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# Argus Battery Materials

Global battery materials prices, news and analysis

Issue 23-44 | Wednesday 1 November 2023

## NEWS AND ANALYSIS

### Cobalt to diverge as Western suppliers struggle

The western cobalt market may fragment in the coming months as alloy and chemical-grade metal become subject to different underlying fundamentals, with the former looking particularly bullish as western demand rises and the supply base struggles to keep up.

Alloy-grade cobalt metal has already been trading in Europe at a premium to chemical grade since August 2022, and the once-narrow spread has been at over \$1/lb for more than three months. At the time of writing, prices for alloy-grade metal are at \$17.50-18.50/lb du Rotterdam, and chemical-grade metal is at \$16.50-17.50/lb du Rotterdam.

That premium may rise in the coming months as US demand – which centres on alloy-grade cobalt – ramps up.

“Demand is really strong in the US and predicted to get a lot stronger,” a market participant said. “On the high-temperature alloys where cobalt is used, we see demand growing at 15pc per annum and the backlog on some alloy grades is almost two years. Most folks here think alloy could be \$22-24/lb during the course of 2024 as western producers are well sold.”

To put that price in context, Argus assessed US prices for min 99.8pc cobalt at \$18.25-19.25/lb fob warehouse today. US cobalt prices have remained below the \$22/lb mark since the beginning of 2023, but jumped to almost \$40/lb as recently as May 2022, which suggests that a projection of \$22-24/lb is entirely plausible.

“The aerospace guys will pay the money. It’s such a small part of their melt, it’s not really a cost-sensitive thing for them,” another market participant said.

A third estimated that demand for alloy grade cobalt this year will total around 10,000t in the US and 7,000-8,000t in Europe. “We see demand rising in these markets by 600-

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Nickel	9-10
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In focus: US carmakers	813-15

## KEY PRICES

Battery metals and chemicals					
	Unit	Timing	Low	High	±
Cobalt min 99.8% alloy grade du	\$/lb	1 Nov	17.50	18.65	+0.075
Cobalt min 99.8% chemical grade	\$/lb	1 Nov	16.50	17.50	nc
Cobalt sulphate min 20.5% ex-works	Yn/t	1 Nov	37,500	39,000	nc
Cobalt hydroxide min 30% cif China	\$/lb	1 Nov	8.30	8.80	nc
Cobalt hydroxide payable indicator 30% min Co cif China (pc Argus cobalt sulphate)	pct	26 Oct	81.00	85.00	nc
Cobalt hydroxide payable indicator 30% min Co cif China (pc Argus cobalt metal)	pct	1 Nov	52.00	55.00	-0.500
Lithium carbonate min 99.5% cif	\$/kg	1 Nov	21.00	22.00	nc
Lithium hydroxide min 56.5% fob	\$/kg	1 Nov	25.50	27.50	nc
Nickel sulphate min 22% cif China	\$/t	1 Nov	3,750	3,800	nc
Graphite Flake 94% carbon fob	\$/t	31 Oct	560	610	nc
Manganese sulphate min 32% Mn	Yn/t	31 Oct	5,300	5,400	nc
Cathodes					
	Unit	Timing	Assessment		±
NCM 811	\$/kWh	31 Oct	41.45		-1.57
LFP	\$/kWh	31 Oct	19.55		-1.10
NCA	\$/kWh	31 Oct	41.23		-1.58

## DATA & DOWNLOADS INDEX

- Project tracker – existing and planned battery material projects
- Trade data exports
- Trade data imports
- China monthly EV sales
- Quarterly EV sales: China, Europe, US
- Global car fleet forecast
- EV forecast

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- Cobalt
- Nickel
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NEWS AND ANALYSIS

1,000t each year... you can see why metal will be tight when demand is increasing.”

The alloy-grade market is inherently at greater risk of supply tightness than chemical grade because consumers need to be very selective about what material they buy and which suppliers they use.

The US levies a 25pc import tariff on Chinese cobalt metal, meaning that US buyers – which account for a huge portion of demand for alloy-grade cobalt – have a smaller selection of suppliers to choose from. Some will accept material from China’s Jinchuan and KLK but it incurs that higher cost.

Furthermore, end-users focused on medical and aerospace alloys must cater to high technical specifications, meaning that they can only use certain cobalt products and suppliers – sometimes contributing to bottlenecks for certain grades. A trader noted that for vacuum grade (aerospace) end-users, only Glencore’s Xstrata, Vale’s Port Colborne and Sumitomo’s cut cathode is accepted. For medical alloys, Glencore’s Murrin Murrin is also accepted.

By contrast, the chemical-grade cobalt market is largely catering to sulphate refineries and battery producers – typically looking towards Asia rather than the US, and heavily shaped by the health of the electric vehicle industry.

Ex-China production drops in 3Q

Brazil’s Vale and Switzerland-based Glencore produced less cobalt metal in the third quarter of 2023, pointing to a further tightening of western-produced supply.

Vale produced 452t of cobalt metal in the third quarter, down by 25.8pc from the same period in 2022. Overall, January-September production totalled 1,410t, down by 26pc from 1,906t a year earlier.

Vale has been transitioning its mining operations at Voisey’s Bay in Canada underground and has experienced delays from feedstock reaching its Long Harbour production facilities, also in Canada.

Glencore has also suffered production setbacks, owing to maintenance at its Sudbury smelter in Canada and strike action. In all, the company produced 1,700t of cobalt metal in January-September, down from 2,700t a year earlier, it confirmed yesterday.

By Thomas Kavanagh



Black Mass Calculator

Estimate the intrinsic scrap value of different battery chemistries

Reference 6 pre-defined battery chemistries:

- LCO
- NCA
- NCM111
- NCM523
- NCM622
- NCM811

or define your own

Add costs, discounts and surcharges as required

Add alloy

Select alloy or add elements ...

PREDEFINED ELEMENTS

+ Aluminum Alloys

- Black Mass

LCO scrap

NCA scrap

NCM111 scrap

NCM523 scrap

NCM622 scrap

NCM811 scrap

+ Brass/Bronze

Argus Future Metals Forum

産業を支える未来の金属

8 November, 2:30 pm – 6pm | Tokyo, Japan



AGENDA:

- **Battery metals update:** Bumps in the road to electrification
- **Nickel:** Entering a class-based pricing era
- **Rare earths pricing update & market evolutions**
- **Evaluating supply chain risks for electronic minor metals**
- **One year on...** How is the US Inflation Reduction Act impacting metals?

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## NEWS HIGHLIGHTS: WEEKLY ROUND UP

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### Spain battery tender awards \$462mm to 11 projects

Spain has awarded €338mn (\$357mn) in grants and €100mn in soft loans to 11 battery and battery material projects this year, with China's Envision picking up most of the funding.

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### Korea relays concerns about battery supply disruptions

South Korea has relayed to China concerns about Beijing's export controls on graphite causing disruption to the battery supply chain.

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### China's GEM raises Jan-Sep precursor, MHP shipments

Major Chinese lithium-ion battery cathode producer Green Eco-Manufacture (GEM) reported higher shipments of nickel-related feedstock and battery products in the first three quarters of 2023.

