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## ARGUS NITROGEN

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## 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 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 Nitrogen fertilizer markets, Argus publishes prices 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, 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 to 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 judgment 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 judgment 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 judgment

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 judgment 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 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.
- Analysis of prices in forward markets for physically deliverable commodity that allow extrapolation of value into the prompt timing for the commodity assessed.
- 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

Because of the varying transportation infrastructure found in all commodity markets, 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. 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 judgment.

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 judgment in the price assessment process.

### Minimum transaction thresholds

Assessment	Minimum trade volume for inclusion in assessment
Prilled urea - fob bulk Black Sea	5,000t
Granular urea - Egypt fob (Europe)	5,000t
Prilled urea - China fob	5,000t
Granular urea - Middle East fob - US netback	5,000t
Granular urea - Brazil cfr	5,000t
Granular urea - US Gulf fob	1,500st
Ammonium sulphate - China fob	5,000t
UAN - Rouen 30pc fca	100t
France AN fca	100t
UK AN cif	100t
Germany CAN cif inland	100t

### Transparency

Argus values transparency in markets. As a result, 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 Nitrogen fertilizers prices are published in the Argus Nitrogen 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.

### 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 also correct errors that arise from mistakes made by market participants in reporting transactions. Argus will not retroactively assess markets based on new information learned after the assessments are published.

### 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 commodities or 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 judgment 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 judgment.
- 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 judgment for illiquid markets.
- Editors are required to sign-off on all price assessments each day, thus ensuring the consistent application of judgment.

### Review of methodology

The overriding objective of any methodology is to produce price assessments which are reliable 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 physical 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.

## General methodology

Argus surveys a wide variety of market participants including producers, trader, 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

Nitrogen prices are assessed on a free on board (fob), cost and freight (cfr), cost, insurance and freight (cif) or free carrier (fca) basis. Deals, bids and offers must be considered repeatable to be included 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. 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 deals that lie within these specifications are 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.

## Assessment period

Unless stated, prices are assessed and published weekly. Weekly prices are for the week up to and including the day of publication. Market information received after 4.30pm London time on the day of publication may not be considered for inclusion in the assessment. During periods of high volatility, weekly price assessments are weighted towards trading activity later in the week.

## Spot and formula pricing

Spot pricing refers to specific cargoes sold that are scheduled to load within 40 days of the sale being agreed. These prices are cash prices, i.e. net of any credit.

Formula pricing is an arrangement where a buyer and seller agree in advance that the price to be paid for a product delivered in the future will be based on a pre-determined calculation, sometimes uti-

listing published prices from Argus and/or other publications. 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.

## Units

Most prices are assessed in \$/t, apart from US domestic assessments, which are priced in short tons (st), European market assessments, which are priced in €/t or £/t and the fca Geelong assessment, which is priced in Australian dollars per tonne. Argus Nitrogen also includes reference prices for weekly US and European natural gas prices in \$/million British thermal units (\$/mn Btu).

## Lot and cargo sizes

For international trade, unless noted otherwise, the minimum lot size used for consideration and inclusion in the relevant price range is 5,000t of a particular product (this includes part cargoes on larger vessels including other fertilizers and for which the freight rate may be more favourable – although this will be explained in the text).

Exceptions: US domestic prices, which are for one barge, assumed to be carrying a minimum of 1,500st, with no set maximum number of barges. There may be occasions when a barge is loaded with less quantity for reasons of low draught levels, but this will be explained fully in the text.

Fob northwest Europe (standard) and northwest Europe (granular) ammonium sulphate prices, which consider for inclusion in the assessment trade of at least 500t for trade to destinations within Europe. Trades to other destinations or to unknown destinations must be for at least 5,000t.

Fob Black Sea ammonium sulphate prices are for trade of at least 2,000t.

For the nitrogen report, Argus considers cargoes as follows — typical short sea routes in Europe — for example from Egypt — employ vessels of 5,000-6,000t. Deepsea voyages employ handysize vessels and above:

- Handysize 10,000-35,000t (the majority of deepsea nitrogen trade)
- Handymax (35,000-49,000t)
- Panamax (50,000-70,000t)

In the US domestic nitrogen market, a typical barge at New Orleans (Nola) is 1,500st.

## Terms

Some transactions are conducted on a sight/cash basis, but where credit terms apply, e.g. up to 180 days, these are taken into account and subtracted from the price so that the published price is net of credit or other terms.

