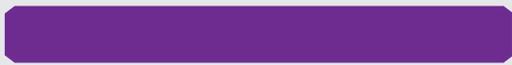


# Iron ore indices



Methodology and price  
specifications – April 2024

## Mission statement

Fastmarkets Metals, Minerals And Mining 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 via Fastmarkets MB and Fastmarkets AMM since 1913 and 1882 respectively.

Fastmarkets Forest Products is the leading global provider of pricing intelligence for the global forest products industry, incorporating Fastmarkets RISI, Fastmarkets FOEX and Random Lengths.

And Fastmarkets Agriculture Products has delivered pricing transparency to opaque agriculture and energy markets in the form of market-moving reporting and commentary, trusted pricing and price forecasting since 1865.

Our mission is to meet our markets' 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' 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 price-reporting team for metals and minerals, agricultural products and forest products. We have hubs in London, New York, Boston, San Francisco, Eugene, Charlottesville, Atlanta, Pittsburgh, Memphis, Sao Paulo, Beijing, Shanghai, Hong Kong, Singapore, Malaysia, Melbourne, Mumbai, Istanbul, Brussels and Helsinki.

The aim of this document is to provide a clear overview of Fastmarkets' methodology and specifications for the prices it assesses. If you have any questions, please contact Global Head of Editorial & Pricing Perrine Faye at [perrine.faye@fastmarkets.com](mailto:perrine.faye@fastmarkets.com) for metals and minerals, Forest Products Senior VP of Indices Matt Graves at [mgraves@fastmarkets.com](mailto:mgraves@fastmarkets.com) for forest products or Editorial Director Tim Worledge at [tim.worledge@fastmarkets.com](mailto:tim.worledge@fastmarkets.com) for agricultural products.

## Price discovery and methodology

### Methodology rationale

The primary role of Fastmarkets' Iron Ore Indices is to provide market participants with a fair and robust representation of the physical iron ore spot market price. Fastmarkets' 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 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 supports the process of price discovery through its established and independent position in the metals market.

The iron ore market is constantly developing. Fastmarkets 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 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 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' 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' website or is available upon request.

Fastmarkets 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 6pm 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 6pm data submission deadline. For indices that are calculated weekly, the data collection window runs for the seven days prior to the 6pm data submission deadline. Only trades concluded, bids and offers submitted and market participants' own estimates communicated to Fastmarkets 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 publishes a minimum-acceptable volume for all index specifications.

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

## Index calculation

The Fastmarkets 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 estimates 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 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 will include price data from both GlobalOre and Corex in its index calculations.

### Market balance

The Fastmarkets 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 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 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 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 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' 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 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.

### Normalization of index-linked spot activity

The development of liquid cash-settled derivatives contracts in the iron ore market has seen an increased proportion of spot trade concluded on an index-linked (sometimes referred to as floating) basis. While not as

clear cut as fixed-price spot trade, index-linked activity still represents valuable price discovery information when converted to a fixed-price equivalent using exchange forward curves.

Fastmarkets applies a transparent methodology to convert index-linked trades to fixed-price equivalents using the Singapore Exchange (SGX) iron ore derivative forward curves. The calculations reflect the premium or discount quoted to the forward price of the underlying index, referencing the average traded forward prices on the SGX one hour prior to the physical spot transaction time (up to a latest window of 4-5pm). The fixed-price equivalent data is then weighted at 50% of the deal's reported tonnage, thereby ensuring a typically greater weighting than an indication, bid or offer data point, but a lower weighting than a fixed-price spot deal.

Fastmarkets will refer to the SGX 62% Fe forward curve for iron ore products traded on a 62% Fe index or a basket of 62% Fe indices and will refer to the SGX 65% Fe forward curve for iron ore products traded on a 65% Fe index. If liquidity on the SGX 65% Fe forward curve is insufficient for a robust reference, Fastmarkets will refer to the SGX 62% Fe forward curve and adjust for the 65%/62% Fe differential using the latest difference between the SGX daily settlement prices for the 62% and 65% Fe futures contracts. For products traded on a 62% Fe low-alumina index or a basket of 62% Fe low-alumina indices, Fastmarkets will refer to the SGX 62% Fe forward curve and adjust for the differential using the difference between Fastmarkets' 62% Fe Low Alumina Index and Fastmarkets' 62% Fe Index, or market participant indications of the differential if deemed more reflective.