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### AVZ seeks arbitration as it vies for DRC lithium mine

Australian minerals firm AVZ Minerals plans to file an emergency arbitration application seeking injunctive relief against Democratic Republic of Congo (DRC) state-owned mining firm Cominiere, as it tussles for a large-scale lithium-rich deposit.

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### China's Ganfeng to develop Nanchang battery project

Major Chinese lithium producer Ganfeng Lithium is on track to develop a battery production project in Nanchang in east China's Jiangxi province.

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### Battery output slumps at Japan's Panasonic

Japanese battery manufacturer Panasonic cut its domestic production during July-September, mostly because of weaker demand for luxury electric vehicles (EVs).

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### Sayona's Quebec Li project posts record output

Australian mining company Sayona today said spodumene concentrate production at its North American Lithium (NAL) operation in Quebec, Canada, reached record highs in the third quarter.

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### EU still open for Australia trade talks

The EU is still open to negotiations and is analysing the failure of negotiations with Australia on a free-trade agreement (FTA) in the Japanese city of Osaka. Australia has noted key sticking points as improved access for beef, sheep meat, dairy and sugar. But the EU insists that agricultural market access was on offer.

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### Glencore base metals output dips, guidance unchanged

Switzerland-based mining and trading company Glencore said today that its output of base metals dropped in the first nine months of the year on an annual basis, but its production guidance remains largely unchanged.

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### China's CMOC posts higher cobalt output in Jan-Sep

Chinese diversified metals and minerals producer CMOC reported much higher cobalt production over January-September from a year earlier.

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### Competing stake complicates Azure-SQM lithium deal

Australia's Hancock Prospecting has built up an 18.3pc stake in Australian lithium firm Azure Minerals, close to a level that will thwart Chilean lithium producer SQM's scheme of arrangement acquisition offer to buy the company outright.

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### Australia's IGO Li output up in 3Q, eyes spodumene cut

Australian lithium firm IGO recorded a rise in its spodumene concentrate production in its July-September quarter but nickel concentrate and copper concentrate output fell, while it signalled a potential spodumene production cut in January-June 2024.

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### ExxonMobil says lithium ambitions 'fairly promising'

ExxonMobil is signaling a growing interest in exploring for lithium, a key component in electric vehicle (EV) batteries.

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## NEWS HIGHLIGHTS: WEEKLY ROUND UP

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### China's Gotion plans US battery cathode, anode plant

Major Chinese lithium-ion battery manufacturer Gotion High-Tech plans to build a production facility for lithium-ion battery cathode and anode materials in Michigan, US.

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### China's CATL to launch Guizhou power battery facility

China's largest power battery manufacturer Contemporary Amperex Technology (CATL) is on track to launch its Guizhou-based power and energy storage battery production project on 27 October.

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### Jul-Sep spodumene output rises at Australia's Core

Australian producer Core Lithium increased spodumene concentrate output during July-September along with an increasing lithium recovery rate.

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### EU signs critical minerals partnership with DRC, Zambia

The European Union has agreed to a partnership with the Democratic Republic of Congo (DRC) and Zambia to develop critical raw material value chains and improve rail transport connections in west Africa.

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### China's Weiming to build high-purity Ni cathode plant

Chinese battery materials manufacturer Zhejiang Weiming is on track to build a high-purity nickel cathode production plant in Wenzhou city in east China's Zhejiang province.

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### Australia's Allkem posts higher Li output in Jul-Sep

Australian lithium firm Allkem saw a rise in its lithium carbonate and spodumene concentrate output during July-September because of robust plant reliability, as well as its mining inching closer towards the centre of its main ore body at Mount Cattlin in Western Australia.

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### Japan's Honda, GM cancel joint EV development plan

Japanese automaker Honda Motor and US-based General Motors (GM) have scrapped their plan to jointly develop a series of electric vehicles (EVs), but will maintain collaboration on studying advanced battery and fuel cell systems.

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### China's Zijin to start up Laguocuo Li project in Tibet

The first phase of the Laguocuo (Lakkor Tso) lithium project – invested by Chinese mining firm Zijin Mining – has completed construction and equipment installations, and is ready for pilot production.

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### China's Zijin to develop DRC's Manono lithium project

Chinese multinational mining firm Zijin Mining is to explore and develop the northeast part of the Manono lithium project in the Democratic Republic of Congo (DRC).

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### Australia's Pilbara posts lower Li output in Jul-Sep

Australian lithium producer Pilbara Minerals' spodumene concentrate output fell from a year earlier and a quarter earlier over July-September, while sales volumes rose on the year but fell on the quarter.

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### Li-Cycle pauses construction on Rochester plant

Canadian lithium-ion battery recycler Li-Cycle is pausing construction on its Rochester, New York, processing facility pending a review of its strategy for the project.

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### EU mulls wider net zero tech definition

The European Parliament's industry and energy committee has voted for changes to the EU's draft Net Zero Industry Act that would expand the scope of technologies covered to include nuclear fission and fusion as well as sustainable aviation fuels (SAF).

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## LITHIUM

**Weekly round-up: Short-lived bounce ends**

The short-lived increase in lithium prices in China ended this week, as prices for spodumene, lithium carbonate and lithium hydroxide moved down.

Argus-assessed prices for 6pc-grade lithium concentrate (spodumene) were at \$1,950-2,200/t cif China on 31 October, down by \$50/t from a week earlier. Many lithium salts converters are keen to press down spodumene purchase prices further because their profit margins have tightened as salts prices have been in a downtrend during most of this year.

Prices for 99.5pc-grade lithium carbonate dipped to 158,000-168,000 yuan/t (\$21,590-22,957/t) ex-works on 31 October, stable today but down from Yn160,000-170,000/t ex-works on 30 October and Yn165,000-175,000/t ex-works on 26 October, as supplies remained sufficient and major lithium-ion battery manufacturers were absent from the spot market. Some cathode active material producers only made as-needed purchases. Many market participants expect prices to continue their downtrend in the near term, although production typically falls in the main production hub of Qinghai province during low winter temperatures.

European lithium carbonate prices remained stable at \$26,000-28,000/t having declined in the previous assessment on 24 October. The European market has followed China down, with spot buying activity limited and traders indicating sustained lower price levels throughout most of the year. In Asia, carbonate prices dipped to \$24-26/kg cif Japan/Korea. Prices fell on a lack of consumer buying interest in the seaborne market. Multiple lithium firms, including Allkem and Pilbara Minerals in their recently released quarterly ac-

tivity reports, said they expect the lithium market to remain volatile in the short term despite solid medium to long-term fundamentals.

The most-traded January 2024 contracts on the Guangzhou Futures Exchange rebounded slightly to Yn153,750/t on 31 October, from Yn151,150/t on 26 October, but down from Yn155,000/t on 24 October, with trading volumes at 399,800t on 31 October.

Import prices for lithium carbonate fell to \$21-22/kg cif China on 1 November from \$21.50-22.50/kg cif China on 26 October, following a slowdown in demand from Chinese buyers.

Prices for 60pc-grade lithium cobalt oxide (LCO) held at Yn222-242/kg ex-works on 31 October, temporarily unchanged from 26 October. Most consumers were set to press down LCO prices because of lower lithium carbonate and cobalt tetroxide feedstock prices.

