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# ***ARGUS TOLUENE, XYLENES AND ISOMERS/PET***

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The most up-to-date Argus Toluene, Xylenes and Isomers/PET  
Methodology and Specifications Guide is available on [www.argusmedia.com](http://www.argusmedia.com)

## Methodology overview

### Methodology rationale

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

In the toluene and xylenes markets, Argus publishes physical market prices in the open market as laid out in the specifications and methodology guide. Argus uses the trading period deemed by Argus to be most appropriate, in consultation with industry, to capture market liquidity.

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

### Survey process

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

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

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

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

### Market data usage

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

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

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

### Verification of transaction data

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

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

### Primary tests applied by reporters

- Transactions not transacted at arm's length, including deals between related parties or affiliates.
- Transaction prices that deviate significantly from the mean of all transactions submitted for that day.
- Transaction prices that fall outside of the generally observed lows and highs that operated throughout the trading day.
- Transactions that are suspected to be a leg of another transaction or in some way contingent on an unknown transaction.
- Single deal volumes that significantly exceed the typical transaction volume for that market.
- Transaction details that are identified by other market participants as being for any reason potentially anomalous and perceived by Argus to be as such.

- Transaction details that are reported by one counterparty differently than the other counterparty.
- Any transaction details that appear to the reporter to be illogical or to stray from the norms of trading behaviour. This could include but is not limited to divergent specifications, unusual delivery location and counterparties not typically seen.
- Transactions that involve the same counterparties, the same price and delivery dates are checked to see that they are separate deals and not one deal duplicated in Argus records.

### Secondary tests applied by editors for transactions identified for further scrutiny

#### Transaction tests

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

#### Source tests

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

### Assessment guidelines

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

The assessment process employing judgement is rigorous, replicable, and uses widely accepted valuation metrics. These valuation metrics mirror the process used by physical commodity traders

to internally assess value prior to entering the market with a bid or offer. Applying these valuation metrics along with sound judgement significantly narrows the band within which a commodity can be assessed, and greatly increases the accuracy and consistency of the price series. The application of judgement is conducted jointly with the supervising editor, in order to be sure that guidelines below are being followed. Valuation metrics include the following:

#### Relative value transactions

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

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

#### Bids and offers

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

#### Comparative metrics

The relative values between compared commodities are readily discussed in the market and can be discovered through dialogue with market participants. These discussions are the precursor to negotiation and conclusion of transactions.

- Comparison to the same commodity in another market centre.
- Comparison to a more actively traded but slightly different specification commodity in the same market centre.
- Comparison to the same commodity traded for a different delivery timing.
- Comparison to the commodity’s primary feedstock or primary derived product(s).
- Comparison to trade in the same commodity but in a different modality (as in barge versus oceangoing vessel) or in a different total volume (as in full cargo load versus partial cargo load).

#### Volume minimums and transaction data thresholds

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

For price assessments used to settle derivatives, Argus will seek to establish minimum transaction data thresholds and when no such

threshold can be established Argus will explain the reasons. These thresholds will often reflect the minimum volumes necessary to produce a transaction-based methodology, but may also establish minimum deal parameters for use by a methodology that is based primarily on judgement.

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

### Transparency

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

### Swaps and forwards markets

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

### Publications and price data

Argus global toluene and xylenes weekly price ranges and contract prices are published in the Argus Toluene, Xylenes, and Isomers/PET report. Subsets of these prices appear in other Argus market reports and newsletters in various forms. The price data are available independent of the text-based report in electronic files that can feed into various databases. These price data are also supplied through various third-party data integrators. The Argus website also provides access to prices, reports and news with various web-based tools. All Argus prices are kept in a historical database and available for purchase. Contact your local Argus office for information.

A publication schedule is available at [www.argusmedia.com](http://www.argusmedia.com)

### Corrections to assessments

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

Trades reported after the day of trade, but before the end of the trading week will be included in assessing weekly price ranges. For example, a trade completed on Monday and reported on Tuesday will be used in assessing the weekly price range. A trade completed on Friday and reported on the following Monday would not be included in assessing the weekly price range.

If transaction information is submitted in error and the submitting company informs Argus of the error within 24 hours of the original submission, Argus will make best efforts to correct the price data. After 24 hours, Argus will review both the material effect that the correction will have on the published price and the amount of time that has elapsed since the date of publication before deciding whether to issue a correction. After 30 days, Argus is unlikely to make a correction based on information submitted in error, and data submitters are not expected to file corrections to submitted data.

### Ethics and compliance

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

### Consistency in the assessment process

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

- A global price reporting manual describing among other things the guidelines for the exercise of judgement
- Cross-training of staff between markets to ensure proper holiday and sick leave backup. Editors that float between markets to monitor staff application of best practices
- Experienced editors overseeing reporting teams are involved in daily mentoring and assisting in the application of judgement for illiquid markets
- Editors are required to sign-off on all price assessments each day, thus ensuring the consistent application of judgement.

### Review of methodology

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

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

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

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

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

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

### Changes to methodology

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

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

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

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

### Market prices

Argus global toluene and xylenes weekly price ranges and contract prices are published in the Argus Weekly Toluene, Xylenes, and Isomers/PET report.

