METHODOLOGY AND SPECIFICATIONS GUIDE

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ARGUS STEELMAKING RAW MATERIALS

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The most up-to-date Argus Steelmaking Raw Materials methodology is available on www.argusmedia.com

Methodology overview

Methodology rationale

Argus strives to construct methodologies that reflect the way the market trades. Argus aims to produce price assessments which are reliable and representative indicators of commodity market values and are free from distortion. As a result, the specific currencies, volume units, locations and other particulars of an assessment are determined by industry conventions.

In the iron ore, coking coal, metallurgical coke, PCI, ferrous scrap, pig iron and steel markets, Argus publishes physical market prices in the open market as laid out in the specifications and methodology guide. Argus uses the trading period deemed by Argus to be most appropriate, in consultation with industry, to capture market liquidity.

In order to be included in the assessment process, deals must meet the minimum volume, delivery, timing and specification requirements in our methodology. In illiquid markets, and in other cases where deemed appropriate, Argus assesses the range within which product could have traded by applying a strict process outlined later in this methodology.

Survey process

Argus price assessments are informed by information received from a wide cross section of market participants, including producers, consumers and intermediaries. Argus reporters engage with the industry by proactively polling participants for market data. Argus will contact and accept market data from all credible market sources including front and back office of market participants and brokers. Argus will also receive market data from electronic trading platforms and directly from the back offices of market participants. Argus will accept market data by telephone, instant messenger, email or other means.

Argus encourages all sources of market data to submit all market data to which they are a party that falls within the Argus stated methodological criteria for the relevant assessment. Argus encourages all sources of market data to submit transaction data from back office functions.

Throughout all markets, Argus is constantly seeking to increase the number of companies willing to provide market data. Reporters are mentored and held accountable for expanding their pool of contacts. The number of entities providing market data can vary significantly from day to day based on market conditions.

For certain price assessments identified by local management, if more than 50pc of the market data involved in arriving at a price assessment is sourced from a single party the supervising editor will engage in an analysis of the market data with the primary reporter to ensure that the quality and integrity of the assessment has not been affected.

Market data usage

In each market, Argus uses the methodological approach deemed to be the most reliable and representative for that market. Argus will utilise various types of market data in its methodologies, to include:

- Transactions
- Bids and offers
- Other market information, to include spread values between grades, locations, timings, and many other data.

In many markets, the relevant methodology will assign a relatively higher importance to transactions over bids and offers, and a relatively higher importance to bids and offers over other market information. Certain markets however will exist for which such a hierarchy would produce unreliable and non-representative price assessments, and so the methodology must assign a different relative importance in order to ensure the quality and integrity of the price assessment. And even in markets for which the hierarchy normally applies, certain market situations will at times emerge for which the strict hierarchy would produce non-representative prices, requiring Argus to adapt in order to publish representative prices.

Verification of transaction data

Reporters carefully analyse all data submitted to the price assessment process. These data include transactions, bids, offers, volumes, counterparties, specifications and any other information that contributes materially to the determination of price. This high level of care described applies regardless of the methodology employed. Specific to transactions, bids, and offers, reporters seek to verify the price, the volume, the specifications, location basis, and counterparty. In some transactional average methodologies, reporters also examine the full array of transactions to match counterparties and arrive at a list of unique transactions. In some transactional average methodologies, full details of the transactions verified are published electronically and are accessible by subscribers. The deals are also published in the daily report.

Several tests are applied by reporters in all markets to transactional data to determine if it should be subjected to further scrutiny. If a transaction has been identified as failing such a test, it will receive further scrutiny. For assessments used to settle derivatives and for many other assessments, Argus has established internal procedures that involve escalation of inquiry within the source's company and escalating review within Argus management. Should this process determine that a transaction should be excluded from the price assessment process, the supervising editor will initiate approval and, if necessary, documentation procedures.

Primary tests applied by reporters

- Transactions not transacted at arm's length, including deals between related parties or affiliates.
- Transaction prices that deviate significantly from the mean of all transactions submitted for that day.
- Transaction prices that fall outside of the generally observed lows and highs that operated throughout the trading day.
- Transactions that are suspected to be a leg of another transaction or in some way contingent on an unknown transaction.

- Single deal volumes that significantly exceed the typical transaction volume for that market.
- Transaction details that are identified by other market participants as being for any reason potentially anomalous and perceived by Argus to be as such.
- Transaction details that are reported by one counterparty differently than the other counterparty.
- Any transaction details that appear to the reporter to be illogical or to stray from the norms of trading behaviour. This could include but is not limited to divergent specifications, unusual delivery location and counterparties not typically seen.
- Transactions that involve the same counterparties, the same price and delivery dates are checked to see that they are separate deals and not one deal duplicated in Argus records.

Secondary tests applied by editors for transactions identified for further scrutiny

Transaction tests

- The impact of linkage of the deal to possible other transactions such as contingent legs, exchanges, options, swaps, or other derivative instruments. This will include a review of transactions in markets that the reporter may not be covering.
- The nature of disagreement between counterparties on transactional details.
- The possibility that a deal is directly linked to an offsetting transaction that is not publicly known, for example a "wash trade" which has the purpose of influencing the published price.
- The impact of non-market factors on price or volume, including distressed delivery, credit issues, scheduling issues, demurrage, or containment.

Source tests

- The credibility of the explanation provided for the outlying nature of the transaction.
- The track record of the source. Sources will be deemed more credible if they
  - Regularly provide transaction data with few errors.
  - Provide data by Argus' established deadline.
  - Quickly respond to queries from Argus reporters.
  - Have staff designated to respond to such queries.
- How close the information receipt is to the deadline for information, and the impact of that proximity on the validation process.

Assessment guidelines

When insufficient, inadequate, or no transaction information exists, or when Argus concludes that a transaction based methodology will not produce representative prices, Argus reporters will make an assessment of market value by applying intelligent judgment based on a broad array of factual market information. Reporters must use a high degree of care in gathering and validating all market data used in determining price assessments, a degree of care equal to that applying to gathering and validating transactions. The information used to form an assessment could include deals done, bids, offers, tenders, spread trades, exchange trades, fundamental supply and demand information and other inputs.

The assessment process employing judgment is rigorous, replicable, and uses widely accepted valuation metrics. These valuation metrics mirror the process used by physical commodity traders to internally assess value prior to entering the market with a bid or offer. Applying these valuation metrics along with sound judgment significantly narrows the band within which a commodity can be assessed, and greatly increases the accuracy and consistency of the price series. The application of judgment is conducted jointly with the supervising editor, in order to be sure that guidelines below are being followed. Valuation metrics include the following:

Relative value transactions

Frequently transactions occur which instead of being an outright purchase or sale of a single commodity, are instead exchanges of commodities. Such transactions allow reporters to value less liquid markets against more liquid ones and establish a strong basis for the exercise of judgment.

- Exchange one commodity for a different commodity in the same market at a negotiated value.
- Exchange delivery dates for the same commodity at a negotiated value.
- Exchange a commodity in one location for the same commodity at another location at a negotiated value.

Bids and offers

If a sufficient number of bids and offers populate the market, then in most cases the highest bid and the lowest offer can be assumed to define the boundaries between which a deal could be transacted.

Comparative metrics

- The relative values between compared commodities are readily discussed in the market and can be discovered through dialogue with market participants. These discussions are the precursor to negotiation and conclusion of transactions.
- Comparison to the same commodity in another market centre.
- Comparison to a more actively traded but slightly different specification commodity in the same market centre.
- Comparison to the same commodity traded for a different delivery timing.
- Comparison to the commodity's primary feedstock or primary derived product(s).
- Comparison to trade in the same commodity but in a different modality (as in barge versus oceangoing vessel) or in a different total volume (as in full cargo load versus partial cargo load).

Volume minimums and transaction data thresholds

Argus typically does not establish thresholds strictly on the basis of a count of transactions, as this could lead to unreliable and non-representative assessments and because of the varying transportation infrastructure found in all commodity markets. Instead, minimum volumes are typically established which may apply to each transaction accepted, to the aggregate of transactions, to transactions which set a low or high assessment or to other volumetrically relevant parameters.