Argus assessed prices for 56.5pc-grade hydroxide at Yn148,000-163,000/t ex-works on 31 October, stable today, falling from Yn150,000-165,000/t ex-works on 30 October and Yn155,000-170,000/t ex-works on 26 October. Producers have cut prices slowly in response to sluggish demand from the ternary cathode active material segment.

Export prices for 56.5pc-grade hydroxide fell from \$26-28/kg fob China on 26 October to \$25.50-27.50/kg fob China on 1 November, in line with slowing demand from the overseas market and sufficient supply.

Prices of lithium hydroxide in Europe were unchanged this week at \$31,000-34,000/t, while seaborne prices in Asia declined to \$29-31/kg cif Japan/Korea.

Lithium price assessments					
	Unit	Timing	Low	High	±
Carbonate min 99.5% ex-works China	Yn/t	1 Nov	158,000	168,000	nc
Carbonate min 99.5% ex-works China excl. VAT USD/kg	\$/kg	1 Nov	19.10	20.31	-0.020
Carbonate min 99.5% cif China	\$/kg	1 Nov	21.00	22.00	nc
Concentrate (spodumene) 6% Li2O cif Australia	\$/t	31 Oct	1,897.00	2,147.00	-50.000
Carbonate min 99.5% in-warehouse Rotterdam	\$/t	31 Oct	26,000	28,000	nc
Carbonate min 99.5% cif Japan/Korea	\$/kg	31 Oct	24	26	-2
Cobalt oxide min 60% Co ex-works China	Yn/kg	1 Nov	222.00	242.00	nc
Hydroxide min 56.5% ex-works China	Yn/t	1 Nov	146,000	161,000	-2,000
Hydroxide min 56.5% ex-works China excl. VAT USD/kg	\$/kg	1 Nov	17.65	19.47	-0.255
Hydroxide min 56.5% fob China	\$/kg	1 Nov	25.50	27.50	nc
Hydroxide min 56.5% in-warehouse Rotterdam	\$/t	31 Oct	31,000	34,000	nc
Carbonate min 99.5% cif Japan/Korea	\$/kg	31 Oct	24	26	-2
Concentrate (spodumene) 6% Li2O cif China	\$/t	31 Oct	1,950.00	2,200.00	-50.000



## LITHIUM OUTLOOK

Spot Chinese lithium prices continued their downwards trend in October, with a brief uptick following the week-long National Day holiday. Lithium carbonate lost 6pc, while lithium hydroxide prices were down 8pc on the month, both prices reaching their lowest levels in 2023 so far. Since the start of the year, lithium carbonate prices have lost nearly 65pc, while lithium hydroxide prices are down 67pc. Prices are now back at levels last seen in September 2021.

Chinese ex-works carbonate was assessed at Yn163,000/t on 31 October, down from Yn168,000/t at the beginning of the month, with ex-works hydroxide down from Yn166,000/t to Yn156,000/t over the same period. Declines of 3pc and 6pc respectively over October.

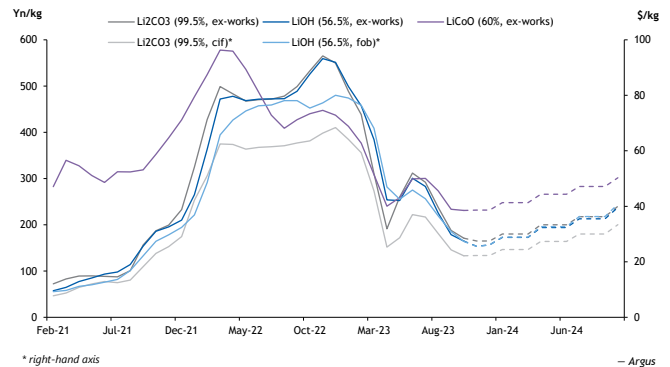
Sufficient supplies of lithium and the absence of major lithium-ion battery manufacturers from the spot market are the main causes for low prices. Some cathode active material producers only made hand-to-mouth purchases. Many market participants expect prices to continue the down-trend in the near term, although production typically falls in the main production hub Qinghai province during low winter temperatures. We forecast the November average will be around Yn165,000/t ex-works for carbonate and Yn153,500/t ex-works for hydroxide. Prices should firm slightly in the rest of the year and the beginning of next year given high EV sales and demand. We expect prices to be stable at this level in 4Q 2023, with lithium carbonate prices averaging Yn167,000/t and lithium Hydroxide averaging Yn158,400/t.

China seaborne traded prices have seen a similar trend to ex-works prices in October. On 31 October, the fob China export price for hydroxide was \$26.50/kg, 3.6pc lower on the month, while the price for carbonate imports into China was down 2.3pc at \$21.50/kg cif.

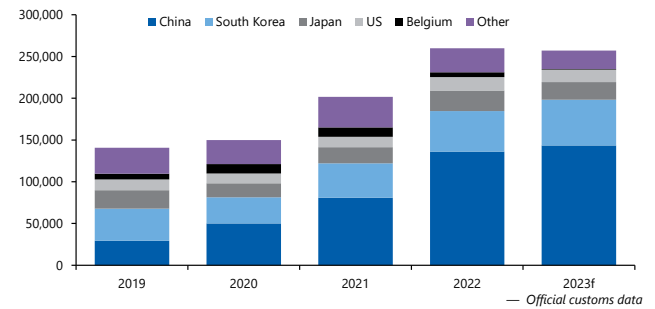
Import prices in Japan and South Korea saw similar trend. On 31 October, the cif Japan/South Korea import price for carbonate was \$25.00/kg, 10.7pc lower on the month, while the price for hydroxide was down 9.1pc at \$30.00/kg cif.

By Argus Consulting

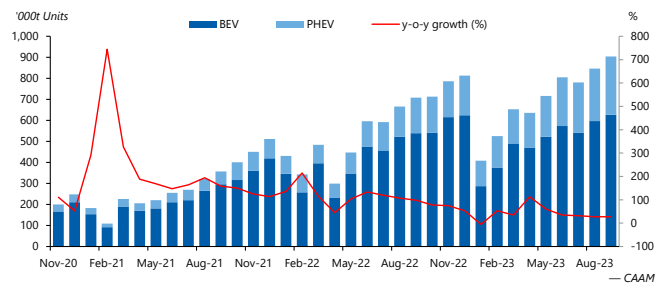
### Lithium 1-year price forecasts



### Lithium carbonate imports



### Chinese EV sales



## COBALT

## Weekly round-up: Europe, US and China diverge

Chinese markets diverged from European and US metal markets this week as Chinese producers promised to add refining capacity while producers elsewhere struggled with output cuts.

