

# Shanghai Metals Market Price Assessment Methodology

## Lithium Carbonate (Battery Grade) Spot Price

Product: SMM Lithium Carbonate ( Battery Grade ) Spot Price

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### 1. Guidelines to SMM price assessment methodology

Shanghai Metals Market ("SMM") is an independent service provider that does not participate in trades. SMM is a market observer that engages buyers and sellers in the commodities market. By consulting with industry independent participants, SMM drafts the methodology, examines and revises it regularly based on the specifications and terms of trade that are generally used in the market, with equal weighting given to transactions that meet the standards. SMM reserves the right to exclude any unreliable or unrepresentative price data from its price assessment, in line with this methodology and other related Benchmark governance policies and procedures.

SMM price assessments refer to metals spot prices or price indices of both the Chinese and overseas markets reported by SMM on a daily basis. All SMM prices are published according to a set of defined methodologies, indicating how the prices are accessed and reported. These methodologies are published on our website [www.metal.com](http://www.metal.com) (English) or [www.smm.cn](http://www.smm.cn) (Chinese) or for all market participants to understand and refer to.

To reflect the actual trades in the spot market, SMM will update the methodology for SMM price assessments and publish all the revisions on our website [www.metal.com](http://www.metal.com) (English) or [www.smm.cn](http://www.smm.cn) (Chinese) 28 days ahead of the changes. For queries or suggestions on the methodology, please contact SMM customer services (please find contact information on the SMM official websites). **Please read this paragraph in conjunction with the SMM methodology review and changes policy, and the SMM Complaint Policy available at [www.metal.com](http://www.metal.com) (English) or [www.smm.cn](http://www.smm.cn) (Chinese).**

This document specifies the standards and management methods for SMM Lithium Carbonate (Battery Grade) Spot Price assessment. These standards are formulated to establish a transparent and verifiable SMM price setting mechanism and provide market participants with an important pricing indicator.

The Committee maintains oversight of the SMM Benchmark methodology and its compilation process, ensuring that SMM prices and indices reflect as closely as possible the objective conditions of physical markets of relevant commodities. The Committee will immediately point out any problem it finds, and propose external consultations and modifications to the existing methodologies or processes, in order to improve the quality of prices or indices published by SMM. The Committee can only propose

changes to the methodologies and processes used in future Benchmark assessments, rather than modifying the already published prices or indices.

## **2. Guidelines to SMM Lithium Carbonate ( Battery Grade ) Spot Price**

### **2.1 Definition**

The SMM Lithium Carbonate (Battery Grade) Spot Price is assessed and reported based on the methodology defined in this document. As a benchmark, it can be referred to by both parties of lithium carbonate (battery grade) spot transaction as their settlement price. The prices reflect the range of the actual traded prices and the most likely to be traded price levels of spot lithium carbonate (battery grade) on a delivery to factory basis at the time of publication on each complete trading day. The prices are mainly based on the spot prices across China in the current day, including relevant expenses in transportation, taxes, capital costs and other relevant trade expenses.

### **2.2 Introduction of price assessment**

SMM collects data information used to evaluate lithium carbonate spot lithium carbonate (battery grade) spot price by means of standard acquisition (that is, the collection of raw data information that complies with the SMM Data Standards Policy), from including the bid and offer of the buyer and seller that were not traded on the same day, and the actually traded price of spot transaction provided by the price submitters. The amount of each transaction that can be deemed as the standard lithium carbonate spot lithium carbonate (battery grade) offers or trades in the price collection will be not less than 30 mt. Data collection, assessment (calculation) and daily management of SMM Lithium Carbonate spot lithium carbonate (battery grade) Spot Price are conducted by SMM Operational teams (consists of 2 price analysts and a price manager).

The price published by SMM is intended to reflect the real transactable value of a commodity in a time point or period during the day. As such, where a confirmed deal is done for the same specification and loading range as confirmed bids and offers, and when all are declared to the market simultaneously, the deal will take precedence over the bids and offers. During the assessment process, we may consider other information. However, actual transactions, bids and offers will always take precedence.