Various methodological approaches are employed in toluene and xylenes markets to produce the most representative prices.

In order to be included in the price formation process, trades must be bona fide and meet the strict delivery, timing and specification requirements outlined below.

In illiquid markets, Argus assesses the range within which toluene and xylenes could have traded, based on bids and offers through the entire day, movements in similar grades, extensive polling of market participants and other market information. In addition to information from and about the physical markets, formula-priced deals and market fundamentals also inform assessments.

### Survey method and verification

Price assessments in the Argus Weekly Toluene, Xylenes, and Isomers/PET report are based on information from a wide variety of sources, including refiners, marketers, importers, traders and brokers.

Counterparty information is requested in order to confirm deals and to avoid double counting in volume-weighted averages. Argus does not publish counterparty names in the toluene or xylenes markets. Many companies have existing confidentiality agreements with counterparties and can only reveal trade information if confidentiality is maintained.

Argus will contact and accept market data from all credible market sources including front and back office of market participants and brokers. Information is accepted by phone, instant messenger, email, or other means. Argus works to verify all deal prices, counterparties, incoterms, and volumes.

### Excluding non-representative information

Information on transactions, bids and offers that lie outside the specifications of timing, size, location and quality will be taken into account but information that lies within the listed specifications of the assessment will be given the most weight. Information that appears to be anomalous or is outside of the generally observed highs and lows that prevailed through the week will not be included in the price assessment process.

## Definition of trading week and day

Argus reports the prevailing price of open-market arms length transactions over the course of the entire trading week up to Friday at 4:30pm Central Standard Time (CST) for the US, 6:00pm Central European Time (CET) for Europe and 5:00pm Singapore time for Asia.

The week includes all trading days on which the New York Mercantile Exchange is open or on which markets in Asia-Pacific and/or Europe are open.

The definition of the trading day and week is under continuous review to maintain the accuracy of the assessments.

## US

### US roll procedure 1 - for products that potentially have up to two months assessed

Applies to nitration grade toluene, mixed xylenes and paraxylene.

If a weekly report is published during a week where the calendar is fully month M, then Argus will report month M ranges and potentially month M1 ranges. If no bid-ask ranges or transactions can be determined for month M1, then Argus will report NA (not available) but Argus will always show month M ranges, based either on market transactions, bid-ask ranges, or an Argus assessment based on landed bid-ask for exports and imports.

If a weekly report is published during a week where the calendar is partly month M and partly month M1, then the following applies:

- Case 1: If there are three days or more of month M occurring during that partial week (and one or two days of month M1), then Argus will show the ranges for month M and also show month M1 if the market has bid-ask ranges or transactions for month M1, otherwise M1 will be shown as NA.
- Case 2A: If there are two days or less of month M occurring during that partial week, and if there are deals transacted during those month M days (for lifting during month M), then Argus will show ranges for month M and month M1.
- Case 2B: If there are two days or less of month M occurring during that partial week and if no deals are transacted during those month M days, then Argus will show ranges for month M1 and potentially M2 (if the market has bid-ask ranges for month M2, otherwise M2 will be shown as NA). Argus will no longer report on month M.

### US roll procedure 2 - for products where only prompt month is assessed

This applies to orthoxylene and commercial grade toluene. If a weekly report is published during a week where the calendar is fully month M, then Argus will report month M ranges.

If a weekly report is published during a week where the calendar is partly month M and partly month M1, then the following applies:

- Case 1: If there are three days or more of month M occurring during that partial week (and one or two days of month M1), then Argus will show the ranges only for month M.
- Case 2A: If there are two days or less of month M occurring during that partial week, and if deals are transacted during those month M days (for lifting during month M), then Argus will show ranges only for month M.
- Case 2B: If there are two days or less of month M occurring during that partial week and if no deals are transacted during those month M days, then Argus will show ranges only for month M1.

### US weekly range – nitration grade toluene spot

Argus reports a low price and high price range for the week.

- If multiple trades meeting the below specifications are reported during the week, Argus will publish the lowest and highest trade price for that week. Trades that are part of a two-part, buy-sell will not be used.
- If only one trade meeting the below specifications is reported during the week, Argus will publish the same price in the low and high range for that week. Trades that are part of a two-part, buy-sell will not be used.
- If no trades meeting the below specifications are reported during the week, Argus will use the 4:30pm CST closing bid-offer range for each of the trading days in the week. The weekly low will be the lowest of the five daily closing bids, and the weekly high will be the highest of the five daily closing offers. In cases where there is no bid or offer in the market, Argus may assess bids based on the best export option, and offers based on the best import option.

Prices are published for two months in US dollars per tonne and US cents per US gallon.

### Specifications

Specification: ASTM D841

Location: US Gulf coast – from Corpus Christi, TX, to Lake Charles, LA

Basis: fob

Volume: minimum 10,000 bl

### US weekly range – commercial grade toluene spot

Argus reports a low-high price range for the week.

