5 March 2024

Oil Products Methodology

Date of last formal consultation: 22 January 2024

Expiry date of this methodology document: 22 January 2027

ICIS
Independent Commodity Intelligence Services

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General methodology

ICIS continuously develops, reviews and revises its methodologies in consultation with industry participants. The product specifications and trading terms and conditions used are intended to reflect typical working practices in the industry.

ICIS publishes market assessments based on information gathered from market participants about: spot transactions, spot bid and offer levels, contract price negotiations, prices of related commodities, and relevant freight costs.

ICIS does not make retrospective adjustments or changes to price assessments based on information received after publication time or after any cut-off point specified in individual methodology documents.

ICIS regards all arm's-length transactions which meet its specification criteria as carrying equal weight.

ICIS uses proprietary models where necessary to normalise data to the typical specifications for cargo size and date ranges given for each commodity. Some ICIS assessments are the product of calculation alone, for example in markets where insufficient market activity takes place to permit price assessment, or where a market itself habitually sets prices according to a formula. Such calculated assessments are noted as such in their detailed methodology specifications.

ICIS endeavours to cross-check all the transaction information it gathers. ICIS will not use information for assessment purposes where such checks call into doubt the accuracy of the original information, or where a transaction appears to have occurred under circumstances that render it non-repeatable or otherwise markedly unusual.

Rationale for oil products methodology

All ICIS-published spot assessments in the daily oil products report are daily assessments. ICIS will indicate days where closure of particular markets due to public holidays would result in non-publishing and non-assessment days.

The value published is intended to reflect the real transactable value of a commodity during the day. As such, transaction information would take precedence over bids and offers.

Where a confirmed deal is done for the same specification and loading range as confirmed bids and offers, and when all are declared to the market simultaneously, the deal will take precedence over the bids and offers. In illiquid markets, sole deals will be used together with bids and offers. In a liquid trading period, deals will form the basis of assessments. In an illiquid

market, a single or small number of deals will be included in the range, together with bids and offers. In the absence of any deals, bids and offers will be used. During the assessment process we may consider other information. However actual transactions, and bids and offers will always take precedence.

ICIS takes into account a wide range of market input in making such choices, and reserves the right to exclude from its analysis any price information deemed unreliable or unrepresentative of the market. ICIS commits to describing the information it deemed reliable in the market comment accompanying its assessments, including transactions, bids, offers and other market information used in making these assessments. This includes instances where ICIS typically makes assessments based on firm transaction or bid/offer information, but where that information was not available on a given day and alternative evidence was used.

Cargoes partially loading outside of the Assessed Trading Timeframe may be reflected in the assessment, but will not typically be used where there is deal/bid/offer information within the assessment period.

ICIS has adopted the daily range methodology for the oil products reports based on several decades of market observation and feedback. Other measurement strategies, for example weighted averaging, are vulnerable to random variation in transaction levels and volume, which can give rise to distortions.

In addition, the exact volume of transactions for any given product is unknowable in advance, and a volume-dependent methodology is exposed to: a) the charge that lower volumes will result in less accurate prices, and b) to the possibility of failure in the event no transactions occur.

Specifications for oil products

ICIS pricing quotes oil products in **Europe**, **Asia-Pacific** and the **US**.

Frequency: Published daily covering the physical, forward and futures markets for the main grades of refined products.

Daily Spot Price Assessments (EUROPE/ASIA)

Premium Unleaded Gasoline

- FOB BARGES ARA (USD/MT & conversion to USD/GAL)
- CIF CARGOES NWE (USD/MT & conversion to USD/GAL)
- FOB CARGOES NWE (USD/MT & conversion to USD/GAL)

Unleaded Regular Gasoline

- CIF CARGOES NWE (USD/MT)

Eurobob Gasoline

- FOB BARGES ARA (USD/MT)

Naphtha Open Spec Physical

- CIF CARGOES NWE (USD/MT)
- FOB BARGES ARA (USD/MT)
- CARGOES FOB MED (USD/MT)
- FOB SINGAPORE (USD/MT)
- FOB MIDDLE EAST (USD/MT)

Japan Open Spec

- CFR JAPAN (USD/MT & conversion to US CTS/GAL) half month 4 & 5
- CFR JAPAN (USD/MT & conversion to US CTS/GAL) half month 3
- CFR JAPAN (USD/MT & conversion to US CTS/GAL) half month 4
- CFR JAPAN (USD/MT & conversion to US CTS/GAL) half month 5
- SWAPS CLOSE (USD/MT)

Jet Kerosene

- CIF CARGOES NWE (USD/MT)
- FOB BARGES ARA (USD/MT)
- FOB CARGOES MED (USD/MT & conversion to USD/GAL)
- FOB SINGAPORE (USD/BBL & conversion to USD/GAL)
- CFR JAPAN (USD/BBL & conversion to USD/GAL)

Gas Oil

- EU CIF CARGOES NWE (USD/MT)
- EU FOB BARGES ARA USD/MT)

Med Gas Oil

- CIF CARGOES (USD/MT)

Premia: Low Sulphur Diesel

- CIF CARGOES NWE (USD/MT & conversion to USD/BBL)

Fuel Oil VLSFO 0.5%

- FOB BARGES ARA (USD/MT)

Fuel Oil 1.0%

- CIF CARGOES NWE (USD/MT)

- FOB BARGES ARA (USD/MT)

Fuel Oil 3.5%

- CIF CARGOES NWE (USD/MT)
- FOB CARGOES NWE (USD/MT)
- FOB BARGES ARA (USD/MT)