**Please read this paragraph with the SMM Benchmark Guidelines on Hierarchy of Data Inputs available at available at [www.metal.com](http://www.metal.com) (English) or [www.smm.cn](http://www.smm.cn) (Chinese).**

### **2.3 Source of raw price data**

#### **2.3.1 Collecting from price data submitters**

Please note that the following standards and procedures need to be read together with the **For more information, please refer to the Submitter Exclusion or Inclusion policy available at available at [www.metal.com](http://www.metal.com) (English) or [www.smm.cn](http://www.smm.cn) (Chinese).**

##### **2.3.1.1 Criteria for price data submitters**

SMM will select representative market participants from the industry chain as targeted price submitters for SMM Lithium Carbonate (Battery Grade) Spot Price assessment (data providers, including smelters, traders and downstream users).

SMM will take reasonable care to determine and verify the authenticity and reliability of price provider. The procedure SMM adopts is designed to minimise the risk of using any abnormal price data and oppose any manipulation of the Benchmark.

The SMM policy includes, but is not limited to, steps to take as follows:

- Collect relevant public domain documents (such as business licenses) for each price submitter and verify the authenticity of the documents.
- Ensure that each price submitter engages in the transaction, procurement, sales or production of lithium carbonate (battery grade) industry chain.
- Ensure that each employee designated as the contact person of the price submitter can have direct access to relevant data in the company, and have the necessary authority and ability to submit the data to the price analyst of SMM in a timely manner and in accordance with the SMM Benchmark Submitter Code of Conduct.
- Invite other reputable market participants to help verify the credibility of price submitters.

#### **2.3.1.1.1 Criteria for smelters**

- Smelters should have lithium carbonate (battery grade) capacity of above 5,000 mt on an annualised basis; conduct standardised transactions smoothly across channels with stable sales performance; possess operational integrity, and enjoy good reputation in the market, in the view of SMM.
- Smelters should provide objective and honest feedback on their lithium carbonate (battery grade) production and sales, including output, operating rate, quality of the product, sales price, sales volume, buyers and inventory, and be able to engage with SMM Operational Teams in accordance with the SMM Benchmark Submitter Code of Conduct.
- Smelters should have a sound understanding of and insight into the macro economy, spot market situation and trades of the spot lithium carbonate (battery grade) market, and be able to engage with SMM Operational Teams in accordance with the SMM Benchmark Submitter Code of Conduct.

#### **2.3.1.1.2 Criteria for downstream users**

- Downstream users should have an annual lithium carbonate (battery grade) purchasing volume of above 1,000 mt; conduct standardised transactions smoothly across channels with stable purchasing performance; possess operation integrity, influence and reputation in the market.
- Downstream users should provide an objective and honest feedback on their

procurement, including quality of the product, purchase prices and volumes, procurement sources, and inventory, and be able to engage well with SMM Operational Teams in accordance with the SMM Benchmark Submitter Code of Conduct.

- Downstream users should have a sound understanding of and insight of the macro economy, keeping up with the latest updates of trading in the lithium carbonate (battery grade) market, and be able to engage with SMM Operational Teams in accordance with the SMM Benchmark Submitter Code of Conduct.

#### **2.3.1.2 Formation and adjustment of the price submitter list**

SMM selects price contributing companies based on the above criteria to produce a stable list. SMM signs a formal agreement with each price contributing company to ensure the accuracy and timeliness of the data provided as well as protect confidential information of the price submitter.

SMM delegates specific price analysts to collect transaction data and data related market information from price submitters. SMM will continue to evaluate every price submitter based on criteria above and make amendments to the lists for price contributing companies based on the results of evaluations. When a company fails to meet the criteria, it would be required to rectify within a limited period. If it refuses to rectify or fails to meet the criteria after within 30 days from the date of issue of the rectification notice, SMM will revoke its qualification for price contributing companies.

#### **2.3.1.3 Process of price data collection**

SMM's Operational Teams will collect lithium carbonate (battery grade) spot transaction data from price submitters by means of phone, fax, email, QQ, WeChat and other forms of communication.

The data will include traded prices within the day, and the most likely traded prices, bids and offers. All communication content on instant messengers, WeChat messaging and emails as well as face-to-face communication will be recorded, while phone communication via phone calls will also be recorded in summary and input into the database. Price data must be a typical, repeatable transaction between unaffiliated market participants (completely financially and legally independent).

SMM's Operational Teams will report to their manager about any threat by market participants that could undermine or influence the assessment during the price collection process.

