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ARGUS ASIA-PACIFIC PRODUCTS

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The most up-to-date *Argus Asia-Pacific Products* 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 Asia-Pacific refined products 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, Argus Open Markets® (AOM®), and directly from the back offices of market participants. Argus will accept market data by telephone, instant messenger, email, AOM 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 arms 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 Asia-Pacific refined products prices are published in the Argus Asia-Pacific Products 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 subscribers, 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.

About Argus Asia-Pacific Products

Argus Asia-Pacific Products is a daily market report that publishes prices and market commentary on the international bulk spot market for petroleum products in Asia and the Pacific Rim.

Argus Asia-Pacific Products contains price assessments for different types of spot contracts at specified locations. Market commentary is provided for the three main regional markets — the bulk spot Singapore market, the bulk spot northeast Asia market and the bulk spot Mideast Gulf and India markets.

Argus price assessments are used in arms length supply and purchase contracts, risk management contracts such as swaps, internal price transfers, internal benchmarking, mark-to-market pricing and market analysis.

Methodological principles

Argus price assessments are based on the structure of the market as established by market participants. If market participants trade and price products in relation to certain benchmarks, then Argus will publish prices in relation to these benchmarks, be they Argus assessments, or those produced by other parties.

The Argus methodology relies on the analysis of a variety of market inputs. This methodology often varies from "market on close" methodologies, which only recognise select transactions, bids or offers at a specific closing time of each day. The Argus methodology considers inputs received throughout the entire day up until its daily timestamp.

A broad range of trade data is considered in assessing refined products prices, including physical transactions, fixed-price and formula-related trades, premiums, discounts, reported but unconfirmed trades, tender results, netbacks, bids, offers, swaps, spreads and supply-demand fundamentals.

This market analysis is standardised, balanced and methodical in its approach and conducted by trained specialists who are part of a dedicated team responsible for the Argus Asia-Pacific Products report.

Sources of information

Trained market reporters receive and verify information through a variety of means, including telephone, email, instant messenger and trading and information platforms.

The assessment process includes trades from various platforms — close-of-market windows, e-commerce portals, third-party transactions and over-the-counter swaps — to reflect a daily consensus on the price of the day.

Argus price assessments do not exclude market activity taking place on any electronic trading systems provided by other parties.

Market participants are contacted directly, and in some markets Argus operates the Argus Open Markets and Argus Bulletin Board systems to gather relevant market information.

Argus does not restrict itself to one subsection of the market, trading platform or means of communication in reporting market information.

Argus contacts and accepts market data from all credible market sources including the front and back offices of market participants and brokers. Information is verified and analysed. The approach is methodical and standardised and information is tested against the views of other market participants.

Assessment procedure

Argus price assessments for Asia-Pacific petroleum products reflect standardised specifications under the general terms and conditions employed for standard contracts in common use.

Low, high and midpoint prices

Argus Asia-Pacific products prices are assessed as a single value for the product and period of assessment. Prices are published as low-high ranges around that assessed midpoint, with the exception of freight rates, netbacks and certain monthly average prices, for which only the single assessed value is published.

Priority of market information

Argus gives priority to the following factors in assessing Asia-Pacific refined products prices.

1. Transactions for cargoes that meet the standard specifications
2. Bids and offers for cargoes that meet the standard specifications
3. Transactions for cargoes that deviate in quantity only from the standard specifications
4. Bids and offers for cargoes that deviate in quantity only from the standard specifications
5. Indicative bid and offer prices that are provided by market participants with sufficient validity in light of the prevailing market conditions

Examples

Using the naphtha market as an example:

One or more standard transactions are reported

The assessment is the volume-weighted average of the transacted prices. Should only one standard transaction be reported, the assessment is the transacted price.

Standard bids and offers reported, no standard transactions

The price is assessed within the range of the highest standard bid and the lowest standard offer. The highest standard bid and lowest standard offer may not necessarily set the low or high prices published for the assessment (see above on low, high and midpoint prices).

No trades, bids or offers

If no trades, bids or offers are reported, the assessment will be published at the price at which a standard transaction could have occurred under prevailing market conditions. The assessment of this price may include, but is not limited to, product crack spreads, time spreads and arbitrage economics.

Normalising non-standard trades, bids or offers

In the event that no standard trades, bids or offers are reported, Argus normalises non-standard market information using an assessment of the value of the deviation from the standard specification based on prevailing market conditions.

As above, a volume-weighted average of normalised non-standard trades is published as the assessment. If only non-standard bids and offers are reported, Argus will assess the price within the range of the highest normalised non-standard bid and the lowest normalised non-standard offer.

Unmatched bids and offers

If only one side of the market is reported, either unmatched bids or unmatched offers, the assessment will be published at the price at which a standard transaction could have occurred under prevailing market conditions. The assessment of this price may include, but is not limited to, product crack spreads, time spreads and arbitrage economics.

Definitions

Standard transaction, bid or offer

A transaction, bid or offer meeting the standard specifications under the general terms and conditions employed for the standard contract in common use.

Non-standard transaction, bid or offer

A transaction, bid or offer deviating from the standard specification, or from the general terms and conditions employed for the standard contract in common use.

Currency, terms and unit of measure

All assessments and formulas refer to the price of the product on the day of the published report and are expressed in US dollars unless otherwise stated. The prices are for contracts under whatever general terms and conditions are accepted as standard and prevailing in that particular market. Price changes refer to the last published report.

Gasoline

Singapore

97R gasoline

Motor gasoline 97R (97-RON, Research Octane Number) unleaded

Unit: US dollars/barrel

Timing: loading 15-30 days forward from date of publication

Size: standardised to cargoes fob Singapore of 50,000 bl to 150,000 bl

Basis: fob Singapore. The assessment also takes into account market information on a fob Malaysia and fob Indonesia basis, normalised to fob Singapore as necessary.

Timestamp: 4:30pm Singapore time

95R gasoline

Motor gasoline 95R (95-RON, Research Octane Number) unleaded

Unit: US dollars/barrel

Timing: loading 15-30 days forward from date of publication

Size: standardised to cargoes fob Singapore of 50,000 bl to 150,000 bl

Basis: fob Singapore. The assessment also takes into account market information on a fob Malaysia and fob Indonesia basis, normalised to fob Singapore as necessary.

The differential shown is the assessed market premium (or discount) to Mean of Platts Singapore (Mops) 95R gasoline.

The premiums/discounts are based on reported transactions, bids, offers and relevant market discussions for trade 15-30 days forward from the date of publication.

Timestamp: 4:30pm Singapore time.

Singapore 95R gasoline swap

Motor gasoline 95R (95-RON, Research Octane Number) unleaded Assessments are published as a low-high range of prevailing prices at the timestamp.

Unit: US dollars/barrel

Timing: swaps are assessed for three consecutive months forward. Forward months will roll on the 16th of the month or, if the 16th of the month is a weekend or holiday, on the next publication date.

Size: standardised to 50,000 bl

Timestamp: 4:30pm Singapore time

92R gasoline

Motor gasoline 92R (92-RON, Research Octane Number) unleaded

Unit: US dollars/barrel

Timing: loading 15-30 days forward from date of publication

Size: standardised to cargoes fob Singapore of 50,000 bl to 150,000 bl

Basis: fob Singapore. The assessment also takes into account market information on a fob Malaysia and fob Indonesia basis, normalised to fob Singapore as necessary.

The differential shown is the assessed market premium (or discount) to Mean of Platts Singapore (Mops) 92R gasoline.

The premiums/discounts are based on reported transactions, bids, offers and relevant market discussions for trade 15-30 days forward from the date of publication.

Timestamp: 4:30pm Singapore time

Singapore 92R gasoline swap

Motor gasoline 92R (92-RON, Research Octane Number) unleaded Assessments are published as a low-high range of prevailing prices at the timestamp.