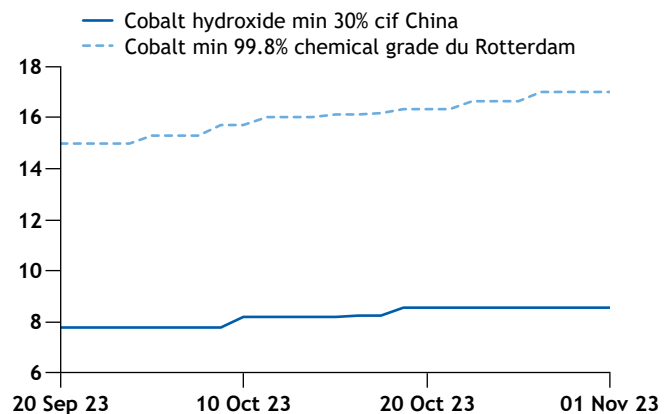
Prices for 99.8pc grade metal in China dipped to Yn240-295/kg ex-works on 31 October and remained stable today, down from Yn245-295/kg ex-works on 26 October in response to increasing supplies. A cobalt company started up metal production in July with 6,000 t/yr of capacity, and plans to raise its capacity by 5,000 t/yr next year.

November contracts for cobalt metal on the Changzhou Zhonglianjin platform rose to Yn236.50/kg on 31 October from Yn236/kg on 26 October, but down from Yn238.50/kg on 24 October. Market sentiment became bearish as domestic metal producers continued to expand capacity.

In Europe, alloy grade metal prices rose to \$17.50-18.65/lb on 1 November, up from \$17.50-18.50/lb on 31 October, lifted by higher offers from traders looking to cash in on demand from the aerospace and medical alloy sectors. Prices for 99.8pc grade cobalt in the US rose to \$18.25-19.25/lb fob warehouse from \$18.00-19.00/lb.

Suppliers nudged up their offers over the past week, but most discussions were for longer-term deals. Some traders attempting to cover long-term contracts faced higher prices than planned. Many inquiries in the past few weeks have come from medical alloy makers but all of them were just

Co hydroxide cif China vs chem grade du Rotterdam \$/lb



gathering information. Most of the actual consumer inquiries came from the aerospace side of the alloy market, market participants said.

The cif China assessment for 30pc grade cobalt hydroxide held at \$8.30-8.80/lb on 31 October, stable from 26 October. Most hydroxide feedstock suppliers and buyers have not yet reached an agreement on their term contracts for 2024, with producers keen to hold prices firm.

The cobalt hydroxide (30pc minimum cobalt) payable indicator basis cif China was last assessed on 27 October at 52.5-55.5pc at the low end of the Argus European chemical-

Cobalt price assessments					
	Unit	Timing	Low	High	±
<b>China</b>					
(Electrolytic metal) min 99.8% ex-works China	Yn/kg	1 Nov	240	295	nc
Chloride min 24% ex-works China	Yn/t	1 Nov	49,000	50,500	nc
Powder min 99.8% ex-works China	Yn/kg	1 Nov	228	238	nc
Hydroxide min 30% cif China	\$/lb	1 Nov	8.30	8.80	nc
Hydroxide payable indicator 30% min Co cif China (pc Argus cobalt sulphate)	pct	26 Oct	81.00	85.00	nc
Hydroxide payable indicator 30% min Co cif China (pc Argus cobalt metal)	pct	1 Nov	52.00	55.00	-0.50
Oxide 72% ex-works China	Yn/kg	1 Nov	155	160	nc
Sulphate min 20.5% ex-works China	Yn/t	1 Nov	37,500	39,000	nc
Sulphate min 20.5% ex-works China excl. VAT	\$/lb	1 Nov	2.06	2.14	nc
Tetroxide min 73% ex-works China	Yn/kg	1 Nov	154.00	159.00	nc
<b>Europe</b>					
Min 99.8% alloy grade du Rotterdam	\$/lb	1 Nov	17.50	18.65	+0.075
Min 99.8% chemical grade du Rotterdam	\$/lb	1 Nov	16.50	17.50	nc
<b>US</b>					
Min 99.8% fob US warehouse	\$/lb	31 Oct	18.25	19.25	+0.250

## COBALT

grade cobalt metal price, stable since 20 October.

Prices for 24pc grade chloride and 20.5pc grade sulphate were assessed at Yn49,000-50,500/t ex-works and Yn37,500-39,000/t ex-works, respectively, on 31 October, down by Yn500/t and Yn1,000/t from 26 October. Producers have had to lower offers to boost sales, given muted overall demand and plentiful supply.

Argus-assessed 73pc cobalt tetroxide prices dipped to Yn154-159/kg ex-works on 31 October from Yn155-160/kg ex-works on 26 October, in response to lower prices for salts feedstock.

Prices for 99.8pc grade powder held at Yn228-238/kg ex-works on 31 October, stable from 26 October. Most producers kept their offers steady in expectation that there will be no notable increases in their sales even if they cut offers, but consumers were keen to press down purchase prices in the near term.

Prices for 72pc grade oxide declined from Yn156-161/kg ex-works on 26 October to Yn155-160/kg ex-works on 31 October, as consumers have slowed restocking since last week after a rise in transactions in early October.

## COBALT OUTLOOK

Cobalt prices have recovered in October. Chemical-grade cobalt prices are back to March levels, though remain 59pc lower than in their April 2022 peak.

Chemical-grade metal duty unpaid in Rotterdam was assessed at \$37.48/kg on 31 October, 11.3pc up on the month, while the monthly average for October was \$35.62/kg (5.7pc higher compared to September). Chinese prices for cobalt salts at the end of October was Yn157.50/kg ex-works for oxide (up 6.8pc on the month), Yn38.25/kg ex-works for sulphate (up 3.4pc) and \$18.85/kg cif hydroxide (up 10.3pc).

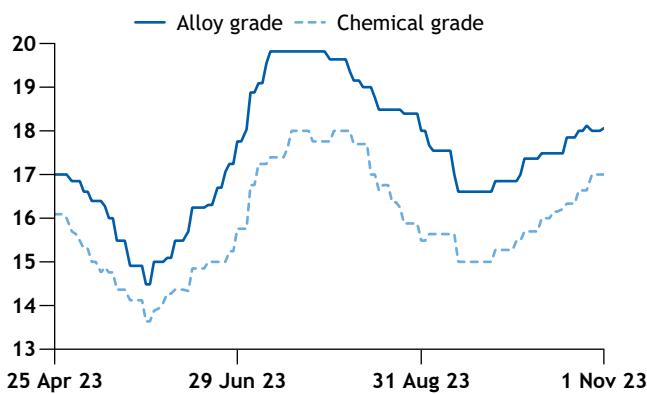
Prices for cobalt salts and chemical-grade cobalt metal both increased in October. Supported by strong demand for EV and smart devices. High raw material costs have also underpinned the higher prices, though a supply surplus still remains. We expect average Rotterdam chemical-grade prices to increase to \$36.90/kg for the last quarter of 2023 (1pc higher than the third quarter average), with prices to increase further in the beginning of next year.

We forecast cobalt oxide prices to average Yn156.70/kg in 4Q (2.3pc down on 3Q), while cobalt hydroxide is expected to average \$18.65/kg (0.2pc up) over the same period. For cobalt sulphate, prices are predicted to average Yn34.01/kg (2.5pc down) in the last quarter of the year before steadily firming in the following quarter.

