

Asian Aromatics Daily Pricing and Methodology

Methodology and specifications
Effective July 2022

OPIS

A DOW JONES COMPANY

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Introduction

This statement of methodology reflects fundamental principles that form the foundation of OPIS Asia Aromatics Daily. It includes detailed information on process, data collection, terms and conditions of price acceptance and product specifications.

The overarching goal of OPIS daily chemical price assessments is to provide market participants with a **trusted and independent benchmark**. OPIS has no stake in any commodity transactions, is not funded by oil and chemical industry initiatives, and strictly adheres to antitrust guidelines determined by independent legal counsel.

As part of the price assessment process, OPIS market editors are required to exercise best judgment and **adherence to the methodology** so as to ensure the reliability of the data and market compilation process.

The methodology is continually evolving to reflect changing market realities and OPIS takes full responsibility for keeping this statement current.

The OPIS Asia Aromatics Daily service lists Asia daily spot market price assessments for the following aromatics markets:

- **Benzene FOB Korea (ASTM D-2359)**
- **Benzene China Domestic (ASTM D-2359)**
- **Mixed Xylenes FOB Korea (ASTM D-843 Max EB content 18%)**
- **Paraxylene CFR China (ASTM D2360 99.7% purity)**
- **Styrene Monomer CFR China (ASTM D-2827 99.7% purity)**
- **Styrene Monomer China Domestic (ASTM D-2827 99.7% purity)**
- **Toluene FOB Korea (Nitration grade ASTM D-841 99.5% purity)**
- **Toluene China Domestic (ASTM D-841 99.5% purity)**

All price assessments are subject to compliance with standard trading conditions regarding **quality, parcel size, loading/delivery ports, laycans and credit terms** as determined by standard market conventions. For OPIS standard trading conditions and criteria please refer to the *Methodology Product table*.

Product	Daily	Weekly	Monthly	Currency Type	Basis	Location	Rollover date	Assessment Unit Dates	Cargo Size	Quality	Ports terms	Credit	Calculation / Assessment
Benzene Laycan 1	x			USD	Spot	FOB Korea	On 1st or 16th of current month (M1)	From first to last day of said laycan.	3,000 MT	ASTM D-2359	Yeosu, Ulsan, Daesan, Incheon, LC at sight		Outlined in APAC Daily Aromatics Methodology Document
Benzene Laycan 2	x			USD	Spot	FOB Korea	16th of current month (M1) or 1st of next month (M2) if Laycan 1 starts on the 16th of current month.	From first to last day of said laycan.	3,000 MT	ASTM D-2359	Yeosu, Ulsan, Daesan, Incheon, LC at sight		Outlined in APAC Daily Aromatics Methodology Document

Benzene Laycan 3	x			USD	Spot	FOB	Korea	1st or 16th of the month two weeks after Laycan 2	From first to last day of said laycan.	3,000 MT ASTM D-2359	Yeosu, Ulsan, Daesan, Incheon	LC at sight	Outlined in APAC Daily Aromatics Methodology Document
Benzene Laycan 4	x			USD	Spot	FOB	Korea	1st or 16th of the month two weeks after Laycan 3	From first to last day of said laycan.	3,000 MT ASTM D-2359	Yeosu, Ulsan, Daesan, Incheon	LC at sight	Outlined in APAC Daily Aromatics Methodology Document
Benzene Laycan 5	x			USD	Spot	FOB	Korea	1st or 16th of the month two weeks after Laycan 4	From first to last day of said laycan.	3,000 MT ASTM D-2359	Yeosu, Ulsan, Daesan, Incheon	LC at sight	Outlined in APAC Daily Aromatics Methodology Document
Benzene Laycan 6	x			USD	Spot	FOB	Korea	1st or 16th of the month two weeks after Laycan 5	From first to last day of said laycan.	3,000 MT ASTM D-2359	Yeosu, Ulsan, Daesan, Incheon	LC at sight	Outlined in APAC Daily Aromatics Methodology Document
Benzene Marker Price	x	x	x	USD	Spot	FOB	Korea		N/A				Average of L/H for laycans 2 and 3
Benzene Daily rolling Spot Avg	x		x	USD	Spot	FOB	Korea	1st day of current month		MT		ASTM D-2359	Average of 'Daily Marker Price' for all publications within given calendar month
Product	Daily	Weekly	Monthly	Currency	Type	Basis	Location	Rollover date	Assessment Dates	Cargo Unit Size	Quality	Ports	Credit Calculation / terms Assessment
Benzene China domestic price	x	x	x	YUAN	Spot	ex-tank	E. China	Daily	3-10 days from assessment date	50-100 MT	ASTM D-2359	Ningbo, Jiangyin, Changzhou, Taizhou, Zhangjiagang	Cash APAC payment Daily Aromatics LC at sight Methodology Document
Benzene Daily China domestic price rolling Spot Avg	x		x	YUAN	Spot	ex-tank	E. China	1st day of current month		50-100 MT	ASTM D-2359		Average of daily assessments from first to last trading day of current month
Benzene Import Parity	x	x	x	USD	Spot	ex-tank	E. China	Daily		50-100 MT	ASTM D-2359		Calculation of domestic Yuan value to USD based on daily PBOC forex rate after deducting Yuan 100

