

CRU Prices

Copper Concentrates
Methodology and
Definitions Guide

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Methodology and Definitions Guide – Copper Concentrates

1 Scope

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

2 Methodology

CRU's copper TC/RC (treatment and refining charges) price assessment is a weighted average of all the reported deals that have passed for inclusion in the assessment process. The weighting is determined by the total volume of reported deals at a given price level. Price opinions, bids and offers can be incorporated into the assessment, particularly when there is a low level of reported business.

This methodology, which 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 market requirements and industry conventions.

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 Collection

CRU's TC/RC price assessment includes transaction data (actual deals concluded). Where deal information is submitted, CRU seeks to verify each deal with both parties but where this is not possible, a third or fourth party may be consulted. Information relating to bids/offers or an opinion of the prevailing market price can also be submitted.

Admissible price data must relate to business that is concluded at arms-length. This means any trade must be between companies who are substantially unrelated in ownership and/or where the transaction is not part of any arrangement to guarantee the long-term security of supply, such as an off-take agreement or participation in joint ventures (JV) in concentrates supplying operations. This therefore necessarily excludes intra-company transfers, as well as shipments to or from JV partners.

Data Providers can provide CRU with one or more transaction that have been concluded during the month in question, as well as bids/offers and opinions. Data providers also include information relating to payment terms, concentrate specifications, and the date (prompt-to-three-months) and size (5,000-30,000 dmt) of shipment.

Industry participants can submit prices to CRU by telephone, email, private one-to-one instant messenger services or other private means of communication. Information must be submitted to CRU by 10:00 UK time on the final working day of each month for it to be considered in the monthly price assessment, which is published later the same day.

Data Submission Dependency & Minimum Threshold

CRU seeks to receive market data information from a broad 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 on 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 outline minimum data thresholds to determine price assessments to avoid establishing non-representative assessments that may be deemed unrepeatable. Periods of liquidity differs across the 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 the TC/RC price assessments, in line with the individual price's market data specifications, such as size, timing, etc 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

Normalisation

Data which meets the precise definition below is eligible for admission to the price without any transformation. Data which does not may still be eligible as an input to the price but would be subject to a normalisation process in order to adjust for the copper grade of the concentrates and the timeframe on the payment terms.

Normalisation for copper grade is achieved by adjustment of the price given for any non-standard copper content material by a factor. This is determined by the empirical relationship between copper grade and price of historical verified spot transactions.

Normalisation for timeframe on the payment terms, otherwise known as the quotation period, is achieved by adjustment of the price given for any non-standard quotation period by a factor. This is determined by the month of payment relative to the standard terms, and the spread between the LME Cash and LME 3M copper price.

Parameters used to make these adjustments are held in CRU's internal Market Interaction Log, only accessible by CRU price assessors and are updated at the end of each month after consultation with Data Providers and copper concentrate market participants. Decisions to normalise a price and/or choice of values used in the normalisation process are forms of expert judgement (see below).

Exclusion of outliers

A Price Assessor may use expert judgement in the exclusion of a data point as an input towards the calculation of the final price assessment. In doing so they would consider 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; market state and direction information from any other source. Inclusion or exclusion of input data in the final price is explicit and recorded.

Price determination in an illiquid market

In the case there is no transaction data (trades), firm bid/offer, indicative bid/offer and price opinion data may be used to establish a price.

In the case that there are no submissions that meet, or after normalisation can meet, the definitions below in any weekly time period, the prior week's published price may be rolled over and used as the final benchmark value for the new week.

Expert judgement

Expert judgement may apply to decisions on whether price data submitted relates to actual deals concluded; 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 calculation of the final price assessment (exclusion of outliers).

Expert judgement is usually limited to the weighting of specific transactions and market assessments. Expert judgement is also applied to assessing whether a concentrates cargo is purchased by a region that is associated with a premium due to additional factors such as sanctions, or distressed in nature, and its use and application is detailed in the written analysis in the *CRU Copper Concentrates Service*.

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 treatment and refining charge will remain active as long as it can be demonstrated that there are a sufficient number of buyers and sellers and/or traders which allow for the price assessor to make an accurate assessment. If the quotation suffers from limited transparency or if business dynamics change, it will be deactivated. Its history will still be available to clients for a fee, should they require it, but no further information will be collected for that product 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

The final price assessment is calculated as the volume-weighted average of eligible data points (i.e. from data submitted in applicable time window and meeting the definition below including after any normalisation). Where admissible information relating to both sides of a deal is obtained, the transaction will only be counted once to avoid overweighing this deal in the final price.

Final Benchmark Publication

CRU TC/RC assessments for copper concentrates are published in the *CRU Copper Concentrates Service*, via CRU Online; data feeds including APIs; and DataLab (CRU's data delivery platform).

Monthly prices are first published on CRU Online on the last working day of the month.

3 Definitions

Treatment & Refining Charges

Miner/Trader

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|-----------------|--|
| DataLab Name: | Copper, Concentrates, Miner/Trader, TC/RC, Spot price; Asia, CIF |
| Material: | Standard grade copper concentrates |
| Price basis: | CIF Asian port |
| Type: | Spot |
| Currency: | US \$ |
| Weight Unit: | Metric tonne |
| Size: | 5,000 - 30,000t |
| Timing: | Prompt to 3 months |
| Pricing: | TC/RC in \$/t and c/lb payable metal |
| Duties/Tariffs: | 0% |
| Frequency: | Monthly |

Trader/Smelter

| | |
|---------------|--|
| DataLab Name: | Copper, Concentrates, Trader/Smelter, TC/RC, Spot price; Asia, CIF |
| Material: | Standard grade copper concentrates |
| Price basis: | CIF Asian port |
| Type: | Spot |
| Currency: | US \$ |
| Weight Unit: | Metric tonne |
| Size: | 5,000 - 30,000t |
| Timing: | Prompt to 3 months |
| Pricing: | TC/RC in \$/t and c/lb payable metal |
| Frequency: | Monthly |

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