



ARGUS RARE EARTHS

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LAST UPDATED: NOVEMBER 2015

The most up-to-date Argus Rare Earths methodology is available on www.argusmedia.com

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.

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.

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.

Verification of transaction data

Reporters carefully analyse all data submitted to the price assessment process. These data can 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 and location basis.

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 and in some cases the previous day where appropriate in less liquid markets.

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. Included in this policy are restrictions against staff trading in commodities assessed by Argus or stocks related to those commodities, 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.

Consistency in the assessment process

Argus recognises the need to have judgment applied consistently 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:

1. A global price reporting manual describing among other things the guidelines for the exercise of judgment
2. 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
3. Experienced editors overseeing reporting teams are involved in daily mentoring and assisting in the application of judgment for illiquid markets
4. Editors are required to sign off on all price assessments, thus ensuring the consistent application of judgment.

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.

Rare earths overview

Argus publishes 58 price assessments spanning 13 rare earth elements, covering heavy and light elements. Price assessments are published on the Argus Rare Earths service through the Argus Direct website and the weekly Argus Rare Earths report, which is published each Thursday. Argus has specialist metals reporters in China, India, Brazil, the US, the UK, Ireland and South Africa.

The Argus Rare Earths service delivered through the Argus Direct platform provides daily online news, twice-weekly price assessments, market commentary, trade data, and historical price data. The service also offers news and price alerts by email and to mobile devices.

The service includes the weekly Argus Rare Earths pdf report, which provides a weekly snapshot of rare earths price assessments. The report includes detailed market commentary, market-relevant news and feature articles, price charts, trade data and a project tracker showing the progress of new mining projects. A table summarising all price updates for the current week, for reference, is included.

Price indexes

The service includes monthly and quarterly price indexes. These are cumulative arithmetic averages of published spot price assessments over the current month and quarter. The final average value for the previous month and quarter are also shown for comparison.

Prices are also published on the Metal-Pages English language website: <https://www.metal-pages.com/> and Chinese language website <http://www.metal-pages.cc/>

Methodology and specifications

Rare earth price assessments are for physical material for spot delivery, with "spot" defined as delivery within four weeks. Assessments reflect the average value of spot material across the whole of the day of assessment.

Price assessments are compiled by 6pm UK time and published by 8pm UK time. Chinese domestic and export prices are assessed twice a week, on Tuesdays and Thursdays. European delivered prices are assessed once a week, on Thursdays, owing to lower liquidity in that market.

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.

Fob China assessments are basis export duty paid, including any export taxes levied by China. Fob China prices are not inclusive of any import duty charged by the importing country.

China domestic prices are basis ex-works, VAT paid, unless otherwise stated.

European prices are basis in-warehouse Rotterdam, duty unpaid unless otherwise stated.

Assessments are for powder for oxides and ingot for metal.

Prices are assessed to two decimal places in either yuan/t (Yn/t), yuan/kg (Yn/kg) or in US dollars/kg (\$/kg). Specifications, such as currency, unit of trade and quality, follow recognised industry standards (*see below for further detail of specifications*).

Assessment process

Price assessments are informed by data and information gathered through a survey conducted by specialist market reporters by telephone, email and instant messaging. Reporters contact a wide cross-section of market participants, including producers, consumers, marketers, traders and other intermediaries. As many participants as possible are contacted. Where relevant, Argus may also take into account information from exchanges, government agencies, trade associations. When gathering data on transactions, reporters seek to obtain the price level, volume, specifications and delivery terms.

When assessing prices, market reporters take into account spot trades, bids and offers and other relevant information. Trades and bids/offers must be deemed repeatable in order to be taken into account in the assessment process. 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.

In illiquid market conditions, where there are no spot trades reported, and where the market is not populated by visible bids and offers, reporters apply intelligent judgment to form an assessment. The assessment will take into account participants' opinions on the price levels at which spot trade could occur, and other information including price levels in other related and more active markets, and fundamental supply and demand.