Unit: US dollars/barrel

Timing: swaps are assessed for three consecutive months forward. Forward months will roll on the 16th of the month or, if the 16th of the month is a weekend or holiday, on the next publication date.

Size: standardised to 50,000 bl

Timestamp: 4:30pm Singapore time

Gasoline east-west spread

The price spread between Singapore 92R swaps and Argus Eurobob oxy fob ARA barge swaps

Unit: US dollars/barrel. Information on a \$/t basis is converted to \$/bl at 8.33bl/t.

Information about trade done for the differential and for European gasoline swaps at the timestamp will be considered for inclusion in the assessment.

Timing: prices are assessed for two months forward

Timestamp: 4:30pm Singapore time

Non-oxy gasoline

Motor gasoline 91R (91-RON, Research Octane Number) unleaded

Unit: US dollars/barrel

Timing: loading 15-30 days forward from date of publication

Size: standardised to cargoes fob Singapore of 50,000 bl to 150,000 bl

Basis: fob Singapore. The assessment also takes into account market information on a fob Malaysia and fob Indonesia basis, normalised to fob Singapore as necessary.

Prices are also published as a differential to the Singapore 92R gasoline price assessment.

Singapore gasoline specifications			
RON (Research Octane Number)	92R	95R	97R
Acetone (ppm)		max 100	
Alcohol		no addition	
Aromatics (% vol)		max 40	
Benzene content (% vol)		max 2.5	
Copper corrosion (3 hrs at 15 deg C)		max 1	
Density at 15°C (g/ml)		0.72	
Distillation 10% vol (°C)		max 74	
Distillation 50% vol (°C)		80-127	
Distillation 90% vol (°C)		max 190	
Distillation FBP (°C)		max 215	
Distillation residual (% vol)		max 2	
Existent gum (mg/100ml)		max 4	
Induction period (min)		240	
Lead content (g/l)		max 0.013	
MTBE content (% vol)		max 10	
Odour		Marketable	
Olefins (% vol)		max 25	
Oxygenates content (% vol)		max 14	
RVP (PSI)		max 9	
Sulphur (% wt)		max 0.005	
Sulphur Mercaptane (% wt)		max 0.0015	

Singapore non-oxy gasoline specifications	
RON/MON	min 91/min 81
Acetone (ppm)	max 100
Alcohol	no additions
Aromatics (% vol)	17-42
Benzene (%vol)	max 1.0
Colour	undyed
Copper corrosion @50°C/3hrs	max 1.0
Distillation 10% vol (°C)	max 65
Distillation 50% vol (°C)	74-115
Distillation 90% vol (°C)	max 183
Distillation FBP (°C)	max 215
Residual (%vol)	max 2.0
Doctor Test	negative
Existent gum (mg/100ml)	max 4.0
Induction period (min)	min 360
Lead content (g/l)	max 0.013
Loss %	max 2.0
Olefins (% vol)	max 18
Oxygenates as components (% vol)	none
Oxygenates as contaminants (% vol)	max 1
RVP (PSI)	max 9
Sulphur content (% wt) max	max 0.015
Sulphur Mercaptane (% wt)	max 0.0015

China

Bohai 92R gasoline fob

Gasoline of 0.001pc (10 parts per million/10 milligrams per kg) sulphur

Unit: prices are assessed and published in Chinese renminbi per tonne and converted to US dollars per barrel net of relevant taxes. The price is also published as a \$/bl differential to the fob Singapore 92R gasoline assessment

Timing: loading 7-21 days forward from date of publication

Size: minimum cargo size of 3,000t (25,000bl)

Basis: fob Shandong (Binzhou, Dongying, Laizhou, Longkou, Yantai, Rizhao, Weifang); Liaoning (Yingkou, Changxing, Jinzhou, Dalian)

Timestamp: 4:30pm China Standard Time

Singapore-Bohai arbitrage excluding freight

The fob Singapore 92R gasoline spot assessment less the fob Bohai 92R gasoline assessment.

Yangtze river delta 92R gasoline ex-tank

Gasoline of 0.001pc (10 parts per million/10 milligrams per kg) sulphur

Unit: prices are assessed and published in Chinese renminbi per tonne and converted to US dollars per barrel net of relevant taxes. The price is also published as a \$/bl differential to the fob Singapore 92R gasoline assessment

Timing: collection 1-20 days forward from date of publication

Size: minimum 500t (4,000bl), maximum 3,000t (25,000bl)

Basis: ex-tank Jiangsu (Taizhou Jingjiang, Nantong, Yangzhou Taicang, Wuxi Jiangyin, Suzhou); Zhejiang (Jiaxing, Zhoushan); Shanghai

Timestamp: 4:30pm China Standard Time

Bohai-Yangtze river delta 92R gasoline arbitrage

The Yangtze river delta 92R ex-tank gasoline price assessment less the corresponding Bohai fob assessment and freight costs for a 5,000-10,000t cargo loading at Bohai ports and discharging at Nantong in Jiangsu province.

Published in Yn/t and \$/bl

Mideast Gulf

95R gasoline

Motor gasoline 95R (95-RON, Research Octane Number) unleaded

Unit: US dollars/barrel

Basis: fob Mideast Gulf

The Mideast Gulf assessments are a daily netback from the 95R Singapore gasoline price.

The netback is calculated using the Argus spot Mideast Gulf-Singapore 35,000t freight rate assessment.

The differential shown is the assessed market premium (or discount) to Mean of Platts Arab Gulf (Mopag) 95R gasoline for minimum cargo size of 200,000 bl. The premiums/discounts are based on reported transactions, bids, offers and relevant market discussions for trade 15-40 days forward from the date of publication.

China gasoline specifications		
Specification: China 6	92R (Summer: 1 May-31 Oct)	92R (Winter: 1 Nov-30 Apr)
RON (Research Octane Number)	min 92	min 92
Standard	National 6 standard	National 6 standard
Sulfur content (ppm)	max 10	max 10
Lead content (g/l)	max 0.005	max 0.005
Vapour pressure (kpa)	40-65	45-85
Vapour pressure (psi)	5.8-9.4	6.5-12.3
Oxygen content (% by weight)	2.7	2.7
Aromatics content (% by vol.)	max 35	max 35
Benzene content (% by vol.)	max 0.8	max 0.8
Olefin content (% by vol.)	max 18	max 18
Manganese content (g/l)	max 0.002	max 0.002
Iron content (g/l)	max 0.01	max 0.01
Density at 15°C (kg/m³)	720-775	720-775
Copper corrosion (3hrs at 15°C)	max 1	max 1
Distillation 10% vol. (°C)	max 70	max 70
Distillation 50% vol. (°C)	max 110	max 110
Distillation 90% vol. (°C)	max 190	max 190
Distillation FBP (°C)	max 205	max 205
Distillation, residual (% vol)	max 2	max 2
Existent gum (mg/100L)	max 30	max 30
Induction period (min)	min 480	min 480
Lead content (g/L)	max 0.005	max 0.005
Olefins (% vol)	max 18	max 18
Oxygenates content (% vol)	max 2.7	max 2.7
RVP (PSI)	40-65	45-85
Sulphur (% wt)	max 10	max 10

92R gasoline

Motor gasoline 92R (92-RON, Research Octane Number) unleaded

Unit: US dollars/barrel

Basis: fob Mideast Gulf

The Mideast Gulf assessments are a daily netback from the 92R Singapore gasoline price.

The netback is calculated using the Argus spot Mideast Gulf-Singapore 35,000t freight rate assessment.

The differential shown is the assessed market premium (or discount) to Mean of Platts Arab Gulf (Mopag) 92R gasoline for minimum cargo size of 200,000 bl. The premiums/discounts are based on reported transactions, bids, offers and relevant market discussions for trade 15-40 days forward from the date of publication.

