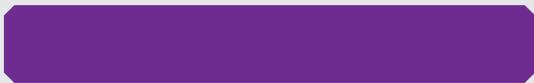


Aluminium low-carbon differentials: P1020A and value added products, Europe



Methodology and price specifications – March 2021

Mission statement

Fastmarkets is a leading commodity price reporting agency (PRA) covering the metals, mining, minerals and forest products industries. Our products include Fastmarkets MB, Fastmarkets AMM, Fastmarkets IM, Fastmarkets RISI, Fastmarkets FOEX and Random Lengths. For more than 100 years we have been providing commodities price reporting services for use by market participants in their day-to-day commercial activities. These services include assessments and indices of commodity prices as well as news, research and commentary on the underlying markets.

Our mission is to meet the market's data requirements honestly and independently, acting with integrity and care to ensure that the trust and confidence placed in the reliability of our pricing methodologies is maintained. We do not have a vested interest in the markets on which we report.

Introduction

Fastmarkets MB is the leading global provider of pricing intelligence for the non-ferrous metal, steel, steelmaking raw materials, industrial minerals, ferrous and non-ferrous scrap markets, producing price assessments since 1913.

Fastmarkets MB reporters are required to abide by a code of conduct and clear pricing procedures during their market reporting and pricing activities. Fastmarkets is completely independent and has no vested commercial interest in any of the markets it prices.

We are the world's largest dedicated metals price reporting team. We have offices in London, New York, Pittsburgh, Shanghai, Hong Kong, Sao Paulo, Melbourne, Singapore, Mumbai, Dnepr, Istanbul and five other US locations.

The aim of this document is to provide a clear overview of Fastmarkets MB's low-carbon aluminium differentials methodology and specifications.

If you have any questions, please contact the Fastmarkets editorial director Alex Harrison at aharrison@fastmarkets.com.

Specifications

EUROPE

MB-AL-0381 **Aluminium low-carbon differential
P1020A, Europe, \$/tonne**

Carbon limit: 4tCO₂e per tonne of aluminium produced, Scope 1 and 2 emissions
Quality: P1020A or 99.7% minimum Al purity (Si 0.10% max, Fe 0.20% max). Ingot
Quantity: Min 100 tonnes
Location: Europe
Unit: USD/tonne
Timing: Within three months
Publication: Monthly, first Friday of the month, 4pm London

MB-AL-0382 **Aluminium low-carbon differential
value added product, Europe,
\$/tonne**

Carbon limit: 4tCO₂e per tonne of aluminium produced, Scope 1 and 2 emissions.
Type: Extrusion billet, primary foundry alloy, wire rod, slab
Quantity: Min 100 tonnes
Location: Europe
Unit: USD/tonne
Timing: Within three months
Publication: Monthly, first Friday of the month, 4pm London

Price discovery and methodology

What is a differential?

There are two Fastmarkets low-carbon aluminium differentials: one for primary aluminium (P1020A); and one for value-added products (VAPs) - aluminium billet, foundry alloys, slab and wire rod.

A differential means the market can be at a premium, a discount or at parity (0). The differentials will be published as an assessed range unless the low-carbon aluminium market is assessed at 0.

Methodology rationale

Fastmarkets' base metals pricing team aims to produce independent, transparent, fair and representative price assessments.

Fastmarkets has adopted and developed a clear and rigorous price discovery process and methodology, as described in the present guide, to produce assessments that are a consistent and representative indicator of the value of the market to which they relate for the trading period they measure.

Fastmarkets supports the process of price discovery through its established and independent position in the metals market. Fastmarkets also employs price reporters that are trained to abide by its methodology and code of conduct, and are dedicated to specific markets and regions. In the case of the low-carbon aluminium differentials, assessments are carried out by a dedicated primary aluminium price reporter and, when not available, by a back-up reporter within the aluminium team. There are also two back-up reporters from other base metals who are trained to be able to price these aluminium differentials.

Before being able to properly assess the market, we must ensure that we understand exactly what information we are trying to collect. The granularity of a price is essential to defining the market and we must therefore be sure that we are clear on our price specifications and the market trends before gathering any pricing data.

