

Iron ore indices



Methodology and price
specifications – December 2018

Mission statement

Fastmarkets is a leading commodity price reporting agency (PRA) covering the metals, mining, minerals and forestry products industries. Our products include Fastmarkets MB, Fastmarkets AMM, Fastmarkets IM, RISI, FOEX and Random Lengths. For more than 100 years we have been providing commodities price reporting services for use by market participants in their day-to-day commercial activities. These services include assessments and indices of commodity prices as well as news, research and commentary on the underlying markets.

Our mission is to meet the market's data requirements honestly and independently, acting with integrity and care to ensure that the trust and confidence placed in the reliability of our pricing methodologies is maintained. We do not have a vested interest in the markets on which we report.

Introduction

Fastmarkets MB is the leading global provider of pricing intelligence for the non-ferrous metal, steel, steelmaking raw materials, industrial minerals, ferrous and non-ferrous scrap markets, producing price assessments since 1913.

Fastmarkets MB reporters are required to abide by a code of conduct and clear pricing procedures during their market reporting and pricing activities. Fastmarkets is completely independent and has no vested commercial interest in any of the markets it prices.

We are the world's largest dedicated metals price reporting team. We have offices in London, New York, Pittsburgh, Shanghai, Hong Kong, Sao Paulo, Melbourne, Singapore, Mumbai, Dnepr, Istanbul and five other US locations.

The aim of this document is to provide a clear overview of Fastmarkets MB's iron ore indices methodology and specifications for the prices it assesses.

If you have any questions, please contact Fastmarkets editorial director Alex Harrison at aharrison@fastmarkets.com.

Price discovery and methodology

Methodology rationale

The primary role of Fastmarkets MB's Iron Ore Indices is to provide market participants with a fair and robust representation of the physical iron ore spot market price. Fastmarkets MB's rationale for adopting the price-discovery process described in this methodology document is to produce a consistent and representative indicator of market value to suit the iron ore market's requirement for a transparent pricing mechanism.

The indices aim to be reflective of the prices seen during the data collection time period – or window – and to be a reliable indicator of value of the iron ore market to which they relate. The data collection window is determined by Fastmarkets MB after considering the number of data points that can reasonably be expected to be collected on a consistent basis over the selected period to support the index calculation process.

The global benchmark pricing system for iron ore ended in 2009; the vast majority of transactions have since been linked to spot prices. Fastmarkets MB supports the process of price discovery through its established and independent position in the metals market.

The iron ore market is constantly developing. Fastmarkets MB reviews its methodology and specifications and engages in discussions with market participants at least every six months to ensure that they remain as representative of the market as possible. Fastmarkets MB will look to develop and introduce new indices in response to market demands and changes in pricing dynamics with respect to different types and grades of iron ore.

The Iron Ore Index methodology has been designed to meet the requirements of the financial market, as well as the physical market. The 58% Fe Premium Index is used by the Singapore Exchange (SGX) as the settlement price for 58% Fe iron ore derivatives.

Data collection

Data collection and quality

Our indices are based on the data provided by the market. To provide a representative price for the market, we aim to collect as many representative data points as possible.

Any market participant involved in the physical iron ore spot market may contribute data to the indices following a review by Fastmarkets MB of their activities. The aim is to ensure that submitters have sufficient visibility and understanding of the market to be able to provide reliable price data. Fastmarkets MB aims to engage a broad and balanced range of physical market participants in the provision of data.

Fastmarkets MB's Data Submitter Policy provides guidelines to ensure the high level of data quality and integrity that we expect from contributing organisations providing pricing data. The policy can be found on Fastmarkets MB's website or is available upon request.

Fastmarkets MB encourages data sources to provide data on all their concluded transactions and welcomes provision of data from employees in back-office functions.

Our price reporters use multiple channels to collect data, including phone calls, email, and digital messenger services across our offices in Singapore, Shanghai, London and Sao Paulo.

The deadline for data submission is 6.15pm Singapore time. Data received after this time will not be included in the calculation of the index. For indices that are calculated daily, the data collection window runs for the 24 hours prior to the 6.15pm data submission deadline. For indices that are calculated weekly, the data collection window runs for the seven days prior to the 6.15pm data submission deadline. Only trades concluded, bids and offers submitted and market participants' own assessments communicated to Fastmarkets MB within the data collection window will be included in the calculation of the indices. The indices are reflective of the price levels seen during this window.

All the reference units, such as the currencies and volumes used in the indices, are in line with recognised iron ore market conventions and the reference units used for transactions in these markets. Fastmarkets MB publishes a minimum-acceptable volume for all index specifications.

