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## ***ARGUS POTASH***

**Contents:**

Methodology overview	2
Argus Potash	5
Spot, contract and formula pricing	6
Terms	6
Units	6
Lot and cargo sizes	6
Products and specifications	6
Price Guide — How prices are defined	6
Freight	8

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The most up-to-date Argus Potash methodology 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 potash 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. The deals are also published in the daily report.

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

### Primary tests applied by reporters

- Transactions not transacted at 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 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

Potash prices are published in the Argus Potash 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 day assessed.

### Ethics and compliance

Argus operates according to the best practices in the publishing field, and maintains thorough compliance procedures throughout the firm. We want to be seen as a preferred provider by our subscribers, who are held to equally high standards, while at the same

time maintaining our editorial integrity and independence. Argus has a strict ethics policy that applies to all staff. The policy can be found on our website at [www.argusmedia.com](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.

## Argus Potash

Argus publishes the Argus Potash report once a week on a Thursday evening in the UK. The report contains a variety of price assessments and market commentary on international bulk markets of potash. These price assessments are published in the weekly report and in the Argus International Fertilizer Price Guide.

### Publication frequency

The weekly report is published 51 weeks of the year on a Thursday evening. The weekly Argus Potash report is not published for one week over the Christmas/new year holidays that take place in the UK; the publication schedule is available at [www.argusmedia.com](http://www.argusmedia.com).

Argus also provides market updates including real-time deals, pricing information and other market news stories affecting fertilizer supply, demand and pricing. These are produced on an ad hoc basis. There is no minimum number of updates and their frequency reflects market liquidity and the timing of other market news events.

### General methodology

Argus surveys a wide variety of market participants during the course of the week, including producers, traders, buyers, sellers and other market analysts. This survey seeks to confirm what trade has been done, by whom, as well as firm bids and offers. The goal is to cross check market transactions from all participants wherever possible. The survey also seeks to ascertain fundamentals data, tender news and supply and demand information. Argus will contact and accept market data from all credible market sources including front and back office of market participants and brokers.

### Assessing price ranges

Potash prices are assessed in various regions, countries and within countries on a free on board (fob) basis in the main export regions and on a cost and freight (cfr) basis in the main destination markets. Deals, bids and offers must be considered repeatable to be reflected in the assessments.

The report seeks to determine price ranges in which actual transactions are taking place or in which transactions could have taken place between a willing buyer and seller.

When there is sufficient liquidity and deals data are deemed reliable and representative, the price range will be defined on the low and the high end of confirmed deals concluded throughout the trading week. These deals must meet the minimum volumes and strict delivery timing, as well as specifications as laid down in this methodology.

Information on transactions, bids and offers that lie outside the specifications of timing, size, location and quality may be used in assessing price ranges, but data on deals that lie within these specifications is given most weight.

In markets that periodically lack liquidity, Argus may assess price ranges based on a range of other market information including netbacks to more liquid markets and market fundamentals

Where there has been no discoverable business in a week for a specific pricing point, prices are usually held at the previous week's range. However, in the absence of verified high or low deals, Argus also reserves the right to make an assessment of the range based on what deals could have been achieved within that time frame based on market fundamentals.

The price guide reflects the last seven days of business, Friday through to Thursday. However, while all information and trades are taken into account, in periods of high volatility, assessments are weighed towards trading activity later in the week or at the end of the Thursday of the assessment.

## Spot, contract and formula pricing

### Spot

Spot pricing refers to specific cargoes sold that are scheduled to load no later than 40 days forward from when the sale has taken place.

### Contract

Contract pricing is split out from normal spot pricing and refers to significant sales volumes contracted for more than a three-month shipping period.

The major contracts in India and China determine these where potash is concerned. Contract timing in both India and China has varied considerably and therefore cannot be characterised in the usual yearly or half-yearly terms.

### Formula

Formula pricing is an arrangement where a buyer and seller agree in advance on the price to be paid for a product delivered in the future, based upon a predetermined calculation, sometimes involving published prices.

Given that the exact nature of the calculation or the agreement between the parties is often private and confidential, and if the deal is considered a one-off (i.e. not repeatable), then calculated netbacks are not used in formulation of a spot price range. However, if a buyer and seller use this method of pricing for multiple transactions on a specific trade route, then the editor may use the deal in formulating a spot price range using current known cfr levels, domestic prices in the destination country and indicative freight rates. This applies particularly when spot markets are illiquid or opaque.

## Terms

Most transactions are conducted on a sight/cash basis, but where credit terms apply, e.g. up to 270 days, these are taken into account and subtracted from the price so that the published price is net of credit or other terms. The exception is the Indian contract price, which has traditionally been booked with 180 days and is quoted as such.

## Units

Prices are assessed in US dollars per tonne (\$/t), apart from granular MOP cfr Europe and standard SOP fob Europe, which are priced in euros per tonne (€/t), and granular MOP fob New Orleans, which is priced in US dollars per short ton (\$/st).

## Lot and cargo sizes

For international trade, the minimum lot size is 5,000t of a particular product, except where otherwise stated in the methodology. There is a wide variety of shipment sizes employed in the potash trade, with much of it being handled in 20,000-65,000t vessels.

## Products and specifications

### Standard MOP

Water soluble potash content (as K<sub>2</sub>O nutrient) minimum 60pc.

Moisture max 0.50pc by weight.

Particle size: varies according to supplier but smaller than granular MOP.

### Granular MOP

Water soluble potash content (as K<sub>2</sub>O nutrient) minimum 60pc.

