



Coking Coal Indices
**PRICING GUIDE: Methodology,
specifications and use**

September 2018

Metal Bulletin

Metal Bulletin Coking Coal Indices

Metal Bulletin's mission statement

The Metal Bulletin Group, aims to provide leading pricing intelligence, including independent industry benchmarks for the metal and mining industry. The group's global portfolio of news, analysis, conferences and insight services complement these price benchmarks.

Introduction

Methodology rationale

The primary role of the Metal Bulletin Coking Coal Indices is to provide market participants with a fair and robust representation of the physical coking coal spot market price. Metal Bulletin's rationale is to adopt and develop the price discovery process and the methodology described in the present guide to produce a consistent and representative indicator of market value to suit the Coking Coal 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 coking coal market. The data collection period taken into consideration to calculate the Index is determined by Metal Bulletin after considering the number of data points that Metal Bulletin can reasonably expect to collect on a consistent basis over the selected period to support the index calculation process.

The coking coal market is constantly developing. Metal Bulletin reviews its methodology and specifications, and engages in discussions with market participants on a regular basis to ensure that it remains as representative of the market as possible.

The Metal Bulletin Coking Coal Indices methodology has been designed to meet the requirements of the financial market as well as the physical market.

Methodology

Data provision 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 coking coal 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 6.00pm Singapore time. Data received after this time will not be included in the calculation of the indices. The data collection window runs for the 24-hour period prior to the 6.00pm data submission deadline. Only price data submitted and communicated to Metal Bulletin within the 24 hour window will be included in the calculation of that day's 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 coking coal market conventions and the reference units used in these markets. The index specifications have a published minimum volume size accepted.

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All data supplied to Metal Bulletin Group Coking Coal Indices is kept strictly confidential. Metal Bulletin Group may sign a Data Submitter Agreement (DSA) with any data provider, if requested to do so.

Index calculation

The Metal Bulletin Coking Coal Indices are a tonnage-weighted calculation, 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 index.

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

Market balance

The Metal Bulletin Group Coking Coal Indices methodology is designed to provide market participants with a fair and robust reflection of the physical coking coal 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 Coking Coal Indices are structured to balance 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 figures are the straight average of two sub-indices, each of which contain data from either the buy side or sell side of the market. Each sub-index is a tonnage-weighted calculation of normalised price data. Only the final indices are published. The use of two sub-indices means that each part of the market has a maximum 50% weighting in the final indices. This removes the possibility of bias or any single data provider having an overbearing influence on any final index.

Normalisation

Nearly all material traded on the coking coal spot market differs from the base specification of the indices. 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 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 indices are updated every month to reflect the constantly changing value-in-use relationship of different products and grades.

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 coking coal spot market. Transactions that are conducted on different payment or credit terms can be normalised, taking into account discounts, interest rate and standard commercial terms.

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 Coking Coal 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 indices may result in the data provider being warned or excluded.

Metal Bulletin 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 reserves the right to

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exclude data that is not fairly presented or is believed to be an effort to distort the index.

Metal Bulletin Group updates relativities for its premium hard coking coal and hard coking coal indices at the beginning of every month. The relativities are calculated using a regression analysis of transaction prices for the various brands as well as assessments provided by and collected from market participants where appropriate over the preceding two months. They are expressed as a percentage relative to the Metal Bulletin indices.

Index calculation during periods of low liquidity

All Metal Bulletin Group Coking Coal 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.

In the absence of transactions, offers at lower levels or bids at higher prices, the index prices will reflect the stability of the market by being flat if participants' feedback has been little changed.

When assessments, offers and bids collected from the market are included into index calculation in order to maintain a robust data set, they 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 coking coal markets.

In the event that a data set is not considered suitably robust 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.

Publication

The Metal Bulletin Group Coking Coal Indices are published at 6.30pm Singapore local time.

Indices are not published on Singapore public holidays.