Because the aluminium market is constantly evolving, Fastmarkets reporters are constantly monitoring developments by engaging in discussion with market participants to ensure its price specifications and assessment techniques remain relevant and as representative of the market as possible.

Defining low-carbon aluminium

For data to be accepted, it must meet and reflect the standards set in the specifications: a maximum of 4 tonnes of CO₂ equivalent (4tCO₂e) per tonne of aluminium produced, outlined in the [Green House Gas Protocol Scope 1 and 2 emissions](#).

Under the protocol, Scope 1 carbon emissions refers to the direct carbon emissions from a smelter. Scope 2 carbon emissions refers to the carbon emissions from a smelter's power source.

Fastmarkets' assessment does not take into account carbon offsets, ie, reductions in carbon emissions made to compensate for emissions made elsewhere.

Fastmarkets will continue to monitor shifts in the definition of low-carbon aluminium and adapt its specifications and methodology accordingly.

To verify data submitted, Fastmarkets may seek confirmation of provided data by requesting to see contracts or other signed paperwork such as smelter carbon emissions certifications before inclusion of the data in the price assessments. If this is not possible, the data supplied may be excluded or discarded from the assessment process.

In the future, it is possible Fastmarkets could accept brands or smelter origins from a list compiled by major industry bodies.

Data collection

Collection window

During the price discovery process, the price reporter aims to discover at what representative level market participants have concluded business, made offers or received bids over a defined time period, or window.

Fastmarkets' base metals price assessments are published between 3-4pm London local time. They are not published on England and Wales public holidays, in accordance with the London Metal Exchange holiday calendar.

Price assessments that are due to be published on UK public holidays will instead be published on the closest working day, within the same calendar month, that precedes or follows that date.

Please refer to the [pricing holiday schedule](#) for this year's public holidays.

When deals are reported to Fastmarkets, a reporter will ask whether there is low-carbon aluminium differential included.

If so, the section of the deal which is a low-carbon differential will be entered into the assessment process for the low-carbon differential, and the underlying premium will be entered into the process for the market it relates to.

For example: If a deal was reported at \$100 per tonne for aluminium P1020A dup Rotterdam, in-whs, with a \$5 per tonne low-carbon differential, the \$5 per tonne would be entered into the low-carbon P1020A differential assessment process and the underlying \$95 per tonne would be entered into the P0120A dup Rotterdam, in-whs, premium assessment process.

If no low-carbon differential is included, even if the deal is for a low-carbon brand of aluminium, the deal will only be used in the underlying premium assessment which it relates to. [See infographic on page 10.](#)

Data contribution

Any market participant actively involved in the physical aluminium spot market may become a data contributor following a review by Fastmarkets of its activities. The aim is to ensure that submitters have sufficient visibility and understanding of the market to be able to provide reliable price data.

Fastmarkets aims to engage a broad and balanced range of physical market participants in the provision of data, including producers, consumers and traders who are selling or buying aluminium.

We expect that data submitters taking part in the pricing process are authorised to report market data on behalf of their organisations.

Fastmarkets' Data Submitter Policy provides guidelines to ensure the high level of data quality and integrity that we expect from contributing organisations providing pricing data. The Policy can be found on Fastmarkets' website or is available upon request.

Fastmarkets encourages contributors to submit all their pricing data, especially all their concluded transactions, and not be selective. Only transactions that have been concluded at arm's length and data that match the price specifications – or can be calculated back to meet the specifications – will be included in the assessment.

Price reporters generally speak to, and collect data from, front office staff directly involved in the commercial

buying and selling of aluminium. But they also welcome organisations to submit pricing data from authorised back office functions.

The price reporter collects data primarily by telephone, but also by email, digital messenger services or face-to-face.

The key to good price discovery is to speak whenever possible to sources on both sides of a transaction to cross-check the pricing information received. All data supplied to Fastmarkets is kept strictly confidential and stored in our secure online pricing database system MInD (Metals Information Database).

Fastmarkets may sign Data Submitter Agreements (DSAs) with any data provider, if requested to do so, to maximise the number of data points collected for inclusion in the assessment process. Any data received subject to DSAs will be used in the pricing assessment but not be published.

For new data submitters, Fastmarkets follows the procedure for adding new sources into Fastmarkets' price database system (MInD).