For price assessments used to settle derivatives, Argus will seek to establish minimum transaction data thresholds and when no such threshold can be established Argus will explain the reasons. These thresholds will often reflect the minimum volumes necessary to produce a transaction-based methodology, but may also establish minimum deal parameters for use by a methodology that is based primarily on judgment.

Should no transaction threshold exist, or should submitted data fall below this methodology's stated transaction data threshold for any reason, Argus will follow the procedures outlined elsewhere in this document regarding the exercise of judgment in the price assessment process.

Transparency
Argus values transparency in energy markets. As a result, where available, we publish lists of deals in our reports that include price, basis, counterparty and volume information. The deal tables allow subscribers to cross check and verify the deals against the prices. Argus feels transparency and openness is vital to developing confidence in the price assessment process.

Swaps and forwards markets
Argus publishes forward assessments for numerous markets. These include forward market contracts that can allow physical delivery and swaps contracts that swap a fixed price for the average of a floating published price. Argus looks at forward swaps to inform physical assessments but places primary emphasis on the physical markets.

Publications and price data
Argus iron ore, coking coal, metallurgical coke, PCI, ferrous scrap, pig iron and steel prices are published in the Argus Steelmaking Raw Materials report. Subsets of these prices appear in other Argus market reports and newsletters in various forms. The price data are available independent of the text-based report in electronic files that can feed into various databases. These price data are also supplied through various third-party data integrators. The Argus website also provides access to prices, reports and news with various web-based tools. All Argus prices are kept in a historical database and available for purchase. Contact your local Argus office for information.

A publication schedule is available at www.argusmedia.com

Corrections to assessments
Argus will on occasion publish corrections to price assessments after the publication date. We will correct errors that arise from clerical mistakes, calculation errors, or a misapplication of our stated methodology. Argus will not retroactively assess markets based on new information learned after the assessments are published. We make our best effort to assess markets based on the information we gather during the trading day assessed.

Ethics and compliance
Argus operates according to the best practices in the publishing field, and maintains thorough compliance procedures throughout the firm. We want to be seen as a preferred provider by our sub-scribers, who are held to equally high standards, while at the same time maintaining our editorial integrity and independence. Argus has a strict ethics policy that applies to all staff. The policy can be found on our website at www.argusmedia.com. Included in this policy are restrictions against staff trading in any energy commodity or energy related stocks, and guidelines for accepting gifts. Argus also has strict policies regarding central archiving of email and instant messenger communication, maintenance and archiving of notes, and archiving of spreadsheets and deal lists used in the price assessment process. Argus publishes prices that report and reflect prevailing levels for open-market arms length transactions (please see the Argus Global Compliance Policy for a detailed definition of arms length).

Consistency in the assessment process
Argus recognises the need to have judgment consistently applied by reporters covering separate markets, and by reporters replacing existing reporters in the assessment process. In order to ensure this consistency, Argus has developed a programme of training and oversight of reporters. This programme includes:

- A global price reporting manual describing among other things the guidelines for the exercise of judgment
- Cross-training of staff between markets to ensure proper holiday and sick leave backup. Editors that float between markets to monitor staff application of best practices
- Experienced editors overseeing reporting teams are involved in daily mentoring and assisting in the application of judgment for illiquid markets

Editors are required to sign-off on all price assessments each day, thus ensuring the consistent application of judgment.

Review of methodology
The overriding objective of any methodology is to produce price assessments which are reliable and representative indicators of commodity market values and are free from distortion. As a result, Argus editors and reporters are regularly examining our methodologies and are in regular dialogue with the industry in order to ensure that the methodologies are representative of the market being assessed. This process is integral with reporting on a given market. In addition to this ongoing review of methodology, Argus conducts reviews of all of its methodologies and methodology documents on at least an annual basis.

Argus market report editors and management will periodically and as merited initiate reviews of market coverage based on a qualitative analysis that includes measurements of liquidity, visibility of market data, consistency of market data, quality of market data and industry usage of the assessments. Report editors will review:

- Appropriateness of the methodology of existing assessments
- Termination of existing assessments
- Initiation of new assessments.

The report editor will initiate an informal process to examine viability. This process includes:

- Informal discussions with market participants
- Informal discussions with other stakeholders
- Internal review of market data

Should changes, terminations, or initiations be merited, the report editor will submit an internal proposal to management for review and approval. Should changes or terminations of existing assessments be approved, then formal procedures for external consultation are begun.

Changes to methodology

Formal proposals to change methodologies typically emerge out of the ongoing process of internal and external review of the methodologies. Formal procedures for external consultation regarding material changes to existing methodologies will be initiated with an announcement of the proposed change published in the relevant Argus report. This announcement will include:

- Details on the proposed change and the rationale
- Method for submitting comments with a deadline for submissions
- For prices used in derivatives, notice that all formal comments will be published after the given consultation period unless submitter requests confidentiality.

Argus will provide sufficient opportunity for stakeholders to analyse and comment on changes, but will not allow the time needed to follow these procedures to create a situation wherein unrepresentative or false prices are published, markets are disrupted, or market participants are put at unnecessary risk. Argus will engage with industry throughout this process in order to gain acceptance of proposed changes to methodology. Argus cannot however guarantee universal acceptance and will act for the good order of the market and ensure the continued integrity of its price assessments as an overriding objective.

Following the consultation period, Argus management will commence an internal review and decide on the methodology change. This will be followed by an announcement of the decision, which will be published in the relevant Argus report and include a date for implementation. For prices used in derivatives, publication of stakeholders' formal comments that are not subject to confidentiality and Argus' response to those comments will also take place.

The report

Argus Steelmaking Raw Materials publishes daily and weekly price assessments for iron ore fines and lump, coking coal, metallurgical coke, PCI, finished steel, ferrous scrap, pig iron, and ferro-alloys.

A subset of Asia-Pacific prices are also published in the Argus Iron Ore Bulletin at the end of the Asia-Pacific day.

Reporting team

The Argus Steelmaking Raw Materials team consists of specialist market reporters and analysts in Beijing, Shanghai, Singapore, Sydney, London, Moscow, Kiev, Houston and Washington, DC, drawing on Argus' global network of correspondents.

Survey process

Argus considers a broad range of information in assessing the price of iron ore fines, coking coal and ferrous scrap each day.

This includes information on fixed-price physical deals, market premiums, market discounts, reported but unconfirmed trades, tender results, bids, offers, and supply and demand fundamentals.

Deals concluded through electronic trading platforms are included in the assessments of prevailing market prices, provided they meet all relevant criteria for the physical commodity.

A balance is maintained in the survey between sellers, buyers and trading companies. The approach is methodical and standardised, and the assessments are tested against the views of other market participants.

Deals must be considered repeatable to be reflected in the assessments. All information is taken into account.

Payment terms

Argus assessments may involve trade in ferrous products and feedstocks that involve different payment terms, including but not limited to prepayment, payment on sight and deferred payment. Trade with unconventional payment terms may not be considered for inclusion in the assessment.

Exclusions

Argus applies editorial judgment to surveys of the market. Transactions that appear to be significantly above or below the market will be excluded before the final volume-weighted average is calculated. Transactions that have non-standard terms will also be excluded.

Source data

Argus welcomes transaction data and survey input from all market participants. We strongly encourage full disclosure of all relevant details of all deals concluded. All information received is cross-checked and tested against other market information. Any anomalies will be excluded.

Iron ore

Seaborne iron ore assessments

Argus Steelmaking Raw Materials contains assessments of cfr prices for various grades of iron ore fines, lump, pellets and concentrate delivered to northern China (Qingdao) including the Argus **ICX®** indexes for 61pc Fe and 62pc Fe Chinese seaborne iron ore imports, and a 62pc Fe lump premium to the Argus **ICX®** 62pc index.