Fujairah

95R gasoline

Unit: US dollars/barrel

Basis: fob Fujairah

The assessment will also take into account relevant market information and deals done on a fob Mideast Gulf basis, normalised to fob Fujairah as necessary.

The differential shown is the assessed market premium (or discount) to the fob Mideast Gulf 95R gasoline assessment. The premi-

ums/discounts are based on reported transactions, bids, offers and relevant market discussions for trade 20-40 days forward from the date of publication.

Timestamp: 4:30pm Singapore time

92R gasoline

Unit: US dollars/barrel

Basis: fob Fujairah

The assessment will also take into account relevant market information and deals done on a fob Mideast Gulf basis, normalised to fob Fujairah as necessary.

The differential shown is the assessed market premium (or discount) to the fob Mideast Gulf 92R gasoline assessment. The premiums/discounts are based on reported transactions, bids, offers and relevant market discussions for trade 20-40 days forward from the date of publication.

Timestamp: 4:30pm Singapore time

fob Fujairah gasoline specifications		
	92R	95R
RON/MON	min 92/min 82	min 95/min 85
Alcohol	no additions	
Aromatics (% vol)	max 35	
Benzene (%vol)	max 1.0	
Colour	undyed	
Copper corrosion @50°C/3hrs	max 1.0	
Distillation 10% vol (°C)	max 65	
Distillation 50% vol (°C)	min 80/max 120	
Distillation 90% vol (°C)	max 180	
Distillation FBP (°C)	max 210	
Residual (%vol)	max 2	
Doctor Test	negative	
Existent gum (mg/100ml)	max 4	
Induction period (min)	min 480	
Lead content (g/l)	max 0.013	
Olefins (% vol)	max 18	
Oxygenates (% vol)	max 15 (MTBE max 10)	
RVP (PSI)	max 9	
Sulphur content (% wt) max	max 0.01	

South Africa

95R gasoline

Unit: US dollars/tonne

Basis: c+f Durban, South Africa

Calculated by adding the Argus spot freight assessment for 35,000t cargoes from Mideast Gulf ports to Durban to the Argus fob Mideast Gulf 95R gasoline assessment, converted from US dollars/bl to US dollars/tonne at 8.45 bl to 1 metric tonne.

Timestamp: 4:30pm Singapore time

Singapore reforming spread

Reforming spreads are calculated by subtracting the price of fob Singapore physical naphtha from the price of 92R, 95R and 97R fob Singapore gasoline cargoes.

Naphtha

Japan Open Specification naphtha forward prices (Japan naphtha half month)

Unit: US dollars/tonne

Timing: prices are assessed for the third, fourth and fifth half-month forward from the day of publication (see timing example).

Half months typically roll on the first and 16th of the month or the first publishing day thereafter should the first or 16th of the month be a weekend or holiday.

Size: cargo size is standardised to 25,000 metric tonnes

Basis: c+f Chiba, Japan

Specification: Open Specification Naphtha as defined by OSN 2017

Timestamp: 4:30pm Singapore time

Japan naphtha c+f

Unit: US dollars/tonne

Prices are derived from the Japan Open Specification naphtha forward prices, assessed as the lower of the low prices and higher of the high prices published for the fourth and fifth half-month forward from the day of publication (see timing example).

Timing example: 8 July

Forward half-month	Commonly referred to	Delivery period
Half-month 1	1-15 days forward	second-half July
Half-month 2	15-30 days forward	first-half August
Half-month 3	30-45 days forward	second-half August*
Half-month 4	45-60 days forward	first-half September*†
Half-month 5	60-75 days forward	second-half September*†

*denotes half-month prices assessed

†denotes assessments used in calculating the Japan naphtha c+f price

Japan naphtha c+f example

If Argus assessments for the three half-month periods are:

half-month 3 (second-half August) = \$475.00/476.00

half-month 4 (first-half September) = \$473.50/474.50

half-month 5 (second-half September) = \$472.50/473.50

the Argus c+f Japan assessment for that day is \$472.50/474.50

Japan naphtha c+f differential

Unit: US dollars/tonne

Prices are the assessed market premium (or discount) to Mean of Platts Japan (MOPJ) naphtha.

Timing: prices are assessed for the fourth and fifth half-month forward from the day of publication (see timing example)

The premiums/discounts are assessed based upon market investigation, analysis into obtained information and the assessment procedure described above.

Specification: Open Specification Naphtha as defined by OSN 2017

Timestamp: 4:30pm Singapore time

Japan naphtha swaps

Naphtha 65pc paraffins swaps

Assessments are published as a low-high range of prevailing prices at the timestamp.

Unit: US dollars/tonne

Timing: swaps are assessed for three consecutive months forward. Forward months will roll on the 16th of the month or, if the 16th of the month is a weekend or holiday, on the next publication date.

Size: standardised to 5,000t

Timestamp: 4:30pm Singapore time

South Korea cfr

Unit: US dollars/tonne

Timing: prices are assessed for the third half-month forward from the day of publication (see timing example above)

Size: cargo size is standardised to 25,000 metric tonnes

Basis: cfr South Korea

Specification: open specification naphtha (OSN) minimum paraffin content of 70pc

Argus may also consider an array of other market information in forming the cfr South Korea assessment, including but not limited to the delivered price in other regional markets, freight and the value of paraffin content.

Singapore naphtha fob

Unit: US dollars/barrel

Timing: prices are assessed for the second half-month forward from the day of publication (see timing example above)

The fob Singapore naphtha assessment is based on a netback from the most prompt period shown within the c+f Japan forward table, the third half-month forward.

The netback uses the MR freight (30,000t) for Chiba/Singapore.

The Argus conversion factor is 9 bl to 1 metric tonne.

Basis: fob Singapore. The assessment also takes into account market information on a fob Malaysia and fob Indonesia basis, normalised to fob Singapore as necessary.

The differential shown is the assessed market premium (or discount) to Mean of Platts Singapore (Mops) naphtha.

The premiums/discounts are based on reported transactions, bids, offers and relevant market discussions for the second half-month forward from the date of publication.

Timestamp: 4:30pm Singapore time

Naphtha specifications	
Arsenic (ppb)	max 20
Chlorine (ppm)	max 1
Colour (Saybolt)	min plus 20
Carbon disulfide (ppm)	max 3
FBP (°C)	max 204
IBP (°C)	min 25
Lead (ppb)	max 150
Mercury (ppb)	max 1
N-paraffins (%)	min 30
Olefins (%)	max 1
Oxygenates (TAME, MTBE) (ppm)	max 50
Paraffins (%)	min 65
RVP (PSI)	max 13
Specific gravity at 15°C (g/cm³)	0.65-0.74
Sulphur (ppm)	max 650

Singapore naphtha swaps

Naphtha 65pc paraffins swaps

Assessments are published as a low-high range of prevailing prices at the timestamp.

Unit: US dollars/barrel

Timing: swaps are assessed for three consecutive months forward. Forward months will roll on the 16th of the month or, if the 16th of the month is a weekend or holiday, on the next publication date.

Size: standardised to 50,000 bl

Specification: open specification quality, 65pc minimum paraffins, 0.65/0.74 specific gravity at 60°F, maximum 1pc olefins, colour (Saybolt) minimum +20, RVP (PSI) maximum 13, lead (PPB) maximum 150, sulphur (PPM) maximum 650, minimum 25°C IBP, max 204°C FBP

Timestamp: 4:30pm Singapore time

Fujairah naphtha fob

Unit: US dollars/tonne

Basis: fob Fujairah

Specification: full range naphtha, typically with a minimum paraffin content of 70pc. Argus will also take into consideration open specification naphtha sold fob India when making an assessment of the premium/discount for naphtha and all relevant market information and deals done on a fob Mideast Gulf basis, normalised to fob Fujairah as necessary.