- If multiple trades meeting the below specifications are reported during the week, Argus will publish the lowest and highest trade price for that week. Trades that are part of a two-part, buy-sell will not be used.
- If only one trade meeting the below specifications is reported during the week, Argus will publish the same price in the low and high range for that week. Trades that are part of a two-part, buy-sell will not be used.
- If no trades meeting the below specifications are reported during the week, Argus will use the 4:30pm CST closing bid-offer range for each of the trading days in the week. The weekly low will be the lowest of the five daily closing bids, and the weekly high will be the highest of the five daily closing offers.

- If there are no transactions, or bid-offer ranges during the week, Argus will assess the commercial grade toluene-nitration grade toluene spread and apply it to the assessed range for nitrogen grade toluene for the week of publication

For example, if the nitration grade toluene range is assessed at 395-400¢/USG, and the differential of CGT to NGT is assessed at 8¢/USG based on discussions in the market, the commercial grade toluene will be assessed at 387-392¢/USG

### Specifications

Specification: commercial grade toluene suitable for gasoline blending

Location: US Gulf coast – from Corpus Christi, TX, to Lake Charles, LA

Basis: fob

Volume: minimum 10,000bl

Prices are published for one month in US dollars per tonne and US cents per US gallon.

### US weekly range – mixed xylenes spot

Argus reports a low price and high price for the week.

- If multiple trades meeting the below specifications are reported during the week, Argus will publish the lowest and highest trade price for that week. Trades that are part of a two-part, buy-sell will not be used
- If only one trade meeting the below specifications is reported during the week, Argus will publish the same price in the low and high range for that week. Trades that are part of a two-part, buy-sell will not be used
- If no trades meeting the below specifications are reported during the week, Argus will use the 4:30pm CST closing bid-offer range for each of the trading days in the week. The weekly low will be the lowest of the five daily closing bids, and the weekly high will be the highest of the five daily closing offers. In cases where there is no bid or offer in the market, Argus may assess bids based on the best export option, and offers based on the best import option

Prices are published for two months in US dollars per tonne and US cents per US gallon.

### Specifications

Specification: ASTM 5211 < 0.3 wt. % non-aromatics < 20 bromine or ASTM D843 or ASTM 5211 < 1 wt. % non-aromatics < 20 bromine

Location: US Gulf coast – from Corpus Christi, TX, to Lake Charles, LA

Basis: fob

Volume: minimum 10,000bl

### US weekly range – paraxylene spot

Argus reports a low price and high price for the week.

- If multiple trades meeting the below specifications are reported during the week, Argus will publish the lowest and highest trade price for that week. Trades that are part of a two-part, buy-sell will not be used

- If only one trade meeting the below specifications is reported during the week, Argus will publish the same price in the low and high range for that week. Trades that are part of a two-part, buy-sell will not be used
- If no trades meeting the below specifications are reported during the week, Argus will use the 4:30pm CST closing bid-offer range for each of the trading days in the week. The weekly low will be the lowest of the five daily closing bids, and the weekly high will be the highest of the five daily closing offers
- If there are no transactions, or bid-offer ranges during the week, Argus will assess spot paraxylene prices as follows
  - The US low for month M is based on the lowest of the five days of daily close fob South Korea paraxylene bid prices (month M2) minus freight for 5,000t from the US Gulf to South Korea
  - The US high for month M is based on the highest of the five days of daily close fob South Korea paraxylene offer prices minus freight for 5,000t from the US Gulf to South Korea

Prices are published for two months in US dollars per tonne and US cents per US gallon.

### Specifications

Specification: minimum purity 99.7%

Location: Gulf coast — from Corpus Christi, TX, to Lake Charles, LA

Basis: fob

Volume: minimum 5,000t

### US weekly – conventional blend value (toluene and mixed xylene)

The weekly conventional blend value is calculated based on the previous day's closing gasoline and butane assessments in the Argus US Products report. For example, if the weekly report is published on 20 September, the closing prices from 19 September are used in the calculation. The following gasoline and butane price assessments are used:

- Gasoline 87M conventional Colonial pipeline (prompt month)\*
- Gasoline 93V conventional Colonial pipeline (prompt month)\*
- Butane Mt Belvieu Non-LST (Non-LDH) (prompt month)\*

(\* ) In the examples above, the prompt month is September.

Prices are published in US dollars per tonne and US cents per US gallon.

See the [Argus US Products methodology](#) for more detail.

### US weekly – Rbob blend value (toluene and mixed xylene)

The weekly conventional blend value is calculated based on the previous day's closing gasoline and butane assessments in the Argus US Products report. For example, if the weekly report is published on 20 September, the closing prices from 19 September are used in the calculation. The following gasoline and butane price assessments are used:

- Gasoline 83.7M Rbob Colonial pipeline (prompt month)\*
- Gasoline 91.3V Rbob Colonial pipeline (prompt month)\*
- Butane Mt Belvieu Non-LST (Non-LDH) (prompt month)\*

(\* In the examples above, the prompt month is September.

## US weekly – toluene alternate values

### STDP contract

The breakeven value of toluene when processed into benzene and paraxylene by selective toluene disproportionation (STDP). Calculations are based on the latest US contract settlement price for benzene and paraxylene.