Prices are assessed in US dollars per dry tonne. The **ICX®** indexes are also published in Australian dollars per dry tonne using the latest available exchange rate from the Reserve Bank of Australia at the time of publication.

The base specifications of the iron ore grades are listed in the international iron ore specifications table below. These specifications standardise the assessments around key criteria relating to contract basis and location, Fe content, timing, contaminant levels and parcel size.

Basis of assessments

Assessments are based on a volume-weighted average of normalised market information, with fixed-price transactions assigned the most weight followed by floating-priced trades, matched platform bids and offers, and in the absence of sufficient transaction or order information, other market information including a survey of bilateral bids, offers and indicative market values.

Assessments are of spot prices for delivery within 2-10 weeks. Deals within the 2-10 week window will be normalised to a six-week delivery.

The timing adjustment is calculated from the shape of the futures forward curve. During periods of steep market contango or backwardation, Argus may also consider the shape of the physical forward curve in determining timing adjustments.

Rounding

Asia-Pacific iron ore price assessments are rounded to the nearest 5¢/dmt for outright prices and to nearest 0.01¢/dmtu for the lump premium.

Argus ICX® index components and validation

Fixed-price trades

Fixed-price spot transactions, meeting **ICX®** index specifications, concluded either bilaterally or on electronic trading platforms such as COREX and globalORE, will be normalised to each of the **ICX®** index specifications using value-in-market adjustments to normalise for deviations of Fe gangue elements, impurities and physical parameters. These will be attributed full volume-weighting in a volume-weighted average.

Floating-price trades

Floating-price trades will be converted to current, fixed prices using the forward price curve on the day of trade, and normalised to each of the **ICX®** index specifications. These would be included at a volume weighting of 50% of total volume.

Matched bids and offers

Firm, matching bids and offers made on electronic trading platforms will be included in the **ICX®** index calculations. The best bid/offer pair (the highest bid and lowest offer) for each cargo, delivery period and electronic trading venue will be normalised to each of the **ICX®** index specification for inclusion in the index at a volume weighting of 20% of the total cargo volume.

Minimum volumes and other market information

In the event that seven or more trades (fixed or floating price) and/or matched bid/offer pairs are reported for a given publication date,

International iron ore specifications

	58% Fe fines, cfr Qingdao	61% Fe fines, cfr Qingdao (ICX®)	62% Fe fines, cfr Qingdao (ICX®)	65% Fe fines, cfr Qingdao	61% Fe lump, cfr Qingdao	62% Fe lump, cfr Qingdao	61% PCX™ seaborne equivalent	62% Fe low-alumina (ICX® 62-LA)*
Fe content (dry basis)								
Fe content (%)	58	61	62	65	61	62	61	62
Gangue elements (dry basis)								
SiO2 (%)	5.5	4.3	3.75	3.3	3.5	3.5	4.3	5
Al2O3 (%)	2.5	2.5	2.25	1.8	1.75	1.75	2.5	1.5
Impurities (dry basis)								
Phosphorus (%)	0.08	0.1	0.1	0.1	0.08	0.08	0.1	0.08
Sulphur (%)	0.04	0.02	0.02	0.02	0.02	0.02	0.02	
Physical parameters (wet basis)								
Moisture (%)	8	8	8	8	4	4	8	8
Grain size	10% >6.3mm and 12% <0.15mm	10% >6.3mm and 15% <0.15mm	10% >6.3mm and 15% <0.15mm	18% >6.3mm and 23% <0.15mm	max 15pc <6.3mm max 25pc >31.5mm	max 15pc <6.3mm max 25pc >31.5mm	10% >6.3mm and 15% <0.15mm	
Parcel (minimum)	40,000t	40,000t	40,000t	40,000t	40,000t	40,000t	na	
Delivery period	2-10 weeks	2-10 weeks	2-10 weeks	2-10 weeks	2-10 weeks	2-10 weeks	na	
Assessment frequency	daily	daily	daily	daily	daily	daily	daily	daily

The 62pc Fe cfr Qingdao low-alumina (**ICX®** 62-LA) index is calculated based on the value-in-market (ViM) quality adjustments for iron, silica, alumina and phosphorus and the **ICX®** index. The specifications above are the same as those used in the normalisation of BRBF - “Brazilian Blended Fines” market information for inclusion in the **ICX®** assessment. BRBF specifications may change over time. **ICX®** 62-LA index specifications will change only after formal consultation with market participants.

Argus will calculate volume-weighted averages of those prices, which will form the **ICX®** indexes.

If there is insufficient data, as described above, to generate robust indexes, fixed and/or floating trades and matched bid/offer pair order data will be supplemented by firm bilateral bids and offers and indicative data at a volume weighting of 5% of total volume.

Validation of market information

Argus evaluates all information (trades, market orders and the response to market surveys), whether or not that information is included in the final index calculations. A series of statistical cross-checks is employed by Argus analysts in considering market information for inclusion in the index calculations.

Specifications

Argus iron ore assessments are for iron ore cargoes with the typical specifications described in the specifications table. Argus focuses on cargoes that correspond with the most traded qualities of iron ore in the Chinese spot iron ore market.

Specifically:

- 63.5-66pc Fe fines are eligible for inclusion in the 65pc assessment
- 59-63.5pc Fe fines are eligible for inclusion in the Argus **ICX®** indexes (61pc and 62pc)
- 56-59pc Fe fines are eligible for inclusion in the 58pc assessment

Normalisation

Argus produces iron ore assessments that correspond to base specifications. Deals that differ from the typical terms and conditions of the base specification are normalised before inclusion in the volume-weighted trade average.

Factors that Argus takes into account include payment terms, brand, delivery terms and loading window, size of parcel, chemical composition of the parcel, and delivery date, based on loading time and average shipping time.

For all iron ore fines assessments, Argus normalises transactions to the 42nd calendar day from the assessment date (six weeks from the date of the transaction) using the daily shape of the forward curve. The shape of the forward curve is established using trades, bids and offers for each of the current month (M0), first- (M1) and second- (M2) full month futures contracts on the SGX exchange between 4pm and 5pm, inclusive, Singapore time. In the absence of sufficient SGX market information, OTC swaps curves will be considered for inclusion in the assessment of the shape of the forward curve.

This normalisation includes quality price differentials in the traded market. Completed transactions and market feedback are taken into consideration in determining quality differentials. See the value-in-market adjustments section below.

Iron ore value-in-market adjustment

Argus Steelmaking Raw Materials publishes daily value-in-market (ViM) adjustments for iron (Fe), silica (SiO2), alumina (Al2O3) and phosphorus (P) some of which are used to normalise iron ore products in the range 59-63.5pc Fe to the common **ICX®** 61pc and **ICX®** 62pc index base specifications.

Value-in-market refers to market averages determined by analysis of captured data and should be seen as distinct from value-in-use (VIU), which is specific to individual users.

Adjustments are assessed in $/dmt for every 1pc change in Fe, silica and alumina and 0.01pc change in phosphorus. The adjustments are derived from market data captured by Argus in its pricing process.

The analysis will focus on received bids, offers and transactions to identify the key chemical properties driving differences between iron ore brands. Argus will assume a linear relationship between price and quality within the given ranges, and apply a series of adjustment bands where it is not possible to assume a linear relationship beyond a certain range. The ranges for which Argus will apply adjustments are shown in the table below and will be published daily.

The adjustments will only be applied within fixed ranges for which Argus is confident there is sufficient liquidity to determine the applicable adjustment. Iron ore value-in-market adjustments are published in US dollars per dry tonne.

Unless specified, the same adjustments are used in the calculation of **ICX®** 61pc and **ICX®** 62pc indexes.

- per 1% Fe 59-63.5%
- per 1% Fe 63.5-65% - note: published but not used for normalisation to **ICX®** index specification
- per 1% SiO2 <4.5%
- per 1% SiO2 4.5-6%
- per 1% SiO2 >6%
- per 1% Al2O3 1-2.25% (**ICX®** 62pc index only)
- per 1% Al2O3 2.25-3% (**ICX®** 62pc index only)
- per 1% Al2O3 <2.5% (**ICX®** 61pc index only)
- per 1% Al2O3 >2.5% (**ICX®** 61pc index only)
- per 0.01% P <0.08%
- per 0.01% P 0.08-0.11%
- per 0.01% P >0.11%

ICX® 62pc-ICX® 61pc spread

Argus also publishes the difference between the outright **ICX®** 62pc and **ICX®** 61pc indexes.