												(handling fee), 2% import duty and 17% VAT	
Benzene Daily China Import Parity rolling Spot Avg	x		x	USD	Spot	ex-tank	E. China	1st day of current month		50-100 MT	ASTM D- 2359	Average of daily import parity calculation from first to last trading day of current month	
Toluene Laycan 1	x			USD	Spot	FOB	Korea	1st or 16th of current month (M1)	From first to last day of said laycan.	2,000 MT	Nitration Yeosu, Ulsan, grade Daesan ASTM D- 841 (99.5% purity)	LC at sight	Outlined in APAC Daily Aromatics Methodology Document
Toluene Laycan 2	x			USD	Spot	FOB	Korea	16th of current month (M1) or 1st of next month (M2) if Laycan 1 starts on the 16th of current month.	From first to last day of said laycan.	2,000 MT	Nitration Yeosu, Ulsan, grade Daesan ASTM D- 841 (99.5% purity)	LC at sight	Outlined in APAC Daily Aromatics Methodology Document
Toluene Laycan 3	x			USD	Spot	FOB	Korea	1st or 16th of the month two weeks after Laycan 2	From first to last day of said laycan.	2,000 MT	Nitration Yeosu, Ulsan, grade Daesan ASTM D- 841 (99.5% purity)	LC at sight	Outlined in APAC Daily Aromatics Methodology Document
Toluene Laycan 4	x			USD	Spot	FOB	Korea	1st or 16th of the month two weeks after Laycan 3	From first to last day of said laycan.	2,000 MT	Nitration Yeosu, Ulsan, grade Daesan ASTM D- 841 (99.5% purity)	LC at sight	Outlined in APAC Daily Aromatics Methodology Document
Toluene Marker Price	x	x	x	USD	Spot	FOB	Korea		N/A				Average of L/H for laycans 2 and 3
Toluene Daily rolling Spot Avg	x		x	USD	Spot	FOB	Korea	1st day of current month		2,000 MT	Nitration grade ASTM D841 (99.5% purity)		Average of 'Daily Marker Price' for all publications within given calendar month

Toluene China domestic price	x	x	x	YUAN	Spot	ex-tank	E. China	Daily	3-10 days from assessment date	50-100 MT	Nitration grade ASTM D-841 (99.5% purity) Zhenjiang	Nanjing, LC at sight	Daily Aromatics Methodology Document
Toluene Daily China domestic price rolling Spot Avg	x		x	YUAN	Spot	ex-tank	E. China	1st day of current month		50-100 MT	Nitration grade ASTM D-841 (99.5% purity)	Average of daily grade assessments from first to last trading day of current month	
Toluene Import Parity	x	x	x	USD	Spot	ex-tank	E. China	Daily		50-100 MT	Nitration grade ASTM D-841 (handling fee), 2% import duty and	Calculation of domestic Yuan value to USD based on daily PBOC forex rate after deducting	ASTM D-841 (99.5% purity) Yuan 100 17% VAT

Product	Daily	Weekly	Monthly	Currency Type	Basis	Location	Rollover date	Assessment Dates	Cargo Unit Size	Quality	Ports terms	Credit	Calculation / Assessment
Toluene Daily China Import Parity rolling Spot Avg	x		x	USD	Spot ex-tank	E. China	1st day of current month		50-100 MT	Nitration grade ASTM D-841 (99.5% purity)			Average of daily import parity calculation from first to last trading day of current month
Isomer MX Laycan 1	x			USD	Spot FOB	Korea	1st or 16th of current month [M1]	From first to last day of said laycan.	3,000 MT	ASTM D843 (Max EB content 18%)			Outlined in APAC Daily Aromatics Methodology Document
Isomer MX Laycan 2	x			USD	Spot FOB	Korea	16th of current month [M1] or 1st of next month [M2] if Laycan 1 starts on the 16th of current month.	From first to last day of said laycan.	3,000 MT	ASTM D-843 Yeosu, Incheon (Max EB content 18%)	Ulsan, Daesan, LC at sight		Outlined in APAC Daily Aromatics Methodology Document
Isomer MX Laycan 3	x			USD	Spot FOB	Korea	1st or 16th of the month two weeks	From first to last day of said laycan.	3,000 MT	ASTM D-843 Yeosu, Incheon (Max EB content 18%)	Ulsan, Daesan, LC at sight		Outlined in APAC Daily Aromatics Methodology Document