Price data provided by the submitters to SMM should include at least the following kinds of information. SMM analysts should encourage the price submitter to report as much detailed information as possible, not just the minimum requirements specified:

### **Product specification**

Lithium carbonate (battery grade): meets YS/T582-2013,  $\text{Li}_2\text{CO}_3 \geq 99.5\%$ , content of magnetic substances not greater than 0.003%. **For details, please see attachment 1.**

### **Major brands**

For details on major brands for lithium carbonate (battery grade), please see 2.5.2.

### **Traded prices/bids/offers**

The assessment could be a specific price number or the price range that is likely to be traded, unit: ten thousand yuan/mt.

### **Volume**

For normal market transactions, the minimum and maximum volumes for a single transaction should be 30 mt and 500 mt respectively. The volumes can be adjusted accordingly in case of sparse trades caused by force majeure and other factors.

### **Delivery location**

Mainstream trading hubs in China.

### **Payment terms**

Payment terms in the negotiated transaction agreement, such as bank cash transfer, acceptance bills, etc.

SMM strictly controls the submission collection process, and only considers transactions, offers and bids that follow standard contract terms. SMM not only collects the submitted trade price, but also on any significant additional information. If necessary, SMM can require the submitter to provide relevant documents to judge the fulfillment of the contract and to verify the validity of data.

### **2.3.2 Collecting price data from other submitters**

SMM's policy on collecting market information and data is that SMM welcomes all information from various sources or organisations, as long as the data submitter provides them for good faith and authentic purposes. However, the data submitter is required to accept the SMM code of conduct on data submitters. SMM does not accept instant messaging requests from unidentified individuals. SMM price analysts are required to confirm the identity of market participants at least in accordance with the procedures specified in 2.3.1.1 before conducting instant messaging communication with the data submitter.

## **2.4 Detailed formation process and related regulations**

### **2.4.1 Data collection**

SMM price analysts will collect price data and information based on the standards mentioned above. And a preliminary raw dataset is finally generated.

Order of priority order: traded prices, offers/ bid prices and expected prices. Analysts will adopt no less than 4 price points per day in order of priority. When there is

insufficient data in order of priority, it will be filled by the subsequent data.

#### **2.4.2 Data standardization**

SMM price analysts will normalise the preliminary data results, and the finalised prices will be the actual transaction or in the form of a high-low price range. The price range of SMM battery-grade lithium carbonate is generally no more than 5,000 yuan/ton.

#### **Standardization of trading volumes**

When the market is trading normally, SMM will rank the abnormal situation under which the trading volumes of each transaction is greater than 500 mt or less than 30 mt behind the order of priority of reasonable traded prices when there is sufficient price points. When there is insufficient price points, SMM will rank the abnormal situation behind offers/ bid prices and expected prices for reference.

When there are only sparse trades as the market is affected by factors such as force majeure, SMM will rank the abnormal situation behind offers/ bid prices and before expected prices for reference.

#### **Standardization of delivery**

For cash, account period and other transaction methods, SMM will normalise the prices in accordance with market prices by acceptance. Under special circumstances, SMM will take into account factors such as logistics and freight rates.

The price data will be recorded both electronically and in writing. All electronic and written records are archived by analysts and kept at least five years in a secure network environment and physical environment. **For more details, please refer to the SMM Recordkeeping Policy available at [www.metal.com](http://www.metal.com) (English) or [www.smm.cn](http://www.smm.cn) (Chinese).**

#### **2.4.3 Information data analysis, verification and screening**

SMM will always do its best to confirm bids, offers and deals information with related parties. SMM will perform multi-party verification on information provided by the buyers/sellers with their counterparties, and will cross-validate with other relevant participants if the buyers and sellers are unable or unwilling to provide the information.

SMM will exclude any questionable, irreproducible or apparently abnormal quote and transaction in the price evaluation process, and note the reason for removal in the original data set, which will also be kept at least five years. For instance, SMM ensures that only transactions and quotes made between financially and legally independent parties will be included in the price evaluation process. SMM price analysts will compare and analyse data submitted by SMM price submitters, verifying whether the prices show trends that run counter to the wider market. The cases include but are not limited to:

- Traded prices are significantly higher due to the inclusion of special circumstances or special services

- A company's quotes are intentionally higher due to a special sales plan or policy of the company
- A company's bids reflect its prospects for the market price and is intentionally made public in advance

SMM analysts will investigate into the data submitted once any abnormal condition is detected. They will contact the price submitter to verify the accuracy, applicability and completeness of the data. If it is confirmed that errors, such as input errors, are made in the submission process, SMM price analysts will correct the error and conduct verification and screening. If no mistakes are found in the data submission process, it could be concluded that the data submitted is disqualified and has to be removed from the original data set. The finalised price assessment is in the form of a price range of the lowest and highest levels.

