

SUMMARY

PLATINUM

- The platinum market was close to balance in 2010, with a surplus of just 20,000 oz. Supplies remained almost flat at 6.06 million ounces, while gross demand increased by 16% to 7.88 million ounces. Recycling of platinum increased by almost a third to 1.84 million ounces.
- Gross demand for platinum in autocatalysts increased by 43% to 3.13 million ounces in 2010 as the global automotive sector bounced back from a poor 2009. Increased vehicle production in Europe in particular benefited platinum.
- Gross industrial demand for platinum increased by 48% to 1.69 million ounces in 2010, led by growth in the glass and chemical sectors.
- Gross demand for platinum from the jewellery sector fell by 14% to 2.42 million ounces in 2010 mainly due to softer Chinese demand. Purchasing of platinum by the jewellery industry in other regions remained fairly stable.
- Identifiable physical investment demand for platinum remained almost flat in 2010 at 650,000 oz.

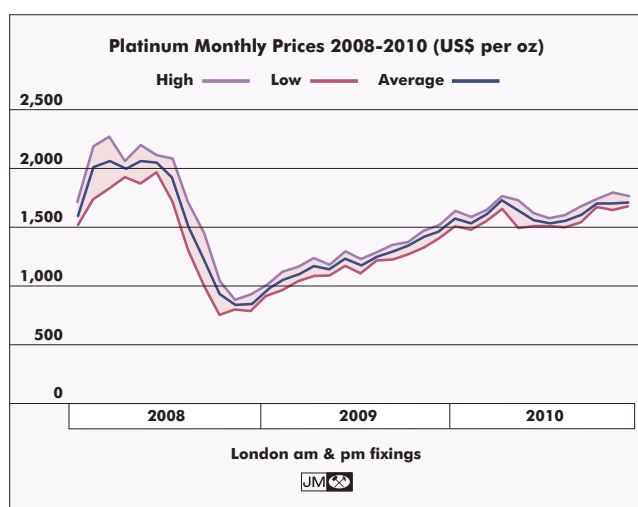
The recovery of the global economy in 2010 helped drive gross demand for platinum up by 16% to 7.88 million ounces, its highest level since 2008. Supplies remained largely flat at 6.06 million ounces while open loop recycling of platinum increased to 1.84 million ounces. The platinum market tightened in 2010 and ended the year very close to balance, with a 20,000 oz surplus. Platinum's average price for 2010 was an all-time high in dollar terms, at \$1,611.

Supplies of platinum from mining operations increased by just 35,000 oz to reach 6.06 million ounces in 2010. Shipments from South Africa remained flat at 4.64 million ounces while increases in supply from Russia and Zimbabwe were largely offset by decreases in North America and elsewhere. Due to a production profile that was heavily loaded towards the end of the year, some of the metal refined in South Africa in 2010 was not shipped by the year-end, therefore supplies fell below the level of refined output. There was some improvement in underlying mine production, which rose by around 3%, reflecting recovery at Lonmin's Marikana operations and at the Impala lease area.

Total supplies of platinum from Russia increased by 40,000 oz in 2010. Although pgm grades have fallen in recent years at Norilsk's Taimyr operation, in 2009 the company increased the processing of above-ground materials to compensate. Production of platinum in North America fell by 50,000 oz in 2010. Despite increases in output in some operations, others were affected by strikes and reduced mill throughput. Platinum supplies from Zimbabwe grew by 50,000 oz in 2010 as Zimplats increased output following the commissioning of the Phase I expansion at its Ngezi mine.