LS Straight Run Premium to ICE Brent

- FOB CARGOES NWE (USD/BBL)

Daily Spot Price Assessments (US)

Gasoline Premium Unleaded

- FOB NYH (US CTS/GAL & conversion to USD/MT)
- US GULF (US CTS/GAL & conversion to USD/MT)

Gasoline Regular Unleaded

- FOB NYH (US CTS/GAL & conversion to USD/MT)
- US GULF (US CTS/GAL & conversion to USD/MT)
- FOB CHICAGO (US CTS/GAL & conversion to USD/MT)
- FOB GROUP 3 (US CTS/GAL & conversion to USD/MT)

RBOB

- FOB NYH (US CTS/GAL & conversion to USD/MT)
- US GULF (US CTS/GAL & conversion to USD/MT)

CBOB

- FOB NYH (US CTS/GAL & conversion to USD/MT)
- US GULF (US CTS/GAL & conversion to USD/MT)
- FOB CHICAGO (US CTS/GAL & conversion to USD/MT)

Reforming Naphtha

- FOB BARGES (US CTS/GAL & conversion to USD/MT)

Jet Kerosene

- FOB NYH (US CTS/GAL & conversion to USD/MT)
- US GULF (US CTS/GAL & conversion to USD/MT)

Ultra-Low Sulphur Diesel

- FOB NYH (US CTS/GAL & conversion to USD/MT)
- US GULF (US CTS/GAL & conversion to USD/MT)

No. 2 Heating Oil

- FOB NYH (US CTS/GAL & conversion to USD/MT)
- US GULF (US CTS/GAL & conversion to USD/MT)

Residual Fuel No. 6

- NO. 6 1.0% (USD/BBL & conversion to USD/MT)
- NO. 6 3.0% (USD/BBL & conversion to USD/MT)

General Information:

Assessment window: Price assessments are based on information supplied by market participants throughout the day up to the normal close of business in each region. In Europe, this is 17:00 UK time.

Specifications:

ASIA

The Naphtha assessments are based on an open-specification petrochemical grade with a 65 pct minimum paraffins content that is generally intended for olefins cracking plants.

Jet Kerosene assessments are based on the standard commercial aviation quality as defined by the UK Ministry of Defence in DEFSTAN 91/91 latest issue (previously DERD 2494) or ASTM D1655. The product would have a typical density of 0.800 at 15 deg C and a freeze point of -47 deg C maximum.

EUROPE

Gasoline qualities are based on the European Union Directive EN 228.

Premium Unleaded grade represents 95 RON/85 MON material with a density of 0.755 at 15 deg C. Cargo and barge assessments are based on product with a sulphur content of 10ppm maximum.

Eurobob Gasoline barge grade represents 95 RON/85 MON material with a density of 0.755 at 15 deg C. It is based on EN 228 material after the addition of 4.8% of ethanol with a sulfur content of 10 ppm maximum.

Regular Unleaded cargo assessments are based on typical qualities of 91 RON/82.5 MON, a density of 0.745 at 15 deg C and a 10 ppm maximum sulphur content.

Naphtha CIF NWE cargo assessments are based on open-specification petrochemical grade with 65 pct minimum paraffins content and a typical density of 0.690 to 0.735 at 15 degree C.

Jet Kerosene quality is based on the standard commercial aviation quality as defined by the UK Ministry of Defence in the periodically-updated DEFSTAN 91/91 latest issue and the Joint Fuelling System Checklist. The product would have a sulphur content of 0.3% maximum, a typical density of 0.775-0.840 at 15 degrees C and a freezing point of -47 degrees C maximum.

NWE Gas Oil Cargo assessments are based on qualities meeting the French Fuel Oil Domestique (FOD), Spanish (B+C) and German Deutsche Industrie Norm (DIN) heating oil grades with a typical density of 0.845 at 15 deg C and a sulphur content of 0.10 pct maximum. For barges the assessment is based on German DIN quality as above and in line with the ICE Gasoil Futures Contract. Cold properties vary seasonally.

MED Gas Oil cargo assessment reflects material meeting the Spanish (B+C) quality gasoil fuel for heating oil use.

Ultra Low-Sulphur Diesel cargoes CIF NWE Premium reflects Benelux and French quality diesel fuel with a sulphur content of 10 ppm maximum and a typical density of 0.845 at 15 degree C.

Very Low-Sulphur Fuel Oil (0.5% sulphur maximum) assessments are based on blended material with a maximum viscosity of 380 CST at 50 degree C and a density of up to 0.991 at 15 deg C.

Low-Sulphur Fuel Oil (1% sulphur maximum) assessments are based on cracked material with a typical viscosity of 380 CST at 50 degree C and a density of up to 0.991 at 15 deg C.

High-Sulphur Fuel Oil (3.5% sulphur maximum) assessments are based on cracked material with a typical viscosity of 380 CST at 50 degree C and a density of up to 0.991 at 15 deg C.

In Europe, fuel oils are categorised between high and low-sulphur and very low-sulphur grades, with the former containing 3.5% sulphur and the latter containing less than 1% sulphur or maximum 0.5% sulphur. The International Maritime Organization's (IMO) Marpol introduced legislative changes on 1 January 2020 meaning ships operating outside Emission Control Areas (ECAs) will have three options to achieve compliance, either by the use of scrubbers or by burning a very low-sulphur fuel oil (VLSFO) with maximum sulphur content of 0.5 % or by burning LNG. Low-sulphur fuel oil (LSFO) trading has been thin in Europe following amendments to the IMO's Marpol and European Commission's sulphur directive mandating a maximum sulphur use of 0.1% in marine fuel from 1 January 2015. The regulation is effective in

the ECA of the Baltic Sea, North Sea, English Channel and waters 200 nautical miles from the coast of US and Canada. High-sulphur fuel oil (HSFO) is traded frequently in Europe and is mainly used outside of the ECA as bunker fuel for ships fitted with scrubbers.