Minimal subjective judgment from analysts is required in the SMM price evaluation process. The established standards and procedures will be applied to manage the actions taken by SMM price analysts in screening the collected data, and to evaluate the data included in the price assessment is valid or if the abnormal data has been excluded. **For more details, please refer to the SMM Guidelines for the Exercise of Expert Judgment available at [www.metal.com](http://www.metal.com) (English) or [www.smm.cn](http://www.smm.cn) (Chinese)**

The experience of SMM price analysts in the lithium carbonate (battery grade) trading market is to ensure that only data that meets clear methodological requirements can be included in the price evaluation process. After screening the original data set and removing disqualified data, SMM price analysts will not have any subjective judgment about the normalised data or the price assessments.

The SMM Benchmark Management Committee regularly reviews the implementation of these procedures to ensure compliance with its published standards. To attain the highest possible standards, SMM price analysts are trained and regularly appraised in their respective markets in which they are responsible for assessing prices. This ensures that SMM analysts follow the requirements of the methodology in a consistent manner.

#### **2.4.4 Special circumstances**

SMM reserves the right to exercise judgments when trading liquidity is thin. We will make the assessments based on the economy, relationships between products, transportation and forward market if there is a lack of credible or verifiable market information, so as to make sure that the data samples used to evaluate the spot prices are sufficient and accurate. **For more details, please refer to the SMM Illiquid Market Management Policy and SMM Expert Judgment Policy available at [www.metal.com](http://www.metal.com) (English) or [www.smm.cn](http://www.smm.cn) (Chinese).**

In addition, SMM will also make a price assessment when there is only one offer or bid,

or when the price difference between offers and bids is too big to assess a tradable price. In these two cases, information of spread trade and mainstream market relationships will also be taken into consideration. SMM will set the assessed price between the highest bid and the lowest offer if information on the offers and bids manage to meet all other requirements set in this assessment methodology. SMM will not set the minimum data in the price assessment as sparse deals are sometimes heard in the market.

#### **2.4.5 Price publication**

The SMM Lithium Carbonate (Battery Grade) Spot Price assessment is published on the SMM websites at [www.metal.com](http://www.metal.com) (English) or [www.smm.cn](http://www.smm.cn) (Chinese).

SMM encourages price submitters not to wait until the deadline to submit their data. This is to ensure that SMM price analysts have enough time to verify the data and incorporate it into the price assessment process.

The time of the price publication may also be affected by emergencies and force majeure factors, such as power outages and natural disasters. In such cases, SMM will make every effort to inform the market of the delayed publication schedule as soon as possible. **For more details, please refer to the SMM Disaster Recovery Procedures available at [www.metal.com](http://www.metal.com) (English) or [www.smm.cn](http://www.smm.cn) (Chinese).**

Price information published by SMM is available to subscribers of SMM services and is entitled to copyright protection. Without a clear agreement with SMM, no third party may distribute the information or use it for commercial interests.

#### **2.4.6 Modification of published prices**

If there are any errors (mistake in calculation or errors caused by incorrect operations) after the price is published, SMM will immediately issue a correction statement to reflect the correct price. **For more details, please refer to the SMM Error Correction Policy available at [www.metal.com](http://www.metal.com) (English) or [www.smm.cn](http://www.smm.cn) (Chinese).**

### **2.5 Review of key points**

#### **2.5.1 Product specification**

Lithium carbonate (battery grade): meets YS/T582-2013,  $\text{Li}_2\text{CO}_3 \geq 99.5\%$ , content of magnetic substances not greater than 0.003%. For details, please see the national standards YST 582-2013 Battery-Grade Lithium Carbonate.

#### **2.5.1 Major brands in circulation and producers**

IOSCO battery-grade lithium carbonate manufacturers account for about 75% of China's total battery-grade lithium carbonate production capacity (2022 capacity).

#### **2.5.2 Reference volume**

SMM sets the typical transaction size that reflects market circulation at 30-500 mt.