### STDP spot

The breakeven value of toluene when processed into benzene and paraxylene by selective toluene disproportionation (STDP). Calculations are based on same-day USGC spot prices for benzene and paraxylene. See the [Argus Benzene Daily methodology](#) and the [Argus Toluene and Xylenes Daily methodology](#).

### TDP contract

The breakeven value of toluene when processed into benzene and mixed xylenes by toluene disproportionation (TDP). Calculations are based on the latest contract settlement price for benzene and the same-day spot price for mixed xylenes 5211 fob USGC see the [Argus Toluene and Xylenes Daily methodology](#).

### TDP spot

The breakeven value of toluene when processed into benzene and mixed xylenes by toluene disproportionation (TDP). Calculations are based on the same-day spot prices for benzene fob USGC and mixed xylenes 5211 fob USGC. See the [Argus Benzene Daily methodology](#) and the [Argus Toluene and Xylenes Daily methodology](#).

### HDA contract

The breakeven value of toluene when processed into benzene by hydro dealkylation (HDA). Calculations are based on the latest US contract settlement price for benzene.

### HDA spot

The breakeven value of toluene when processed into benzene by hydro dealkylation (HDA). Calculations are based on the same-day fob USGC benzene price assessment. See the [Argus Benzene Daily methodology](#).

Toluene alternative values are published in US dollars per tonne and US cents per gallon.

## US contracts settlement reporting

- Argus reports a price if it understands full settlement is agreed to by all parties, disregarding any discounts or premiums to the base contract between parties
- If there is a split settlement, for example if there is one group that settles PX at 70 cpp and another group that settles PX at 72 cpp, Argus will publish both settlements as a range

- If there is a partial settlement of one set of parties on a contract, but other parties in the contract did not settle, Argus will show the price for that month as being unsettled (UN)
- When there is no settlement, Argus will not publish a price, nor will it publish a calculated assessment in the contract price data field. This data field will show NA.

## Mixed xylene contract

## Paraxylene contract

## Toluene TDI grade contract

## Orthoxylene contract

## PA (phthalic anhydride) molten contract

## PTA (purified terephthalic acid) contract

Calculation of PTA production cost, based on the most recently settled PX contract price, the fob USGC residual fuel oil price (see the [Argus US Products methodology](#)) averaged over the previous month, and commodity and labor data provided by the Federal Reserve Bank of St Louis.

## US – aromatic solvents:

### Toluene - solvent USGC

See the [Argus Aromatic Solvents methodology](#)

### Toluene - solvent Midwest

See the [Argus Aromatic Solvents methodology](#)

## US – physical market monthly averages:

Calculated as the average of all assessments for the named commodity published in Argus Toluene Xylenes and Isomers/PET during the named month. See the [Argus Toluene and Xylenes Daily methodology](#).

## Europe

### Europe – toluene spot weekly range

Argus reports a low-high price range for the week. All qualities of product meeting the ASTM D841 nitration grade specification are included in the assessment.

- If multiple trades meeting the below specifications are reported during the week, Argus will publish the lowest and highest trade price for that week. Trades that are part of a two-part, buy-sell will not be used
- If only one trade meeting the below specifications is reported during the week, Argus will publish the same price in the low and high range for that week. Trades that are part of a two-part, buy-sell will not be used
- If no trades meeting the below specifications are reported during the week, Argus will make an assessment of the bid-offer range for the week based upon the daily reported bid-offer ranges for the toluene fob NWE assessment reported in



Argus Toluene and Xylenes Daily. See the [Argus Toluene and Xylenes Daily methodology](#) for more information

- Transactions are reported for prompt delivery. Prompt refers to the current month, but on or after the 20th of a given month will include trade for the following month
- Prices are assessed on a fob ARA basis; deals reported on a fob or cif Rhineland location may be included in the assessment, adjusted to a fob ARA basis taking freight elements into account

### Specifications

Location: ARA or Rhine

Basis: fob

Volume: minimum 1,000t

Currency: transactions are reported in \$/t; trades concluded in €/t are converted to \$/t at the European Central Bank's reference exchange rate for the day of the transaction

Specification: ASTM D841

### Europe – toluene monthly contract

A number of contract prices are negotiated at the end of each month for the following month, based upon prevailing spot prices. Argus reports the high and low prices of the contracts concluded and reported.

### Specifications

Location: ARA, NWE or Rhine

Basis: cif

Volume: Minimum 1,000t

Currency: Prices are reported in \$/t

Specification: ASTM D841

### Europe – toluene blend value weekly

The European toluene blend price is assessed in \$/t and ¢/USG and is based on the Argus gasoline eurobob oxy NWE barge five-day rolling average price for the week, to which a premium reflecting historical octane related differentials is added. This premium is currently \$64/t.

### Europe – mixed xylenes spot weekly range

Argus reports a low-high price range for the week. All qualities of product meeting the ASTM D843 specification are included in the assessment.

