CRU Prices

Carbon Products Methodology and Definitions Guide

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Methodology and Definitions Guide - Carbon Products

1 Scope

This guide covers carbon product prices in all geographical markets and should be read in conjunction with the <u>CRU Group</u> <u>Compliance Framework and Methodology Guide</u>. It details commodity-specific methodology which have precedence, with all other aspects covered by the Group methodology guide.

2 Methodology

CRU assesses prices for physically traded carbon product 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 combination of single points and price ranges, reflecting the various levels of liquidity and transaction frequency across these markets. Published price ranges represent all gathered prices pertaining to each current or upcoming pricing window, ensuring contracts fixed at the start of the pricing period are recorded alongside those fixed at the end of this period. Carbon products prices are assessed on a combination of monthly and quarterly frequencies, representing the cadence of market transactions and contract agreements.

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

For monthly prices, data providers provide CRU with prices relating to sales or purchases concluded throughout the month, with the submission window closing at 16:00 Beijing time on the Tuesday of the week of publication. Prices are published on the fourth Wednesday of every month. Quarterly prices are collated through the relevant quarter, with the submission window closing at 17:00 UK time on the Tuesday of the week of publication.

For settlement windows containing a mix of quarterly and semester pricing (6-month settlement period), CRU Price Assessors will use discretion when including mixed tenor prices, to better reflect the true market conditions at the time of publication.

Transaction data is prioritised as an input and to that extent the hierarchy of acceptable price types follows that described in Section 2.1 of the CRU Group Compliance Framework and Methodology Guide. Published premia reflect the average of the deals concluded within the time frame under consideration. Outliers are excluded from the assessment.

In the absence of actual transaction data, data providers can give firm/indicative bids or offers, and opinion of the prevailing market price in the same period.

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

FOB prices are derived either from direct sales from producers to traders/buyers or from netbacks on CIF sales based on estimated or actual freight rates.



Data Submission Dependency and Minimum Thresholds

CRU seeks to receive market data information from a broad range of active data sources and seeks to increase the number of companies willing to submit market data. If 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, include or defer the indication received until more information is received. This expert judgement 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 carbon products assessments to avoid establishing non-representative assessments that may be deemed unrepeatable. Periods of liquidity differs across carbon products 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 carbon products assessments, in line with the individual market data specifications, such as size, timing, loading locations, 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

Expert Judgment

Expert judgement may apply to decisions on what type of price 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 its application is maintained through a combination of selection, formal and informal training and review, supervision and control processes as detailed in section 4.5 of the CRU Group Compliance Framework and Methodology Guide.

Normalisation

The final price is assessed based on 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.

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 price data that deviates from the previous assessed price range or the collected price 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.

Price determination in an illiquid market

In the case that there are no submissions that meet, or after normalisation can meet, the definition below in any monthly or quarterly time period, the prior period's published price range will be rolled over and used as the value for the current period. In the case of low market liquidity but where a single admissible data point has been received, this single data point would be the sole determinant of the value of the price range in the relevant period.



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.

Frequency

Published price assessments represent all gathered prices pertaining to each current or upcoming pricing window, ensuring contracts fixed at the start of the pricing period are recorded alongside those fixed at the end of this period - price ranges are then established.

For settlement windows containing a mix of quarterly and semester pricing (6-month settlement period), CRU Price Assessors will use discretion when including mixed tenor prices, to better reflect the true market conditions at the time of publication.

Deactivated Prices

If the quotation suffers from limited transparency or if business dynamics change, it will be deactivated. CRU will provide 3 months' notice before the deactivation date. Its history will still be available to clients, should they require it, but no further information will be collected for that product from the time it is deactivated.

Sizes and Specifications

Transaction sizes may vary by shipment. Timing of spot assessments typically reflect transactions for a product to be supplied within 30 days although this may vary. CRU reserves the right to adjust its historical pricing assessments if compelling new evidence emerges.

Final Benchmark Publication

CRU carbon prices are published in the CRU Carbon Product 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 fourth Wednesday of each month.

