BENCHMARK MINERAL INTELLIGENCE

LITHIUM ION BATTERY CELL PRICE ASSESSMENT METHODOLOGY

UPDATED NOVEMBER 2024

CONTENTS

BENCHMARK MINERAL INTELLIGENCE

INTRODUCTION

BENCHMARK MINERALS MISSION STATEMENT

Benchmark Mineral Intelligence (Benchmark Minerals) strives to create methodologies that accurately reflect the market dynamics of the industries we cover and allow for independent data collection, free of distortion or misrepresentation.

In the lithium-ion battery cell market, we have identified 48 prices that best reflect the existing balance of production and trade flows, details of which can be found in the Price Definitions section of this document (section 3).

These prices include the most commonly utilised cathode chemistries: NCM111, NCM523, NCM622, NCM811, NCA, LCO and LFP. Furthermore, each price is specific to one of three major cell formats: pouch, prismatic and cylindrical.

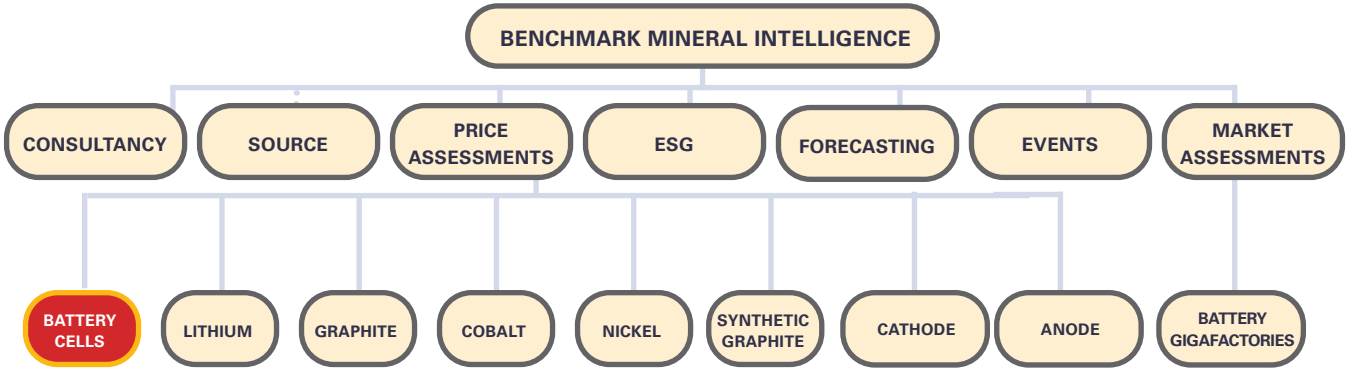
Prices for each of these products have been broken down into the geographies across which they are most commonly traded in order to provide a comprehensive global picture of pricing, encompassing the specific market dynamics across regions where notable differences in pricing exist.

Lithium-ion battery cells are non-exchange traded speciality products, where prices are negotiated privately between buyer and seller. Often, the exact specification of the cell is not stipulated by the buyer, which typically would be seeking specific characteristics such as energy density and life cycle. However, the lithium-ion battery cell prices we assess cover all major variations of cell being produced for the electric vehicle (EV), energy storage systems (ESS) and portable electronics sectors.

Benchmark Minerals' lithium-ion battery cell prices are based on its proprietary lithium ion cell cost model, which includes more that 50 price inputs but at its core relies on Benchmark's IOSCO compliant Price Assessments for lithium, nickel, cobalt flakes graphite and synthetic graphite prices.Those raw material price assessments are audited by a 3rd party consultancy annually to ensure adherence to IOSCO price reporting principles. By submitting those assessments to be audited to the most vigorous independent standards available (IOSCO Type II) we strive to continuously raise the bar for price reporting agencies covering critical minerals. Details of our price assessment methodologies for these critical raw materials are available on our website.

Due to the opaque nature of the industry, Benchmark Minerals employs expert analysts to collect and interpret this information, using editorial expertise to assess the information received. Approximately 65-70% of the inputs (by value) in our proprietary lithium-ion battery cell prices model are from Benchmark Minerals IOSCO compliant raw material prices (lithium, nickel, cobalt, graphite). The remainder of the inputs are from 3rd parties which fall under one of two categories: credible macroeconomic data purveyors (for example, European labour rates from the European Commission's

COMPANY STRUCTURE



BENCHMARK MINERAL INTELLIGENCE

INTRODUCTION

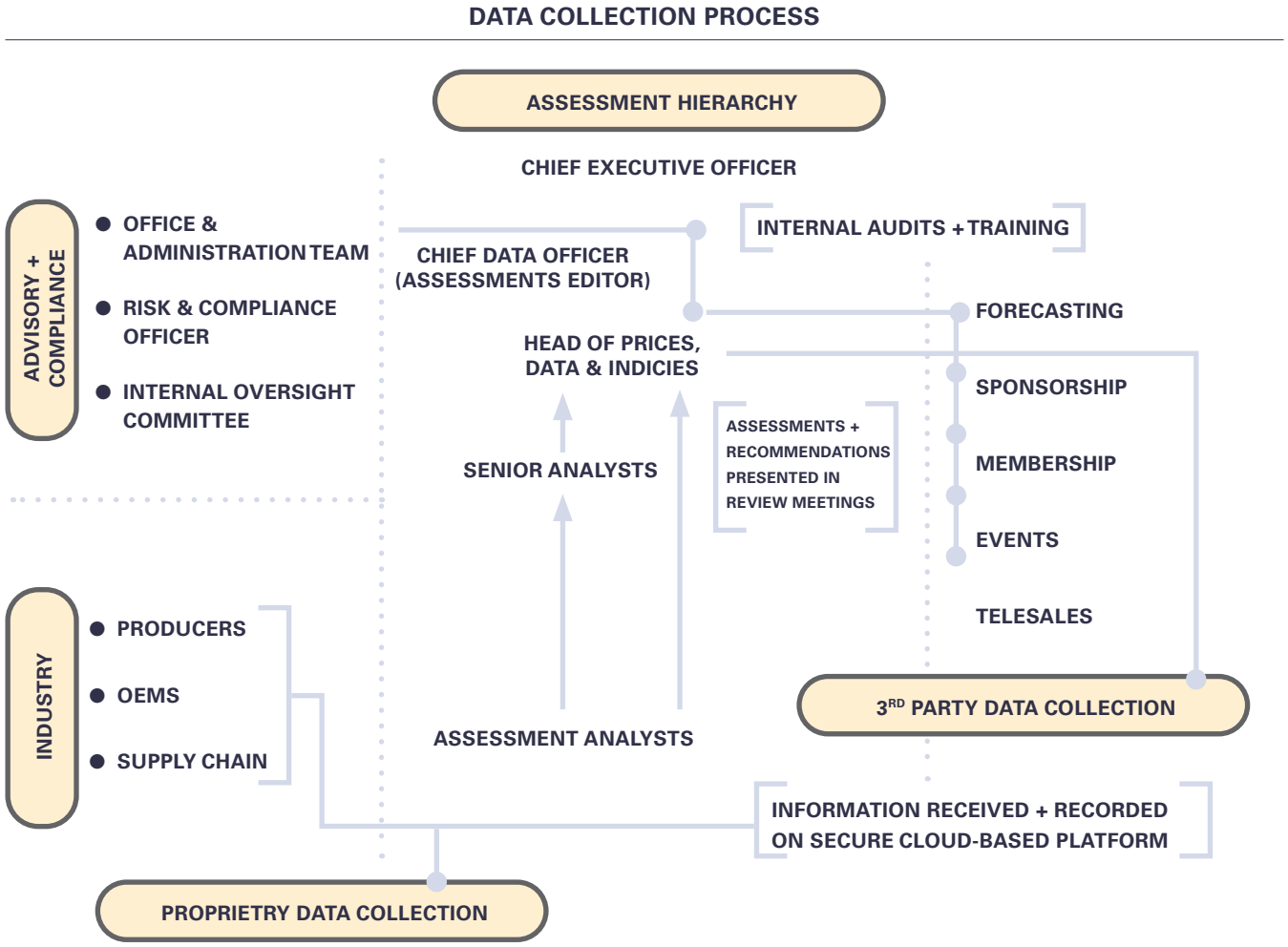
EUROSTAT data portal) or specialist price reporting outlets which have a credible reputation in their specific field. Benchmark chooses to partner with these organisations for the purpose of modelling cell prices to maximise the accuracy of our cell prices.

This methodology describes the process by which Benchmark Minerals assesses lithium-ion battery cell prices and the standards our analysts adhere to in data collection and price modelling. The information we publish is distributed directly to subscribers and also made available via our website for authorised users/ licensers.

The timing and delivery of this information is outlined in section 1.4. To ensure the data we publish is accurate, delivered on time and compliant with regulatory principles, Benchmark Minerals applies a number of failsafe processes that are outlined in this document to allow problems to be rectified when and if they occur.

Benchmark Minerals methodologies are created and updated in line with developments in each of the specific markets we cover. As the industries we follow evolve, we update the data we collect and process we adhere to in order to ensure the most accurate and relevant data is made available to the market. A full history of revisions to our methodology can be found in section 8.

All Benchmark Minerals methodologies are tailored to the markets they cover and reflect Benchmark's



INTRODUCTION

METHODOLOGY STRUCTURE

This methodology has been structured to provide a detailed description of our data collection and modelling processes and procedures, the rationale behind this process in relation to the lithium-ion battery cell prices market, and the compliance process we adhere to in order to ensure clear and transparent data reporting. The methodology is structured as follows:

- **SECTION 1:** An overview of the data we report, details of the data collection process and Benchmark Minerals' data assessment principles. This includes how and when data are distributed.
- **SECTION 2:** Highlights the key types of data that are collected for the assessment and how they relate to the market.
- **SECTION 3:** A detailed description of each lithium-ion battery cell price we publish, including a review of the significance of each price in relation to global trade flows.
- **SECTION 4:** A description of our compliance and security procedures, including how we adhere to regulatory principles relating to price reporting and benchmarking.
- **SECTION 5:** How we identify and substantiate corrections to published price data, including how any corrections are reported to the market.
- **SECTION 6:** Benchmark Minerals contact details.

1. DATA COLLECTION AND PRICE REPORTING

The objective of Benchmark Minerals lithium-ion battery cell price assessment is to provide an accurate and independent evaluation of global cell prices across all major chemistries, formats and geographies. While the prices covered in this assessment are model based, approximately 65-70% of the inputs (by value) come from Benchmark Minerals' IOSCO compliant price assessments for lithium, nickel, cobalt, graphite, and manganese.

During the price collection process for these raw material prices, data is collected directly from the market, and we encourage our sources to report any supplementary information possible in order to determine the most accurate reflection of the data we have collected. In order to protect the integrity of our assessments, Benchmark Minerals conducts regular reviews of the sources providing market information. These sources are also kept private in order to allow for open and honest information exchange.

In this section we detail how this information is collected, used and reported to the market via Benchmark Minerals Market Assessments. For the remaining inputs which feed into the lithium-ion battery cell price model, we source reliable data from 3rd party publishers.

These publishers may be commercial organisations, such as price reporting agencies, governmental organisations, such as national statistics associations, or non-governmental bodies such macroeconomic observatories. We can receive this data via multiple methods such as API, email, scraping and/or verbal or in person communication. Our data quality philosophy remains the same for all the data which goes into the lithium-ion battery cell price model whether proprietary or not – it must be accurate, from a credible source and frequently revised/updated.

1.1 HOW WE COLLECT DATA

Benchmark Minerals IOSCO audited proprietary prices – which form typically 65-70% of lithium-ion battery cell price model inputs (by value, as of July 2023) – are collected by polling a cross-section of active market participants. Our team of analysts verify and substantiate this information through a range of primary and secondary sources.

Our primary process involves a dedicated team of experienced market analysts communicating regularly with the industry via phone, email, messenger services and direct meetings in person.

For full details of Benchmark's raw material Price Assessment methodologies please visit our website to download a copy, there are available at: **https://www.benchmarkminerals.com/price-assessments/**

3rd party prices which constitute 30-35% of the lithium-ion battery cell price model inputs (by value, as of July 2023) are collected directly from source. We can receive this data via various methods such as API, email, scraping and/or verbal or in person communication. We then check the new/update data points to verify that any movement is within reasonable bounds and can be explained by public market developments or from the data source.

The frequency of these 3rd party updates varies from monthly to quarterly depending on the source. Once we are confident that new price inputs are accurate we input them into the lithium-ion battery cell price model.

One distinct feature of the lithium-ion battery cell price model is the inclusion of margin data to ensure that the finished price is indeed a "market price" rather than "ex-works cost".

We model margins based Benchmark's interaction with market contacts and public data, for example financial reports to the United States Securities and Exchange Commission (SEC) and seek to find a credible update on margin percentages for all major regions covered in the price assessments.

We infer changes to margin either from direct or indirect data. An example of direct data is "the margin for X is 5% compared to 6% last quarter" and an example of indirect data is "margins for X have

1. DATA COLLECTION AND PRICE REPORTING

increased by 50% this quarter". For the latter, we apply the relative change to our previous margin input.

The cutoff time for the initial assessment is 5pm (London) on the day prior to publication. If any information is received after this point, it is included in the following assessment.

1.2 TYPICAL INTERACTIONS

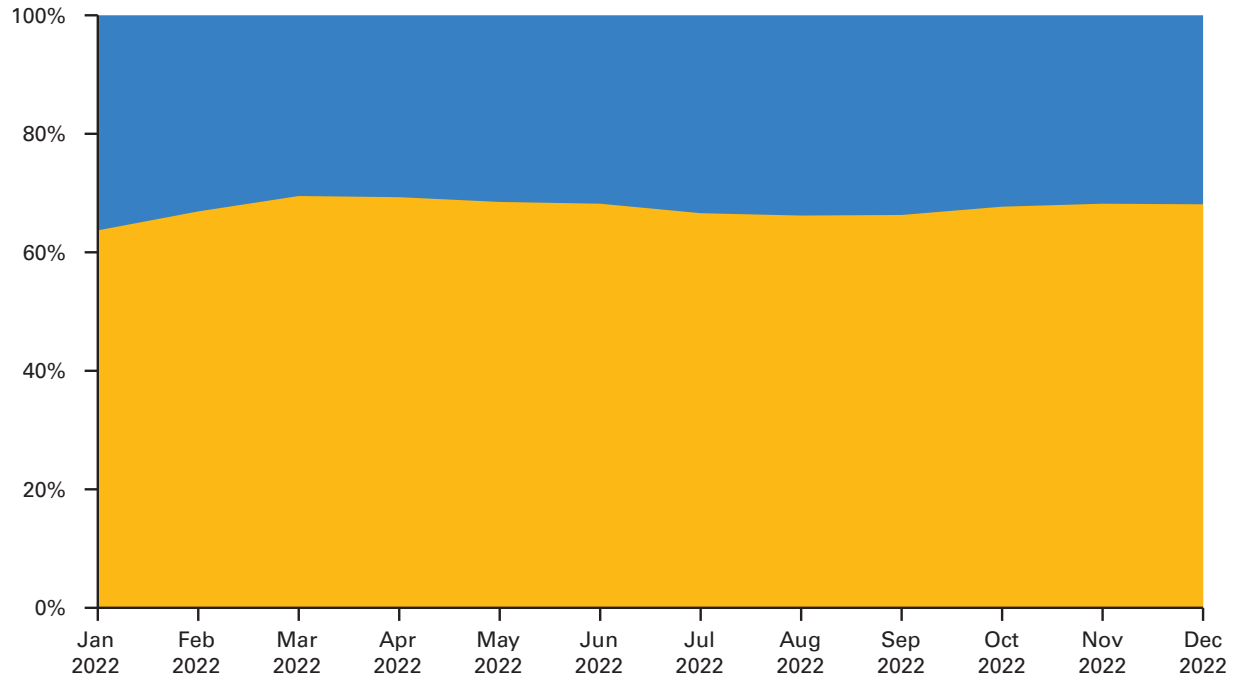
Price data
Due to adopting a modelled pricing approach to lithium-ion cell prices, there is minimal variation in the types of inputs used for each price assessment. However, clearly, the weighting of each input will vary from price to price.

For example, nickel price inputs will carry less weight for low nickel chemistry cells than for high nickel cells. Details of these variables in relation to specific prices Benchmark Minerals publish is outlined in the Price Definitions section of this methodology (Part 3).

The price data included in the model from Benchmark Minerals Price Assessments represents confirmed trades primarily and firm bid/offers that are open to the market as a whole.

For further information on how Benchmark collects and assesses its IOSCO compliant Price Assessments, please download the latest copy of our market specific Price Assessment Methodologies here: **https://www.benchmarkminerals.com/price-assessments/**

AVERAGE PERCENTAGE OF CELL PRICE ATTRIBUTED TO BENCHMARK RAW MATERIAL PRICES 2022



Assessment period
Benchmark Minerals analysts evaluate all data received in the assessment period on the day of publishing during an initial review meeting with the Chief Data Officer; Head of Prices, Data & Indices; or Senior Analysts.

These proposed price ranges are then submitted and reviewed on the day of publication by the Chief Data Officer; Head of Prices, Data & Indices; or Senior Analysts. The cutoff time for the initial assessment is

1. DATA COLLECTION AND PRICE REPORTING

5pm (London) on the day prior to publication. If any information is received after this point it is included in the following assessment. If we do not receive sufficient data points to make an assessment, then we do carry over relevant data received in previous assessments or information which can be used to extrapolate market prices.

The 3rd party price inputs to the lithium-ion cell price model are not beholden to the same degree of opacity as the commodity markets the model inputs from Benchmark Minerals' proprietary pricing database. Therefore, concerns around assessment thresholds for these inputs, for example, local energy and labour rates, carry lower risk and therefore influence on the efficacy of the cell price model.

Nevertheless, as part of our review of third party sources feeding into the model we seek to understand the procedures in place to ensure good data hygiene and only once we are satisfied that a supplier has a credible level of quality control in place do we include that source in our lithium-ion cell price model.

1.3 DATA SOURCES

For its proprietary prices, Benchmark Minerals conducts confidential interactions with market participants in order to source the data and market intelligence used for its assessments. Due to the structure of the commodity markets our proprietary assessments cover and the position of companies within the supply chain, full transactional data is not always available.
Where possible Benchmark Minerals requests that all relevant data is provided and individual data points are provided throughout the assessment period. Due to the private nature of the discussions Benchmark has with its contacts, full disclosure of the interaction is often not possible, however Benchmark Minerals does ask sources to meet a set of standards which confirm:

i) Data is reported on an honest, timely and consistent basis
ii) Data is reflective of the overall trend in data rather than selective deals submitted to influence the assessment
iii) Data is supplied or approved by a commercial division of the source company
iv) data provided is from arm's length transactions only, from non-affiliated parties.

Data providers do not enter into a formal agreement to provide data to Benchmark Minerals. Instead interactions with the market are conducted on a trust basis which require internal review and editorial judgement. Information sources are only added to our network of price providers after a review process between the analyst, the Head of Prices, Data & Indices, and the Chief Data Officer.

For the remaining inputs which feed into the lithium-ion battery cell price model, we source reliable data from 3rd party publishers. These publishers may be commercial organisations, such as price reporting agencies, governmental organisations, such as national statistics associations, or non-governmental bodies such macroeconomic observatories. We can receive this data via multiple methods such as API, email, scraping and/or verbal or in person communication. Our data quality philosophy remains the same for all the data which goes into the lithium-ion battery cell price model whether proprietary or not – it must be accurate, from a credible source and frequently revised/updated.

1.4 DATA ASSESSMENT PROCESS

Benchmark Minerals lithium-ion cell price data is assessed on a monthly basis to allow for a sufficient number of transactions in core input markets (lithium, nickel, cobalt and graphite) to be made to identify a consistent market trend and range for prices.

Benchmark Minerals analysts conduct the monthly review on the first working day of the following month, with price data published to Benchmark's website by 4pm (London).

Benchmark reserves the right to temporarily alter publishing dates, for example during UK national holidays, subject to providing the market with 30 days' notice via email.

1. DATA COLLECTION AND PRICE REPORTING

The monthly data review involves all relevant analysts collecting their respective data points for the time period in question and reviewing in relation to other information received.

The team of analysts then submit recommended price ranges based on the data collected in that period and these recommendations are confirmed by the Chief Data Officer; Head of Prices, Data & Indices; or Senior Analysts who were not involved in the price collection process for the assessed grades. All price assessments and editorial judgments made during the assessment review are recorded and logged internally by name and rationale within internal audit framework.

Benchmark Minerals works actively with the industry to increase the regularity and transparency of transactions, and as the industry evolves the frequency of the prices it publishes will move towards semi-monthly, weekly and eventually daily pricing across all grades where suitable.Due to the nature of capacity data received by Benchmark analysts, on occasion, data received in an assessment month may not be published until later months whilst it is verified.

1.5 CHEMISTRY-SPECIFIC PRICES

Price calculation
Benchmark Minerals employs a process of editorial judgement to calculate the price for each of the cell grades prices published. This process originates from primary data collection which is logged and reviewed in regular team meetings involving the relevant market analysts.

After the data is reviewed and each relevant analyst makes their price recommendations, the Chief Data Officer, Head of Prices, Data & Indices, or a Senior Analyst will analyse the recommended price ranges in relation to supporting evidence and internal data logs to check for accuracy.

In the event that price recommendations do not correspond with the prices and supporting evidence which has been internally logged, the Chief Data Officer; Head of Prices, Data & Indices, or relevant Senior Analyst will conduct a review of the data with the responsible analyst(s) directly.

The Chief Data Officer, Head of Prices, Data & Indices, or a Senior Analyst not involved with the price collection process for the assessed grades verifies the established price before the data is published and distributed.

Input weightings
Benchmark Minerals' assessment of the value and weighting of the numerous inputs in for cell production have been built up via direct research and analysis via Benchmark's network of supply chain contacts alongside detailed analysis of the cell production process. This data is used in Benchmark's proprietary cell production model to calculate the final cell prices.

Units of measurement
Benchmark Minerals lithium ion battery cell price assessments are standardised to US dollars (USD) per kilowatt hour. Inputs to the price model are converted from domestic currencies such as Chinese yuan (RMB) and Euros (EUR) to US dollars (USD), using exchange rates from Reuters at 9am (London) on the day of publication and can be made available to subscribers upon request.

Shipping terms
Across all lithium ion cell price assessments, Benchmark Minerals uses one industry standard incoterms to represent the location/destination of the material:
Ex Works (EXW) – used to represent a domestically traded price with minimal shipping or transportation costs.

Editorial judgement
The nature of the lithium ion battery cell market dictates that a process of editorial judgement is necessary to interpret the various data points in the market and normalise the information received received to the chemistry specifications, outlined in the Price Definition section of this methodology.

2. PRICE CALCULATION

2.1 GOVERNANCE

Benchmark Minerals employs a number of governance checks to ensure the suitability and application of the methodology and to consult with the market as to any changes in our processes and procedures.

A full employee code of conduct is available upon request and outlines the standards employees are obligated to adhere to in terms of antitrust, confidentiality and data protection policy.

Operational checks and balances
Benchmark Minerals imposes Chinese walls between areas of the business where a conflict of interest may arise to ensure our price assessments are conducted independently, and without any prejudice or bias.

The five areas of the Benchmark Minerals business are outlined on pg. 2 of this methodology:

- Benchmark Source: News & analysis
- Benchmark Price Assessments: Price reporting
- Benchmark Forecasting: Long-term supply, demand & price forecasting
- Benchmark Events: Conferences and seminars
- ESG: Reports and life cycle assessments

Benchmark Price Assessments are operated by a team of analysts that operate independently to the other areas of the business. This price analyst team is managed by the Chief Data Officer who, alongside Senior Analysts, coordinates the price assessment reviews and makes the final appraisal of price data received ahead of publishing.

The Chief Data Officer reports directly to the Chief Executive Officer who oversees any external queries or complaints and regularly monitors the proper implementation of the methodology.

The company also employs a Company Secretary to act as external counsel on any issues pertaining to legal disputes.

Internal governance meetings
Benchmark Minerals holds annual governance meetings with all senior management members to review price collection processes and ensure data collection adheres to the standards outlined in this methodology as well as regulatory principles.

Benchmark Minerals also holds bi-annual consultation meetings with management and the price collection team to consult on any amendments or changes to the methodology.

This meeting serves as a review of the methodology relevance in relation to industry developments and ensures are price reporting process is robust to industry requirements and regulatory standards.

Methodology Public Consultation
Benchmark Minerals holds a period of public consultation to allow for comment on its mineral specific Price Assessment Methodologies.

This is held via a free to view article on the Benchmark website and notification is made to its contact database. This public consulation will typically be held in August, and for no fewer than 28 days, exact dates may change as market factors define.

Benchmark will review all comments and seek to make public all non-confidential comments/responses within 10 working days of the closure of the public consulation period. If any comments result in a material change to its methodology, Benchmark will undertake process defined in its Benchmark Methodology Review Process.

External Audits
Benchmark Minerals employs an external auditor to confirm the company's compliance with IOSCO principles with reasonable assurance.