- If multiple trades meeting the below specifications are reported during the week, Argus will publish the lowest and highest trade price for that week. Trades that are part of a two-part, buy-sell will not be used
- If only one trade meeting the below specifications is reported during the week, Argus will publish the same price in the low and high range for that week. Trades that are part of a two-part, buy-sell will not be used
- If no trades meeting the below specifications are reported during the week, Argus will make an assessment of the bid-offer range for the week based upon the daily reported bid-offer ranges

- Transactions are reported for prompt delivery. Prompt refers to the current month, but on or after the 20th of a given month will include deals for the following month.
- Prices are assessed on a fob ARA basis; deals reported on a fob or cif Rhineland location may be included in the assessment, adjusted to a fob ARA basis taking freight elements into account

### Specifications

Location: ARA

Basis: fob

Volume: minimum 1,000t

Currency: transactions are reported in \$/t; deals concluded in €/t are converted to \$/t at the European Central Bank's reference exchange rate for the day of the transaction

Specification: ASTM D843

### Europe – paraxylene spot weekly range

Argus reports a low-high price range for the week.

- If multiple trades meeting the below specifications are reported during the week, Argus will publish the lowest and highest trade price for that week. Trades that are part of a two-part, buy-sell will not be used
- If only one trade meeting the below specifications is reported during the week, Argus will publish the same price in the low and high range for that week. Trades that are part of a two-part, buy-sell will not be used
- If no trades meeting the below specifications are reported during the week, Argus will make an assessment of the bid-offer range for the week based upon the daily reported bid-offer ranges
- Transactions are reported for prompt delivery. Prompt refers to the current month, but on or after the 20th of a given month will include deals for the following month.

### Specifications

Location: NWE

Basis: fob

Volume: minimum 1,000t

Currency: transactions are reported in \$/t; deals concluded in €/t are converted to \$/t at the European Central Bank's reference exchange rate for the day of the transaction

Specification: Minimum 97% purity

### Europe – paraxylene monthly contract

The European contract price is negotiated by producers and buyers on a monthly basis in €/t. Argus reports a price which is confirmed to have agreement from a minimum of two buyers and two sellers. In the event that more than one price is agreed meeting this criterion, Argus will report the high and low prices as a range.

### Specifications

Location: NWE

Basis: fob

Volume: minimum 1,000t

Currency: €/t

Specification: minimum 97% purity

### Europe – orthoxylene spot weekly range

Argus reports a low-high price range for the week.

- If multiple trades meeting the below specifications are reported during the week, Argus will publish the lowest and highest trade price for that week. Trades that are part of a two-part, buy-sell will not be used
- If only one trade meeting the below specifications is reported during the week, Argus will publish the same price in the low and high range for that week. Trades that are part of a two-part, buy-sell will not be used
- On weeks where no deals are traded, Argus will make an assessment of the bid-ask range based upon alternative values, notably for export or related to mixed xylenes pricing, and upon discussions with market players.
- Transactions are reported for prompt delivery. Prompt refers to the current month, but on or after the 20th of a given month will include deals for the following month.

#### Specifications

Location: NWE

Basis: fob

Volume: Minimum 1,000t

Currency: \$/t

Specification: minimum purity 98% and maximum 0.3 wt. % non-aromatics

### Europe – orthoxylene monthly contract

The European contract price is negotiated by producers and buyers on a monthly basis in €/t. Argus reports a price which is confirmed to have agreement from a minimum of two buyers and two sellers. In the event that more than one price is agreed meeting this criterion, Argus will report the high and low prices as a range.

#### Specifications

Location: NWE

Basis: fob

Volume: minimum 1,000t

Currency: €/t

Specification: minimum purity 98% and maximum 0.3 wt. % non-aromatics

### Europe – PA (phthalic anhydride) liquid contract

A calculated assessment that tracks the change in the orthoxylene contract price for that month.

#### Specifications

Location: NWE

Basis: delivered

Volume: minimum 20t lots

Currency: €/t

Specification: minimum purity 98%

### Europe – DMT (dimethyl terephthalate) contract

A calculated assessment. The month-on-month change in the DMT contract price assessment is equal to 0.63 times the change in the Europe paraxylene monthly contract price plus 0.4 times the change

in the methanol contract price (quarterly, Rotterdam fob EQCP as published in the Argus Methanol report.

See the [Argus Methanol methodology](#).

#### Specifications

Location: NWE

Basis: delivered

Volume: minimum 20t lots

Currency: €/t

Specification: minimum purity 99%

### Europe – PTA (purified terephthalic acid) contract

Argus assesses a midpoint of monthly PTA contract prices for Europe and applies a range to account for differences in individual negotiated contracts.

The assessment is based on the change in the Argus PX monthly contract price assessment and PTA netbacks from Asia-Pacific to northwest Europe. The Asia-Pacific netback is based on the average of the daily Argus China PTA spot price assessment for the previous month, to account for shipping time, and freight costs to northwest Europe. The assessment also takes into account the Argus margin model for the PTA/PET chain and surveys of market participants.

Timing: The Argus monthly PTA assessment is initially published on the first publication day after the PX contract settlement. In the event of a delay to the PX contract settlement, Argus may publish a provisional PTA assessment, subject to revision at a later date.

#### Specifications

Location: NWE

Basis: delivered

Currency: €/t

Specification: minimum purity 99.6%

### Europe – MEG (monoethylene glycol) contract

The European contract price is negotiated by producers and buyers on a monthly basis in €/t. Argus reports a price which is confirmed to have agreement from a minimum of two buyers and two sellers. In the event that more than one price is agreed meeting this criterion, Argus will report the high and low prices as a range.