										after Laycan 2	
Isomer MX x Laycan 4		USD	Spot FOB	Korea	1st or 16th of the month two weeks after Laycan 3	From first to last day of said laycan.	3,000 MT	ASTM D-843 (Max EB content 18%)	Ulsan, Daesan, Yeosu, Incheon	LC at sight	Outlined in APAC Daily Aromatics Methodology Document
Isomer MX x Marker Price	x	USD	Spot FOB	Korea		N/A					Average of Laycans 2 and 3
Isomer MX x Daily rolling Spot Avg	x	USD	Spot FOB	Korea	1st day of current month		3,000 MT	ASTM D843 (Max EB content 18%)			Average of 'Daily Marker Price' for all publications within given calendar month
Paraxylene x Laycan 1		USD	Spot CFR	China	1st or 16th of current month (M1)	From first to last day of said laycan.	5,000 MT	ASTM D2360 (99.7% purity)	Ningbo, Shanghai, Zhuhai, Jianguyin, Lianyungang, Xiamen, Dalian	LC 30 days APAC for Asia Aromatics origin	Outlined in Daily Aromatics Methodology LC Document for India/Mideast LC 90 days for deep sea
Paraxylene x Laycan 2		USD	Spot CFR	China	16th of current month (M1) or 1st of next month (M2) if Laycan 1 starts on the 16th of current month.	From first to last day of said laycan.	5,000 MT	ASTM D2360 (99.7% purity)	Ningbo, Shanghai, Zhuhai, Jianguyin, Lianyungang, Xiamen, Dalian	LC 30 days APAC for Asia Aromatics origin	Outlined in Daily Aromatics Methodology LC Document for India/Mideast LC 90 days for deep sea
Paraxylene x Laycan 3		USD	Spot CFR	China	1st or 16th of the month two weeks after Laycan 2	From first to last day of said laycan.	5,000 MT	ASTM D2360 (99.7% purity)	Ningbo, Shanghai, Zhuhai, Jianguyin, Lianyungang, Xiamen, Dalian	LC 30 days APAC for Asia Aromatics origin	Outlined in Daily Aromatics Methodology LC Document for India/Mideast LC 90 days for deep sea
Paraxylene x Laycan 4		USD	Spot CFR	China	1st or 16th of the month two weeks after Laycan 3	From first to last day of said laycan.	5,000 MT	ASTM D2360 (99.7% purity)	Ningbo, Shanghai, Zhuhai, Jianguyin, Lianyungang, Xiamen, Dalian	LC 30 days APAC for Asia Aromatics origin	Outlined in Daily Aromatics Methodology LC Document for India/Mideast LC 90 days for deep sea

Paraxylene x Laycan 5	USD	Spot	CFR	China	1st or 16th of the month two weeks after Laycan 4	From first to last day of said laycan.	5,000 MT ASTM D2360 (99.7% purity)	Ningbo, Shanghai, Zhuhai, Jianguyin, Lianyungang, Xiamen, Dalian	LC 30 days Outlined in APAC for Asia Aromatics origin Methodology LC 60 days Document for India/Mideast LC 90 days for deep sea
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Product	Daily	Weekly	Monthly	Currency Type	Basis	Location	Rollover date	Assessment Unit Dates	Cargo Size	Quality	Ports	Credit terms	Calculation / Assessment
Paraxylene x Laycan 6				USD	Spot	CFR	China	1st or 16th of the month two weeks after Laycan 5	From first to last day of said laycan.	5,000 MT ASTM D2360 (99.7% purity)	Ningbo, Shanghai, Zhuhai, Jianguyin, Lianyungang, Xiamen, Dalian	LC 30 days for Asia origin LC 60 days for India/Mideast LC 90 days for deep sea	Outlined in APAC Daily Aromatics Methodology Document
Paraxylene x Marker Price	x		x	USD	Spot	CFR	China		N/A				Average of L/H for laycans 2 and 3
PX Daily rolling Spot Average	x		x	USD	Spot	CFR	China	1st day of current month		5,000 MT ASTM D2360 (99.7% purity)			Average of 'Daily Marker Price' for all publications within given calendar month
Styrene Laycan 1	x			USD	Spot	CFR	China	1st or 16th of current month (M1)	From first to last day of said laycan.	2,000 MT ASTM D-2827 (99.7% purity)	Ningbo, Jianguyin, Zhangjianggang, Nantong	LC 90 days	Outlined in APAC Daily Aromatics Methodology Document
Styrene Laycan 2	x			USD	Spot	CFR	China	16th of current month (M1) or 1st of next month (M2) if Laycan 1 starts on the 16th of current month.	From first to last day of said laycan.	2,000 MT ASTM D-2827 (99.7% purity)	Ningbo, Jianguyin, Zhangjianggang, Nantong	LC 90 days	Outlined in APAC Daily Aromatics Methodology Document
Styrene Laycan 3	x			USD	Spot	CFR	China	1st or 16th of the month two weeks after Laycan 2	From first to last day of said laycan.	2,000 MT ASTM D-2827 (99.7% purity)	Ningbo, Jianguyin, Zhangjianggang, Nantong	LC 90 days	Outlined in APAC Daily Aromatics Methodology Document
Styrene Laycan 4	x			USD	Spot	CFR	China	1st or 16th of the month two	From first to last day of said laycan.	2,000 MT ASTM D-2827 (99.7% purity)	Ningbo, Jianguyin, Zhangjianggang, Nantong	LC 90 days	Outlined in APAC Daily Aromatics Methodology

