TSI Methodology and specifications guide
Australian coking coal, US and European steel and ferrous scrap

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INTRODUCTION

S&P Global Platts methodologies are designed to produce price assessments and indices that are representative of market value, and of the particular markets to which they relate. Methodology documents describe the specifications for various products reflected by Platts assessments and indices, the processes and standards Platts adheres to in collecting data, and the methods by which Platts arrives at final values for publication.

These guides are freely available on Platts website at the following link: https://www.spglobal.com/platts/en/our-methodology/methodology-specifications/metals.

The indices listed in this guide are calculated using a volume-weighted averaging methodology for specific steel products traded in particular locations and metallurgical coal exported from Australia. These indices are referred to as The Steel Index ("TSI") in Platts publications.

Platts discloses publicly the days of publication for its price indices, and the times during each trading day in which it considers transactions in determining its index levels. This schedule of publication is available on the Platts website, at the following link: https://www.spglobal.com/platts/en/our-methodology/holiday.

The dates of publication and the pricing periods are subject to change in the event of outside circumstances that affect the Platts TSI team's ability to adhere to its normal publication schedule. Such circumstances include changes to official holidays, network outages, power failures, acts of terrorism and other situations that result in an interruption in Platts' TSI operations at one or more of its worldwide offices. In the event that any such circumstance occurs, Platts' TSI analysts will endeavor, whenever feasible, to communicate publicly any changes to its TSI publication schedule, with as much advance notice as possible.

The TSI methodology reflects the Platts TSI team's commitment to maintaining best practices in price reporting.

The TSI methodology has evolved to reflect changing market conditions through time, and will continue to evolve as markets change. A revision history consisting of a cumulative summary of changes to this and future updates, is included at the end of the methodology. Methodology is reviewed regularly to ensure it reflects current market reality. Such reviews are carried out by Platts' TSI analysts and their managers, supplemented and supported by price methodology specialists who operate separately from the reporting teams. The Platts' TSI analysts follow a clearly defined process for public consultation on material changes to its TSI and other methodologies. This process is based on full transparency and communication with industry stakeholders aimed at gaining market acceptance for any proposed introduction or changes to methodology. For more information on the review and approval procedures, please visit: https://www.spglobal.com/platts/en/our-methodology/methodology-review-change.

How this methodology statement is organized

This description of methodology for price indices is divided into seven major parts (I-VII) that parallel the entire process of producing price values for the specified market period (daily or weekly).

- Part I describes what goes into TSI price indices, including details on what data the market participants are expected to submit, the process for submitting data and criteria for timeliness of market data submissions.

- Part II describes the security and confidentiality practices that Platts' TSI uses in handling and treating data.

- Part III is a detailed account of what the Platts' TSI analysts do with the collected TSI data to formulate its price indices. It includes descriptions of the methods that Platts uses for reviewing TSI data, and the methods used to convert raw data into price indices, including the procedures used to identify anomalous data. This section describes how and when judgment is applied in this process, the basis upon which transaction data may be excluded from the index, and the relative importance assigned to each criterion used in forming them. This section also describes the minimum amount of transaction data required for a particular price index to be published. Finally, this section describes how the Platts' TSI analysts address periods where one or more reporting entities submit TSI market data that constitute a significant proportion of the total data upon which the index is based.

- Part IV explains the process for verifying that published prices comply with the Platts TSI team's standards.

- Part V lays out the verification and correction process for revising published prices and the criteria the Platts' TSI analysts use to determine when it publishes a TSI correction.

- Part VI explains how users of TSI price indices can contact Platts' TSI analysts for clarification of data that has been published, or to register a complaint. It also describes how to find out more about Platts' complaint policies regarding TSI.

- Part VII lists all indices which are calculated using this methodology.

PART I: INPUT DATA

The objective of Platts' TSI analysts is to ensure that the submission of transactional information and other data inputs that analysts use as the basis for compiling the price indices is of the highest quality, as this is crucial to maintaining the integrity of its various pricing processes.

Platts' TSI analysts compile transactional data received from a broad group of companies, hereafter referred to as "data providers". This group is fully representative of the markets for which indices are produced.
Platts’ TSI analysts aim to have a balance of data providers representing the “buy side” and “sell side” of transactions for each reference price. These data providers submit spot price data and related information based on their transactions.

