

Shanghai Metals Market Price Assessment Methodology Zinc concentrate (Zn 50%) treatment charge (TC) in Hunan

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 believes the processes and procedures documented in their Methodologies represent the most accurate way of representing the underlying economic reality of the markets each Benchmark seeks to measure.

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 (English) or 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 (English) or 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 (English) or www.smm.cn (Chinese).**

This document specifies the standards and management methods for the **SMM zinc concentrate (Zn 50%) treatment charge (TC) in Hunan** assessment. These standards are formulated to establish a transparent and verifiable SMM price setting mechanism and provide market participants with an important pricing indicator.

To ensure that SMM Benchmarks and indices are constructed, maintained and operated to the highest standards, the administrator of the SMM Benchmarks – Shanghai Metal Markets ("SMM" or "the Administrator", herein known as "SMM") employs a robust governance framework to manage and approve new

Benchmarks and also approve changes to the methodologies of existing Benchmarks.

The SMM Benchmark Management Committee (“the Committee”) is responsible for all aspects of the design, management governance and calculation of the SMM Benchmarks, and is responsible for approving all policies and procedures relating to the provision of the Benchmarks. The Committee will regularly - and no less frequently than annually - review the methodology and its evaluation and publication process. Additionally, the Committee will review the methodology and all other relevant policy and procedure documents in response to changes to market conditions or any aspect of the dynamics of the underlying market the Benchmarks seek to measure.

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 zinc concentrate (Zn 50%) treatment charge (TC) in Hunan

2.1 Definition

The SMM zinc concentrate (Zn 50%) TC in Hunan is assessed and reported based on the methodology defined in this document. As a benchmark, it can be referred to by both parties of zinc concentrate spot transaction as their settlement price. The prices reflect the actual transaction price range of zinc concentrate in Hunan every week.

2.2 Introduction of price assessment

SMM collects data information used to evaluate zinc concentrate (Zn 50%) TC in Hunan 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 fail to close a deal that week, 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 zinc concentrate (Zn 50%) TC in Hunan or trades in the price collection will be not less than 100 mt (Zn content). Data collection, assessment (calculation) and daily management of SMM zinc concentrate (Zn 50%) TC in Hunan are conducted by SMM Operational teams (consists of 2 price analysts and a price

manager).

SMM's objective is to collect price (or data) reflecting arm's length spot market activity. Types of data collected can include, but not limited to:

- Concluded transactions
- Firm bids that are available to the whole marketplace, with market accepted terms
- Firm offers that are available to the whole marketplace, with market accepted terms
- Expressions of interest to trade, with market accepted terms
- Third party reports of transactions
- Any other data that may be relevant to SMM prices

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. TCs vary for zinc concentrates of different grades. Even if the zinc concentrate actually traded by the submitters is not the standard zinc concentrate (Zn 50%), we will include it in the reference. 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 (English) or 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 (English) or www.smm.cn (Chinese).**

2.3.1.1 Criteria for price data submitters

SMM will select representative market participants from the industry chain in Hunan as targeted price submitters for SMM Zn 50% zinc concentrate TCs assessment (data providers include zinc concentrate producers in Hunan, traders that trade zinc concentrate in Hunan and zinc smelters in Hunan).

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 zinc concentrate products.
 - 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 zinc concentrate producers

- Zinc concentrate producers should have production capacity of above 500 mt with metal content 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 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 price analysts.
- Smelters should have a sound understanding of and insight into the macro economy, spot market situation and trades of the zinc and zinc concentrate market, and be able to engage with SMM price analysts.

2.3.1.1.2 Criteria for traders

- Traders should have over two years of experience in zinc concentrate spot trading with an annual purchasing or sales volume of above 1,000 mt with metal content; conduct standardised transactions smoothly across channels with stable purchasing and sales performance; possess operation integrity, influence and good reputation in the market.
- Traders should provide objective and honest feedback on their zinc concentrate procurement and sales, including quality of the product, prices and volumes for purchase and sales, sources of procurement, buyers, and inventory, and be able to engage with SMM price analysts.
- Traders should have a sound understanding of and insight of the macroeconomics, status quo and trading of the zinc and zinc concentrate market, and be able to engage with SMM price analysts.

2.3.1.1.3 Criteria for zinc smelters

- Smelters should have zinc concentrate purchasing capacity of above 1,000 mt with metal content 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 zinc concentrate purchases, including quality of the product, procurement price, purchasing volume, purchasing sources 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 zinc and zinc concentrate 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.