The differential shown is the assessed market premium (or discount) to Mean of Platts Arab Gulf (Mopag) naphtha. The premiums/discounts are based on reported transactions, bids, offers and relevant market discussions for cargoes trading 20-40 days forward from the date of publication.

Timestamp: 4:30pm Singapore time

Mideast Gulf netbacks

Naphtha LR1

Naphtha using LR1 (long-range 1) freight.

Unit: US dollars/tonne

Basis: fob Mideast Gulf. The Mideast Gulf quotations are netted back daily using Argus spot freight assessments.

The naphtha LR1 netback is calculated from the Argus Japan c+f naphtha quotation using LR1 freight (55,000t), with an average freight using a two port loading of Jubail/Ruwais to Quoin Island and Mina al-Ahmadi/Ras Tanura to Quoin Island and using a two port discharge of Chiba/Mizushima plus 50pc of the Saudi port charge. The differential shown is the assessed market premium (or discount) to Mean of Platts Arab Gulf (Mopag) naphtha on a LR1 vessel.

The premiums/discounts are based on reported transactions, bids, offers and relevant market discussions for trade 15-40 days forward from the date of publication.

Specification: full range naphtha, typically 0.680-0.700 specific gravity. Argus will also take into consideration open specification naphtha sold fob India when making an assessment of the premium/discount for naphtha.

Argus will only consider cargoes sold fob India that meet the specifications laid out for fob Mideast Gulf cargoes — minimum 65pc paraffins, typically 0.680-0.700 specific gravity.

Timestamp: 4:30pm Singapore time

Naphtha LR2

Naphtha using LR2 (long-range 2) freight.

Unit: US dollars/tonne

Basis: fob Mideast Gulf. The Mideast Gulf quotations are netted back daily using Argus spot freight assessments.

The naphtha LR2 netback is calculated from the Argus Japan c+f naphtha quotation using LR2 freight (75,000t), with an average freight using a two port loading of Jubail/Ruwais to Quoin Island and Mina al-Ahmadi/Ras Tanura to Quoin Island and using a two port discharge of Chiba/Mizushima plus 50pc of the Saudi port charge.

Northwest Europe swaps

Northwest Europe swaps – Singapore timestamp

Naphtha cif northwest Europe

Assessments are published as a low-high range of prevailing prices at the timestamp.

Unit: US dollars/tonne

Timing: swaps are assessed for three consecutive months forward.

Forward months will roll on the 16th of the month or, if the 16th of the month is a weekend or holiday, on the next publication date.

Size: standardised to 5,000t

Timestamp: 4:30pm Singapore time

Jet-kerosine

Singapore

Unit: US dollars/barrel

Timing: loading 15-30 days forward from date of publication

Size: standardised to cargoes fob Singapore of 100,000 bl to 250,000 bl

Basis: fob Singapore. The assessment also takes into account market information on a fob Malaysia and fob Indonesia basis, normalised to fob Singapore as necessary.

Specification: the latest UK Defence Standard specifications
Some third-party carriers of Argus price information provide the Argus jet/kero price in alternative units. The conversion factor used by these third parties is 7.88 bl to a metric tonne.

The differential shown is the assessed market premium (or discount) to Mean of Platts Singapore (Mops) jet/kerosine. The premiums/discounts are based on reported transactions, bids, offers and relevant market discussions for trade 15-30 days forward from the date of publication.

Timestamp: 4:30pm Singapore time

South Korea

Unit: US dollars/barrel

Timing: loading 15-30 days forward from date of publication

Size: standardised to cargoes fob South Korea of 100,000 bl to 250,000 bl

Basis: fob South Korea

Specification: the latest UK Defence Standard specifications
Some third-party carriers of Argus price information provide the Argus jet/kero price in alternative units. The conversion factor used by these third parties is 7.88 bl to a metric tonne.

The differential shown is the assessed market premium (or discount) to Mean of Platts Singapore (Mops) jet-kerosine. Premiums/discounts are based on reported transactions, bids, offers and

relevant market discussions for cargoes fob South Korea loading 15-30 days forward from date of publication.

Timestamp: 4:30pm Singapore time

Mideast Gulf

Unit: US dollars/barrel

Basis: fob Mideast Gulf. The Mideast Gulf quotations are netted back daily using Argus spot freight assessments.

The jet-kerosine netback is calculated from the Argus fob Singapore jet-kerosine quotation using LR1 freight (55,000t), with an average freight using a two port loading of Bahrain/Jubail to Singapore plus 50pc of the Saudi port charge.

The differential shown is the assessed market premium (or discount) to Mean of Platts Arab Gulf (Mopag) jet-kerosine for minimum cargo size of 200,000 bl.

The premiums/discounts are based on reported transactions, bids, offers and relevant market discussions for trade 15-40 days forward from the date of publication.

Timestamp: 4:30pm Singapore time

Fujairah

Unit: US dollars/barrel

Basis: fob Fujairah

Specification: the latest UK Defence Standard specifications

The assessment will also take into account relevant market information and deals done on a fob Mideast Gulf basis, normalised to fob Fujairah as necessary.

The differential shown is the assessed market premium (or discount) to the fob Mideast Gulf jet-kerosine assessment. The premiums/discounts are based on reported transactions, bids, offers and relevant market discussions for trade in cargoes of at least 200,000 bl, 20-40 days forward from the date of publication.

Timestamp: 4:30pm Singapore time

Japan

Unit: US dollars/barrel

Timing: delivery 20-40 days forward from date of publication

Size: standardised to cargoes c+f Japan of 100,000 bl to 250,000 bl

Basis: c+f Japan

Specification: the latest UK Defence Standard specifications
Some third-party carriers of Argus price information provide the Argus jet/kero price in alternative units. The conversion factor used by these third parties is 7.88 bl to a metric tonne.

Timestamp: 4:30pm Singapore time

South Africa

Unit: US dollars/tonne

Basis: c+f Durban, South Africa

The jet-kerosine c+f Durban prices are calculated by adding Argus spot freight assessments for 35,000t cargoes from Mideast Gulf ports to Durban, expressed in US dollars/tonne, to the Argus fob Mideast Gulf jet-kerosine quotation, converted from US dollars/bl to US dollars/tonne by a factor of 7.878 bl/tonne.

Timestamp: 4:30pm Singapore time

Singapore jet-kerosine swaps

Assessments are published as a low-high range of prevailing prices at the timestamp.

Unit: US dollars/barrel

Timing: forward swaps are assessed for three consecutive months and three quarters forward

Forward months will roll on the 16th of the month or, if the 16th of the month is a weekend or holiday, on the next publication date.

Forward quarters will roll on the 16th of the first month of the calendar quarter (January, April, July and October) or if the 16th of the month is a weekend or holiday, on the next publication date.

Size: standardised to 50,000 bl for the monthly swaps and 150,000 bl for the quarterly swaps

Specification: jet A-1

Timestamp: 4:30pm Singapore time

Some third-party carriers of Argus price information provide the Argus 0.5pc sulphur gasoil price in alternative units. The conversion factor used by these third parties is 7.46 bl to a metric tonne.

Timestamp: 4:30pm Singapore time

Gasoil 0.25%

Gasoil of 0.25pc sulphur

Unit: US dollars/barrel

Timing: loading 15-30 days forward from date of publication

Size: standardised to cargoes fob Singapore of 150,000 bl to 250,000 bl

Basis: fob Singapore. The assessment also takes into account market information on a fob Malaysia and fob Indonesia basis, normalised to fob Singapore as necessary.

The differential shown is the assessed market premium (or discount) to Mean of Platts Singapore (Mops) for 0.001pc sulphur gasoil. The premiums/discounts are based on reported transactions, bids, offers and relevant market discussions for trade 15-30 days forward from the date of publication.

Some third-party carriers of Argus price information provide the Argus 0.25pc gasoil price in alternative units. The conversion factor used by these third parties is 7.46 bl to a metric tonne.