Quarterly Prices are first published on CRU Online on the fourth Wednesday of each quarter.



3 Definitions

Green Petroleum Coke: Monthly

No.1 China (\$/t Ex-works)

DataLab name: Carbon Products, Green Coke, 1A 1B, Spot price; China, EXW

Material: 1A / 1B GPC
Price basis: Ex-works
Location: China
Type: Spot

Currency: Collected prices in RMB and convert to US\$

Weight unit: Metric tonne

Pricing: Reflects typical 1A/1B grade green petroleum coke

Duties/tariffs: Where applicable

 Sulphur, %:
 ≤ 0.50

 Volatile, %:
 ≤ 12

 Ash, %:
 ≤ 0.30

Moisture, %: Actual measured

Real Density, %: ≥2.05 Coke powder, %: ≤35 Silicon, μg/g: ≤300 Vanadium, μg/g: ≤150 ≤250 Iron, μg/g: Calcium, µg/g: ≤200 Nickel, µg/g: ≤150 Sodium, µg/g: ≤100

Nitrogen, %: Actual measured

Frequency: Monthly

2A 2B 2C China (\$/t Ex-works)

DataLab name: Carbon Products, Green Coke, 2A 2B, 2C Spot price; China, EXW

Material: 2A / 2B /2C GPC
Price basis: Ex-works
Location: China
Type: Spot

Currency: Collected prices in RMB and convert to US\$

Weight unit: Metric tonne

Pricing: Reflects typical 2A/2B grade green petroleum coke

Duties/tariffs: Where applicable Sulphur, %: $\leq 1.00 (2A)$ Sulphur, %: ≤ 1.50 (2B, 2C) Volatile, %: ≤ 12 Ash. %: ≤ 0.35 (2A) Ash, % ≤ 0.40 (2B) Ash, %: ≤ 0.450 (2C) Moisture, %: Actual measured Coke powder, %: Actual measured Actual measured Actual measured

Silicon, µg/g:

Vanadium, µg/g:

Iron, µg/g:

Calcium, µg/g:

Sodium, µg/g:

Actual measured

Frequency: Monthly



3A 3B 3C China (\$/t Ex-works)

DataLab name: Carbon Products, Green Coke, 3A 3B,3C Spot price; China, EXW

Material: 3A / 3B /3C GPC

Price basis: Ex-works
Location: China
Type: Spot

Currency: Collected prices in RMB and convert to US\$

Weight unit: Metric tonne

Pricing: Reflects typical 3A/3B/3C grade green petroleum coke

 $\begin{array}{lll} \mbox{Duties/tariffs:} & \mbox{Where applicable} \\ \mbox{Sulphur, \%:} & \leq 2.00 \ (3A) \\ \mbox{Sulphur, \%:} & \leq 2.50 \ (3B) \\ \mbox{Sulphur, \%:} & \leq 3.0 \ (3C) \\ \mbox{Volatile, \%:} & \leq 12 \\ \mbox{Ash, \%:} & \leq 0.50 \\ \end{array}$

Moisture, %: Actual measured

Frequency: Monthly

Calcined Petroleum Coke: Monthly

Low S CPC China (\$/t Ex-works)

DataLab name: Carbon Products, Calcined Coke, low S, Spot price; China, EXW

Material:Low S CPC ChinaPrice basis:Ex-worksLocation:ChinaType:Spot

Currency: Collected prices in RMB and convert to US\$

Weight unit: Metric tonne

Pricing: Reflects typical 1A/1B grade calcined petroleum coke

Duties/tariffs: Where applicable

 Sulphur, %:
 ≤ 0.50

 Volatile, %:
 ≤ 0.50

 Ash, %:
 ≤ 0.50

 Real Density, %:
 ≥ 2.05

 Frequency:
 Monthly

Premium CPC China (\$/t Ex-works)