Fastmarkets consults its approved market sources on the validity of its conversion assumptions for each index-linked spot trade. Sources that disagree with the fixed-price equivalent calculated by Fastmarkets are welcomed to provide their own indications for the tradeable value of the product in question, which is then also included in the index at the specified minimum tonnage weighting.

### **Criteria for discarding pricing data and the removal of outlier data**

Fastmarkets 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 has constructed its Iron Ore Indices, excluding the Iron Ore premium 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 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 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 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 aims to calculate each index using a robust data set, it will therefore where necessary look to use price data including estimates, 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 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 pellet and concentrate indices are published each Friday at 6.30pm Singapore local time. Weekly value-in-use indices are published each Monday at 6.30pm Singapore local time.

Indices are not published on Singapore public holidays. 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 pellet and concentrate indices will be published on the preceding working day and will reflect price data from that week's working days. Where public holidays occur on a Monday, the weekly value-in-use indices will be published the following working day, but will still reflect data from the week preceding their Friday 6.15pm Singapore local time cut-off.

Please refer to the [pricing holiday schedule](#) for this year's public holidays.

### 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 uses several procedures and measures to avoid delays in the publication of its Indices. In the event of a delay, however, Fastmarkets 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 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 reviews its methodologies every six months. If market changes necessitate more frequent changes, Fastmarkets 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 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' [Methodology Review & Change Consultation Process](#) available on Fastmarkets MB's website

### **Procedure to ensure consistency in the price-discovery procedures**

Fastmarkets aims to maintain the highest standards in the provision of prices to those involved in the global metals industry. All Fastmarkets pricing employees are required to adhere to Fastmarkets' 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' 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' electronic database and may be accessed at any time for internal review and auditing purposes.

### **Index-related queries and complaints**

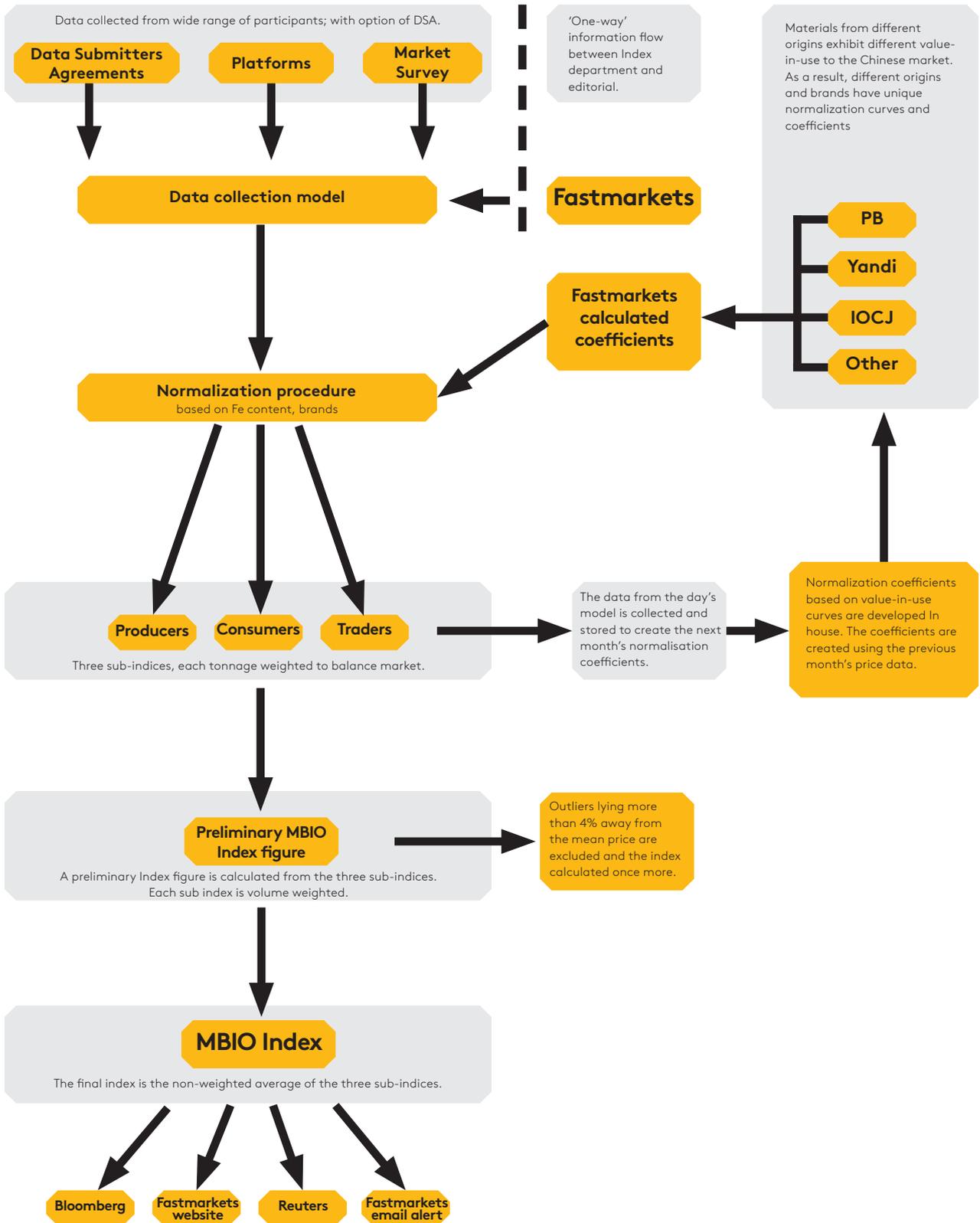
Fastmarkets encourages engagement from the market on its pricing principles and methodology. The company promotes understanding of its calculation procedures and is committed to responding to requests for further information and clarification on a timely basis.