All data supplied to Fastmarkets MB Iron Ore Indices is kept strictly confidential. Fastmarkets MB Iron Ore Indices may sign Data Submitter Agreements (DSAs) with any data provider, if requested to do so.

Index calculation

The Fastmarkets MB Iron Ore Indices are tonnage-weighted calculations, where actual transactions carry full weight, as reflected by the reported volume, while offers, bids and market participants' own assessments of the market are weighted at the specified minimum tonnage for the respective index. In instances where the same deal is reported by multiple sources, these will be treated as independent full-tonnage data points.

Fastmarkets MB aims to collect full details of each transaction including brand, commercial terms and any other details relevant to value and pricing. If tonnage is not reported, the minimum published tonnage for the index will be used.

The development of electronic trading platforms has led to many changes in the iron ore spot market. Fastmarkets MB will include price data from both GlobalOre and Corex in its index calculations.

Market balance

The Fastmarkets MB Iron Ore Index methodology is designed to provide market participants with a fair and robust reflection of the physical iron ore spot price level. The methodology incorporates structures and mechanisms to ensure a balanced and consistent calculation that is able to resist possible undue influences.

The Fastmarkets MB Iron Ore Indices are structured to balance the influence of all sides of the market. This reduces the potential risk of market distortions and bias in the data and ensures that all parts of the market have the same influence on the final Index calculation.

The published index figure is the straight average of three sub-indices, each of which contain data from a single part of the market: producers (miners), consumers (mills) and traders*. Each sub-index is a tonnage-weighted calculation of normalized price data. Only the final indices are published. The use of three sub-indices means that each part of the market has a maximum 33% weighting in the final index. This removes the possibility of bias or any single data provider having an overbearing influence on the final index.

Transaction data received via GlobalOre and Corex will be entered into each sub-index. This reflects the balanced nature of ownership of the platforms.

Normalization

Nearly all material traded on the iron ore spot market

differs from the base specification of the indices. This price data requires normalization to determine the equivalent price for the respective index base specification.

Material that falls within the target specification range is normalized to the index base specification and port of delivery. The base specifications and ranges have been chosen following consultation with the market to reflect the reality of the physical spot market.

Data is normalized to the base specifications using in-house developed models based on regression analysis of the collected data points. The analysis allows Fastmarkets MB to capture the value-in-use applied by the market to different materials and to normalize it to a single specification. This normalization process also allows Fastmarkets MB to capture and normalize factors outside of the chemical and physical properties such as values associated with individual brands.

The normalization coefficients for the daily indices are updated every month to reflect the constantly changing value-in-use relationship of different products and grades. Fastmarkets MB updates the normalization coefficients for the weekly iron ore Indices every quarter. All normalization coefficients, prior to publication, are subject to peer review and are signed off by a senior member of Fastmarkets MB's editorial or index teams. The different timings of the updates for the normalization coefficients reflects the different levels of data liquidity in the markets. Our aim is to balance the requirement to keep the value-in-use calculations reflective of the market and to provide a statistically robust data set for analysis.

Specification payment terms are based on typical commercial practice in the iron ore spot market. Transactions that are conducted on different payment or credit terms can be normalized, taking into account discounts, interest rates and standard commercial terms.

Material in different physical form is excluded as necessary from the index in question. Fastmarkets MB excludes domestic Chinese material as well as material imported by routes other than by sea – by train or by truck, for example. Material that has been delivered and is held on stockpile at the dock is also excluded except in the China Port Stock Index.

Criteria for discarding pricing data and the removal of outlier data

Fastmarkets MB uses its expert judgment to exclude prior to inclusion in the model unrepresentative numbers

and discard prices that it believes may otherwise be questionable and unreliable and/or when deciding to use fall-back procedures. In exercising expert judgment, the following factors must be considered:

- Is the information received credible? If questionable: have we seen signed contracts (preferable), or has it been confirmed on both sides of the deal?
- If credible: were all the prices in a similar range?
- Were all the deals reported of a similar size?
- Do the reported deals all have the same terms and specifications?
- Did all the sources indicate the market was headed in the same direction? If not, why not?
- It is not unusual for different sources to report slightly different numbers but it is important, as far as possible, to understand why they are different.
- In the absence of trade, what are the prevailing bids/offers in the market? Did the source provide firm bids/offers or indicative numbers?
- What are the positions of the contributors?
- Are we confident about the freight or free-on-charge costs?
- Has an adequate sample been obtained that correctly represents the market?

Fastmarkets MB has constructed its Iron Ore Indices to exclude outlier data automatically. All data points after normalization that fall more than 4% away from the initial calculated index are automatically excluded – the index is then recalculated. Outliers will be investigated; suspected attempts to influence the index unfairly may result in the data provider being warned or excluded.