## Products and specifications

### Urea

**Urea** is a dry bulk fertilizer containing 46pc nitrogen by weight. It is produced by combining ammonia with carbon dioxide, which is generated during the production of ammonia. It is produced in two forms — prilled and granular. Both of these are widely used for direct application to land. Granular urea is also often used as a feedstock for bulk blending for NPK manufacture. Prilled urea is also used in a variety of industrial processes. Prices are only assessed based on deals concluded in the agricultural sector. Sales to the industrial sector may be discussed in the text, but will not form part of the assessment.

### Ammonium sulphate (amsul)

**Ammonium sulphate (amsul)** is a dry bulk fertilizer containing 21pc nitrogen and 24pc sulphur. It is used for direct application in agriculture, as a component in producing nitrogen fertilizers containing sulphur and as a raw material in making compound fertilizers. Ammonium sulphate is produced primarily as a by-product or co-product of other processes, most commonly in the manufacture of caprolactam and acrylonitrile and also from steel making. Caprolactam grade ammonium sulphate is sometimes referred to as standard or crystalline ammonium sulphate. Steel grade ammonium sulphate is a lower quality product and is often referred to as raw material grade. The prices assessed refer to caprolactam grade ammonium sulphate, except where specified.

### Ammonium nitrate (AN)

**Ammonium nitrate (AN)** is a dry bulk fertilizer containing 33.5-34.5pc nitrogen. It is used for direct application in agriculture. AN can also be used as an explosive. The prices published in Argus nitrogen refer only to agricultural grade AN. AN is classified as a hazardous substance and various countries have introduced regulations controlling its transport, storage and handling.

### Urea ammonium nitrate (UAN)

**Urea ammonium nitrate (UAN)** solutions are a liquid fertilizer typically containing 28-32pc nitrogen and consisting of 50pc urea and 50pc ammonium nitrate in liquid form. UAN is used in a minority of countries owing to the more sophisticated handling, storage and application required. UAN is not a hazardous substance and requires only mild steel tanks to transport and store it.

### Calcium ammonium nitrate (CAN)

**Calcium ammonium nitrate (CAN)** is a dry bulk fertilizer containing 26-28pc nitrogen. It is used for direct application in agriculture.

### Ammonium chloride

**Ammonium chloride** is a by-product of soda ash production used as a raw material for NPK fertilizer production.

## Markets covered

### Prilled urea

#### Black Sea fob

The price is derived from sales of urea from Black Sea ports. Sales are made both fob to trading companies and cfr to end-buyers. Both the fob sales and prices netted back from cfr sales are used in determining the weekly price range. The main export markets are Turkey, eastern Europe and Latin America. Russian urea is subject to a 6.5pc import duty in the EU and Turkey.

#### Baltic fob

This price is derived from sales of mainly Russian urea made through several Baltic ports. Russian urea producers regularly sell through Baltic ports, not only on a fob basis to traders, but also on a cfr basis to end-buyers. Both the fob sales and prices netted back from cfr sales are used in determining the weekly price range. The main markets for Baltic urea are in North and South America and in Europe. Russian urea is subject to a 6.5pc import duty in the EU and Turkey.

#### Middle East fob

This price relates to sales from Qatar and Saudi Arabia. Much of the urea is sold under price formulae to regular buyers. Prices are determined through conversations with the producers in the two countries and traders and end-users in the client markets.

#### China fob

Daily and weekly prices are published. Daily prices are assessed 9am-5pm Singapore time.

Prices are for prilled urea shipped from a range of ports in China. Prices are determined through conversations with Chinese suppliers, trading companies that buy urea from producers and distributors in the country.

#### Southeast Asia cfr

The price of spot sales of prilled urea to southeast Asian markets including but not limited to the Philippines, Vietnam and Malaysia. Prices are determined through conversations with producers, trading companies and end-users in the region.

#### Brazil cfr

This price assessed is for all Brazilian ports. It is determined through conversations with trading companies and end-buyers.

#### Mexico east coast cfr

This price assessed is for all Mexican east coast ports, the main destinations for imports of prilled urea into the country. It is determined through conversations with export producers, trading companies and end-buyers. Mexico is a major outlet for prilled urea from Russia.