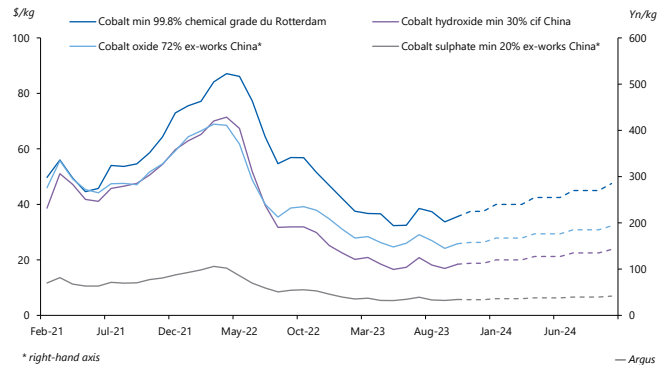
By Argus Consulting

Rotterdam cobalt prices

\$/lb



Cobalt 1-year price forecasts





## NICKEL

### Nickel weekly round-up: Sulphate falls

Chinese nickel sulphate prices fell further over the past week amid a bearish downstream demand outlook for nickel-cobalt-manganese (NCM) cathodes heading into next year. Both domestic and import sulphate prices eased as term contracts took precedence over spot trade, with market participants reporting near-term support for intermediate feedstock prices but continued pressure on nickel sulphate prices to put a squeeze on producer margins.

The Argus assessment for nickel sulphate min 22pc ex-works China fell to 31,000-31,200 yuan/t on 31 October, down from Yn31,400-31,600/t on 26 October. An NCM precursor producer was heard to have purchased undisclosed volumes at Yn31,000/t. And the assessment for nickel sulphate min 22pc cif China also fell, to \$3,800-3,850/t, over the same period, a drop of \$50/t, in line with the decline in domestic prices.

The drop in sulphate prices has been slower relative to that in underlying nickel metal prices, reducing the arbitrage for processing sulphate into the new electrowinning nickel sector in China. The official cash-settled nickel contract price on the London Metal Exchange (LME) fell by 2.26pc over the past week to \$17,737.50/t today, while domestic sulphate prices declined by 1pc over the same period.

The Argus-assessed payable indicator for MHP rose to 76-78pc on 26 October, from 75-77pc on 19 October, based on LME nickel cash official prices, with the nickel price drop causing the uptick. Term contracts were heard to be dominating market activity, with spot availability heard to be tight given the continued disruption to ore supply in Indonesia.

With integrated MHP and NCM precursor producers in the process of expanding precursor production capacity or otherwise ramping up output, spot availability of MHP was reported to be tighter on the week, with supplies held back for producers' near-term use.

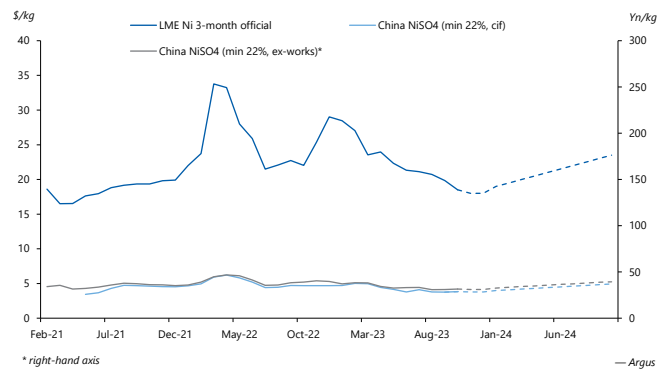
The payable indicator for nickel matte on 26 October was assessed stable from 19 October at 84-86pc, based on LME nickel cash official prices, in line with limited market activity.

European nickel premiums continued to decline sharply on extremely low spot demand, along with a focus on term contract supply. Russian cathode premiums tested fresh lows against the backdrop of a scheduled rise in Asian Class 1 supply. The Argus in-warehouse premium for Russian-origin full-plate cathode fell to \$0-25/t on 26 October, from \$0-50/t a week earlier. The only upside for Russian uncut cathode premiums stems from the fact that sellers are able to deliver

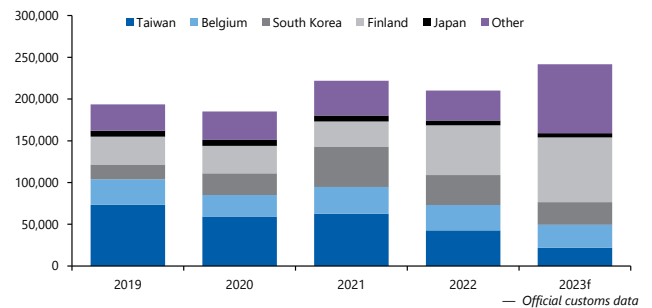
products into the LME's network of warehouses for a \$50/t incentive. Some trading firms continue to offer at a minimum \$50/t premium as a result, even as physical space indicates no premium.

The Argus in-warehouse premium for Russian-origin 4x4 cut cathode moved sideways to \$150-200/t on 26 October, while the premium for nickel briquette declined to \$100-150/t, from \$125-175/t on 19 October, in what is currently an illiquid market.

### Nickel 1-year price forecast

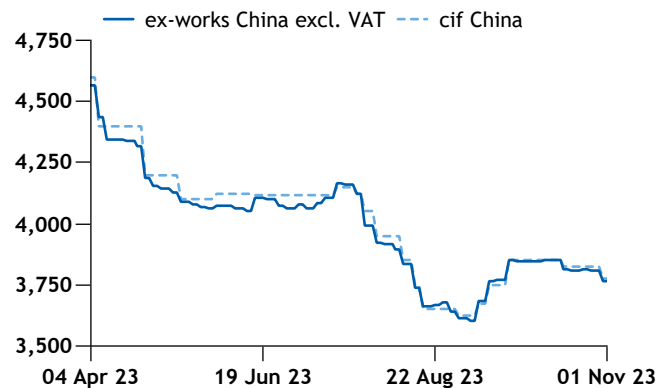


### Nickel sulphate exports



### China nickel sulphate domestic vs import

\$/t



## NICKEL OUTLOOK

LME nickel prices remained volatile and followed an overall downwards trend in October. The average price for 2023 so far has been \$22.61/kg, 13pc lower than the \$26.10/kg average for the whole of 2022 due to the continuous decline in prices since the start of the year. The LME 3-month nickel price dropped from \$31.33/kg at the beginning of January to \$18.06/kg at the end of October. The October average was down 6.8pc on September at \$18.50/kg.

We forecast an average LME 3-month price of \$18.00/kg in November, with prices stabilising at \$18.00/kg in the last quarter of the year. Increasing supplies of Class 1 nickel remain the key issue depressing LME nickel prices. We are forecasting a stable 4Q and a slight recovery in 1Q next year.

Meanwhile, the Chinese ex-work sulphate prices have also declined with the price on 31 October at Yn31.10/kg, 2pc down on the month, with market participants mostly bearish about demand for the main downstream product nickel-cobalt-manganese (NCM) batteries for the coming year. Argus expects the price to average Yn31.04/kg in November and to average Yn31.21/kg in the fourth quarter of the year.

The Chinese import price for sulphate also went down in October, with the price on 31 October at \$3.78/kg, 2pc down on the month and 25pc lower than the peak price seen in February and early March 2023 of \$5.05/kg. We expect the price to stay at \$3.80/kg in the last quarter of the year.