In order for a company to become a data provider, Platts’ TSI analysts require the following conditions to be satisfied:

- The company has to be directly involved in the supply chain, either buying or selling relevant products;
- The company must be directly involved in spot transactions. Negotiated contract prices or index-related prices are ineligible for submission.
- The company must be either buying or selling relevant products within the specification ranges defined as permissible by Platts’ TSI analysts and for the relevant pricing points specified for each index.

Individuals providing the data typically hold positions in the commercial sales or purchasing departments in their companies, although they can also be members of senior management or administrative staff.

Data submitted to the Platts’ TSI team must be detailed, transaction-level data. The Platts’ TSI analysts strongly encourage companies to surpass minimum reporting requirements and to submit all their transaction data relevant to TSI indices.

Data collected and units
1. Data providers should submit the following transaction information in each data submission:
   - Detailed Material Specifications, including grade or brand
   - Transaction Date
   - Transaction Price up to two (’.00) decimal places, in units of measurement, applicable to each index: $/metric tonne for coking coal, $/short ton for the US steel and scrap indices and Eur/mt for European steel indices.
   - Incoterms and Location
   - Volume/Lot Size, in metric tonnes/short ton
   - Loading/Delivery Window (start date - end date) within which it is intended that each cargo will be loaded and made ready for shipping or delivered, depending on Incoterms. If the cargo is already loaded onto a ship, then data providers note this information. This information is necessary to determine whether the transaction is considered relevant. Only cargoes which fall within the stipulated loading/delivery window, specific for each product, are included in the calculation of TSI indices.
   - Origin and Destination. Shipments from all major ports within the applicable origin country for which freight cost differentials to the reference port can be determined by the Platts’ TSI analysts are included in the index.
   - The pricing points for TSI Premium Hard Coking Coal reference prices are FOB East Coast Port Australia for Australian exports. Relevant ports for the FOB East Coast Port Australia reference prices include the Queensland ports of Dalrymple Bay, Hay Point, Gladstone and Abbot Point; and in New South Wales: Newcastle and Port Kembla.
   - Payment Terms, recorded in terms of “Number of Days” with “0 days” representing “Payment at sight”.

For Australian Coking Coal Material Specifications should also include:
- Volatile matter (air dried) – up to two (’.00) decimal places, in %
- Ash content (air dried) – up to two (’.00) decimal places, in %
- Total moisture content (as received) – up to two (’.00) decimal places, in %
Vitrinite content – whole integer, in %
- Sulfur content (air dried) – up to two (:.00) decimal places, in %
- Phosphorus content (air dried) – up to two (:.00) decimal places, in %
- Vitrinite Reflectance (RV max) – up to two (:.00) decimal places, in %
- Gieseler Fluidity – whole integer, in dial divisions per minute (DDPM)
- Free Swelling Index (FSI) – up to one (:.0) decimal place
- Coke Strength after Reaction (CSR) – whole integer in %
- Total Dilatation (max contraction + max dilatation) – whole integer, in %
- Vitrinite content – whole integer, in %

**How to report**

The Platts’ TSI analysts accept price information in real-time across a variety of media, including email, instant messaging systems and telephone. For steel and scrap indices only data providers are able to submit their price information through the online portal (www.steelbb.com/data_provider/). Data submissions should not be considered as received by TSI analysts unless acknowledged as received by a TSI analyst.

Data providers are requested to provide Platts’ TSI analysts with their email addresses and telephone numbers so that those responsible for submissions can be contacted and asked questions about submissions made. Where TSI analysts become aware that data has not been received, they may contact the data provider to request submission.

TSI analysts will attempt to verify any transactions, bids and offers, published on physical trading platforms, directly with at least one of the counterparties involved in order to receive sufficient details to normalize the price to TSI reference product specifications.

Submissions for TSI indices must be made at least 30 minutes before the index publication time if they are to be included in the data used to compile that day’s index. The 30 minutes before index publication time each day is used to compile, verify and prepare the TSI prices for publication. Any incomplete submissions made within the time period but unclarified at the cut-off point, are not included in the compilation process for that day’s index. Submissions made on time but in an incomplete form, where the terms are not clarified until after the cut-off deadline will not be used in the compilation process for that day’s index. Permissible data submitted after 30 minutes before the publication time is considered for inclusion in the compilation of the next day’s/week’s indices.

As a general recommendation Platts’ TSI analysts advise market participants not to wait until the last possible minute before the cut-off deadline as the communication may not be completed and verified in time for inclusion in the data sample used to compile that day’s index.