Fastmarkets MB reserves the right to see contracts and signed paperwork before inclusion of the data in the calculation. If this is refused, the data supplied may be excluded from the calculation process. Fastmarkets MB reserves the right to exclude data that is not fairly presented or is believed may be an effort to distort the index. In this instance, the data, and the data supplier, may be excluded from the data collection process.

Index calculation in periods of low data liquidity

All Fastmarkets MB Iron Ore Indices are calculated based on price data collected from the market. The Indices are set up so that actual transactions have the greatest effect on the final calculated price.

Since Fastmarkets MB aims to calculate each index using a robust data set, it will therefore where necessary look to use price data including assessments, offers and bids collected from the market. Data points that do not

reflect actual transactions will be interested into the indices in the same way as transaction data but will be weighted according to the lowest tonnage permissible for the respective index.

Fastmarkets MB does not specify a minimum amount of transaction data, or a transaction data threshold, required for the publication of its indices because liquidity varies across the iron ore markets.

In the event that in a particular pricing session the dataset collected is not considered suitably robust (such as there being too few data points) for the calculation of an index, Fastmarkets will implement the following fall-back procedures (1-7) until a suitable number of data points is reached to calculate the index:

1. Carry over transaction data from other sub-indices in same calculation period
2. Carry over non-transaction data from other sub-indices in same calculation period
3. Carry over transaction data from the previous calculation in the appropriate sub-index
4. Carry over transaction data from the previous calculation from any sub-index
5. Carry over non-transaction data from the previous calculation in the appropriate sub-index
6. Carry over non-transaction data from the previous calculation from any sub-index
7. If no price data can be collected, the index price will be carried over

The implementation of fall-back procedures does not affect the tonnage weighting of the original data point. In the unlikely situation that more than half of the pricing data collected on one day is provided by a single source, Fastmarkets will use the fall-back procedures 3-7 (see above) to ensure there is not a dependency on a significant proportion of data (of 50% or more) being provided by a single entity.

Publication

Daily indices are published at 6.30pm Singapore local time. Weekly indices are published each Friday at 6.30pm Singapore local time. Monthly value-in-use indices are published at 6.30pm on the first working day of the month.

Indices are not published on Singapore public holidays.

Singapore public holidays 2018-2019 are as follows:

2018

Tues 25 December: Christmas Day

2019

Tues 1 January: New Year's Day

Tues-Weds 5-6 February: Chinese New Year

Fri 19 April: Good Friday

Weds 1 May: Labor Day

Sun 19 May:* Vesak Day

Weds 5 June: Hari Raya Puasa

Fri 9 August: National Day

Sun 11 August:* Hari Raya Haji

Sun 27 October:* Deepavali

Weds 25 Dec 2019: Christmas Day

Source: www.mom.gov.sg

*Where the national holiday is on a Sunday the public holiday will take place on the following working day.

Where public holidays occur on a Friday, the weekly indices will be published on the preceding working day and will reflect price data from that week's working days.

Corrections and delays

If an index is published incorrectly, it will be rectified and republished as soon as possible. A correction notice will be sent to all subscribers.

Fastmarkets MB uses several procedures and measures to avoid delays in the publication of its Indices. In the event of a delay, however, Fastmarkets MB will inform subscribers as soon as possible.

In the event of late publication, only data that has been received within the correct standard timeframe will be included in the calculations. No indices will be amended due to the emergence of new data or market activity after the initial publication. Retrospective changes to the published values will only be made in cases of administrative or calculation error.

Methodology and price specifications review process

Fastmarkets MB aims to continually develop and periodically revise its methodologies in consultation with industry participants, with the objective of adopting product specifications and trading terms and conditions that reflect and are representative of typical working practices in the iron ore industry.

Fastmarkets MB reviews its methodologies every six months. If market changes necessitate more frequent changes, Fastmarkets MB will implement its formal review process in line with its published consultation process.

Any change to the methodology and/or price specifications are implemented following a consultation process that starts with Fastmarkets MB posting on its website an advance pricing notice providing clear details and a timeframe for the change proposed. The objective of the consultation process is to give market participants sufficient time and opportunity to provide feedback and views about the change proposed.

Changes to the existing methodology will either be classed as 'material' or 'immaterial'. 'Material' changes are those that may result in fundamental changes to the published price once implemented. These include specification changes or index structural changes. 'Immaterial' changes are those that will not result in a different price level once implemented. Typically a material change will require a three-month consultation period.

