

CRU Prices

Cobalt

Methodology and
Definitions Guide

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**Data, Insight,
Strategy &
Communities**

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Methodology and Definitions Guide – Cobalt

1 Scope

This guide covers commodity prices in all geographical markets and should be read in conjunction with the [CRU Group Compliance Framework and Methodology Guide](#). It details a commodity-specific methodology which has precedence, with all other aspects covered by the Group methodology guide.

2 Methodology

CRU assesses prices for physically traded cobalt prices in the global market that are outlined in the following methodology guide. This methodology was developed in consultation with the industry (including through our annual Underlying Market Conditions Review), allowing CRU to capture market liquidity and establish prices that are reliable and representative of the market. Specification definitions such as price assessment frequency, incoterms, currencies, size/volumes, units and others are aligned with the relevant market requirements and industry conventions.

Final published prices are assessed as a range because this has been established as an industry requirement. Prices in these markets tend to be more widely distributed and a range is therefore better suited to reflect the spread of data as a basis for negotiations and for use in long term contracts.

Data Providers

CRU price assessments are based on regular contact with a wide a network of market participants situated at critical nodes in the supply chain. This network is constantly reviewed to seek a balance of buyers and sellers that are representative of the market.

They must have access to data relating to actual spot market transactions (a purchase or a sale), bid/offer information or be able to provide a credible opinion on such prices in the absence of any other data over the relevant time period. They are therefore typically employed in sales or marketing functions on the sell side and purchasing functions on the buy side, or act in a trading function. Data Providers may also include individuals in finance functions if they can provide the same.

Each data provider is required to meet the criteria stipulated in Section 2.4 of the *CRU Group Compliance Framework and Methodology Guide*.

Data Submitted and Submission Processes

Data providers are to provide CRU with prices relating to sales or purchases concluded in a transaction window as follows:

- Bi-weekly Prices
- Data to be provided between 16:00 Tuesday and 16:00 Thursday in the appropriate regional time zone, or other price information relating to this time period.
- Data to be provided between 16:00 Thursday and 16:00 Tuesday in the appropriate regional time zone, or other price information relating to this time period.

Industry participants can submit prices to CRU by telephone, email, private one-to-one instant messenger services or other private means of communication.

*These times may be subject to change, any changes will be notified in advance.

Data Submission Dependency and Minimum Threshold

CRU seeks to receive market data information from the broadest range of active data sources as possible and seeks to increase the number of companies willing to submit market data. In the event that a limited number of market participants are active in the market, and the market data received constitutes a significant proportion of the total data on which is the assessment is based, CRU will use expert judgement to determine whether to exclude or include or defer the indication received until more information is received. This would be based on: observation of the previous price; short term historical price trends; other quantitative market data including prices in other related active markets, producer price change announcements; qualitative information such as that received from interactions with market participants or other CRU Price Assessors, and; other sources of information relevant to the market.

CRU does not specify minimum transaction data thresholds to determine its Cobalt price assessments, to avoid establishing

non-representative assessments that may be deemed unrepeatable. Periods of liquidity differ across these markets and data thresholds could result in price assessments that do not accurately reflect the market. Price Assessors, instead, aim to source data from a wide range of industry participants to establish price assessments in line with the individual price's market data specifications, such as size, timing, loading locations as outlined in this methodology.

When no admissible data is received, Price Assessors follow the processes set out in the "Price determination in an illiquid market" section and expert judgement would be used to determine the final price value. Further details can be found under Section 2.1 of the *CRU Group Compliance Framework and Methodology Guide*.

Final Price Assessment

Price determination in an illiquid market

In the cases of zero submissions or where all submissions were deemed inadmissible, expert judgement would be used to determine the final price value. This choice would be based on: observation of the previous week's prices; short term historical price trends; other quantitative market data including prices in other related active markets, producer price change announcements; qualitative information such as that received from interactions with market participants or other CRU Price Assessors, and; other sources of information relevant to the spot market.

The Price Assessor will use their judgement to evaluate the volume, quality and coherence of any such market information they may possess. If one or more of these factors in combination does not provide a sufficiently clear indication of the direction and extent of market movement to allow the Price Assessor to confidently change the price from the previous value, the prior value would be rolled over to form the current period value.

Exclusion of outliers

Expert judgement may be used in the exclusion of a data point as an input to the calculation of a final price. In doing so consideration may be given to the range and distribution of data collected in the same timeframe from other data providers; previous data received from the same data provider; non-price information received from the data provider and the current market state from any other source. Inclusion or exclusion of input data in the final price is recorded.