**PART II: SECURITY AND CONFIDENTIALITY**

Market participants are expected to submit all transactions for each trading period. The collected data is published and tested with the wider market, unless data confidentiality is agreed between data providers and Platts in separate agreements. Platts’ TSI analysts commit to keeping the identity of each data provider, except in circumstances where it is legally required to disclose it.

Submitted data is stored in a secure network, in accordance with S&P Global policies and procedures. Transaction-level price data is used only for constructing indices. Platts’ TSI analysts do not use price data from an individual source for news reporting purposes, and Platts news reporters do not have access to individual entities’ transaction reports. Data aggregated from all reporting sources – eg. changes in prices and trading volumes over time – may be used as the basis for reports or news stories.

**PART III: CALCULATING INDICES**

The following section describes how Platts’ TSI analysts use reported transactions and any other market information they have collected, in the manner described in Part I, to formulate the price indices.

**Index calculation principles**

Platts’ places independence and impartiality at the heart of its price indices. Platts has no financial interest in the price of the products or commodities on which it reports. Its overall objective is to reflect the transactable value of the commodity.

Platts’ TSI analysts require transactional spot price data that has been executed at arms’ length in the open market. A spot price for a physical commodity is the value at which a standard, repeatable transaction for merchantable material takes place between parties on an arms’ length basis. Where both counterparties are known, the TSI data validation process includes checks to ensure transactions are executed at arm’s length.

TSI prices are available to any party who subscribes to the relevant Platts services. TSI prices are copyrighted and may not be distributed or used for commercial gain by any third party without an explicit agreement with Platts. Market participants do not need to be subscribers to be data providers.

TSI analysts follow specific methodology when exercising editorial judgment during their pricing process. Judgment is only applied when determining whether data is suitable for inclusion within the index calculation. No judgment is used during the
index calculation itself. Only data that meets methodology requirements is accepted. All such judgments are subject to review by management for adherence to the standards published in the TSI methodology.

To ensure the indices are as robust as possible, TSI processes are subject to managerial and compliance oversight. To ensure analysts follow TSI methodological guidelines in a consistent manner, TSI analysts are trained and regularly assessed in their markets.

Publication Time
The frequency of the publication of the TSI indices can be found in the relevant specifications guides.

Normal publication time is:
- 18.30 in Singapore
- 17.00 in London
- 16.00 in Pittsburgh

Index calculation procedure
The calculation of the indices involves three principal steps:

- Normalization of the data submitted to the reference product specifications and pricing points;
- Analysis, rationalization and verification of the normalized data set i.e. statistical checks, validation and removal of outliers and any anomalous data submissions;
- Volume-weighted calculation of the indices based on the rationalized and validated normalized data set.

Normalization
All data submitted is initially screened to ensure the loading/delivery window corresponds to the Platts requirements for TSI. Any data for which the end of the expected loading/delivery window falls outside this window is excluded from the data sample.

Any data submissions for which one or more attributes fall outside the permissible ranges is excluded from the data sample.

For each data submission that has not been excluded by a previous step, the price is normalized for any variations in material specifications from the applicable reference product specification. For example, for coking coal this includes volatile matter, ash, total moisture, sulfur, nmax, FSI, total dilatation and phosphorus content. The normalization adjustments applied for each factor reflect the average market value-in-use associated with that factor at that point in time, determined by analyses of the data submitted and confirmed by collecting market intelligence, including brand differentials.

Where necessary, price submissions are also normalized for payment terms to ‘at sight’. Adjustments are made based on international lending rates.

Analysis, Rationalization and Verification
Prior to calculating the index, all normalized price data submitted is screened to identify and remove outliers to ensure that the data set is as tight as possible at the pre-calculation stage. This ensures no outlying price data can influence the index.

A variety of statistical analyses are conducted of all the price data and other information submitted by data providers. The purpose of these analyses is firstly to evaluate and record the size, attributes and consistency of the data sample submitted to verify the statistical robustness of the normalized data set and secondly to monitor individual data submissions for any signs of bias or attempts by individual data providers to manipulate the indices.

Any data submissions exhibiting unusual trends are investigated by a TSI analyst and the data provider concerned is contacted. If no satisfactory explanation can be found, the anomalous data submission is not included in the calculation of the index. If any data provider repeatedly submits anomalous data for which no satisfactory explanations can be found, the agreement with the data provider concerned is terminated and no further data is accepted from that company.

