



# **Iron Ore Index**

## **PRICING GUIDE: Methodology, specifications and usage**

Version: June 2017

# **Metal Bulletin**

## Iron Ore Index

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### Methodology rationale

The primary role of Metal Bulletin Group's Iron Ore Indices is to provide market participants with a fair and robust representation of the physical iron ore spot market price. Metal Bulletin Group's rationale to adopt and develop the price discovery process and the methodology described in the present guide 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 price levels seen during the data collection time period or window and to be a reliable indicator of value of the iron ore market they relate to. The data collection period taken into consideration to calculate the indices is determined by Metal Bulletin Group 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 and since then the vast majority of transactions have been linked to spot prices. Metal Bulletin Group supports the process of price discovery through its established and independent position in the metals market.

The iron ore market is constantly developing. Metal Bulletin Group reviews its methodology and specifications, and engages in discussions with market participants at least every 6 months to ensure that it remains as representative of the market as possible.

Metal Bulletin Group 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.

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### Data collection and quality

Our Indices are based on the data provided by the market. In order 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 Metal Bulletin Group 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. Metal Bulletin Group aims to engage a broad and balanced range of physical market participants in the provision of data.

Metal Bulletin Group'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 Metal Bulletin's website or is available upon request.

Metal Bulletin Group 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 utilise a number of methods to collect data. These include 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 7 days prior to the 6.15pm data submission deadline. Only trades concluded, and bids and offers submitted and market participants' own assessment communicated to Metal Bulletin Group 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 stated collection period.

All the reference units, such as currencies and volumes units used in the indices, are in line with recognised iron ore market conventions and the reference units used for transactions in these markets. All index specifications have a published minimum volume size accepted.

All data supplied to Metal Bulletin Group Iron Ore Indices is kept strictly confidential. Metal Bulletin Group Iron Ore Indices may sign Non-Disclosure Agreements (NDA) with any data provider, if requested to do so.

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## Index calculation

The Metal Bulletin Group 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 assessment of the market are weighted at the specified minimum tonnage for the respective index.

Metal Bulletin Group aims to collect full details of each transaction including brand, commercial terms and any other details relevant to value and pricing.

The development of electronic trading platforms has led to a number of changes in the iron ore spot market. Metal Bulletin Group will include price data from both GlobalORE and COREX in Index calculations.

## Market balance

The Metal Bulletin Group 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, which is able to resist possible undue influences.

The Metal Bulletin Group 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 normalised price data. Only the final Indices are published.

The use of three sub-indices means that each part of the market has a maximum of 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.

## Normalisation

Nearly all material traded on the iron ore spot market differs from the base specification of the indices. This price data requires normalisation in order to determine the equivalent price for the respective index base specification.

Material that falls within the target specification range is normalised 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 normalised to the base specifications using in-house developed models based on regression analysis of the collected data points. The analysis allows Metal Bulletin Group to capture the value-in-use applied by the market to different materials, and to normalise to a single specification. This normalisation process also allows Metal Bulletin Group to capture and normalise factors outside of the chemical and physical properties such as values associated with individual brands.

The normalisation coefficients for the daily Indices are updated every month to reflect the constantly changing value-in-use relationship of different products and grades. Weekly iron ore Indices have their normalisation coefficients updated every quarter. All normalisation coefficients, prior to publication, are subject to peer review and are signed off by a senior member of the editorial or index team. The different timing of the updates for the normalisation coefficients reflects different levels of data liquidity between the markets. Our aim is to balance the requirement to keep the value-in-use calculations reflective of the market, and also 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 normalised, taking into account discounts, interest rates and standard commercial terms.

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

## Criteria to Discard Pricing Data and Removal of Outlier Data

Metal Bulletin Group 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.

Furthermore, the Metal Bulletin Group Iron Ore Indices have been specifically constructed to automatically exclude outlier data. All data points that fall greater than 4% away from an initial calculated Index are automatically excluded, and the index recalculated. Outliers will be investigated, and suspected attempts to unfairly influence the Index may result in the data provider being warned or excluded.