Moisture max 0.50pc by weight.

Particle size: varies according to supplier but typically not more than 5pc is below 1mm size.

### Standard SOP

Water soluble potash content (as K<sub>2</sub>O nutrient) minimum 50pc.

Sulphur (as S) by weight minimum 17.5pc.

Moisture max 1.50pc by weight.

Particle size: varies according to supplier but smaller than granular SOP.

### Granular SOP

Water soluble potash content (as K<sub>2</sub>O nutrient) minimum 50pc.

Sulphur (as S) by weight minimum 17.5pc.

Moisture max 1.50pc by weight.

Particle size: varies according to supplier but typically not more than 5pc is below 1mm size.

## Price Guide — How prices are defined

### MOP – fob

Fob contract prices are assessed using the major cfr contract prices in India and China less freight costs. Fob spot prices are assessed using fob sales or spot cfr sales less freight costs.

### MOP - standard bulk

### Vancouver fob

### NW Europe fob

### FSU fob

This assessment includes product from Belarus and Russia. Belarusian product is shipped mostly from the Baltic Sea port of Klaipeda, Lithuania and Russian product from St Petersburg. Exports also take place from Black Sea ports, but to a much lesser extent.

### Jordan fob

### Israel fob

Israeli product is shipped from Mediterranean and Red Sea ports, Ashdod and Eilat, respectively. Price assessments include exports from both ports.

### Chile fob

## MOP - granular bulk

### Vancouver fob

### NW Europe fob

### FSU fob

This assessment includes product from Belarus and Russia. Belarusian product is shipped mostly from the Baltic Sea port of Klaipeda, Lithuania and Russian product from St Petersburg. Exports also take place from Black Sea ports, but to a much lesser extent.

### Jordan fob

### Israel fob

Israeli product is shipped from Mediterranean and Red Sea ports, Ashdod and Eilat, respectively. Price assessments include exports from both ports.

### Chile fob

### New Orleans (Nola) fob

See the [Argus North American Fertilizer methodology](#).

## MOP – cfr standard bulk

### Southeast Asia

The price of standard MOP product in cargoes of 5,000t and above. The assessment is of prices in the major southeast Asian markets of Indonesia, Malaysia, Vietnam and Thailand. Sales to other regional markets satisfying the product and quantity specifications will be taken into consideration. Granular MOP spot prices are shown in parentheses as a premium to the spot price range for standard MOP.

### India cfr including 180 days' credit

Prices in India are assessed on the basis of cfr contract prices for standard MOP only. The length of the contracts in number of months varies depending on when the contracts are concluded. Once the first contract is agreed (normally by Indian Potash Ltd) then all subsequent agreements for that contract term traditionally use the same headline price. Discounts apply for ports discharging faster than 5,000 t/d but this is not reflected in our assessment.

### China cfr

Prices in China are assessed on the basis of cfr contract prices for standard MOP only. The length of the contracts in number of months varies depending on when the contracts are concluded. Once the first contract is agreed (normally by a consortium of buyers including state-owned Sinochem's fertilizer arm Sinofert, China National Agricultural Means of Production Group (CNAMPGC) and state-owned CNOOC), then all subsequent agreements for that contract term traditionally follow the same headline price.

## MOP – cfr granular bulk

### Brazil cfr

### Europe cfr

Spot prices for granular MOP in Europe are assessed for cargoes of all sizes on the basis of cfr spot transactions primarily to ports in Benelux and France.

### Thailand/Vietnam

The assessment is of cfr sales to importers in Vietnam and Thailand. The granular MOP is primarily used to make bulk blended NPKs or applied directly. Formula-related sales are excluded from the assessment.

## SOP – fob standard bulk

### NW Europe fob

Prices are assessed on the basis of mostly cfr spot prices with estimated freight cost deducted. Prices are for standard SOP product.

## SOP – fob granular

### East Asia granular SOP fob (bagged)

The assessment is of fob sales from Taiwan and China by both producers and traders.

Most product is shipped in lot sizes below 1,000t and commonly in containers. The minimum trade quantity for consideration in the assessment is 100t. Taiwanese product is commonly shipped in 25kg bags.

Regardless of the lot size, Chinese SOP exports in bags containing 10kg or more are excluded from the assessment because the Chinese export tax system heavily penalises such shipments. Chinese SOP exports in 9.5kg bags are now commonplace and are included in the assessment.

In the absence of fob sales, netbacks from cfr business can be used to assess the range. The main outlet markets include Australia, Japan, South Africa, Mexico, Peru, Iran and the US.

Formula-related sales are excluded from the assessment.

## Freight

Argus Potash includes several freight rate assessments. Prices are assessed as a range, and include information collected over the course of the trading week.

Freight rate assessments are established by surveying freight providers and buyers of spot freight, maintaining a balance between both parties. The assessment is for cargoes that will load and move within the next 30 days.

- Vancouver-China (60,000-65,000t)
- Vancouver-southeast Asia (25,000-30,000t) - southeast Asia refers to Malaysia and Indonesia
- Vancouver-Brazil (30,000-35,000t)
- Red Sea-west coast India (25,000-30,000t)
- Baltic Sea-China (60,000-65,000t)
- Baltic Sea-southeast Asia (25,000-30,000t) - southeast Asia refers to Malaysia and Indonesia
- Baltic Sea-Brazil (30,000-40,000t)
- Baltic Sea-Nola (50,000-55,000t)
- Hamburg-Brazil (30,000-35,000t)