HERAEUS Precious Appraisal

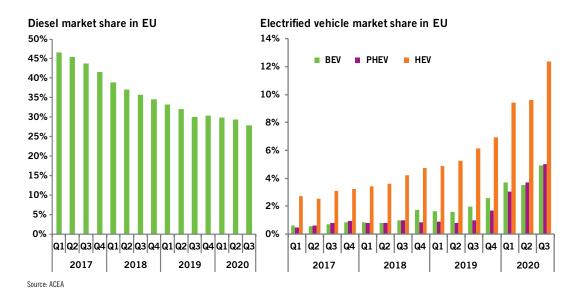
Ed. 39 9th November 2020

Heraeus



Sustained high palladium price favours substitution

As reported last week, registrations of electrified vehicles overtook those for diesels for the first time in European history in September, as BEVs, PHEVs and HEVs made up one in four of new cars registered (source: JATO). However, as hybrid cars still contain a combustion engine, diesel fared slightly better than the headline implied. Nevertheless, the pandemic has certainly exacerbated the decline of diesel in Europe, which is one of the single largest threats to the platinum market. Diesel cars' market share in Europe has fallen from 45.7% in 2016 to around 28% in Q3'20, resulting in a contraction in demand of more than 500 koz of platinum.



Substitution of palladium with platinum in three-way autocatalysts will help to offset platinum's decline in time, but near-term upside is limited. A modest level of substitution is expected in gasoline autocatalysts from 2021, initially in the US where vehicles are generally larger with lower temperature engines. In China and Europe, car manufacturers have prioritised meeting increasingly tight emissions legislation, so will be behind on changing catalyst formulations compared to the US.

However, a sustained palladium price above that of platinum could be tipping the balance in favour of increased substitution, which is necessary to bring both the platinum and palladium markets closer to balance. Palladium has traded at an average of \$2,187/oz this year, despite being in the midst of a pandemic and a global recession, with significant contractions to demand. The palladium market deficit is forecast to shrink to around 340 koz this year (as demand was impacted more than supply by Covid-19), and again in 2021 due to work-in-progress stock but is expected to expand significantly thereafter as light-vehicle production recovers.

PRECIOUS METALS REVIEW

Au

Gold

	Close	Weekly change	High	Date	Low	Date
\$/oz	1,952	3.75%	1,960	06/11/2020	1,881	02/11/2020
€/oz	1,643	1.71%	1,652	05/11/2020	1,611	04/11/2020

Gold jumped higher last week as a Biden victory saw bond yields and the dollar fall. After some volatility on 4 November, the market reaction has been to buy. Republican control of the Senate is also looking increasingly under threat, although the final outcome may not be clear until runoff votes in Georgia in January. If Republicans remain in control, then any further fiscal support could be slower in coming and not as large as if the Democrats controlled the Senate as well as the House of Representatives. Trump, the first president to lose a re-election bid in 28 years, has shown no sign of conceding, however, and continues to fight legal battles to overturn the result which could lead to increased price volatility for gold. **Total gold supply fell by 3% year-on-year in Q3 to 1,223 tonnes**, with growth in recycling offset by weaker mine supply. In the year to date, total supply is down by 5% compared to the same period last year. Mining activity resumed in many key regions in Q3 and production totalled 883.8 tonnes, up 14% from Q2 but still down 3% year-on-year (source: World Gold Council). The disruption to mine supply caused by the pandemic is likely to see output fall this year compared to 2019 (3,530 tonnes), but as most mines are now working at or close to normal capacity, and recycling channels have reopened, the impact on full-year production is expected to be minimal.

Ag <mark>Silver</mark>

	Close	Weekly change	High	Date	Low	Date
\$/oz	25.50	7.94%	25.85	06/11/2020	23.23	04/11/2020
€/oz	21.46	5.81%	21.76	06/11/2020	20.01	04/11/2020

Silver Eagle coin sales in the US have been strong, with over 1.6 million sold in the first few days of November and over 26 million sold so far this year compared to 15 million in the whole of 2019. The silver price started the week on a positive note and after some weakness on

4 November the price rallied further, outperforming gold. However, it has yet to move out of its trading range. If investors keep buying then the price can continue to climb.

Platinum

Ę		Close	Weekly change	High	Date	Low	Date
	\$/oz	891	5.16%	916	06/11/2020	849	02/11/2020
	€/oz	749	3.04%	770	06/11/2020	731	02/11/2020

Car registrations in Western Europe fell by 6.3% year**on-year in October**, to an average selling rate of 12.7 million units/year (source: LMC Automotive). As the second wave of lockdowns and restrictions hit some of the region's largest markets, the outlook for the rest of the year is bleak. The full-year forecast has been revised down to 10.58 million units (-26.0% year-on-year). The expectation that disruption will continue into next year has led to a forecast of 12.45 million units in 2021 (+17.6% year-on-year, but down 12.8% from 2019). Car dealerships in France and the UK are now closed as part of governmental efforts to contain the spread of the virus. German showrooms remain open, but demand is likely to be impacted as citizens are urged to stay home. Passenger car platinum requirements in Western Europe are expected to fall by a third to 300 koz this year.

Platinum Guild International (PGI) has launched a new platinum jewellery brand, 'Platinum Woman', in collaboration with Japan's leading jewellery brands. Japan is the second-largest market for platinum jewellery behind China, accounting for around 330 koz last year. While demand in Japan is forecast to slip by almost a third this year, a strong rebound is predicted for 2021. However, it is expected to take a few years before global jewellery demand returns to pre-pandemic levels. Platinum was caught up in the buying last week but any price gains are expected to remain muted given its weak fundamental outlook.

