful and honest operation, and a good market reputation.
- b. Able to objectively and truthfully feedback the actual situation of the company's cobalt sulphate production and sales, including production, operating rate, product quality, selling price, sales volume, sales destination, and product inventory, and maintain good communication with SMM price analysts on these matters.
- c. Have a certain level of analysis and expectation of the macroeconomic situation, the current state of the cobalt sulphate industry, and cobalt sulphate market transactions, and maintain good communication with SMM price analysts on these matters.

##### **2.3.1.1.2 Requirements for Downstream Enterprises**

- a. Cobalt sulphate procurement volume of over 500 mt (metal content) per year with stable production, standardized procurement models, smooth procurement channels, relatively stable procurement volumes, a certain level of influence and recognition, lawful and

honest operation, and a good market reputation.

- b. Able to objectively and truthfully feedback the actual situation of the company's cobalt sulphate procurement, including product quality, pricing methods, procurement price, intended price, source of procurement, and cobalt sulphate inventory, and maintain good communication with SMM price analysts on these matters.
- c. Have a certain level of analysis and expectation of the macroeconomic situation, the current state of the cobalt sulphate industry, and cobalt sulphate market transactions, and maintain good communication with SMM price analysts on these matters.

### **2.3.1.2 Formation and Adjustment of the List of Price Submitters**

SMM selects price submitters based on the above criteria and forms a relatively stable list of price submitters. To ensure the smooth conduct of price collection, SMM signs a formal price submitter agreement with each price submitter, ensuring the accuracy and timeliness of price data information while protecting the confidentiality of the price submitters. SMM assigns dedicated price analysts to collect prices from the dedicated contacts at the price submitters and communicate about the market situation related to the price data information. SMM continuously evaluates each price submitter based on the above criteria and adjusts the list of price submitters according to the evaluation results. For price submitters that do not meet the above criteria, SMM will place them on a rectification list and notify them to rectify within a specified period. If a price submitter fails to rectify or still does not meet the standards after rectification within 30 days of the notification, SMM will terminate its qualification as a price submitter.

In addition to price submitters, SMM also collects prices from other market participants. For details, see Section 2.3.2.

Data providers do not receive any incentives, rewards, or benefits from SMM for providing data.

### **2.3.1.3 Method of Collecting Prices**

SMM, based on the price submitter agreement, will have price analysts regularly (between 9:00 AM and 10:20 AM on each trading day) collect relevant cobalt sulphate price data information from the price submitters' contacts via telephone, QQ, WeChat, fax, and email (price data information submitted after 10:20 AM will not be used as the basis for the day's price assessment, and incomplete data lacking the minimum required information details, even if submitted before the deadline, will not be included). All instant messaging content, email communications, and records of any face-to-face communications will be archived; details of telephone communications will be summarized and entered into the database. The price data information must be from typical, repeatable transactions between non-affiliated market participants (financially and legally independent).

SMM price analysts must adhere to business ethics when reporting to their supervisors any communications from market participants that were made under duress or threat, or

any attempts to influence the assessment results through inducements.

The price data information provided by price submitters to SMM should at least include the following, and SMM price analysts should encourage price submitters to provide as much relevant detail as possible, not just the minimum requirements:

**Cobalt Sulphate Specifications**

Cobalt Sulphate: Compliant with GB/T 26523-2022, Co $\geq$ 20.5%, with nickel content in the product not exceeding 0.001%. For specific specifications and indicators, please refer to the attachment: Industry Standard "GB/T 26523-2022 Cobalt Sulphate".

**Quotation Unit: Yuan/mt (physical ton).**

**Delivery Location and Method: Mainstream trading locations in China. Door-to-door delivery.**

**Payment Method: Credit period + bank acceptance payment (the most mainstream settlement method in the market as surveyed by SMM, other payment methods are standardized to this standard).**

**Online Update Time: 10:30 AM each trading day**

**Collecting Prices from Other Sources**

SMM's policy for collecting market data information is that SMM welcomes information from all sources or organizations, as long as the data providers submit the information in good faith and for genuine purposes. But it requires that all parties must acknowledge the SMM Data Submitter Code of Conduct. SMM does not accept instant messaging communication requests from unidentified individuals, and requires that SMM price analysts, before engaging in instant messaging communications, must at least confirm the identity of the market participant according to the 2.3.1.1 procedure mentioned above.

## **2.4 Detailed Formation Process and Related Regulations**

### **2.4.1 Information Data Collection**

SMM price analysts will collect price data information based on the aforementioned price collection standards. The preliminary price data results will be comprehensively considered, including market quotations, spot market conditions, macroeconomic factors, industry status, market transactions, supply and demand relationships, inventory levels, and other significant political, economic, and natural factors, to ultimately derive a preliminary raw data set.