Annual external audits will be held once IOSCO certification is received to ensure all processes and procedures are being followed in a regulatory compliant manner within the structure of this methodology.

Industry briefings and conferences
Benchmark Minerals also engages the industry to consult on updates and developments to its price collection process through its series of annual events.

2. PRICE CALCULATION

These events include:

- **Benchmark World Tour**
- **Benchmark Gigafactories events**
- **Benchmark Week**
- **Webinars**

2.2 REVIEW PROCESS

Ahead of publication of our prices, Benchmark Minerals conducts a thorough review process to ensure all information received has been logged internally and reviewed in line with the principles set out in this methodology.

Initial review
Benchmark Minerals analysts hold reviews the day prior or the day of price publication to collate information received from various price providers and interpret this information in order to make an informed and consistent assessment of market prices during the period in question.

This meeting is chaired by the Chief Data Officer, Head of Prices, Data & Indices or a Senior Analyst and is attended by the Chief Operating Officer, and/or another senior manager or Senior Analyst not involved with the price collection process for the assessed grades. All relevant analysts involved in the price assessment process are also present in the meeting, where possible, or are given the opportunity to review the final prices after the meeting but before publication. Analysts present the information they have received, as well as their interpretation of this information in alignment with the price definition and our guidance for suspicious or anomalous data.

In conjunction with the Chief Data Officer or Senior Analyst, this information is used to provide a set of suggested prices for each of the grades using the processes set out above.

Notes are made of this assessment process, including the details of suggestions from each analyst invovled in the price collection process, in order to log the rationale used in the assessment. This rationale is not made public due to the confidential nature in which Benchmark Minerals collects market information, but is stored for external audit purposes.

These notes, along with the individual price assessment audit trails of each price analyst are saved on a secure system and stored for a minimum of 10 years after the assessment is made. These files are password protected and restricted to senior management and compliance access.

Final review
The final review of each price assessment is made on the day of publication by the Chief Data Officer, Head of Prices, Data & Indices or a Senior Analyst.

This review involves a detailed analysis of the suggested assessments from the initial review, during which the Chief Data Officer, Head of Prices, Data & Indices or a Senior Analyst check the assessments are in accordance with the methodology principles.

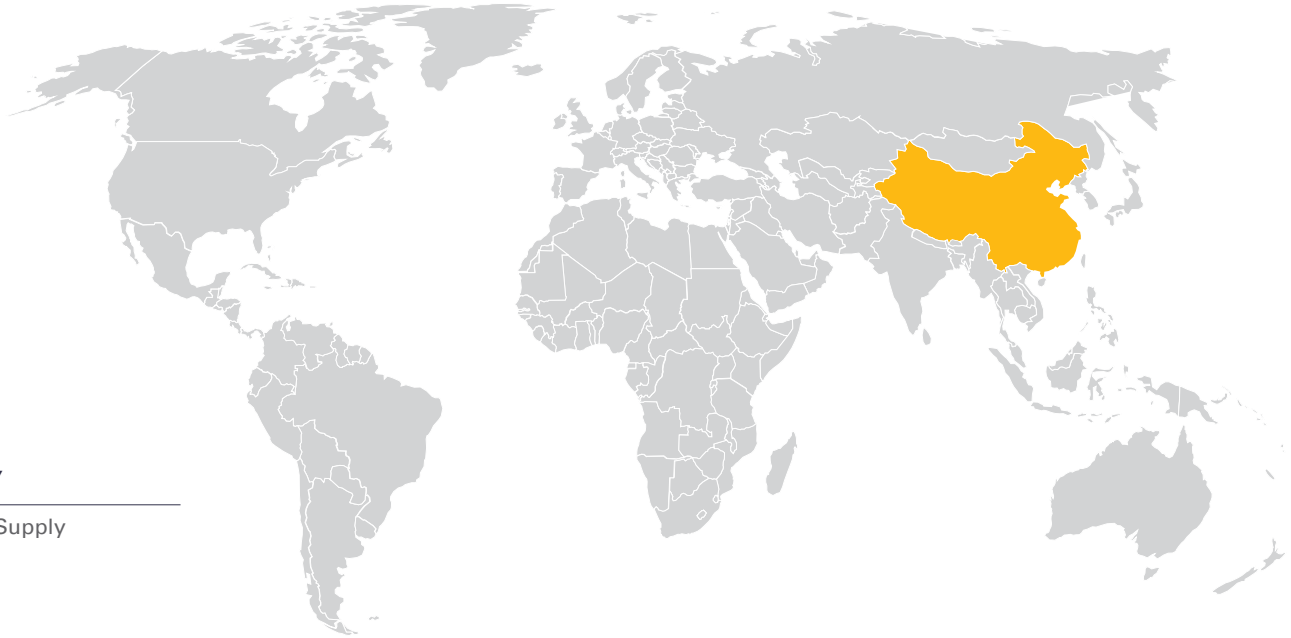
This review is documented and saved on a secure system as above.

Internal checks and compliance
All information relating to the price assessment process, including audit trails and supporting rationale are saved on a secure system for compliance purposes.

Benchmark Minerals' Compliance officer conducts periodic reviews of this information to ensure it is being stored, maintained and interpreted in accordance with the principles set out in this methodology.

3. PRICE DEFINITIONS

3.1 NCM111, POUCH, EXW CHINA



KEY

Supply

DOMINANT CATHODE SPECIFICATION

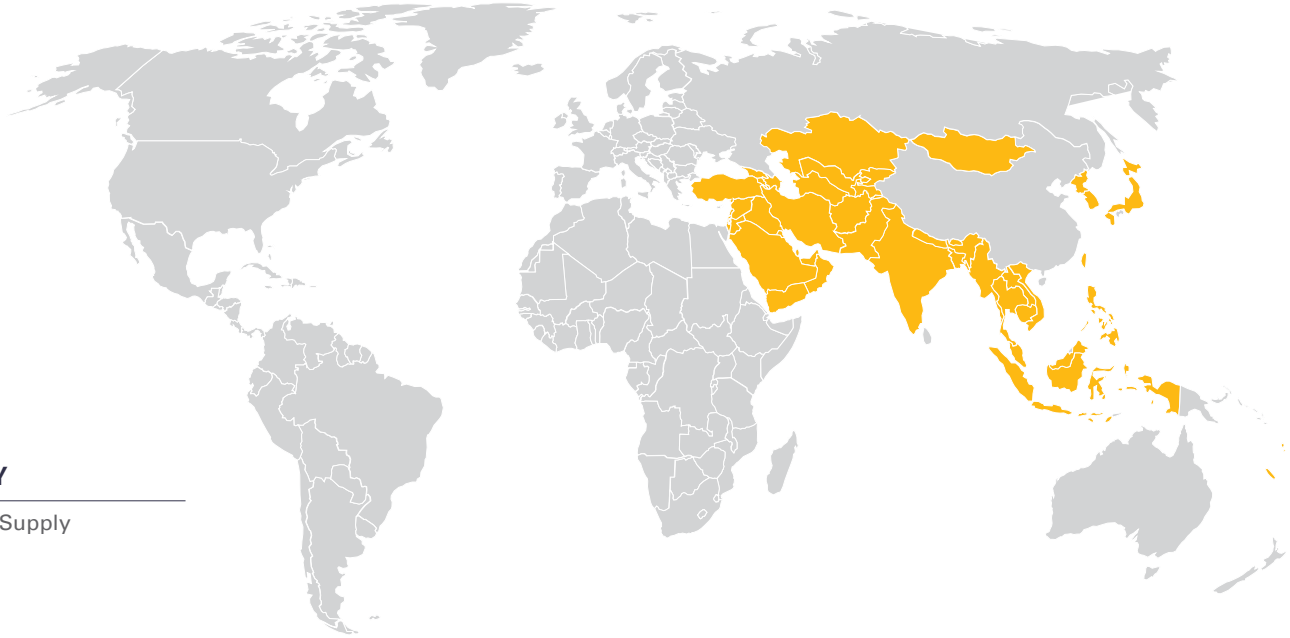
NCM111	
Specific Capacity	140-160 mAh/g
Ni Proportion (%)	20.0±5.0
Co Proportion (%)	20.0±5.0
Mn Proportion (%)	18.0±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

LOCATION:	China
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Pouch
PRIMARY CHEMISTRY:	NCM111
MAIN PRODUCERS:	China
TYPICAL END USE:	EVs
PRODUCTION* (2022):	0 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

* refers to 2022 pouch format cell production where NCM111 was the dominant cathode material. This number does not include cell production where NCM111 was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.2 NCM111, POUCH, EXW ASIA



LOCATION:	Asia
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Pouch
PRIMARY CHEMISTRY:	NCM111
MAIN PRODUCERS:	Asia (excl. China)
TYPICAL END USE:	EVs
PRODUCTION* (2022):	0 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

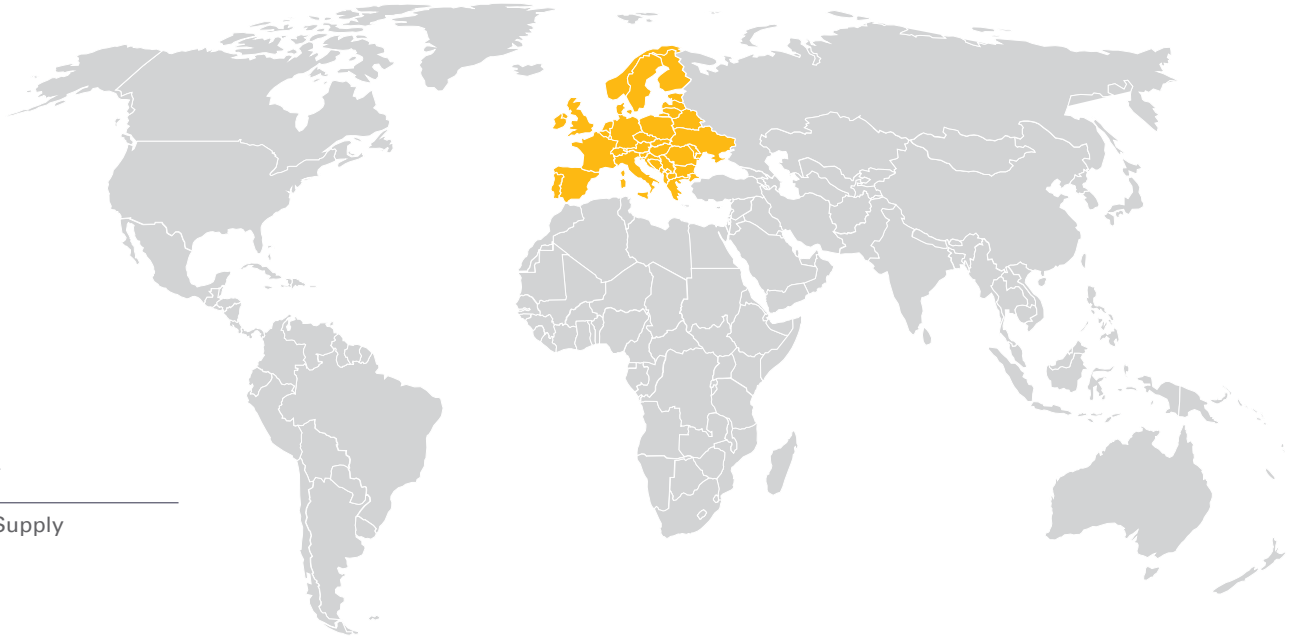
* refers to 2022 pouch format cell production where NCM111 was the dominant cathode material. This number does not include cell production where NCM111 was a secondary or supplementary cathode input.

DOMINANT CATHODE SPECIFICATION

NCM111	
Specific Capacity	140-160 mAh/g
Ni Proportion (%)	20.0±5.0
Co Proportion (%)	20.0±5.0
Mn Proportion (%)	18.0±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

3. PRICE DEFINITIONS

3.3 NCM111, POUCH, EXW EUROPE



KEY

Supply

DOMINANT CATHODE SPECIFICATION

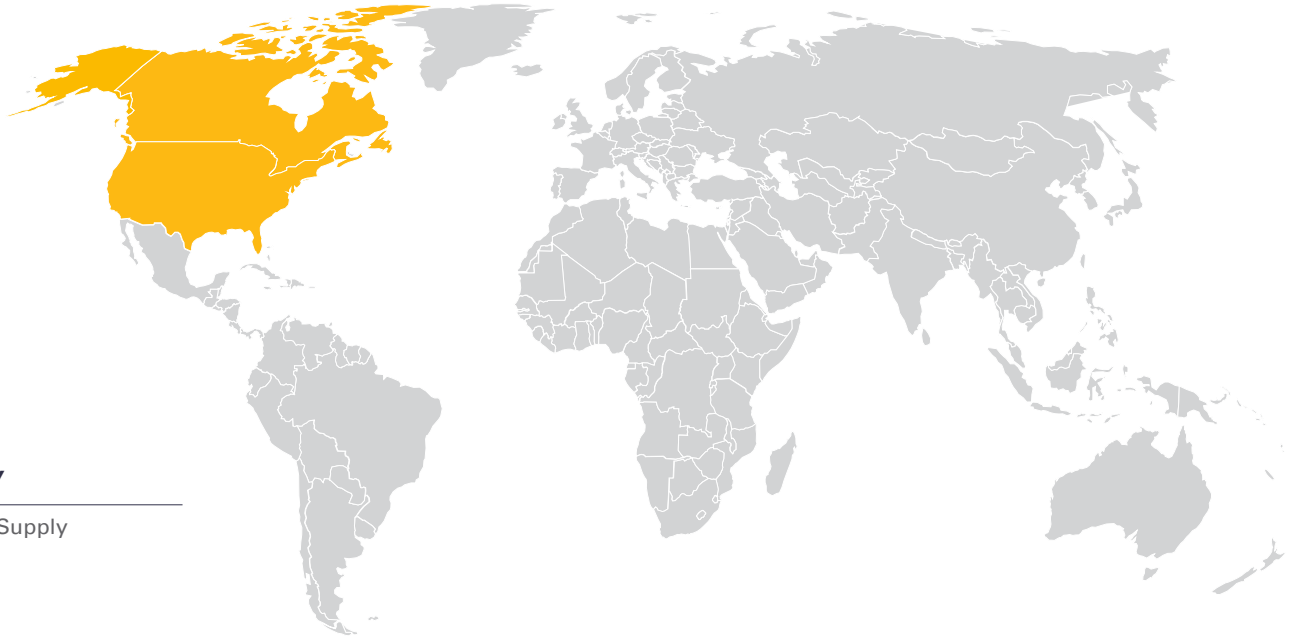
NCM111	
Specific Capacity	140-160 mAh/g
Ni Proportion (%)	20.0±5.0
Co Proportion (%)	20.0±5.0
Mn Proportion (%)	18.0±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

LOCATION:	Europe
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Pouch
PRIMARY CHEMISTRY:	NCM111
MAIN PRODUCERS:	Europe
TYPICAL END USE:	EVs
PRODUCTION* (2022):	0 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

* refers to 2022 pouch format cell production where NCM111 was the dominant cathode material. This number does not include cell production where NCM111 was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.4 NCM111, POUCH, EXW N. AMERICA



KEY

Supply

DOMINANT CATHODE SPECIFICATION

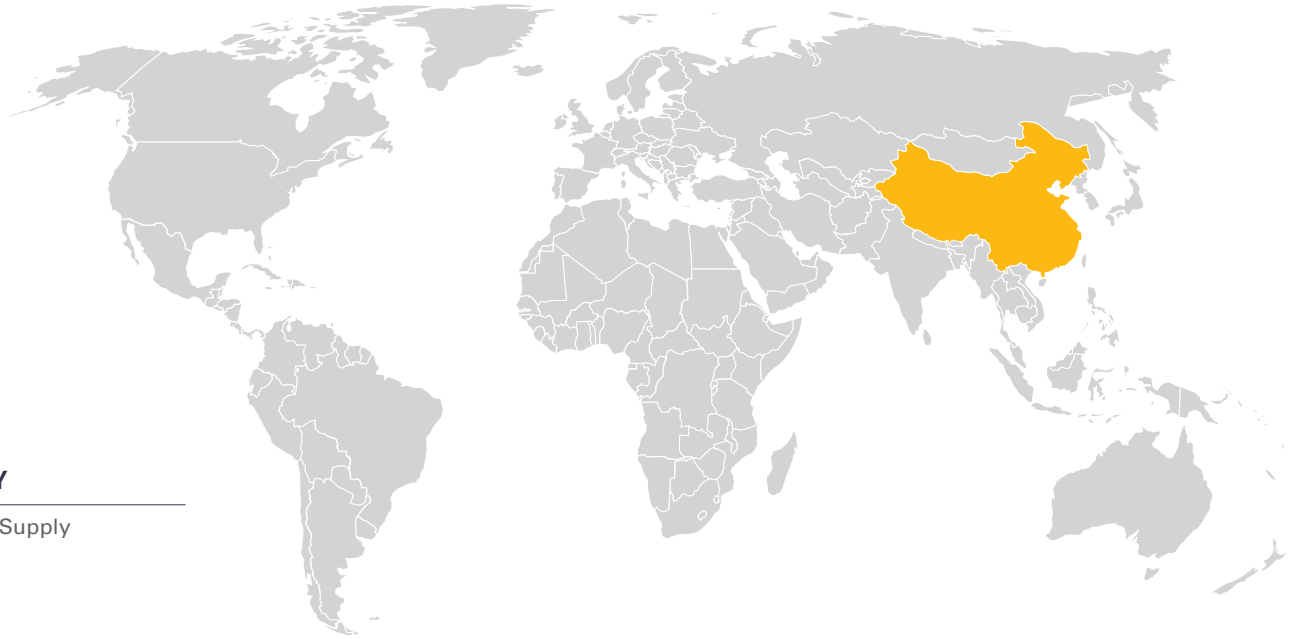
NCM111	
Specific Capacity	140-160 mAh/g
Ni Proportion (%)	20.0±5.0
Co Proportion (%)	20.0±5.0
Mn Proportion (%)	18.0±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

LOCATION:	North America
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Pouch
PRIMARY CHEMISTRY:	NCM111
MAIN PRODUCERS:	North America
TYPICAL END USE:	EVs
PRODUCTION* (2022):	0 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

* refers to 2022 pouch format cell production where NCM111 was the dominant cathode material. This number does not include cell production where NCM111 was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.5 NCM111, PRISMATIC, EXW CHINA



KEY

Supply

DOMINANT CATHODE SPECIFICATION

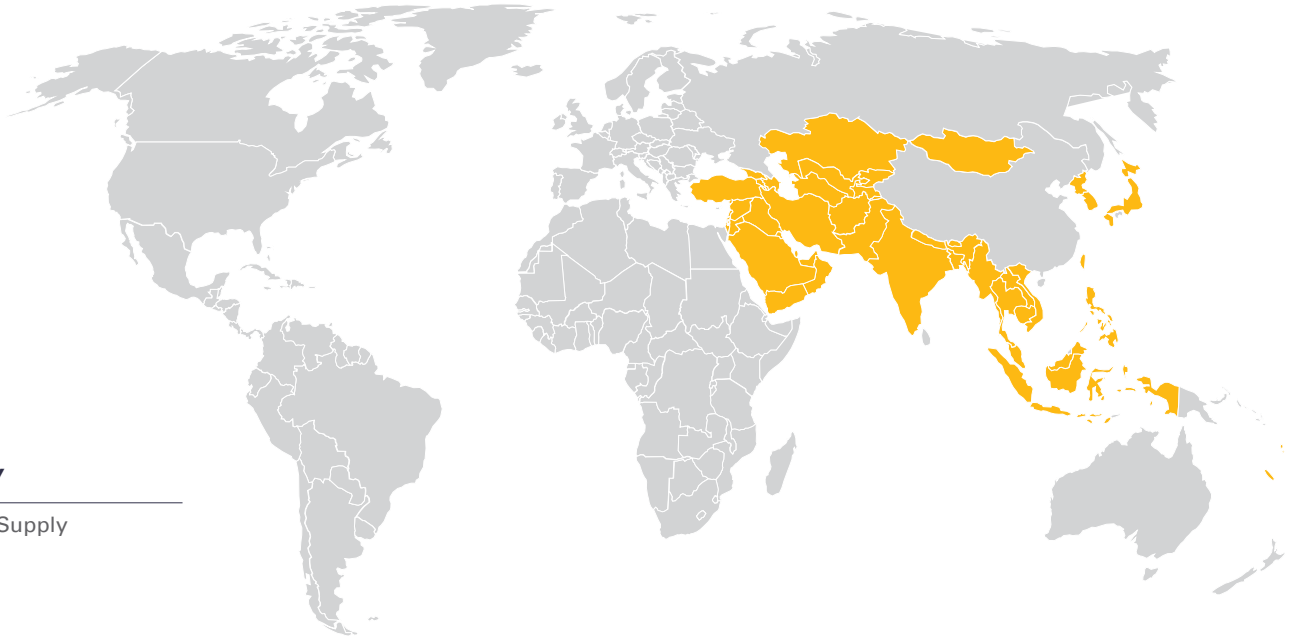
NCM111	
Specific Capacity	140-160 mAh/g
Ni Proportion (%)	20.0±5.0
Co Proportion (%)	20.0±5.0
Mn Proportion (%)	18.0±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

LOCATION:	China
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Prismatic
PRIMARY CHEMISTRY:	NCM111
MAIN PRODUCERS:	China
TYPICAL END USE:	EVs
PRODUCTION* (2022):	0 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

* refers to 2022 prismatic format cell production where NCM111 was the dominant cathode material. This number does not include cell production where NCM111 was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.6 NCM111, PRISMATIC, EXW ASIA

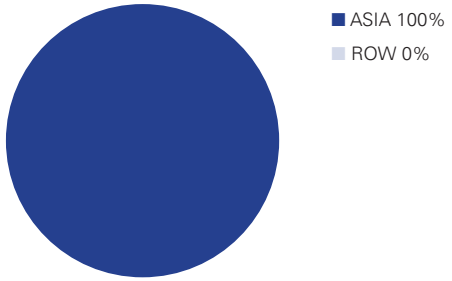


LOCATION:	Asia
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Prismatic
PRIMARY CHEMISTRY:	NCM111
MAIN PRODUCERS:	Japan
TYPICAL END USE:	EVs
PRODUCTION* (2022):	2,500 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

DOMINANT CATHODE SPECIFICATION

NCM111	
Specific Capacity	140-160 mAh/g
Ni Proportion (%)	20.0±5.0
Co Proportion (%)	20.0±5.0
Mn Proportion (%)	18.0±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

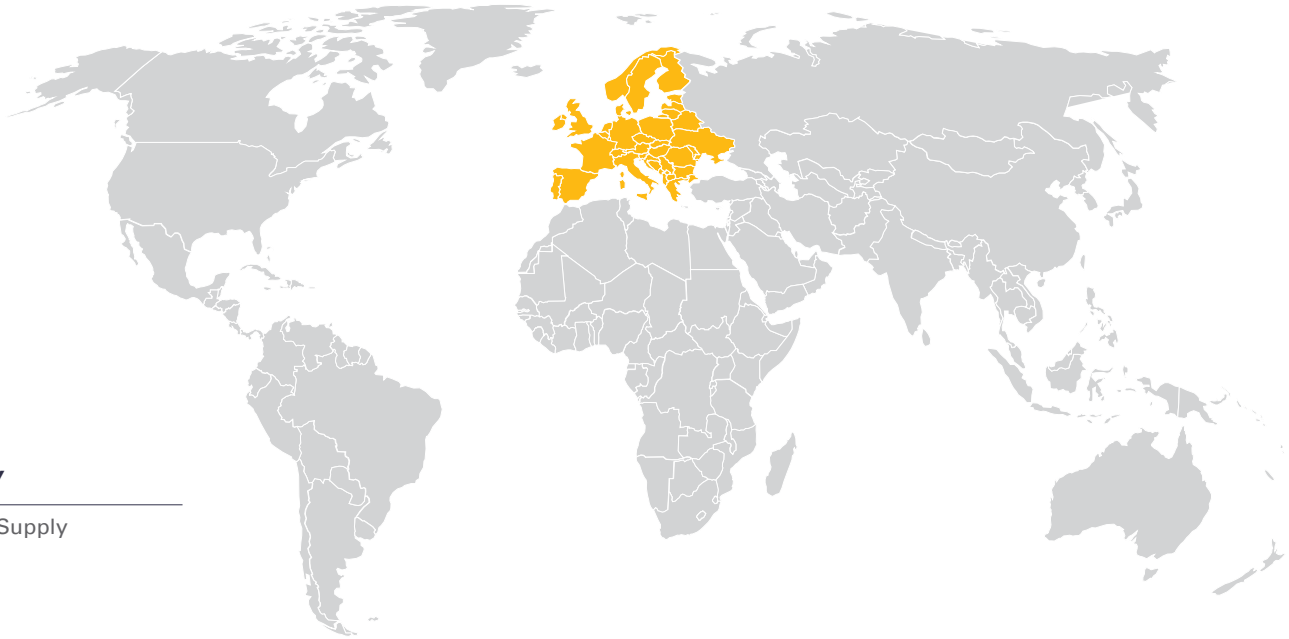
NCM111 (PRISMATIC) CELL SUPPLY (2022)