A rise in vehicle production across all regions in 2010 helped drive up demand for platinum in autocatalysts. With an improved global economic outlook, manufacturing of vehicles worldwide reached 78 million units in 2010, an increase of almost 16 million compared with 2009. Gross platinum demand in the autocatalyst sector rose by 43% in 2010 to 3.13 million ounces, a considerable

improvement compared with the previous year but still some way off pre-2009 levels of demand. Driving much of this increase was the use of platinum in diesel autocatalyst formulations in Europe. Diesel passenger vehicle production recovered strongly in 2010 as the overall vehicle market grew and scrappage incentives, which had favoured small gasoline cars, came to an end. This meant there was a recovery in the market share of diesels to around 48%, which helped boost demand for platinum in autocatalysts in Europe by 51% to 1.47 million ounces. Higher production of heavy duty diesels worldwide accelerated platinum demand, as did more stringent heavy duty diesel emissions regulations in the US which generally meant an increase in platinum catalyst loadings. Although usage of platinum in autocatalysts has fallen from its peak in 2007 as partial substitution with palladium has occurred, platinum



Platinum's price traded higher in 2010 than in the previous year, reaching levels not seen since 2008. The price was supported by strong supply-demand fundamentals.

remains the dominant component of diesel emissions control systems.

In 2010, gross industrial demand for platinum increased by 550,000 oz to 1.69 million ounces. Resurgent demand for platinum from the electrical, chemical and glass sectors came as a result of economic recovery in traditional markets such as Europe and North America, and substantial new demand as manufacturing capacity was constructed in China and elsewhere in Asia. The glass sector in particular saw remarkable growth in demand for platinum in 2010 as production of thin-film transistor liquid crystal display (TFT-LCD) glass for use in electronic displays increased, as did output of glass fibre for construction materials. This stimulated purchases of platinum for glass manufacturing lines, which exceeded returns from older decommissioned facilities.

Demand for platinum in the chemical sector increased by 53% in 2010 to 445,000 oz as manufacturing plants boosted capacity utilisation. Growth was fastest in emerging markets where demand for polymers is increasing rapidly. In traditional markets, a cautious approach to investing in new production capacity tempered the growth in platinum demand. Gross platinum demand from the global electrical sector increased by 30,000 oz to 220,000 oz as higher sales of electronic equipment increased the demand for platinum in hard disk drives, as well as in plating and thermocouples.

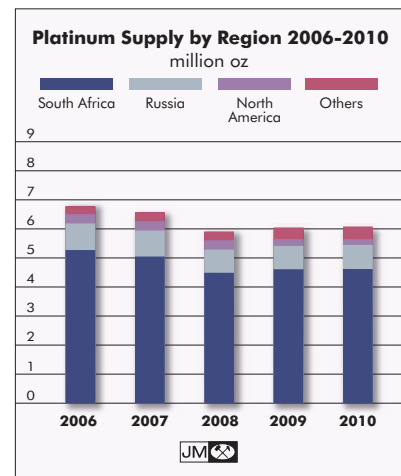
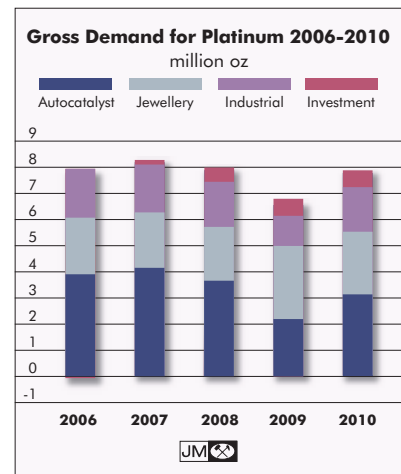
Gross demand for platinum in the jewellery sector was 2.42 million ounces in 2010, 14% lower than in 2009. Demand from the Chinese jewellery industry remained relatively robust at 1.65 million ounces. Although this represented a fall of 21% compared with 2009 when lower prices encouraged exceptional levels of stock building and sales, this was a healthy figure given that platinum traded on average 34% higher in 2010 than 2009. The Chinese jewellery sector remained strong compared with historical levels: demand was around 600,000 oz higher in 2010 than in 2008.