								weeks after Laycan 3										Document
Styrene Laycan 5	x			USD	Spot	CFR	China	1st or 16th of the month two weeks after Laycan 4	From first to last day of said laycan.	2,000 MT	ASTM D-2827 [99.7% purity]	Ningbo, Jiangyin, Zhangjianggang, Nantong	LC 90 days					Outlined in APAC Daily Aromatics Methodology Document
Styrene Laycan 6	x			USD	Spot	CFR	China	1st or 16th of the month two weeks after Laycan 5	From first to last day of said laycan.	2,000 MT	ASTM D-2827 [99.7% purity]	Ningbo, Jiangyin, Zhangjianggang, Nantong	LC 90 days					Outlined in APAC Daily Aromatics Methodology Document
Styrene Marker Price	x	x	x	USD	Spot	CFR	China		N/A									Average of L/H for laycans 2 and 3
Styrene Daily rolling Spot Average	x		x	USD	Spot	CFR	China	1st day of current month		2,000 MT	ASTM D-2827 [99.7% purity]							Average of 'Daily Marker Price' for all publications within given calendar month
Styrene China domestic price	x	x	x	YUAN	Spot	ex-tank	E. China	Daily	3-10 days from assessment date	50-100 MT	ASTM D2827 [99.7% purity]	Ningbo, Jiangyin, Zhangjianggang, Nantong	Cash payment LC at sight					Outlined in APAC Daily Aromatics Methodology Document
Styrene Daily China domestic price rolling Spot Avg	x		x	YUAN	Spot	ex-tank	E. China	1st day of current month		50-100 MT	ASTM D-2827 [99.7% purity]							Average of daily assessments from first to last trading day of current month
Styrene Import Parity	x	x	x	USD	Spot	ex-tank	E. China	Daily		50-100 MT	ASTM D-2827 [99.7% purity]							Calculation of domestic Yuan value to USD based on daily PBOC forex rate after deducting Yuan 100 (handling fee), 2% import duty and 17% VAT
Styrene Daily China Import Parity rolling Spot Avg	x		x	USD	Spot	ex-tank	E. China	1st day of current month		50-100 MT	ASTM D2827 [99.7% purity]							Average of daily import parity calculation from first to last trading

Daily Price Discovery Process

The Asian price assessment methodology seeks to capture full day transactions, bids and offers for spot market **benzene, mixed xylenes, paraxylene, styrene monomer and toluene**. OPIS market editors will proactively poll market participants via electronic instant messaging (such as ICE Chat, WeChat, Yahoo), email, telephone or face-to-face conversation in order to discover price data throughout the standard trading day of 9:00 a.m. – 5:00 p.m. Singapore time (SGT).

Market editors will always attempt to collect data from a broad cross section of the Asian aromatics sector, including producers, consumers, traders and brokers, so that OPIS is not reliant on one source for data.

In order to meet publication deadline, OPIS reserves the right not to include transactions received **after 5:00 p.m.** Singapore time for consideration in the day's final price assessment process or the revision process. Information received beyond this time will be used at the market editor's discretion only.

Market participants are encouraged to report transactions, **real-time** bids and offers and live market bid-offer ranges directly to OPIS. The expressions of bids and offers are regarded as open and executable to the **market at large**. OPIS will attempt to gather as much price information from the marketplace as possible and from as many sources as it can so that data is not being provided from any one source. OPIS reserves the right to **re-publish** the market information collected, and closely track the evolution of indicative values throughout the business day. All

data collected is **time-stamped** and **archived** for review.