For more details on the formal periodic review of the methodology and details of the consultation process to propose changes to the methodology, refer to Fastmarkets MB's Methodology Review & Change Consultation Process available on Fastmarkets MB's website

Procedure to ensure consistency in the price-discovery procedures

Fastmarkets MB aims to maintain the highest standards in the provision of prices to those involved in the global metals industry. All Fastmarkets MB pricing employees are required to adhere to Fastmarkets MB's Code of Conduct and Pricing Guidelines.

All indices are subject to peer review prior to publication and are signed off by a senior member of Fastmarkets MB's editorial or index teams. This peer-review process is in place to make sure that pricing procedures and methodologies are correctly and consistently applied and to ensure integrity and quality of the published prices.

Full details of data inputs and calculations are stored in Fastmarkets MB's electronic database and may be accessed at any time for internal review and auditing purposes.

Index-related queries and complaints

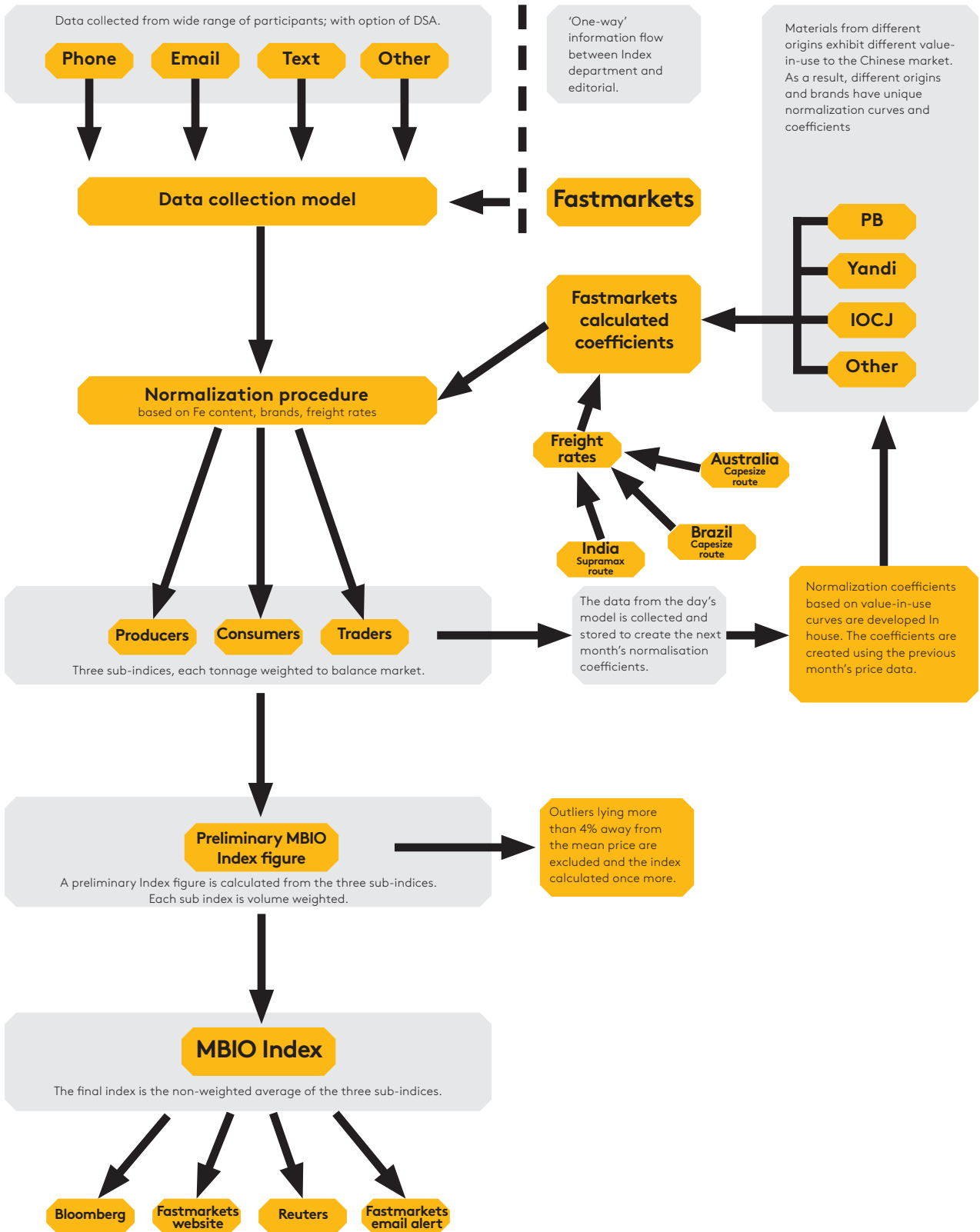
Fastmarkets MB encourages engagement from the market on its pricing principles and methodology. The company promotes understanding of its calculation procedures and is committed to responding to requests for further information and clarification on a timely basis.