By Argus Consulting

Nickel					
	Unit	Timing	Low	High	±
<b>Europe</b>					
Briquette min 99.8% in-warehouse Rotterdam	\$/t	26 Oct	100.00	150.00	-25.00
Briquette in-warehouse Rotterdam transaction	\$/t	1 Nov	17,825.00	17,900.00	-75.000
Cathode full-plate premium (non-Russian origin) in-warehouse Rotterdam	\$/t	na	na	na	na
Cathode full-plate premium (Russian origin) in-warehouse Rotterdam	\$/t	na	na	na	na
Cathode 4x4 inch premium (non-Russian origin) in-warehouse Rotterdam	\$/t	na	na	na	na
Cathode 4x4 inch premium (Russian origin) in-warehouse Rotterdam	\$/t	na	na	na	na
Cathode full-plate (non-Russian origin) in-warehouse Rotterdam transaction	\$/t	1 Nov	18,025.00	18,100.00	-75.000
Cathode full-plate (Russian origin) in-warehouse Rotterdam transaction	\$/t	1 Nov	18,025.00	18,125.00	-75.000
Cathode 4x4 inch (non-Russian origin) in-warehouse Rotterdam transaction	\$/t	1 Nov	18,225.00	18,300.00	-75.000
Cathode 4x4 inch (Russian origin) in-warehouse Rotterdam transaction	\$/t	1 Nov	18,375.00	18,500.00	-75.000
<b>US</b>					
Briquette premium del US	\$/lb	26 Oct	0.50	0.55	nc
Cathode 4x4inch premium (small lots) del US	\$/lb	26 Oct	0.90	0.95	nc
Cathode 4x4inch premium (truckloads) del US	\$/lb	26 Oct	0.85	0.90	nc
Cathode 4x4inch (truckloads) del US transaction	\$/lb	31 Oct	8.9353	8.9853	-0.16100
Cathode 1x1inch premium (small lots) del US	\$/lb	31 Oct	1.30	1.35	nc
Cathode 1x1inch premium (truckloads) del US	\$/lb	31 Oct	1.20	1.30	-0.03
Nickel-Cobalt refinery scrap cobalt contained del US processor	\$/lb	31 Oct	3.0000	3.5000	-0.55000
Nickel-Cobalt refinery scrap nickel contained del US processor	\$/lb	31 Oct	3.50	4.00	nc
<b>China</b>					
Cathode full plate premium cif Shanghai	\$/t	26 Oct	100.00	200.00	nc
Full plate premium ex-warehouse Shanghai Jinchuan-produced	Yn/t	1 Nov	2,700.00	3,000.00	nc
Full plate premium ex-warehouse Shanghai imported	Yn/t	1 Nov	-200.00	-100.00	nc
Ore min 1.8% Ni fca China	Yn/wmt	1 Nov	760.00	770.00	nc
Philippine ore min 1.3% Ni cif China	\$/wmt	26 Oct	40.00	41.00	-2.00
Pig iron min 10% ex-works China	Yn/mtu	1 Nov	1,100.00	1,120.00	nc
Mixed hydroxide precipitate (MHP) payable indicator 30-40% Ni cif China	pct	26 Oct	76	78	+1
Matte payable indicator 70% min Ni cif China	pct	26 Oct	84	86	nc
Sulphate min 22% ex-works China	Yn/t	1 Nov	31,000	31,200	nc
Sulphate min 22% ex-works China excl. VAT	\$/t	1 Nov	3,750.63	3,774.83	nc
Nickel sulphate min 22% cif China	\$/t	1 Nov	3,750.00	3,800.00	nc

## ADDITIONAL BATTERY METALS

### Battery minor metals: Graphite stabilises

An uptick in graphite prices, driven by China's newly announced export controls, paused this week without support from physical demand.

Prices on 31 October held stable from 24 October at 3,500-3,900 yuan/t ex-works for 94pc-grade flake and Yn3,900-4,400/t ex-works for 95pc-grade material, as producers maintained their offers given the possibility of output cuts amid low winter temperatures and uncertainty stemming from China's newly announced export controls that will take effect on 1 December.

Export prices on 31 October stabilised at \$560-610/t fob for 94pc-grade flake and \$600-660/t fob for 95pc-grade flake, in line with stable domestic prices and seaborne demand, following significant price increases last week driven by newly announced export controls.

Prices for antimony remained subdued following a slight fall late last week, with the inactivity expected to continue until

the end of this year, when buyers are likely to increase their purchases before the Lunar New Year holiday starts. Prices for 99.85pc-grade metal on 31 October were unchanged at Yn81,500-82,500/t ex-works after a dip of Yn500/t on 26 October. The range for 99.8pc-grade trioxide remained at Yn72,000-73,000/t over the same period, with suppliers maintaining prices in response to firm metal feedstock costs. Prices for vanadium pentoxide flake fell to Yn85,000-86,000/t ex-works on 31 October, from Yn86,000-88,000/t ex-works on 30 October and Yn88,000-90,000/t ex-works on 26 October, in response to sufficient spot supplies and lower bid prices from alloy smelters driven by less demand from the steel sector.

Major flake suppliers Sichuan Chuanwei, Sichuan Desheng and Chengde Jianlong have not signed any contracts with regular consumers since 23 October, as alloy producers were reluctant to accept bid prices of above Yn85,000/t ex-works paid by cash owing to narrower profit margins.

Price assessments					
	Unit	Date	Low	High	±
<b>Antimony</b>					
Trioxide min 99.5% ex-works China	Yn/t	1 Nov	70,500	71,500	nc
Trioxide min 99.5% fob China	\$/t	1 Nov	9,850	9,950	nc
Trioxide min 99.8% fob China	\$/t	1 Nov	9,950	10,050	nc
Regulus Trioxide grade min 99.65% Sb du Rotterdam	\$/t	1 Nov	11,600	11,900	nc
<b>Graphite</b>					
Flake 94% min carbon ex-works China	Yn/t	31 Oct	3,500	3,900	nc
Flake 94% min carbon fob China	\$/t	31 Oct	560	610	nc
Flake 94% min carbon ex-works China excl. VAT	\$/t	31 Oct	423.46	471.85	-0.210
Flake 95% min ex-works China	Yn/t	31 Oct	3,900.00	4,400.00	nc
Flake 95% min fob China	\$/t	31 Oct	600.00	660.00	nc
<b>Manganese</b>					
Briquette min 97% Mn ex-works China	Yn/t	1 Nov	12,900	13,000	nc
Briquette 97% Mn fob China	\$/t	1 Nov	1,720	1,780	nc
Manganese sulphate min 32% Mn battery grade ex works China	Yn/t	31 Oct	5,300	5,400	nc
Dioxide min 91% carbon battery grade ex works China	Yn/t	31 Oct	15,500	16,000	nc
Dioxide min 91% alkaline battery grade ex works China	Yn/t	31 Oct	16,400	16,900	nc
Dioxide 91% min LMO battery grade ex-works China	Yn/t	31 Oct	17,200	17,700	nc
Dioxide 91% min LMO battery grade ex-works China excl. VAT USD/t	\$/t	31 Oct	2,081	2,141	-1
<b>Silicon</b>					
2-2-0-2 min 99.5% Si fca Europe works	€/t	1 Nov	2,500	2,700	nc
Silicon 3-3-0-3 min 99% Si dat Chinese ports	Yn/t	1 Nov	15,900	16,200	nc
Silicon 3-3-0-3 min 99% Si fca Europe works	€/t	1 Nov	2,400	2,500	nc
Silicon 3-3-0-3 min 99% Si fob China	\$/t	1 Nov	2,230	2,260	nc
<b>Vanadium Pentoxide</b>					
Fused flake min 98% du Rotterdam (per lb V2O5)	\$/lb V2O5	31 Oct	6	6	nc
98% V2O5 ex-works China	Yn/t	1 Nov	85,000	86,000	nc
98% V2O5 fob China	\$/lb	1 Nov	6	6	nc

## BATTERY CATHODES

### LFP falls below \$20/kWh

Costs for LFP cathodes fell below \$20/kWh this week for the first time since September 2021, as lithium prices declined sharply in China.