#### **2.5.3 Delivery**



Delivered on transaction day, delivery to factory, by air or by trucks.

#### **2.5.4 Payment terms**

Bank acceptance

#### **2.5.5 Delivery site**

Factory of buyer

#### **2.5.6 Unit of pricing**

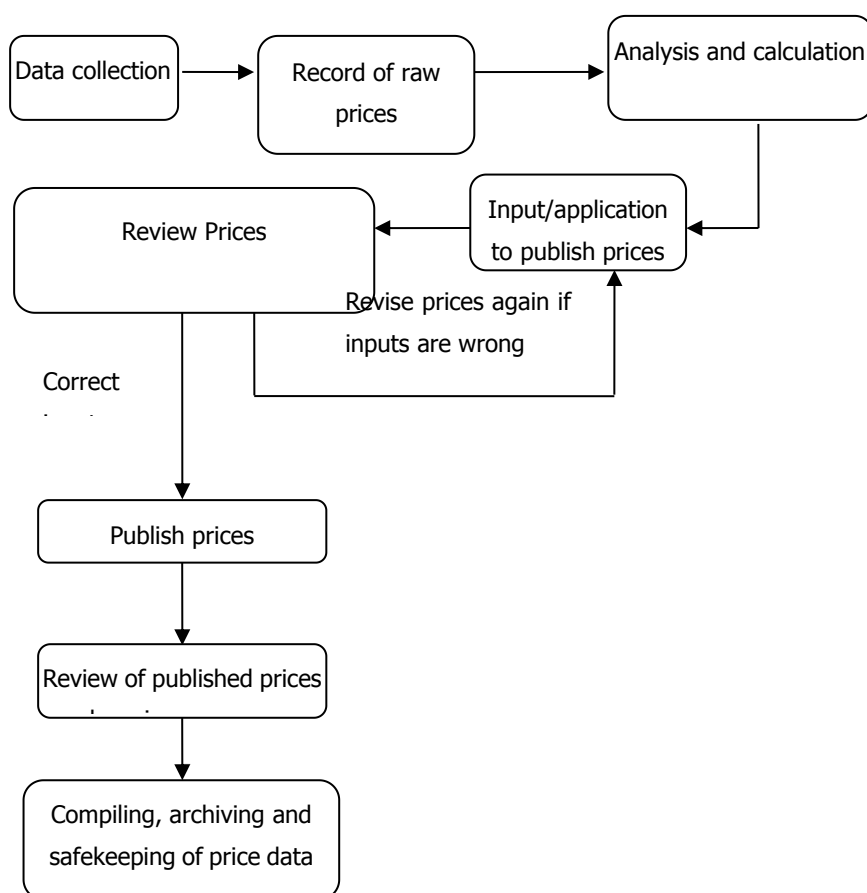
10,000 yuan/mt

#### **2.5.7 Form**

The prices are published as a price range, including 13% VAT

#### **2.5.8 Price assessment process**

SMM undertakes the lithium carbonate (battery grade) spot price assessments. The detailed process is as follows:



SMM strictly controls the submission collection process, and only considers transactions, offers and bids that follow standard contract terms. SMM not only collects the submitted trade price, but also on any significant additional information. If necessary, SMM can require the submitter to provide relevant documents to judge the fulfillment of the contract and to verify the validity of data.

## **2.6 Adjustment to the price assessment methodology**

SMM updates our methodologies on a regular basis to reflect a constantly changing metals trading market. Amendments will be made based on feedback by market participants, and an internal check will be also made regularly. We will follow the external consultation workflow to amend discrepancies in the methodology that may be less time-sensitive. Major revisions and updates will be published 28 days ahead of the changes, to seek opinions from market participants, unless there are unavoidable and unpreventable circumstances such as natural disasters, war or bankruptcy of the exchange, which will shorten the period. SMM promises to carefully look into any feedback to the adjustment of the price methodologies, and will amend the methodologies under certain circumstances even if some market participants do not approve of the changes. We will arrange an official consultation of the the Lithium Carbonate (Battery Grade) spot price assessment at least once a year. Dates of the most recent and the next session are at the start of this document. **For more details, please refer to the SMM Methodology Review and changes Policy, available at [www.metal.com](http://www.metal.com) (English) or [www.smm.cn](http://www.smm.cn) (Chinese).**