For each reference price:
- If one or more price data points are more than a certain range away from the arithmetic average (mean) price of the total data set submitted, the data point furthest from the average is excluded and the average recalculated; this procedure is repeated until all price data points are within the certain range of the average price of the remaining data set. The range is set at:
  - +/- 20% for Australia coking coal index
  - +/- 5% for European and US steel and scrap indices
- The standard deviation of the remaining price data set is calculated;
- Any remaining price data points falling outside +/- 1 times the standard deviation from the average (mean) price of the remaining data set are also excluded.
- For the coking coal index if no data point falls outside +/- 1 times the standard deviation from the mean, the highest and lowest prices respectively within the remaining data are excluded, if they are unique.

Following removal of the outliers and any anomalous data submissions that cannot be verified, the remaining normalized price data set is referred to as the “Core Data”.

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Calculation

Each index is calculated as the volume-weighted average of the normalized Core Data set.

Data is utilized in the following order:

- Concluded and reported transactions
- Bids and offers
- Indicative values

When calculating the volume-weighted average price, the percentage weighting assigned to the total submissions by any single data provider is capped at 40% in order to ensure that the average remains representative.

Fall-back Procedures

If analysis of the Core Data set on any occasion reveals that it does not provide a sufficiently statistically robust basis for compiling the indices (for example, if an insufficient number of transactions has been submitted during the period), fallback procedures are deployed. These fallback procedures ensure that the TSI indices can be compiled on every occasion.

As a first level of fallback, the Core Data set collected for the current period is supplemented by “rolling forward” data submissions made during the previous period by data providers that have not submitted any data during the current period.

Providing this achieves a Core Data set which is a sufficiently statistically robust basis for calculating the indices, the usual methodology is then applied, but any price data “rolled forward” carries a reduced volume-weighting (10% less each day) in the calculation of the reference price.

If, after applying this first fallback measure, there is still insufficient Core Data to meet the necessary robustness criteria for compiling the indices, a second fallback measure is applied in which the Core Data set is supplemented with firm bid and offer price data for the relevant period. The usual calculation methodology is then applied, but any firm bid and offer price data used also carries a reduced volume-weighting relative to any transaction data submitted for the current period (where a transaction is weighted to 100%, the bid/offer is weighted to 10%).

As a third level of fallback, for steel and scrap indices Platts’ TSI analysts factor in indicative values, which are also assigned the weighting of 10%.

For coking coal index Platts’ TSI analysts employ indicative bids & offers only when market-disruptive events lead to acute reduction in FOB data points. In such circumstances, a subscriber note is published to inform market participants when such indications are included.

An evaluation process is conducted before publication on every benchmark index by a second analyst or manager.

PART IV: PLATTS EDITORIAL STANDARDS

All Platts’ TSI employees must adhere to the S&P Global Code of Business Ethics (COBE), which has to be signed annually. The COBE reflects S&P Global’s commitment to integrity, honesty and acting in good faith in all its dealings.

In addition, Platts requires that all TSI employees attest annually that they do not have any personal relationships or personal financial interests that may influence or be perceived to influence or interfere with their ability to perform their jobs in an objective, impartial and effective manner.

TSI analysts are mandated to ensure adherence to published methodologies as well as internal standards that require accurate records are kept in order to document their work.

S&P Global Platts has a Compliance function that is independent of the analysts. The Compliance team is responsible for ensuring the quality and adherence to Platts policies, standards, processes and procedures. The Compliance team conduct regular assessments of editorial operations, including checks for adherence to published methodologies.

S&P Global Platts appoints an independent, external auditor with appropriate experience and capability to review and report on its adherence to this stated methodology. The annual report is published online at https://www.spglobal.com/platts/en/about-platts/regulatory-engagement.

PART VI: REQUESTS FOR CLARIFICATIONS OF DATA AND COMPLAINTS

Platts’ TSI analysts strive to provide critical information of the highest standards, to facilitate greater transparency and efficiency in physical commodity markets.

TSI users raise questions about Platts’ methodologies and the approach taken in indices, proposed methodology changes and other editorial decisions in relation to TSI indices. Platts’ TSI analysts strongly value these interactions and encourage dialogue concerning any questions a market participant may have.