* refers to 2022 prismatic format cell production where NCM111 was the dominant cathode material. This number does not include cell production where NCM111 was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.7 NCM111, PRISMATIC, EXW EUROPE



KEY

Supply

DOMINANT CATHODE SPECIFICATION

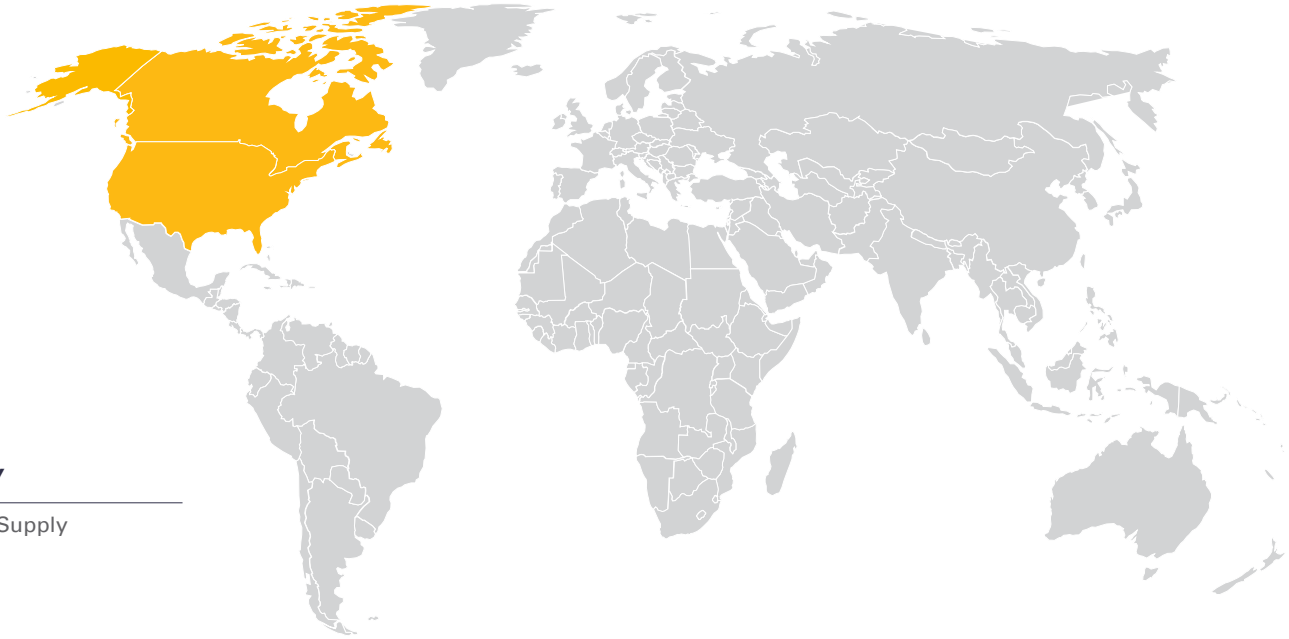
NCM111	
Specific Capacity	140-160 mAh/g
Ni Proportion (%)	20.0±5.0
Co Proportion (%)	20.0±5.0
Mn Proportion (%)	18.0±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

LOCATION:	Europe
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Prismatic
PRIMARY CHEMISTRY:	NCM111
MAIN PRODUCERS:	Europe
TYPICAL END USE:	EVs
PRODUCTION* (2022):	0 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

* refers to 2022 prismatic format cell production where NCM111 was the dominant cathode material. This number does not include cell production where NCM111 was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.8 NCM111, PRISMATIC, EXW N. AMERICA



KEY

Supply

DOMINANT CATHODE SPECIFICATION

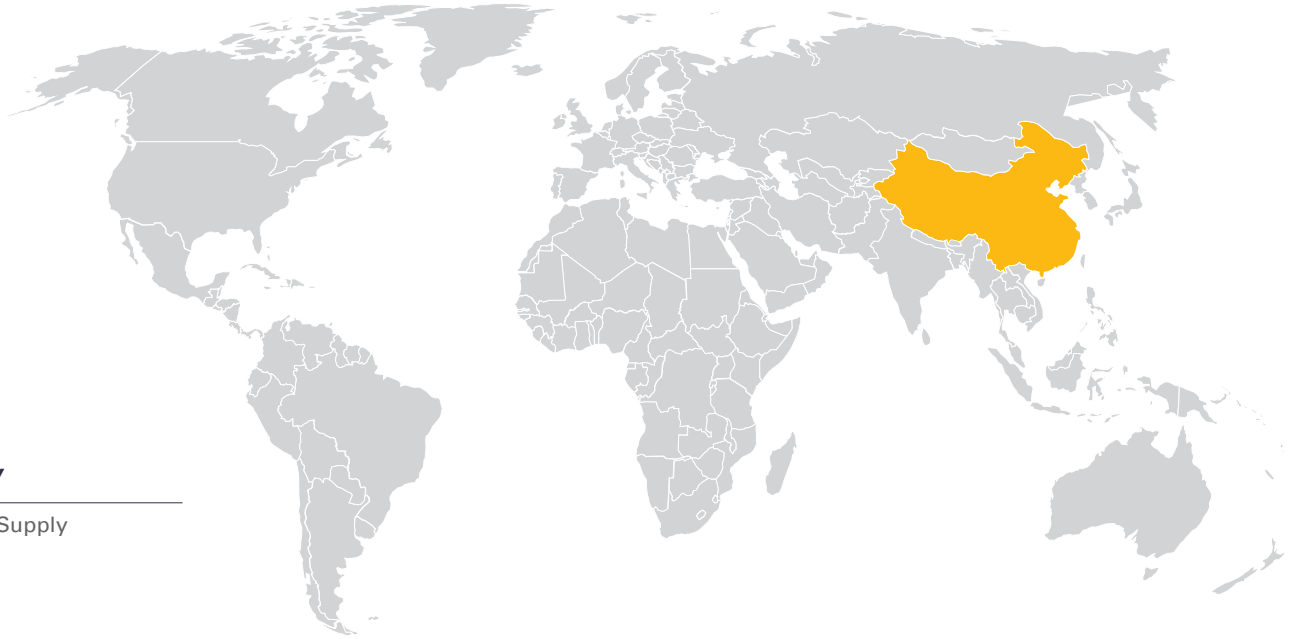
NCM111	
Specific Capacity	140-160 mAh/g
Ni Proportion (%)	20.0±5.0
Co Proportion (%)	20.0±5.0
Mn Proportion (%)	18.0±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

LOCATION:	North America
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Prismatic
PRIMARY CHEMISTRY:	NCM111
MAIN PRODUCERS:	North America
TYPICAL END USE:	EVs
PRODUCTION* (2022):	0 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

* refers to 2022 prismatic format cell production where NCM111 was the dominant cathode material. This number does not include cell production where NCM111 was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.9 NCM523, POUCH, EXW CHINA



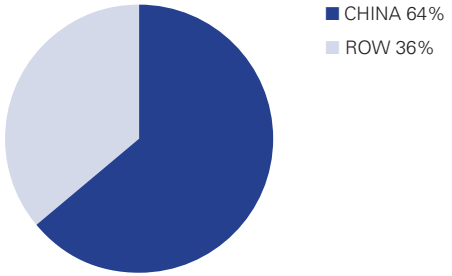
LOCATION:	China
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Pouch
PRIMARY CHEMISTRY:	NCM523
MAIN PRODUCERS:	China
TYPICAL END USE:	EVs
PRODUCTION* (2022):	37,500 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

* refers to 2022 pouch format cell production where NCM523 was the dominant cathode material. This number does not include cell production where NCM523 was a secondary or supplementary cathode input.

DOMINANT CATHODE SPECIFICATION

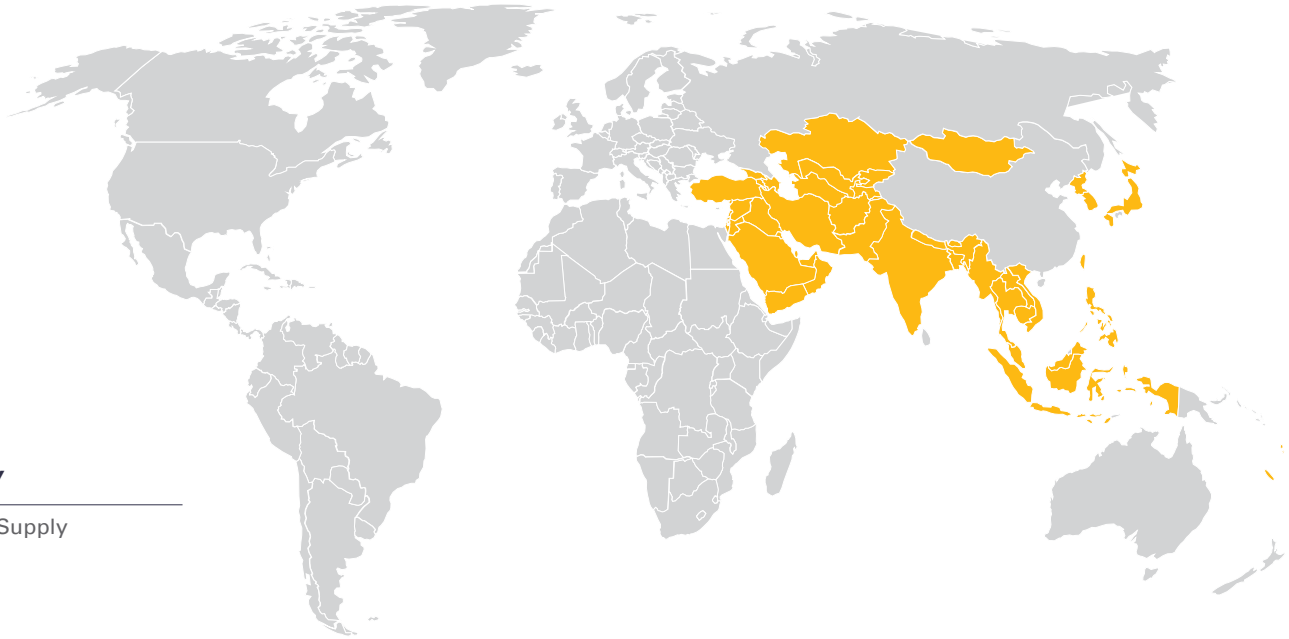
NCM523	
Specific Capacity	150-170 mAh/g
Ni Proportion (%)	30.0±5.0
Co Proportion (%)	12.0±5.0
Mn Proportion (%)	17.0±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

NCM523 (POUCH) CELL SUPPLY (2022)



3. PRICE DEFINITIONS

3.10 NCM523, POUCH, EXW ASIA

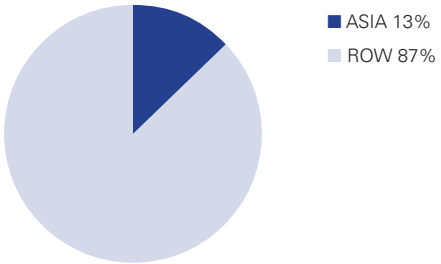


LOCATION:	Asia
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Pouch
PRIMARY CHEMISTRY:	NCM523
MAIN PRODUCERS:	Japan, Korea, Thailand
TYPICAL END USE:	EVs, ESS
PRODUCTION* (2022):	7,900 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

DOMINANT CATHODE SPECIFICATION

NCM523	
Specific Capacity	150-170 mAh/g
Ni Proportion (%)	30.0±5.0
Co Proportion (%)	12.0±5.0
Mn Proportion (%)	17.0±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

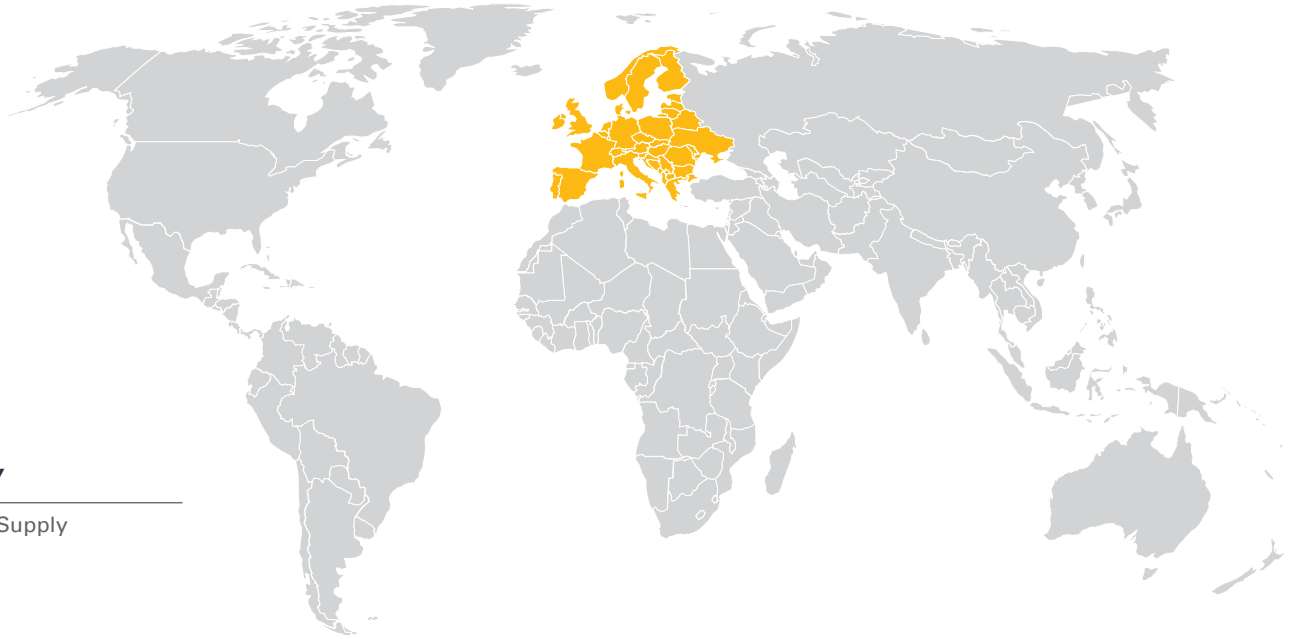
NCM523 (POUCH) CELL SUPPLY (2022)



* refers to 2022 pouch format cell production where NCM523 was the dominant cathode material. This number does not include cell production where NCM523 was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.11 NCM523, POUCH, EXW EUROPE

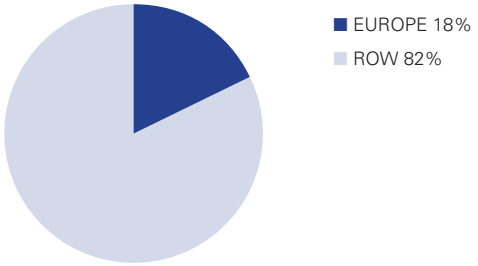


LOCATION:	Europe
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Pouch
PRIMARY CHEMISTRY:	NCM523
MAIN PRODUCERS:	Germany, Hungary, UK
TYPICAL END USE:	EVs, ESS
PRODUCTION* (2022):	10,750 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

DOMINANT CATHODE SPECIFICATION

NCM523	
Specific Capacity	150-170 mAh/g
Ni Proportion (%)	30.0±5.0
Co Proportion (%)	12.0±5.0
Mn Proportion (%)	17.0±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

NCM523 (POUCH) CELL SUPPLY (2022)

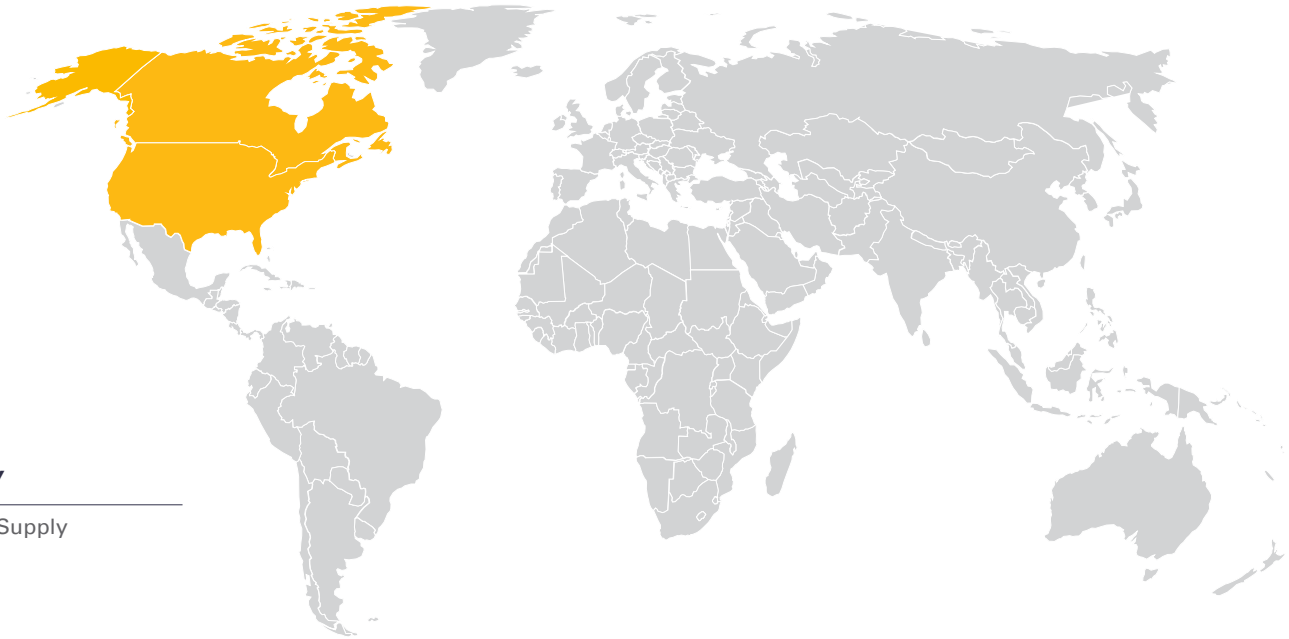


* refers to 2022 pouch format cell production where NCM523 was the dominant cathode material. This number does not include cell production where NCM523 was a secondary or supplementary cathode input.

BENCHMARK MINERAL INTELLIGENCE

3. PRICE DEFINITIONS

3.12 NCM523, POUCH, EXW N. AMERICA



KEY

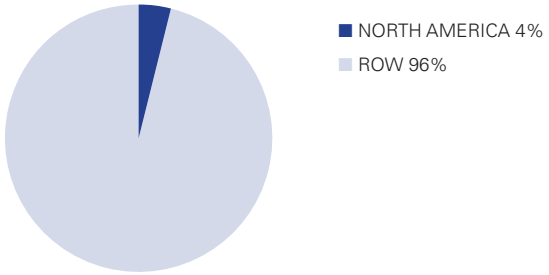
Supply

LOCATION:	North America
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Pouch
PRIMARY CHEMISTRY:	NCM523
MAIN PRODUCERS:	US
TYPICAL END USE:	EVs
PRODUCTION* (2022):	2,500 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

DOMINANT CATHODE SPECIFICATION

NCM523	
Specific Capacity	150-170 mAh/g
Ni Proportion (%)	30.0±5.0
Co Proportion (%)	12.0±5.0
Mn Proportion (%)	17.0±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

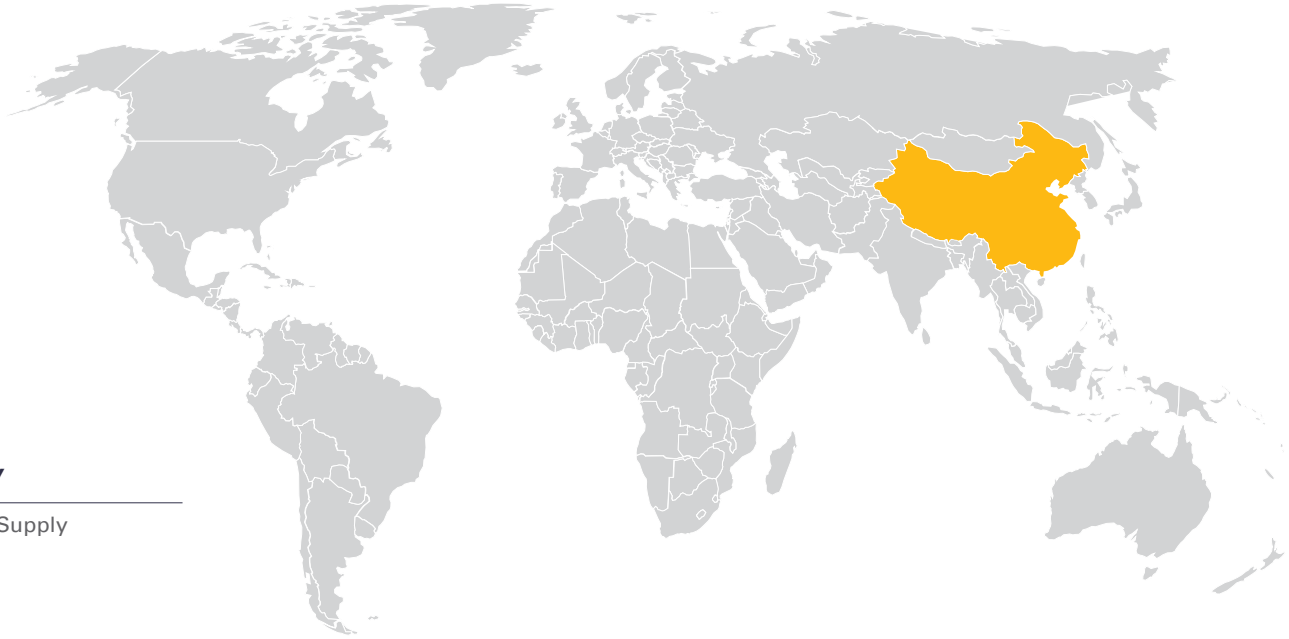
NCM523 (POUCH) CELL SUPPLY (2022)



* refers to 2022 pouch format cell production where NCM523 was the dominant cathode material. This number does not include cell production where NCM523 was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.13 NCM523, PRISMATIC, EXW CHINA

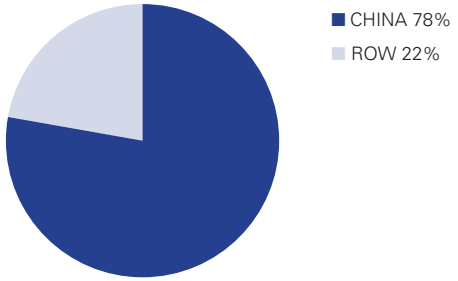


LOCATION:	China
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Prismatic
PRIMARY CHEMISTRY:	NCM523
MAIN PRODUCERS:	China
TYPICAL END USE:	EVs
PRODUCTION* (2022):	83,850 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

DOMINANT CATHODE SPECIFICATION

NCM523	
Specific Capacity	150-170 mAh/g
Ni Proportion (%)	30.0±5.0
Co Proportion (%)	12.0±5.0
Mn Proportion (%)	17.0±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

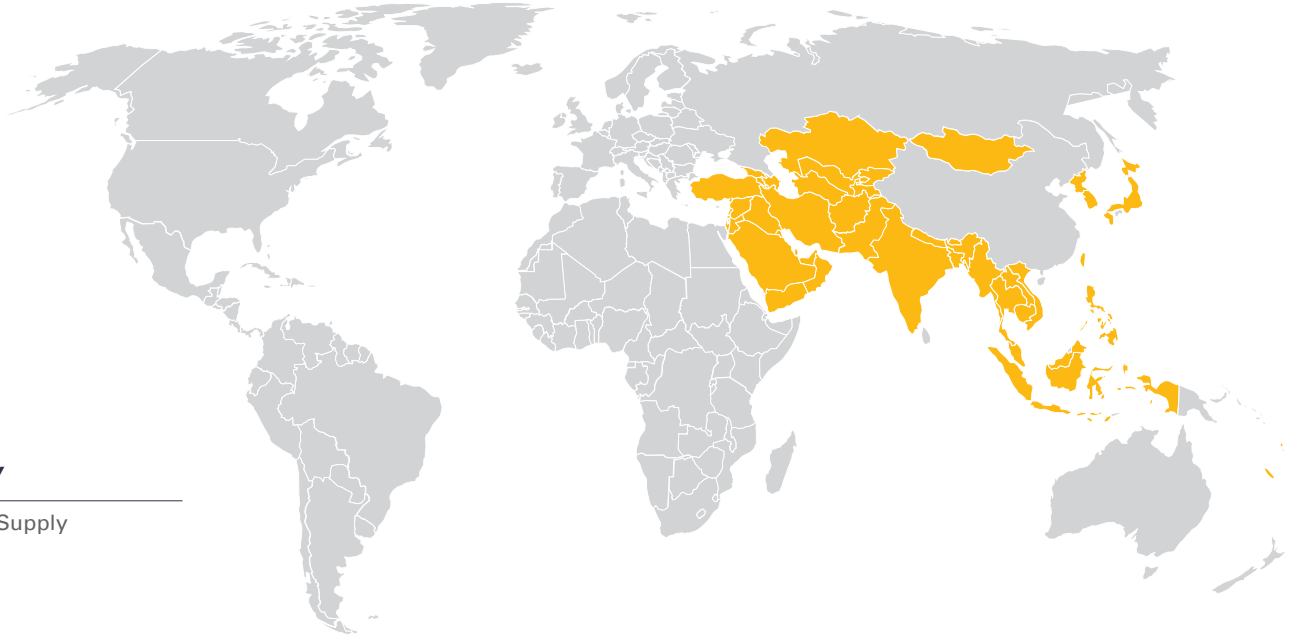
NCM523 (POUCH) CELL SUPPLY (2022)