Singapore public holidays 2018* are as follows:

16-17 February 2018	Chinese New Year public holiday
30 March -2018	Good Friday
1 May 2018	Labour Day
29 May 2018	Vesak Day
15 June 2018	Hari Raya Puasa
9 August 2018	National Day
22 August 2018	Hari Raya Haji
6 November 2018	Deepavali
25 December 2018	Christmas Day

*source: www.mom.gov.sg

Corrections and delays

If the 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 Index. 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.

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Methodology and specifications review process

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

Metal Bulletin Group reviews methodologies every six 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.

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 [Methodology Review & Change Consultation Process](#) available on the Metal Bulletin website

Procedure to ensure consistency in the price discovery process

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'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.

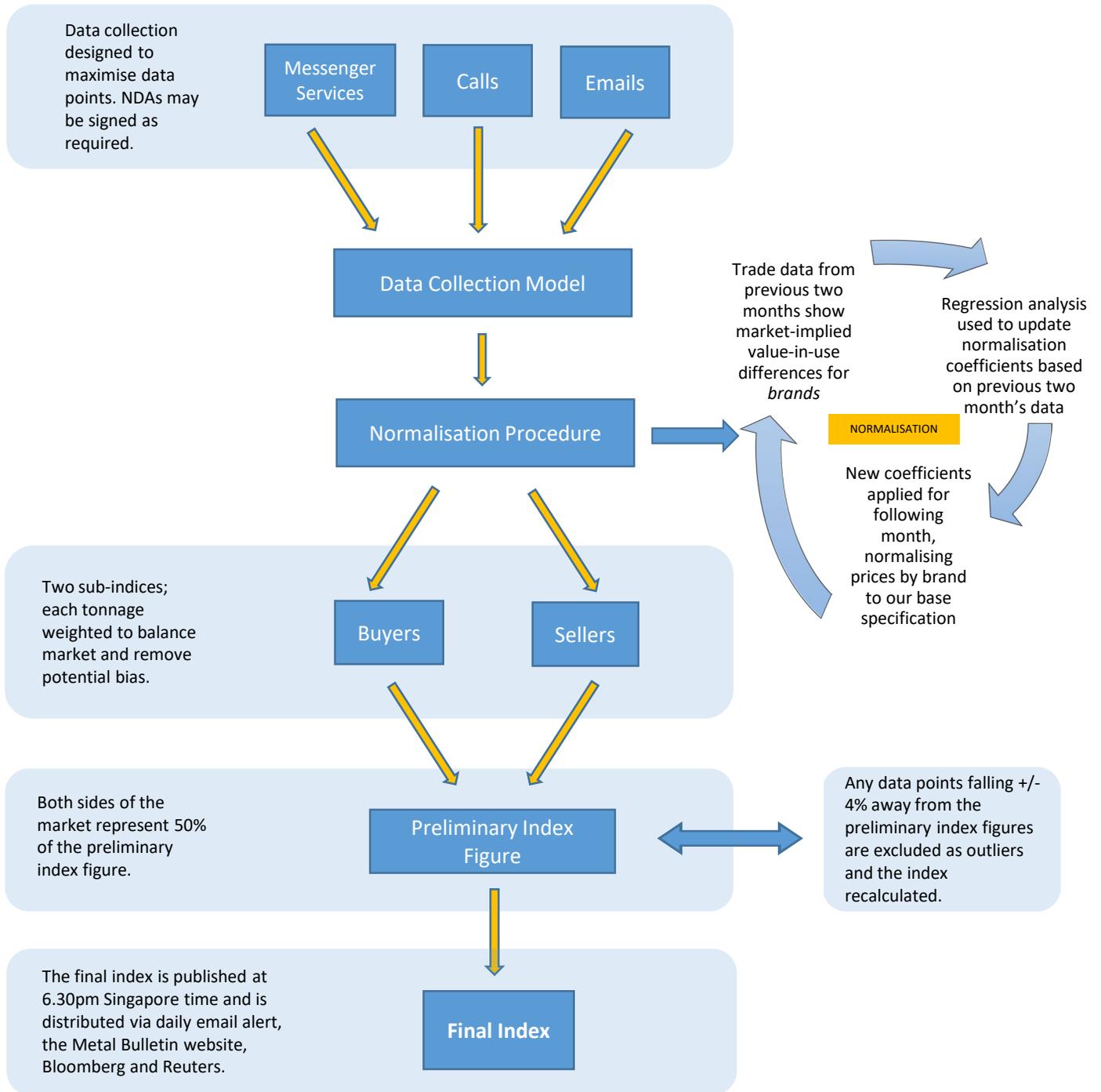
There are multiple channels for interaction with the pricing teams, including email, telephone and instant messenger services.