Price Assessment Laycans

OPIS tracks market activity throughout the Asia Pacific business day to derive an assessment of spot market prices levels for specified delivery/loading laycans as outlined in the Methodology Product table

Price Assessment Criteria

OPIS prices are assessed based on the range of confirmed physical cargoes transacted and reported during the Asia Pacific working day (9am-5pm Singapore time) for the relevant assessment laycans. Where only one deal has been confirmed, that will form the price assessment range for the day. Where there is a range of deals for the same month, the lowest and highest traded values will form the range. On occasions where there is extreme price volatility or severe illiquidity in petrochemical markets, OPIS will assess prices at the market editors' discretion as opposed to traded value or last heard notional ranges.

Highest priority will be given to transactions that are transparent and open to any reputable counterparty with proper financial and logistical resources. For a deal to be used in the price assessment, it must be confirmed by a source that has been vetted and deemed an approved market source for the product in question by OPIS. A good faith attempt will always be made to "confirm" both sides of any transaction (meaning that the

buyer and seller in the transaction have been identified and corroborate the price and terms of the sale). Deals of all types that are confirmed to OPIS with the stipulation that they are not for wider publication will not be used within the price assessment.

All transactions are to be "physical" product; the sale of "paper" product (meaning a financial arrangement where no physical volume is expected or required to be exchanged) will not be included in the price range.

Any transaction that has logistic restrictions, quality or specification issues, different currency, load size, shipping terms to those specified in the methodology product table or any other special considerations will not be used to determine the posted range. Bids and offers that are restrictive to select buyer or seller will be ranked lower as compared to bids and offers that are transparent and open to the market at large.

All buy/sell transactions; time and/or location swaps; any transactions having options which could meaningfully impact the commercial value; will be ignored if discovered, regardless of the price assigned.

If a transaction appears to be "out of market" (meaning significantly different in price than would be expected based on other recently confirmed price points), OPIS may elect to ignore the transaction following review of the data. OPIS will also review prior expressions of buying and selling interests to examine the circumstances leading to the trade in order to determine the integrity of the transaction.

Transactions must be conducted at arm's length whereby the buyer and seller are not related in any way by means of share ownership or affiliation in each other's company.

All bona fide transactions can be considered for index compilation, regardless of whether it is concluded by a natural buyer (end-user), seller (producer) or trader. If a transaction is identified by OPIS or market participants as anomalous or suspicious, it will be excluded from the assessment process until the situation can be clarified. This can include repetitive transactions between two parties within a single trading session, whereby the parties alternately buy and sell from each other. If it is verified that the transaction is above board by the next business day, OPIS will retroactively revise its marker assessment to include the deal.

On days when there have been no confirmed transactions a "notional" price will be posted. A notional price reflects the market editor's best estimate of price or price range where a transaction could have occurred between an interested buyer and interested seller. The main guide for assessment will be prevailing bids and offers, if any have been reported. Highest priority will be given to bids and offers that are transparent and open to any reputable counterparty with proper financial and logistical resources.

Both repetitive and incremental bids and offers that conform to standard market conventions, as well as retracted bids and offers, will be included for consideration in the OPIS price assessment process.

Notional postings are indicated by the letter "n" located in the right-hand column of the price range in question.

Daily Marker Price

A daily 'marker' price will be published in the Asia market daily service aromatics report for benzene, mixed xylenes, paraxylene, styrene monomer and toluene. The marker is a calculated price as

opposed to an assessment and is calculated for both Asian wide market price and the China Domestic Market. The marker price is calculated using a simple arithmetical average of the low and high assessments for **laycan 2 and laycan 3** for all products.

Monthly Spot Averages

The Monthly Spot Averages are calculated for benzene, mixed xylenes, paraxylene, styrene monomer and toluene using a simple arithmetical average of the daily marker price as featured in each daily report for any given calendar month. The current month indexes are re-calculated each day during a month and then finalized at the end of that month. The cycle then continues for the new month. An eleven-month history is also shown.

China Import Parity Price

An Import Parity Price will be published alongside the China domestic price daily. This is a calculated price based on the assessed China domestic price. The price is derived by the following formula:
Calculation of domestic Yuan value to USD is based on daily PBOC forex middle rate after deducting Yuan 100 (handling fee), 2% import duty and 17% VAT

Example: Import parity for RMB5,000 will be:
 $(5,000-100)/1.17/1.02/6.9125 = \594

Illiquid Markets

OPIS recognizes that petrochemical markets can suffer from periods of illiquidity. In the absence of firm bids, offers and transactions, OPIS will still poll market participants for expressions of interest to trade. Due to **tight correlation** between certain markets, OPIS also tracks **spread values** in upstream feedstock, downstream products, co-products and alternative products.