* refers to 2022 prismatic format cell production where NCM523 was the dominant cathode material. This number does not include cell production where NCM523 was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.14 NCM523, PRISMATIC, EXW ASIA

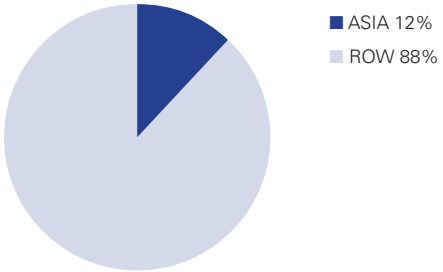


LOCATION:	Asia
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Prismatic
PRIMARY CHEMISTRY:	NCM523
MAIN PRODUCERS:	Japan, Korea
TYPICAL END USE:	EVs, ESS
PRODUCTION* (2022):	12,900 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

DOMINANT CATHODE SPECIFICATION

NCM523	
Specific Capacity	150-170 mAh/g
Ni Proportion (%)	30.0±5.0
Co Proportion (%)	12.0±5.0
Mn Proportion (%)	17.0±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

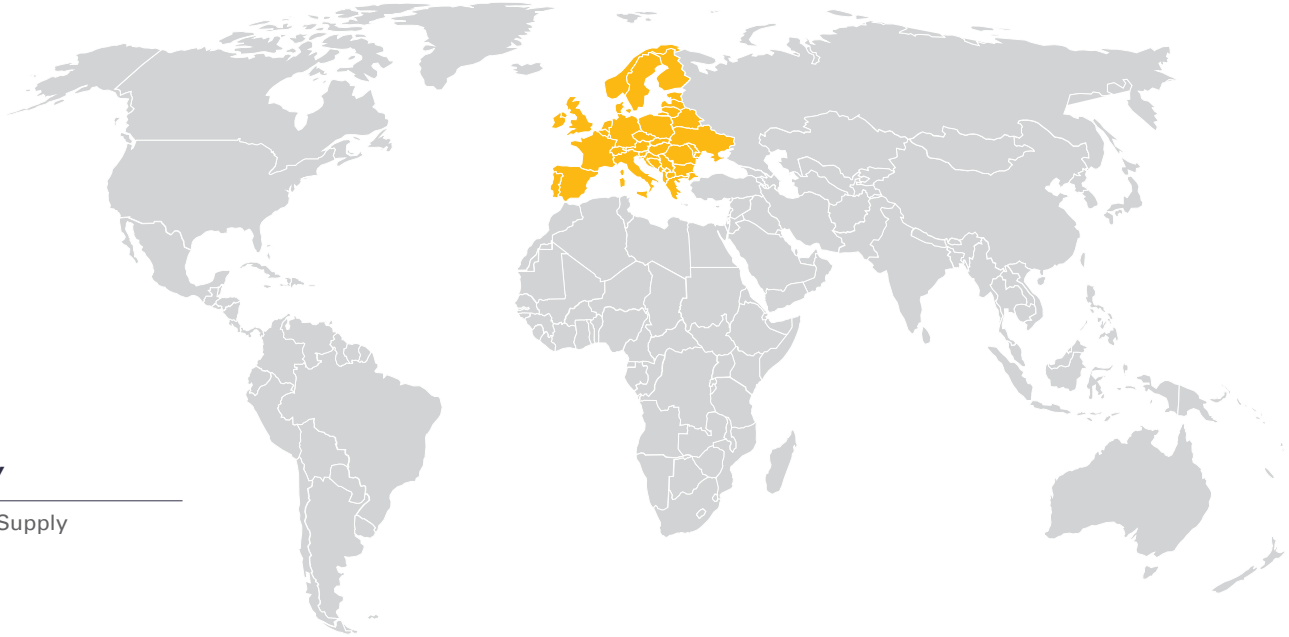
NCM523 (POUCH) CELL SUPPLY (2022)



* refers to 2022 prismatic format cell production where NCM523 was the dominant cathode material. This number does not include cell production where NCM523 was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.15 NCM523, PRISMATIC, EXW EUROPE

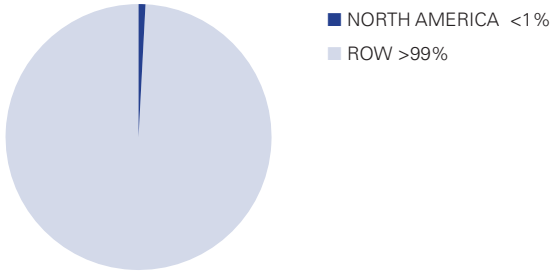


LOCATION:	Europe
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Prismatic
PRIMARY CHEMISTRY:	NCM523
MAIN PRODUCERS:	Czechia, Hungary
TYPICAL END USE:	EVs, ESS
PRODUCTION* (2022):	100 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

DOMINANT CATHODE SPECIFICATION

NCM523	
Specific Capacity	150-170 mAh/g
Ni Proportion (%)	30.0±5.0
Co Proportion (%)	12.0±5.0
Mn Proportion (%)	17.0±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

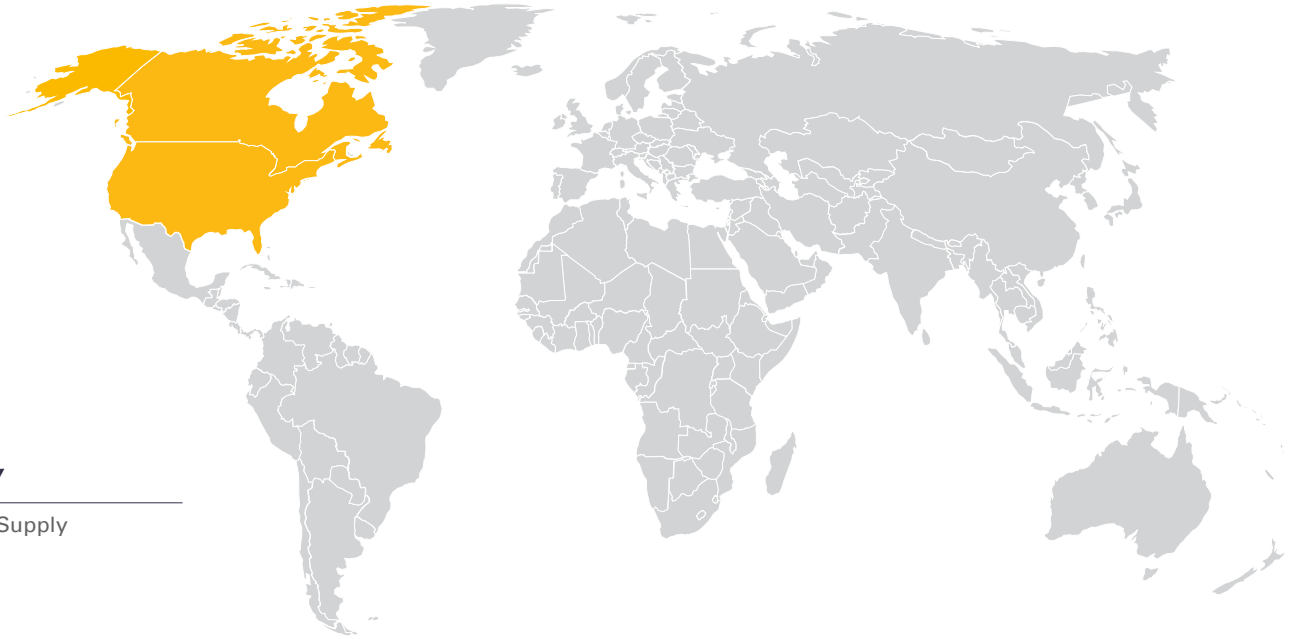
NCM523 (POUCH) CELL SUPPLY (2022)



* refers to 2022 prismatic format cell production where NCM523 was the dominant cathode material. This number does not include cell production where NCM523 was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.16 NCM523, PRISMATIC, EXW N. AMERICA



KEY

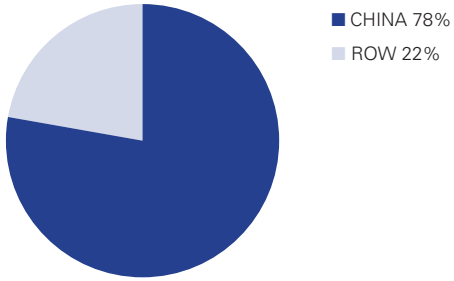
Supply

LOCATION:	North America
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Prismatic
PRIMARY CHEMISTRY:	NCM523
MAIN PRODUCERS:	US
TYPICAL END USE:	EVs, ESS
PRODUCTION* (2022):	107,650 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

DOMINANT CATHODE SPECIFICATION

NCM523	
Specific Capacity	150-170 mAh/g
Ni Proportion (%)	30.0±5.0
Co Proportion (%)	12.0±5.0
Mn Proportion (%)	17.0±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

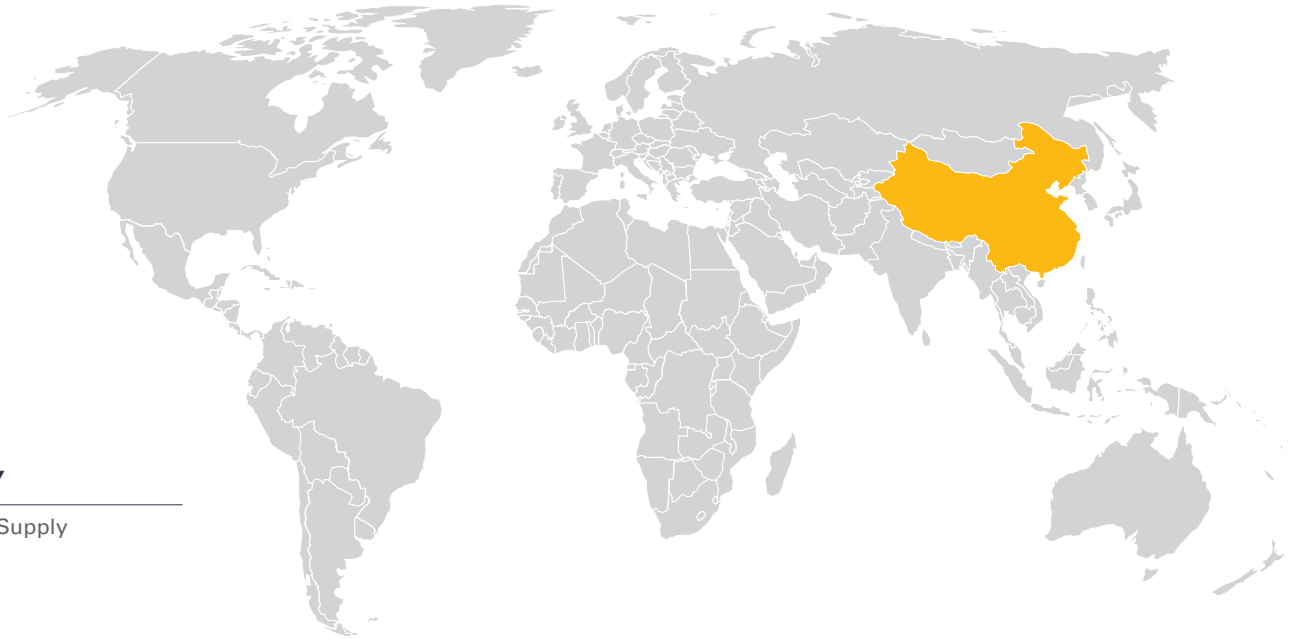
NCM523 (POUCH) CELL SUPPLY (2022)



* refers to 2022 prismatic format cell production where NCM523 was the dominant cathode material. This number does not include cell production where NCM523 was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.17 NCM622, POUCH, EXW CHINA

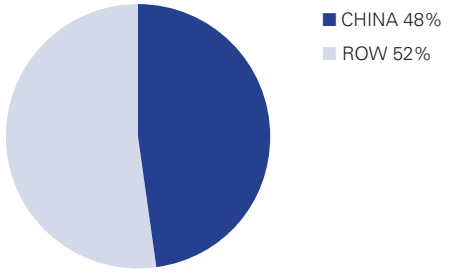


LOCATION:	China
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Pouch
PRIMARY CHEMISTRY:	NCM622
MAIN PRODUCERS:	China
TYPICAL END USE:	EVs
PRODUCTION* (2022):	43,900 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

DOMINANT CATHODE SPECIFICATION

NCM622	
Specific Capacity	155-180 mAh/g
Ni Proportion (%)	35.0±5.0
Co Proportion (%)	12.0±5.0
Mn Proportion (%)	11.0±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

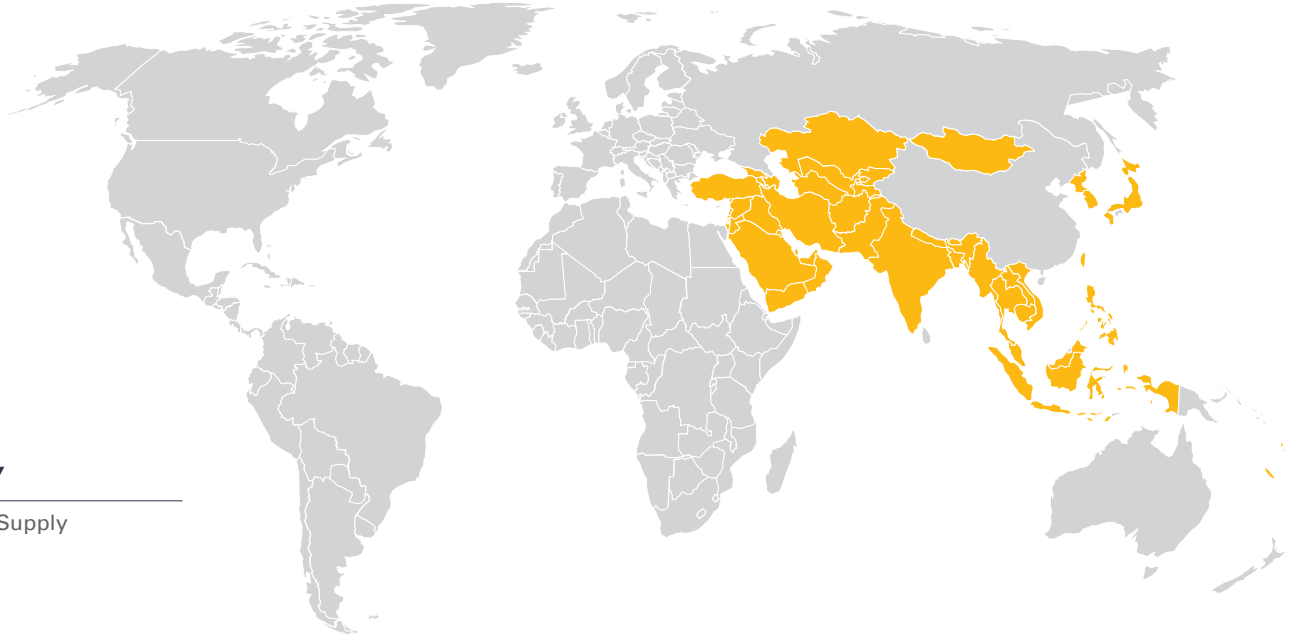
NCM622 (POUCH) CELL SUPPLY (2022)



* refers to 2022 pouch format cell production where NCM622 was the dominant cathode material. This number does not include cell production where NCM622 was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.18 NCM622, POUCH, EXW ASIA

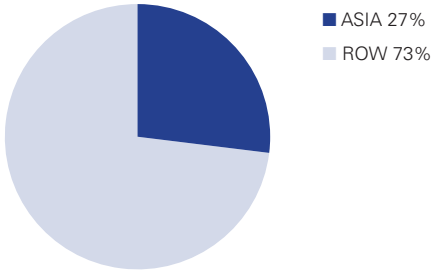


LOCATION:	Asia
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Pouch
PRIMARY CHEMISTRY:	NCM622
MAIN PRODUCERS:	South Korea
TYPICAL END USE:	EVs
PRODUCTION* (2022):	25,000 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

DOMINANT CATHODE SPECIFICATION

NCM622	
Specific Capacity	155-180 mAh/g
Ni Proportion (%)	35.0±5.0
Co Proportion (%)	12.0±5.0
Mn Proportion (%)	11.0±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

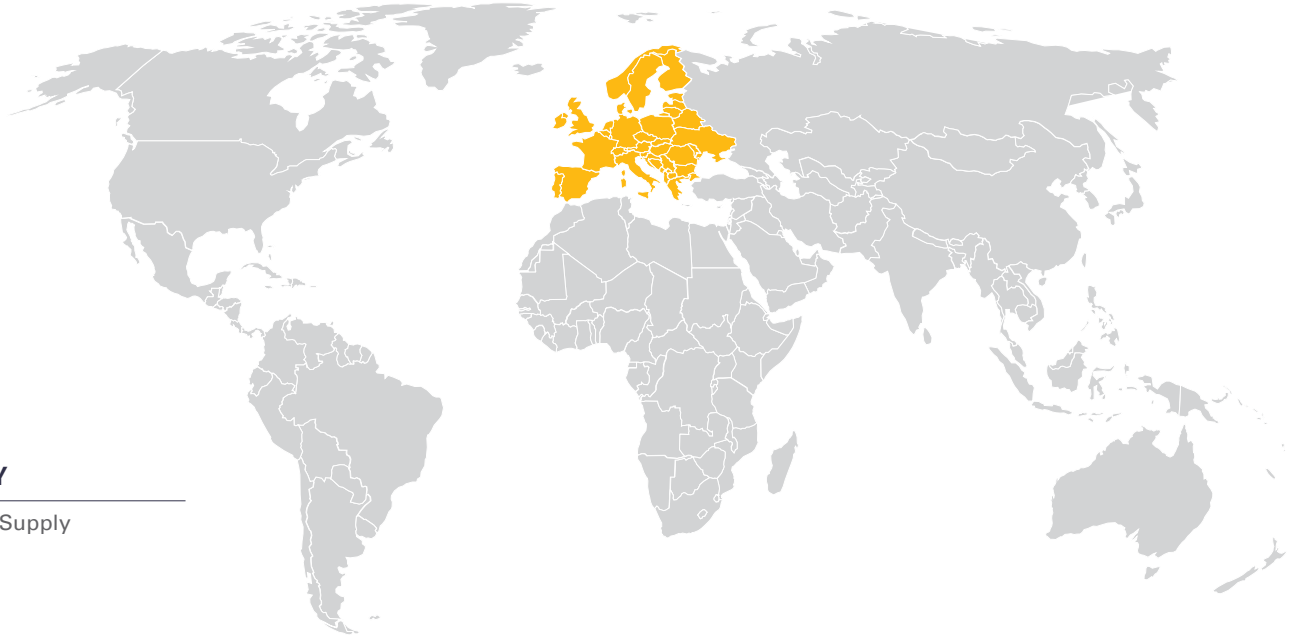
NCM622 (POUCH) CELL SUPPLY (2022)



* refers to 2022 pouch format cell production where NCM622 was the dominant cathode material. This number does not include cell production where NCM622 was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.19 NCM622, POUCH, EXW EUROPE

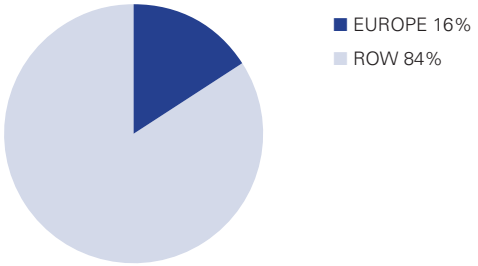


LOCATION:	Europe
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Pouch
PRIMARY CHEMISTRY:	NCM622
MAIN PRODUCERS:	Poland
TYPICAL END USE:	EVs
PRODUCTION* (2022):	15,000 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

DOMINANT CATHODE SPECIFICATION

NCM622	
Specific Capacity	155-180 mAh/g
Ni Proportion (%)	35.0±5.0
Co Proportion (%)	12.0±5.0
Mn Proportion (%)	11.0±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

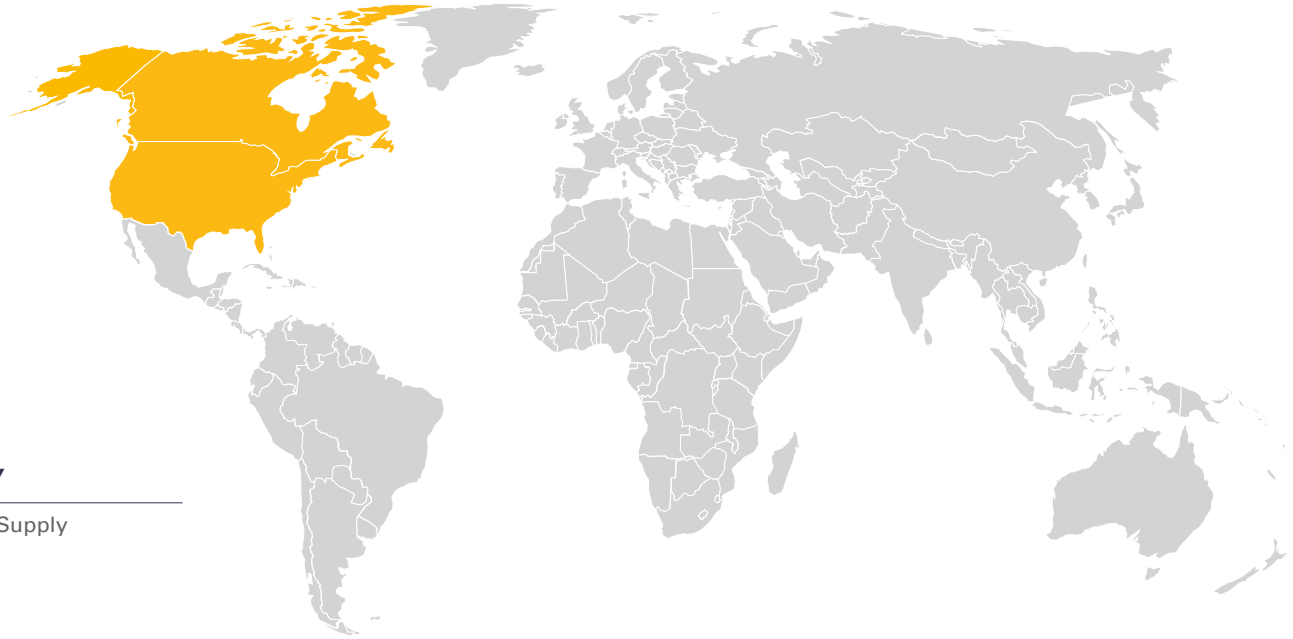
NCM622 (POUCH) CELL SUPPLY (2022)



* refers to 2022 pouch format cell production where NCM622 was the dominant cathode material. This number does not include cell production where NCM622 was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.20 NCM622, POUCH, EXW N. AMERICA



KEY

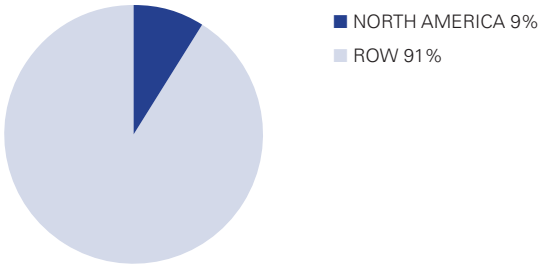
Supply

LOCATION:	North America
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Pouch
PRIMARY CHEMISTRY:	NCM622
MAIN PRODUCERS:	US
TYPICAL END USE:	EVs
PRODUCTION* (2022):	8,400 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

DOMINANT CATHODE SPECIFICATION

NCM622	
Specific Capacity	155-180 mAh/g
Ni Proportion (%)	35.0±5.0
Co Proportion (%)	12.0±5.0
Mn Proportion (%)	11.0±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