The **Low Sulphur (LS) Straight Run** assessment represents premiums or discounts to ICE Brent crude oil futures. The range is based upon straight run fuel oil with a sulphur content of 0.5-0.7%.

US

The products assessed are normal US domestic qualities traded in New York Harbor and on the US Gulf Coast. For gasolines and distillates the products reflect fungible qualities meeting the appropriate Colonial Pipeline Company specifications for the respective grades, with the usual seasonal variations.

Gasolines

Regular Unleaded grade for Colonial Pipeline Company is based on 87 octane R+M/2, with an API gravity of 62 for the US Gulf and New York Harbor.

For regular unleaded grade in Chicago, the products reflect fungible qualities meeting the appropriate Explorer Pipeline specifications.

For regular unleaded grade in Group 3, the products reflect fungible qualities meeting the appropriate Magellan Pipeline specifications.

Premium Unleaded grade for the US Gulf and New York Harbor the Colonial Pipeline Company is based on 93 octane R+M/2, a density of 0.745 at 15 deg C and a 50 ppm maximum sulphur content.

Reformulated Blendstock for Oxygenate Blending (RBOB) for the Colonial Pipeline Company is based on 83.7 octane R+M/2 before blending.

For Conventional Blendstock for Oxygenated Blending (CBOB) on the US Gulf transported by the Colonial Pipeline, octane of min 82 (R+M)/2 before blending with 10% denatured ethanol, sulphur of max 80ppm.

For Conventional Blendstock for Oxygenated Blending (CBOB) in the New York Harbor market, the product reflects fungible qualities meeting the appropriate Buckeye Pipeline specifications.

For Conventional Blendstock for Oxygenated Blending (CBOB) in Chicago, the product reflects fungible qualities meeting the appropriate Explorer Pipeline specifications.

The Reforming Naphtha assessment reflects a typical naphtha quality for use in reforming into gasoline with a 40 pct N+A content and a gravity of 56-60 API>

The Jet Kerosene quality is based fungible product meeting the Colonial Pipeline Company specification for 54 grade.

Ultra-low Sulphur Diesel quality is based on fungible product meeting the Colonial Pipeline Company specification for 62 grade meeting 0.2% maximum sulphur and minimum gravity of 30 API.

No. 2 Heating Oil quality is based on fungible product meeting the Colonial Pipeline Company specification for 86 grade meeting 40 minimum cetane, 200 ppm maximum sulphur and a typical gravity of 30-34 API.

The Residual Fuel No. 6 assessment for low-sulphur grades reflects 1.0 pct sulphur maximum with a typical gravity of 8 API and a viscosity of 225 ssf, while high-sulphur grades reflect 3.0 pct sulphur maximum with a typical gravity of 10.5 API and a viscosity of 150-250 ssf.

CDI reports

The **CDI Normal Butane** assessment is an average of spot trades in the current month.

CDI prices for the **NGLs (ethane, propane, n-butane, isobutane, natural gasoline (light naphtha)** are the daily average spot closing prices. CDI uses the ICIS reported closing prices for ethane and propane. For butanes and natural gasoline, CDI uses published average daily closing prices along with published weekly average prices.

CDI natural gas prices are the average of the final 5 days of closing prices for the front month contract up to contract expiration. This sets the spot delivered price to the Henry Hub. Spot Gulf Coast (i.e., Houston area) delivered prices are an average of the spot differential to Henry Hub during the final five days leading up to expiration of the front month contract.

Regarding the remaining Oil Products, the CDI assessment is an average of spot daily closing prices as reported by external sources. ICIS reports spot prices for regular gasoline, premium, RBOB, jet, No. 2 heating oil, Gulf Coast HSFO, low sulfur diesel. The CDI feedstock report also reports contract prices for regular gasoline, premium, midgrade, ULSD, jet, GC 0.5% LSFO, NY 0.3% LSFO, NY HSFO, spot mix grade ethane.

Timing: In Asia, jet kerosene cargo assessments delivered Japan are based on a delivery window of 4-6 weeks forward from the publication date. Jet kerosene cargoes FOB Singapore reflects a forward delivery window of 15-30 days.

For Asia naphtha, the CFR Japan assessments cover three major delivery windows of 30-45 days, 45-60 days and 60-75 days forward from the date of publication. The three major delivery windows also factor in the upper end of the 30-45 days, 45-60 days and 60-75 days ranges respectively. They are known as half-month 3, half-month 4 and half-month 5.

The FOB Singapore and the Middle East assessments are for cargoes delivering 30-45 days and 45-75 days forward, respectively.

In Europe, the forward delivery window for cargoes is 5-15 days from the publication date, while on barges FOB ARA a forward delivery window of 2-12 days is used.

Gasolines

In the US, barges FOB New York Harbor are assessed using a forward delivery window of 2-12 days. The gasoline assessments in the US Gulf relate to products moving into the Colonial Pipeline system, which normally operates on 10 cycles per month, and reflects the relevant forward cycle trading at the time of publication, typically 2-12 days. In Group 3 on the Magellan pipeline, gasoline is assessed using a forward delivery window of 2-12 days. For the Chicago FOB market on the Explorer pipeline, the pipeline operates on three running cycles with the most recent cycle used for assessments. In Europe, delivery is usually 15 days forward for barges.