#### Prilled urea India (cfr)

This price is assessed for all Indian ports. It is based on prices set in tenders held by government agencies and any private sector imports. The price range reflects the lowest and highest prices set in the tenders for different discharge ports. Government tenders take place at

varying intervals throughout the year. In the absence of private sector business, prices will remain unchanged from one tender to the next.

### Granular urea

#### Middle East fob all netbacks

This price range is based on the high and low points of the three subsequent price assessments. The assessment excludes shipments from Iran.

#### Middle East fob – US netback

This is a calculated price based on the US Gulf cfr metric tonne price (see below) minus the freight rate for a 35,000-45,000t vessel between the Mideast Gulf, excluding Iran, and the US Gulf. The assessment also includes any spot sales made fob Middle East specifically for the US market. Iranian urea is excluded from the US market. The US Gulf cfr price is derived from the domestic fob barge assessment, downstream of any tariffs paid for any imported product. Therefore, for the calculation of the fob Middle East netback, any US import duty applicable to origin markets in the Middle East is removed from the US Gulf cfr price before the freight rate is subtracted.

#### Middle East fob – Brazil netback

This is a calculated price based on the Brazil cfr metric tonne price (see below) minus the freight rate for a 40,000t vessel between the Middle East Gulf, excluding Iran and Brazil. The assessment also includes any spot sales made fob Middle East specifically for the Brazilian market.

#### Middle East fob – non-US netbacks (spot)

Daily and weekly prices are published. Daily prices are assessed 9am-4:30pm London time.

This price is based on assessments of spot market sales for Middle East granular urea, excluding Iran. A minority of sales by Middle East urea producers are made on a spot basis. However, this price is the most representative of the current situation in the urea market and is used as a benchmark in formula-based sales. The price is determined through conversations with Middle East producers, trading companies and end-buyers.

Prices are assessed based on fixed-price fob sales reported by producers and traders. Where there are no confirmed fixed-price sales during the week, prices are assessed using firm bids and offers confirmed by suppliers, traders and buyers. Netback calculations from representative markets may also be considered. Netback calculations are made based on cfr sales minus representative freight rates for the vessel sizes involved.

#### Iran fob

This price is based on exports from Iranian ports. Iranian urea cannot trade freely owing to international sanctions against the country. It is sold through a small number of specialist trading companies that are prepared to trade with Iran. The restrictions on its sale mean that Iranian urea has to be sold at a discount to urea from other producers in the Middle East.

### Egypt fob (Europe)

Daily and weekly prices are published. Daily prices are assessed 9am-4:30pm London time.

Prices are for sales of the exporting producers in Egypt to European markets and Turkey. Prices are determined by conversations with the producers in Egypt and trading companies who buy the urea from them.

### Egypt fob (non-Europe)

This price is based on the sales of the exporting producers in Egypt to markets excluding Europe and Turkey. Prices are determined by conversations with the producers in Egypt and trading companies who buy the urea from them.

### Algeria fob

This price is based on the sales of the two exporting producers in Algeria. Sales are made using various price formulae as well as on a fixed-price basis. The prices are assessed based on fob sales and on netbacks calculated from the various markets in which Algerian urea is sold, mainly in western Europe and the Americas. Prices are determined by conversations with the producers and the trading companies that buy the urea from them.

### Granular urea north Africa full range

This price assessment is set by taking the high and low prices from the Egypt (fob Europe and fob non-Europe) and Algeria fob assessments.

### Nigeria fob

This price is based on the sales of the exporting producers in Nigeria. Netback calculations are also used in weeks when no spot sales have taken place, based mainly on Brazil, which is the largest destination for Nigerian urea exports. Prices are determined by conversations with producers and the trading companies that buy urea from them.

### China fob

This price is based on exports from producers and trading companies in China. Granular urea is mainly exported from ports in northern China, with the exception of urea from China BlueChemical's plant at Basuo in Hainan province. Prices are determined by conversations with producers and trading companies active in the region.

### Southeast Asia fob

This price is based on exports from Petronas in Malaysia and Indonesian producer PT Pupuk Kalimantan Timur (Kaltim) and state-owned Brunei Fertilizer Industries. Prices are determined by conversations with producers and trading companies active in the region.

### Southeast Asia cfr

This price refers to sales of granular urea made principally in Thailand, Vietnam and the Philippines from a variety of origins, including but not limited to the Middle East, Indonesia, Malaysia and Brunei. Prices are determined by conversations with producers supplying into the region, trading companies and end-buyers in southeast Asia.