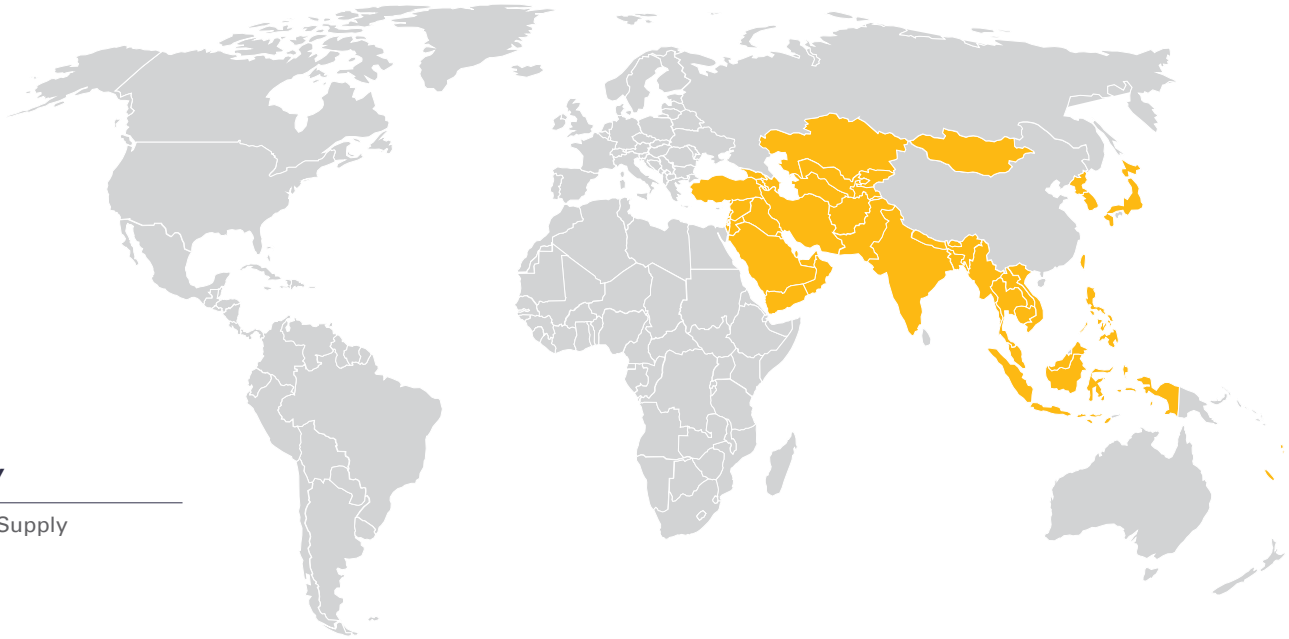
NCM622 (POUCH) CELL SUPPLY (2022)



* refers to 2022 pouch format cell production where NCM622 was the dominant cathode material. This number does not include cell production where NCM622 was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.21 NCM622, PRISMATIC, EXW ASIA

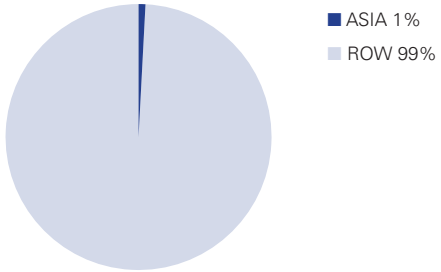


LOCATION:	Asia
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Prismatic
PRIMARY CHEMISTRY:	NCM622
MAIN PRODUCERS:	Japan
TYPICAL END USE:	EVs
PRODUCTION* (2022):	1,000 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

DOMINANT CATHODE SPECIFICATION

NCM622	
Specific Capacity	155-180 mAh/g
Ni Proportion (%)	35.0±5.0
Co Proportion (%)	12.0±5.0
Mn Proportion (%)	11.0±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

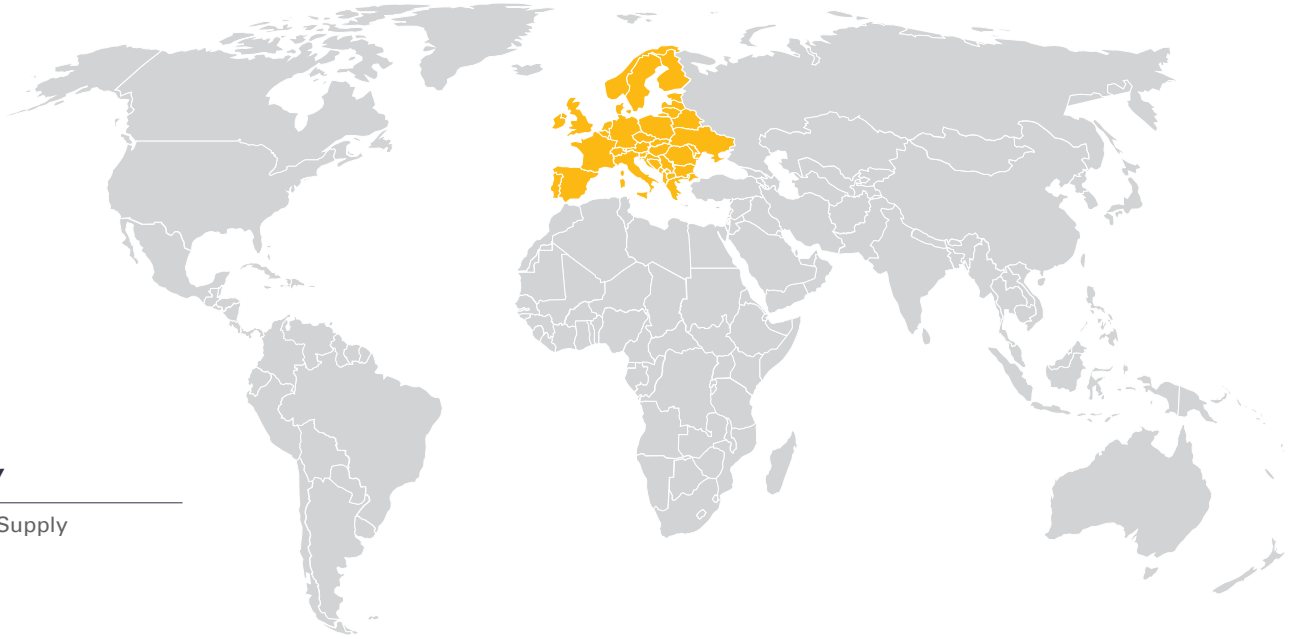
NCM622 (PRISMATIC) CELL SUPPLY (2022)



* refers to 2022 prismatic format cell production where NCM622 was the dominant cathode material. This number does not include cell production where NCM622 was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.22 NCM622, PRISMATIC, EXW EUROPE



KEY

Supply

DOMINANT CATHODE SPECIFICATION

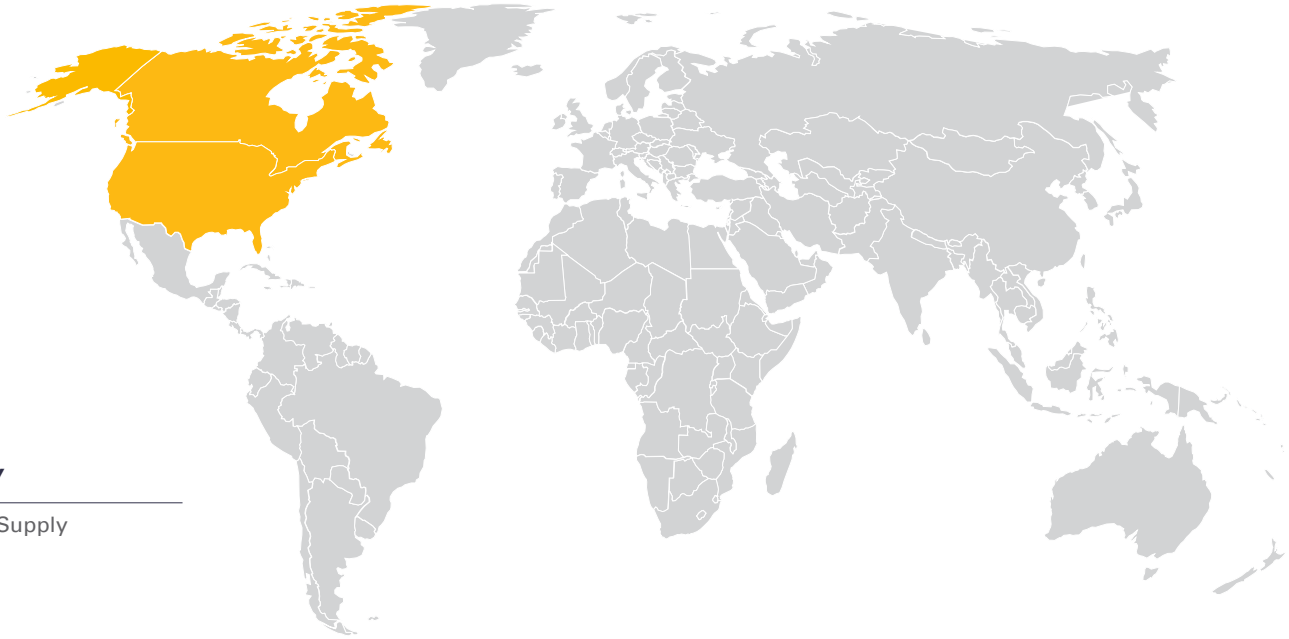
NCM622	
Specific Capacity	155-180 mAh/g
Ni Proportion (%)	35.0±5.0
Co Proportion (%)	12.0±5.0
Mn Proportion (%)	11.0±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

LOCATION:	Europe
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Prismatic
PRIMARY CHEMISTRY:	NCM622
MAIN PRODUCERS:	Europe
TYPICAL END USE:	EVs
PRODUCTION* (2022):	0 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

* refers to 2022 prismatic format cell production where NCM622 was the dominant cathode material. This number does not include cell production where NCM622 was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.23 NCM622, PRISMATIC, EXW N. AMERICA



KEY

Supply

DOMINANT CATHODE SPECIFICATION

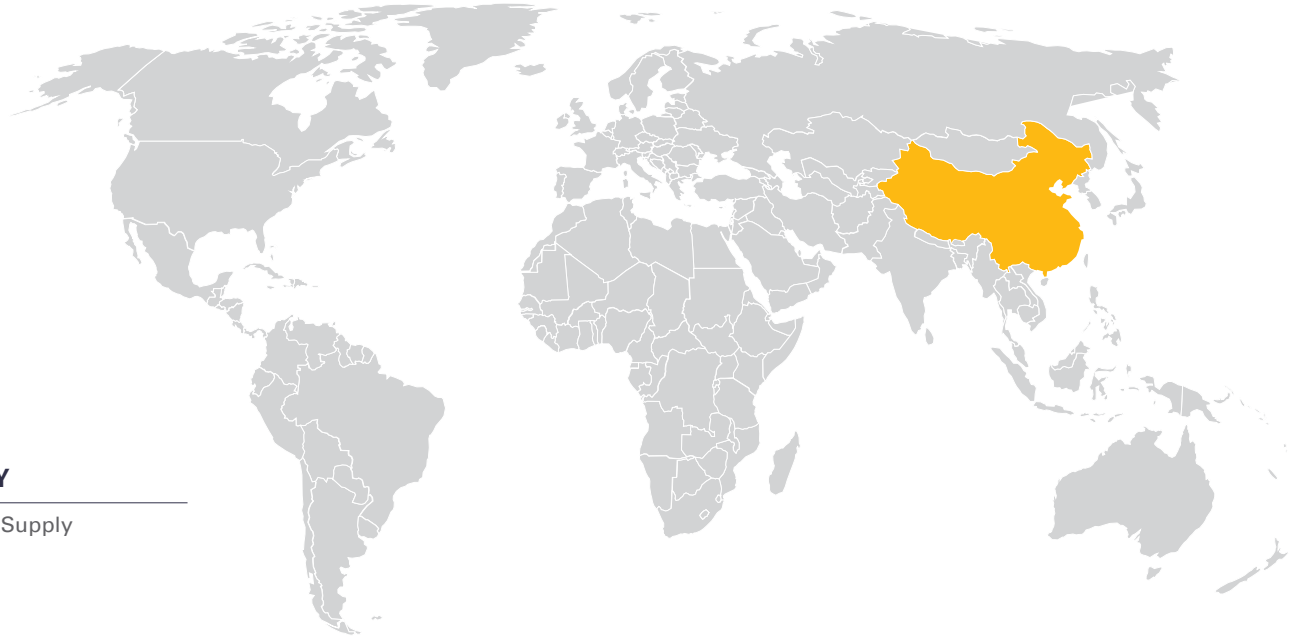
NCM622	
Specific Capacity	155-180 mAh/g
Ni Proportion (%)	35.0±5.0
Co Proportion (%)	12.0±5.0
Mn Proportion (%)	11.0±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

LOCATION:	North America
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Prismatic
PRIMARY CHEMISTRY:	NCM622
MAIN PRODUCERS:	US
TYPICAL END USE:	EVs
PRODUCTION* (2022):	0 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

* refers to 2022 prismatic format cell production where NCM622 was the dominant cathode material. This number does not include cell production where NCM622 was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.24 NCM811, POUCH, EXW CHINA

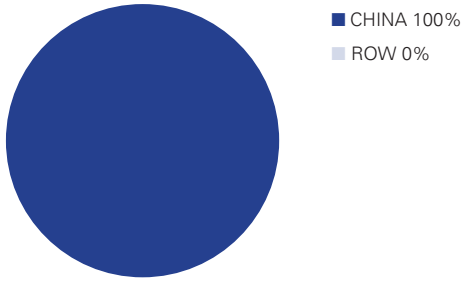


LOCATION:	China
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Pouch
PRIMARY CHEMISTRY:	NCM811
MAIN PRODUCERS:	China
TYPICAL END USE:	EVs
PRODUCTION* (2022):	2,000 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

DOMINANT CATHODE SPECIFICATION

NCM811	
Specific Capacity	>200 mAh/g
Ni Proportion (%)	50.0±5.0
Co Proportion (%)	6.0±5.0
Mn Proportion (%)	5.5±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

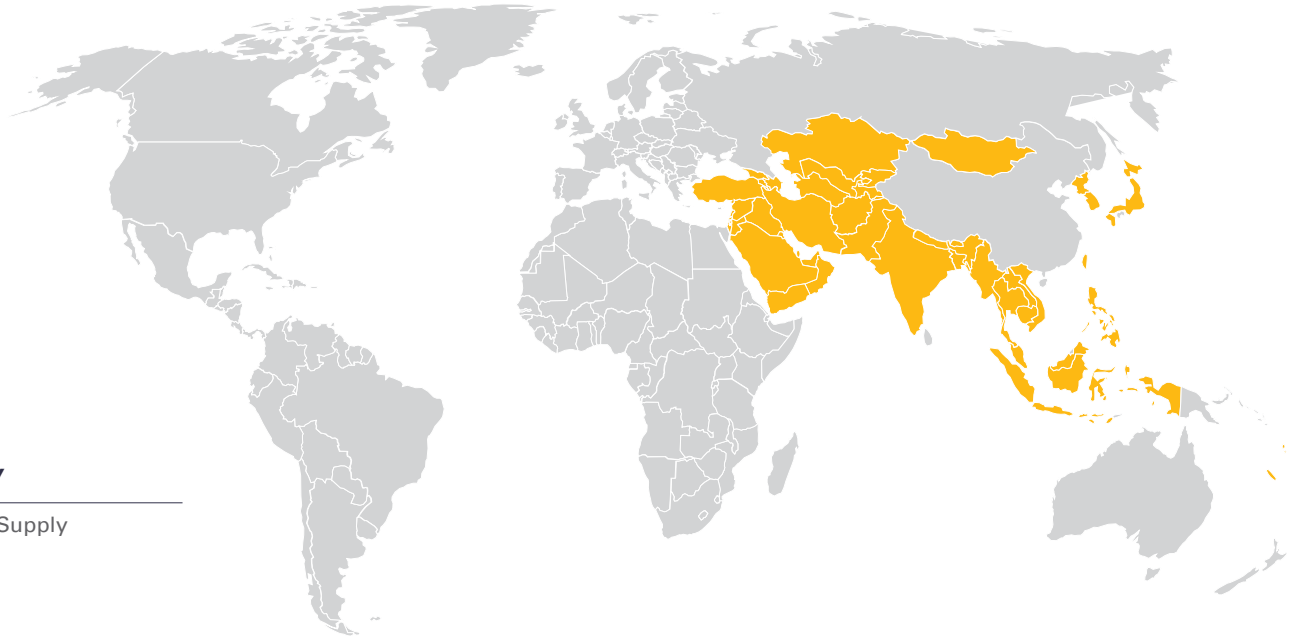
NCM811 (POUCH) CELL SUPPLY (2022)



* refers to 2022 pouch format cell production where NCM111 was the dominant cathode material. This number does not include cell production where NCM111 was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.25 NCM811, POUCH, EXW ASIA



KEY

Supply

LOCATION:	Asia
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Pouch
PRIMARY CHEMISTRY:	NCM811
MAIN PRODUCERS:	Asia excl. China
TYPICAL END USE:	EVs
PRODUCTION* (2022):	0 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

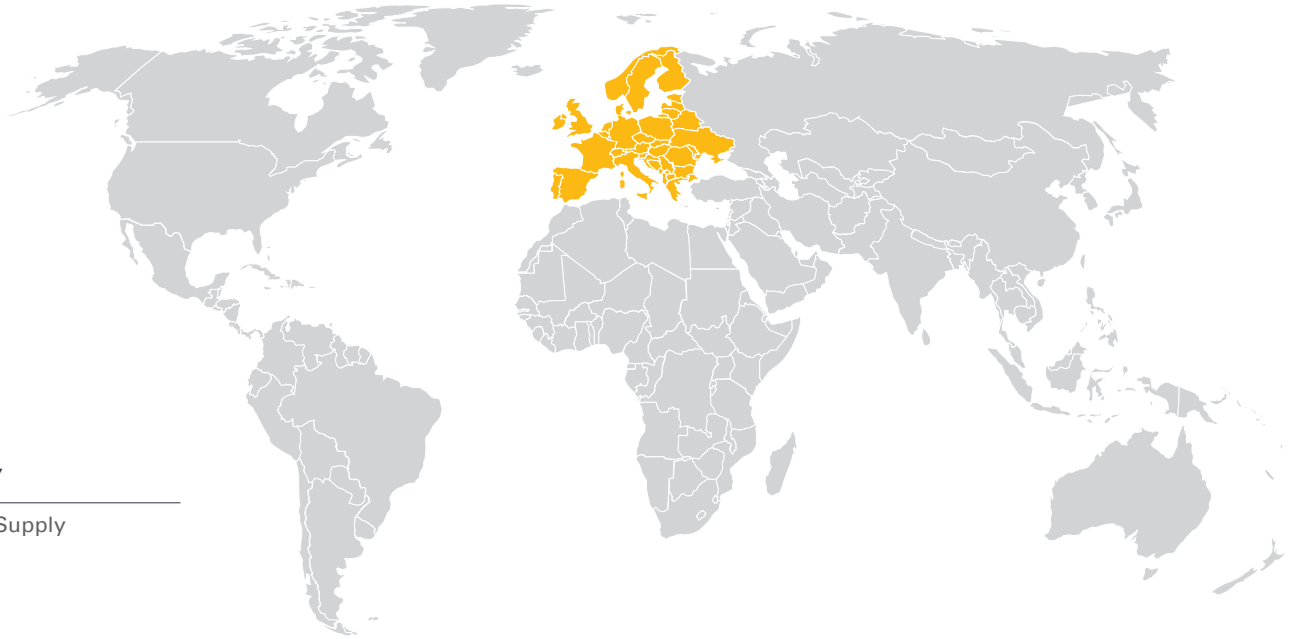
DOMINANT CATHODE SPECIFICATION

NCM811	
Specific Capacity	>200 mAh/g
Ni Proportion (%)	50.0±5.0
Co Proportion (%)	6.0±5.0
Mn Proportion (%)	5.5±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

* refers to 2022 pouch format cell production where NCM811 was the dominant cathode material. This number does not include cell production where NCM811 was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.26 NCM811, POUCH, EXW EUROPE



KEY

Supply

DOMINANT CATHODE SPECIFICATION

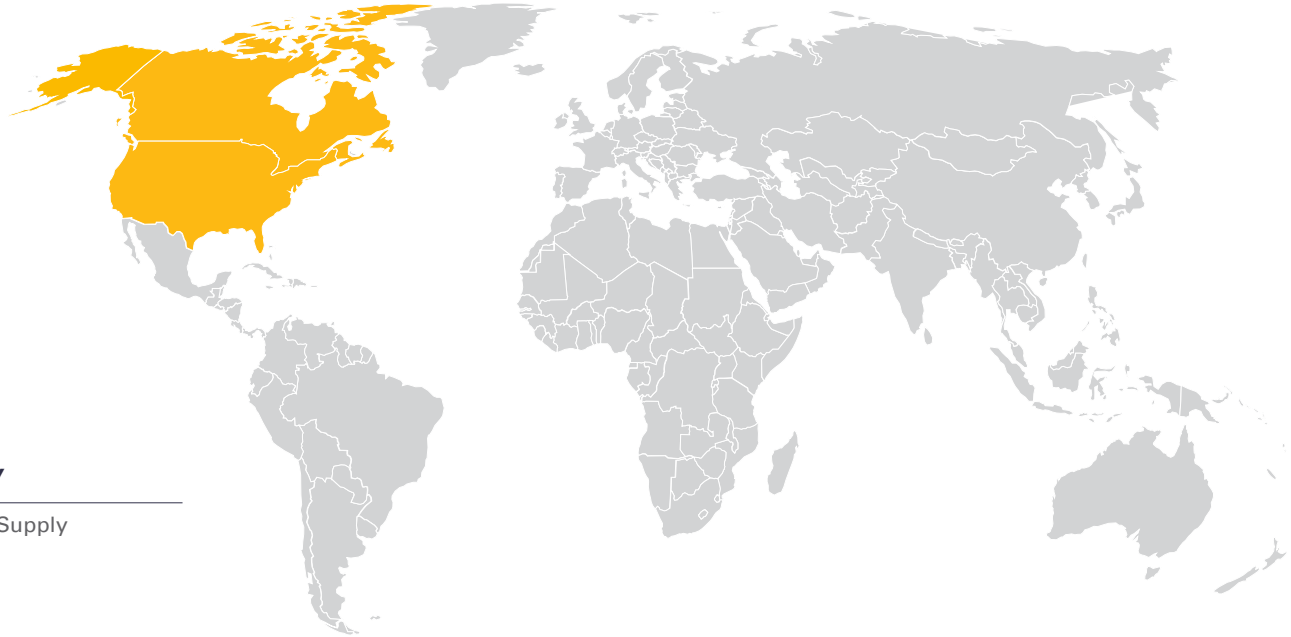
NCM811	
Specific Capacity	>200 mAh/g
Ni Proportion (%)	50.0±5.0
Co Proportion (%)	6.0±5.0
Mn Proportion (%)	5.5±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

LOCATION:	Europe
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Pouch
PRIMARY CHEMISTRY:	NCM811
MAIN PRODUCERS:	Europe
TYPICAL END USE:	EVs
PRODUCTION* (2022):	0 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

* refers to 2022 pouch format cell production where NCM811 was the dominant cathode material. This number does not include cell production where NCM811 was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.27 NCM811, POUCH, EXW N. AMERICA



KEY

Supply

DOMINANT CATHODE SPECIFICATION

NCM811	
Specific Capacity	>200 mAh/g
Ni Proportion (%)	50.0±5.0
Co Proportion (%)	6.0±5.0
Mn Proportion (%)	5.5±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

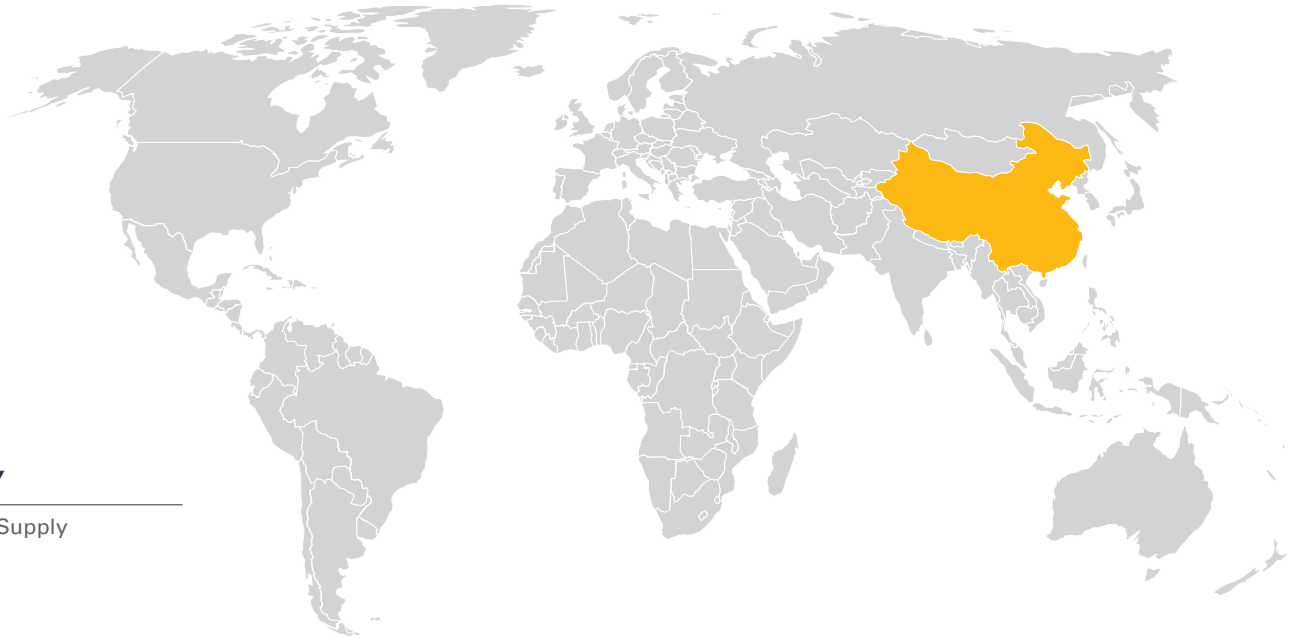
LOCATION:	North America
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Pouch
PRIMARY CHEMISTRY:	NCM811
MAIN PRODUCERS:	North America
TYPICAL END USE:	EVs
PRODUCTION* (2022):	0 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

* refers to 2022 pouch format cell production where NCM811 was the dominant cathode material. This number does not include cell production where NCM811 was a secondary or supplementary cathode input.