Cargo sizes

In Asia the FOB Singapore and CFR Japan assessments for naphtha and jet kerosene are based on minimum cargo sizes of 12,500 tonnes or 100,000 bbls and up to a maximum of 250,000 bbls. FOB Middle East cargo size is LR1 or 55,000 tonnes.

In Europe, barges FOB ARA are typically traded in parcels of 1,000-5,000 tonnes. For cargoes in NW Europe, shipments in the range 10,000-30,000 tonnes are considered in the assessments, while for cargoes in the Mediterranean the typical cargo size is 20,000-30,000 tonnes. Naphtha cargoes in NW Europe generally reflect four cargo sizes of 12,500 tonnes, 24,000-28,000 tonnes, 28,000-32,000 tonnes and 32,000-36,000 tonnes open-specification trade.

In the US, a minimum parcel size of 10,000 bbls is considered for the barges FOB New York Harbor assessments, and for pipeline deliveries a minimum

parcel size of 25,000 bbls is used. For residual fuel oil in the US Gulf Coast market, a minimum parcel size of 40,000 bbls is considered.

Assessment basis: Asian spot naphtha prices are strongly correlated to crude oil prices; the supply/demand balance is reflected in the premium/discount over the CFR Japan quote.

On the first and 16th day of every month, the front trading contract for naphtha will be rolled over. For example on 1 February, quotes would be for second half March, first half April and second half April. On 16 February, quotes would be for first half April, second half April and first half May arrival.

The main CFR Japan assessment reflects the low and the high prices of the fourth and fifth half-month published cycles, covering a 45-75 day market.

The FOB Middle East assessment covers a 45-75 day market.

The FOB Singapore and FOB Middle East prices are generally CFR Japan minus freight differential.

The mid-point of the FOB Singapore assessment is derived from the mid-point of the CFR Japan half month 3 quote minus the freight differential for medium range vessels between Singapore and Chiba, which is typically around $20/tonne. The range is then formed by adding a +1/ or -1 to the mid-point, which is in line with accepted market practice. The above freight differentials for Yeosu-Chiba and Singapore-Chiba are reviewed periodically.
The mid-point of the FOB Middle East assessment is derived from the mid-point of the CFR Japan half month 4 and 5 quote minus the freight differential between the Middle East and Chiba. The range is then formed by adding a +1/ or -1 to the mid-point, which is in line with accepted market practice. The freight differentials for Jubail + Mina Al Ahmadi/Shuaiba + Ras Tanura/Mina Al Ahmadi + Ruwais-Quoin Island-Chiba are reviewed periodically.

In the event of a public holiday in Singapore when Asian naphtha and jet kerosene markets are closed, prices are assessed unchanged from the previous trading day and are notional.

In Europe, the price assessments are based on actual recorded trades or, if there are no trades, bid/offer levels throughout the European day up to and including the afternoon trading window. Some assessments are the product of calculation alone, for example in markets where insufficient market activity takes place to permit price assessment, or where a market habitually itself sets prices according to a formula.

Assessments for naphtha FOB barges ARA, FOB cargoes Med and CIF cargoes Med are calculated as a differential to the CIF cargoes NWE assessment.

Assessments for premium gasoline CIF cargoes NWE, FOB cargoes NWE and unleaded regular CIF cargoes NWE are calculated as a differential to the premium gasoline FOB barges ARA assessment.

Fuel oil assessments for CIF cargoes NWE and FOB cargoes NWE are calculated as a differential to the FOB barges ARA range.

The jet kerosene cargoes FOB Med assessment is calculated as a netback of the cargoes CIF NWE price using spot freight rates sourced from shipbrokers for a clean modern 30,000 tonne cargo basis Augusta to Rotterdam.

For jet kerosene, gasoil and low sulphur diesel, the price assessments in NWE (cargoes CIF NWE and barges FOB ARA) are based on the premiums or discounts traded, bid for or offered throughout the day, and added to or deducted from the settlement price for the appropriate month of ICE Gasoil Futures Contract.

In Europe, residual fuel 3.5% fuel oil price assessments are derived from actual trades reported, bid/offer levels discussed and reported during the trading day. 1% fuel oil price assessments are calculated notionally on 3.5% fuel oil trades/bids/offers. 0.5% fuel oil prices are derived from actual trades reported, bid/offer levels and in case of no market activity, they are assessed using a formula calculation.

If there is a paucity of market activity, or if insufficient information is obtained to assess premiums/discounts, they will be left unchanged. Jet kerosene and gasoil prices will be driven by the ICE gasoil settlement alone.

For Low Sulphur Straight Run, premiums or discounts are quoted against ICE Brent crude oil futures. If there is a lack of market activity, or if insufficient information is obtained to assess premiums/discounts, they will be left unchanged.

In the US, the price assessments are derived from actual trades reported, bid/offer levels and differentials to the NYMEX futures contracts. For gasolines, the prices are linked to the settlement prices for the relevant month of the NYMEX Unleaded Gasoline Futures Contract. Jet kerosene, ultra low-sulphur diesel and heating oil are linked to the settlement prices for the relevant month of the NYMEX Heating Oil Futures Contract.

Residual fuel price assessments are derived from actual trades reported and bid/offer levels discussed and reported during the trading day.

Normalisation: In exceptional cases where the lack of liquidity represents a challenge in making assessments, editors can choose to adopt a normalisation process to include deals/trades information which falls outside

the standard specifications listed in the methodology pertaining to, but not limited to, volume, timing, delivery, payment terms, import tariffs, product specifications and other operational matters. The normalisation process adopted should be in line with standard practices and will only be used either as a reference for assessments, or be included as part of the assessment range. Where normalisation has occurred and has been reflected in a published price assessment, this will be described in the text of the report and the process will be described and justified.