When evaluating the collected data, SMM will comprehensively assess the rationality of each company's quotation, including the relationship between the buyer and seller, supply and demand at various market stages, specifications and quality, shipping and payment terms, etc., to determine the cobalt sulphate index. Prices resulting from related-party transactions, forced sales under financial or legal pressure, and any other non-recurring transactions will be excluded.

If any abnormal submitted data is identified, SMM price analysts will need to investigate it. SMM price analysts will re-contact the price submitter to verify the accuracy, applicability, and completeness of the submitted data. If errors are confirmed to have occurred during the submission process, such as input errors, the errors will be corrected and re-verified and screened. If no errors occurred during the submission process, it can be concluded that the data submitted by the price submitter is not qualified, and further communication and confirmation with the company are required.

SMM will always strive to make the greatest effort to confirm quotations, inquiries, and transaction information with relevant parties. SMM will endeavor to verify all market data information provided by buyers/sellers with their counterparties through multiple channels. When both parties of a transaction are unable or unwilling to confirm the data, SMM will seek cross-verification from other market participants.

A company's quotation is intentionally high or low due to internal special sales plans or policies;

A company's bid is intentionally announced to the market in advance based on market anticipation.

SMM's process of evaluating all prices should minimize the subjective judgment of analysts. Established standards and procedures will be applied to manage the steps taken by SMM price analysts in screening the collected data (please refer to the SMM Expert Judgment Guidelines for details) and to assess whether the data included in the price evaluation is valid or whether anomalies have been excluded. The experience of SMM price analysts in the cobalt sulphate trading market is solely to ensure that only data meeting the explicit methodological requirements is included in the price evaluation process. The SMM Regulatory Committee will regularly review the implementation of these procedures to ensure compliance with the published standards. To ensure the highest possible standards, SMM price analysts will receive training and regular evaluations in the markets they are responsible for assessing prices. This ensures that SMM price analysts follow the methodological provisions in a consistent manner.

#### **2.4.2 Information Data Standardization**

SMM price analysts need to standardize this preliminary data result, and ultimately all data must exist as standardized product prices.

Each price data will be electronically recorded or simultaneously exist in written records. All electronic records and any possible paper records must be archived by the price collection personnel and retained for a long period (at least 5 years) in a secure network and physical environment. Please refer to the SMM Data Retention Policy for details.

#### **2.4.3 Price Index Derivation and Outlier Handling**

The SMM cobalt sulphate index is derived by weighted averaging the standardized data and the weights of each company after standardizing the collected qualified data.

The initial weights of each company are calculated based on the company's participation in various trading stages of cobalt sulphate. SMM will regularly or irregularly review the weights of companies and the industry chain, and adjust or maintain the weights based on changes in market supply and demand structure and after consulting the price submitters and the market.

After collecting all prices daily, SMM will analyze the daily price collection and index results, retaining the right to adjust weights. The adjusted weights are then weighted averaged with the data collected that day to obtain the final index for the day. The regressed weights will be used as the initial weights for the next working day.

For companies with quotations that deviate significantly over a long period, in addition to the aforementioned weight reduction measures, SMM will investigate to determine if there is any behavior misleading the SMM cobalt sulphate index quotation. Once verified, the company will be disqualified as a price submitter.

#### **2.4.4 Publication of Index Evaluation (Calculation)**

At 10:30 AM each trading day, the price derived from the complete collection, standardization, and weighted calculation will be published in the form of an index.

#### **2.4.5 Price Publication**

SMM will form the SMM cobalt sulphate index according to the following standards and regulations and publish it on the SMM official website [www.smm.cn](http://www.smm.cn).

The publication time is 10:30 AM each working day (excluding Chinese legal holidays and weekends).

The deadline for price collection, from 10:20 AM to the latest publication time of 10:30 AM, is used to verify data and evaluate and calculate the final published cobalt sulphate index.

The publication time may also be affected by various emergencies and force majeure factors, such as power outages and natural disasters. If this occurs, SMM will make every effort to inform the market of the delayed price publication time as early as possible. Please refer to the SMM Disaster Recovery Procedure for details.

The prices published by SMM are available to any customer who subscribes to SMM services. The prices published by SMM are protected by copyright, and without explicit agreement with SMM, any third party may not distribute or use them for commercial benefit.

#### **2.4.6 Modification of Published Prices**

After the price is published, if errors are found, whether due to incorrect operations or calculation errors, SMM will promptly issue a correction announcement and correct the

errors. Please refer to the SMM Price Correction Policy for details.

## **2.5 Key Points Review**

### **2.5.1 Price (Product) Standards**

**2.5.2** Cobalt Sulphate: Complies with GB/T 26523-2022, Co $\geq$ 20.5%, nickel content in the product not exceeding 0.001%. Please refer to the attachment for specific specifications and indicators: Industry Standard "GB/T 26523-2022 Cobalt Sulphate".

### **2.5.3 Payment Method**

Account period + bank acceptance payment (standardized to the most mainstream settlement method in the market surveyed by SMM, other payment methods are standardized to this standard).