Seaborne equivalent

Argus calculates seaborne equivalent prices by removing moisture, port fees and value-added tax from the relevant portside assessment to create a yuan/dmt price. That price is converted into a $/dmt seaborne-equivalent price.

Seaborne equivalent prices are calculated for:

- SSF Fines, fot Qingdao port
- 61pc Fe Fines, fot Qingdao port **PCX™** index

SSF and **PCX™** index seaborne equivalent prices are published as both outright prices and as differentials to the Argus **ICX®** 62pc Fe index. Argus also publishes the average of the seaborne equivalent 61pc Fe Fines, fot Qingdao port **PCX™** index and the 62pc Fe Fines, cfr Qingdao **ICX®** index.

Fob Australia ICX® index netback

Argus publishes a daily fob Australia netback price for the Argus **ICX®** 62pc index. The price is calculated by converting the daily WC Australia-N China freight rate from $/wmt to $/dmt by removing 8pc moisture and subtracting the freight from the **ICX®** cfr China $/dmt index. See the Iron ore freight section below.

Lump premiums

Argus also produces lump premiums to the Argus **ICX®** 61pc Fe index and the Argus **ICX®** 62pc Fe index, published in ¢/dry metric tonne unit (¢/dmtu). 60-65pc Fe lump cargoes sold during the day are eligible for inclusion in both premium assessments. An outright lump price is also published. Lump prices are for delivery 2-10 weeks forward, normalised to six weeks from the date of the transaction.

63pc Fe pellet

Argus assesses two weekly prices for 63pc Fe blast furnace pellet on a $/dmt cfr Qingdao basis. The specifications are listed below. Assessments are based on trades, bids and offers and a survey of market participants.

Seaborne pellet specifications

	Blast furnace pellet 63% Fe 3.5% Al cfr Qingdao	Blast furnace pellet 63% Fe 2% Al cfr Qingdao
Fe content (%)	63	63
SiO2 (%)	4	4
Al2O3 (%)	3.5	2
Phosphorus (%)	0.05	0.04
Sulphur (%)	0.01	0.01
Compression strength	Base 240 daN, min 230 daN	Base 260 daN
Parcel size	50,000t	
Delivery period	2-8 weeks	
Assessment frequency	Weekly	

Concentrate

Argus assesses two weekly concentrates premiums, published as differentials to the Argus 65pc Fe fines, cfr Qingdao assessment. The specifications are listed below. The Australian assessment is published as a differential to the front-month 65pc Fe fines price. The Ukrainian assessment is published as a differential to the second-forward month 65pc Fe fines price. For example, on 1 May, the Australian concentrate premium is published as a differential to the June 65pc Fe fines price and the Ukrainian concentrate premium is published as a differential to the July 65pc Fe fines price. Assessments are based on trades, bids and offers and a survey of market participants.

Seaborne concentrate specifications

	Australian	Ukrainian
Fe content (%, dry basis)	66	65
SiO2 (%, dry basis)	7.2	8.5
Al2O3 (%, dry basis)	0.2	0.5
Phosphorus (%, dry basis)	0.05	0.05
Sulphur (%, dry basis)	0.05	0.07
Water (%, wet basis)	9	10
Delivery period	2-8 weeks	
Assessment frequency	Weekly	

Brand quality adjustments

Medium-grade

Argus publishes the price of medium-grade iron ore brands as a differential to the **ICX®** 61pc and **ICX®** 62pc index and as outright prices. Differentials are calculated by applying the value-in-market (VIM) quality adjustments and typical brand specifications to the **ICX®** indexes. The same (VIM) quality adjustments are used to normalise the price of branded product for inclusion in the **ICX®** indexes.

Prices are published in $/dmt as differentials to the **ICX®** indexes and as outright prices on a typical brand specification basis, and on a 61pc and 62pc Fe basis.

Differentials and outright prices are published for

- PB Fines (PBF)
- Newman High Grade Fines (NHGF)
- MAC Fines (MACF)
- Jimblebar Fines (JMBF)
- Brazilian Blend Fines (BRBF)

Low-grade

Argus publishes the price of low-grade iron ore brands (<60% Fe) as a differential to the **ICX®** 62pc Fe index and as outright prices.

Outright prices are calculated by applying value-in-market (ViM) adjustments similar to those described above, although the specific ViM adjustments are not published.

Differentials and outright prices are published for

- Yandi fines actual basis (YDF)
- Yandi fines 58% basis (YDF58)

Lump

Argus publishes the price of iron ore lump brands as a lump premium to the Argus **ICX®** 62pc Fe index, published in ¢/dry metric tonne unit (¢/dmtu). Premiums are calculated by applying brand and quality adjustments to the Argus 62pc Fe lump premium.

Lump premiums are published for

- Newman Blend lump (NBL)
- Pilbara lump (PBL)

Implied floating premiums

Argus publishes implied floating premiums for the most traded iron ore fines brands. The premiums are against the prompt month (M+1) and are calculated as the difference between the Argus ViM brand outright price and the Argus prompt-month forward price assessment.

Floating premiums are published for

- PB Fines (PBF)
- Newman High Grade Fines (NHGF)
- MAC Fines (MACF)
- Jimblebar Fines (JMBF)
- Brazilian Blend Fines (BRBF)
- Yandi fines 62% basis (YDF62)*

*The Yandi fines 62% basis implied floating premium is calculated based on the Yandi fines 58% basis outright price, adjusted to a 62% basis assuming a linear relationship between iron content and price.

Timing of assessment

Transactions completed after the time stamp for physical transactions (6pm Singapore time) or before midnight the same day will not be considered for inclusion in the volume-weighted average.

The 61pc and 62pc Fe lump premiums are published daily with a 6pm Singapore timestamp.

The 63pc pellet prices are published weekly on Tuesday.

The 65pc concentrate premiums are published weekly on Wednesday.

China portside

Argus assesses free on truck (fot) prices for brands of iron ore fines in the Chinese domestic port market. The base specifications of the iron ore brands are listed in the Domestic Chinese portside brand specifications table.

These specifications standardise the assessments around key criteria relating to contract basis and location, Fe content, timing, contaminant levels and parcel size.

Basis of assessments

Assessments are based 90pc on an average of spot transactions and 10pc on a survey of active market participants, including firm bids and offers. In the absence of spot transactions, the assessment will be based entirely on the market survey.

Argus iron ore price assessments are for iron ore brand parcels with the typical specifications described in the Domestic Chinese portside specifications table below. Argus focuses on brands that are the most actively traded in the Chinese portside iron ore secondary market.

Iron ore prices are assessed fully independently from one another. Argus assesses the market price of the branded material, regardless of any changes to the physical properties of the branded product over time.

The minimum size of trades, bids or offers for inclusion in the assessments is 5,000t.

Rounding

Prices are assessed in Chinese yuan per wet tonne and include a port handling fee and value-added tax. Portside iron ore price assessments are rounded to the nearest Chinese yuan/wmt.

China portside 61pc Fe Fines, fot Qingdao port (**PCX**™ 61pc index)

The **PCX**™ index is the price of the most liquid mainstream iron ore products, normalised to the listed specification. The price relates solely to iron ore sold in the domestic Chinese market at Qingdao port on a fot basis for loading within the free storage period. Argus also assesses prices for branded iron ore traded at Qingdao and Caofeidian

Domestic Chinese portside specifications

	61pc Fe fines, fot Qingdao port (PCX™)
Fe content (dry basis)	
Fe content (%)	61
Gangue elements (dry basis)	
SiO2 (%)	4.3
Al2O3 (%)	2.5
Impurities (dry basis)	
Phosphorus (%)	0.1
Sulphur (%)	0.02
Physical parameters (wet basis)	
Moisture (%)	8

Brands traded at Qingdao and Caofeidian

- PBF - Australian “Pilbara Fines”
- SSF - Australian “Super Special Fines”

Brands traded at Qingdao

- BRBF - “Brazilian Blended Fines”
- NHGF - Australian “Newman High Grade Fines’’
- PBL - Australian “Pilbara Lump”

Prices are published for each brand as an outright Yn/wmt price and as differentials to the **PCX**™ 61pc index.