A key feature of 2010, as in recent years, was the size of the investment market for platinum. Over the past three years, growth in investment has had an increasing influence on the metal's price, while the price has in turn influenced investment levels. The total cumulative volume of platinum allocated in various physically-backed exchange traded funds (ETFs) around the world exceeded 1.2 million ounces in December 2010, an historic high. Similarly, total combined net long platinum positions on NYMEX and TOCOM reached record levels of over 2 million ounces by the end of 2010. The dynamics of the investment market operate on a wholly different timescale from the supply of platinum. The volume of platinum that went into ETFs in 2010 was larger than the year-on-year increase in global supplies of platinum in any year apart from 1993.

However, the platinum market remains very different from the gold and silver markets in that it still remains primarily industrial, not speculative. The rationale for platinum as an investment metal can be traced to the fundamentals of supply and demand, as well as the low opportunity cost of investing in ETFs in a low interest rate environment. Investors appear to remain convinced that, in the longer term, demand will outstrip supply. The strong increase in demand for platinum in 2010 undoubtedly drove physical investment in platinum, which in turn added 650,000 oz of new demand, mainly in the form of ETFs.

Open loop recycling of platinum returned 1.84 million ounces to the market in 2010. A resurgence in the automotive sector meant rates of platinum recovery from end-of-life vehicles increased to 1.09 million ounces. This was boosted by the returns from car scrapping schemes which increased the volume of platinum from older vehicles processed through the recycling system. The high metal price in 2010 also helped incentivise recycling in the jewellery sector, lifting the total jewellery scrap figure to 745,000 oz.

Platinum Supply and Demand '000 oz			
Supply	2008	2009	2010
South Africa	4,515	4,635	4,635
Russia	805	785	825
Others	620	605	600
Total Supply	5,940	6,025	6,060
Gross Demand			
Autocatalyst	3,655	2,185	3,125
Jewellery	2,060	2,810	2,415
Industrial	1,720	1,140	1,690
Investment	555	660	650
Total Gross Demand	7,990	6,795	7,880
Recycling	(1,830)	(1,405)	(1,840)
Total Net Demand	6,160	5,390	6,040
Movements in Stocks	(220)	635	20



PALLADIUM

- The palladium market was in a fundamental deficit of 490,000 oz in 2010. Supplies of palladium increased by a modest 3% to 7.29 million ounces. Gross demand increased by 23% to 9.63 million ounces, its highest ever level. Open loop recycling of palladium increased by 29% to 1.85 million ounces.
- A strongly performing automotive sector in all regions pushed up gross demand for palladium in autocatalysts by 35% to 5.45 million ounces in 2010.
- Net identifiable physical investment demand for palladium increased by a remarkable 74% in 2010 due to strong demand for various palladium exchange traded funds (ETFs).
- Gross industrial demand for palladium increased by 70,000 oz in 2010 to 2.47 million ounces.
- Gross palladium demand in the jewellery sector softened by 20% in 2010 to 620,000 oz.

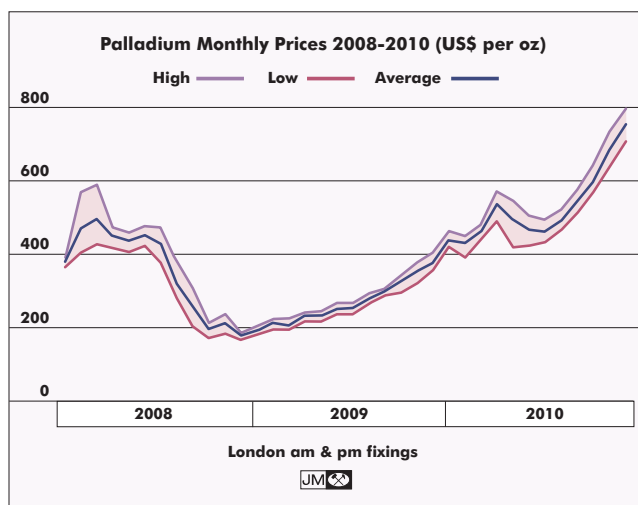
The palladium market was in a substantial deficit of 490,000 oz in 2010 as a surge in demand from the rebounding automotive industry, and growth in the physical investment sector, outweighed rising supplies. Gross palladium demand reached a record high level of 9.63 million ounces in 2010 reflecting a better economic outlook in most regions. Driven by the strong supply–demand fundamentals, palladium proved to be popular with investors in ETFs. Physical investment holdings of palladium were larger than those of platinum in 2010 and reached record high volumes. With a tight market underpinning investment demand, palladium's price performed strongly, trading at an annual average of \$526, twice as high as in 2009 and at its third highest ever level.