### **2.5.4 Delivery Location**

Buyer's in-plant inventory

### **2.5.5 Pricing Unit**

Chinese yuan/mt

### **2.5.6 Presentation Form**

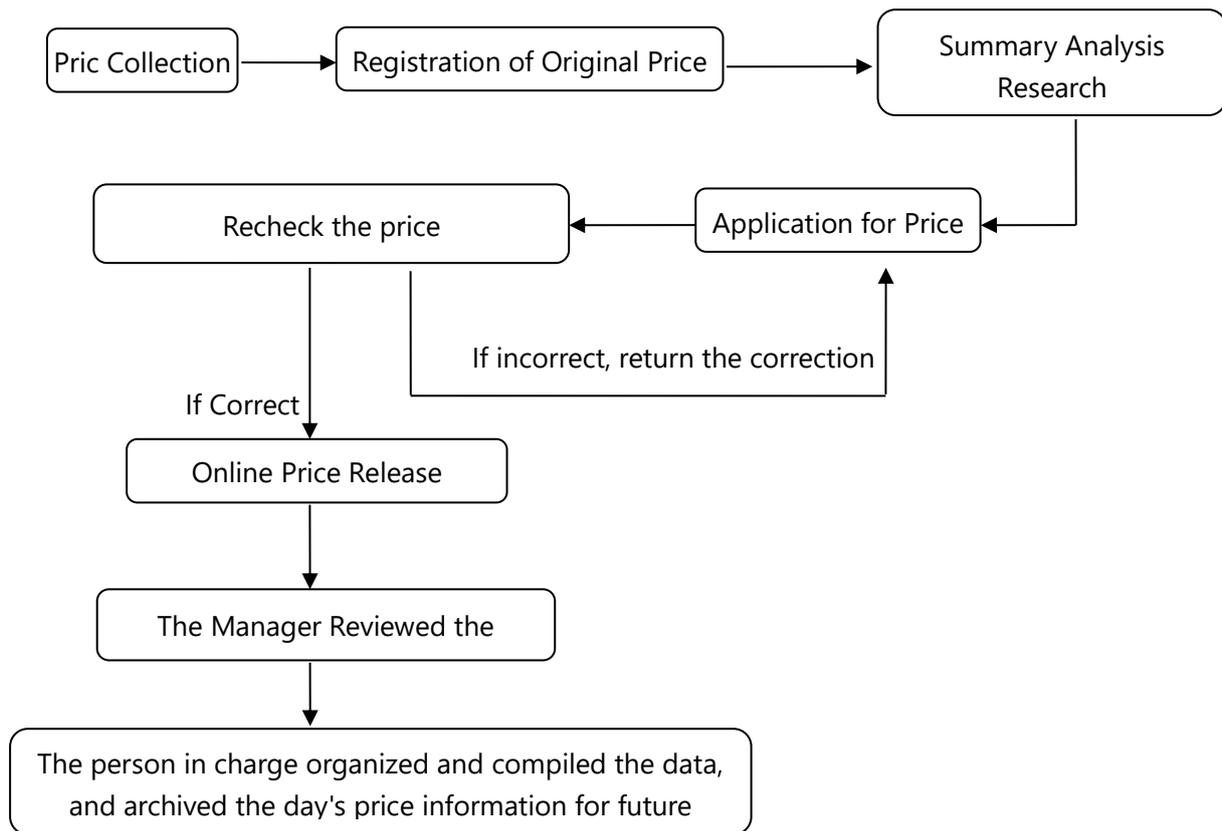
Presented in index form (rounded to the nearest integer), including tax (currently including 13% VAT).

### **2.5.7 Publication Time**

10:30 AM each working day (excluding Chinese legal holidays and weekends).

## **2.6 Quotation Process**

SMM conducts the SMM cobalt sulphate index quotation work from 9:00 AM to 10:30 AM each working day, with the specific process as follows:



## 2.7 Methodology Changes

All markets are changing, and SMM has the responsibility to ensure that the methodology for market reports evolves with the market. Therefore, SMM will regularly conduct internal reviews of the appropriateness of the methodology based on industry feedback. For all substantial but non-urgent potential modifications, SMM will follow a formal external consultation process. Major changes will then be announced, with a notice period of at least 28 days, inviting industry participants to comment, unless special circumstances, especially force majeure (natural disasters, wars, exchange bankruptcies, etc.), shorten the notice period. SMM is committed to carefully reviewing all comments on proposed methodology changes, but in some cases, it may have to make changes to the methodology against the wishes of some market participants. In addition, SMM has a formal methodology consultation process. SMM is committed to holding at least one formal consultation for cobalt sulphate reports each year. The date of the last consultation and the deadline for the next consultation promised by SMM are located at the top of the methodology document. Please refer to the SMM Methodology Review and Change Policy for details.