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.

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Calculation process



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Premium Hard Coking Coal

The Metal Bulletin Premium Hard Coking Coal Indices are benchmark prices representing the top-quality coking coal market. All transaction data within the specified 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.

The CFR China and FOB Australia indices are calculated separately. They reflect outright CFR and FOB values and are not based on net-back or net-forward calculations.

Premium Hard Coking Coal CFR China	Premium Hard Coking Coal FOB Australia	Index material inclusion
<p>Price US\$ per metric tonne</p> <p>Origins All origins</p> <p>CSR Base 71%, Minimum 67%</p> <p>Volatile Matter (ad) Base 21%, Range 18-25%</p> <p>Ash (ad) Base 9.50%, Maximum 11%</p> <p>Sulphur (ad) Base 0.50%, Maximum 1.10%</p> <p>CSN/FSI Base 8, Minimum 7</p> <p>Total Moisture (ar) Base 10%</p> <p>Mean Maximum Reflectance Base 1.35%, Range 1.10-1.60%</p> <p>Maximum Fluidity Base 500ddpm, Minimum 40ddpm</p> <p>Physical Size <50mm</p> <p>Delivery Seaborne, laycan within 60 days</p> <p>Trade size Minimum 10,000 tonnes</p> <p>Payment terms LC on sight</p> <p>Publication Daily at 6.30pm Singapore time</p>	<p>Price US\$ per metric tonne</p> <p>Origin Australia</p> <p>CSR Base 71%, Minimum 67%</p> <p>Volatile Matter (ad) Base 21%, Range 18-25%</p> <p>Ash (ad) Base 9.50%, Maximum 11%</p> <p>Sulphur (ad) Base 0.50%, Maximum 1.10%</p> <p>CSN/FSI Base 8, Minimum 7</p> <p>Total Moisture (ar) Base 10%</p> <p>Mean Maximum Reflectance Base 1.35%, Range 1.10-1.60%</p> <p>Maximum Fluidity Base 500ddpm, Minimum 40ddpm</p> <p>Physical Size <50mm</p> <p>Delivery Seaborne, laycan within 60 days</p> <p>Trade size Minimum 10,000 tonnes</p> <p>Payment Terms LC on sight</p> <p>Publication Daily at 6.30pm Singapore time</p>	<p>The following brands will be included and normalised in the premium hard coking coal indices, as well as other materials falling within the specified ranges:</p> <ul style="list-style-type: none"> German Creek Goonyella Hail Creek Illawarra Moranbah North North Goonyella Oaky Creek Oaky North Peak Downs Peak Downs North Premium Premium Low Vol Riverside Saraji Standard Wollombi

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Hard Coking Coal

The Metal Bulletin Hard Coking Coal Indices are benchmark prices representing the hard coking coal market with lower CSR properties. All transaction data within the specified 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.

The CFR China and FOB Australia indices are calculated separately. They reflect outright CFR and FOB values and are not based on net-back or net-forward calculations.