There are multiple channels for interaction with the Index department including email, telephone and instant messenger services.

If a subscriber has an issue with published prices, they may contact the Index team. In the event that the response is not satisfactory the issue may be escalated to the internal compliance department. For more details refer to Fastmarkets MB's Complaint Handling Policy available on our website.

Fastmarkets MB takes all queries and complaints seriously and will seek to provide an explanation of the prices wherever possible. It is important to note, however, that calculation models and input data remain confidential and cannot be provided to third parties.

Capturing the relationship between different materials



Iron ore indices

62% Fe Fines CFR Qingdao

Fastmarkets MB publishes two separate indices for 62% Fe Fines on a CFR Qingdao basis, representing different gangue profiles.

The MBIOL-62 and MBIOL-62-LA are benchmark prices representing the mid-grade iron ore fines market. All data within the specification ranges below are normalised to the base specification based on the value-in-use implied by the market. The indices are rounded to two decimal places and are published at 6.30pm Singapore time.

The MBIOL-62-LA is a price reflecting a typical 'Low-Alumina' mid-grade ore type. The MBIOL-62-LA is calculated as a tonnage-weighted average of transaction data, not utilizing the three subindices as in the MBIOL-62.

This is because the vast majority of eligible spot trade occurs on the Globalore and COREX platforms and is not deemed to pertain to any one part of the market.

Index:	MBIOL-62, US\$ per dry metric tonne, CFR China
Material origin:	All Origins
Fe content:	Base 62%, range 60% to 63.5%
Silica:	Base 3.5%, maximum 8.0%
Alumina:	Base 2.0%, maximum 4.0%
Phosphorus:	Base 0.10%, maximum 0.15%
Sulphur:	Base 0.02%, maximum 0.06%
Loss on Ignition (%DW):	Base 4.7%, maximum 11.0%
Moisture:	Base 8.0%, maximum 10.0%
Granularity:	Base Size >90% < 6.3mm, at least 90% <10.0mm, at most 40% <0.15mm
Trade size:	Minimum 30,000 tonnes
Payment terms:	Payment at sight, other terms normalised to base
Delivery port:	Base Qingdao, normalized for any Chinese mainland sea port
Delivery period:	Within 8 weeks
Publication:	Daily at 6.30pm Singapore time
Data history:	From May 2008

Index:	MBIOL-62-LA, US\$ per dry metric tonne, CFR China
Material origin:	All Origins
Fe content:	Base 62.0%, range 61.0% to 63.5%
Silica:	Base 5.0%, maximum 7.0%
Alumina:	Base 1.5%, maximum 1.9%
Phosphorus:	Base 0.08%, maximum 0.09%
Moisture:	Base 9.0%, maximum 10.0%
Granularity:	>90% <10.0mm, at least 35% >1.0mm, at most 45% <0.15mm
Trade size:	Minimum 30,000 tonnes
Payment terms:	Payment at sight, other terms normalised to base
Delivery port:	Base Qingdao, normalized for any Chinese mainland sea port
Delivery period:	Within 10 weeks
Publication:	Daily at 6.30pm Singapore time
Data history:	From April 2018

58% and 58% Premium, Fe Fines CFR Qingdao

The MBIOL-58 is a price representing the lower-grade iron ore fines market. All prices within the specification maximums below are normalised to the base specification based on the value-in-use implied by the market. The index is rounded to two decimal places.

The MBIOL-58 is a daily index published at 6.30pm Singapore time. In addition to the MBIOL-58, Fastmarkets MB publishes a daily differential premium for 58% Fe high specification; low alumina and phosphorous material (MBIOL-58P).

The MBIOL-62 and MBIOL-58 are rounded to two decimal places. The premium is rounded to the nearest \$0.50. The figure representing the combined MBIOL-58 and High Specification Premium is the 58% Fe Premium Index.