#### Specifications

Location: NWE

Basis: cfr

Volume: minimum 20t

Currency: €/t

Specification: minimum purity 99.8%

## Asia-Pacific

### Asia-Pacific – nitration grade toluene spot weekly range

Toluene in Asia is assessed at 5:00pm Singapore time on Friday.

Argus fob South Korea and cfr China toluene prices are assessed for half-month loading or delivery periods.

#### Example:

On Friday, 1 July, Argus will publish assessments for

- the second half of July (15-30 days forward)
- the first half of August (30-45 days forward)
- the second half of August (45-60 days forward)
- the first half of September (60-75 days forward)
- the second half of September (75-90 days forward, fob South Korea only)

#### fob South Korea

The weekly fob South Korea price ranges are the lowest and highest of the daily fob South Korea assessments published in Argus Toluene and Xylenes Daily for each of the second, third and fourth half-month periods during the week. In the above example, fob South Korea price assessments will be published for the first half of August (30-45 days forward), the second half of August (45-60 days forward) and the first half of September (60-75 days forward).

#### fob South Korea marker

The weekly fob South Korea marker price is the arithmetic average of the daily fob South Korea marker prices published in Argus Toluene and Xylenes Daily.

See the [Argus Toluene and Xylenes Daily methodology](#) for details.

#### cfr China

The weekly cfr China price ranges are the lowest and highest of the daily cfr China price assessments published in Argus Toluene and Xylenes Daily for each of the second, third and fourth half-month periods during the week. In the above example, cfr China price assessments will be published for the first half of August (30-45 days forward), the second half of August (45-60 days forward) and the first half of September (60-75 days forward).

#### cfr China marker

The weekly cfr China marker price is the arithmetic average of the daily cfr China marker prices published in Argus Toluene and Xylenes Daily.

See the [Argus Toluene and Xylenes Daily methodology](#) for details.

#### cfr southeast Asia

Assessments are based on trades, bids and offers completed from Monday to Friday.

Trades, bids and offers for delivery into Singapore, Malaysia, Indonesia, Thailand, the Philippines and Vietnam are taken into consideration.

If no firm bids and offers are reported, the assessment is based on

a survey of market participants and will take into account changes in crude and naphtha prices, the trend in other key aromatics markets, demand-supply dynamics, plant operation status and other indicators.

#### cfr India

Assessments are based on trades, bids and offers completed from Monday to Friday.

Trades, bids and offers for delivery into the western Indian ports of Kandla and Mumbai are taken into consideration.

If no firm bids and offers are reported, the assessment is based on a survey of market participants and will take into account changes in crude and naphtha prices, the trend in other key aromatics markets, demand-supply dynamics, plant operation status, netback calculations for cargoes from Singapore, Thailand and South Korea, and other indicators.

#### China ex-tank

The prompt month (M) price range is the lowest and highest of the daily assessments published during the week in Argus Toluene and Xylenes Daily.

Prices are assessed in yuan/t.

See the [Argus Toluene and Xylenes Daily methodology](#) for detail.

#### India domestic ex-tank

The prompt month (M) price range is the lowest and highest of the daily assessments published during the week in Argus Toluene and Xylenes Daily.

Prices are assessed in rupee/kg.

See the [Argus Toluene and Xylenes Daily methodology](#) for detail.

### Specifications

Location: southeast Asia, India

Timing 15-60 days

Specification: ASTM D841

Trade size: 1,000-3,000t

Basis: cfr

Trading day: 9am-5pm Singapore time, Monday to Friday, excluding public holidays

### Asia-Pacific – Mixed xylene spot weekly range

#### Isomer xylene

Prices are assessed on a fob South Korea and cfr Taiwan basis. Assessments are published as a range of the lowest bid and highest offer present in the market during the assessment week. If no trades are completed during the week, the price range is the lowest bid and highest offer in the market at close to 5:00pm Singapore time on Friday. Argus publishes prices for the first full forward month (M+1) and the first half of the following month (M+2).

### Weekly markers:

The fob South Korea and cfr Taiwan weekly markers are an arithmetic average of the fob South Korea and cfr Taiwan daily markers published in Argus Toluene and Xylenes Daily.

See the [Argus Toluene and Xylenes Daily methodology](#) for detail.

### Solvent xylene

Prices are assessed on a fob South Korea and cfr Taiwan basis. Assessments are based on trades, bids and offers in the market during the assessment week. If there are no trades completed during the week, the price range is the bid and offer in the market at close to 5:00pm Singapore time on Friday.

In the absence of trades bids and offers, price assessments are based on a survey of market participant and take into account changes in crude and naphtha prices, isomer xylene prices, the trend in other aromatics markets, supply and demand dynamics, plant operation status and other factors, including a netback calculation using estimated freight rates for cargoes sold on a cfr China basis.

Argus publishes a spot price for delivery or loading within 60 days.