Metal Bulletin Group 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. Metal Bulletin Group reserves the right to exclude data that is not fairly presented or is believed may be an effort to distort the Index.

## Index Calculation during periods of Low Data Liquidity

All Metal Bulletin Group 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.

Metal Bulletin Group aims to calculate each index based on a robust data set and as such will, where necessary, look to utilise price data including assessments, offers and bids collected from the market. Data points that do not represent actual transactions will be entered into the Indices like transaction data but will be weighted according to the lowest tonnage permissible for the respective index.

Metal Bulletin Group does not specify a minimum amount of transaction data, or a transaction data threshold, required for the publication of its Indices as 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 too few data points on the day) for the calculation of a particular index, Metal Bulletin will implement the following fall back procedures (1-9) until a suitable number of data points is reached to calculate the Index:

1. Carry over transaction data from other sub-indices on the day.
2. Carry over assessment data from other sub-indices on the day.
3. Carry over transaction data from the previous day in the appropriate sub-index.
4. Carry over transaction data from the previous day from any sub-index.
5. Carry over assessment data from the previous day in the appropriate sub-index.
6. Carry over offer/bid data from the previous day in the appropriate sub-index.
7. Carry over assessment data from the previous day from any sub-index.
8. Carry over offer/bid data from the previous day from any sub-index.
9. If no price data can be collected then the index price will be carried over.

In the unlikely situation that more than half of the pricing data collected on a day is provided by a single source, Metal Bulletin Group will use the fall back procedures 3-9 (see above) to ensure that there is not dependency on a significant proportion of data being provided by a single entity. A significant proportion of market data would be 50%.

## Publication

Daily indices are published at 6.30pm Singapore local time. Weekly indices are published Friday 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 2017\* are as follows:**

January 2, 2017	New Year's Day
January 30, 2017	Chinese New Year
April 14, 2017	Good Friday
May 1, 2017	Labour Day
May 10, 2017	Vesak Day
June 26, 2017	Hari Raya Puasa
August 9, 2017	National Day
September 1, 2017	Hari Raya Haji
October 18, 2017	Deepavali
December 25, 2017	Christmas Day

\*source: [www.mom.gov.sg](http://www.mom.gov.sg)

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.

Metal Bulletin Group employs a number of procedures and measures to avoid delays in the publication of its Indices. However, in the event of a delay occurring, Metal Bulletin Group 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

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

Metal Bulletin Group reviews methodologies every 6 months. If market changes necessitate more frequent changes, Metal Bulletin Group 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 which starts with Metal Bulletin Group 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 Metal Bulletin Group's Internal and External Review Process and Metal Bulletin Group's Change to the Methodology Consultation Process documents available on Metal Bulletin Group's website.

## Procedure to ensure consistency in the price discovery procedures

Metal Bulletin Group aims to maintain the highest standards in the provision of prices to those involved in the global metals industry. All pricing employees are required to adhere to Metal Bulletin Group's [Code of Conduct](#) and Pricing Procedure guidelines.

Prior to publication all indices are subject to peer review and are signed-off by a senior member of the editorial or index team. 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 Metal Bulletin Group's electronic database and may be accessed at any time for internal review and auditing purposes.