Contract prices

Quarterly 65pc Fe blast furnace and direct reduction pellet premiums are published as differentials to the Argus 65pc Fe fines cfr Qingdao assessment.

Each premium is published as a single value on the day the contract settlement is confirmed and republished until the next quarterly premium is agreed. Premiums are published for blast furnace pellets and direct reduction pellets meeting the below specification and originating from Brazil, Canada or Sweden. Premiums are differentials to the average of the 65pc Fe fines price over the corresponding quarter.

Seaborne pellet specifications

	Blast Furnace Pellet	Direct Reduction Pellet
Fe content (%)	min 64	min 67
SiO2 (%)	max 6	max 2
Al2O3 (%)	max 1	max 0.5
Assessment frequency	Quarterly	

Delivered Europe net-forward

Argus publishes the calculated value of Brazilian iron ore on a cfr Rotterdam basis. Prices are calculated using the latest available underlying assessments. Calculations net back delivered China prices to an implied fob Tubarao basis using the published Argus 170,000t iron ore Tubarao to Qingdao freight rate before adding the published Argus 170,000t iron ore Tubarao to Rotterdam freight rate to arrive at a final delivered price.

Freight rates are adjusted by 2-4pc to account for the difference between wet and dry metric tonnes in which freight and ore price are published. See the Argus Dry Freight methodology.

- Iron ore 65% BF Pellet cfr Rotterdam: iron ore fines 65% Fe cfr Qingdao + the iron ore seaborne blast furnace pellet 65% Fe premium for the applicable quarter + freight
- Iron Ore 65% fines cfr Rotterdam: iron ore fines 65% Fe cfr Qingdao + freight
- Iron ore 62% lump cfr Rotterdam: iron ore fines 62% Fe cfr Qingdao (**ICX®** index) + iron ore lump premium 62% Fe cfr Qingdao + freight
- Iron ore 62% Fe fines cfr Rotterdam: iron ore fines 62% Fe cfr Qingdao (**ICX®** index) + freight

Iron ore freight

Argus Steelmaking Raw Materials contains iron ore freight rates, published in $/wmt.

Iron ore routes covered

- WC Australia-N China 170,000t Capesize
- Tubarao-Rotterdam 170,000t Capesize
- Tubarao-Qingdao 170,000t Capesize
- Saldanha Bay-Qingdao 170,000t Capesize

See the Argus Dry Freight methodology.

Iron ore forward prices

Argus Steelmaking Raw Materials includes forward price assessments for 62pc Fe Chinese imported iron ore.

Price assessments are based on a survey of market participants. Assessments are of prices prevailing in the market at 6pm Singapore time. Assessments are published for the current month and the following two months. Monthly forward prices roll at the start of each month.

Prices are published for three quarters forward. Quarterly forward prices roll at the start of the second month of each quarter. During the first month of a quarter, prices are published for the current quarter and the first two forward quarters. During the second and third months of a quarter, prices are published for the first three forward quarters. For example, in April, Argus will publish prices for the second, third and fourth quarter of the year. In May, Argus will publish prices for the third and fourth quarter of the year, and the first quarter of the following year.

Prices are also published for two calendar years forward. Calendar year forward prices roll at the start of the new year.

Coking coal

Coking coal assessments

Argus Steelmaking Raw Materials contains assessments of internationally traded bulk coking coal prices on the spot market, according to the specifications listed in the table below.

Basis of assessment

Assessments are based 50pc on a volume-weighted average of deals done and 50pc on a survey of active market participants. In the absence of transactions, the assessment will be based on the market survey. Argus does not exclusively rely upon transactions to establish market prices.

Information on transactions, bids and offers that lie outside the specifications of timing, size and quality will be taken into account but information that lies within the listed specifications of the assessment will be given most weight. Argus applies editorial judgment to the surveys and will eliminate information that is not judged to be representative of the market in its final assessment of the price. These specifications standardise the assessment around key criteria relating to cargo size and location, and for coal qualities — free swelling index, reflectance, coke strength, sulphur content, ash, moisture and volatile matter.

Asia-Pacific hard coking coal assessments are the price of product meeting or normalised to the standard specification described below based on discussion with active market participants. Information about product with specifications falling outside the permissible ranges may not be considered for inclusion in the assessment.

Loading/delivery timing

Prices are for loading or delivery entirely within the following periods:

- **fob Australia:** loading 15-60 days forward
- **fob US:** loading 14-60 days forward
- **fob Colombia:** loading 14-60 days forward
- **fob Vostochny:** loading 7-60 days forward

- **cfr China:** delivery 7-60 days forward
- **cfr Japan:** delivery 15-60 days forward
- **cfr India:** delivery 7-60 days forward

Timing of assessment

Asia-Pacific assessments are the average of the trading day's activity. Transactions completed after the time stamp for physical transactions (5.30pm Singapore time) will not be considered for inclusion in the volume-weighted average.

US assessments are the average of market activity during the 24-hour period ending at 1pm New York time on the day of publication. To be considered for inclusion in the assessment, market information must be received by 1:30pm New York time. Argus will review and make best efforts to include in the assessment process all validated market activity that occurred before 1pm New York time and was received after 1:30pm New York time, but reserves the right to exclude any market data from the process if received after the cut-off time.

Colombian and Amsterdam-Rotterdam-Antwerp (ARA) coking coal prices are assessed on a weekly basis every Tuesday. Colombian transactions completed after 1pm New York time and ARA transactions completed after 4.30pm London time will not be considered for inclusion in the assessment.

Rounding

Asia-Pacific coking coal price assessments are rounded to the nearest 5¢/t. US, Colombian and European coking coal price assessments are rounded to the nearest 5¢/t.

Australia

Argus assesses prices for hard and premium hard coking coal exports from Australia.

For price assessments of the fob Australia physical coking coal market, Argus contacts Australian producers, buyers of Australian coking coal and international traders.

Note, the fob Australia hard coking coal price is also published as a percentage of the fob Australia premium low-vol hard coking coal price.

Australia (including US coals, China netbacks)

Argus also assesses a price for fob Australia premium hard low-vol coking coal that includes the price of Australian-origin premium hard coking coal traded on a cfr China basis, freight-adjusted to a fob Australia basis, and US coals Warrior Blue Creek #7 (BC7) and Hatfield Oak Grove traded on a delivered Amsterdam-Rotterdam-Antwerp (ARA), India, Japan or China basis, freight-adjusted to a fob Australia basis.

China import

Argus assesses prices for hard and premium hard coking coal l imports into northern China.

Argus polls international producers, Chinese end-users and traders to arrive at its assessment of import prices. The primary assessment location is Jingtang, although other import locations such as Rizhao, Qinhuangdao, Qingdao and Caofeidian will be taken into account.

China domestic

Argus assesses prices for low-vol premium hard coking coal and mid-vol hard coking coal in the Chinese domestic coking coal market.

This assessment relates solely to coking coal produced in mainland China and sold to domestic Chinese users on an ex-mine basis.

Argus polls Chinese producers, end-users and intermediaries in order to arrive at its assessment of the domestic market. The minimum size of trade, bid or offer for inclusion in the Argus assessment process is 5,000t.

The assessment is made primarily in Chinese yuan/t. It is also shown in US dollars/t for ease of comparison with the import market.