Other factors that can influence prices, such as supply/demand data, macroeconomic issues and geopolitics will also be filtered for market clarity. Accordingly, in certain assessments where **insufficient market data** exists, OPIS market editors will exercise best judgment to **quantify** these **relative values** in the process of compiling the price index.

If certain markets are shut because of public holidays, OPIS market editors may elect to **retain** the price assessment values published on the previous trading day.

Judgment guidelines

As part of the price reporting process, market editors are required to use their professional judgment, to ensure the reliability of the data and price assessment compilation process. OPIS has set forth guidelines throughout this Methodology to ensure that the use of judgment is consistent and fair. These guidelines can be found in the following sections of this Methodology:

- Anomalous or suspicious transactions
- Additional checks and analysis
- Comparative markets
- Transactions and survey weightings

OPIS has developed Editorial Standards that details the process for compiling each specific price assessment. In addition, OPIS has developed a programme of training and oversight of market editors that helps ensure uniformity in the application of judgment. The key elements of this programme include:

1. An initial course of training that explains and defines the parameters for the exercise of judgment
2. Suitably sourced staffing to ensure proper backup for sick days, vacations, etc.
3. Oversight of reporting teams by experienced market editors that are involved in daily mentoring and assisting in the application of judgment

4. A requirement that market editors sign-off on all price assessments

Market data application

The specifications defined in the methodology and data used to compile each price assessment is deemed to be the most representative for that market. OPIS will utilize various types of market data in compiling its price assessments, including:

- Transactions
- Bids and offers
- Other market information

Transaction information is the preferred source of data for the price assessments. However, depending on the liquidity of the markets being assessed, other information can be and is used, such as bids and offers and other market information. This can be in combination with transactions, or can substitute transactions, depending on the market liquidity and specific market circumstances.

Consequently, in most markets there will be a relatively higher rank given to transactions over bids and offers and other market information in the compilation process.

Verification of transaction data

Market editors carefully evaluate all data gathered before it is used in the price compilation process. These data inputs include transactions, bids, offers, volumes, counterparties, specifications and any other information that contributes materially to the determination of a price assessment. Specific to transactions and bids and offers, market editors seek to verify and validate the price, volume, specifications, and location basis, and with regard just to transactions, the counterparties. Market editors examine all the reported transactions to avoid duplication.

In order to promote transparency in the markets, OPIS seeks to inform the market of any deals it

identifies and significant movements of bids and offers through the relevant OPIS publications.

Scrutiny of transactions

OPIS has created guidelines that control the exercise of judgment by its market editors. Market editors are trained to identify anomalous or suspicious transactional data that merit further investigation to verify if they are bona fide data for inclusion in the index compilation process. If a transaction has been identified by a market editor as anomalous or suspicious, it will be escalated to the managing editor. Further checks and analysis will be conducted by the markets editor when an anomalous or suspicious transaction is identified for further examination.

Anomalous or suspicious market data

The following types of market data have been identified by OPIS as potentially anomalous or suspicious:

- Transactions not transacted at arm's length, including deals between related parties or affiliates
- Transaction prices that fall outside of the generally observed bids and offers that operated throughout the trading period
- In the absence of observed bids and offers, transaction prices that deviate significantly from transactions seen for that trading period
- Assessments of fair value that fall outside the reasonable parameters set by transactional information
- Transactions that are suspected to be a leg of another transaction or in some way

contingent on an unknown transaction (excluding EFP¹ and sleeve trades²).

- Transactions, bids and offers that deviate from the typical transaction volumes seen in that market.
- Any other transaction details that appear to stray from the usual trading behaviour seen in that market, including, but not limited to:
- repeated trading activity in periods or pools of potentially low liquidity, such as the margins of the defined trading window (such as very early or very late deals),
- Counterparties not typically seen, – divergent specifications and – unusual delivery locations.
- Or specific delivery location in a port range that may have time specific issues affecting price.
- This will include transactions that are identified by other market participants as being, for any reason, potentially anomalous
- Discrepancy in transaction details reported by counterparties

Additional checks and analysis

The markets editors will undertake the following transactional and source analysis when a potentially anomalous or suspicious transaction is identified for further examination.

They will assess the following transaction-based factors:

- The nature of the linkage of the perceived anomalous or suspicious transaction to other possible transactions
- The differences between counterparties on transactional details

- The impact of other factors on price and/or volume, including scheduling and logistic issues, demurrage issues and credit issues

The markets editor will also assess the following source-based factors:

- Whether the explanation provided by the source for the outlying nature of the transaction is plausible
- The credibility of the sources³
- Whether the timing of the provision of information impacts the verification and validation process.