Worldwide supplies of palladium in 2010 increased by 3% to 7.29 million ounces. Supplies from South Africa increased by 205,000 oz due to pipeline releases of palladium, as well as increased production from palladium-rich ore bodies by the two largest producers. Russian supplies of palladium increased by 45,000 oz through the greater exploitation of above-ground reserves, while sales of Russian state stock continued at around a million ounces, roughly the same level as the previous two years. Although North American supplies reduced by 22% to 590,000 oz following lower production at Stillwater and Vale, this was insufficient to offset net growth in supplies worldwide.

On the demand side, palladium was very strong. Gross demand increased by 1.78 million ounces in 2010 to reach a record 9.63 million ounces with recovery in almost all sectors. Growth in automotive demand was impressive, increasing by 1.40 million ounces in 2010 to reach 5.45 million ounces. With developed markets recovering from recession, there was an increase in vehicle production, which drove automotive palladium demand up by 33% in Europe and North America and 38% in Japan. Rapid expansion of light duty gasoline vehicle production helped lift palladium demand by 42% in the Chinese automotive market, while high rates of growth of vehicle production in other developing markets created new demand. Palladium also benefited

from increasing levels of substitution for platinum in gasoline autocatalyst formulations, which continued despite a narrowing of the price difference between the two metals.

Industrial demand for palladium strengthened overall, increasing by 70,000 oz to 2.47 million ounces, lifted by expansion of manufacturing capacity. Purchasing of palladium by the electrical sector increased by 40,000 oz to 1.41 million ounces as improved economic conditions stimulated consumer and business demand for various electronic products. Demand for palladium from the chemical industry, particularly in downstream uses of polymers, increased by 70,000 oz in 2010 to 395,000 oz as higher rates of chemical plant utilisation stimulated demand for process catalysts. There was especially strong growth in China, where significant new capacity is being constructed to supply the domestic market.



Palladium's price performed remarkably in 2010, particularly in the second half when it reached its highest level in almost a decade.

Purchasing of palladium by the dental sector worldwide weakened in 2010 to 580,000 oz. Palladium demand in dentistry continued to be affected by the long-term effects of improved dental health and preventative measures worldwide and the greater use of resin-based, all-ceramic and base metal dental treatments.

Demand for palladium in the jewellery sector also fell in 2010, by 20% to 620,000 oz. Consumer purchases of palladium jewellery continued to grow in Europe and North America, particularly in the men's wedding band market. However, demand declined in China, reducing by around a third to 380,000 oz, as elevated prices and adequate manufacturer and retail stock levels affected new purchasing of palladium.

Investment demand for palladium grew by 74% compared with 2009: the highest rate of growth in any of our demand sectors. The ETF market was responsible for most of this; specifically, the US-based palladium ETF registered heavy investment inflows throughout much of the year. With strong fundamentals in the palladium market, including high levels of new demand coming from emerging markets and recovery in developed markets, there was net purchasing of ETF investments, which further drove up physical palladium demand levels. Investors piled into ETFs as the palladium price climbed rapidly at the end of 2010: between the end of November and the end of December, palladium's price increased by around \$100, and total ETF holdings increased by 200,000 oz. Although it is difficult to disentangle the cause and effect of the appreciating price and the growth in ETF holdings, price and demand clearly acted in tandem.