However, Platts-TSI recognizes that occasionally market participants may not be satisfied with responses received or the services provided and wish to escalate matters. Full information about how to contact TSI to request clarification around an index, or make a complaint, is available on the Platts website, at: https://www.spglobal.com/platts/en/contact/complaints.
## PART VII: LIST OF INDICES

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<td>min 100 mt</td>
<td>W 1000-1250 mm, T 0.7-2.5 mm</td>
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<td>Ruhr</td>
<td>4-10 weeks</td>
<td>Prompt payment on delivery</td>
<td>Eur/mt</td>
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<td>STRR03</td>
<td>STRR04</td>
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<td>Calculation</td>
<td>Daily</td>
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<td>European Norm EN10131:2006. Grade: DC01</td>
<td>min 100 mt</td>
<td>W 1000-1250 mm, T 0.7-2.5 mm</td>
<td>EXW</td>
<td>Ruhr</td>
<td>4-10 weeks</td>
<td>Prompt payment on delivery</td>
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<td>Calculation</td>
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<td>European Norm EN10131:2006. Grade: DC01</td>
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<td>W 1000-1250 mm, T 0.7-2.5 mm</td>
<td>EXW</td>
<td>Ruhr</td>
<td>4-10 weeks</td>
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<td>AISI grades C1005 to C1008</td>
<td>Min 100 st</td>
<td>W 48-72&quot;, T 0.0272-0.1000&quot;</td>
<td>EXW</td>
<td>Indiana</td>
<td>4-12 weeks</td>
<td>Net 30 days after delivery</td>
<td>$/st</td>
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<td>Calculation</td>
<td>Daily</td>
<td>PMA1228</td>
<td>AISI grades C1005 to C1008</td>
<td>Min 100 st</td>
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<td>4-12 weeks</td>
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<td>$/st</td>
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<td>Index</td>
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<td>min 100 st</td>
<td>16 G min (0.08&quot; min) W: 48-72&quot;</td>
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<td>16 G min (0.08&quot; min) W: 48-72&quot;</td>
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<td>$/st</td>
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<td>Plate Delivered US Midwest</td>
<td>STPRI00</td>
<td>STPRI03</td>
<td>STPRI04</td>
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<td>Index</td>
<td>Daily</td>
<td>PMA1248</td>
<td>ASTM A36/A36M</td>
<td>min 20 st</td>
<td>W to 86&quot;, T 0.375-2&quot;, L to 240&quot;</td>
<td>Delivered</td>
<td>US Midwest</td>
<td>4-12 weeks</td>
<td>Net 30 days after delivery</td>
<td>$/st</td>
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<td>Ferrous Scrap</td>
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<td>Shredded Scrap Delivered US Midwest</td>
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<td>FEMWD03</td>
<td>FEMWD04</td>
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<td>Index</td>
<td>Daily/Weekly</td>
<td>PMA1318</td>
<td>ISRI 210-211 inclusive</td>
<td>Min 1,000 lt</td>
<td>Delivered</td>
<td>US Midwest mill</td>
<td>0-30 days</td>
<td>Net 30 days after delivery</td>
<td>$/lt</td>
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<td>Shredded Scrap 10-day Average Dlvd US Midwest</td>
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<td>Min 1,000 lt</td>
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<td>US Midwest mill</td>
<td>0-30 days</td>
<td>Net 30 days after delivery</td>
<td>$/lt</td>
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REVISION HISTORY

January 2020: Updated punctuation in references to TSI team and analysts.

December 2019: Completed an annual update of the TSI Methodology and Specifications Guide. During the review, updated web links, and edited text for style and clarity. Added the list of all steel and ferrous scrap indices in Europe and US, which use the same weighted-average methodology as the coking coal. The text was amended throughout to account for additional products.

September 2019: Clarified data provision and validation, as well as methods of data submission to exclude for the coking coal market an on-line channel, which was discontinued in 2018.

March 2019: Updated the Platts Methodology Review and Change web link in the Introduction. Added language to Part III to cover the Platts end of day approval process. Updated Part IV to reference 'Platts'.

October 2018: Methodology & Specifications Guide Annual Review was conducted and clarifications made.

November 2017: Methodology & Specifications Guide Annual Review was conducted. In addition, updates were made to reflect methodology change carried out on November 1, 2017.

October 2016: Correction to typos.

January 2016: Clarified early publication time prior to key Singapore public holidays.

December 2015: Moved the publication time to earlier in the day on the eve of three specified Singapore public holidays and corrected typos.