CRU Prices

Copper Concentrates
Methodology and
Definitions Guide

July 2020

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 TC/RC 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.

Data Providers

CRU's spot price assessments for TC/RCs (treatment and refining charges) are based on regular contact with a wide network of market participants including producers, buyers, traders at critical nodes in the supply chain, and shipping companies. This network is constantly reviewed and maintained to seek a balance of buyers and sellers. Each data provider is required to meet the criteria stipulated in Section 3.4 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.

Calculation Procedure

<u>Normalisation</u>

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

An analyst 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 Raw Materials Monitor*.

An analyst 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 2.5 of the *Group Compliance Framework and Methodology Guide*.

Verification

Input data points, calculations and the final price for publication are checked and verified by a second analyst at each critical stage (i.e. where there is scope for error) in the process from data collection to final publication, and this verification is documented including the identity of the verifier.

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.

Assessment Publication

CRU's TC/RC assessments for copper concentrates are published on the last working day (Monday-Friday) of each month in the *Copper Raw Materials Monitor*.

3   Definitions

Treatment & Refining Charges

Miner/Trader

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%

Trader/Smelter

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