Timestamp: 4:30pm Singapore time

Gasoil 0.05% (500ppm)

Gasoil of 0.05pc (500 parts per million) sulphur

Unit: US dollars/barrel

Timing: loading 15-30 days forward from date of publication

Size: standardised to cargoes fob Singapore of 150,000 bl to 250,000 bl

Basis: fob Singapore. The assessment also takes into account market information on a fob Malaysia and fob Indonesia basis, normalised to fob Singapore as necessary.

The differential shown is the assessed market premium (or discount) to Mean of Platts Singapore (Mops) for 0.001pc sulphur gasoil.

The premiums/discounts are based on reported transactions, bids,

Gasoil

Singapore

Gasoil 0.5%

Gasoil of 0.5pc sulphur

Unit: US dollars/barrel

Timing: cargoes loading 15-30 days forward from date of publication.

Size: standardised to cargoes fob Singapore of 150,000 bl to 250,000 bl

Basis: fob Singapore. The assessment also takes into account market information on a fob Malaysia and fob Indonesia basis, normalised to fob Singapore as necessary.

The differential shown is the assessed market premium (or discount) to Mean of Platts Singapore (Mops) 0.001pc sulphur gasoil. The premiums/discounts are based on reported transactions, bids, offers and relevant market discussions for trade 15-30 days forward from the date of publication.

Gasoil specifications (Singapore and South Korea)					
	0.001% (10ppm)	0.005% (50ppm)	0.05% (500ppm)	0.25% (2,500ppm)	0.5% (5,000ppm)
Appearance at 25°C	clean, clear	clean, clear	clean, clear		
Ash content (% weight)	max 0.01	max 0.01	max 0.01	max 0.01	max 0.01
Cetane Index	46	48	48	48	48
Cloud Point (°C)	max -1				
Cold filter plugging point (°C)	max -5				
Colour	2	2	2	2	2
Conductivity at 20°C (pS/m)	max 150				
Conradson Carbon Residue (10% distillation) (% mass)	max 0.2	max 0.2	max 0.2	max 0.1	max 0.1
Copper corrosion (3hrs at 50°C)	max 1	max 1	max 1	max 1	max 1
Density at 15°C (g/ml)	0.82-0.845	0.82-0.86	0.82-0.86	0.82-0.86	0.82-0.87
Distillation T90 (90% recovered) (°C)				max 360	max 370
Distillation T95 (95% recovered) (°C)	max 360	max 360	max 370		
Flash Point (°C)	min 66	min 66	min 66	min 66	min 66
Kinematic viscosity at 40°C (cst)	2.0-4.5	2.0-4.5	2.0-4.5	2.0-4.5	1.7-5.5
Lubricity at 60°C (microns)	max 460	max 460	max 460	max 460	
Oxidation Stability (mg/L)	max 25				
Pour Point (°C)		max 9	max 9	max 9	max 9
Total Acid Number (mg KOH/g)	max 0.3	max 0.5	max 0.5	max 0.5	max 0.5
Water & sediment (%)	max 0.05	max 0.05	max 0.05	max 0.05	max 0.05
Water content (mg/kg)	max 200				

offers and relevant market discussions for trade 15-30 days forward from the date of publication.

Some third-party carriers of Argus price information provide the Argus 0.05pc gasoil price in alternative units. The conversion factor used by these third parties is 7.46 bl to a metric tonne.

Timestamp: 4:30pm Singapore time

Gasoil 0.005% (50ppm)

Gasoil of 0.005pc (50 parts per million) sulphur

Unit: US dollars/barrel

Timing: loading 15-30 days forward from date of publication

Size: standardised to cargoes fob Singapore of 150,000 bl to 250,000 bl

Basis: fob Singapore. The assessment also takes into account market information on a fob Malaysia and fob Indonesia basis, normalised to fob Singapore as necessary.

The differential shown is the assessed market premium (or discount) to Mean of Platts Singapore (Mops) for 0.001pc sulphur gasoil.

The premiums/discounts are based on reported transactions, bids, offers and relevant market discussions for trade 15-30 days forward from the date of publication.

Some third-party carriers of Argus price information provide the Argus 0.005pc gasoil price in alternative units. The conversion factor used by these third parties is 7.46 bl to a metric tonne.

Timestamp: 4:30pm Singapore time

Gasoil 0.001% (10ppm)

Gasoil of 0.001pc (10 parts per million) sulphur

Unit: US dollars/barrel

Timing: loading 15-30 days forward from the date of publication

Size: standardized to cargoes fob Singapore of 150,000 bl to 250,000 bl

Basis: fob Singapore. The assessment also takes into account market information on a fob Malaysia and fob Indonesia basis, normalised to fob Singapore as necessary.

The differential shown is the assessed market premium (or discount) to Mean of Platts Singapore (Mops) for 0.001pc sulphur gasoil.

The premiums/discounts are based on reported transactions, bids, offers and relevant market discussions for trade 15-30 days forward from the date of publication.

Some third-party carriers of Argus price information provide the Argus 0.001pc gasoil price in alternative units. The conversion factor used by these third parties is 7.46 bl to a metric tonne.

Timestamp: 4:30pm Singapore time

China

Bohai gasoil 0.001% (10ppm) fob

Gasoil diesel of 0.001pc (10 parts per million/10 milligrams per kg) sulphur

Unit: prices are assessed and published in Chinese renminbi per tonne and converted to US dollars per barrel net of relevant taxes.

The price is also published as a \$/bl differential to the fob Singapore Gasoil 0.001% (10ppm) assessment

Timing: loading 7-21 days forward from date of publication

Size: minimum cargo size of 3,000t (25,000bl)

Basis: fob Shandong (Binzhou, Dongying, Laizhou, Longkou, Yantai,

Rizhao, Weifang); Liaoning (Yingkou, Changxing, Jinzhou, Dalian)

Timestamp: 4:30pm China Standard Time

Singapore-Bohai arbitrage excluding freight

The fob Singapore 10ppm gasoil spot assessment less the fob Bohai 10ppm gasoil assessment.

Yangtze river delta gasoil 0.001% (10ppm) ex-tank

Gasoil diesel of 0.001pc (10 parts per million/10 milligrams per kg) sulphur

Unit: prices are assessed and published in Chinese renminbi per tonne and converted to US dollars per barrel net of relevant taxes.

The price is also published as a \$/bl differential to the fob Singapore Gasoil 0.001% (10ppm) assessment

Timing: collection 1-20 days forward from date of publication

Size: minimum 500t (4,000bl), maximum 3,000t (25,000bl)

Basis: Jiangsu (Taizhou Jingjiang, Nantong, Yangzhou Taicang, Wuxi Jianguyin, Suzhou); Zhejiang (Jiaxing, Zhoushan); Shanghai

Timestamp: 4:30pm China Standard Time

Bohai-Yangtze river delta gasoil 0.001% (10ppm) arbitrage

The Yangtze River Delta gasoil 0.001% (10ppm) ex-tank price assessment less the corresponding Bohai fob assessment and freight costs for a 5,000-10,000t cargo loading at Bohai ports and discharging at Nantong in Jiangsu province.