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' [Complaint Handling Policy](#) available on our website.

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

### **MB-IRO-0008** Iron ore 62% Fe fines, cfr Qingdao, \$/tonne MBIOI-62

Quality:	Fe content base 62%, range 60-63.5%; silica base 4%, max 8%; alumina base 2.3%, max 4%; phosphorus base 0.10%, max 0.15%; sulfur base 0.02%, max 0.06%; loss on ignition (%DW) base 4.7%, max 11%; moisture: base 8%, max 10%; granularity base size >90% < 6.3mm, at least 90% <10.0mm, at most 40% <0.15mm
Quantity:	Min 30,000 tonnes
Location:	cfr Qingdao, normalized for any Chinese mainland sea port
Timing:	Within 8 weeks
Unit:	USD/tonne
Payment terms:	Payment at sight, other terms normalized to base
Publication:	Daily at 6.30pm Singapore time
Notes:	All origins. Data history from May 2008

### **MB-IRO-0144** Iron ore 62% Fe low-alumina fines, cfr Qingdao, \$/dmt MBIOI-62-LA

Quality:	Fe content base 62%, range 61-63.5%; silica base 5%, max 7%; alumina base 1.5%, max 1.9%; phosphorus base 0.08%, max 0.09%; moisture base 9%, max 10%; granularity >90% <10.0mm, at least 35% >1.0mm, at most 45% <0.15mm
Quantity:	Min 30,000 tonnes
Location:	cfr Qingdao, normalized for any Chinese mainland sea port
Timing:	Within 10 weeks
Unit:	USD/dry metric tonne
Payment terms:	Payment at sight, other terms normalised to base
Publication:	Daily at 6.30pm Singapore time
Notes:	All origins. Data history from April 2018

# 58% and 58% Premium, Fe Fines cfr Qingdao

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

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

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

**MB-IRO-0015 Iron ore 58% Fe fines, cfr Qingdao, \$/tonne**
**MBIOI-58**

Quality:	Fe content base 58%, range 56-60%; Silica base 5.5%, max 9%; alumina base 3.5%, max 5%; phosphorus base 0.08%, max 0.15%; sulfur base 0.04%, max 0.07%; moisture base 8%, max 10%; granularity base size >90% < 6.3mm, at least 90% <10.0mm, at most 40% <0.15mm
Quantity:	Min 30,000 tonnes
Location:	cfr Qingdao, normalized for any Chinese mainland sea port
Timing:	Within 8 weeks
Unit:	USD/tonne
Payment terms:	Payment at sight, other terms normalized to base
Publication:	Daily at 6.30pm Singapore time
Notes:	All origins. Data history from August 2011