### Specifications (isomer-grade)

Location: South Korea, Taiwan

Specifications: ASTM D843

Minimum trade size: 3,000-5,000t (5,000t only applies to open origin parcels)

Basis: fob, cfr

Trading week: 9:00am-5:00pm Singapore time, Monday-Friday excluding public holidays

### Specifications (solvent grade)

Location: South Korea, China

Specifications: ASTM D846

Minimum trade size: 1,000t

Basis: fob, cfr

Trading week: 9.00am to 5.00pm Singapore time, Mondays to Fridays excluding public holidays

### Asia-Pacific – paraxylene (PX) ACP (Asian Contract Price)

Argus assesses the monthly negotiated PX Asia Contract Price (ACP) used by producers, traders and end-users in settlements of long-term contracts.

The PX ACP is usually negotiated between five sellers (JXTG Nippon Oil and Energy, Idemitsu Kosan, S-Oil, ExxonMobil and SK Global Chemical) and seven buyers (CAPCO, OPTC, Mitsubishi Chemicals, Mitsui Chemicals, BP, Shenghong Petrochemicals and Zhejiang Yisheng Petrochemicals), and is usually set on the last working day of each month.

Argus does not dictate the inclusion of negotiating parties in the monthly PX ACP. The above named negotiating parties are buyers and sellers that negotiate a monthly contract price with their suppliers against which the Asian market-at-large settles contracts.

Argus publishes the PX ACP as the Asia cfr contract price upon verifying and confirming the settlements that have been executed at arms-length between any two of the above mentioned buyers and sellers, often referred to as a “major settlement”.

During months in which settlements do not fulfil the industry-accepted definition of a major settlement, Argus will not publish an ACP for the month.

### Asia Paraxylene (PX) contract price

During months in which settlements fulfil the industry-accepted definition of a major settlement, the published contract price will be the same as the PX ACP.

During months in which settlements do not fulfil the industry-accepted definition of a major settlement, Argus will publish a range of prices of verified and confirmed transactions between end-users, traders and producers.

This range of prices of verified and confirmed transaction will not be limited to the five ACP-linked sellers (JXTG Nippon Oil and Energy, Idemitsu Kosan, S-Oil, ExxonMobil and SK Global Chemical) and seven ACP-linked buyers (CAPCO, OPTC, Mitsubishi Chemicals, Mitsui Chemicals, BP, Shenghong Petrochemicals and Zhejiang Yisheng Petrochemicals).

The average of daily/weekly published prices, privately negotiated prices or any other forms of confirmed and verified settlement methods may be considered as part of the price assessment process.

### Asia-Pacific – Paraxylene (PX) spot weekly range

Prices are assessed on a fob South Korea, cfr Taiwan, cfr China and cfr southeast Asia basis.

Assessments are published as a range of the lowest bid and highest offer present in the market during the assessment week. If no trades are completed during the week, the price range is the lowest bid and highest offer in the market at close to 5:00pm Singapore time on Friday.

The fob South Korea and cfr southeast Asia paraxylene prices are assessed as a differential to the cfr Taiwan and cfr China markets in the absence of trade and bids and offers, using an assessment of the spread swap between the illiquid and liquid markets.

Argus publishes prices for the first full forward month (M+1) and the first half of the following month (M+2).

### Weekly markers:

The Argus cfr China, cfr Taiwan and fob South Korea weekly markers are an arithmetic average of the cfr China, cfr Taiwan and fob South Korea daily markers published in Argus Toluene and Xylenes Daily.

The cfr southeast Asia marker is assessed as a differential to the cfr Taiwan and cfr China markers based on a survey of market participants and other market information.

See the [Argus Toluene and Xylenes Daily methodology](#).

## Specifications

Location: Taiwan

Minimum trade size: 5,000t

Specification – ASTM 2360

Basis: cfr

Port basis: Kaohsiung, Mailiao, Taichung, Suao

Trading week: Monday-Friday 9:00am-5:00pm Singapore time excluding public holidays.

Location: China

Timing: 15-60 days forward

Minimum trade size: 5,000t

Specification – ASTM 2360

Basis: cfr

Port basis: Zhuhai, Shanghai, Ningbo, Dalian, Xiamen, Hainan

Trading week: Monday-Friday 9:00am-5:00pm Singapore time excluding public holidays.

Location: South Korea

Timing: 15-60 days forward

Minimum trade size: 5,000t

Specification – ASTM 2360

Basis: fob

Port basis: Ulsan, Daesan, Onsan, Yeosu, Incheon

Trading week: Monday-Friday 9:00am-5:00pm Singapore time excluding public holidays.

Location: Southeast Asia

Timing: 15-60 days forward

Minimum trade size: 5,000t

Specification – ASTM 2360

Basis: cfr

Port basis: Map Ta Phut, Merak, Kuantan

Trading week: Monday-Friday 9:00am-5:00pm Singapore time excluding public holidays.

## Sinopec Contract Price (SPCP)

The SPCP is a monthly retrospective Chinese domestic settlement price announced by Sinopec, usually in the first working week of each calendar month.

The price is decided by Sinopec, which has used it to settle term deals since January 2009.

The published SPCP is the final settled price on a delivered basis and excludes any volume discounts that Sinopec gives to buyers.