Any data that deviates from the previous assessed range or the collected data for the trading period will receive extra scrutiny. For example, if a transaction is considered to be a potential outlier, supporting documentation as a means of further authentication may be asked for. Supporting documentation is typically a contract or purchase/sales order, but other documentation may be accepted. Supporting documentation may not be asked for when, in CRU's judgement, the data is otherwise corroborated or deemed valid.

Normalisation

The final price is assessed based on all data received by all permissible means. Data which meet the precise definitions below are eligible for admission without any transformation. Data which do not will be subject to a normalisation process in order to adjust for delivery basis etc.

Expert judgement

Expert judgement may apply to decisions on what type of data is submitted; if the deal is executed at arms-length; if normalisation of price data submitted is required; the means of any normalisation, and the inclusion of a data point in the calculation of the final price (exclusion of outliers).

A Price Assessor will consult with one or more colleagues before any application of expert judgement if in any doubt, or where collective input would improve the quality of a judgement.

Consistency in the application of expert judgement is achieved through a combination of selection, formal and informal training and review, supervisions and control processes as detailed in section 4.5 of the *CRU Group Compliance Framework and Methodology Guide*.

Deactivated Prices

A price assessment will remain active as long as there are sufficient buyers, sellers and/or traders for the Price Assessor to make an accurate assessment. If the quotation suffers from limited transparency or if business dynamics change, it may be

deactivated following market consultation. Its history will still be available, but no further information will be collected for that assessment from the time it is deactivated.

Price Verification

Information from data providers and the final price assessments are captured and established in the CRU's Prices System (CPS). The final prices are approved by another Price Assessor or the editor.

Final Benchmark Publication

CRU cobalt metal prices are published in the *CRU Noble Alloys and Minor Metals Service* and *Cobalt Service*, via CRU Online; data feeds including APIs; and DataLab (CRU's data delivery platform)

Bi-weekly prices are first published on CRU Online on Tuesday and Thursday.

3 Definitions

EU 99.8% Co DDP

DataLab Name:

Grade:	Cobalt, 99.8% Co, Spot price; Europe, DDP
Price basis:	99.8% min Co
Credit/Payment terms:	Delivered, duty paid, per pound
Loading Location:	Cash/Net 30-60 standard
Type:	Rotterdam
Currency:	Spot
Weight Unit:	US Dollar
Size:	Pound
Timing:	min 1 tonne
Consumer Markets:	No more than 8 weeks forward Main
Pricing:	European inland terminals/locations
Frequency:	Business reported by sellers to buyers, including producers to traders
	Bi-weekly, every Tuesday and Thursday

US 99.8% Co EXW

DataLab Name:

Grade:	Cobalt, 99.8% Co, Spot price; USA, ex-warehouse
Price basis:	99.8% min Co
Credit/Payment terms:	US ex-warehouse
Loading Location:	Cash/Net 30-60 standard
Type:	Major US ports/warehouse; domestic destinations only
Currency:	Spot
Weight Unit:	US Dollar
Size:	Pound
Timing:	min 1 tonne
Main Consumer Markets:	No more than 8 weeks forward
Pricing:	US inland terminals/locations
Frequency:	Business reported by sellers to buyers, including producers to traders
	Bi-weekly, every Tuesday and Thursday

China 99.8% Co DAP

DataLab Name:

Grade:	Cobalt, 99.8% Co, Spot price; China, DAP
Price basis:	99.8% min Co
Credit/Payment terms:	DAP
Loading Location:	Bank acceptance (other payment normalized)
Type:	Producer plant
Currency:	Spot - Assessed
Weight Unit:	RMB
Size:	Metric ton of material
Timing:	Min lot size 1 tonne
Main Consumer Markets:	No more than 4 weeks forward
Pricing:	China
Duties/Tariffs:	Business reported by sellers to buyers, including producers to traders
Frequency:	VAT included, any other duties excluded
	Bi-weekly, every Tuesday and Thursday

Glossary of Abbreviations

INCO TERM RULES FOR ANY MODE OR MODES OF TRANSPORT:

EXW – Ex-Works
FCA – Free Carrier
CPT – Carriage Paid To
CIP – Carriage and Insurance Paid To
DAT – Delivered at Terminal
DAP – Delivered at Place
DDP – Delivered – Duty paid

INCO TERM RULES FOR SEA AND INLAND WATERWAY TRANSPORT:

FAS – Free Alongside Ship
FOB – Free On Board
CFR – Cost and Freight
CIF – Cost Insurance and Freight

COUNTRY ABBREVIATIONS USED:

We use ISO 3166 alpha-2 standard country codes