Other principles and guidelines

Changes to methodology

All markets evolve and ICIS has a duty to ensure its methodologies for market-reporting evolve in step with markets.

ICIS therefore regularly conducts internal reviews of the appropriateness of its methodologies, based on industry feedback.

Draft changes are then made public and comment requested from industry participants, with a minimum one-month notice period, except where, exceptionally a *force majeure* event (natural disaster, war, bankruptcy of a trading exchange etc.) makes necessary a shorter notice period.
ICIS is committed to reviewing all comments on proposed methodology changes, but in some cases may find it necessary to alter its methodologies against the wishes of some market participants.
In addition, ICIS has a formal methodology consultation process. The company commits to holding this consultation every three years for the Reports. The date of the last consultation launched and the expiry date by which the company commits to conducting the next consultation can be seen at the top of the methodology document.

Please also refer to the Methodology Consultation Process section of the company's Compliance Manual. This contains detailed flow charts documenting the internal and external review and consultation process.

Consistency

ICIS achieves consistency between its assessors in exercising their judgement by requiring all assessors to follow this detailed methodology as well as the company's Editorial Standards document. In addition, ICIS reporters are required to complete standard training before undertaking the work of a market reporter. Every reporter's work is spot checked.

Data standards

ICIS has a public Data Standards Policy which covers the type and quality of information we ask market participants to report.

The following principles relate to ICIS oil products assessments and commentaries:

- Where possible, please allow access to active market traders and allow them to comment on active news stories.
- Where possible, please provide market data from both front and back-office functions.
- Where possible, please provide complete data and not a subsection.
- Flag inter-affiliate transactions.
- Flag sleeve trade.
- Flag spread trades.
- When a source or contact leaves the organisation please contact ICIS to the replacement (ICIS requests that both the source and the organisation contact them).
- Where information is not validated by the source (i.e. rumour) please indicate as such.

Delivery locations for price assessments

Locations for ICIS oil products assessments are chosen to reflect the concentration of liquidity on the traded markets.

Exercise of judgement

Apart from instances where data may be excluded (see below), ICIS will typically exercise judgement where market information about firm bids and offers or transactions is not available.
In most cases this will involve the application of spread trade information or prevailing market relationships, detailed in the specifications section for each grade in this document.

ICIS will also exercise judgement where only a bid or offer is available, or where a bid/offer spread is so wide as to be unhelpful in establishing tradable value. In both instances, spreads to other grades or prevailing market relationships will typically be used to assess the price. In these cases the assessment will still fall above the highest firm bid and below the lowest firm offer, as long as the bid and/or offer information meets all other criteria specified in this methodology.

Exclusion of data

In line with its Editorial Standards policy, ICIS reporters actively seek to identify anomalous market information and exclude it from the assessment process. For market assessments, this is done by the daily information gathering and verification process carried out by reporters, whereby market transaction, bid and offer information is confirmed and verified by multiple sources.

In assessing oil products markets, ICIS takes into consideration only arms-length transactions between non-affiliated parties.

ICIS does not accept bids or offers that are not firm. Any bid or offer which is demonstrably not firm will be disregarded and further bids or offers from the same counterparty may also be disregarded. In the Oil Products report, buying and selling indications are also included.

ICIS also excludes from its assessments transactions where ICIS market reporters have reasonable grounds to doubt that a transaction is representative of typical market behaviour: for example, where a deal is concluded disregarding the best bid or offer on the market; where there is evidence that a market participant has disclosed only part of its market activity to ICIS; or where a transaction lies outside the prevailing range of typical market activity.

ICIS records instances of anomalous data and reviews these instances on a regular basis with a view to determining if a pattern exists.
Where market reporters have concerns over the behaviour of a market participant, this will be escalated using the ICIS Escalation Process for Compliance and Regulatory Issues. This can be found in the company's Compliance Manual.

Market communication

ICIS communicates with a broad range of market participants – traders, brokers, back-office employees, supply managers, operations personnel and company executives – to obtain market information.

ICIS communicates with participants by telephone, email, instant messenger and in person. All instant messenger, email communication and notes of any face-to-face communication are archived and details of telephone communication are logged and data-based.

ICIS does not accept instant messenger communication from unknown parties, and reporters are required to verify a market participant's identity prior to using IM communication.

ICIS does not regard in any way as binding attempts by companies to restrict ICIS communication with their employees. ICIS has a duty to its subscribers to obtain the maximum possible amount of market information. ICIS treats all communication from market participants as confidential.

ICIS reporters are bound by a Code of Conduct to report to their superiors any coercive or threatening communication from market participants, or any offers of inducements of any kind intended to influence an assessment.

Where improper communication appears to have taken place, ICIS will communicate in the first instance with senior management at the company or companies involved, and if necessary with relevant market authorities.
ICIS expects the highest standards of propriety from all market participants, and regards all communications from market participants as representative of the views of an individual's employer.

ICIS is committed to the highest levels of customer service, and has a formal feedback and complaints policy, which can be viewed here:
http://www.icis.com/about/icis-feedback-policy

Market data verification

ICIS will always make best endeavours to confirm bids, offers and transactions with the relevant party/parties. ICIS attempts to cross-check all market data received from a buy or sell-side participant with a participant's trading counterparty.

Where both counterparties to a transaction cannot or will not confirm the data, ICIS seeks corroboration from other market sources.