Data analysis

Assessment using specifications and expert judgment

Once data collection is complete, Fastmarkets reviews the data points applying its methodology and its expert judgment to set the price range to reflect the representative spread of prices at which business has been transacted, offered or bid, or indicated in the absence of business.

Before making an assessment, the following factors must be considered:

- Does the deal have a specific low-carbon aluminium differential?
- Is the information received credible? If questionable: have we seen signed contracts (preferable), or has it been confirmed on both sides of the deal?
- If credible: were all the differentials in a similar range?
- Were all the deals reported of a similar size?
- Did all the sources indicate the market was headed in the same direction? If not, why not?
- In the absence of trade, what are the prevailing bids/offers in the market? Did the source provide firm bids/offers or indicative numbers?

- What are the positions of the contributors?

Once the above factors have been considered, Fastmarkets will produce a price assessment following the guidelines below.

Fastmarkets does not treat all collected information equally, but has a justification and rationale for how each piece of information obtained has been used. Greater weighting is given to actual concluded transaction data, but other data is also used: bids and offers are second behind transactions in order of importance, followed by deals indirectly reported to Fastmarkets (referred to as deals heard) and lastly by data sources' own evaluations of the market when they have no business to report.

Other considerations might also intervene in the price assessment such as, the trustworthiness of a data source based on past data submissions, or their willingness to provide data on a consistent basis.

When no actual transactions can be collected, extra caution is applied during the price assessment process. Price reporters are encouraged to keep the price unchanged until actual transactions back up a change. Price reporters can adjust the price to reflect our assessment of the tradeable value in an open and competitive market.

As a general rule, larger deals carry more weight, but Fastmarkets tries to ascertain what sort of discount a large lot size carries or what sort of premium a smaller deal would carry.

Fastmarkets will compare the information received from a single source with the information provided by the same source in the previous pricing cycle. This way, if a source consistently gives low or high numbers, Fastmarkets can still use the data without it unduly influencing its assessment.

Criteria for discarding pricing data

Fastmarkets will use its expert judgment to exclude outlying or unrepresentative numbers, and discount or discard prices that it believes may otherwise be questionable and unreliable.

Outliers will be investigated, and suspected attempts to unfairly influence the price assessments may result in the data provider being warned or excluded.

When a transaction appears questionable or well outside the range reported by other market participants, Fastmarkets may seek confirmation of

the claimed deal by requesting to see contracts or other signed paperwork before inclusion of the data in the price assessments. If this is refused, Fastmarkets will seek to corroborate the information it receives by matching trades. So if a seller tells us he has sold a certain amount at a certain level, we then try to speak to the buyer involved in the transaction to confirm the transaction.

If this is not possible, the data supplied may be excluded from the assessment process.

Fastmarkets reserves the right to exclude data that is not fairly presented or is believed may be an effort to distort the price assessments.

Data publication

Peer review process

All Fastmarkets' price assessments are set by a first reporter who covers that specific market, peer reviewed by a second reporter, and always signed-off and approved by a senior reporter or editor prior to publication.

This peer review process, which takes place in MInD, is fully auditable and is in place to make sure that pricing procedures and methodologies are correctly and consistently applied, and to ensure the integrity and quality of the published prices.

Price reporters are formally trained in the price discovery process and must abide by a written Code of Conduct and pricing procedures.

Publication

At the end of the peer review process, Fastmarkets publishes its price assessments via MInD and onto its website and price book.

To enhance market transparency and to provide evidence of data inputs that support the price discovery process, Fastmarkets may publish trade logs for its aluminium prices, while maintaining full counterparty confidentiality, pricing data and volume received from data contributors.

Fastmarkets also publishes pricing rationales to explain price settlement and editorial judgment. These notes explain, for instance, why price reporters may conclude whether anomalous or suspicious data should be excluded; when reporters determine a price and a price

range based on market information; or when judgment is applied when the dataset collected is not considered suitably robust so that fallback procedures need to be applied.

Price correction policy

Publication of price errors can occasionally happen for reasons that may include technical, input errors or incorrect application of the methodology.