DataLab name: Carbon Products, Premium CPC China Spot price; China, EXW

Material: Premium CPC China

Price basis: Ex-works
Location: China
Type: Spot

Currency: Collected prices in RMB and convert to US\$

Weight unit: Metric tonne

Pricing: Reflects typical premium CPC calcined petroleum coke

Duties/tariffs: Where applicable

 Sulphur, %:
 ≤ 1.50

 Sulphur, %:
 ≤ 3.50

 Vanadium, ppm
 ≤600

 Volatile, %:
 ≤ 0.50

 Ash, %:
 ≤ 0.50

 Real Density, %:
 ≥ 2.05

 Frequency:
 Monthly

Regular CPC China (\$/t Ex-works)

DataLab name: Carbon Products, Regular CPC, Spot price; China, EXW

Material: Regular CPC China

Price basis: Ex-works
Location: China



Type: Spot

Currency: Collected prices in RMB and convert to US\$

Weight unit: Metric tonne

Pricing: Reflects typical regular calcined petroleum coke

 $\begin{array}{lll} \mbox{Duties/tariffs:} & \mbox{Where applicable} \\ \mbox{Sulphur, \%:} & 3.00-3.50 \\ \mbox{Volatile, \%:} & \leq 0.50 \\ \mbox{Ash, \%:} & \leq 0.50 \\ \mbox{Real Density, \%:} & \geq 2.05 \\ \mbox{Frequency:} & \mbox{Monthly} \end{array}$

China Export (\$/t FOB)

DataLab name: Carbon Products, Calcined Coke, Spot price; China, FOB

Material: CPC

Price basis: China Export FOB

Location: China

Type: Contract & Spot

Currency: US\$

Weight unit: Metric tonne

Pricing: Reflects typical export grade calcined petroleum coke

Duties/tariffs: Where applicable

 Sulphur, %:
 ≤ 1.50 (A)

 Sulphur, %:
 ≤ 3.50 (B)

 Vanadium
 ≤400

 Volatile, %:
 ≤ 0.50

 Ash, %:
 ≤ 0.50

 Real Density, %:
 ≥2.05

 Frequency:
 Monthly

Coal Tar: Monthly

China (\$/t Ex-works)

DataLab name: Carbon Products, Coal Tar, Spot price; China, EXW

Material: CT
Price basis: Ex-works
Location: China
Type: Spot

Currency: Collected prices in RMB and convert to US\$

Weight unit: Metric tonne

Pricing: Reflects typical coal tar
Duties/tariffs: Where applicable

Frequency: Monthly

Coal Tar Pitch: Monthly

China (\$/t Ex-works)

DataLab name: Carbon Products, Coal Tar Pitch, Spot price; China, EXW

Material: CTP
Price basis: Ex-works
Location: China
Type: Spot

Currency: Collected prices in RMB and convert to US\$

Weight unit: Metric tonne

Pricing: Reflects typical coal tar pitch (i.e liquid coal tar pitch)

Duties/tariffs: Where applicable

Typical Softening point, °C: 103-120
Typical Quinoline Insoluble, %: 7-12
Typical Ash, %: ≤0.5



Frequency: Monthly

China Export (\$/t FOB)

DataLab name: Carbon Products, Coal Tar Pitch, Spot price; China, FOB

Material:CTPPrice basis:Export FOBLocation:ChinaType:ContractCurrency:US\$

Weight unit: Metric tonne

Pricing: Reflects typical coal tar pitch

Duties/tariffs: Where applicable

Typical Softening point, °C: 103-120
Typical Quinoline Insoluble, %: 7-12
Typical Ash, %: ≤0.5
Frequency: Monthly

Anodes: Monthly

China (\$/t Ex-works)

DataLab name: Carbon Products, Anodes, Spot price; China, EXW

Material: Anode
Price basis: Ex-works
Location: China
Type: Spot

Currency: Collected prices in RMB and convert to US\$

Weight unit: Metric tonne

Pricing: Reflects typical anode Duties/tariffs: Where applicable

Frequency: Monthly

China Export (\$/t FOB)

DataLab name: Carbon Products, Anodes, Spot price; China, FOB

Material: Anode

Price basis: China Export FOB

Location: China
Type: Spot
Currency: US\$

Weight unit: Metric tonne

Pricing: Reflects typical anode Duties/tariffs: Where applicable

Frequency: Monthly

Calcined Petroleum Coke: Quarterly

US Gulf Coast (\$/t FOB)