### East coast Australia cfr

The price of imports into the Australian east coast. Prices are determined through conversations with buyers and suppliers. The main origins are typically the Middle East and southeast Asia.

### Geelong, Australia fca

The price of at least 10t, bulk from warehouses in Geelong for shipment by truck. Assessed and published in Australian dollars/tonne.

### Venezuela/Trinidad fob

This price is based on shipments from Fertinitro in Venezuela and Nutrien in Trinidad and Tobago. Most sales are made based on formula pricing. Where there are no spot sales in a particular week, prices are calculated from cfr values for granular urea in the US Gulf and Latin America minus freight.

### Argentina cfr

### Brazil cfr

Daily and weekly prices are published. Daily prices are assessed 9am-4:30pm London time.

Prices are for all Brazilian ports and are determined through conversations with trading companies and end-buyers. Brazil is a major outlet for granular urea from the Middle East, Nigeria and north Africa.

### Mexico west coast cfr

This price is assessed for all Mexican Pacific coast ports. It is determined through conversations with export producers, trading companies and end-buyers. Mexico is a major outlet for granular urea from the Middle East and China.

### US Gulf fob (pst barge)

Daily and weekly prices are published. See Urea (granular) Nola barge fob in the [Argus North American Fertilizer methodology](#).

### US Gulf (cfr metric)

See Urea (granular) Nola cfr t import eq in the [Argus North American Fertilizer methodology](#).

### Nola barge weighted average

Daily and weekly prices are published. See Urea (granular) Nola urea delivery month barge-weighted average in the [Argus North American Fertilizer methodology](#).

### French Atlantic fca euro

This price is based on imported granular urea sold from the ports of La Pallice, Bordeaux and Bayonne. The main supply sources are Egypt and Algeria, with additional urea sold from Russia, the Netherlands and from the Middle East. Prices are determined from conversations with importers, traders and producers involved in the trade.

### Granular urea Baltic fob

This price is derived from sales of Russian and Belarusian urea made through Baltic ports, mainly on a fob basis to traders, but also on a cfr or fca basis to end-buyers. Both the fob sales and prices netted back from cfr/fca sales are used in determining the weekly

price range. Prices are determined by conversations with producers and trading companies active in the region and with buyers in European and American markets.

### Granular urea Black Sea fob

This price is derived from sales of Russian and Central Asian urea made through Black Sea ports. Producers regularly sell through ports in the Black Sea, mainly on a fob basis to traders, but also on a cfr or fca basis to end-buyers. Both the fob sales and prices netted back from cfr/fca sales are used in determining the weekly price range. The main markets for Black Sea urea are in Turkey, the Balkans, Mediterranean, Europe and North and South America. Russian, Turkmen and Azeri urea is subject to a 6.5pc import duty in the EU. Prices are determined by conversations with producers and trading companies active in the region and with buyers in key markets.

### Romania cfr

The price of imports into Constantza. Prices are determined through conversations with buyers and suppliers. The main origins are typically Egypt and central Asia.

### Granular urea India (cfr)

This price is assessed for all Indian ports. It is based on prices set in tenders held by government agencies and any private sector imports. The price range reflects the lowest and highest prices set in the tenders for different discharge ports. Government tenders take place at varying intervals throughout the year. In the absence of private sector business, prices will remain unchanged from one tender to the next.

## Ammonium sulphate

### Northwest Europe fob (granular caprolactam)

This price covers exports of granular caprolactam grade ammonium sulphate from key ports in northwest Europe. The product is made up of 20-21pc nitrogen and 24pc water-soluble sulphur. The granular caprolactam grade is a larger type of granule that can be more accurately and widely spread than the standard caprolactam grade. The price is assessed on the basis of discussions with producers, traders and buyers active in the region. The price is assessed in US dollars per tonne.

### Northwest Europe fob (standard caprolactam)

This price covers exports of standard (also known as crystalline) caprolactam grade ammonium sulphate from key ports in northwest Europe. The product is made up of 20-21pc nitrogen and 24pc water-soluble sulphur. The standard caprolactam grade is a smaller type of granule than granular caprolactam grade. The price is assessed on the basis of discussions with producers, traders and buyers active in the region. The price is assessed in US dollars per tonne.

### China fob (compacted)

This price covers exports of compacted caprolactam grade ammonium sulphate from a range of ports in China. The price is assessed on the basis of discussions with producers, traders and buyers active in the region.