Assessment:	MBIOI-58, US\$ per dry metric tonne, CFR China
Material origin:	All Origins
Fe content:	Base 58%, range 56-60%
Silica:	Base 5.5%, maximum 9.0%
Alumina:	Base 3.5%, maximum 5.0%
Phosphorus:	Base 0.08%, maximum 0.15%
Sulphur:	Base 0.04%, maximum 0.07%
Moisture:	Base 8.0%, maximum 10.0%
Granularity:	Base Size >90% < 6.3mm, at least 90% <10.0mm, at most 40% <0.15mm
Trade size:	Minimum 30,000 tonnes
Payment terms:	Payment at sight, other terms normalised to base
Delivery port:	Base Qingdao, normalized for any Chinese mainland sea port
Delivery period:	Within 8 weeks
Publication:	Daily at 6.30pm Singapore time
Data history:	From August 2011

Assessment:	MBIOI-58P (high specification), US\$ per dry metric tonne, CFR China
Material origin:	All Origins
Fe content:	Base 58%
Silica:	Base 5.5%
Alumina:	Base 1.5%
Phosphorus:	Base 0.05%
Sulphur:	Base 0.01%
Moisture:	Base 8.0%
Granularity:	>90% <10.0mm
Trade size:	Minimum 30,000 tonnes
Payment terms:	Payment at sight
Delivery port:	Qingdao
Delivery period:	Within 8 weeks
Publication:	Daily at 6.30pm Singapore time
Data history:	From August 2011

65% Fe Brazilian Fines Index, CFR Qingdao

The MBIOI-65-BZ is a price representing the Brazilian origin iron ore fines market. All transaction data within the specification maximums below, are normalised to the base specification based on the value-in-use implied by the market. The index is rounded to the nearest \$0.10. The MBIOI-65-BZ is a daily index published at 6.30pm Singapore time.

Assessment:	MBIOI-65-BZ, US\$ per dry metric tonne, CFR China
Material origin:	Brazil
Fe content:	Base 65.0%, range 63.5-66%
Silica:	Base 1.7%
Alumina:	Base 1.5%
Phosphorus:	Base 0.08%
Sulphur:	Base 0.01%
Moisture:	Base 9.0%
Granularity:	>90%<10.0mm, <30%<0.15mm
Trade size:	Minimum 30,000 tonnes
Payment terms:	Payment at sight
Delivery port:	Base Qingdao
Delivery period:	Within 10 weeks
Publication:	Daily at 6.30pm Singapore time
Data history:	From August 2013

63% Fe Australian Lump Premium, CFR Qingdao

The MBIOLP reflects the premium, in US\$ per dry metric tonne unit (dmtu), that Australian origin lump within the specifications defined below, commands on a spot basis over the benchmark 62% Fe Fines Index (MBIOI-62). The premium is rounded to the nearest \$0.50. The MBIOLP is a daily index published at 6.30pm Singapore time.

Assessment:	MBIOI-LP, US\$ per dry metric tonne, CFR China
Material origin:	Australia
Fe content:	Base 63%, range 61-65%
Silica:	Base 3.5%, maximum 5.0%
Alumina:	Base 1.5%, maximum 2.0%
Phosphorus:	Base 0.08%, maximum 0.10%
Sulphur:	Base 0.02%, maximum 0.04%
Loss on Ignition (%DW):	Base 5.0%
Moisture:	Base 4.0%, maximum 6.5%
Granularity:	Max 13.5% <6.3mm Max 25% >31.5mm
Trade size:	Minimum 30,000 tonnes
Payment terms:	Letters of Credit on sight, other terms normalised to base
Delivery port:	CFR Qingdao, normalized for any Chinese mainland sea port
Delivery period:	Within 8 weeks
Publication:	Daily at 6.30pm Singapore time
Data history:	From May 2013

65% Fe Blast Furnace Pellet, CFR Qingdao

The MBIOLP is a price representing the iron ore blast furnace pellet market. All transaction data within the specification maximums below, are normalised to the base specification based on the value-in-use implied by the market.

The index is rounded to two decimal places. The MBIOLP is a weekly index published Friday at 6.30pm Singapore time.

A proportion of transactions in the seaborne pellet market is structured as index averages, adjusted for iron content and a specified differential.

To maximise the inclusion of index data, Fastmarkets MB uses this price data by taking the weekly average of the index referenced and adjusting, as specified by the data provider, to the fixed-price equivalent.

Assessment:	MBIOI-PT, US\$ per dry metric tonne, CFR China
Fe content:	Base 65%, Range 60% to 70%
Origins:	All Origins
Silica:	Base: 4.5%, maximum: 6.0%
Alumina:	Base: 0.4%, maximum: 0.8%
Phosphorus:	Base: 0.03%, maximum: 0.05%
Sulphur:	Base 0.01%, maximum 0.02%
Moisture:	Base 2.0%/DW, Max 3.0%/DW
Granularity:	Maximum Size >90% >10.0mm
Compression strength:	Base 250daN, min 200daN
Trade size:	Minimum 10,000 tonnes
Payment Terms:	Letters of Credit on sight - other payment terms normalised
Delivery Port:	Base Qingdao - normalized for any Chinese mainland sea port
Delivery:	Seaborne Imports- within 8 weeks
Publication:	Weekly. Friday at 6.30pm Singapore time
Data history:	From April 2012

66% Fe Concentrate, CFR Qingdao

The MBIOL-CO is a price representing the iron ore concentrate market. All transaction data within the specification maximums below, are normalised to the base specification based on the value-in-use implied by the market.