**MB-IRO-0017**
**Iron ore 58% Fe fines high-grade premium index, CFR Qingdao, \$/tonne**
**MBIOI-58P Index**

Quality:	Fe content base 58%; silica base 5.5%; alumina base 1.5%; phosphorus base 0.05%; sulfur base 0.01%; moisture base 8%; granularity >90% <10.0mm
Quantity:	Min 30,000 tonnes
Location:	cfr Qingdao
Timing:	Within 8 weeks
Unit:	USD/tonne
Payment terms:	Payment at sight
Publication:	Daily at 6.30pm Singapore time
Notes:	All origins. Data history from August 2011

**MB-IRO-0016 Iron ore 58% Fe fines high-grade premium, cfr Qingdao, \$/tonne**
**MBIOI-58P**

Quality:	Fe content base 58%; silica base 5.5%; alumina base 1.5%; phosphorus base 0.05%; sulfur base 0.01%; moisture base 8%; granularity >90% <10.0mm
Quantity:	Min 30,000 tonnes
Location:	cfr Qingdao
Timing:	Within 8 weeks
Unit:	USD/tonne
Payment terms:	Payment at sight
Publication:	Daily at 6.30pm Singapore time
Notes:	All origins. Data history from August 2011

## 65% Fe Brazilian Fines Index, cfr Qingdao

The MBIOL-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 two decimal places. The MBIOL-65-BZ is a daily index published at 6.30pm Singapore time.

<b>MB-IRO-0009</b>	<b>Iron ore 65% Fe Brazil-origin fines, cfr Qingdao, \$/tonne</b> <b>MBIOL-65-BZ</b>
Quality:	Fe content base 65%, range 63.5-66%; silica base 2.2%; alumina base 1.4%; phosphorus base 0.075%; sulfur base 0.01%; moisture base 9%; granularity 90% <10.0mm, <30%<0.15mm
Quantity:	Min 30,000 tonnes
Location:	CFR Qingdao
Timing:	Within 10 weeks
Unit:	USD/tonne
Payment terms:	Payment at sight
Publication:	Daily 6:30pm Singapore time
Notes:	Origin Brazil only. Data history from August 2013

## 63% Fe Australian Lump Premium, cfr Qingdao

The MBIOL-LP 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 (MBIOL-62). The premium is rounded to the nearest \$0.50. The MBIOL-LP is a daily index published at 6.30pm Singapore time.

<b>MB-IRO-0010</b>	<b>Iron ore 63% Fe Australia-origin lump ore premium, cfr Qingdao, US cents/dmtu</b> <b>MBIOL-LP</b>
Material origin:	Australia
Quality:	Fe content base 63%, range 61-65%; silica base 3.5%, max 5%; alumina base 1.5%, max 2%; phosphorus base 0.08%, max 0.10%; sulfur base 0.02%, max 0.04%; loss on ignition (%DW) base 5%; moisture base 4%, max 6.5%; granularity max 13.5% <6.3mm, max 25% >31.5mm
Quantity:	Min 30,000 tonnes
Location:	cfr Qingdao, normalized for any Chinese mainland sea port
Timing:	Within 8 weeks
Unit:	US cents/dmtu
Payment terms:	Letters of Credit on sight, other terms normalized to base
Publication:	Daily at 6.30pm Singapore time
Notes:	Origin Australia only. Data history from May 2013

## 65% Fe Blast Furnace Pellet, cfr Qingdao

The MBIOT-PT 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 MBIOT-PT 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.