LFP costs fell by 5.33pc to \$19.55/kWh on 31 October, falling sharply because of a 5.78pc decrease in the Chinese lithium carbonate price to Yn158-168/kg between 24-31 October. Lithium demand has fallen in China after a brief increase in mid-October.

Electric vehicle sales growth in Asia is slowing, with multiple large market players reporting lower demand. Panasonic cut its battery production during July-September, mostly because of lower demand for luxury electric vehicles. Domestic battery production during July-September, the second quarter of Panasonic's 2023-24 fiscal year, fell by 60pc from the previous quarter.

Costs for other cathodes also declined this week, with high nickel NCM811 and NCM622 cathodes falling by 3.65pc to \$41.45/kWh and 3.93pc to \$38.18/kWh, respectively. Cathodes containing a higher proportion of cobalt to nickel declined more sharply, with NCM532 down by 3.96pc to \$38.11/kWh, while NCM111 prices fell by 4.13pc to \$37.64/kWh.

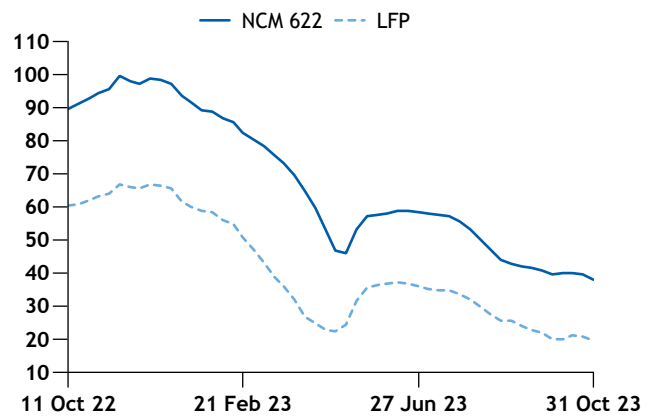
"NCM demand is poor, but with low cobalt pricing we might see 622 coming back a bit over 811," a cobalt trader in Europe said.

Cobalt sulphate prices in China declined by Yn1,000/mt to Yn37,500-39,000/mt on 31 October, weighing on prices for cathodes high in cobalt.

Battery cathode active materials				
	Unit	Timing	Mid	±
NCM111	\$/kWh	31 Oct	37.64	-1.62
NCM523	\$/kWh	31 Oct	38.11	-1.57
NCM622	\$/kWh	31 Oct	38.18	-1.56
NCM811	\$/kWh	31 Oct	41.45	-1.57
NCA	\$/kWh	31 Oct	41.23	-1.58
LFP	\$/kWh	31 Oct	19.55	-1.10

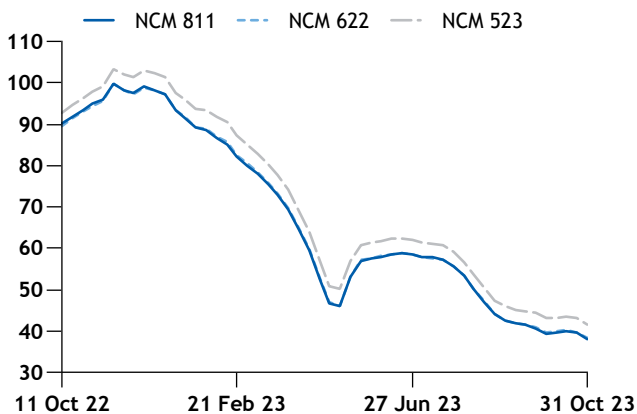
Cathode chemistries LFP vs NCM 622

\$/kwh

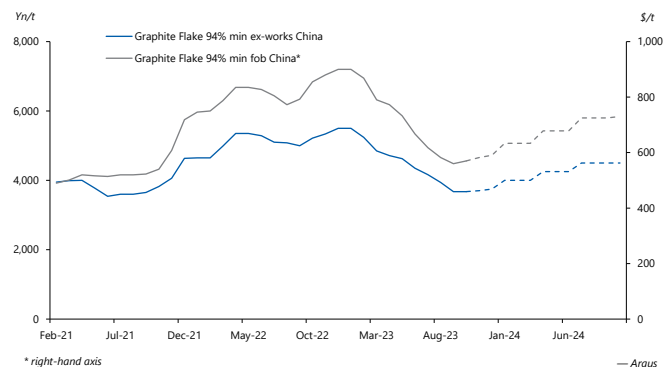


Cathode chemistries NCM 811 vs 622 vs 523

\$/kwh



Graphite 1-year price forecasts



## IN FOCUS: US CARMAKERS

### Stellantis, GM reach tentative deals with UAW

US automakers Stellantis and General Motors (GM) have reached tentative labor agreements with the United Auto Workers (UAW) union that could end a strike that began more than six weeks ago.

Stellantis and the UAW on Saturday said they had reached a tentative agreement that gives union members a 25pc wage increase over the span of the new contract, among other benefits.

The deal broadly matches what the UAW secured last week in its tentative agreement with Ford, the first Big 3 automaker to reach a tentative deal with the union. UAW members will return to work at Stellantis, as they did at Ford, while members review the agreement and prepare to vote.

The strike against Ford, General Motors (GM) and Stellantis began on 15 September. Prior to reaching the agreement with Ford, over 45,000 UAW-represented members were striking eight US assembly plants and 38 distribution centers across the three automakers.

Stellantis will restart its idled plant in Belvidere, Illinois, where it will produce a midsize pickup truck, according to UAW vice president Rich Boyer. Stellantis also committed to add 1,000 jobs at a new battery plant in Belvidere, he said.

GM also has reached a tentative agreement with the UAW, a source close to the matter confirmed on Monday.

The UAW on Sunday expanded its strike at GM to an SUV plant in Spring Hill, Tennessee, adding to three other plants as well as numerous parts and distribution sites where workers have walked off the job.

Ford and the UAW on 26 October [came to a tentative agreement](#) that would stretch for four-and-a-half years, expiring on 20 April 2028.

The strike [cost Ford](#) the production of at least 80,000 vehicles, the company said in its third-quarter earnings call.  
*By Rye Druzin*

### UAW, Ford reach tentative agreement

The United Auto Workers (UAW) union and US automaker Ford Motor have come to a tentative agreement that will have union workers return to work immediately.