Coking coal specifications

Grade	Free swelling index (FSI)	Average max. reflectance	Coke Strength after Reaction (CSR)	Sulphur (air dried)	Ash (air dried)	Total Moisture (as received)	Volatile matter (air dried)	Size	Fluidity (ddpm)
Asia-Pacific premium hard coking coal low-vol									
fob Australia	9	1.52%	70	0.6%	10.5%	10%	19.5%	25,000t	160
fob Australia permissible range	7-9	1.1-1.65%	min 67	up to 0.75%	up to 11%	up to 10.5%	up to 25%	min 25,000t	
cfr north China permissible range	7-9	1.1-1.65%	min 67	up to 0.75%	up to 11%	up to 10.5%	up to 25%	min 25,000t	
delivered Japan permissible range	7-9	1.1-1.65%	min 67	up to 0.75%	up to 11%	up to 10.5%	up to 25%	min 25,000t	
cfr east coast India permissible range	7-9	1.1-1.65%	min 67	up to 0.75%	up to 11%	up to 10.5%	up to 25%	min 25,000t	
Asia-Pacific hard coking coal (fob Australia, cfr north China, cfr east coast India)									
Specification	7	1.3%	61	0.5%	8%	up to 11%	21.5%	min 25,000t	
Permissible range	7-9	1.1-1.5%	min 56	up to 0.85%	up to 10.5%	up to 11%	19-24%	min 25,000t	
North China domestic coking coal low-vol									
North China domestic	7-9	1.1-1.5%	min 67	up to 0.6%	up to 10.5%	up to 10%	up to 25%	min 5,000t	
North China domestic coking coal mid-vol									
North China domestic	7-9	1.1-1.5%	min 58	up to 0.85%	up to 10.5%	up to 11%	19-28%	min 5,000t	
Russian prime high-vol coking coal									
fob Vostochny**	7.5-8.5		40-55	up to 0.6%	up to 11%	up to 11%	30-35%	min 30,000t	10,000+
Grade	**Free swelling index (FSI)**	**Average max. reflectance**	**Coke Strength after Reaction (CSR)**	**Sulphur (dry)**	**Ash (dry)**	**Total Moisture (as received)**	**Volatile matter (dry)**	**Size**	**Fluidity (ddpm)**
Hard coking coal, Europe and the Americas									
fob US east coast (low-vol)	7-9	1.50-1.65%	57-62	up to 1%	7-9%	up to 9%	17-20%	min 20,000t	100-200
fob Alabama (low-vol)	9	1.35-1.45%	73-74	up to 0.7%	10.5%	up to 10%	19-21%	min 20,000t	700
fob Hampton Roads (high-vol A)	8-9	1-1.1%	min 60	up to 1.1%	up to 8%	up to 9%	31-34%	min 20,000t	30,000+
fob Hampton Roads (high-vol B)	7-9	up to 1%	up to 59	0.9-1%	up to 8%	up to 9%	34-37%	min 20,000t	20,000+
cif Amsterdam-Rotterdam-Antwerp (low-vol)*	7-9	1.50-1.65%	57-62	up to 1%	7-9%	up to 9%	17-20%	min 20,000t	100-200
fob Colombia (mid-vol)	7-9	1.0-1.5%	min 62	up to 1%	up to 10%	up to 10%	24-28%	Handysize	

**Calculated as the published fob US east coast (low vol) + the US east coast-ARA 75,000t Panamax freight assessment ** plastic layer Y 22-30mm, G index (caking index) 90-100*

India import
Argus assesses the price of hard and premium hard coking coal imports into the east coast of India.

Argus polls international producers, Indian end-users and traders in order to arrive at its assessment of import prices. The primary assessment locations are Gangavaram, Vishakapatnam, Haldia, Paradip, Chennai, although other relevant import locations will be taken into account.

Japan
The premium hard coking coal (low-vol) delivered Japan price is constructed by adding the Argus premium hard coking coal (low-vol) fob Australia assessment to a representative spot Australia-to-Japan Panamax freight assessment.

US
Argus assesses prices for three types of coking coal exports from North America via the Port of Hampton Roads on the US east coast. Argus polls US producers, US and international traders who deal with exports of US coal to Atlantic basin and Pacific markets, buyers of US coal at coking and steel companies, and transport system operators to obtain pricing and market-relevant information on prompt physical sales.

Coal exported from Hampton Roads is shipped from three main terminals and largely comes from Central and Northern Appalachia. Argus observes coking coal sales from other US producing regions, for different delivery periods, and for export from the Port of Baltimore in setting Hampton Roads export prices, but the heaviest weight is given to confirmed prompt physical sales out of the Hampton Roads export terminals.

Argus also publishes two prices for US coals delivered to India. Argus assesses the price of US east coast (low-vol) and US high-vol A coking coal traded on a cfr east coast India basis. Both prices are published as differentials to the Argus cfr east coast India hard coking coal price.

Colombia
Argus assesses prices for coking coal exports from Colombia via terminals on the coast.

Argus polls Colombian producers, Colombian and international marketers and trading firms, and steelmakers throughout South America and the Atlantic basin to obtain pricing and market-relevant information on physical coal sales.

Amsterdam-Rotterdam-Antwerp (ARA)
The cif ARA price assessment is constructed by adding the Argus fob US east coast low-vol price to a representative spot US-to-ARA Panamax rate.

Russia
Argus assesses prices for coking coal exports from Russia through the ports around Vostochny.

Argus contacts Russian producers, international traders and buyers of Russian coking coal. Market information reported on a delivered basis may be net back to fob Vostochny basis using relevant freight costs.

Delivered Europe net-forward
Argus publishes the calculated value of Australia coking coal ore on a cfr Rotterdam basis. Prices are calculated using the latest available underlying assessments. See the Argus Dry Freight methodology.

- Hard coking coal fob Australia + Hay Point to Rotterdam 160,000t coal freight

Coking coal freight
Argus Steelmaking Raw Materials contains coking coal freight rates, published in $/t.

Coking coal routes covered
- Puerto Bolivar-Rotterdam 160,000t Capesize
- Murmansk-Rotterdam 70,000t Panamax
- Newcastle-Zhoushan 150,000t Capesize
- Richards Bay-south China 150,000t Capesize
- east coast Australia-Japan 70,000t Panamax
- east coast Australia-east coast India 70,000t Panamax
- east coast Australia-South Korea 70,000t Panamax
- US east coast-ARA 120,000t Capesize
- US east coast-Japan 75,000t Panamax
- Hay Point-Rotterdam 160,000t Capesize

See the Argus Dry Freight methodology.

Coking coal forward prices
Argus Steelmaking Raw Materials includes forward swaps price assessments for premium low-volatile hard coking coal fob Australia. Price assessments are based on a survey of market participants. Assessments are of prices prevailing in the market at 4.30pm London time.

Assessments are published for the current month and the following two months. Monthly forward prices roll at the start of each month.

Prices are published for three quarters forward. Quarterly forward prices roll at the start of the second month of each quarter. During the first month of a quarter, prices are published for the current quarter and the first two forward quarters. During the second and third months of a quarter, prices are published for the first three forward quarters. For example, in April, Argus will publish prices for the second, third and fourth quarter of the year. In May, Argus will publish prices for the third and fourth quarter of the year, and the first quarter of the following year.

Prices are also published for two calendar years forward. Calendar year forward prices roll at the start of the new year.

Pulverised coal injection (PCI)

Argus Steelmaking Raw Materials publishes daily and weekly price assessments for internationally traded bulk PCI coal on the spot market in accordance with the specifications and frequency listed in the table below.

Basis of assessment

Argus will consider all bids and offers for a particular PCI coal brand or specification against a base specification detailed in the Pulverised coal injection (PCI) specifications table and will apply editorial judgment to these surveys, excluding values that appear to be outside the consensus of the market. Bids and offers are tested against current market conditions through discussions with market participants.

Information on transactions, bids and offers that lie outside the specifications of timing, size and quality will be taken into account but information that lies within the listed specifications of the assessment will be given most weight. Argus applies editorial judgment to the surveys and will eliminate information that is not judged to be representative of the market in its final assessment of the price.