Where transaction or bid/offer information has been received from a trader rather than from a company's back office, ICIS always seeks confirmation from other sources.
Where ICIS has grounds to doubt an item of market data, it may request further evidence that a transaction has taken place, including documented evidence.

ICIS treats transaction data received from active brokerages as confirmed. On occasion, in markets with low liquidity and a low number of counterparties, ICIS may choose to use unconfirmed data, but only in so far as it is aligned with other market information and comes from a source deemed reliable by ICIS based on previous interactions.

Minimum data threshold

Because of the sometimes thinly traded nature of some markets, ICIS does not have a minimum data threshold for its assessment methodologies in this market.
ICIS makes clear in its daily market comments whether it has assessed a price based on transaction or bid/offer data or whether it has used other forms of evidence or calculation.

Selection of participants

ICIS policy on general market data is that we welcome all information regardless of source or constitution as long as it is provided in good faith as true.

However, only active market participants verified as such by existing active industry participants and verified as a viable business by ICIS investigations will be allowed to contribute price data to ICIS for the purpose of assessing tradable market value under this methodology.

Unit prices and credit terms

Oil products in all regions is generally traded in US dollars/tonne, cents/lb or euros/tonne and therefore all price assessments are quoted on these bases. Typical credit terms for oil products are 30-90 days from Bill of Lading date.

Volumes

For each region ICIS publishes the standard cargo size, found in the specifications sections of this methodology document. Market information for cargoes conforming to these standards will be fully considered in the assessment process, providing the information conforms to all other specifications and conditions published in this methodology.

As indicated earlier, if ICIS has market information regarding cargoes outside of these published ranges, it will be normalised together with any standard-sized cargo information. In this case, ICIS will seek to establish whether there is a market price premium or discount for the non-standard cargo and apply this for the purpose of making its assessment.

General Methodology Guide for ICIS Chemicals

ICIS endeavours to provide a fair and timely representation of traded prices, which could be used as an effective reference point for market participants. As no two markets are the same, ICIS hopes to tailor methodologies which reflect the needs of each specific commodity market it covers based on factors such as, but not limited to, geography, trade flows/logistics, market size, product characteristics, participants and regulation. ICIS adopts an open policy to feedback regarding its methodology and will conduct reviews on a regular basis.

Spot range assessments

Published daily and weekly, these delineate the typically tradable range for a full working day or week.

The range is normally established using verified typical transactions and standardized atypical transactions.

In the event that no relevant transactions have occurred in the assessed period, ICIS will establish a range using bids and offers for typical spec material; and using established market relationships resulting from manufacturing economics, product linkages, freight and forward markets.

ICIS Mid-Point

Established referencing to ICIS prices often refer to the mid-point of the range as the fair representation of the commodity's traded value.

Weekly range assessments are marked in some ICIS reports with a "+" to distinguish them from spot close assessments (see below).

Instrument function: In liquid markets, ICIS would typically focus on the majority traded principle which would typically exclude deals considered to be outlier deals and unrepresentative of the general market consensus. Provides overview of market activity over course of one day in the case of daily reports, or one week in the case of weekly reports. Any change in assessment periods as a result of public holidays arising in any given week will be indicated via subscriber notes. Width of range offers insight into current levels of market volatility, and could also infer associated differentials caused by logistical and product variances.

ICIS endeavours to keep a tight range through maintaining detailed methodologies but this is difficult in thinly traded markets. Variable range width means assessment trades off accuracy for inclusivity, and transparency is reduced vis-a-vis spot close assessment. Suitable for inclusion in averaging mechanisms and market analysis tools.

Spot close assessments

Published daily and weekly, these reflect the transactable market value of the assessed product at the close of business for the assessed period (daily or weekly). Assessments are nevertheless shown as a low-high range, indicating the "space" in which a transaction is deemed to have been possible at the specified time. This low-high is typically tighter than that shown in a Spot Range assessment. The assessment is established taking into account:

· typical, repeatable transactions at arm's length between non-affiliated market participants;
· standardized "atypical" transactions, where it is possible to derive a typical equivalent market value for a transaction which does not conform to standard specifications;
· bids and offers for typical spec material;
· movements in related markets. In the absence of reliable, confirmable market information for a specific commodity, ICIS reserves the right to compute changes in specific assessments based on established relationships derived from manufacturing economics, product linkages, freight, and forward markets.
Weekly/Daily Spot Close assessments are marked in some ICIS reports with a "*" to distinguish them from Spot Range assessments (see above).

Where possible, editors will indicate any weightage used for spot close assessments which are weighted towards an active period.

Instrument function: Reflects most recent tradable market value with high transparency and high accuracy. Suitable for inclusion in averaging mechanisms and market analysis tools.

Indexes

In some markets, ICIS publishes volume-weighted averages – known as “indexes” or “indices” – of verified typical transactions over specified periods, either daily or weekly.

Inputs to an index are checked editorially for conformity to specification and statistical outliers are eliminated. See individual methodologies for details.

Instrument function: An index is a mathematically derived indicator of typical traded value over a given period. Because it is an average, the deviation from the last transacted value at the close of business could be substantial, depending on the time period assessed hence does not always provide a currently transactable price indication.

Contract reference prices

These are publicly announced, often single number, reference contract prices, agreed in multilateral negotiations and used as a base price for contractual sales of material by producers, typically between major producers and large end-users. ICIS publishes Contract Reference prices once confirmation is obtained of at least two agreements between recognised contract partners of significant size. Note that the date of publication can vary for each contract period depending on the speed of industry negotiations.