The UAW was able to secure 25pc pay increases, a restoration of cost of living adjustments, and other demands,

UAW president Shawn Fain said Wednesday night. Details of the agreements are expected to be ready for membership to review by the night of 29 October.

Striking UAW members from Ford will return to work, allowing for the restarts of Ford's Chicago SUV assembly plant, Kentucky fullsize pickup truck plant, and Michigan mid-size pickup truck and SUV assembly plant. The strike began on 15 September.

The Ford UAW membership still needs to vote on the agreement and could reject it.

In October at Mack Trucks, UAW membership [voted down](#) a tentative agreement on 9 October and then went on strike.

The UAW remains on strike at General Motors (GM) and Stellantis, which the UAW ramped up by [striking GM's Arlington, Texas](#) fullsize SUV plant on 24 October and striking Stellantis' Sterling Heights, Michigan fullsize pickup truck plant [on 23 October](#).

*By Rye Druzin*

### Stellantis says least affected by strike in Big 3

Global automaker Stellantis said the labor strike by the United Auto Workers (UAW) affected the company the least among the Big 3 US automakers.

The UAW strike – which began on 15 September – and the Unifor strike in Canada prevented the shipment of about 50,000 vehicles in September and October and had a €3bn (\$3.17bn) revenue impact, chief financial officer Natalie Knight said Tuesday during the company's third-quarter earnings call.

Stellantis and General Motors (GM) on 28 October reached [tentative labor agreements](#), following a similar deal the [UAW secured with Ford on 26 October](#). Workers have returned to factories pending union members' ratification of the deals. Ford said the strike action [cost the company](#) the production of at least 80,000 vehicles.

Stellantis' North American shipments rose in the third quarter by 6.6pc on the year to 470,000 vehicles. Higher North American shipments were driven by the Chrysler Pacifica, Grand Cherokee, Dodge, and Ram. Gains were mitigated by Jeep shipments that fell because of the discontinued current generation Cherokee and scheduled downtime for production of the Jeep Compass, the company said.

**IN FOCUS: US CARMAKERS**

Stellantis in October announced it planned to acquire 20pc of Leapmotor, a Chinese EV producer, for €1.5bn to form Leapmotor International. The joint venture will give Stellantis exclusive rights for the export, sale and manufacturing of Leapmotor products outside China. Stellantis expects to begin shipments in the second half of 2024.

Stellantis' third-quarter profit rose to a €45.1bn, up by 7pc on the year.  
 By Hannah Borai

**Ford says strike cost 80,000 vehicles**

US automaker Ford Motor says a six-week strike by its union workforce has resulted in the loss of tens of thousands of vehicle assemblies as it pulled its guidance for 2023.

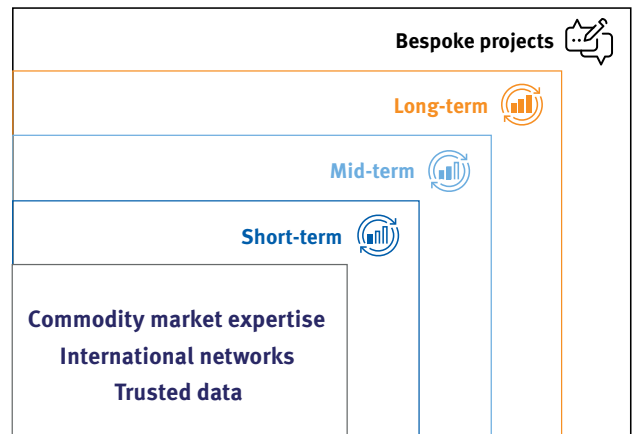
The company's chief financial officer John Lawler said Thursday the guidance was pulled "in part because of the continued disruption in the industry with ongoing strikes, the follow-on impact to our shared supply base, the ramp-up of production in our plants and at our supplier partners, as well as other ancillary effects."

The strike by the United Auto Workers (UAW) at three Ford assembly plants cost the company the production of at least 80,000 vehicles, lowering earnings before interest and taxes (Ebit) by \$1.3bn. Ford and the UAW **came to a tentative agreement** on Wednesday that is seeing workers return to the plants before they vote in the coming weeks on whether or not to ratify the deal, which gives them 25pc pay increases over the life of the contract among other benefits.

The UAW **began striking** Ford, General Motors (GM) and Stellantis on 15 September, expanding the strike multiple times before coming to the tentative agreement with Ford. The union continues to strike GM and Stellantis plants and **parts distribution facilities**.

By Rye Druzin

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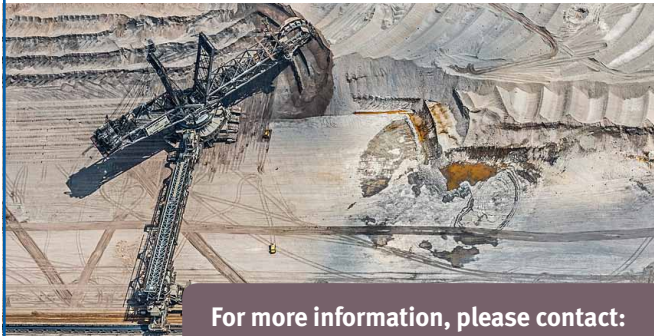
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Additional battery feedstocks					
	Unit	Date	Low	High	±
<b>Phosphoric acid</b>					
Cfr India quarter	\$/t	26 Oct		985	nc
<b>Sulphuric acid</b>					
Cfr China contract	\$/t	26 Oct	12.85	21.30	+13.07
Fob China spot	\$/t	26 Oct	38.00	42.00	-2.50
<b>Caustic soda</b>					
50pc China domestic week 1	Yn/dmt	27 Oct	2850	2980	-200.0
<b>Anode grade petroleum coke</b>					
China fob anode grade green 2.0% sulphur month	\$/t	11 Oct	260.00	325.00	-22.500
China fob anode grade green 3.0% sulphur month	\$/t	11 Oct	230.00	270.00	-10.000
China fob anode grade calcined 3.0% sulphur month	\$/t	11 Oct	410.00	525.00	-10.000



## Argus expands coverage of iron ore market

The two new weekly prices, for Australian and Ukrainian origin concentrate, will be published as differentials to the Argus 65pc Fe fines index.



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## Change to China cobalt hydroxide price name

Following consultation, Argus will from 7 September change the name of a cobalt hydroxide payable price to clarify the way in which it is calculated.

Cobalt hydroxide payable indicator 30% min Co cif China will be changed to Cobalt hydroxide payable indicator 30% min Co cif China (pc Argus cobalt metal).

The methodology governing the assessment will not change.

## Proposal to change China cobalt hydroxide price

Argus proposes to change the minimum lot size and form of its cobalt hydroxide min 30% cif China assessment to 10t metal equivalent in powder form from 5t in powder or wet bulk forms to better align with market activity.

Argus will accept comments on this proposed change until 15 November. To discuss comments on this proposal, please contact Ohmin Zhao at [ohmin.zhao@argusmedia.com](mailto:ohmin.zhao@argusmedia.com). Formal comments should be marked as such and may be submitted by email to [ami@argusmedia.com](mailto:ami@argusmedia.com) and received by 15 November. Please note, formal comments will be published after the consultation period unless confidentiality is specifically requested.



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