BENCHMARK MINERAL INTELLIGENCE

3. PRICE DEFINITIONS

3.28 NCM811, PRISMATIC, EXW CHINA



KEY

Supply

DOMINANT CATHODE SPECIFICATION

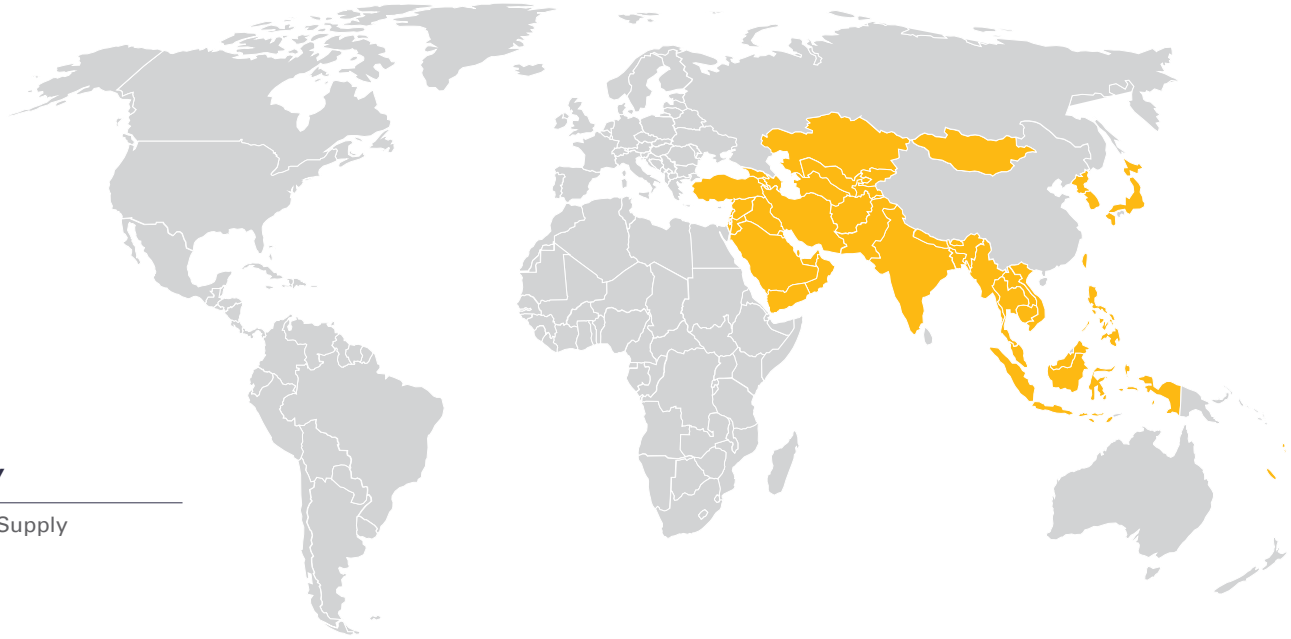
NCM811	
Specific Capacity	>200 mAh/g
Ni Proportion (%)	50.0±5.0
Co Proportion (%)	6.0±5.0
Mn Proportion (%)	5.5±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

LOCATION:	China
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Prismatic
PRIMARY CHEMISTRY:	NCM811
MAIN PRODUCERS:	China
TYPICAL END USE:	EVs
PRODUCTION* (2022):	0 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

* refers to 2022 prismatic format cell production where NCM811 was the dominant cathode material. This number does not include cell production where NCM811 was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.29 NCM811, PRISMATIC, EXW ASIA



KEY

Supply

DOMINANT CATHODE SPECIFICATION

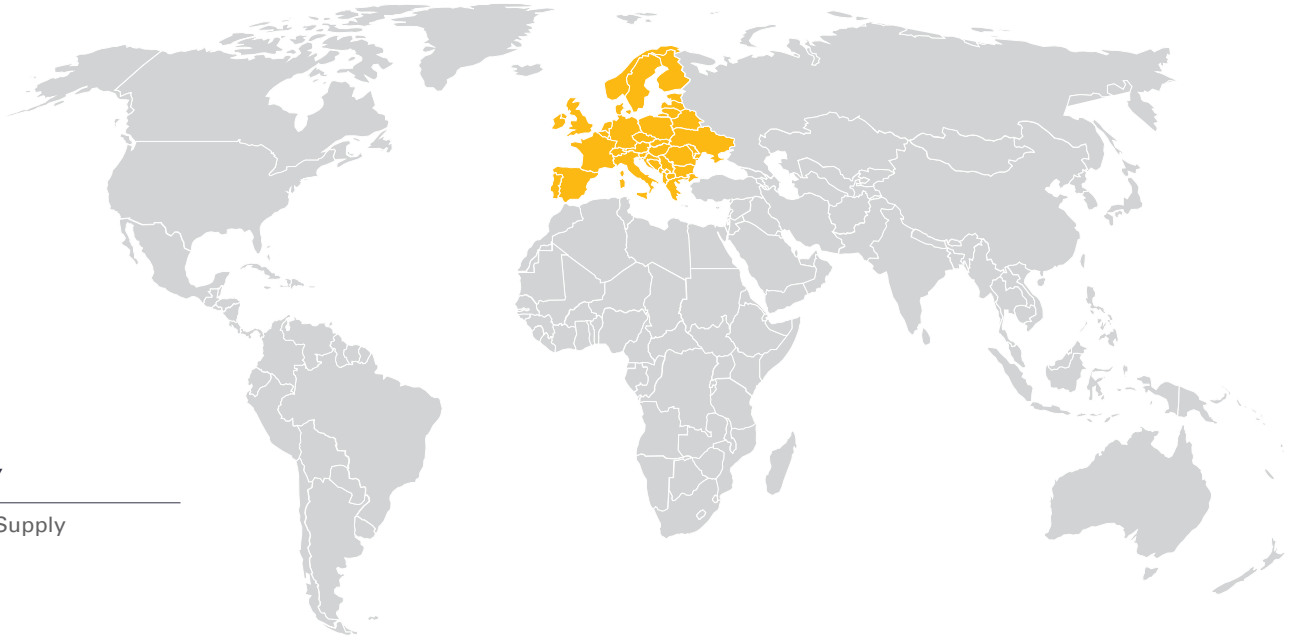
NCM811	
Specific Capacity	>200 mAh/g
Ni Proportion (%)	50.0±5.0
Co Proportion (%)	6.0±5.0
Mn Proportion (%)	5.5±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

LOCATION:	Asia
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Prismatic
PRIMARY CHEMISTRY:	NCM111
MAIN PRODUCERS:	Asia excl. China
TYPICAL END USE:	EVs
PRODUCTION* (2022):	0 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

* refers to 2022 prismatic format cell production where NCM811 was the dominant cathode material. This number does not include cell production where NCM811 was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.30 NCM811, PRISMATIC, EXW EUROPE



KEY

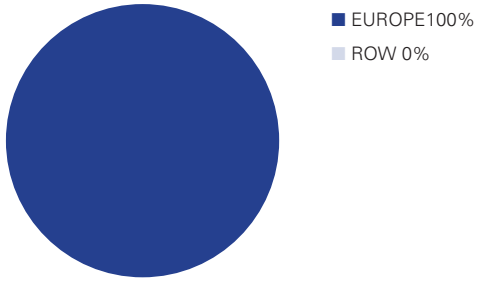
Supply

LOCATION:	Europe
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Prismatic
PRIMARY CHEMISTRY:	NCM811
MAIN PRODUCERS:	Sweden
TYPICAL END USE:	EVs
PRODUCTION* (2022):	500 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

DOMINANT CATHODE SPECIFICATION

NCM811	
Specific Capacity	>200 mAh/g
Ni Proportion (%)	50.0±5.0
Co Proportion (%)	6.0±5.0
Mn Proportion (%)	5.5±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

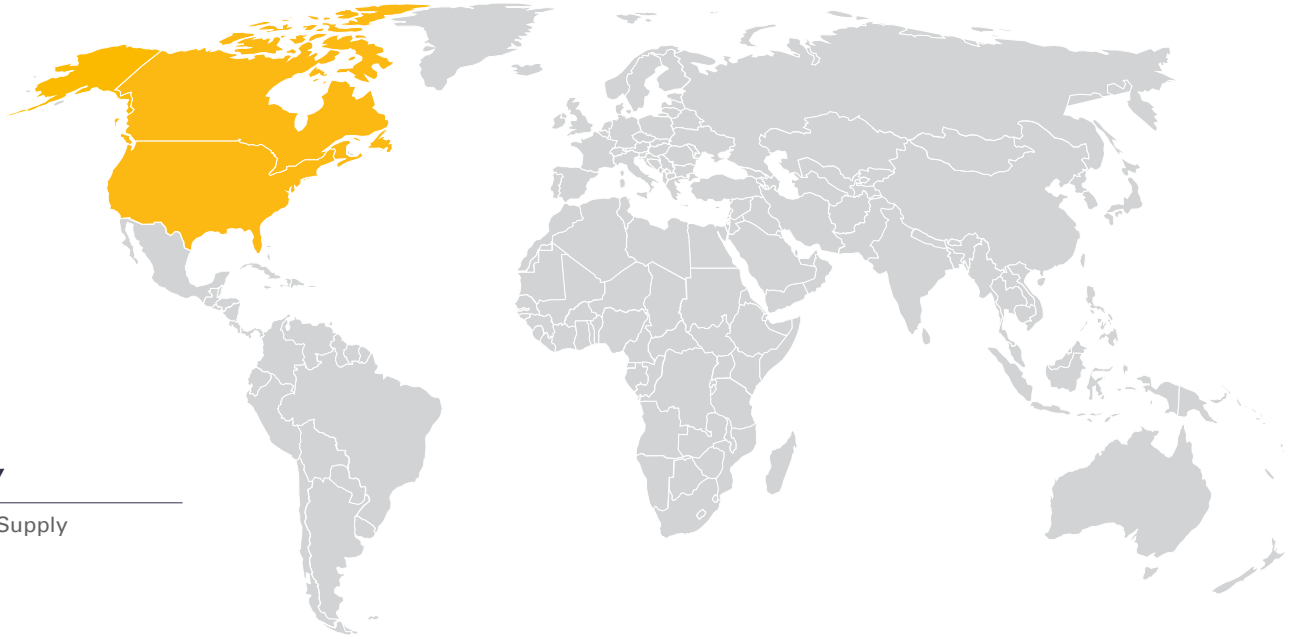
NCM811 (PRISMATIC) CELL SUPPLY (2022)



* refers to 2022 prismatic format cell production where NCM811 was the dominant cathode material. This number does not include cell production where NCM811 was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.31 NCM811, PRISMATIC, EXW N. AMERICA



KEY

Supply

DOMINANT CATHODE SPECIFICATION

NCM811	
Specific Capacity	>200 mAh/g
Ni Proportion (%)	50.0±5.0
Co Proportion (%)	6.0±5.0
Mn Proportion (%)	5.5±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

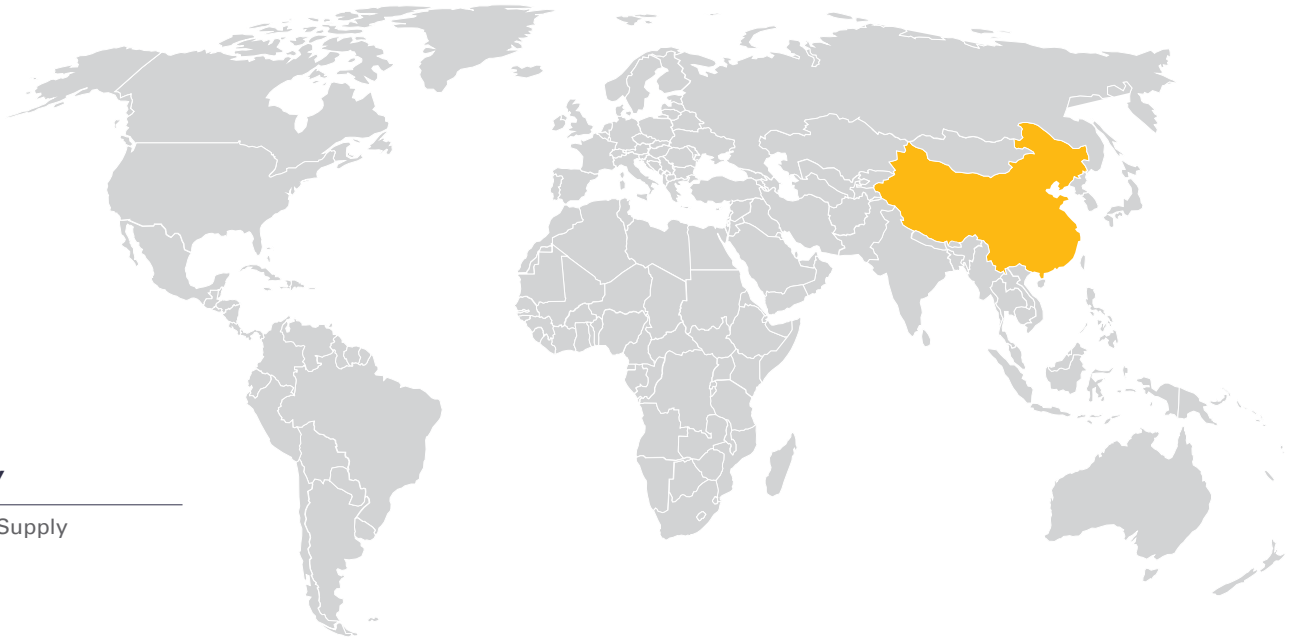
LOCATION:	North America
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Prismatic
PRIMARY CHEMISTRY:	NCM811
MAIN PRODUCERS:	North America
TYPICAL END USE:	EVs
PRODUCTION* (2022):	0 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

* refers to 2022 prismatic format cell production where NCM811 was the dominant cathode material. This number does not include cell production where NCM811 was a secondary or supplementary cathode input.

BENCHMARK MINERAL INTELLIGENCE

3. PRICE DEFINITIONS

3.32 NCM811, CYLINDRICAL, EXW CHINA

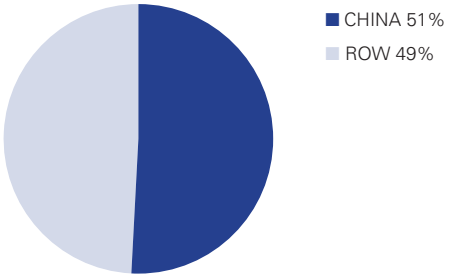


LOCATION:	China
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Cylindrical
PRIMARY CHEMISTRY:	NCM811
MAIN PRODUCERS:	China
TYPICAL END USE:	EVs
PRODUCTION* (2022):	1,800 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

DOMINANT CATHODE SPECIFICATION

NCM811	
Specific Capacity	>200 mAh/g
Ni Proportion (%)	50.0±5.0
Co Proportion (%)	6.0±5.0
Mn Proportion (%)	5.5±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

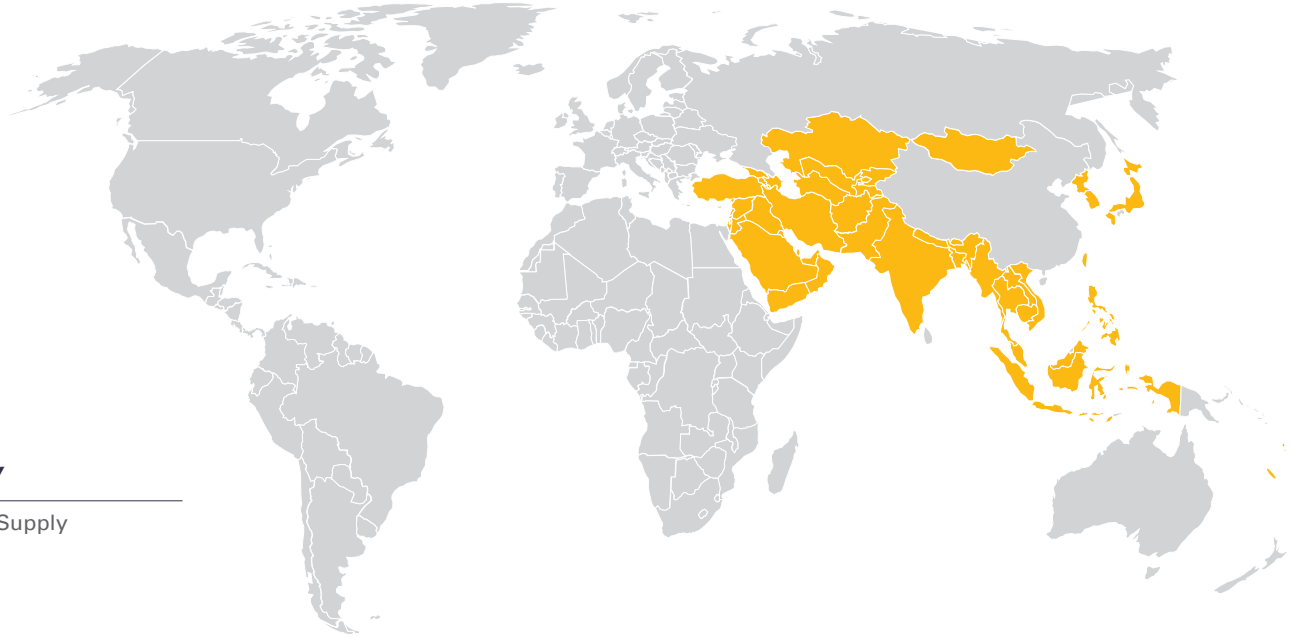
NCM811 (CYLINDRICAL) CELL SUPPLY (2022)



* refers to 2022 cylindrical format cell production where NCM811 was the dominant cathode material. This number does not include cell production where NCM811 was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.33 NCM811, CYLINDRICAL, EXW ASIA



KEY

Supply

DOMINANT CATHODE SPECIFICATION

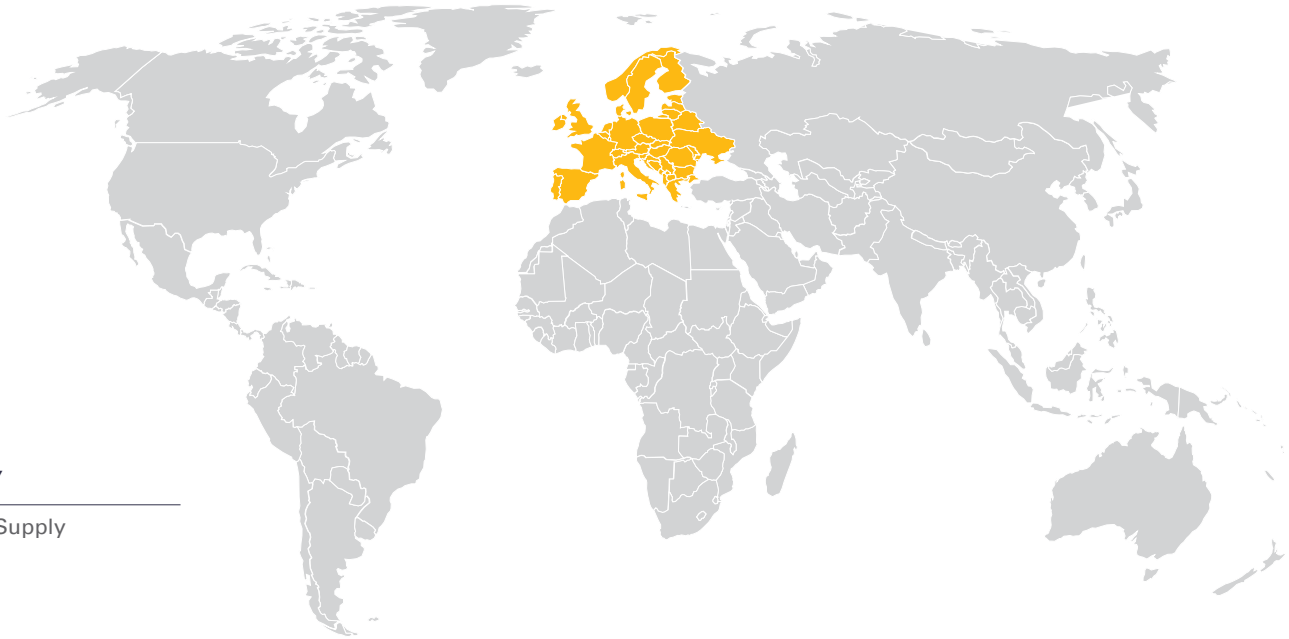
NCM811	
Specific Capacity	>200 mAh/g
Ni Proportion (%)	50.0±5.0
Co Proportion (%)	6.0±5.0
Mn Proportion (%)	5.5±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

LOCATION:	Asia
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Cylindrical
PRIMARY CHEMISTRY:	NCM811
MAIN PRODUCERS:	Asia excl. China
TYPICAL END USE:	EVs
PRODUCTION* (2022):	0 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

* refers to 2022 cylindrical format cell production where NCM811 was the dominant cathode material. This number does not include cell production where NCM811 was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.34 NCM811, CYLINDRICAL, EXW EUROPE



KEY

Supply

DOMINANT CATHODE SPECIFICATION

NCM811	
Specific Capacity	>200 mAh/g
Ni Proportion (%)	50.0±5.0
Co Proportion (%)	6.0±5.0
Mn Proportion (%)	5.5±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

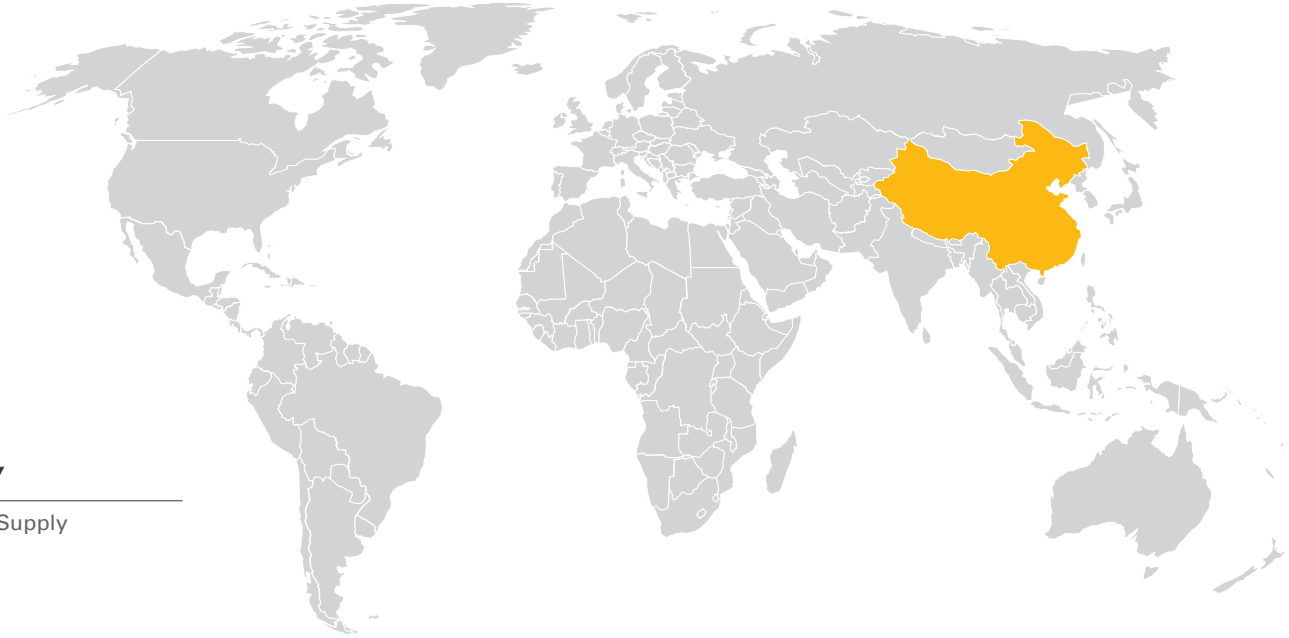
LOCATION:	Europe
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Cylindrical
PRIMARY CHEMISTRY:	NCM811
MAIN PRODUCERS:	Sweden
TYPICAL END USE:	EVs
PRODUCTION* (2022):	0 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

* refers to 2022 cylindrical format cell production where NCM811 was the dominant cathode material. This number does not include cell production where NCM811 was a secondary or supplementary cathode input.