### China fob (standard caprolactam)

Daily and weekly prices are published. Daily prices are assessed from 9am Singapore to 4:30pm London time.

This price covers exports of standard caprolactam grade ammonium sulphate from a range of ports in China. The price is assessed on the basis of discussions with producers, traders and buyers active in the region.

### Southeast Asia cfr (caprolactam)

This price refers to sales of caprolactam grade ammonium sulphate imported to Malaysia, Indonesia, Thailand, Vietnam and the Philippines. The largest supply source is China, but there are also sizeable exports from South Korea and Japan into the region. Shipment size is typically 5,000-6,000t but can extend to 25,000t for some buyers.

### Brazil cfr (compacted)

Daily and weekly prices are published. Daily prices are assessed 9am-4:30pm London time.

This price refers to sales of compacted caprolactam grade ammonium sulphate made to ports in Brazil. The main supply sources are in China, Europe and the US.

### Brazil cfr (standard caprolactam)

This price refers to sales of standard caprolactam grade ammonium sulphate made to ports in Brazil, which is the largest importer of this product worldwide. The main supply sources are in western Europe, China and the US.

## Ammonium chloride

### cfr southeast Asia

The price of deliveries to southeast Asia including but not limited to Malaysia, Indonesia, Vietnam and the Philippines.

## Ammonium nitrate

### Baltic fob bulk

This price covers exports of ammonium nitrate in bulk from Russian producers from a range of ports in the Baltic Sea. The main export destinations are in South America and Africa. The price is assessed on the basis of discussions with producers, traders and buyers active in the region.

### Black Sea fob bulk

This price covers exports of ammonium nitrate in bulk from exporters in the region. The main export destinations are Brazil and African markets. The price is assessed on the basis of discussions with producers, traders and buyers active in the region.

### AN UK cif bagged

AN 34pc is imported from various countries, primarily Lithuania and Poland, and offered on a cif or fca bagged basis. Imported AN is priced in relation to UK-produced AN, to which it sells at a discount as domestic AN is favoured. The published price is assessed on the basis of conversations with various market participants including producers, importers, distributors, traders and buyers. AN is

normally imported in vessels of less than 5,000t and delivered by truck to inland destinations.

### CAN Germany

Yara and OCI are among the CAN producers active in Germany. Commonly, producers will announce official list prices for the month ahead or until further notice. The CAN price published is assessed on the basis of conversations with various market participants including producers, importers, distributors, traders and buyers, and reflects the level at which actual trade is taking place.

All of these assessments are based on cargo sizes of a minimum 100t. Most commonly, barge lots are 1,500-2,000t with quantities below this usually transported by trucks.

### UAN solutions

#### Nola (short ton)

See UAN Nola barge fob in the [Argus North American Fertilizer methodology](#).

#### Rouen 30% N fot (€)

This is a price for 30pc solution ex-terminal in Rouen, France, in €/t. Rouen is the main import port for UAN solutions shipped to France. Imports supply 100pc of the UAN solutions consumed by farmers in France. The price is assessed on the basis of discussions with producers, traders and buyers active in the region.

#### Fob Black Sea

This is a price for 32pc solution fob Black Sea port in \$/t. There is only one regular exporter of UAN solutions from the Black Sea — Russian producer Eurochem, which exports from Novorossiysk.

#### Fob Baltic Sea (non-Russian)

This is a price for 32pc solution of non-Russian origin UAN fob Baltic Sea port in \$/t. The price is assessed on the basis of discussions with producers, traders and buyers active in the region.

#### Fob Baltic Sea (Russian)

This is a price for 32pc solution of Russian origin UAN fob Baltic Sea port in \$/t. The price is assessed on the basis of discussions with producers, traders and buyers active in the region.

## CAN production costs

Argus publishes calculated calcium ammonium nitrate (CAN) production costs based on Argus assessments and assumptions about the costs of various import and production pathways.

Unless stated, market prices for ammonia, CAN, CO<sub>2</sub> emissions allowances, electricity and electricity guarantees of origin are the most recent published Argus assessments.

Production costs are bottom up estimated costs for a typical CAN and associated upstream nitric acid plant operating in northwest Europe with an annual production capacity of 330,000t. The cost model includes variable raw material costs (water, catalysts) and

fixed costs (labour, maintenance and overheads) for nitric acid and variable raw material costs (limestone, coating agents) and fixed costs (labour, maintenance and overheads) for CAN. Assumed costs and production model inputs are reviewed annually, in January, and changes are announced to subscribers.