Published in Yn/t and \$/bl

China diesel specification		
Specification: China 6	0# Diesel (Summer: 1 May-31 Oct)	0# Diesel (Winter: 1 Nov-30 Apr)
Freezing point (degree Celsius)	max 0	max 0
Standard	National 6 standard	National 6 standard
Sulphur content (ppm in weight)	max 10	max 10
Cetane index	min 51	min 51
Flash point (°C)	min 60	min 60
Polycyclic aromatic hydrocarbons (PAH) content (% by weight)	max 11	max 11
Density at 20 degrees Celsius (kg/m3)	810-845	810-845
Ash content (% weight)	max 0.01	max 0.01
Cold filter plugging point (°C)	max 4	max -5
Colour	min 3.5	min 3.5
Conradson Carbon Residue (10% distillation) (% mass)	max 0.3	max 0.3
Copper corrosion (3hrs at 50°C)	max 1	max 1
Density at 15°C (g/ml)	0.82-0.845	0.82-0.845
Distillation T90 (90% recovered) (°C)	max 355	max 355
Distillation T90 (95% recovered) (°C)	max 365	max 365
Kinematic viscosity at 40°C (cst)	3.0-8.0	2.5-8.0
Wear scar diameter (WSD) at 60°C (microns)	max 460	max 460
Oxidation stability (mg/L)	max 25	max 25
Pour point (°C)	0	-10
Total Acid Number (mg KOH/g)	max 7	max 7
Water & sediment (%)	max trace	max trace

South Korea

Gasoil 0.05%

Gasoil of 0.05pc sulphur

Unit: US dollars/barrel

Timing: cargoes loading 15-30 days forward from date of publication

Size: minimum cargo size of 200,000 bl

Basis: fob South Korea

The differential shown is the assessed market premium (or discount) to Mean of Platts Singapore (Mops) for 0.001pc sulphur gasoil.

The premiums/discounts are based on reported transactions, bids, offers and relevant market discussions for cargoes fob South Korea loading 15-30 days forward from the date of publication.

Some third-party carriers of Argus price information provide the Argus 0.05pc sulphur gasoil price in alternative units. The conversion factor used by these third parties is 7.46 bl to a metric tonne.

Timestamp: 4:30pm Singapore time

Gasoil 0.001% (10ppm)

Gasoil of 0.001pc (10 parts per million) sulphur

Unit: US dollars/barrel

Timing: loading 15-30 days forward from date of publication

Size: minimum cargo size of 200,000 bl

Basis: fob South Korea

The differential shown is the assessed market premium (or discount) to Mean of Platts Singapore (Mops) for 0.001pc sulphur gasoil.

The premiums/discounts are based on reported transactions, bids, offers and relevant market discussions for cargoes fob South Korea loading 15-30 days forward from the date of publication.

Some third-party carriers of Argus price information provide the Argus 0.001pc gasoil price in alternative units. The conversion factor used by these third parties is 7.46 bl to a metric tonne.

Timestamp: 4:30pm Singapore time

Mideast Gulf

Gasoil 0.2%

Gasoil 0.2pc sulphur

Unit: US dollars/barrel

Basis: fob Mideast Gulf

The assessment of 0.2pc sulphur gasoil fob Mideast Gulf is calculated from the 0.001pc sulphur gasoil fob Mideast Gulf assessment plus the difference in the assessed market premium (or discount) for the two grades.

The differential shown is the assessed market premium (or discount) to Mean of Platts Arab Gulf (Mopag) 0.001pc sulphur gasoil. The premiums/discounts are based on reported transactions, bids, offers and relevant market discussions for trade 15-40 days forward from the date of publication.

Timestamp: 4:30pm Singapore time

Gasoil 0.05% (500ppm)

Gasoil 0.05pc (500 parts per million) sulphur

Unit: US dollars/barrel

Basis: fob Mideast Gulf

The assessment of 0.05pc sulphur gasoil fob Mideast Gulf is calculated from the 0.001pc sulphur gasoil fob Mideast Gulf assessment

plus the difference in the assessed market premium (or discount) for the two grades.

The differential shown is the assessed market premium (or discount) to Mean of Platts Arab Gulf (Mopag) 0.001pc sulphur gasoil. The premiums/discounts are based on reported transactions, bids, offers and relevant market discussions for trade 15-40 days forward from the date of publication.

Timestamp: 4:30pm Singapore time

Gasoil 0.005% (50ppm)

See the [Argus Mideast Gulf and Indian Ocean Products methodology](#).

Gasoil 0.001% (10ppm)

Gasoil 0.001pc (10 parts per million) sulphur

Unit: US dollars/barrel

Basis: fob Mideast Gulf

The Mideast Gulf 10ppm sulphur gasoil assessment is netted back from the Argus fob Singapore 10ppm sulphur gasoil assessment using LR1 freight (55,000t), with an average freight using a two port loading of Bahrain/Jubail to Singapore plus 50pc of the Saudi port charge. The differential shown is the assessed market premium (or discount) to Mean of Platts Arab Gulf (Mopag) for 0.001pc sulphur gasoil. The premiums/discounts are based on reported transactions, bids, offers and relevant market discussions for trade 15-40 days forward from the date of publication.

Timestamp: 4:30pm Singapore time

Fujairah

Gasoil 0.001% (10ppm)

Gasoil with maximum sulphur content of 10ppm

Unit: US dollars/barrel

Basis: fob Fujairah

Argus will also take into account relevant market information and deals done on a fob Mideast Gulf basis, normalised to fob Fujairah as necessary.

The differential shown is the assessed market premium (or discount) to Mean of Platts Arab Gulf (Mopag) for 0.001pc sulphur gasoil. The premiums/discounts are based on reported transactions, bids, offers and relevant market discussions for trade 20-40 days forward from the date of publication.

Timestamp: 4:30pm Singapore time

Japan

Gasoil 0.005% (50ppm)

Gasoil of 0.005pc (50 parts per million) sulphur

Unit: US dollars/barrel

Timing: delivery 20-40 days forward from date of publication.

Size: standardised to cargoes c+f Japan of 100,000 bl to 250,000 bl

Basis: c+f Japan

Specification: 0.005pc maximum sulphur; minus 20°C pp to minus 5°C pp; typically less than 0.5 colour; ASTM, minimum plus 5 colour saybolt; 50 minimum cetane index; maximum 350°C distillation point at which 90pc recovered

Timestamp: 4:30pm Singapore time

South Africa

Gasoil 0.05%

Unit: US dollars/tonne.

Basis: c+f Durban, South Africa

Calculated by adding the Argus spot freight assessment for 35,000t cargoes from Mideast Gulf ports to Durban to the Argus fob Mideast Gulf gasoil 0.05% sulphur assessment, converted from US dollars/bl to US dollars/tonne at 7.46 bl to 1 metric tonne.

Timestamp: 4:30pm Singapore time

Gasoil 0.005%

Unit: US dollars/tonne.

Basis: c+f Durban, South Africa

Calculated by adding the Argus spot freight assessment for 35,000t cargoes from Mideast Gulf ports to Durban to the Argus fob Mideast Gulf gasoil 0.005% sulphur assessment, converted from US dollars/bl to US dollars/tonne at 7.46 bl to 1 metric tonne.

Timestamp: 4:30pm Singapore time

Gasoil 0.001%

Unit: US dollars/tonne.

Basis: c+f Durban, South Africa

Calculated by adding the Argus spot freight assessment for 35,000t cargoes from Mideast Gulf ports to Durban to the Argus fob Mideast Gulf gasoil 0.001% sulphur assessment, converted from US dollars/bl to US dollars/tonne at 7.46 bl to 1 metric tonne.

Timestamp: 4:30pm Singapore time

Gasoil cargo swaps

Gasoil swaps are for the 0.5pc sulphur grade up to and including the month of December 2012, for the 0.05pc (500ppm) sulphur grade from January 2013 up to and including December 2017, and for the 0.001pc (10ppm) sulphur grade thereafter.

Assessments are published as a low-high range of prevailing prices at the timestamp.

Unit: US dollars/barrel

Timing: forward swaps are assessed for three consecutive months and three quarters forward.

Forward months will roll on the 16th of the month or, if the 16th of the month is a weekend or holiday, on the next publication date.

Forward quarters will roll on the 16th of the first month of the calendar quarter (January, April, July and October) or if the 16th of the month is a weekend or holiday, on the next publication date.

Size: standardised to 50,000 bl for the monthly swaps and 150,000 bl for the quarterly swaps

Timestamp: 4:30pm Singapore time

Gasoil arbitrage

Price spread between Singapore gasoil swaps and Ice gasoil futures.