Should this process determine that a transaction be excluded from the price assessment process, the markets editor will approve the exclusion and document the rationale. For price assessments used to settle derivatives, OPIS has established internal procedures that involve escalating review within OPIS management and, if necessary, notification and escalation of inquiry within the source's company.

Comparative markets

There exist tight price correlations between certain markets and the premiums and discounts between these markets, which are constantly assessed and compared by market participants. By polling and entering into dialogue with the market, market editors are able to quantify these relative values. Accordingly, in certain assessments when no relevant or insufficient market data exists, market editors will assess market value using some or all of the following comparative metrics.

- Comparison to another market hub for the same quality of product

¹ . An EFP deal is initially executed at a fixed price and is then broken down into two parts: one part being a physical deal done on an index basis, while a paper position of equivalent size is taken in the same direction as the physical deal. This is done in a way that adds up to the same as the strike price and all elements of the EFP deal are executed at the same time.

² . Sleeve deals are deals executed using a third-party credit sleeve because the buyer and seller are unable to transact directly because of credit issues. The third-party credit sleeve is not exploiting an arbitrage opportunity.

³ . Sources will be deemed more credible if they (i) adhere to the reporting standards outlined in this Methodology; (ii) quickly respond to queries from market editors; and (iii) have staff designated to respond to such queries.

- Comparison to a more actively traded but slightly different specification or quality in the same
- market hub
- Other metrics, such as demand and supply data.

Compliance and ethics

OPIS has implemented extensive compliance policies and procedures in accordance with the best practices of the price reporting industry. These include a comprehensive ethics policy that applies to all the Editorial Price Reporting staff. The Editorial Standards is an expression of OPIS' intent to set out ideals for the ethical conduct of OPIS Price Reporting personnel in the performance of their product price assessment activities. This Editorial Standards Code of Conduct is supported by the Conflicts of Interest Statement.

Price Assessment Disputes

Every spot price editor at OPIS understands that his or her top priority is calling market assessments fairly. Our methodologies are crafted after careful consultation with our customers and applied by our editors to ensure maximum transparency and accuracy.

Still, we understand there may be times when spot price customers wish to question, dispute or comment on a price assessment and/or our methodologies.

Complaints Policy

OPIS has a complaints policy in line with the IOSCO Oil PRA Principles. This policy describes the procedures and mechanisms for receiving, investigating and retaining records concerning complaints about its price assessments.

Submission of a complaint

For a complaint to enter the formal complaints handling process, the complainant must record the complaint in writing, explaining as fully as possible the background to the complaint, and attaching all relevant materials or evidence where appropriate.

The complaint should be sent to:

Energy-SpotComplianceGroup@opisnet.com

Complaints may be submitted in relation to any aspect of benchmark calculation and management process by employees including:

- Whether a specific benchmark determination is representative of market value;
- On a proposed change to a benchmark determination process;
- On an application of the methodology in relation to a specific benchmark determination; and
- On other decisions in relation to the benchmark determination process.

If an employee of OPIS receives an enquiry from a stakeholder which is not formally stated to be a complaint but could be regarded as such, the employee should make the stakeholder aware of this Complaints Policy.

Price Assessment Corrections

If warranted by the circumstances, OPIS may publish corrections to price assessments after the publication date. OPIS will typically correct material errors that arise from the improper entry of information, the erroneous calculation of market data, misreported information or the incorrect application of the stated methodology. However, OPIS will not retroactively assess markets based solely on new information learned after the publication date of the relevant price assessment. Corrections to price assessments will be

conducted in accordance with the Price Assessments Correction policy.

Methodology Review

Review of methodology

OPIS price assessment methodology is constantly scrutinized internally for clarity, relevance and comprehensiveness by market editors across the OPIS group. Methodology changes involve a robust polling of the marketplace to ensure all points of view are considered prior to any changes being considered or made.

Internally, all methodologies are reviewed on a quarterly basis, within the OPIS group and records of any proposed methodology change are stated in a central electronic file.

OPIS also encourages industry participants to propose improvements or revisions to daily price assessment methodology via e-mail, telephone and instant messaging. Based on the input received, OPIS senior leadership within the chemical group will decide whether to accept or reject suggestions made by stakeholders for methodology changes.

Once a spot methodology change is contemplated, OPIS will reach out to stakeholders in the form of a note delivered via email soliciting feedback on the change.

Feedback may be given via email or telephone and the opportunity to comment on any contemplated spot methodology change is open for no less than two (2) weeks and generally not more than six (6) weeks.

In the case of methodology additions, a draft notice is sent out to customers with a deadline for comments set at a maximum of two (2) weeks.