To minimise the inconvenience to our subscribers, Fastmarkets aims to investigate each error as soon as it becomes aware of it and to publish a correction promptly on its website through a pricing notice with an explanation of the reason for the correction. Fastmarkets will publish a correction of a price only where it has established undeniably that there has been an error. Fastmarkets' price assessments are produced based on the best data available at the time of the assessment. It will not retroactively change a price based on new information or additional submission of data received after a respective pricing session has closed.

Low liquidity measures

Fastmarkets aims to reflect the tradeable level in the open and competitive market, by using confidence and significance as our guiding principles to interpret the data collected. We aim to achieve consistent and understandable price assessments that incentivize best-practice price discovery.

We reflect a hierarchy of data, with transactions, bids, offers and assessments all being taken into account. Transaction data is tested to ensure it conforms to the principle of accurately reflecting the tradeable level of the open and competitive market.

In an evolving market, spot trade can be limited and sporadic. Term contracts currently dominate the low-carbon aluminium market, and Fastmarkets will pay close attention to annual and quarterly negotiations to monitor the market's evaluation of the differential.

During the contractual negotiation period, whether annual or quarterly, Fastmarkets reporters will gather bids, offers and concluded differentials and apply editorial judgment to derive an assessment range.

In between contractual negotiation periods, Fastmarkets will continuously test market conditions, referencing the most recent contractual negotiations but also taking account of current market conditions influencing participants' view of the current value of the low-carbon differential. Factors affecting the low-carbon differential may include increased or reduced demand, supply disruptions, new brands of low-carbon aluminium arriving in the market and new or revised government carbon emissions policies.

In markets that trade only sporadically on a spot basis, a whole-session assessment approach creates a fairer reflection of market conditions over time. The whole session approach for a monthly price can mean that a wide range of prices or evaluations is reported. The aim is to identify the prevailing market level, without undue weight to specific data, such as favoring activity that has taken place toward the end of the pricing period. If a wide range of prices becomes the norm over a monthly period, this would amount to a compelling argument for increasing the frequency of the assessment, pending the result of an open consultation.

Methodology and price specification review process

Fastmarkets' editorial teams carry out a formal review of its methodologies on an annual basis.

The process starts with an open consultation in which feedback is invited from users. Further consultation follows should any material change to the methodology be proposed. Material changes are those that, once implemented, may result in fundamental changes to the published price.

At the end of the consultation process, the editorial teams review any feedback received and decide on whether a change should be made before announcing and explaining that decision to the market via a pricing notice/coverage note.

The editorial teams may also suggest changes or additions to methodologies on an ad-hoc basis to reflect market developments, in which case they will follow the same process as outlined for formal reviews.

As low-carbon aluminium is a new and developing market, Fastmarkets expects there may be changes to the methodology's specifications in the future.

These changes could include pricing frequency and carbon limits. As well as the future possibility of breaking up the low-carbon aluminium VAP basket.

For more details, please refer to Fastmarkets' Methodology Review and Change Consultation Process document available on the Fastmarkets website, as well as on divisional websites such as Fastmarkets MB or Fastmarkets FOEX.

The evolution of pricing

Fastmarkets develops and adjusts its pricing mechanisms in response to changing market conditions. The evolution of long-term contracts to index-linked pricing often occurs as industry players seek to link their pricing to market fundamentals and spot market activity. This trend has been seen clearly in the aluminium market. While Fastmarkets does not seek to drive the direction of the markets it covers, it aims to identify opportunities where spot market activity can be captured, and greater transparency provided through new price assessments.

The development of a pricing mechanism is a process, and as liquidity increases, the sophistication of the pricing methodology can be increased.

Queries and complaints

Fastmarkets encourages engagement from the market on its pricing principles and methodology. The company promotes understanding of its pricing procedures and is committed to responding to requests for further information and clarification on a timely basis.

There are multiple channels for interaction with the pricing team including email, telephone and instant messenger services.

If a subscriber has an issue with the published prices, then they may contact the pricing team. In the event that the response is not satisfactory the issue may be escalated to the internal compliance department. For more details refer to Fastmarkets' Complaint Handling Policy available on Fastmarkets' website.

Fastmarkets takes all queries and complaints seriously and will seek to provide an explanation of the prices wherever possible. It is important to note, however, that input data remain confidential and cannot be provided to third parties.