BENCHMARK MINERAL INTELLIGENCE

3. PRICE DEFINITIONS

3.36 NCA, POUCH, EXW CHINA



KEY

Supply

DOMINANT CATHODE SPECIFICATION

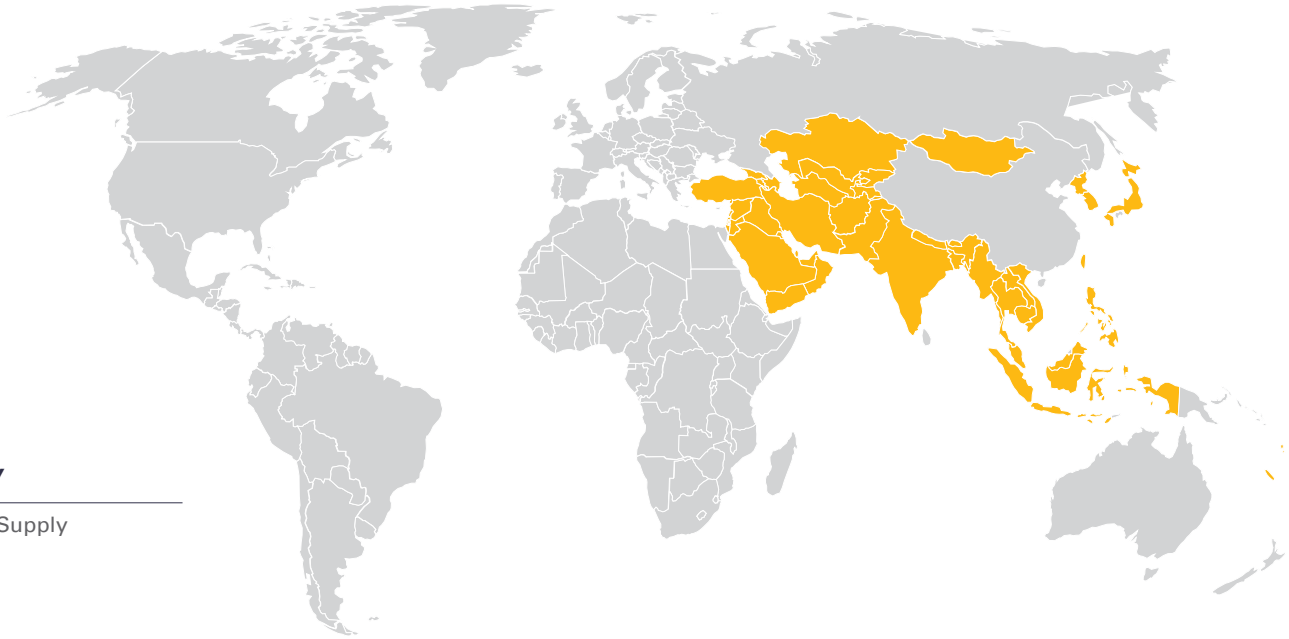
NCA	
Specific Capacity	>175 mAh/g
Ni Proportion (%)	50.0±5.0
Co Proportion (%)	8.5±5.0
Mn Proportion (%)	5.5±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0
Al Proportion (%)	≤2.0

LOCATION:	China
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Pouch
PRIMARY CHEMISTRY:	NCA
MAIN PRODUCERS:	China
TYPICAL END USE:	EVs
PRODUCTION* (2022):	0 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

* refers to 2022 pouch format cell production where NCA was the dominant cathode material. This number does not include cell production where NCA was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.37 NCA, POUCH, EXW ASIA



KEY

Supply

DOMINANT CATHODE SPECIFICATION

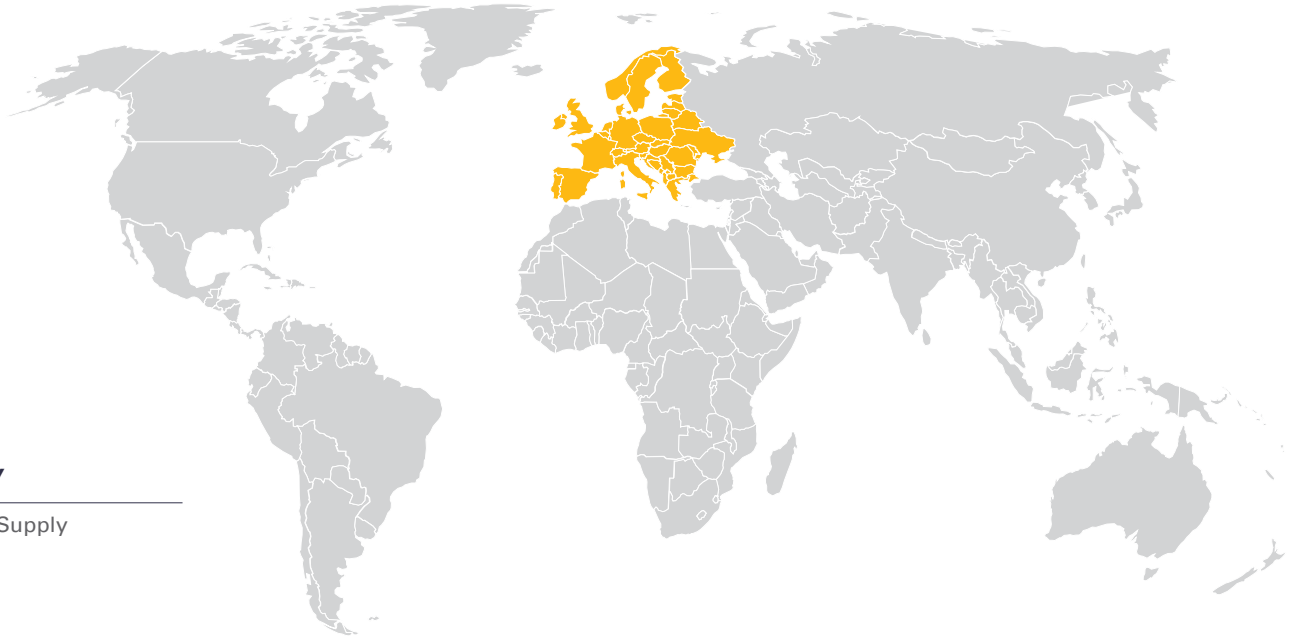
NCA	
Specific Capacity	>175 mAh/g
Ni Proportion (%)	50.0±5.0
Co Proportion (%)	8.5±5.0
Mn Proportion (%)	5.5±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0
Al Proportion (%)	≤2.0

LOCATION:	Asia
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Pouch
PRIMARY CHEMISTRY:	NCA
MAIN PRODUCERS:	Asia excl. China
TYPICAL END USE:	EVs
PRODUCTION* (2022):	0 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

* refers to 2022 pouch format cell production where NCA was the dominant cathode material. This number does not include cell production where NCA was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.38 NCA, POUCH, EXW EUROPE



KEY

Supply

DOMINANT CATHODE SPECIFICATION

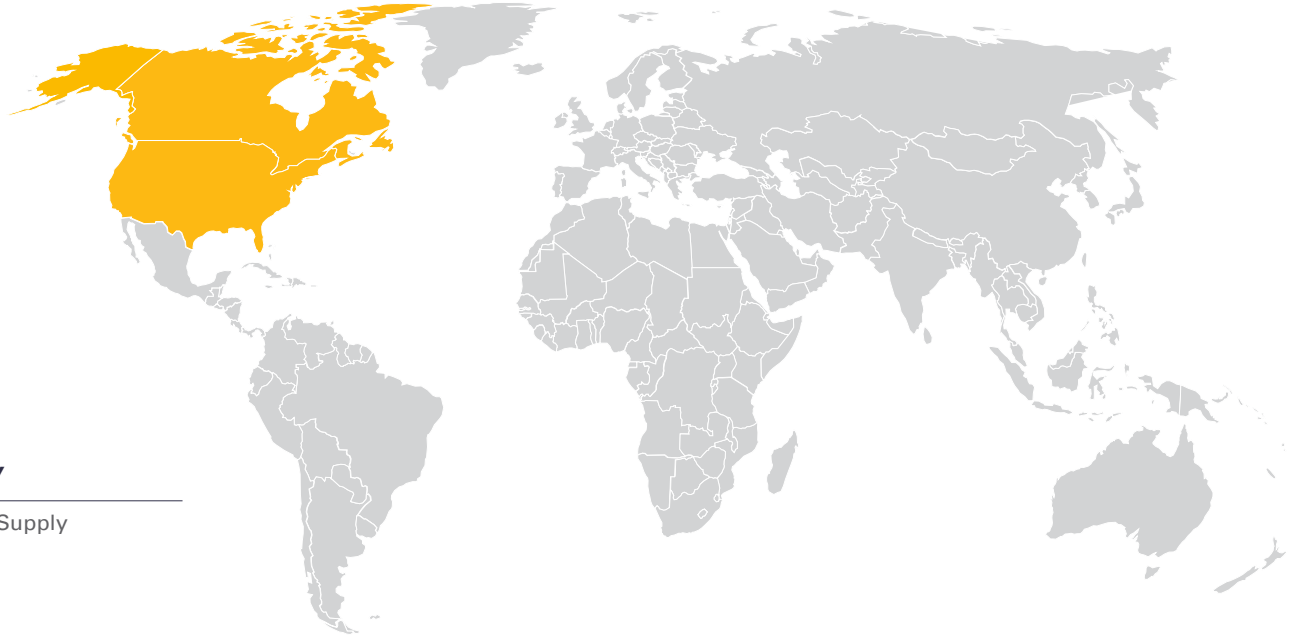
NCA	
Specific Capacity	>175 mAh/g
Ni Proportion (%)	50.0±5.0
Co Proportion (%)	8.5±5.0
Mn Proportion (%)	5.5±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0
Al Proportion (%)	≤2.0

LOCATION:	Europe
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Pouch
PRIMARY CHEMISTRY:	NCA
MAIN PRODUCERS:	Europe
TYPICAL END USE:	EVs
PRODUCTION* (2022):	0 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

* refers to 2022 pouch format cell production where NCA was the dominant cathode material. This number does not include cell production where NCA was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.39 NCA, POUCH, EXW N. AMERICA



KEY

Supply

DOMINANT CATHODE SPECIFICATION

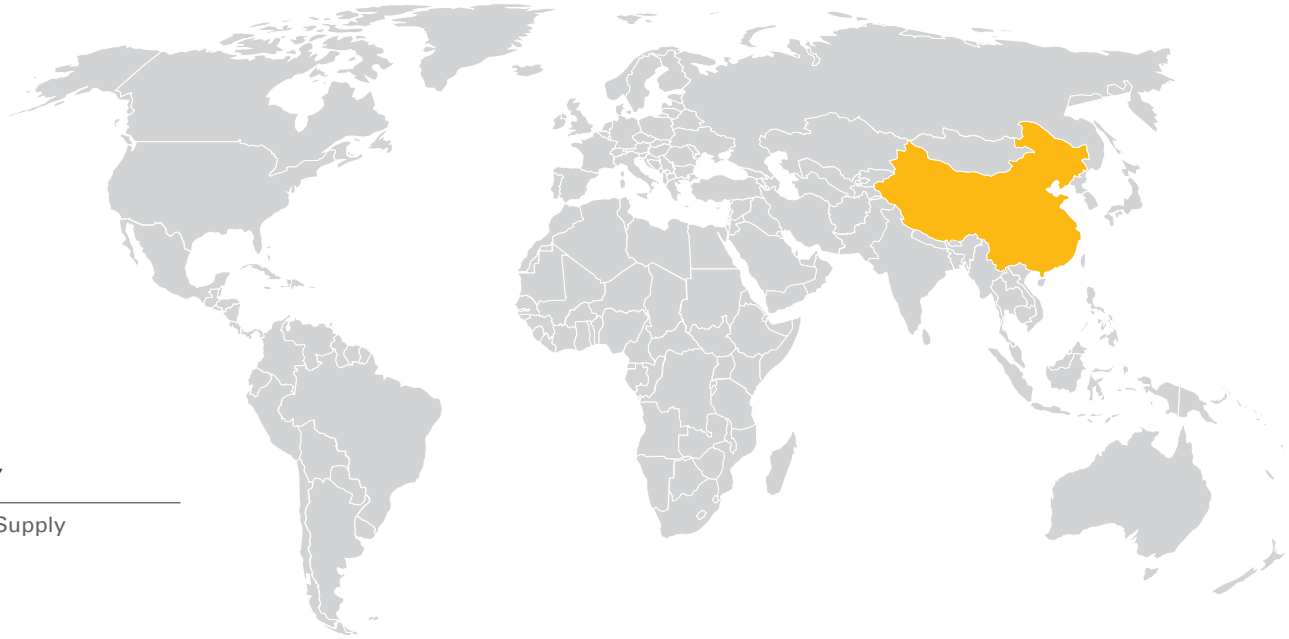
NCA	
Specific Capacity	>175 mAh/g
Ni Proportion (%)	50.0±5.0
Co Proportion (%)	8.5±5.0
Mn Proportion (%)	5.5±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0
Al Proportion (%)	≤2.0

LOCATION:	North America
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Pouch
PRIMARY CHEMISTRY:	NCA
MAIN PRODUCERS:	North America
TYPICAL END USE:	EVs
PRODUCTION* (2022):	0 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

* refers to 2022 pouch format cell production where NCA was the dominant cathode material. This number does not include cell production where NCA was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.40 NCA, PRISMATIC, EXW CHINA



KEY

Supply

DOMINANT CATHODE SPECIFICATION

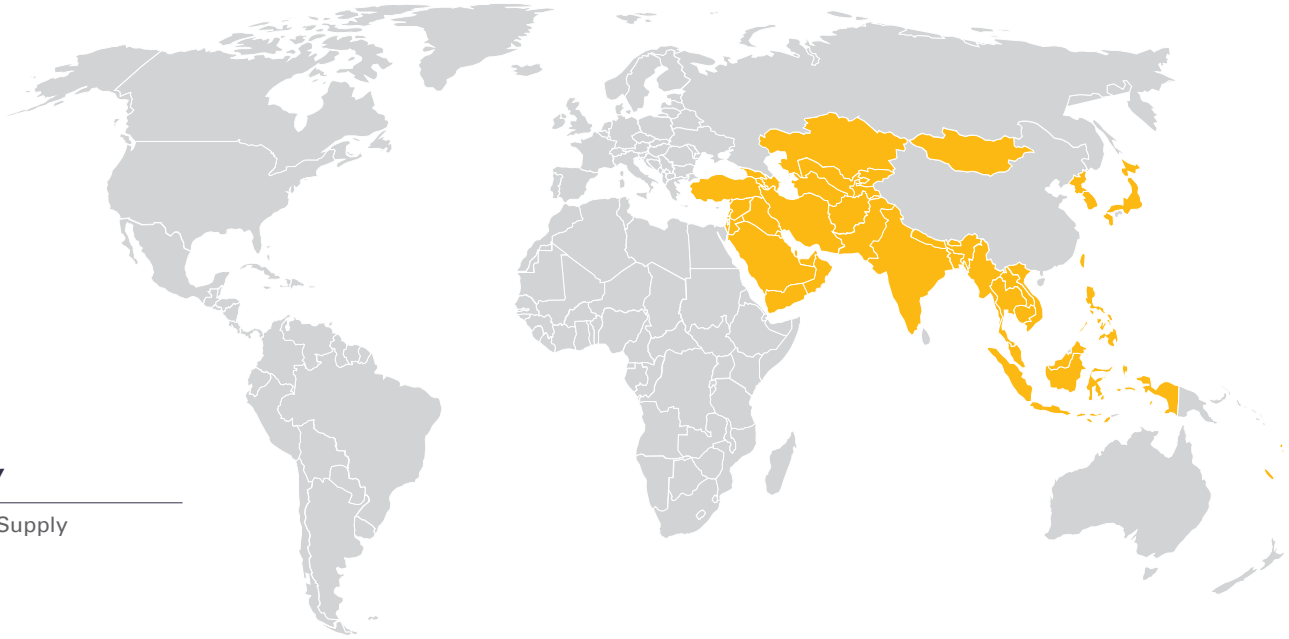
NCA	
Specific Capacity	>175 mAh/g
Ni Proportion (%)	50.0±5.0
Co Proportion (%)	8.5±5.0
Mn Proportion (%)	5.5±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0
Al Proportion (%)	≤2.0

LOCATION:	China
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Prismatic
PRIMARY CHEMISTRY:	NCA
MAIN PRODUCERS:	China
TYPICAL END USE:	EVs
PRODUCTION* (2022):	0 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

* refers to 2022 prismatic format cell production where NCA was the dominant cathode material. This number does not include cell production where NCA was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.41 NCA, PRISMATIC, EXW ASIA



KEY

Supply

DOMINANT CATHODE SPECIFICATION

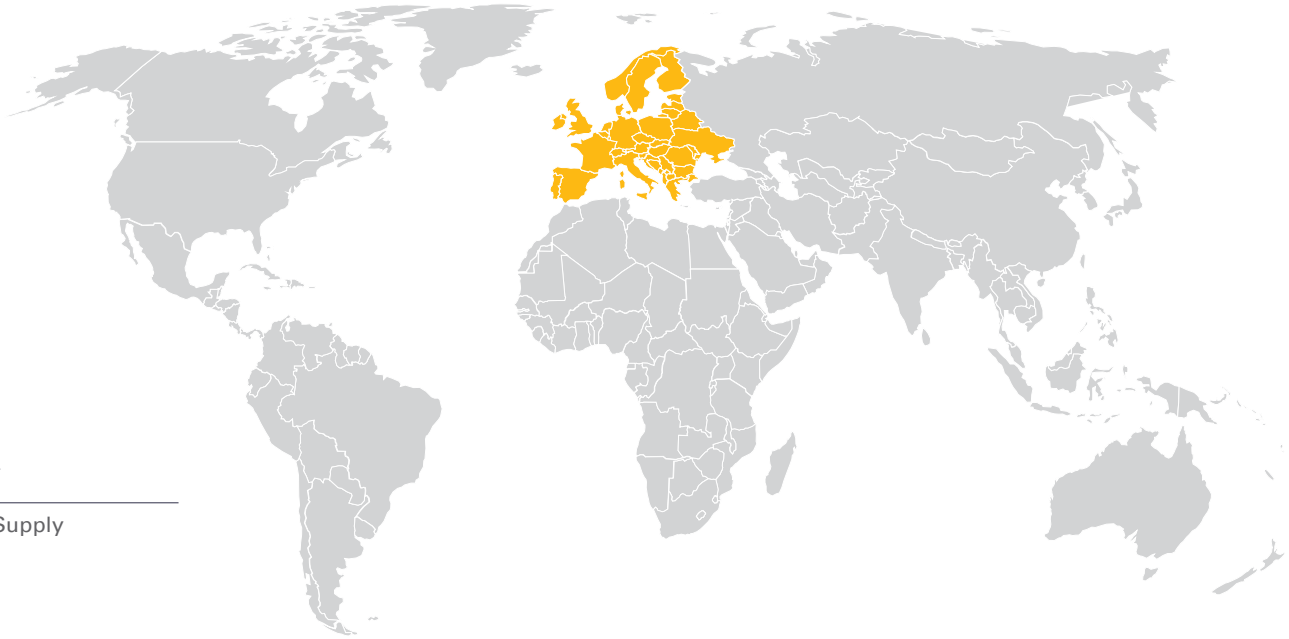
NCA	
Specific Capacity	>175 mAh/g
Ni Proportion (%)	50.0±5.0
Co Proportion (%)	8.5±5.0
Mn Proportion (%)	5.5±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0
Al Proportion (%)	≤2.0

LOCATION:	Asia
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Prismatic
PRIMARY CHEMISTRY:	NCA
MAIN PRODUCERS:	Asia excl. China
TYPICAL END USE:	EVs
PRODUCTION* (2022):	0 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

* refers to 2022 prismatic format cell production where NCA was the dominant cathode material. This number does not include cell production where NCA was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.42 NCA, PRISMATIC, EXW EUROPE



KEY

Supply

DOMINANT CATHODE SPECIFICATION

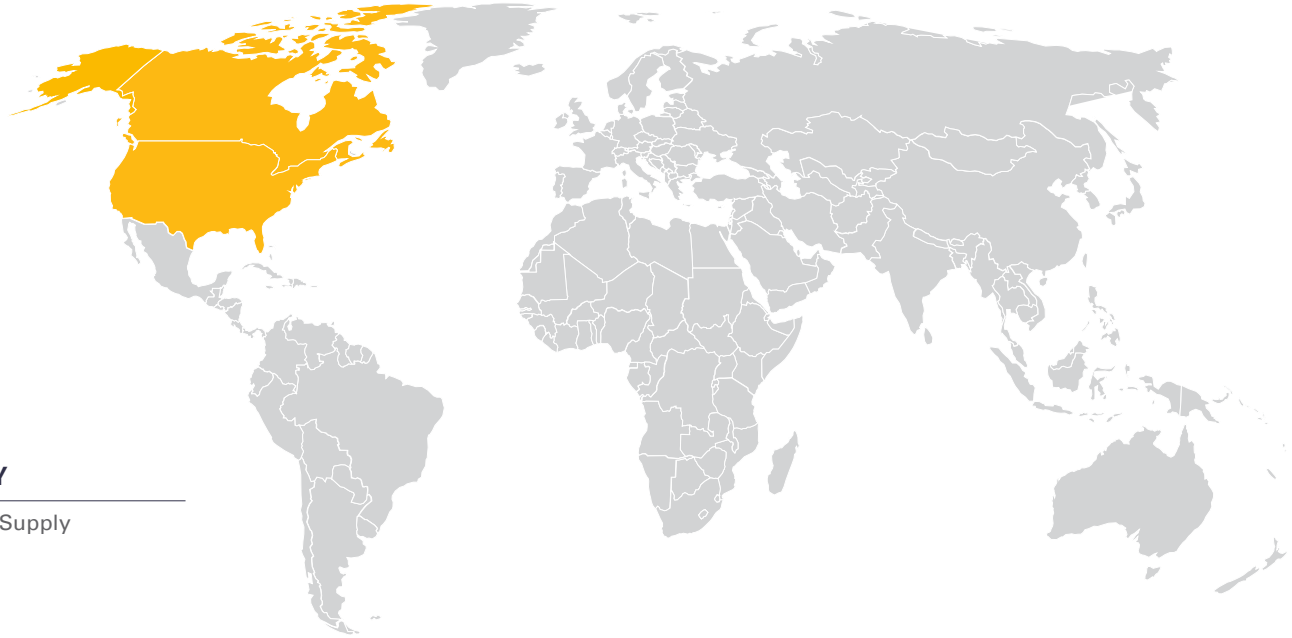
NCA	
Specific Capacity	>175 mAh/g
Ni Proportion (%)	50.0±5.0
Co Proportion (%)	8.5±5.0
Mn Proportion (%)	5.5±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0
Al Proportion (%)	≤2.0

LOCATION:	Europe
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Prismatic
PRIMARY CHEMISTRY:	NCA
MAIN PRODUCERS:	Europe
TYPICAL END USE:	EVs
PRODUCTION* (2022):	0 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

* refers to 2022 prismatic format cell production where NCA was the dominant cathode material. This number does not include cell production where NCA was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.43 NCA, PRISMATIC, EXW N. AMERICA



KEY

Supply

DOMINANT CATHODE SPECIFICATION

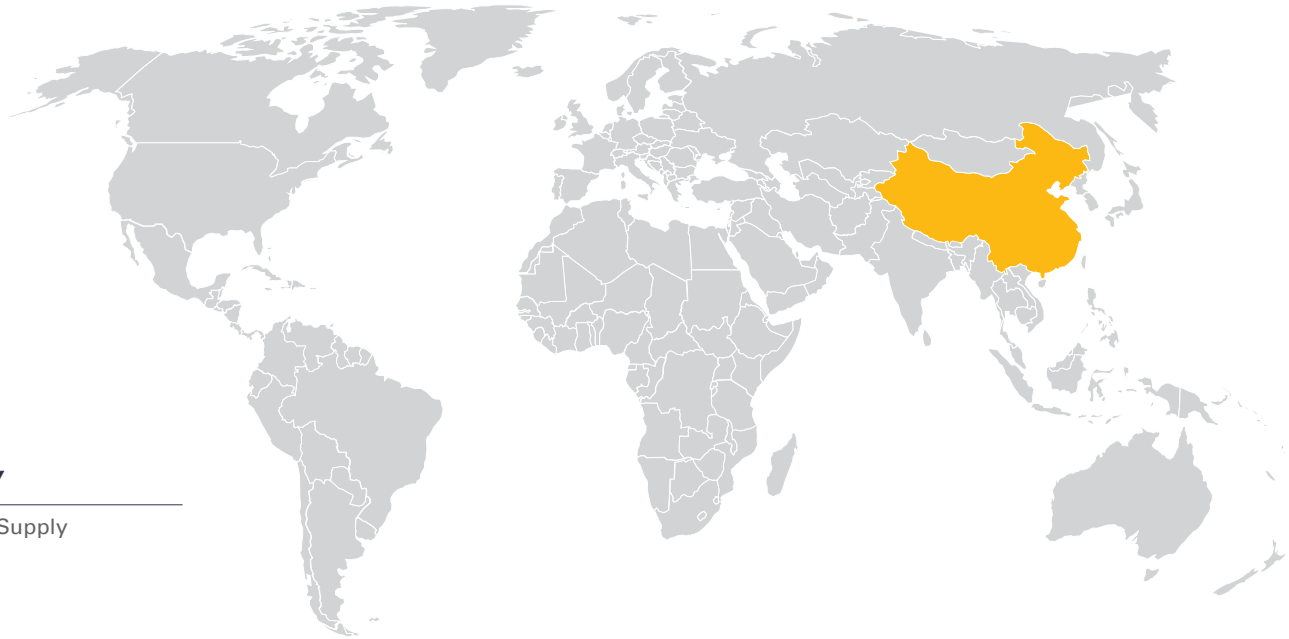
NCA	
Specific Capacity	>175 mAh/g
Ni Proportion (%)	50.0±5.0
Co Proportion (%)	8.5±5.0
Mn Proportion (%)	5.5±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0
Al Proportion (%)	≤2.0