PRECIOUS METALS REVIEW



Palladium

	Close	Weekly change	High	Date	Low	Date
\$/oz	2,444	10.36%	2,469	06/11/2020	2,195	02/11/2020
€/oz	2,054	7.77%	2,078	06/11/2020	1,887	02/11/2020

Anglo American Platinum (AAP) has cut its 2020 refined production guidance owing to the closure of the Phase B unit of its Anglo Converter Plant (ACP). The Phase B unit has been closed for a full rebuild in 2021. The Phase A unit also remains closed and is undergoing repairs, which means AAP cannot currently convert green matte to white matte for refining. As a result, refined production guidance has been revised down to 2.5 moz PGMs, leading to a total build-up of 1.1-1.3 moz PGMs this

year, of which about 400 koz is palladium. Repairs to the Phase A unit are on track for completion by the end of the year, but the release of work-in-progress material will take some time. AAP accounted for 15% of global palladium supply last year, at around 1 moz. The palladium price jumped last week and the interruption to AAP's refined supply could continue to support the price despite uncertainty around auto sales amid the resurgence in Covid-19 cases.

Rhodium, Ruthenium, Iridium

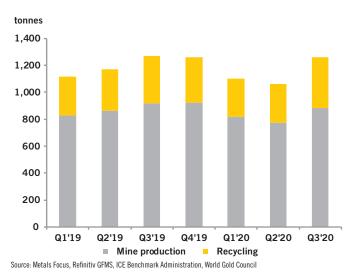
Rn-		Rhodium	Ruthenium	Iridium
	Reporting week	\$14,850/oz	\$295/oz	\$1,670/oz
	Previous week	\$13,750/oz	\$295/oz	\$1,650/oz

The rhodium market will be the worst affected by the closure of AAP's ACP Phase B unit. Owing to market tightness, any interruption to supply has a greater impact on rhodium than on platinum or palladium. In addition, rhodium has the longest process time (compared to platinum or palladium), meaning refined output is

likely to be impacted for longer. Iridium prices nudged slightly higher last week, by 1.2%, while ruthenium was unchanged for another week. Rhodium went up by 8% on the news of the Phase B unit closure and is expected to make new highs this week.

TRENDS AND INVESTMENTS

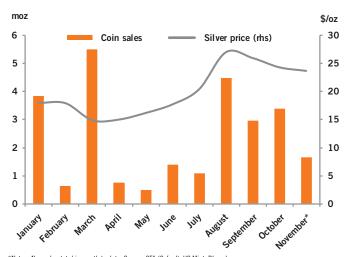
Gold supply



Palladium and platinum prices

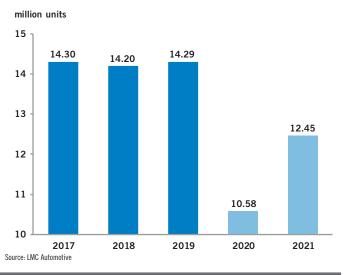


US Eagle silver coin sales



*Note - November total is month to date. Source: SFA (Oxford), US Mint, Bloomberg

Western Europe car sales



Heraeus Precious Metals

Europe, Middle East, Africa & other regions Phone: +49 6181 35 2750 edelmetallhandel@heraeus.com

South East Asia Phone: +852 2773 1733 tradinghk@heraeus.com

www.herae.us/trading-market-report

Phone: +1 212 752 2180 tradingny@heraeus.com

United States of America

Phone: +86 21 3357 5658 tradingsh@heraeus.com The $\ensuremath{\text{HERAEUS}}$ $\ensuremath{\text{PRECIOUS}}$ $\ensuremath{\text{APPRAISAL}}$ produced in collaboration with:

SFA (Oxford) Ltd United Kingdom Phone: +44 1865 784366 www.sfa-oxford.com



The Oxford Science Park, Oxford, United Kingdom, OX4 4GA

DISCLAIMER

This document is being supplied to the recipient only, on the basis that the recipient is reasonably believed to be a professional market participant in the precious metals market. It is directed exclusively at entrepreneurs and especially not intended for the use of consumers. The material contained in this document has no regard to the specific investment objectives, financial situation or particular need of any specific recipient or organisation. It is not provided as part of a contractual relationship. It is not and should not be construed as an offer to sell or the solicitation of an offer to purchase or subscribe for any investment or as advice on the merits of making any investment. This report has been compiled using information obtained from sources that Heraeus and SFA (Oxford) Ltd ("SFA") believe to be reliable but which they have not independently verified. Further, the analysis and opinions set out in this document, including any forward-looking statements, constitute a judgment as of the date of the document and are subject to change without notice.

There is no assurance that any forward-looking statements will materialize. Therefore,

neither SFA nor Heraeus warrants the accuracy and completeness of the data and analysis contained in this document. Heraeus and SFA assume no liability for any losses or damages of whatsoever kind, resulting from whatever cause, through the use of or reliance on any information contained in this document. However, in so far as a liability claim exists under German law, Heraeus and SFA shall have unlimited liability for willful or grossly negligent breach of duty. Unless expressly permitted by law, no part of this document may be reproduced or distributed in any manner without written permission of Heraeus. Heraeus specifically prohibits the redistribution of this document, via the internet or otherwise, to non-professional or private investors and neither Heraeus nor SFA accepts any liability whatsoever for the actions of third parties in reliance on this document. Prices quoted are interbank (offer) prices for gold, silver, platinum and palladium. Rhodium, ruthenium and iridium quotes reflect the Heraeus offer price at the time of writing.