Calculation of average prices

There is a monthly average high price and average low price. The LME monthly averages are calculated by dividing the sum of the daily bid/ask mean by the number of trading days during the month.

Calculation of inferred prices

Fastmarkets will also be publishing some inferred mid-point low-carbon aluminium prices. These will be calculated using the mid-point of the underlying premium and the mid-point of the low-carbon aluminium differential.

The below inferred prices will be published (this may expand as market demand increases):

MB-AL-0377	Aluminium P1020A premium, in-whs dup Rotterdam, inferred low-carbon mid-point, \$/tonne
MB-AL-0378	Aluminium P1020A premium, in-whs dp Rotterdam, inferred low-carbon mid-point, \$/tonne
MB-AL-0379	Aluminium 6063 extrusion billet premium, ddp Italy (Brescia region), inferred low-carbon mid-point, \$/tonne
MB-AL-0380	Aluminium 6063 extrusion billet premium, ddp North Germany (Ruhr region), inferred low-carbon mid-point, \$/tonne

These differentials could be used on top of Fastmarkets' underlying European P1020 and VAP premiums including, but not limited to:

MB-AL-0346	Aluminium P1020A premium, in-whs dup Rotterdam, \$/tonne
MB-AL-0004	Aluminium P1020A premium, in-whs dp Rotterdam, \$/tonne
MB-AL-0316	Aluminium P1020A premium, fca dp Italy \$/tonne
MB-AL-0319	Aluminium P1020A premium, fca dp Spain, \$/tonne
MB-AL-0300	Aluminium 6063 extrusion billet premium, ddp Italy (Brescia region), \$/tonne
MB-AL-0302	Aluminium 6063 extrusion billet premium, ddp North Germany (Ruhr region), \$/tonne
MB-AL-0002	Aluminium 6063 extrusion billet premium, in-whs dp Rotterdam, \$/tonne
MB-AL-0299	Aluminium 6063 extrusion billet

MB-AL-0339	premium, ddp Spain, \$/tonne Aluminium primary foundry alloy silicon 7 ingot premium, ddp Germany, \$/tonne
MB-AL-0340	Aluminium primary foundry alloy silicon 7 ingot premium, ddp Eastern Europe, \$/tonne

The low-carbon VAP assessment could also be used as an upcharge for other aluminium products, such as slab and wire rod, that Fastmarkets does not currently assess.

Become a contributor to the price discovery process

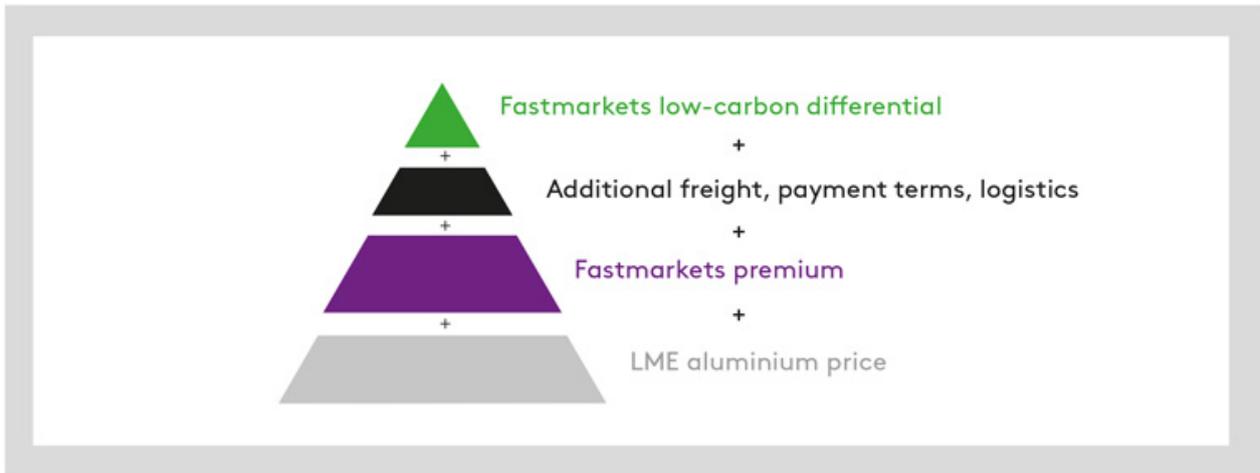
Fastmarkets continually seeks to increase the number of market sources willing to take part in the price discovery process. The main condition Fastmarkets requires from contributors is for them to be active participants in the spot market.