LOCATION:	North America
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Prismatic
PRIMARY CHEMISTRY:	NCA
MAIN PRODUCERS:	North America
TYPICAL END USE:	EVs
PRODUCTION* (2022):	0 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

* refers to 2022 prismatic format cell production where NCA was the dominant cathode material. This number does not include cell production where NCA was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.44 LCO, POUCH, EXW CHINA



KEY

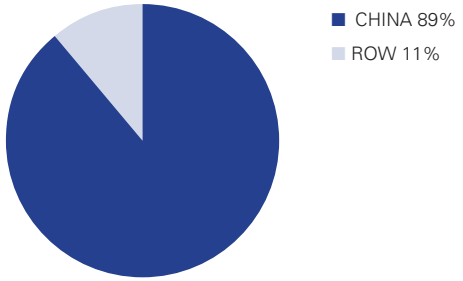
Supply

LOCATION:	China
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Pouch
PRIMARY CHEMISTRY:	LCO
MAIN PRODUCERS:	China
TYPICAL END USE:	Portable Electronics
PRODUCTION* (2022):	48,400 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

DOMINANT CATHODE SPECIFICATION

LCO	
Specific Capacity	>155 mAh/g
Li Proportion (%)	7.0±5.0
Co Proportion (%)	58.0±5.0
O Proportion (%)	33.0±5.0

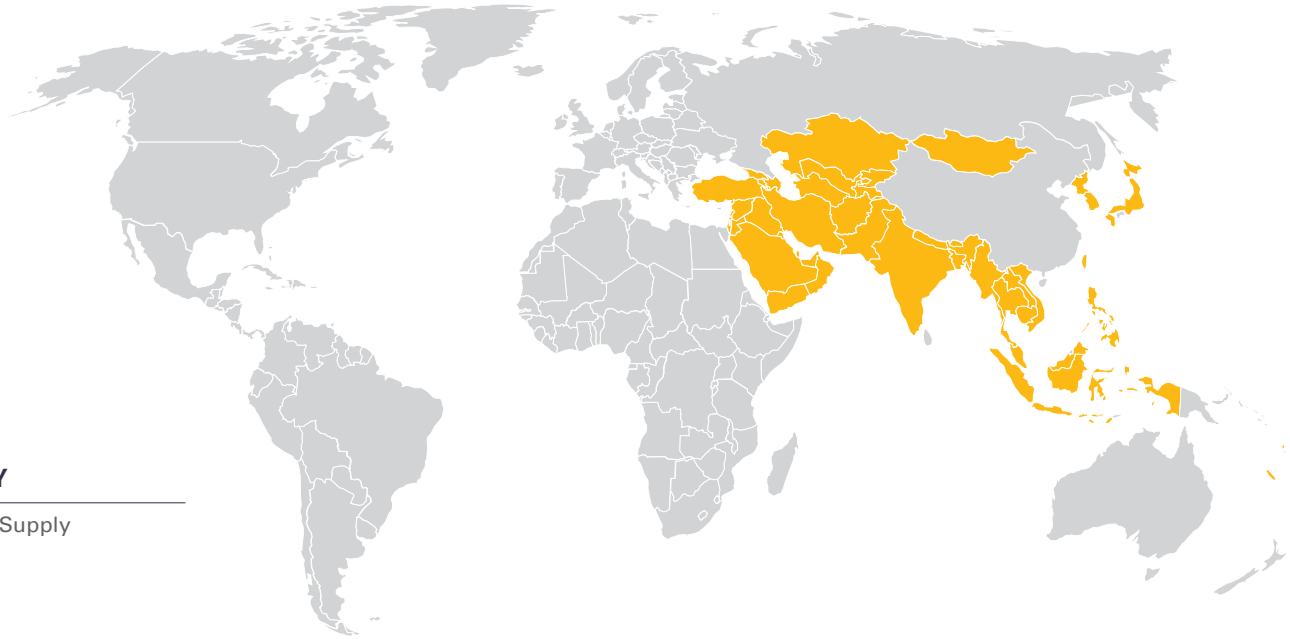
LCO (POUCH) CELL SUPPLY (2022)



* refers to 2022 pouch format cell production where LCO was the dominant cathode material. This number does not include cell production where LCO was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.45 LCO, POUCH, EXW ASIA

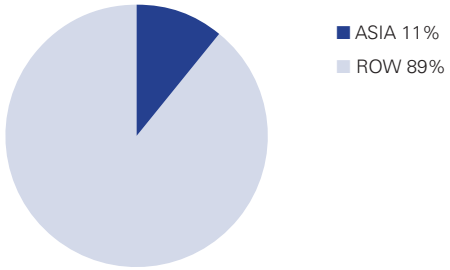


LOCATION:	Asia
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Pouch
PRIMARY CHEMISTRY:	LCO
MAIN PRODUCERS:	Korea, Malaysia, Singapore
TYPICAL END USE:	Portable Electronics
PRODUCTION* (2022):	5,870 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

DOMINANT CATHODE SPECIFICATION

LCO	
Specific Capacity	>155 mAh/g
Li Proportion (%)	7.0±5.0
Co Proportion (%)	58.0±5.0
O Proportion (%)	33.0±5.0

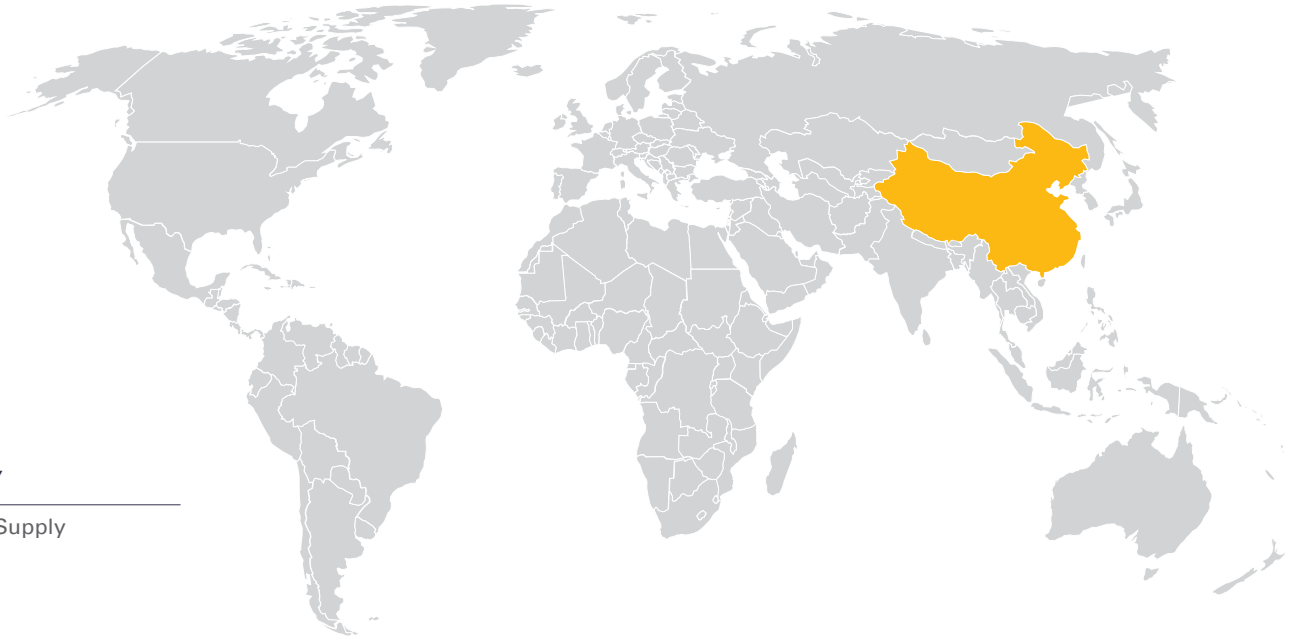
LCO (POUCH) CELL SUPPLY (2022)



* refers to 2022 pouch format cell production where LCO was the dominant cathode material. This number does not include cell production where LCO was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.46 LFP, POUCH, EXW CHINA



KEY

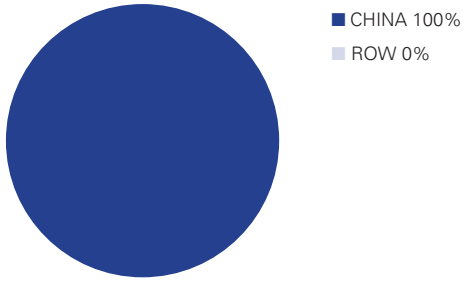
Supply

LOCATION:	China
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Pouch
PRIMARY CHEMISTRY:	LFP
MAIN PRODUCERS:	China
TYPICAL END USE:	EVs
PRODUCTION* (2022):	22,100 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

DOMINANT CATHODE SPECIFICATION

LFP	
Specific Capacity	>160 mAh/g
Li Proportion (%)	5.5.0±2.5
Fe Proportion (%)	35.0±2.5
P Proportion (%)	19.0±2.5
O Proportion (%)	40.0±5.0

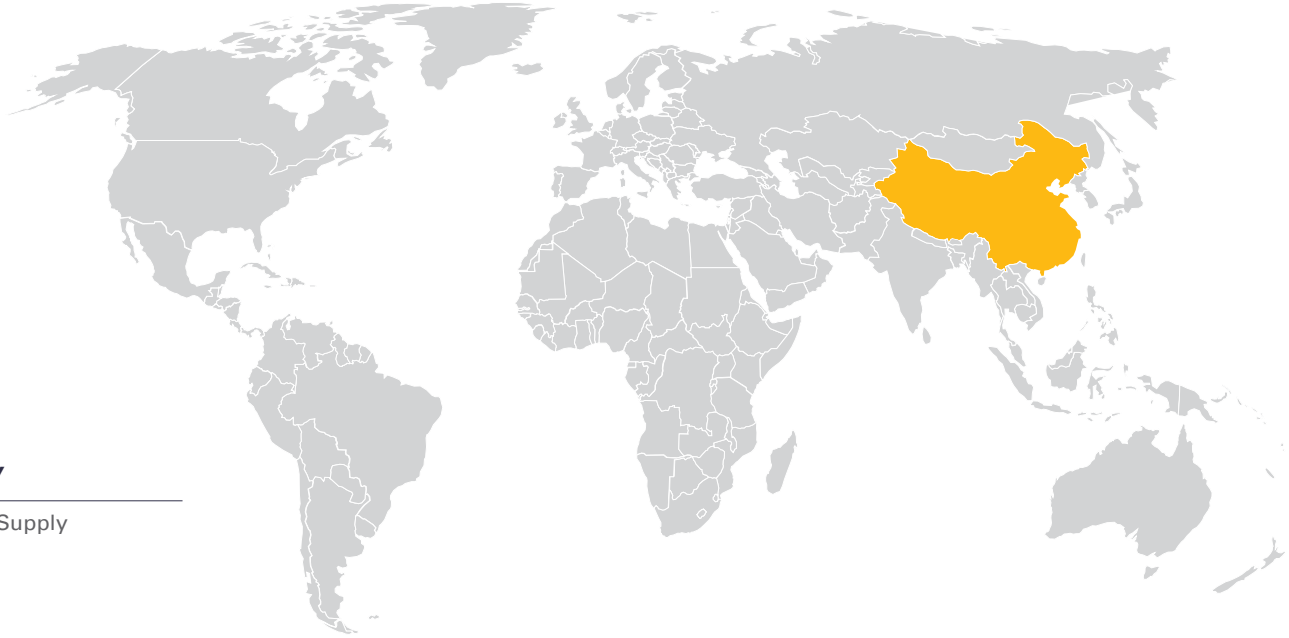
LFP (POUCH) CELL SUPPLY (2022)



* refers to 2022 pouch format cell production where LCO was the dominant cathode material. This number does not include cell production where LCO was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.47 LFP, PRISMATIC, EXW CHINA



KEY

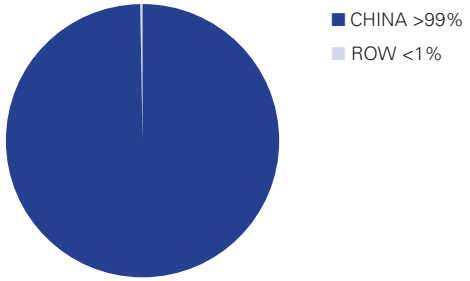
Supply

LOCATION:	China
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Prismatic
PRIMARY CHEMISTRY:	LFP
MAIN PRODUCERS:	China
TYPICAL END USE:	EVs
PRODUCTION* (2022):	129,950 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

DOMINANT CATHODE SPECIFICATION

LFP	
Specific Capacity	>160 mAh/g
Li Proportion (%)	5.5.0±2.5
Fe Proportion (%)	35.0±2.5
P Proportion (%)	19.0±2.5
O Proportion (%)	40.0±5.0

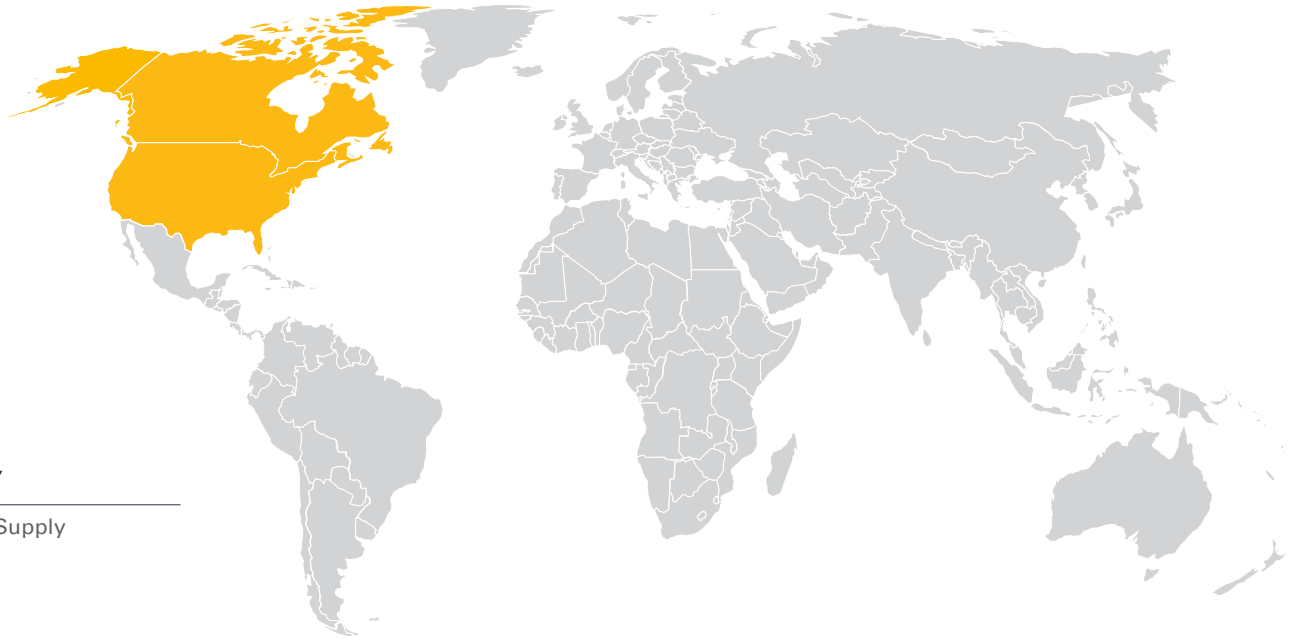
LFP (PRISMATIC) CELL SUPPLY (2022)



* refers to 2022 prismatic format cell production where LFP was the dominant cathode material. This number does not include cell production where LFP was a secondary or supplementary cathode input.

3. PRICE DEFINITIONS

3.35 NCM811, CYLINDRICAL, EXW N. AMERICA

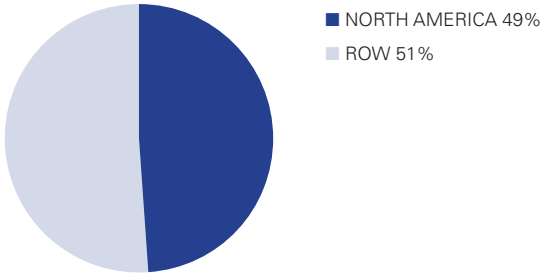


LOCATION:	North America
CONTRACT BASIS:	Ex-Works
CURRENCY:	USD
UOM:	kWh
FORMAT:	Cylindrical
PRIMARY CHEMISTRY:	NCM811
MAIN PRODUCERS:	China
TYPICAL END USE:	US
PRODUCTION* (2022):	1,700 MWh
PUBLICATION:	1st of the month or the first working day following the 1st by 4pm (London)

DOMINANT CATHODE SPECIFICATION

NCM811	
Specific Capacity	>200 mAh/g
Ni Proportion (%)	50.0±5.0
Co Proportion (%)	6.0±5.0
Mn Proportion (%)	5.5±5.0
O Proportion (%)	33.0±5.0
Li Proportion (%)	7.0±5.0

NCM811 (CYLINDRICAL) CELL SUPPLY (2022)



* refers to 2022 cylindrical format cell production where LFP was the dominant cathode material. This number does not include cell production where LFP was a secondary or supplementary cathode input.

BENCHMARK MINERAL INTELLIGENCE

4. COMPLIANCE & SECURITY

All Benchmark Minerals analysts are obligated to sign a code of conduct upon employment in relation to data collection and assessment, to ensure independence and credibility.

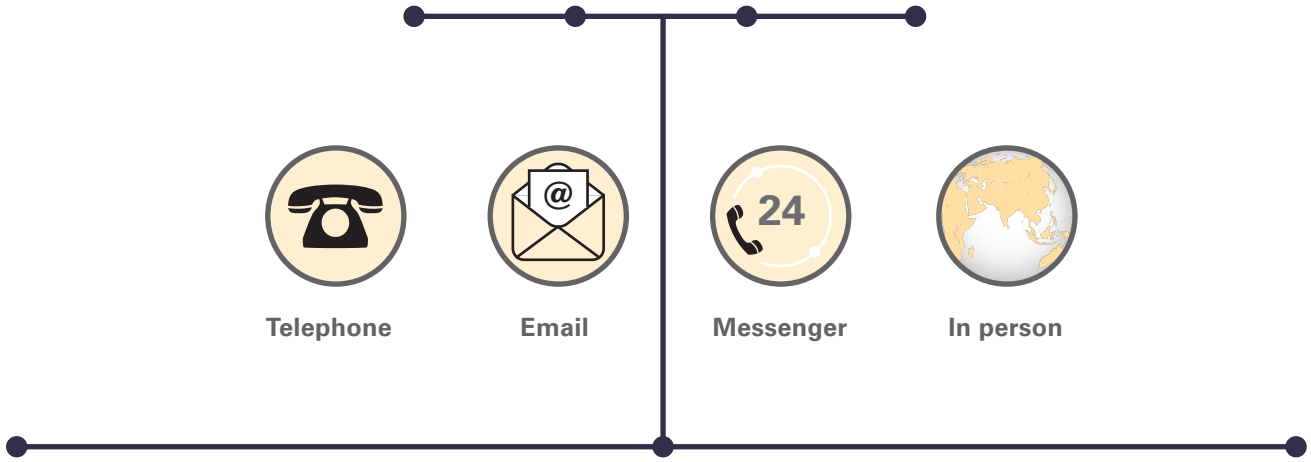
This code of conduct is enforced through annual appraisals by the Chief Data Officer where adherence to these principles is reviewed. All members price analysts are also required to attend annual training sessions where the terms of the employee code of conduct are outlined in detail.

Benchmark Minerals also provides an employee handbook which outlines all company policies in relation to antitrust, conflicts of interest, anti-corruption and bribery.

Data and supporting information is stored on a secure cloud-based platform to ensure the information can only be accessed and edited by authorised Benchmark Minerals employees.

We treat the confidentiality of all our contacts and data with the utmost seriousness and information exchange is subject to Chinese walls within the company in addition to complete confidentiality outside of the company. To allow for open and transparent price discussions, Benchmark Minerals does not publicly disclose the sources of its price data.

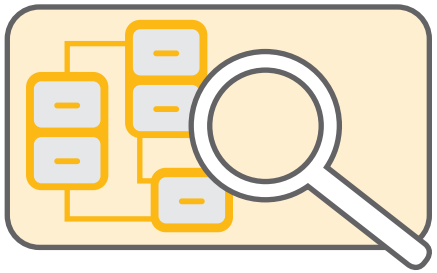
Benchmark Minerals analysts are required to log all



1 **Analyst audit trail**
Contact details
Date
Pricing by grade
Volumes
Market commentary

2 **Evidence saved and logged internally**
Notes from price calls/meetings
Email trail
Photos of messenger conversations

3 **Price ranges published**
Published via website
Rangers & averages
Emailed to subscribers
Peer revised



4. COMPLIANCE & SECURITY

price interactions, including supplementary market commentary in our internal audit system which details:

- Point/date of contact
- Company details
- Method of communication
- Pricing by grade
- Volume information
- Market commentary

All relevant data and information is stored on Benchmark Minerals internal systems for a period of 10 years following the date of publishing.

IOSCO
Benchmark Minerals implements an accountable audit trail for its price collection and has created a robust price assessment process, designed specifically for the lithium ion battery cell market.

Benchmark Minerals also implements a strict employee code of conduct to prevent conflicts of interest and a comprehensive complaints process to address any external queries or questioning of Benchmark Minerals prices.

EU Benchmark Regulation
Benchmark Minerals will seek registration as a benchmark administrator under the EU Benchmark Regulation as its prices are adopted in financial derivatives.

5. CORRECTIONS

Benchmark Minerals is committed to providing accurate and reliable pricing information and as such any corrections to previously published data are reviewed internally and communicated to the market at the earliest opportunity.

Only data that was available when the price/index was published is used for subsequent corrections.

If a correction is identified then the price assessment team conduct an internal verification process to ensure the accuracy of the correction before notifying the market.

Notification of corrections is sent directly to users/ licensers via email, updated on the following issues and also updated on the Benchmark Minerals online price database.

BENCHMARK MINERAL INTELLIGENCE

6. COMPLAINTS AND ENQUIRIES

7. COMPLAINTS AND ENQUIRIES

Benchmark Minerals strives to provide the highest standards for any request for information or complaint in order to give the market full confidence in its price assessments.

Any complaints should be forwarded to our dedicated complaints mailbox at: complaints@benchmarkminerals.com

All complaints are acknowledged within 3 working days

For any other queries, contact details for price assessment analysts are provided on the front page of the Price Assessment reports and we encourage open and transparent dialogue to retain the highest levels of confidence in our prices.

If for any reason a client is unsatisfied with the response received in relation to their enquiry/ complaint, this can be escalated to the Benchmark Minerals management team by contacting: complaints@benchmarkminerals.com

Complaints handling principles:

- Complaints can come from data providers, subscribers, as well as industry participants.
- Complaints can cover specific prices, how the data was compiled, proposed changes to methodology and other editorial decisions taken by BMI.
- BMI has set a timetable and will handle all complaints in a timely and fair manner.
- The inquiry is conducted independently of any personnel who may be subject of the complaint.
- BMI will advise the complainant of the outcome in writing in a reasonable period.
- There is recourse to an independent 3rd party appointed by BMI if a complainant is dissatisfied with the outcome and seeks further recourse.
- All material concerning the complaint and its review are kept by BMI for five years.

7. REVISION HISTORY

8. REVISION HISTORY

Benchmark Minerals is committed to consistency in data collection and reporting methodology.

Benchmark Minerals regularly reviews its policies and procedures, at least annually, to affirm the appropriateness of its methodologies.

Benchmark Minerals has continual and regular dialogue within the industry which allows it to gather feedback, adjust and refine its policies that ensure:

- Appropriateness of data assessments
- Provide amendments and or removal of pricing conditions
- Initiate new price assessments to meet market needs

November 2024: Updated to include provision for modifications to publishing schedule

BENCHMARK MINERAL INTELLIGENCE

8. CONTACT US

CONTACT US

For more information please contact:

Price and Data division
prices@benchmarkminerals.com

For complaints or compliance related questions, please contact:

Risk and Compliance Officer
Email: complaints@benchmarkminerals.com