The index is rounded to two decimal places. The MBIOL-CO is a weekly index published Friday at 6.30pm Singapore time.

A proportion of transactions in the seaborne concentrate market is structured as index averages, adjusted for iron content and a specified differential.

To maximise the inclusion of index data, Fastmarkets MB uses this price data by taking the weekly average of the index referenced and adjusting, as specified by the data provider, to the fixed-price equivalent.

Index:	MBIOL-CO, US\$ per dry metric tonne, CFR China
Fe content:	Base 66%, range 63-70%
Origins:	All Origins
Silica:	Base: 4.5%, maximum: 9.0%
Alumina:	Base: 0.5%, maximum: 2.0%
Phosphorus:	Base: 0.02%, maximum: 0.06%
Sulphur:	Base 0.03%, maximum 0.10%
Titanium:	Base 0.05%, maximum 0.30%
Moisture:	Base 8.0%/DW, Max 11.0%/DW
Granularity:	Maximum Size >80% <0.15mm. Undersize maximum 20%<0.05mm
Trade size:	Minimum 10,000 tonnes
Payment terms:	Letters of Credit on sight - other payment terms normalised
Delivery port:	Base Qingdao - normalized for any Chinese mainland sea port
Delivery:	Seaborne Imports- within 8 weeks
Publication:	Weekly. Friday at 6.30pm Singapore time
Data history:	From September 2012

62% Fe Port Stock Price

The China Port Stock Index represents the market for imported iron ore sold at main Chinese ports.

The MBIOL China Port Stocks Index (MBIOL - CPS) is based on a tonnage-weighted calculation of actual transactions of imported material conducted at main Chinese ports.

The prices of material included in the specified range are normalised to the base specification based on the value-in-use implied by the market. An additional adjustment is applied to normalise the port of sale to the base location, Qingdao, based on the prior month's relative prices.

The price is quoted in RMB per wet metric tonne, and includes 17% VAT and port fees. The index is rounded to the nearest yuan.

Due to the nature of participants in the port market, the index is a tonnage-weighted average of all transactions. They are not split into sub-indices as is the case in the rest of Fastmarkets MB's indices.

The normalised chemistry specification is identical to the benchmark 62% Fe CFR fines index, thereby providing the best possible opportunity for comparison.

Index:	MBIOL-CPS, yuan per wet metric tonne, Free-on-truck
Fe content:	Base 62%, range 60% to 63.5%
Origins:	All Origins
Silica:	Base 3.5%, maximum 8.0%
Alumina:	Base 2.0%, maximum 4.0%
Phosphorus:	Base 0.10%, maximum 0.15%
Sulphur:	Base 0.02%, maximum 0.06%
Moisture:	Base 8.0%, maximum 10.0%
Granularity:	Base Size >90% < 6.3mm, at least 90% <10.0mm, at most 40% <0.15mm
Trade size:	Minimum 500 tonnes
Payment terms:	Payment at sight, other terms normalised to base
Delivery port:	Base Qingdao, normalized for any Chinese mainland sea port
Delivery period:	Within two weeks
Publication:	Daily at 6.30pm Singapore time
Data history:	From January 2014

Product Differentials to MBIOI-62

Individual products in the iron ore spot market frequently trade at a differential to the underlying 62% Fe Fines Index (MBIOI-62).

Fastmarkets MB publishes the differential in \$ per tonne that Pilbara Blend Fines (MBIOI-Diff-PBF) achieves on a spot basis relative to the MBIOI-62.

Fastmarkets MB will look to introduce further product differentials if the number of transparent spot deals is considered suitably frequent. Fastmarkets MB considers transparent trades to be those completed on GlobalOre, COREX or by tender.

Pilbara Blend Fines Differential (MBIOI-Diff-PBF)

The MBIOI-Diff-PBF represents the differential in \$ per tonne that 62% Fe Pilbara Blend Fines achieves on a spot basis relative to the MBIOI-62. Pilbara Blend Fines transactions that take place on a different Fe basis will be adjusted to 62% Fe using a linear adjustment.

The calculation of the differential is the tonnage-weighted average of transparent transactions of that product on a given day, minus the MBIOI-62 on that day.

The sum of the MBIOI-62 and the published differential represents the actual value at which the particular product traded in the spot market on that day.