It is common for discounts to be associated with announced contract prices, which are usually not common knowledge.

Instrument function: Contract reference prices are used in some markets as the basis for monthly or quarterly contracts and form the basis for further negotiations between producers and buyers on volume-related discounts or premiums.

Contract price assessments

Published weekly, these reflect the achievable “base price” for contractual sales of material by producers, either to onward “distributors” or direct to end-users. Prices, typically valid either for one month or for three, are arrived at by negotiation between producers and buyers, and are updated by ICIS once

confirmation is obtained of agreement between major producers and typical buyers of the size indicated in individual specifications. Note that most contract prices are agreed as a base from which discounts or premiums are given to individual buyers, and that the size of these discounts typically varies based on the volume purchased over the contract period by the buyer.

In the event that market participants fail or decline to confirm outright contract price levels to ICIS, ICIS reserves the right to make its assessments of achievable contract prices based on established market relationships derived from manufacturing economics, product linkages, freight, and forward markets.

Instrument function: Provides view of baseline for currently prevailing contract mechanisms, where these are statically determined – that is, bilaterally negotiated contracts not based on automated averaging of spot market prices.

Distribution indicators

Published weekly for some markets, these reflect contract prices net of known discounts to typical-sized product distributors. See individual methodology statements for details.

Instrument function: Provides additional insight into typical prices paid by buyers in statically determined (i.e. bilaterally negotiated contracts not based on averaged spot market prices).

Margins

Published in ICIS Margin Reports, margin prices reflect computed differentials between different products related through the processing chain.

Instrument function: Provides insight into supply chain economics and industry profitability. A useful reference for baseline production cost calculations, particularly by tracking the margin shifts across different periods. Theoretically determines scope of pricing further along processing chain. Note that market behaviour sometimes violates apparent margin economics. Suitable for in-depth market and industry analysis.

List or posted prices

Published weekly for some markets, these are released by manufacturers as suggested selling prices. In many cases, these prices are reduced after negotiations with buyers. Price changes are sometimes used as important references for negotiations in thinly traded markets.

Price changes

The change in prices from the previous period is indicated in blue as an increase (+), in red as a decrease (-) or no change (n/c) or not assessed (n/a).

Changes for prices at the low end of each range are shown at the left and changes for prices at the high end of each range are shown at the right. Changes in weekly spot prices represent the changes from the previous week and changes in monthly or quarterly contract prices represent the change from the previous month or quarter.

Report name

Some reports cover a range of products. Trade in product of inferior quality (off-spec) is taken into consideration when it affects the market for material that meets standard specifications. Reference to off-spec/distressed cargo is at the discretion of the editor.

Periods referred to in contract price quotations are either months (noted by standard abbreviations) or quarters of the calendar year.

Q1 January February March
Q2 April May June
Q3 July August September
Q4 October November December

Feedstock prices

Contract prices for certain feedstocks are shown where appropriate. In all cases where feedstock prices are shown, they have been taken from the current ICIS pricing report for the product.

Date

ICIS pricing reports are written on the day of publication. The only exceptions are when a public holiday impacts the market. In some circumstances reports will be compiled one or a maximum two days early. When this occurs, it is clearly marked on the report. ICIS pricing provides daily and weekly pricing reports. Deadlines (unless otherwise specified in the methodology) are 1700 hours local time in London, Singapore, Shanghai and Houston. Market close prices refer to this deadline, unless specified otherwise.

Contract price assessments are updated in reports as soon as possible after confirmation is obtained of contract settlement. Because the amount of time required to reach contract agreement varies from month to month, it is not possible to guarantee publication of monthly contract prices at the same point in each month.

Note that information received after the relevant close cannot be used for assessment purposes, nor can a correction be issued based on subsequently received information.
The date of publication is not altered in the event of public holidays. All weekly

reports are published at least 50 times per year. Certain reports are not published during a two-week period in late December/early January. Daily reports are published five times per week, but may not appear on certain days due to public holidays. Please refer to the ICIS pricing publishing schedule for more detailed information.

Geographical regions

ICIS pricing normally covers products on a regional basis to ensure the main drivers impacting the market in any given area are adequately covered. Reports are currently issued covering Europe, the Middle East, Asia or Asia-Pacific, China, India, West Asia, the United States or North America, Latin America, and the Former Soviet Union.

Within these broad areas the most common quotations comprise:

NWE	mainland Northwest Europe (N. France, N. Germany, Benelux)
Med	Southern France, Spain, Italy
NE Asia	Taiwan, Korea, Japan, China
SE Asia	Singapore, Philippines, Indonesia, Malaysia, Thailand, Vietnam
West Asia	Pakistan, India
East Asia	NE Asia & SE Asia
GCC	Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, UAE
E. Med	Greece, Israel, Egypt, Syria, Jordan, Lebanon
FSU	Former Soviet Union: Russia, Ukraine, Belarus, Uzbekistan, Kazakhstan
USG	US Gulf
CMP	China Main Port
Northern Africa	Morocco, Algeria, Tunisia, Libya, Egypt, Sudan
Eastern Africa	Eritrea, Djibouti, Somalia, Kenya, Tanzania
Southern Africa	Namibia, Mozambique, South Africa
Western Africa	Mauritania, Senegal, The Gambia, Guinea-Bissau, Guinea, Sierra Leone, Liberia, Côte d'Ivoire, Ghana, Togo, Benin, Nigeria.

Quotation basis

Prices are quoted with reference to the terms and location of delivery. The period of delivery is also quoted for contract prices. Assessment windows vary from product to product for spot sales. See specific product entries in the Methodology for further details.