Fastmarkets' Data Submitter Policy provides guidelines defining the high level of data quality and integrity that Fastmarkets expects. Market participants that wish to provide pricing data and be part of the price discovery process should first read the Data Submitter Policy available on the website.

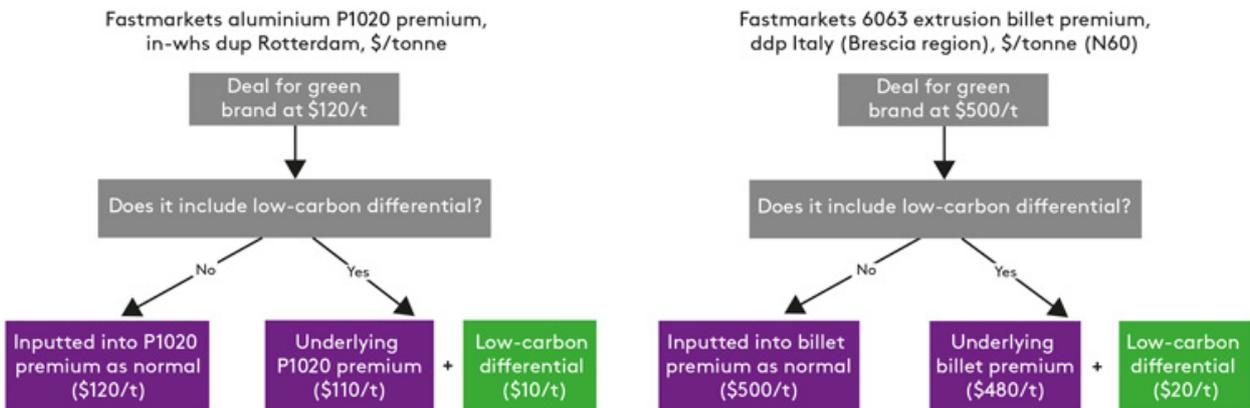
All data sources are subject to review before data submitted is fully taken into account in the pricing process. The aim is to make sure that submitters are trustworthy and have sufficient visibility and understanding of the market to be able to provide viable price data.

To become a contributor, or if you have questions or comments about the methodology and price specifications, please contact the Fastmarkets aluminium team.

What goes into a low-carbon aluminium contract and how is it assessed?



Examples:



* Figures used here are for illustrative purposes only and are not indicative of actual deals reported to Fastmarkets.

The differentials can be used on top of Fastmarkets' underlying European P1020 and VAP premiums including, but not limited to:

- MB-AL-0346 Aluminium P1020A premium, in-whs dup Rotterdam, \$/tonne
- MB-AL-0004 Aluminium P1020A premium, in-whs dp Rotterdam, \$/tonne
- MB-AL-0316 Aluminium P1020A premium, fca dp Italy \$/tonne
- MB-AL-0319 Aluminium P1020A premium, fca dp Spain, \$/tonne
- MB-AL-0300 Aluminium 6063 extrusion billet premium, ddp Italy (Brescia region), \$/tonne
- MB-AL-0302 Aluminium 6063 extrusion billet premium, ddp North Germany (Ruhr region), \$/tonne
- MB-AL-0002 Aluminium 6063 extrusion billet premium, in-whs dp Rotterdam, \$/tonne
- MB-AL-0299 Aluminium 6063 extrusion billet premium, ddp Spain, \$/tonne
- MB-AL-0339 Aluminium primary foundry alloy silicon 7 ingot premium, ddp Germany, \$/tonne
- MB-AL-0340 Aluminium primary foundry alloy silicon 7 ingot premium, ddp Eastern Europe, \$/tonne

The low-carbon VAP assessment could also be used as an upcharge for other aluminium products, such as slab and wire rod, which Fastmarkets does not currently price.

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