<b>MB-IRO-0012</b>	<b>Iron ore 65% Fe blast furnace pellet, cfr Qingdao, \$/tonne MBIOT-PT</b>
Quality:	Fe content base 65%, range 60-70%; silica base 4.5%, max 6%; alumina base 0.4%, max 3.5%; phosphorus base 0.03%, max 0.08%; sulfur base 0.01%, max 0.02%; moisture base 2.0%/DW, max 3.0%/DW; granularity max size >90% >10.0mm; compression strength base 250daN, min 200daN
Quantity:	Min 10,000 tonnes
Location:	cfr Qingdao - normalized for any Chinese mainland sea port
Timing:	Within 8 weeks
Unit:	USD/tonne
Payment Terms:	Letters of Credit on sight - other payment terms normalized
Publication:	Weekly. Friday at 6.30pm Singapore time
Notes:	All origins. Data history from April 2012

## 65% Fe Blast Furnace Pellet Premium, cfr Qingdao

The MBIOT-PP is a price representing the premium that high-quality iron ore blast furnace pellet commands over the 65% Fe Fines Index on a cfr Qingdao spot basis.

All transaction data within the specification maximums below are normalized to the base specification based on the value-in-use implied by the market. It differs from the MBIOT-PT index by simply reflecting the standalone pellet premium negotiated above deals linked to the 65% Fe Fines Index as an underlying base index, rather than converting it to an all-in fixed price.

The MBIOT-PP also has a narrower accepted specification range for inclusion.

The index is rounded to two decimal places. The MBIOT-PP is a weekly index published on Fridays at 6.30pm Singapore time.

<b>MB-IRO-0177</b>	<b>Iron ore pellet premium over 65% Fe fines, cfr China, \$/tonne MBIOT-PP</b>
Quality:	Fe: base 65%, min 64.5%; Si: base 4.5%, max 6.0%; Al: base 0.4%, max 0.6%; P: base 0.03%, max 0.05%; S: base 0.01%, max 0.02%; Moisture: base 2.0%, max 3.0%; CCS: base 230 daN, min 220 daN; Sizing: <5% <5.0mm
Quantity:	Min 10,000 tonnes
Location:	cfr Qingdao (other main sea ports normalized)
Timing:	Delivery within eight weeks
Unit:	USD/tonne
Payment terms:	Letters of Credit on sight - other payment terms normalized
Publication:	Weekly, Friday, 6.30pm Singapore time
Notes:	All origins. Premium quoted above 65% Fe Fines Index

# 65% Fe Concentrate Premium and 65% Fe Concentrate, cfr Qingdao

The MBIOL-COP index is a price representing the premium or discount, in US\$ per tonne, that iron ore concentrate within the specifications defined below, commands on a cfr Qingdao spot basis over the benchmark Fastmarkets' 65% Fe Brazil-origin fines index (MBIOL-65-BZ). All transaction data within the specification maximums below are normalized the base specification based on the value-in-use implied by the market. The premium is rounded to the nearest \$0.10. The MBIOL-COP is a daily index published at 6.30pm Singapore time.

The MBIOL-CO index is a price representing the outright price of iron ore concentrate within the specifications defined below on a cfr Qingdao spot basis. It is derived by adding the forward price of the MBIOL-65-BZ index to the MBIOL-COP index. The index is rounded to two decimal places. The MBIOL-CO is a daily index published at 6.30pm Singapore time.

## **MB-IRO-0189 Iron ore 65% Fe concentrate premium, cfr Qingdao, \$/tonne MBIOL-COP**

Quality: Fe content base 65%, range 63%-66%; silica base 6%, max 9%; alumina base 0.5%, max 2%; phosphorus base 0.02%, max 0.10%; sulfur base 0.03%, max 0.10%, titanium base 0.05%, max 0.30%; moisture base 8.0%/DM, max 11.0%/DW; granularity max size >80% <0.15mm

Quantity: Min 10,000 tonnes

Location: cfr Qingdao – normalized for any Chinese mainland seaport

Timing: Delivery within 8 weeks

Unit: USD/tonne

Payment terms: Letters of Credit on sight – other payment terms normalized

Publication: Daily at 6.30pm Singapore time

Notes: All origins. Premium quoted above Fastmarkets' 65% Fe Brazil-origin fines index.

## **MB-IRO-0013**

### **Iron ore 65% Fe concentrate, cfr Qingdao, \$/tonne MBIOL-CO**

Quality: Fe content base 65%, range 63%-66%; silica base 6%, max 9%; alumina base 0.5%, max 2%; phosphorus base 0.02%, max 0.10%; sulfur base 0.03%, max 0.10%, titanium base 0.05%, max 0.30%; moisture base 8.0%/DM, max 11.0%/DW; granularity max size >80% <0.15mm

Quantity: Min 10,000 tonnes

Location: cfr Qingdao – normalized for any Chinese mainland seaport

Timing: Delivery within 8 weeks

Unit: USD/tonne

Payment terms: Letters of Credit on sight – other payment terms normalized

Publication: Daily at 6.30pm Singapore time

Notes: All origins.