In the absence of trade, the product differential is maintained until another transparent trade is observed. When the differential remains unchanged, the implied product value will continue to move with the underlying movement in the MBIOI-62.

The differential is rounded to the nearest \$0.01. The MBIOI-Diff-PBF is a daily figure published at 6.30pm Singapore time.

The implied value of Pilbara Blend Fines is represented by the combined MBIOI-62 and MBIOI-Diff-PBF. This index is called the MBIOI-PBF.

Direct Reduction Grade Pellet Premium

Direct reduction is a unique method of iron making that requires specific raw materials. In particular, the process necessitates the use of iron ore pellet that is higher in Fe and lower in gangue than can be used in the blast furnace. The cost associated with upgrading ore to a DR-Grade level pellet, and the relative rarity of its supply, accounts for this material obtaining a premium in the market.

The DR-Grade Pellet Premium is conventionally quoted as the additional value component that a DR-Grade Pellet commands after the Iron Value-In-Use adjustment over the CFR China 62% Fe Fines Benchmark (MBIOI-62) and freight adjustments have been applied.

This 'Premium' component is negotiated between the buyer and seller and reflects the specific value of processing costs and supply and demand fundamentals associated with the higher Fe feedstock required for production. The index is rounded to the near \$0.50. The MBIOI-DRP is a monthly index published on the last working day of the month at 6.30pm Singapore time.

Index:	MBIOI-DRP, US\$ per dry metric tonne, Middle East Reference
Fe content:	Base 67.5%
Origins:	All Origins
Silica:	Base 1.5%,
Alumina:	Base 0.5%
Sizing:	94% < 9.0mm,
Trade size:	Minimum 10,000 tonnes
Payment terms:	Payment at sight, other terms normalised to base
Delivery port:	Middle East Reference
Publication:	Monthly. Last working day of the month, 6.30pm Singapore time

Value-in-use adjustments for iron, silica, alumina and phosphorus

Fastmarkets MB's chemistry adjustments represent the market-implied value of individual chemistries based on regression analysis of actual transaction data.

Analysis of spot market data shows that linear relationships between price and selected individual chemistries can be applied within certain ranges while maintaining statistical validity.

The value-in-use adjustments are intended as a tool for price adjustments, all other factors being equal.

They should be used as a differential from their respective reference indices. Note that these VIU-indices measure the price impact of a specified percentage point of that chemistry, all other factors being equal.

The chemistry adjustment factors are published on the first working day of the month and are based on a regression analysis of the previous month's transaction data.

Value-in-use adjustments for iron, silica, alumina and phosphorous**Iron Value In Use adjustments (Fe -VIU)**

- Value of Iron Ore at X% Iron = MBI0162 + (% Fe difference from 62% * Fe-VIU Index)
- Calculated from data in the 60-63.5% Fe range
- Optimised range: 60-63.5% Fe
- Data history from: July 2012

Iron Value In Use adjustments (Fe -65VIU)

- Value of Iron Ore at X% Iron = MBI0165-BZ + (% Fe difference from 65% * 65 Fe -VIU Index)
- Calculated from data in the 63.5-66% Fe range
- Optimised range: 63.5-66% Fe
- Data history from January 2015

Silica Value In Use adjustments (Si-VIU)

- Value of Iron Ore at X% Silica = MBI0162 + (% Si difference from 3.5% * Si-VIU Index)
- Calculated from data in the 60.0% -63.5% Fe range
- Optimised range: 3.5-9.0%
- Data history from December 2013

Alumina Value In Use adjustments (Al-VIU)

- Value of Iron Ore at X% Alumina = MBI0162 + (% Al difference from 2.0% * Al-VIU Index)
- Calculated from data in the 60.0% -63.5% Fe range
- Optimised range: 1.0-3.5%
- Data history from November 2014

Phosphorous Value In Use adjustments (P-VIU)

- Value of Iron Ore at X% Phosphorus = MBI0162 + (0.01% P difference from 0.10% * P-VIU Index)
- Calculated from data included in the MBI01-62
- Optimised range: 0.04-0.13% P
- Data history from October 2015

Contacts

Singapore

Peter Hannah

+65 6238 2113

phannah@fastmarkets.com

Christopher Ellis

+65 6238 2117

cellis@fastmarkets.com

Shanghai

Karen Shi

+86 21 5877 0857-30

karen.shi@fastmarkets.com

London

Jon Mulcahy

+44 20 7827 6480

jon.mulcahy@fastmarkets.com

Inaki Villanueva

+44 (0)20 7827 6468

ivillanueva@fastmarkets.com

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