Argus also publishes the SPCP import parity equivalent in \$/t by using the following formula: Sinopec delivered yuan price / 1.17 (17% VAT) / 1.02 (2% import tax) / prevailing \$/Yn forex.

## Asia-Pacific – MEG (monoethylene glycol)

Argus publishes weekly MEG prices on a cfr China and fob Korea basis. Assessments include trades, bids and offers up to 5.00pm Singapore time.

- If multiple trades meeting the below specifications are reported, Argus will publish the lowest and highest trade price for that week.
- If no trades meeting the below specifications are reported during the week, Argus will publish the highest bid and the lowest offer.

The fob Korea price assessment is a net-back calculation from the cfr China assessment. The net-back employs the prevailing freight rates between Korea and Ningbo, Zhangjiagang and Taicang for that week.

Argus also publishes a monthly cfr Asia contract price range for MEG, the highest and lowest of the monthly offers from Shell, MEGlobal and SABIC.

Details of each offer will be included in the commentary. These three companies offer a contract price to the broader market around the middle of each calendar month for the month ahead. The offer price may not be the final settlement price.

## Specifications:

Location: China

Timing: up to 30 days from the date of publication

Trade size: 1,000t

Specification: minimum purity 99.5pc

Basis: cfr

Port Basis: Ningbo, Zhangjiagang and Taicang

Trading week: Monday-Friday 9.00am-5.00pm Singapore time excluding public holidays

## Asia-Pacific – Purified pterathalic acid (PTA) spot weekly range

Argus publishes a weekly PTA cfr China price range set by the lowest bid and highest offer during the week.

Assessments include trade, bids and offers up to 5:00pm Singapore time.

- If multiple trades meeting the below specifications are reported, Argus will publish the lowest and highest trade price for that week.
- If no trades meeting the below specifications are reported during the week, Argus will publish the lowest bid and the highest offer.

Argus excludes cargoes of Thai origin in its price assessment because of limited spot trade.

Argus also publishes a weekly cfr China PTA marker. This weekly marker price is the arithmetic average of the daily price assessments published in Argus Toluene and Xylenes Daily.

See the [Argus Toluene and Xylenes Daily methodology](#) for detail.

## Specifications

Location: China

Timing: up to four weeks from the date of publication.

Minimum trade size: 1,000t;  
 Specification: 4-Carboxy Benzaldehyde: max 25ppm, Para-Toluic Acid: max 170ppm  
 Basis: cfr  
 Port basis: Ningbo, Zhangjiagang  
 Roll date: first business day following the 15th of each calendar month  
 Trading week: Monday-Friday 9:00am-5:00pm Singapore time excluding public holidays.

### PTA – Domestic China

Argus publishes weekly domestic Chinese PTA prices.

Assessments include trades, bids and offers up to 5.00pm Singapore time.

- If multiple trades meeting the below specifications are reported, Argus will publish the lowest and highest trade price for that week.
- If no trades meeting the below specifications are reported during the week, Argus will publish the highest bid and the lowest offer.

#### Specifications:

Location: Domestic China  
 Timing: up to 14 days from the date of publication  
 Trade size: 1,000-2,000t  
 Specifications: Acid Number: 675 +/-2; 4-Carboxy Benzaldehyde: max 25ppm  
 Basis: delivered within Jiangsu and Zhejiang province  
 Trading week: Monday-Friday 9.00am-5.00pm Singapore time excluding public holidays

### Asia-Pacific – Orthoxylene spot weekly range

Argus publishes fob South Korea Asia, cfr southeast Asia, cfr China and cfr India prices on a weekly basis. Argus weekly prices are primarily deals done over the business week up until the close on Friday at 5.00pm Singapore time.

- If multiple trades meeting the below specifications are reported, Argus will publish the lowest and highest trade price for that week. If no trades meeting the below specifications are reported during the week, Argus will publish the highest bid and the lowest offer.

Argus does not normalize cargoes that are exempt from import tax in China. The low-end of the cfr China range will represent cargoes of India/Middle East and South Korea origin while the high-end of the range will represent cargoes of Taiwan and southeast Asia origin, which are exempt from a 2pc import tariff. Similarly, the low-end of the fob northeast Asia price will represent cargoes of South Korea origin while the high-end of the range will reflect cargoes of Taiwan origin.

#### Specifications

Location: Northeast Asia  
 Timing: 15-60 days forward  
 Minimum trade size: 2,000t

Specification: Minimum purity of 98%; non-aromatic content of less than 0.3%

Basis: fob

Port basis: Ulsan, Yeosu, Mailiao, Kaohsiung

Trading week: Monday-Friday 9.00am-5.00pm Singapore time excluding public holidays

Location: Southeast Asia

Timing: 15-60 days forward

Minimum trade size: 2,000-3,000t

Specification: Minimum purity of 98%; non-aromatic content of less than 0.3%

Basis: cfr

Port basis: Singapore, Kuantan, Gresik

Location: China

Timing: 15-60 days forward

Minimum trade size: 2,000-3,000t

Specification: Minimum purity of 98%; non-aromatic content of less than 0.3%

Basis: cfr

Trading week: Monday-Friday 9.00am-5.00pm Singapore time excluding public holidays