## 62% Fe Port Stock Price

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

The MBIO China Port Stocks Index (MBIOI-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 CNY per wet metric tonne, and includes 13% 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 normalized chemistry specification is identical to the benchmark 62% Fe cfr fines index, thereby providing the best possible opportunity for comparison.

The MBIOI-CPS conversion index (MBIOI-CPS\$) shows the price of a direct conversion of the China Port Stocks Index from Yuan/tonne to USD/tonne, based on daily currency exchange rate.

### MB-IRO-0011

#### Iron ore 62% Fe fines, fot Qingdao, yuan/wet tonne MBIOI-CPS

Quality:	Fe content base 62%, range 60-63.5%; silica base 4%, max 8%; alumina base 2.3%, max 4%; phosphorus base 0.10%, max 0.15%; sulfur base 0.02%, max 0.06%; moisture base 8%, max 10%; granularity base size >90% < 6.3mm, at least 90% <10.0mm, at most 40% <0.15mm
Quantity:	Minimum 500 tonnes
Location:	fot Qingdao, normalized for any Chinese mainland sea port
Timing:	Within two weeks
Unit:	CNY/wet metric tonne
Payment terms:	Payment at sight, other terms normalized to base
Publication:	Daily at 6.30pm Singapore time
Notes:	All origins. Data history from January 2014

### MB-IRO-0022

#### Iron ore 62% Fe fines, fot Qingdao, \$/tonne conversion MBIOICPS\$

Quality:	Fe content base 62%, range 60-63.5%; silica base 4%, max 8%; alumina base 2.3%, max 4%; phosphorus base 0.10%, max 0.15%; sulfur base 0.02%, max 0.06%; moisture base 8%, max 10%; granularity base size >90% < 6.3mm, at least 90% <10.0mm, at most 40% <0.15mm
Quantity:	Minimum 500 tonnes
Location:	fot Qingdao, normalized for any Chinese mainland sea port
Timing:	Within two weeks
Unit:	\$/wet metric tonne conversion
Payment terms:	Payment at sight, other terms normalized to base
Publication:	Daily at 6.30pm Singapore time
Notes:	All origins. Data history from January 2014

# 67.5% Fe Pellet Feed Premium and 67.5% Fe Pellet Feed, cfr Qingdao

The MBIOI-PFP index is a price representing the premium, in US\$ per tonne, that high-grade pellet feed within the specifications defined below, commands on a cfr Qingdao spot basis over the benchmark Fastmarkets' 65% Fe Brazil-origin fines index (MBIOI-65-BZ). All transaction data within the specification maximums below are normalized the base specification based on the value-in-use implied by the market. The premium is rounded to the nearest \$0.10. The MBIOI-PFP is a daily index published at 6.30pm Singapore time.

The MBIOI-PF index is a price representing the outright price of high-grade pellet feed within the specifications defined below on a cfr Qingdao spot basis. It is derived by adding the forward price of the MBIOI-65-BZ index (adjusted to 67.5% Fe basis) to the MBIOI-PFP index. The index is rounded to two decimal places. The MBIOI-PF is a daily index published at 6.30pm Singapore time.

**MB-IRO-0188**
**Iron ore 67.5% Fe pellet feed, cfr Qingdao, \$/tonne**  
**MBIOI-PF**

Quality:	Fe content base 67.5%, range 66%-70%; silica base 3%, max 6%; alumina base 0.5%, max 1.5%; phosphorus base 0.02%, max 0.06%; sulfur base 0.03%, max 0.10%, titanium base 0.05%, max 0.30%; moisture base 8.0%/DM, max 11.0%/DW; granularity max size >80% <0.15mm
Quantity:	Minimum 10,000 tonnes
Location:	cfr Qingdao – normalized for any Chinese mainland seaport
Timing:	Delivery within 8 weeks
Unit:	USD/tonne
Payment terms:	Letters of Credit on sight – other payment terms normalized
Publication:	Daily at 6.30pm Singapore time
Notes:	All origins.

