

OPIS

A DOW JONES COMPANY

Europe Aromatics Daily Pricing and Methodology

Methodology and specifications
Effective July 2022



A DOW JONES COMPANY

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Introduction

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

The overarching goal of OPIS daily price assessment 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.

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

The OPIS Europe Aromatics Daily service lists European daily spot market prices for the following aromatics markets:

- Benzene CIF ARA
- Toluene FOB ARA
- Styrene FOB ARA

All price assessments are subject to compliance with standard trading conditions with regard to **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 Contract/Spot	Basis	Location	Delivery Period	Standard Load Size	Unit Quality	Calculation / Assessment
Benzene M1/Current	x	x	x	USD	Spot	CIF	ARA	Current month	1,000 MT	ASTM D-2359 (BASF)	Daily methodology doc
Benzene M2/Next	x	x		USD	Spot	CIF	ARA	Next month	1,000 MT	ASTM D-2359 (BASF)	Daily methodology doc
Benzene M3/Third	x			USD	Spot	CIF	ARA	Third month	1,000 MT	ASTM D-2359 (BASF)	Daily methodology doc
Benzene Daily rolling Spot Avg	x		x	USD	Spot	CIF	ARA		1,000 MT		Daily methodology doc (25th previous month to 24th current month)
Toluene M1/Current	x	x	x	USD	Spot	FOB	ARA	Current month	1,000 MT	NTN ASTM D841	Daily methodology doc
Toluene M2/Next	x			USD	Spot	FOB	ARA	Next month	1,000 MT	NTN ASTM D841	Daily methodology doc
Toluene Daily rolling Spot Avg	x		x	USD	Spot	FOB	ARA		1,000 MT		Daily methodology doc (25th previous month to 24th current month)
Styrene M1/Current	x	x	x	USD	Spot	FOB	ARA	Current month	1,000 MT	ASTM D-2827	Daily methodology doc
Styrene M2/Next	x			USD	Spot	FOB	ARA	Next month	1,000 MT	ASTM D-2827	Daily methodology doc
Styrene M3/Third	x			USD	Spot	FOB	ARA	Third month	1,000 MT	ASTM D-2827	Daily methodology doc
Styrene Daily rolling Spot Average	x		x	USD	Spot	FOB	ARA		1,000 MT		Daily methodology doc (25th previous month to 24th current month)

Daily Price Discovery Process

The European price assessment methodology seeks to capture full day transactions, bids and offers for spot market **benzene, toluene, and styrene**. OPIS market editors will proactively poll market participants via electronic instant messaging (such as ICE Chat, or WhatsApp), email, telephone or face-to-face conversation in order to discover price data throughout the standard trading day of 9:00 a.m. - 6:00 p.m. Central European Time (CET).

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

Market participants are encouraged to report transactions, **real-time** bids and offers and live market bid-offer ranges directly to OPIS, **before 6:00 p.m. CET**. The expressions of bids and offers are regarded as open and executable to the **market at large**. OPIS editors 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** via instant messaging platforms 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 European business day to derive an assessment of spot market prices levels for specified delivery/loading laycans. Based on 'normal' regional market activity, the following laycans will be assessed:

Benzene: Month 1 (M1), Month 2 (M2) and Month 3 (M3).

Styrene Monomer: Month 1 (M1), Month 2 (M2) and Month 3 (M3).

Toluene: Month 1 (M1), Month 2 (M2)

On any given day Month 1 refers to the current month, Month 2 = current month +1 and Month 3 = current month + 2. Each month represents cumulative business days between the 25th of prior month through the 24th of the current month.

Price Assessment Criteria

OPIS prices are assessed based on the range of confirmed physical deals transacted and reported during the European working day (9 a.m. – 6 p.m. CET) for the relevant month of assessment. Where only one deal has been confirmed, then that will form the price assessment for the day. Where there is a range of deals for the same month, the lowest and highest traded values will form the range.

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.

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.

Any transaction that has logistic restrictions, quality or specification issues, different currency, load size or shipping terms to those specified in the methodology product table or any other special considerations will not be used to determine the posted range.

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.

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

On days when there have been no confirmed transactions a "notional" price will be posted. A

notional price reflects the editor's best estimate of price or price range where a transaction could have occurred between an interested buyer and interested seller. The editor will take into account market direction, momentum, demand and supply as well as the most recent transaction price information and the prevailing range of bids and offers, if any. 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, are included for consideration in the OPIS price assessment process.

Late deals – those concluded **after 6:00 p.m. CET** – need to be confirmed by the buyer as well as the seller to be included in the next day's range. Late deals need to be submitted with time stamp of trade execution (both parties to mention what time the trade was concluded). The value of the deal(s) will be included in the next day's bid-offer range if there are no new trades done or considered in the range of trades done. Late trades will not become the sole assessment of the next day. It is important to note that the exception on late deals only applies to late deals concluded after the data submission deadline of 6:00 p.m. CET. Deals which are transacted before that time but submitted later are not included in the assessment.

In the case of benzene and styrene monomer, M3 prices will be posted on the basis of confirmed deals for the month in question as per the assessment criteria of M1 and M2. When there are no confirmed deals or notional bid/offer range for M3, then no assessment will be made. However, if a range was posted the previous day, then a range must continue to be posted based on editorial judgement.

In the case of toluene, M2 prices will be posted on the basis of confirmed deals for the month in question as per the assessment criteria of M1. When there are no confirmed deals or notional bid/offer range for M2, then no assessment will be made. However, if a range was posted the previous day, then a range must continue to be posted based on editorial judgement.

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

Monthly Spot Averages

The Monthly Spot Averages published in the Europe Aromatics Daily report are shown for current month benzene, toluene and styrene, and calculated as straight arithmetical averages of the daily high and low postings from the 25th of the prior month (or the next trading day after if the 25th is not a trading day) and the 24th of the current month (or the prior trading day if the 24th is not a trading day). The current month prices are recalculated each day during the posting period and then finalised when the current month rolls after the close of business on the 24th. The cycle then continues for the new current month. An eleven-month history is published for Monthly Spot Averages.

Illiquid Markets

OPIS recognizes that markets can suffer from periods of illiquidity. In the absence of firm bids, offers and transactions, OPIS will 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 considered for market clarity. Accordingly, in certain assessments where **insufficient market data** exists, market editors will exercise best judgment to **quantify** these **relative values** in the process of compiling the price assessments.

In the event that certain markets are shut because of public holidays, 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).

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.

- 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 editor 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 make an assessment of market value using some or all of the following comparative metrics.

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

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.

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 market editor at OPIS understands that their 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

In order 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. 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. In some circumstances the daily report will be re-issued.

Methodology Review

OPIS price assessment methodology is constantly scrutinized internally for clarity, relevance and comprehensiveness by market editors and senior

leadership 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 an annual 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 formal note delivered via email soliciting feedback on the change.

Feedback may be given via post, email or telephone and the opportunity to comment on any contemplated spot methodology change is open for no less than four weeks and generally not more than six 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 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 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.

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 takes into account 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 teams responses, except where a commenter has requested confidentiality;
- Following the conclusion of the consultation process, make a decision 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 take into account 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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(Toll- free within the U.S)