Hard Coking Coal CFR China	Hard Coking Coal FOB Australia	Index material inclusion
Price US\$ per metric tonne	Price US\$ per metric tonne	The following brands will be included and normalised in the hard coking coal indices, as well as other materials falling within the specified ranges: Carborough Downs Curragh Lake Vermont Low Ash Coking Coal Mavis Downs Metropolitan Mid Vol Coking Coal Middlemount Tahmoor Tuhup
Origins All origins	Origin Australia	
CSR Base 64%, Minimum 57%	CSR Base 64%, Minimum 57%	
Volatile Matter (ad) Base 25%, Range 19.50-27%	Volatile Matter (ad) Base 25%, Range 19.50-27%	
Ash (ad) Base 9.50%, Maximum 11%	Ash (ad) Base 9.50%, Maximum 11%	
Sulphur (ad) Base 0.60%, Maximum 1.50	Sulphur (ad) Base 0.60%, Maximum 1.50%	
CSN/FSI Base 7, Minimum 6	CSN/FSI Base 7, Minimum 6	
Total Moisture (ar) Base 10%	Total Moisture (ar) Base 10%	
Mean Maximum Reflectance Base 1.20%, Range 1.00-1.50%	Mean Maximum Reflectance Base 1.20%, Range 1.00-1.50%	
Maximum Fluidity Base 500ddpm, Minimum 40ddpm	Maximum Fluidity Base 500ddpm, Minimum 40ddpm	
Physical Size <50mm	Physical Size <50mm	
Delivery Seaborne, laycan within 60 days	Delivery Seaborne, laycan within 60 days	
Trade size Minimum 10,000 tonnes	Trade size Minimum 10,000 tonnes	
Payment terms LC on sight	Payment Terms LC on sight	
Publication Daily at 6.30pm Singapore time	Publication Daily at 6.30pm Singapore time	

Chemistry Adjustments

Metal Bulletin's chemistry adjustments represent the market implied value of individual attributes, measuring the impact on price of one unit change in a coking coal variable.

The value-in-use (VIU) adjustments are calculated using the extensive data collected by Metal Bulletin on coking coal prices for different brands and statistical regression models. Regression analysis of the large amount of data gathered by Metal Bulletin allows us to calculate the VIUs applied by the market to different coking coal attributes. Tests are applied to

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make sure data is consistent, robust and that results are statistically significant.

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

The VIU 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. and VIU adjustments for the following variables have been calculated:

CSR (Coke strength after reaction)
VM (Volatile matter)
Ash
CSN (Crucible swelling number)
TM (Total moisture)
Sulphur

Pulverized Coal Injection (PCI)

The Metal Bulletin PCI indices are benchmark prices representing the pulverized coal injection market, normalized to a low volatile matter base specification. All transaction data within the specified ranges below are normalized to the base specification based on the value-in-use implied by the market. The indices are rounded to two decimal places. The CFR China and FOB Australia indices are calculated separately. They reflect outright CFR and FOB values and are not based on net-back or net-forward calculations.

Low-vol PCI cfr China

Price
US\$ per metric tonne
Origin
All origins
Volatile Matter (ad)
Base 13%
Ash (ad)
Base 9%
Sulphur (ad)
Base 0.5%
Phosphorus (ad)
Base 0.1%
Total Moisture (ar)
Base 10%
Delivery
Seaborne, laycan within 60 days
Trade Size
Minimum 10,000 tonnes
Payment Terms
LC on sight
Publication
Daily at 6.30pm Singapore time

Low-vol PCI fob Australia

Price
US\$ per metric tonne
Origin
Australia
Volatile Matter (ad)
Base 13%
Ash (ad)
Base 9%
Sulphur (ad)
Base 0.5%
Phosphorus (ad)
Base 0.1%
Total Moisture (ar)
Base 10%
Delivery
Seaborne, laycan within 60 days
Trade Size
Minimum 10,000 tonnes
Payment Terms
LC on sight
Publication
Daily at 6.30pm Singapore time

Index Material Inclusion

The following brands will be included and normalised in the PCI indices, as well as other materials falling within the specified ranges:

Brule	Lake Vermont
Carborough Downs	Middlemount
Coppabella	Peak Downs North
Curragh	Poitrel
Foxleigh	South Walker Creek
Jellinbah	Yarrabee

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Contacts

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

cokingcoal@metalbulletin.com

Singapore

Deepali Sharma

deepali.sharma@metalbulletinasia.com |

+65 6238 2118

Sophie Zhao

sophie.zhao@metalbulletinasia.com

+65 6238 2133

Peter Hannah

phannah@metalbulletin.com

+65 6238 2113

Shanghai

July Zhang

july.zhang@metalbulletinasia.com

+86 21 5877 0857 x21

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