See the [Argus Ammonia](#), [Argus Carbon](#), [Argus European Electricity](#), [Argus Renewable Gas and Power](#) and [Argus Hydrogen and Future Fuels](#) methodologies. CO<sub>2</sub> production assumptions are drawn from *The Carbon Footprint of Fertiliser Production: Regional Reference Values*.

### Carbon-adjusted inland Germany

The northwest Europe CAN price plus the prompt EU ETS price assuming 0.825t CO<sub>2</sub>/t CAN produced.

### Ammonia import-based cif inland northwest Europe

The northwest Europe ammonia price plus the cost of moving ammonia from the point of import to the CAN production plant, plant operating costs and Dutch month-ahead wholesale electricity prices. The calculation assumes \$5/t to move ammonia from the point of import to the CAN production plant, 0.35t of ammonia, \$111 in operating costs and 52.6kWh of power consumed per tonne of CAN produced. Fixed transport and operating costs for calculated prices before 2024 have been adjusted for inflation.

### Carbon-adjusted ammonia import-based cif inland northwest Europe

The Ammonia import-based cif inland northwest Europe value plus the prompt EU ETS price assuming 0.87t CO<sub>2</sub>/t CAN produced.

### BAT+ (best available technology + CCS) ammonia-based cif inland northwest Europe

The Dutch BAT+ ammonia price plus plant operating costs and Dutch month-ahead wholesale electricity prices. The calculation assumes 0.35t of ammonia, \$111 in operating costs and 52.6kWh of power consumed per tonne of CAN produced.

### Carbon-adjusted BAT+ (best available technology + CCS) ammonia-based cif inland northwest Europe

The BAT+ (best available technology + CCS) ammonia-based cif inland northwest Europe value plus the prompt EU ETS price assuming 0.34t CO<sub>2</sub>/t CAN produced and the cost of Dutch guarantees of origin for power from any renewable source.

### No-C (no CO<sub>2</sub> emissions) ammonia-based cif inland northwest Europe

The Dutch No C ammonia price plus plant operating costs and the levelised cost of power in the Netherlands. The calculation assumes 0.35t of ammonia, \$111 in operating costs and 52.6kWh of self-generated renewable power consumed per tonne of CAN produced. The levelised cost of power is used to approximate the unit cost of self-generated electricity.

## Natural gas prices

### Henry Hub (\$/mn Btu)

This price is calculated as a weekly average of closing prices for Henry Hub gas published in other Argus reports. The Henry Hub is one of the main pricing points for natural gas in the US market.

See the [Argus Natural Gas Americas methodology](#).

### TTF month ahead (\$/mn Btu)

This price is calculated as a weekly average of closing prices for TTF gas published in Argus European Natural Gas. The TTF is one of the main pricing points for natural gas in western Europe.

See the [Argus European Natural Gas methodology](#).

## Freight rates

The freight rate in the Argus Nitrogen report shows the week's average spot rate range and the prior week's range. Argus publishes prices for international dry bulk and liquid shipping markets for fertilizers and raw materials. Assessments are of the prevailing spot rates for the major bulk fertilizer trade routes and relevant vessel sizes. Market information received after 4.30pm London time on the day of assessment may not be considered for inclusion in the assessment. Subject to publication schedules, these assessments are usually repeated in full on the following Friday in the Argus Dry Freight report.

The freight ranges 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. Argus makes an assessment of the range between the low and high prices provided.

### Dry bulk

Mideast Gulf\*-US Gulf (45,000t)  
 Mideast Gulf\*-Thailand (30,000t)  
 Mideast Gulf\*-Brazil (40,000t)  
 Baltic-Brazil (30,000t)  
 Nigeria-Brazil (30,000t)  
 Egypt-French bay (6,000t)  
 China-SE Asia (6,000t)  
 China-India (60,000t)  
 Algeria-Brazil (30,000t)  
 Algeria-US Gulf (30,000t)  
 Algeria-French bay (12,000t)  
 Baltic-EC Mexico (30,000t)  
 Baltic-WC Mexico (25,000t)  
 China-WC Mexico (25,000t)  
 \*excluding Iran

### Liquid

Klaipeda-Rouen (25,000-30,000t)