These specifications standardise the assessment around key criteria relating to cargo size and location, and for coal qualities — volatile matter, moisture, ash content, sulphur content and hardgrove grindability index (HGI).

Except for fob Vostochny, prices are spot prices for loading or delivery within the next 60 days. Fob Vostochny prices are for loading 7-60 days forward.

Asia-Pacific

Asia-Pacific price assessments are based 50pc on a volume-weighted average of trades and 50pc on a survey of active market participants, including firm bids and offers.

Reported trades may remain a part of a given assessment, including as a component of a volume-weighted average until they are deemed no longer representative of the market being assessed. Trades may be evaluated for continued inclusion in the assessment using a number of means which may include statistical analysis and/or editorial judgement.

Timing of assessment

Assessments are the average of the week's or day's trading activity. Transactions that are received or confirmed after the time stamp for Asia-Pacific (5.30pm Singapore time), Russian far east (5.45pm Moscow time each Wednesday) and European (4.30pm London time each Wednesday) transactions will not be considered for inclusion in the assessment.

Rounding

PCI price assessments are rounded to the nearest 5¢/t.

Australia

Argus assesses an outright price for low-volatile PCI coal exports from Australia.

Argus contacts Australian producers, international traders and international buyers of Australian PCI coal. Australian PCI coal sold on a cfr China basis will be net-back to a fob Australia basis, using prevailing freight rates.

Argus uses value-in-use adjustments to normalise different PCI brands and specifications to a common basis for inclusion into the low-vol PCI assessment. The same adjustments are used to publish a mid-vol specification assessment, as detailed in the PCI specifications table. The mid-vol PCI price is assessed and published as a differential to the low-vol PCI price. Note, the fob Australia low-vol PCI price is also published as a percentage of the fob Australia premium low-vol hard coking coal price.

China import

The low-volatile PCI price delivered into northern China is assessed based on trades, bids, offers and other market information about the trade of PCI from all origins that meets the specifications outlined below.

India

The low-volatile PCI delivered east India price is calculated by adding the Argus low-volatile fob Australia assessment to a representative spot Australia-to-India Panamax freight assessment.

Russian far east

Argus assesses prices for low-volatile PCI coal exports from Russia through the ports around Vostochny. For fob Vostochny price assessments, Argus contacts Russian producers, international traders and buyers of Russian PCI coal. Market information reported on a delivered basis may be net back to fob Vostochny basis using relevant freight costs.

European imports

Argus assesses prices for low-volatile PCI coal and mid-volatile PCI coal imports into northwest Europe.

For delivered Europe price assessments, Argus contacts international producers, international traders and European buyers of PCI coal. The primary assessment location is ARA, although other European import locations such as Turkey, Scandinavia and Italy will be taken into account.

Pulverised coal injection (PCI) specifications

Grade	Volatile matter (dry ash free) %	Ash content %	Moisture content %	Sulphur content %	HGI	Size	Frequency
LV PCI cif ARA base (range)	16 (10-19)	9.5 (4-13)	8.5 (5-12)	0.35 (<0.8)	50-85	min 10,000t	weekly (Wednesday)
MV PCI cif ARA base (range)	21 (15-30)	7.5 (4-13)	7.5 (5-12)	0.3 (<0.8)	50-85	min 10,000t	weekly (Wednesday)
LV PCI fob Australia/cfr China/cfr India base (range)	13 (10-18)	9 (4-13)	10 (5-12)	0.5 (<0.8)	80 (55-85)	min 20,000t	daily
MV PCI fob Australia (range)	21 (18-23)	10 (4-13)	10 (5-12)	0.5 (<0.8)	80 (55-85)	min 20,000t	daily
LV PCI fob Vostochny (fob Vostochny, Vanino, Nakhodka or Vladivostok	10-17	≤10	≤11	≤0.6	70-85	10,000-75,000t	weekly (Wednesday)

Metallurgical (met) coke

Met coke assessments

Argus Steelmaking Raw Materials contains assessments for internationally traded bulk met coke on the spot market according to the specifications listed in the table below.

Basis of assessment

Assessments are based 50pc on a volume-weighted average of deals done and 50pc on a survey of active market participants.

Reported trades may remain a part of a given assessment, including as a component of a volume-weighted average until they are deemed no longer representative of the market being assessed. Trades may be evaluated for continued inclusion in the assessment using a number of means which may include statistical analysis and/or editorial judgement.

Argus does not exclusively rely upon transactions to establish market prices.

Information on transactions, bids and offers that lie outside the specifications of timing, size and quality will be taken into account but information that lies within the specifications of the assessment will be given the most weight. Argus applies editorial judgment to the surveys and will eliminate information that is not judged to be representative of the market in its final assessment of the price.

These specifications standardise the assessment around key criteria relating to cargo size and location, and for coke qualities — coke strength, CRI, volatile matter, sulphur content, ash, phosphorus, size and M40/M10.

Prices are spot prices for loading or delivery within the next 60 days.

Timing of assessment

The assessment is the average of the day's trading activity. Transactions completed after the time stamp for physical transactions (5.30pm Singapore time for fob China assessments and 4.30pm London time for all others) will not be considered for inclusion in the volume-weighted average.

Rounding

Asia-Pacific metallurgical coke price assessments are rounded to the nearest 5¢/t.

China

Argus assesses prices for 62 CSR met coke and 65 CSR met coke exports from northern China.

For price assessments of the fob north China physical met coke market, Argus contacts Chinese coke makers, buyers of Chinese coke and international traders.

The primary assessment location is Tianjin, although other export locations such as Rizhao, Qingdao, Jingtang and Caofeidian will be taken into account.

fob Indonesia

The price of 65 CSR met coke exports from Indonesia. Argus contacts Indonesian producers, international traders and buyers.

cif ARA

The price of 64-65 CSR met coke imports into northwest Europe. Argus contacts international producers, international traders and European buyers.

fob Colombia

The price of 64 CSR met coke exports from Colombia. Argus contacts Colombian producers, international traders and buyers.

Metallurgical coke specifications

Grade	Coke strength after reaction (CSR)	CRI	Volatile matter	Sulphur	Ash	Phosphorus	Particle size	M40	M10
62 CSR coke, fob north China	62	30 max	up to 1.5%	up to 0.75%	up to 13.5%	up to 0.045%	30-100mm	82	8
65 CSR coke, fob north China	65	30 max	up to 1.5%	up to 0.75%	up to 13.5%	up to 0.045%	30-100mm	82	8
65 CSR coke, fob Indonesia	65	26 max	up to 1.5%	up to 0.65%	up to 12.5%	up to 0.050%	30-90mm	84	7
64-65 CSR coke, cif ARA	64-65	30 max	up to 1.5%	up to 0.75%	up to 13.5%	up to 0.065%	30-100mm	75	8
64 CSR coke, fob Colombia	64	20 max	up to 1.5%	up to 0.75%	up to 12.5%	up to 0.045%	30-100mm	82	8

Steel

Argus Steelmaking Raw Materials contains steel price assessments republished from Argus Global Steel and a steel-scrap spread republished from Argus Scrap Markets. See the Argus Global Steel and Argus Scrap Markets methodologies for more information.

Global

- HRC global marker (daily, $/t)
- Rebar global tracker (daily, $/t)

Asia-Pacific seaborne

- Rebar, fob Zhangjiagang (daily, $/t)
- HRC, ASEAN cfr Vietnam (SAE1006) (daily, $/t)
- Billet, cfr ASEAN (weekly, $/t)
- Slab, fob Asia (weekly, $/t)

Black Sea seaborne

- Billet, fob Black Sea (weekly, $/t)
- Slab, fob Black Sea (weekly, $/t)

Turkey domestic ex-works

- Billet ex-works Turkey (weekly, $/t)
- Billet cfr Turkey (weekly, $/t)

China domestic

- HRC, Shanghai inc VAT (daily, YN/t)
- Rebar, Shanghai inc VAT (daily, YN/t)
- Billet, Tangshan ex-works as posted by Tangshan mills (daily, YN/t)

Europe

- Slab, cfr Italy (weekly, $/t)
- HRC European marker (daily, $/t)

US domestic

- HRC ex-works US (weekly, $/st)
- Rebar ex-works US south (weekly, $/st)

Blast furnace economics

Argus calculates ferrous feed unit costs and indicative cost spreads for steel mills, published in $/t.