## Index related queries and complaints

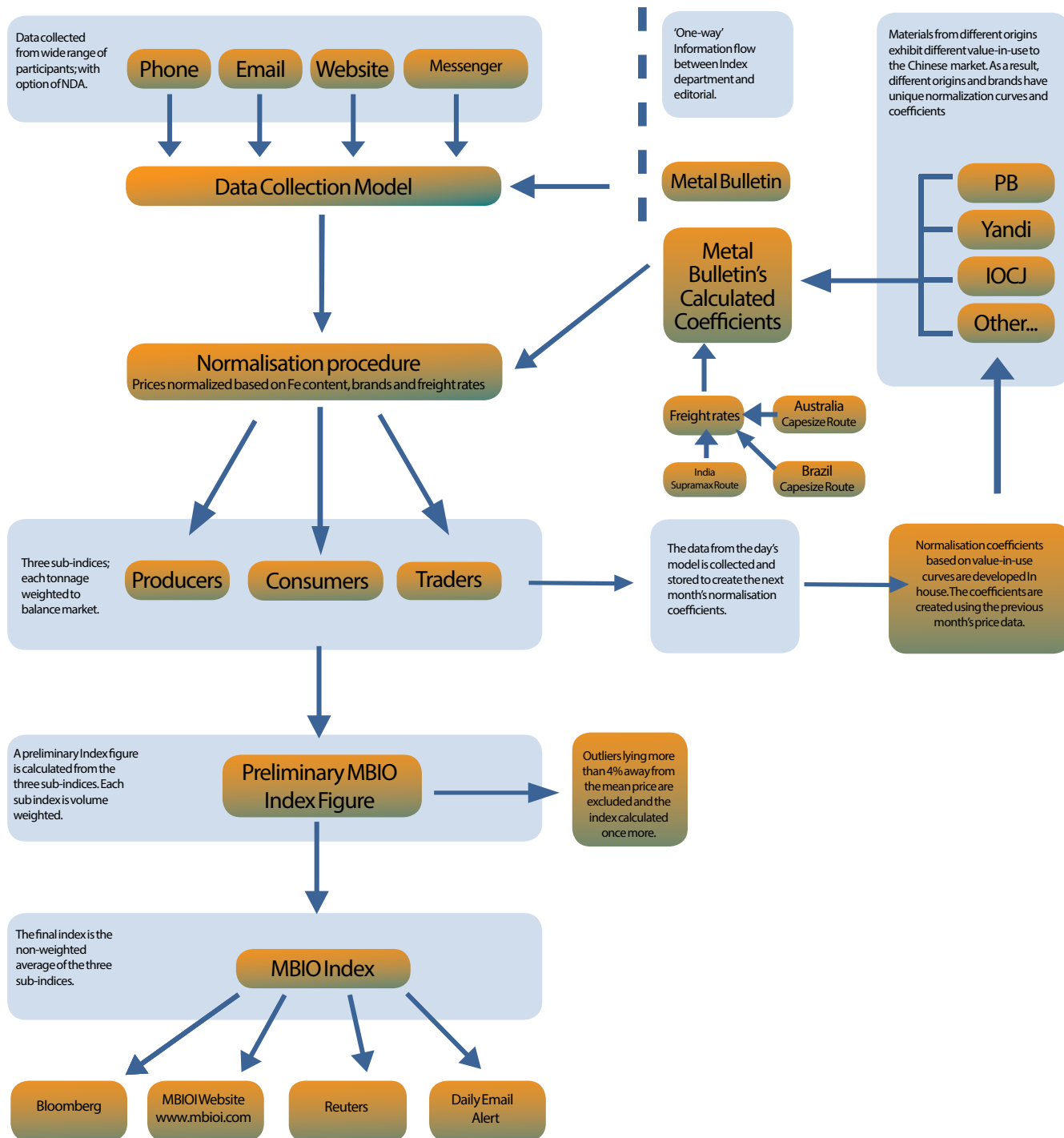
Metal Bulletin Group encourages engagement from the market on its pricing principles and methodology. The company promotes understanding of its calculation procedures and is committed to responding to requests for further information and clarification on a timely basis.

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 Metal Bulletin Group's [Complaint Handling Policy](#) available on our website.

Metal Bulletin Group 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



## 62%, 58% and 58% Premium, Fe Fines CFR Qingdao

The MBIOI-62 is a benchmark price representing the iron ore fines market. All transaction data within the specification ranges 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 MBIOI-62 is a daily index published at 6.30pm Singapore time.

The MBIOI-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 MBIOI-58 is a daily index published at 6.30pm Singapore time.

In addition to the MBIOI-58, Metal Bulletin 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.