**MB-IRO-0187**
**Iron ore 67.5% Fe pellet feed premium, cfr Qingdao, \$/tonne**  
**MBIOI-PFP**

Quality:	Fe content base 67.5%, range 66%-70%; silica base 3%, max 6%; alumina base 0.5%, max 1.5%; phosphorus base 0.02%, max 0.06%; sulfur base 0.03%, max 0.10%, titanium base 0.05%, max 0.30%; moisture base 8.0%/DM, max 11.0%/DW; granularity max size >80% <0.15mm
Quantity:	Minimum 10,000 tonnes
Location:	cfr Qingdao – normalized for any Chinese mainland seaport
Timing:	Delivery within 8 weeks
Unit:	USD/tonne
Payment terms:	Letters of Credit on sight – other payment terms normalized
Publication:	Daily at 6.30pm Singapore time
Notes:	All origins. Premium quoted above Fastmarkets' 65% Fe Brazil-origin fines index.

## Iron ore spot 67.5% Fe magnetite-hematite pellet feed price differential, cfr Qingdao

The MB-IRO-0190 index is a price representing the premium differential between magnetite and hematite materials in Fastmarkets' 67.5% Fe pellet feed indices (MB-IRO-0187 and MB-IRO-0188). Its specifications are same as 67.5% Fe pellet feed indices as it tracks the premium differential of different brands in the 67.5% Fe pellet feed indices. It is derived by subtracting the average hematite materials premium from the average magnetite materials premium. The index is rounded to two decimal places. It is a daily price published at 6.30 pm Singapore time.

MB-IRO-0190	Iron ore spot 67.5% Fe magnetite-hematite pellet feed price differential, CFR Qingdao, \$/tonne
Quality:	Fe content base 67.5%, range 66%-70%; silica base 3%, max 6%; alumina base 0.5%, max 1.5%; phosphorus base 0.02%, max 0.06%; sulfur base 0.03%, max 0.10%; titanium base 0.05%, max 0.30%; moisture base 8.0%/DM, max 11.0%/ DW; granularity max size >80%<0.15mm
Quantity:	Minimum 10,000 tonnes
Location:	cfr Qingdao – normalized for any Chinese mainland seaport
Timing:	Delivery within 8 weeks
Unit:	USD/tonne
Payment terms:	Letters of Credit on sight – other payment terms normalized
Publication:	Daily at 6.30pm Singapore time
Notes:	All origins

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

Fastmarkets MB's chemistry adjustments represent the market-implied value of individual chemistries. They are calculated and updated every Monday based on a regression analysis using the previous week's data, before remaining flat from Tuesday to Friday.

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 daily indices with publication at 6.30pm Singapore local time.

### **MB-IRO-0018** Iron ore 62% Fe fines, % Fe VIU, cfr Qingdao, \$/tonne

#### 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

### **MB-IRO-0019** Iron ore 65% Fe fines, % Fe VIU, cfr Qingdao \$/tonne

#### 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

**MB-IRO-0020      Iron ore 62% Fe fines, % Si VIU, cfr  
Qingdao, \$/tonne****Silica Value In Use adjustments (Si-VIU)**

- Value of Iron Ore at X% Silica= MBIOI62 + (% Si difference from 4% \* 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

**MB-IRO-0021      Iron ore 62% Fe fines, % Al<sub>2</sub>O<sub>3</sub>  
VIU, cfr Qingdao, \$/tonne****Alumina Value In Use adjustments (Al-VIU)**

- Value of Iron Ore at X% Alumina= MBIOI62 + (% Al difference from 2.3% \* 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

**MB-IRO-0024      Iron ore 62% Fe fines, 0.01% P VIU,  
cfr Qingdao, \$/tonne****Phosphorous Value In Use adjustments (P-VIU)**

- Value of Iron Ore at X% Phosphorus= MBIOI62 + (0.01% P difference from 0.10% \* P-VIU Index)
- Calculated from data included in the MBIOI-62
- Optimised range: 0.04-0.13% P
- Data history from October 2015

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