China

Basic oxygen furnace (BOF)

Ferrous feed unit cost China BOF 15% charge is calculated daily as the 62% Fe Fines, cfr Qingdao (**ICX®** index) *1.6 + the average of the fob China 62 CSR and 65 CSR metallurgical coke assessments * 0.5 + cfr China low-volatile PCI * 0.1 + heavy melt #3 posted price del east China *0.15. The ratios are the inputs required to make a tonne of crude steel.

BOF spread 15% charge fob China rebar is calculated daily as the rebar fob Zhangjiagang – ferrous feed unit cost China BOF 15% charge.

BOF spread 15% charge fob China HRC is calculated daily as the HRC fob Tianjin – ferrous feed unit cost China BOF 15% charge.

Blast furnace

Ferrous feed unit cost China blast furnace is calculated daily as the 62% Fe Fines, cfr Qingdao (**ICX®** index) *1.6 + the average of the fob China 62 CSR and 65 CSR metallurgical coke assessments * 0.5 + cfr China low-volatile PCI * 0.1. The ratios are the inputs required to make a tonne of crude steel.

Blast spread fob China rebar is calculated daily as the rebar fob Zhangjiagang – ferrous feed unit cost China blast furnace.

Blast spread fob China HRC is calculated daily as the HRC fob Tianjin – ferrous feed unit cost China blast furnace.

Taiwan

Ferrous feed unit cost Taiwan arc furnace is calculated weekly as 1.12 *Ferrous scrap HMS 1/2 (80:20) containerised cfr Taiwan. The 12% loss is for slagging and other losses.

Turkey

Ferrous feed unit cost Turkey arc furnace is calculated daily as 1.12 *Ferrous scrap HMS 1/2 (80:20) cfr Turkey. The 12% loss is for slagging and other losses.
Arc spread fob Turkey rebar is calculated daily as the price of steel rebar fob Turkey – the ferrous feed unit cost Turkey arc furnace.

Arc spread ex-works Turkey rebar is calculated daily as the price of steel rebar ex-works Turkey – the ferrous feed unit cost Turkey arc furnace.

Direct Reduced Iron (DRI)

Direct Reduced Iron (DRI) calculated costs

Calculated production costs are based on the typical input of iron ore, electricity, and natural gas or hydrogen required to produce a tonne of DRI with 95pc metallisation.

Costs are calculated and published separately for DRI produced using green hydrogen, blue hydrogen and natural gas. Conversion costs, the full costs less the cost of the iron ore, are also published.

Costs assume an input of 1.48t of iron ore at the 67pc Fe DR pellet cfr Rotterdam price and the energy, hydrogen and emissions prices listed below.

Green and blue hydrogen-based DRI costs assume the use of 58kg of hydrogen, as well as electric process heating and renewable power for all electricity requirements. Renewable power costs are assumed to be the base-load power price plus the guarantee of origin price.

Natural gas-based DRI assumes the use of 2.9MWh of natural gas for heating and reduction and a carbon intensity of 500kg per tonne of DRI.

All costs are exclusive of labour, maintenance, oxygen, energy transmission and other fixed costs.

Energy and emissions

Electricity: German OTC base load month ahead, see the Argus European Electricity methodology
Guarantees of origin: Nordic hydro current year, see the Argus Net Zero methodology
Hydrogen: green hydrogen no-C northwest Europe and blue hydrogen BAT + (SMR + CCS), see the Argus Hydrogen and Future Fuels methodology
Natural gas: TTF month ahead, see the Argus European Natural Gas methodology
Emissions: EU ETS spot, see the Argus Carbon methodology

67pc Fe iron ore direct reduction (DR) pellet, cfr Rotterdam

Derived from the 65pc Fe fines cfr China price assessment, using a linear adjustment for iron content, an assessed quarterly DR pellet premium and the difference in freight costs on the Tubarao-Qingdao and Tubarao-Rotterdam routes on a moisture-adjusted basis. Published daily.

Ferrous scrap

Argus Steelmaking Raw Materials includes daily and weekly ferrous scrap prices republished from Argus Scrap Markets. See the Argus Scrap Markets methodology.

Seaborne ferrous scrap prices (daily)
- HMS 1/2 (80:20), cfr Turkey
- HMS 1/2 (80:20) (short-sea), cif Turkey
- HMS 1/2 (80:20) containerised, cfr Taiwan
- H2, fob Japan

Seaborne ferrous scrap prices (weekly)
- Shredded containerised, cfr Nhava Sheva India
- HS, fob Japan
- HMS 1/2 80/20, cfr Vietnam

Mill/consumer delivered ferrous scrap prices
- Heavy melt #3 posted price, del east China (daily)
- E40 shredded old steel scrap - Germany national average (monthly)
- E40 shredded old steel scrap - Spain (monthly)
- E40 shredded old steel scrap - Italy (monthly)
- Shredded composite, del US (weekly)
- Shredded, del southern US consumer (monthly)

Steel domestic ferrous scrap - Tahara plant
- H2 Japan Tokyo Steel domestic purchase price
- Shindachi Bara Japan Tokyo Steel domestic purchase price
- Shredded A Japan Tokyo Steel domestic purchase price

Tokyo Steel domestic ferrous scrap - Utsunomiya plant
- H2 Japan Tokyo Steel domestic purchase price
- Shindachi Bara Japan Tokyo Steel domestic purchase price
- Shredded A Japan Tokyo Steel domestic purchase price

Tokyo Steel domestic ferrous scrap - Kyushu plant
- H2 Japan Tokyo Steel domestic purchase price
- Shindachi Bara Japan Tokyo Steel domestic purchase price
- Shredded A Japan Tokyo Steel domestic purchase price

Pig iron

Argus Steelmaking Raw Materials includes weekly pig iron prices republished from Argus Scrap Markets. See the Argus Scrap Markets methodology.

China ex-works
- Tangshan, Hebei

fob Black Sea
- Russian basic
- Ukrainian basic

fob Brazil
- fob northern Brazil basic
- fob southern Brazil basic

Ferro-alloys

Argus Steelmaking Raw Materials includes weekly, twice-weekly and monthly ferro-alloy prices republished from Argus Non-Ferrous Markets.

See the Argus Non-Ferrous Markets methodology.

Ferro-manganese
- HC 75% fob China (twice weekly)
- HC 75% Mn ex-works China (twice weekly)
- HC min 80% Mn 6-8% C fob N America (weekly)

Silico-manganese
- 65% Mn 17% Si fob China (twice weekly)
- 65% Mn ddp Europe works (twice weekly)
- Min 65% Mn 16% Si fob N America (weekly)

Vanadium
- 77% V 18% N ex-works China (daily)

Argus Steelmaking Raw Materials monthly roundup

Argus also publishes the monthly Argus Steelmaking Raw Materials: market roundup, a bulletin containing monthly averages of prices published in Argus Steelmaking Raw Materials.

Monthly average prices are published for

Raw materials
- 62% Fe fines, cfr Qingdao (**ICX®** index)
- Premium hard coking coal low-vol fob Australia
- Hard coking coal high-vol A fob Hampton Roads
- HMS 1/2 (80:20) scrap cfr Turkey

Semi-finished steel
- Billet, Tangshan ex-works
- Slab fob Black Sea

Finished steel
- HRC fob Tianjin
- HRC ex-works northwest Europe
- HRC ex-works Italy
- HRC ex-works US midwest Rebar fob Turkey

Spreads
- **PCX™** portside iron ore index differential to **ICX®** 62pc index
- Blast spread fob China HRC

Monthly average prices are made available electronically to subscribers on the first publication day of the month. Argus Steelmaking Raw Materials: monthly roundup is published during the first week of each calendar month.