### MBIOI – 62

#### Price

US\$ per dry metric tonne, CFR China

#### Material Origin

All Origins

#### Fe Content

Base 62%, Range 56% to 66%

#### 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

### MBIOI – 58

#### Price

US\$ per dry metric tonne, CFR China

#### Material Origin

All Origins

#### Fe Content

Base 58%, Range 56% to 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

### MBIOI – 58P (high spec)

#### Price

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 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.

### MBIOT-PT

**Price**

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**

LC 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 MBIOT-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 MBIOT-CO is a weekly index published Friday at 6.30pm Singapore time.

### MBIOT-CO

**Price**

US\$ per dry metric tonne, CFR China

**Fe Content**

Base 66%, Range 63% to 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**

LC 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 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 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 Metal Bulletin's indices.

The normalised chemistry specification is identical to the benchmark 62% Fe CFR fines index in order to provide to best possible opportunity for comparison.

## MBIOI–CPS

### Price

RMB per wet metric tonne, Free-on-truck

### Fe Content

Base 62%, Range 56% to 66%

### 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 MBI0I-62

Individual products in the iron ore spot market frequently trade at a differential to the underlying 62% Fe Fines Index (MBI0I-62).

Metal Bulletin publishes the differential in \$/tonne that Pilbara Blend Fines (MBI0I-Diff-PBF) achieves on a spot basis relative to the MBI0I-62.

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

### Pilbara Blend Fines Differential (MBI0I-Diff-PBF)

The MBI0I-Diff-PBF represents the differential in \$/tonne that 62% Fe Pilbara Blend Fines achieves on a spot basis relative to the MBI0I-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 MBI0I-62 on that day.

The sum of the MBI0I-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 MBI0I-62.

The differential is rounded to the nearest \$0.01. The MBI0I-Diff-PBF is a daily figure published at 6.30pm Singapore time.

The implied value of Pilbara Blend Fines is represented by the combined MBI0I-62 and MBI0I-Diff-PBF. This index is called the MBI0I-PBF.

## Direct Reduction Grade Pellet Premium

Direct-reduction is a unique method of iron making, which 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 (MBI0I-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 MBI0I-DRP is a monthly index published on the last working day of the month at 6.30pm Singapore time.

### MBI0I-DRP

#### Price

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 Indices

### Adjusting Prices for Iron, Silica, Alumina and Phosphorus

Metal Bulletin'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 whilst 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.

### Application of MB Value-In-Use indices

#### Iron Value In Use Adjustment (Fe -VIU)

Value of Iron Ore at X% Iron  
= MBIOI62 + (% Fe difference from 62% \* Fe-VIU Index)

Calculated from data in the 60.0% -63.5% Fe range  
Optimised range: 60-63.5% Fe  
Data history from July 2012

#### Iron Value In Use Adjustment (Fe-65VIU)

Value of Iron Ore at X% Iron  
= MBIOI65-BZ + (% Fe difference from 65% \* 65Fe -VIU Index)

Calculated from data in the 63.5% -66.0% Fe range  
Optimised range: 63.5-66%Fe  
Data history from January 2015

#### Silica Value In Use Adjustment (Si-VIU)

Value of Iron Ore at X% Silica  
= MBIOI62 + (% 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 Adjustment (Al-VIU)

Value of Iron Ore at X% Alumina  
= MBIOI62 + (% 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

#### Phosphorus Value In Use Adjustment (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

# MetalBulletin

For more information about the Metal Bulletin Iron Ore Indices and how they can help you, please do not hesitate to contact the Index team:

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Evaluations or calculations of prices and price indices by us are based upon certain market assumptions and evaluation methodologies, and may not conform to prices or information available from third parties. There may be errors or defects in such assumptions or methodologies that cause resultant evaluations to be inappropriate for use. Your use or reliance on any prices or other information published by us is at your sole risk. Neither we nor any of our providers of information make any representations or warranties, express or implied as to the accuracy, completeness or reliability of any advice, opinion, statement or other information forming any part of the published information or its fitness or suitability for a particular purpose or use. Neither we, nor any of our officers, employees or representatives shall be liable to any person for any losses or damages incurred, suffered or arising as a result of use or reliance on the prices or other information

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