Unit: US dollars/tonne

The spreads included compare the first month of Singapore gasoil swaps with each of the first three months of the Ice gasoil futures Singapore minute marker price.

When the first month of Ice gasoil futures expires and rolls to the next month ahead of Singapore gasoil swaps, the price spread will use the second forward month of the Singapore swaps table until the forward

months roll on the 16th of the month. From the 16th of the month, the spread reverts to using the first month of Singapore gasoil swaps.

Timestamp: 4:30pm Singapore time

Fuel oil

Singapore

HSFO 180cst

High-sulphur fuel oil of 180 centistokes

Unit: US dollars/tonne

Timing: loading 15-30 days forward from date of publication

Size: standardised to cargoes fob Singapore of 20,000t to 40,000t.

Basis: is fob Singapore. The assessment also takes into account market information on a fob Malaysia and fob Indonesia basis, normalised to fob Singapore as necessary.

The conversion factor is 6.45 bl to 1 metric tonne.

The differential shown is the assessed market premium (or discount) to Mean of Platts Singapore (Mops) high-sulphur fuel oil 180cst.

The premiums/discounts are based on reported transactions, bids, offers and relevant market discussions for trade 15-30 days forward from the date of publication.

Timestamp: 4:30pm Singapore time

HSFO 180cst 2% sulphur

Unit: US dollars/tonne

Prices are calculated as a premium to Singapore 180cst 3.5% sulphur. The premium is a multiplier, currently fixed at 1.0225, and subject to revision depending on market feedback

Timing: loading 15-30 days forward from date of publication

Size: standardised to cargoes fob Singapore of 20,000t to 40,000t

Basis: fob Singapore. The assessment also takes into account market information on a fob Malaysia and fob Indonesia basis, normalised to fob Singapore as necessary.

The conversion factor is 6.45 bl to 1 metric tonne

Timestamp: 4:30pm Singapore time

HSFO 380cst

High-sulphur fuel oil of 380 centistokes

Unit: US dollars/tonne

Timing: loading 15-30 days forward from date of publication

Size: standardised to cargoes fob Singapore of 20,000t to 40,000t

Basis: fob Singapore. The assessment also takes into account market information on a fob Malaysia and fob Indonesia basis, normalised to fob Singapore as necessary.

The conversion factor is 6.45 bl to 1 metric tonne.

The differential shown is the assessed market premium (or discount) to Mean of Platts Singapore (Mops) HSFO 380cst.

The premiums/discounts are based on reported transactions, bids, offers and relevant market discussions for trade 15-30 days forward from the date of publication.

Timestamp: 4:30pm Singapore time

HSFO 380cst east-west spread

The price spread between fob Singapore HSFO 380cst swaps and fob Rotterdam 3.5% HSFO barge swaps

Unit: US dollars/tonne

Information about trade done for the differential and for fob Rotterdam 3.5% HSFO barge swaps at the timestamp will be considered for inclusion in the assessment.

Timing: prices are assessed for one month forward

Timestamp: 4:30pm Singapore time

Low-sulphur (0.5%S) marine fuel

Low-sulphur (0.5%S) marine fuel of at least 30 centistokes

Unit: US dollars/tonne

Timing: loading 15-30 days forward from date of publication

Size: standardised to cargoes fob Singapore of 20,000t to 40,000t.

Basis: is fob Singapore. The assessment also takes into account market information on a fob Malaysia and fob Indonesia basis, normalised to fob Singapore as necessary.

The conversion factor is 6.45 bl to 1 metric tonne.

The differentials shown are the assessed market premiums (or discounts) to Mean of Platts Singapore (Mops) high-sulphur fuel oil 380cst and Mean of Platts Singapore Marine Fuel 0.5%.

The premiums/discounts are based on reported transactions, bids, offers and relevant market discussions for trade 15-30 days forward from the date of publication.

Timestamp: 4:30pm Singapore time

Low-sulphur (0.5%S) marine fuel east-west spread

The price spread between fob Singapore HSFO 380cst swaps and fob Rotterdam marine fuel 0.5% barge swaps

Unit: US dollars/tonne

Information about trade done for the differential and for fob Rotterdam marine fuel 0.5% barge swaps at the timestamp will be considered for inclusion in the assessment.

Timing: prices are assessed for one month forward

Timestamp: 4:30pm Singapore time

Mideast Gulf

HSFO 180cst

High-sulphur fuel oil 180 centistokes

Unit: US dollars/tonne

Basis: fob Mideast Gulf

The Mideast Gulf assessments are netted back daily using Argus spot freight assessments. The HSFO 180cst netback is calculated from the Argus fob Singapore HSFO 180cst quotations using LR2 freight (80,000t), with an average freight using a two port loading of Bahrain/Mina al-Ahmadi to Quoin Island to Singapore.

Timestamp: 4:30pm Singapore time

HSFO 380cst

High-sulphur fuel oil 380 centistokes

Unit: US dollars/tonne

Basis: fob Mideast Gulf

The Mideast Gulf assessments are netted back daily using Argus spot freight assessments.

The HSFO 380cst netback is calculated from the Argus fob Singapore HSFO 380cst quotations using LR2 freight (80,000t), with an average freight using a two port loading of Bahrain/Mina al-Ahmadi to Quoin Island to Singapore.

The differential shown is the assessed market premium (or discount) to Mean of Platts Arab Gulf (Mopag) for high-sulphur fuel oil 380 centistokes.

The premiums/discounts are based on reported transactions, bids, offers and relevant market discussions for trade 15-40 days forward from the date of publication.

Timestamp: 4:30pm Singapore time

South Korea

HSFO 180cst

High-sulphur fuel oil of 180 centistokes

Unit: US dollars/tonne

Timing: loading 15-30 days forward from date of publication

Size: standardised to cargoes fob South Korea of 20,000t to 50,000t.

Basis: fob South Korea

Japan

HSFO 180cst

High-sulphur fuel oil of 180 centistokes

Unit: US dollars/tonne

Timing: delivery 20-40 days forward from date of publication

Size: standardised to cargoes c+f Japan of 20,000t to 50,000t

Basis: c+f Japan

Singapore high-sulphur fuel oil swaps

High-sulphur fuel oil swaps for fob Singapore 180cst and 380cst, 3.5pc sulphur

Assessments are published as a low-high range of prevailing prices at the timestamp.

Unit: US dollars/tonne

Timing: forward swaps are assessed for three consecutive months and three quarters forward.

The last day of assessment of the first month of the forward swaps table will typically be the 15th of that month.

Forward months will roll on the 16th of the month or, if the 16th of the month is a weekend or holiday, on the next publication date.

Forward quarters will roll on the 16th of the first month of the calendar quarter (January, April, July and October) or if the 16th of the month is a weekend or holiday, on the next publication date.

Size: standardised to 5,000t for the monthly swaps and 15,000t for the quarterly swaps

Timestamp: 4:30pm Singapore time

Singapore 0.5%S fuel oil swaps

Low-sulphur fuel oil swaps for fob Singapore low-sulphur (0.5%S) marine fuel

Assessments are published as a low-high range of prevailing prices at the timestamp.

Unit: US dollars/tonne

Timing: forward swaps are assessed for three consecutive months. The last day of assessment of the first month of the forward swaps table will typically be the 15th of that month.

Forward months will roll on the 16th of the month or, if the 16th of the month is a weekend or holiday, on the next publication date.