Argus rare earths specifications

Rare earths	
Element	Currency/unit
Cerium	
Ce Carbonate 45% REO China	Yn/t
Ce Carbonate 45% REO fob China	\$/kg
Ce Metal 99% min China	Yn/t
Ce Metal 99% min fob China	\$/kg
Ce Oxide 99.5-99.9% China	Yn/t
Ce Oxide 99.5-99.9% fob China	\$/t
Ce Oxide 99.5-99.9% Europe	\$/kg
Dysprosium	
Dy Metal 99% min fob China	\$/kg
Dy Oxide 99.5% min China	Yn/kg
Dy Oxide 99.5% min fob China	\$/kg
Dy Metal 99% min China	Yn/kg
Dy Oxide 99.5% min Europe	\$/kg
Erbium	
Er Oxide 99.5% Europe	\$/kg
Er Oxide 99.5% min China	Yn/t
Europium	
Eu Metal 99.9% min fob China	\$/kg
Eu Oxide 99.99% min China	Yn/kg
Eu Oxide 99.99% min fob China	\$/kg
Ferro-dysprosium	
Ferro-dysprosium Dy 80% min EXW	Yn/kg
Ferro-dysprosium Dy 80% min fob	\$/kg
Gadolinium	
Gd Metal 99% min China	Yn/t
Gd Metal 99% min fob China	\$/kg
Gd Oxide 99.5-99.9% min China	Yn/t
Gd Oxide 99.999% min fob China	\$/t
Lanthanum	
La Metal 99% min China	Yn/t
La Metal 99% min fob China	\$/kg
La Oxide 99.5-99.9% China	Yn/t
La Oxide 99.5-99.9% fob China	\$/t
La Oxide 99.999% min China	Yn/t
La Oxide 99.999% min fob China	\$/kg
Lanthanum cerium chloride min 45% REO	Yn/t

Rare earths	
Element	Currency/unit
Mischmetal	
Mischmetal La 35% Ce 65% China	Yn/t
Mischmetal La 35% Ce 65% fob China	\$/kg
Mischmetal low Zn and Mg China	Yn/t
Mischmetal low Zn and Mg fob China	\$/kg
Neodymium	
Nd Metal 99% min China	Yn/t
Nd Metal 99% min fob China	\$/kg
Nd Oxide 99.5-99.9% China	Yn/t
Nd Oxide 99.5-99.9% fob China	\$/t
Nd Metal 99% Europe	\$/kg
Nd Oxide 99.5-99.9% Europe	\$/kg
Praseodymium	
Pr Metal 99% min China	Yn/t
Pr Metal 99% min fob China	\$/kg
Pr Oxide 99.5-99.9% China	Yn/t
Pr Oxide 99.5-99.9% fob China	\$/t
Praseodymium-neodymium	
Pr-Nd Metal 99% min China	Yn/t
Pr-Nd Metal 99% min fob China	\$/kg
Pr-Nd Oxide 99% min China	Yn/t
Pr-Nd Oxide 99% min fob China	\$/t
Samarium	
Sm Metal 99% min China	Yn/t
Sm Metal 99% min fob China	\$/kg
Sm Oxide 99.5% min China	Yn/t
Sm Oxide 99.5% min fob China	\$/kg
Terbium	
Tb Metal 99.9% min China	Yn/kg
Tb Metal 99.9% min fob China	\$/kg
Tb Oxide 99.99% min China	Yn/kg
Tb Oxide 99.99% min fob China	\$/kg
Tb Oxide 99.99% min Europe	\$/kg
Yttrium	
Y Metal 99.9% min China	Yn/kg
Y Metal 99.9% min fob China	\$/kg
Y Oxide 99.999% min China	Yn/t
Y Oxide 99.999% min fob China	\$/t
Y Oxide 99.999% Europe	\$/kg