DataLab name: Carbon Products, Calcined Coke, Contract price; USA, FOB

Material: CPC
Price basis: USGC FOB
Location: US Gulf Coast
Type: Quarterly Contract

Currency: US\$

Weight unit: Metric tonne

Pricing: Reflects typical calcined petroleum coke

Duties/tariffs:Where applicableTypical Sulphur, %:2.5 – 3.5Typical Vanadium, ppm:250–350



Europe (\$/t CIF)

DataLab name: Carbon Products, Calcined Coke, Contract price; Europe, CIF

Material: CPC
Price basis: EU CIF
Location: Rotterdam
Type: Quarterly Contract

Currency: US\$

Weight unit: Metric tonne

Pricing: Reflects typical calcined petroleum coke

Duties/tariffs:Where applicableTypical Sulphur, %:≤1.0-2.5Typical Vanadium, ppm:150-250

Middle East (\$/t CIF)

DataLab name: Carbon Products, Calcined Coke, Contract price; Middle East, CIF

Material: CPC
Price basis: M.E. CIF

Location: Delivered M.E. Smelter Type: Quarterly Contract

Currency: US\$

Weight unit: Metric tonne

Pricing: Reflects typical calcined petroleum coke

Duties/tariffs: Where applicable

Typical Sulphur, %: ≤1.5-3.5 Typical Vanadium, ppm: 150-350

Coal Tar: Quarterly

Europe Coal Tar (\$/t FOB)

DataLab name: Carbon Products, Coal Tar, quarterly price; Europe, FOB

Material: CT
Price basis: EU FOB
Location: Europe
Type: Quarterly

Currency: US\$ conversion from Euro

Weight unit: Metric tonne

Pricing: Reflects typical coal tar
Duties/tariffs: Where applicable

Frequency: Quarterly

Europe Coal Tar (€/t FOB)

DataLab name: Carbon Products, Coal Tar, quarterly price; Europe, FOB

Material: CT
Price basis: EU FOB
Location: Europe
Type: Quarterly
Currency: Euro

Weight unit: Metric tonne

Pricing: Reflects typical coal tar
Duties/tariffs: Where applicable

Frequency: Quarterly



Coal Tar Pitch: Quarterly

North America (\$/t FOB)

DataLab name: Carbon Products, Coal Tar Pitch, Contract price; USA, FOB

Material: C

Price basis: North America FOB
Location: Supplier Facility
Times

Type: Quarterly and Semester

Currency: US\$

Weight unit: Metric tonne

Pricing: Reflects typical coal tar pitch (i.e liquid coal tar pitch)

Duties/tariffs: Where applicable

Typical Softening point, °C: 108-113

Typical Quinoline Insoluble, %: 8-16

Typical Ash, %: ≤0.5

Frequency: Quarterly

Europe (\$/t FOB)

DataLab name: Carbon Products, Coal Tar Pitch, Contract price; Europe, FOB

Material:CTPPrice basis:EU FOBLocation:EuropeType:QuarterlyCurrency:US\$

Weight unit: Metric tonne

Pricing: Reflects typical coal tar pitch (i.e liquid coal tar pitch)

Duties/tariffs: Where applicable

Typical Softening point, °C: 103-120

Typical Quinoline Insoluble, %: 4-7

Typical Ash, %: ≤0.5

Frequency: Quarterly

Europe (€/t FOB)

DataLab name: Carbon Products, Coal Tar Pitch, Contract price; Europe, FOB

Material: CTP
Price basis: EU FOB
Location: Europe
Type: Quarterly

Currency: Euro conversion from US\$

Weight unit: Metric tonne

Pricing: Reflects typical coal tar pitch (i.e liquid coal tar pitch)

Duties/tariffs: Where applicable

Typical Softening point, °C: 103-120

Typical Quinoline Insoluble, %: 4-7

Typical Ash, %: ≤0.5

Frequency: Quarterly



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