Timestamp: 4:30pm Singapore time

Fuel oil specifications				
	HSFO 380cst	min 30cst 0.5%S	HSFO 180cst	180cst 2%S
Aluminium + Silicon (ppm)	max 60	max 60	max 50	max 50
Ash content (% weight)	max 0.1	max 0.1	max 0.07	max 0.07
Carbon Residue: micro method (%)	max 18	max 18	max 15	max 15
Flash point (°C)	min 60	min 60	min 60	min 60
Pour point (°C)	max 30	max 30	max 30	max 30
Sodium (ppm)	max 100	max 100	max 50	max 50
Specific gravity at 15°C (kg/l)	max 0.991	max 0.991	max 0.991	max 0.991
Sulphur content (%)	max 3.5	max 0.5	max 3.5	max 2
Total sediment aged (%)	max 0.1	max 0.1	max 0.1	max 0.1
Vanadium (ppm)	max 350	max 350	max 150	max 150
Water (%)	max 0.5	max 0.5	max 0.5	max 0.5
Hydrogen sulphide (ppm)	max 2	max 2	max 2	max 2
Acid Number (mgKOH/g)	max 2.5	max 2.5	max 2.5	max 2.5
Calculated Carbon Aromaticity Index (CCAI)	max 870	max 870	max 860	max 860
All shall be free of used lubricants				

China fuel oil

South China fuel oil (fob)

Medium sulphur FO 180cst barge ex terminal

Medium-sulphur fuel oil of 180 centistokes

Unit: Chinese yuan/tonne

Timing: barges loading 0-5 days forward from date of publication

Size: standardised to barges of minimum 500t and maximum 3,000t

Basis: fob south China (ex-terminal in Huangpu port)

Specification: 180cst, 1.5pc maximum sulphur content, maximum 0.991 g/cm³ density at 15°C, maximum 30°C pour point, maximum 15pc CCR, maximum vanadium content 150ppm, minimum 60°C flash point, maximum ash content of 0.07pc

Timestamp: 4:30pm Singapore time

South China fuel oil (c+f)

High-sulphur fuel oil of 180 centistokes

Unit: US dollars/tonne

Timing: delivery 15-30 days forward from date of publication

The forward physical prices for cfr south China fuel oil are for two consecutive months forward.

The last day of quotation of the first month of the forward physical table will be the 15th of that month.

Prices are exclusive of duties and taxes at destination.

Size: standardised to cargoes c+f south China of minimum 15,000t

Basis: c+f south China.

Specification: 180cst, 3.5pc maximum sulphur, cracked fuel oil, typically 0.980 specific gravity, maximum 24°C pp, CCR 13-14.2pc on a weight basis, vanadium 150ppm

Timestamp: 4:30pm Singapore time

Bunkers and marine gasoil

Argus Asia-Pacific Products includes bunker fuel and marine gasoil assessments.

- Fujairah 3.5%S 380cst
- Hong Kong 3.5%S 380cst
- Qingdao 3.5%S 380cst
- Shanghai 3.5%S 380cst
- Singapore 3.5%S 380cst
- Singapore 3.5%S 500cst
- Singapore 0.5%S 380cst
- Ulsan/Busan/Yeosu 3.5%S 380cst

See the [Argus Marine Fuels methodology](#).

Low-sulphur 0.45%S fuel oil V-1250

Indonesia

Low-sulphur 0.45%S fuel oil V-1250

The differential shown is the assessed market premium (or discount) to Singapore low-sulphur 0.5pc sulphur marine fuel. The premiums/discounts are based on reported transactions, bids, offers and relevant market discussions for trade 15-30 days forward from the date of publication.

Unit: US dollars/tonne

Size: assessments are standardised to cargoes fob Indonesia of 100,000 bl to 300,000 bl.

Timing: loading 15-30 days forward from date of publication

Information of c+f transactions to Asian destinations will be considered for inclusion in the assessment using the netback equivalent to fob Indonesia if the loading date (after deduction for the estimated loading, voyage transit time and discharge) falls within this timing.

Timestamp: 4:30pm Singapore time

Low-sulphur 0.45%S fuel oil V-1250 specifications	
Ash content (% weight)	max 0.1
Conradson Carbon Residue (%)	max 10
Flash point (°F)	min 160
Pour point (°F)	max 130
Specific gravity at 60/60°F (kg/l)	max 0.97
Sulphur content (%)	max 0.45
Viscosity kinematic at 140°F (mm ² /sec)	max 321
Viscosity redwood at 140°F (sec)	max 1300
Water content (% vol)	max 0.5

Freight rates

Asia-Pacific Products fuel oil netback Mideast Gulf-Singapore

The spot freight rate that is used to calculate the Mideast Gulf fuel oil netback.

Size: 80,000t vessels

Timing: rates are based on fixtures and market discussion for positions 15-30 days ahead. Argus takes into account liquidity outside this period and market structure.

Argus Asia-Pacific Products also includes freight rates for specific products based on Argus assessments published in Argus Tanker Freight and specific conversion factors for individual products to convert from general to product-specific \$/t or \$/bl rates.

See the [Argus Tanker Freight methodology](#) for more information about Argus tanker freight coverage.

- Gasoline Mideast Gulf-Singapore 35kt (\$/bl)
- Jet Mideast Gulf-Singapore 55kt (\$/bl)
- Gasoil Mideast Gulf-Singapore 55kt (\$/bl)
- Fuel oil Indonesia-Japan 80kt (\$/t)
- Naphtha LR1 Mideast Gulf-Japan 55kt (\$/t)
- Naphtha LR2 Mideast Gulf-Japan 75kt (\$/t)
- Gasoil Singapore-Japan 30kt (\$/bl)
- Jet Singapore-Japan 30kt (\$/bl)
- Jet/Gasoil/Naphtha Singapore-Japan 30kt (\$/t)

Refining margins

Crack spreads represent the nominal profit a refiner makes from producing petroleum products from crude oil. Argus crack spreads compare prices for petroleum products with crude prices to calculate this profit.

Singapore fuel oil 180cst crack spread

Unit: in US dollars/barrel

The spread is the difference between the fob Singapore HSFO 180cst swaps and Dubai crude swaps for the promptest complete calendar month. The Dubai crude swaps methodology can be found in the [Argus Crude methodology](#).

Singapore gasoil crack spread

Unit: US dollars/barrel

The spread is the difference between fob Singapore 0.5pc sulphur gasoil swaps and Dubai crude swaps for the promptest complete calendar month. The Dubai crude swaps methodology can be found in the [Argus Crude methodology](#).

Singapore jet crack spread

Unit: US dollars/barrel

The spread is the difference between fob Singapore jet-kerosine swaps and Dubai crude swaps for the promptest complete calendar month. The Dubai crude swaps methodology can be found in the [Argus Crude methodology](#).

Japan naphtha c+f half month crack spreads

Unit: US dollars/tonne

The spreads are the difference between c+f Japan naphtha forward prices and the Ice Brent crude oil futures price for the same specified period.

Singapore naphtha crack spread

Unit: US dollars/barrel

The spread is the difference between the price of naphtha fob Singapore and front month Ice Brent crude oil futures.

Singapore 97R gasoline crack spread

Unit: US dollars/barrel

The spread is the difference between the price of 97R gasoline fob Singapore and front month Ice Brent crude oil futures.

Singapore 95R gasoline crack spread

Unit: US dollars/barrel

The spread is the difference between the price of 95R gasoline fob Singapore and front month Ice Brent crude oil futures.

Singapore 92R gasoline crack spread

Unit: US dollars/barrel

The spread is the difference between the price of 92R gasoline fob Singapore and front month Ice Brent crude oil futures.

Issued tenders

Argus provides a list of the tenders to buy and sell oil products that have not yet been awarded. Argus provides as much detail as possible in terms of the quantities, timing, location, closing date and validity date of bids and offers.

Argus Asia-Pacific Products (USWC section)

As an additional service, subscribers to *Argus Asia-Pacific Products* also receive a standalone supplement *Argus Asia-Pacific Products* (USWC section), which provides pricing and comment about the products markets on the US West Coast. This supplement is sent out as a separate report after close of business in Houston.

For the methodology underlying the USWC product assessments please see the [Argus US Products methodology](#).