The updated list of SMM zinc concentrate TCs contributing companies:

Type	Company
Smelter	Zhuzhou Smelter Group
Smelter	Hunan Taifeng Mining Group
Smelter	Hunan Sanli Group Co., Ltd
Smelter	Hunan Jinshi Mining (Group) Co., Ltd
Smelter	Hunan Xuanhua Zinc Co., Ltd
Mine	Hunan Baoshan Nonferrous Metals Mining Co., Ltd
Mine	Chenzhou Xiasheng Industry Co., Ltd
Mine	Hunan Nonferrous Metals Co., Ltd. Huangshaping Mining Branch
Mine	Xiangxi Hualin Mining Co., Ltd

Note: SMM will amend the list based on the selection criteria in this document.

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

2.3.1.3 Process of price data collection

In accordance with the agreement with price contributors, SMM price analysts will collect zinc concentrate TCs from price submitters by means of phone, QQ, WeChat, fax, email and other forms of communication before 17:00 China Standard Time ("CST") each Friday. (Price data that are submitted after 17:00 CST on each Friday will not be included in price assessment on the day).

The data will include traded prices within the week, 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 looks to collect as much data as possible, including transactions, offers, bids and specifications of samples. SMM confirms and analyses submissions, and encourages all market participants to become submitters to the SMM Benchmarks and indices, as more extensive data will increase the accuracy of the Benchmarks and indices.

SMM's Operational teams aim to collect comprehensive information related to the underlying markets the index seeks to measure.

Submissions received that do not fully adhere to SMM's defined requirements will not be incorporated into the index calculation.

SMM takes into account the principle of confidentiality, and all employees must strictly abide by SMM confidentiality and Conflicts of Interest policies, and never disclose any Benchmark and index compilation-related information, whether regarding Benchmark and index values, data or customers, unless required to by law.

SMM strictly prohibits Operational team employees and management from participating in transactions, offers, or bids as individuals or on behalf of market participants in the underlying markets the Benchmarks and indices seek to measure or any related derivative markets. They are also not permitted to

provide market participants with free subscriptions or any other benefits in exchange for price or market information. A specific Conflicts of Interests declaration is required annually by Operational team employees, managers and any other staff involved in the production of SMM Benchmarks and indices, declaring that they have not benefited from non-public information. All staff involved in the calculation or management of SMM Benchmarks and indices receive regular training on Conflicts of Interest. **SMM maintains a Conflicts of Interest Register. For more information please refer to the SMM Conflicts of Interest Policy, available at www.metal.com (English) or www.smm.cn (Chinese).**

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

Zn **50%**

Volume

The minimum transaction size is set at 100 mt with metal content.

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 after taking into account offers and bids, spot market conditions, future market conditions, the macroeconomy, industry status, transactions, demand and supply, inventories, and political, economic, and natural factors.

2.4.2 Data normalisation

SMM price analysts will standardise the preliminary data results in the event of different zinc concentrate grades. A deduction of 20 yuan/mt with zinc content will be used in the excess or deficiency content based on a benchmark grade of 50%. TCs will be lowered by 20 yuan/mt with zinc content for every 1% increase in the grade, and TCs will be lowered by 20 yuan/mt with zinc content for every 1% decline in the grade. The final TCs will be in the form of a range and quoted against standard Zn 50% zinc concentrate in Hunan.

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 (English) or 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 range of TCs.

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 (English) or www.smm.cn (Chinese)**

The experience of SMM price analysts in the zinc concentrate 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 Evaluation of published prices (calculation)

SMM analysts fine-tune the range of TCs based on their industry experience, demand and supply before publishing the range of Zn 50% zinc concentrate TCs in Hunan.

After years of tracking and gathering feedback, SMM applies a price-range strategy in assessing zinc concentrate RCs as other strategies have proven unreliable. For example, a tonnage weighted calculation will be easily affected by traded price and volumes. As trading volumes are unpredictable, the accuracy of price assessments can be affected by a few regions that account for the majority of market share when the trading volumes in those regions are overly large. The absence of trades resulting from contentious opinions between the parties can also lead to failures in price assessment.

2.4.5 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 (English) or www.smm.cn (Chinese).**

In addition, SMM will also make a price assessment when there is an absence or a lack of trades in the spot week. In these two cases, information of actual demand and supply and offers will also be taken into consideration. SMM will not set the minimum data in the zinc concentrate TCs assessment as sparse deals are sometimes heard in the market.