OPIS will publish stakeholder comments received with our responses regarding proposed methodology changes on our website and will respect commenter confidentiality when requested.

In order to ensure that they are representative of the market being assessed, OPIS conducts reviews of its methodologies on both an internal and external basis. OPIS conducts a review of all of its methodologies and attendant documents on at least an annual basis. Externally, OPIS is in regular contact with market participants as such market participants are not only well-situated to know the particulars of the market but have a vested interest in the implementation of accurate and relevant methodologies. When conducting its reviews, OPIS will consider a myriad of factors, including, but not limited to, activity in the market, visibility of market data and current and anticipated industry usage of the price assessment.

If the review process recommends a material change to the methodology, or termination of an existing benchmark, the markets editor will submit a proposal to OPIS Editorial management for review.

Changes to methodology

If either an internal or external review of a methodology results in a potential material change to the methodology or cessation of a benchmark, OPIS will begin procedures for external consultation. Materiality is subject to professional judgment and considers the impact of the proposed change on the decision making of stakeholders.

Materiality is subject to professional judgment and takes into account the impact of the proposed change on the decision making of stakeholders.

As part of a wider consultation on a methodology change to a benchmark, OPIS Editorial will:

- Take reasonable steps to make registered users and other stakeholders aware of the proposed changes, the rationale for the methodology change, and proposed timing;
- Provide a clear timeframe during which stakeholders may provide feedback to the suggested methodology change. Consultations about methodology changes will generally be open for 4 weeks, except in exceptional circumstances where the OPIS decides that a shorter or longer consultation period is warranted;
- Within a reasonable time period after the consultation period has closed, OPIS may choose to make available a summary of the comments received along with the Editorial team's responses, except where a commenter has requested confidentiality;
- Following the conclusion of the consultation process, decide on the methodology change and report it to the appropriate editorial senior management, and Compliance team; and
- Publish a notification of the upcoming methodology change in the relevant report and registered users/customers will be notified via email, along with adequate notice of the date on which the methodology change will take place.

When setting such date, the OPIS Editorial team will consider the type of benchmark and the extent of its use.

Once a spot methodology change or addition is contemplated, OPIS reaches out to customers in the form of a subscriber notice delivered via email soliciting feedback on the change. Feedback will be given via email or telephone and the opportunity to comment on any contemplated spot methodology change is open for up to four weeks from the notice period.

Cessations of a benchmark

Situations might arise where the OPIS Editorial Management might consider discontinuing the provision of a Benchmark, for example given a lack of demand for the benchmark, a deterioration in data sufficiency, or changes in market structure. The Editorial team will undertake any benchmark cessation in an orderly manner, taking into consideration the potential impact to users of the benchmark and market integrity. When considering whether to discontinue or terminate a benchmark the OPIS Editorial team will follow the following procedure:

- Confirm whether there are any financial instruments which reference the relevant benchmark. Other than where there are no outstanding products linked to a benchmark, the cessation of a benchmark will require escalation to and approval by the relevant editorial and product management teams, and the appropriate notification Compliance should the benchmark be used for clearing of financial instruments.
- Conduct a stakeholder consultation process on the proposed cessation similar to the process used for methodology changes;
- As part of any consultation process, take reasonable steps to make registered users/customers and other relevant stakeholders aware of the rationale for the termination, the content and proposed timing of the termination;
- Provide a clear timeframe during which stakeholders may provide feedback to the cessation proposal. Consultations about cessations will generally be open for up to 4 weeks, except in exceptional circumstances where the Editorial team decides that a shorter or longer consultation period might be warranted;

- Within a reasonable period of time after the consultation period has closed, the Editorial team will make available a summary of the comments received during any consultation process along with the OPIS Editorial team's responses, except where a commenter has requested confidentiality;
- If the termination of a benchmark or family of benchmarks has been approved, a notification of the decision will be published on the relevant webpages and registered users/customers are notified, along with adequate notice of the date on which termination will take place. When deciding on the length of such period the Editorial management team will consider the type of benchmark and the extent of its use.

In order to ensure that they are representative of the market being assessed, OPIS conducts reviews of its methodologies on both an internal and external basis. OPIS conducts a formal review of all of its methodologies and attendant documents on at least an annual basis. Externally, OPIS is in regular contact with market participants as such market participants are not only well-situated to know the particulars of the market but have a vested interest in the implementation of accurate and relevant methodologies. When conducting its reviews, OPIS will consider a myriad of factors, including, but not limited to, activity in the market, visibility of market data and current and anticipated industry usage of the price assessment.

If the review process recommends a material change to the methodology, or termination of an existing benchmark, the markets editor will submit a proposal to OPIS Editorial management for review.

Contacts

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