Incoterms devised by the International Chamber of Commerce are mainly used to indicate what costs are included in the price. Assessments do not include Value Added Tax (VAT). Terms regularly used in ICIS pricing reports can be found in the Glossary.

Units

Prices are quoted in the currency and unit measure relevant to the particular market. Most chemicals are quoted in US dollars per metric tonne ($/MT), although euros per metric tonne (€/MT), US cents per pound (US CTS/LB) or US cents per gallon (US CTS/GAL) are frequently used. Historical data includes assessments previously measured in European currencies superseded by the euro.

Conversions (weights and measures)

Prices are converted to other currencies and unit measures for ease of reference. Conversions are derived from the quoted price assessments using standard rates of conversion and current exchange rates. Conversions involving weights and volumes are calculated within industry acceptable ranges, which vary from product to product according to specific gravity (e.g. USD/MT to CTS/GAL).

Foreign exchange rates

ICIS provides exchange rates for a variety of international currencies that are time aligned with publication of our pricing reports and consistent for analytical use when applied to historical pricing data. Because of our publishing schedule, certain rates used in some reports may be changed as data moves into a historical database. The ICIS methodology used is as follows:

Rates are not established by ICIS pricing but are published by arrangement with Xenon (www.xe.com). The exchange rates shown are those in effect at the time and date indicated, normally around 17:15 hours in London on the day of publication. They are not a mean or average of exchange rates in effect during the period since the report was last published, but reflect a mean of the bid/offer at the time taken for that particular day. Exchange rates published by ICIS pricing are intended only as a reference and rates offered by local banks or other financial institutions may vary.

- Exchange rates quoted at the foot of the text in ICIS pricing reports are mid-market rates, quoted to two decimal places, applicable on the date of publication. ICIS pricing also offers a real-time currency conversion tool via XE.com, with a click-through link from the pricing reports, to enable subscribers to make quick exchange calculations.

- Exchange rates used for the current day's price assessments in compiling the charts contained within ICIS pricing reports are mid-market rates issued at 01:00 UTC on the date of publication. This preliminary exchange rate is used to allow charts to be produced ahead of 16:00 UTC.

- Exchange rates applied to historical data are mid-market rates issued at 16:00 UTC on the date of publication.

ICIS pricing also offers a real-time currency conversion tool, with a click-through link from the pricing reports, to enable subscribers to make quick exchange calculations.

Non-market price adjustments

Non-market price adjustments are necessary on the rare occasions when after careful consideration it is determined that the level of a price assessment is deemed to have become unrealistic. Before any decision is taken to adjust a price level, a broad spectrum of market participants is polled for their views on both the necessity and potential impact of any planned change and its timing.

Once it is clear an adjustment is required, ICIS pricing posts a notice telling subscribers it intends to make the change, and asks for any feedback over a two week period. After two weeks, and if it is decided to proceed, a second notice is posted informing subscribers that the adjustment will be made two weeks later. All price adjustments take place with a minimum four weeks public notice to subscribers.

Once the adjustment has taken place it is prominently mentioned in the price report it applies to. ICIS also adds a note to the online Price History to explain the apparent step-change in prices. It is important to note that price change deltas remain unaffected by any adjustment and the price trend remains accurate.

Contract Price Change Deltas

In some markets, contract settlements – especially quarterly ones – can evolve further after the initial assessment. This may mean that the actual market movement to the next settlement may not be fully aligned with the mathematical difference between the reported prices in one period and the next. In such cases, ICIS may make an editorial decision to publish the new

period's price range without including a delta value in the price table. The reasons for doing so and the indications of the actual market movement would be discussed in the text of the report. The delta box in these cases would show as “not assessed” (n/a).

Price history – key changes to methodology for contract prices

ICIS price history has been modified such that contract price assessments now relate to the period to which they apply irrespective of their settlement date. This change has been applied retrospectively to all quotes, including discontinued quotes.

As a result:

For a monthly contract (or quarterly) quote selected as frequency ‘C’ and downloaded as csv or displayed as a table in the original quoted currency the report date is given as the first of the month (or quarter). For a contract selected as frequency ‘C’ and displayed as a graph, a ‘stepped’ chart of the value (or average of the low and high where applicable) is displayed with the steps occurring on the first of the month (or quarter).

For a contract quote selected as frequency ‘C’ in any currency other than the original a single monthly (or quarterly) value (low, high and average) is displayed. This value is derived using an average of the foreign exchange rates taken at 16:00 UTC (GMT) on each of the publication dates within the month (or quarter). For the current period, the average foreign exchange rates for all the publication dates within the period to date are used.

For a contract quote selected as frequency ‘W’, the report date is given as the ICIS pricing weekly report publication date – the contract value (low, high and average) applicable to that month (or quarter) is displayed (which, depending on settlement date, may differ from the contract value reported at the time in that week’s ICIS pricing report). For a contract quote selected as frequency ‘W’ and displayed as a graph, a ‘stepped’ chart is displayed with the steps occurring on the first publication date within the month (or quarter).

For a contract quote selected as frequency ‘W’ in any currency other than the original, the contract value is converted for each week using the foreign exchange rate taken at 16:00 UTC (GMT) on the publication date.

Where a contract for the current period has not yet settled, no contract value shows in a weekly price history series – price history terminates at the end of the period to which the last settled contract price applies.

Where a contract settles for a future period, it does not display in price history until publication of the first ICIS pricing report within that period.

Where an initial contract value is reported for a period, and subsequently revised, the latter (or latest) value is taken as the contract value for the whole period.