2.4.6 Price publication

The SMM Zn 50% zinc concentrate TCs assessment for Hunan is published every Friday on the SMM English and Chinese websites at www.metal.com (English) or www.smm.cn (Chinese). The publication will be one or two days ahead of the public holidays which will be announced on the SMM websites.

The time for price collection is before 17:00 CST every Friday, and the 30-60 minutes thereafter is used to verify and calculate the final zinc concentrate TCs.

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 (English) or www.smm.cn (Chinese).**

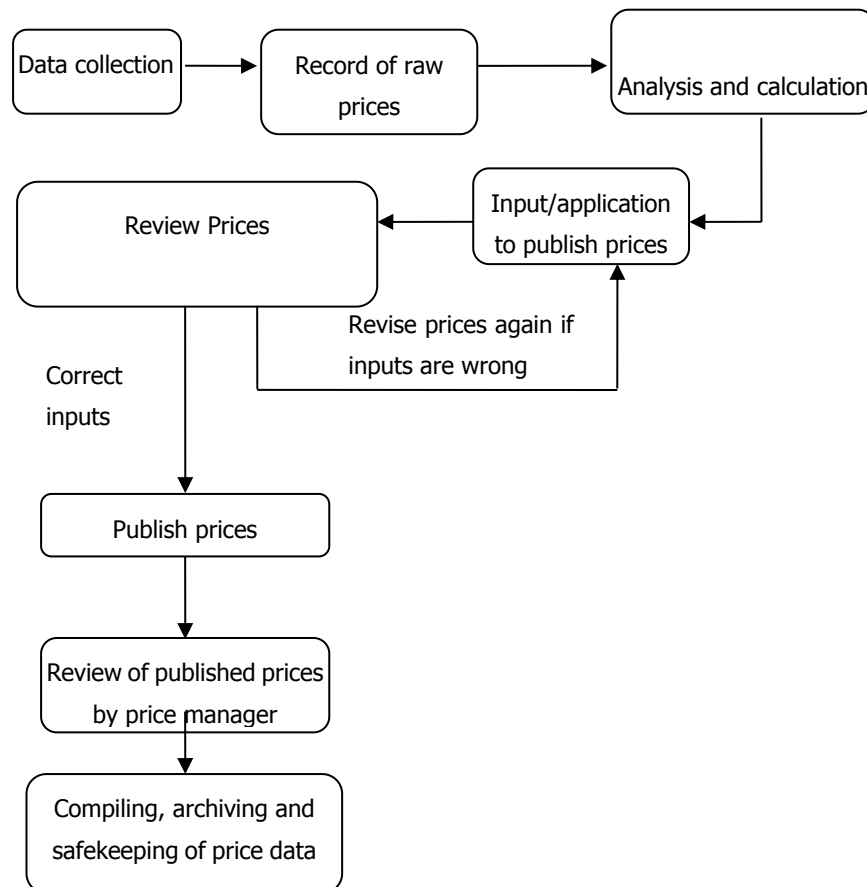
Price information published by SMM is available to subscribers of SMM services and is entitled to copyright protection. Without a clear agreement with SMM, no third party may distribute the information or use it for commercial interests.

2.4.7 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 (English) or www.smm.cn (Chinese).**

2.5 Price assessment process

SMM undertakes the zinc concentrate TCs assessments before 17:00 CST every Friday. The detailed process is as follows:



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 **zinc concentrate TCs 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 (English) or www.smm.cn (Chinese).**

3. Historical data

SMM maintains records of all communications with submitters, whichever

collection channel is used: telephone, email or internet-based instant-communication tools, in order that all submissions used in the Benchmarks can be traced back to an original record of the received submission in line with the SMM Recordkeeping Policy. Via the Submitter Code of Conduct policy, all submitters are also subject to record keeping policies.

Submissions are stored in SMM's secure storage system to ensure the segregation and confidentiality of data, and to prevent the improper usage of the data by parties not involved in the Benchmark calculation process.

Subscribers of Shanghai Metals Market are able to access historical data of the price assessments since **April 10, 2015**. For information on subscribing to historical price data Please visit www.metal.com (English) or www.smm.cn (Chinese). **For more details, please refer to the SMM Recordkeeping Policy, available at www.metal.com (English) or www.smm.cn (Chinese).**

4. Compliance with SMM Policies

All SMM employees must comply with the methodologies published by SMM, as well as follow SMM's internal standards and policies, which include the SMM Conflict of Interest Policy, SMM Whistleblowing Policy, SMM Error Correction Policy, SMM Methodology Review, Consultation and Modification Policy, and SMM Complaint Policy.