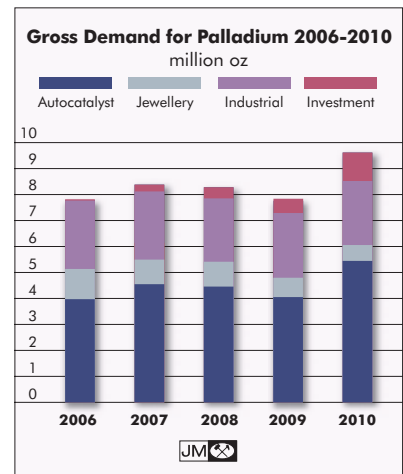
A feature of investor sentiment for palladium in 2010 was the anticipation of potential future supply shortfalls. This, together with strong demand throughout the year, underpinned the dynamics of the palladium market, accounted for much investor interest and also partly explained the price performance. Prompted by comments in the second half from Norilsk Nickel, the largest Russian producer, investors became increasingly convinced that 2010 could be the last year of significant sales from Russian state stocks. The pricing in of that potential shortfall, and the evidently rising level of demand, helped underpin the price rally towards the end of the year and added to the positive fundamentals.

New investment demand for palladium totalled 1.09 million ounces in 2010, its highest ever level, of which over 1 million ounces were in ETFs. The cumulative ETF total fund volume stood at 2.2 million ounces at the end of 2010, another record high. To put this into context: the growth in palladium demand in ETFs last year was larger than the year-on-year growth in net demand (excluding investment) at any time in the past decade. Growth in palladium ETF investments exceeded the percentage growth in all other demand sectors and in 2010 was roughly equal to total supplies from Russian state stocks.

Underpinned by strong fundamentals, the palladium price performed extremely strongly in 2010, doubling over the course of the year and reaching levels not seen since 2000 and 2001. The price of palladium was more volatile than that of platinum; palladium's price outperformed that of platinum in both upward and downward movements, with a notably sharp rally for palladium towards the end of the year.

Recycling of palladium from the open loop sources of automotive, electrical and jewellery sectors totalled 1.85 million ounces in 2010, an increase of almost a third compared with the previous year. The majority of this metal, 1.33 million ounces, came from scrapped autocatalysts. This sector saw a substantial increase in the amount of palladium recycled in 2010 as higher numbers of end-of-life vehicles were returned for recycling. Recycling of electrical components also increased as did recycling of old, broken, and unsold palladium jewellery, largely driven by higher prices.

Palladium Supply and Demand '000 oz			
Supply	2008	2009	2010
South Africa	2,430	2,370	2,575
Russia	3,660	3,635	3,720
Others	1,220	1,095	995
Total Supply	7,310	7,100	7,290
Gross Demand			
Autocatalyst	4,465	4,050	5,450
Jewellery	985	775	620
Industrial	2,420	2,400	2,470
Investment	420	625	1,085
Total Gross Demand	8,290	7,850	9,625
Recycling	(1,615)	(1,430)	(1,845)
Total Net Demand	6,675	6,420	7,780
Movements in Stocks	635	680	(490)



OTHER PGM

- Rhodium was in oversupply by 114,000 oz in 2010, although the market was tighter than in 2009.
- Gross rhodium demand increased by 22% in 2010, mainly due to higher levels of purchasing by the automotive and glass industries.
- Recycling of rhodium from autocatalyst scrap increased by 26% to 236,000 oz in 2010 due to higher returns of end-of-life vehicles.
- Supplies of rhodium fell by around 3% to 751,000 oz in 2010 with lower sales from South Africa.
- Demand for ruthenium increased by 79% to 1.03 million ounces in 2010, stimulated by purchases from the hard disk drive sector.
- Iridium demand increased to 334,000 oz in 2010 from 81,000 oz the previous year. Much of this demand was for iridium crucibles in the electrical sector.

Rhodium

The rhodium market tightened in 2010, still in oversupply but with the surplus of 241,000 oz in 2009 falling to 114,000 oz in 2010. Higher levels of purchasing by the global automotive sector underpinned a rise in gross demand for rhodium. Increased capacity utilisation and construction of new plants in the chemical and glass sectors also stimulated purchasing. Supplies of rhodium fell slightly, mainly due to reduced pipeline movements in South Africa. Supplies were augmented by greater levels of recycling, particularly in the autocatalyst sector.

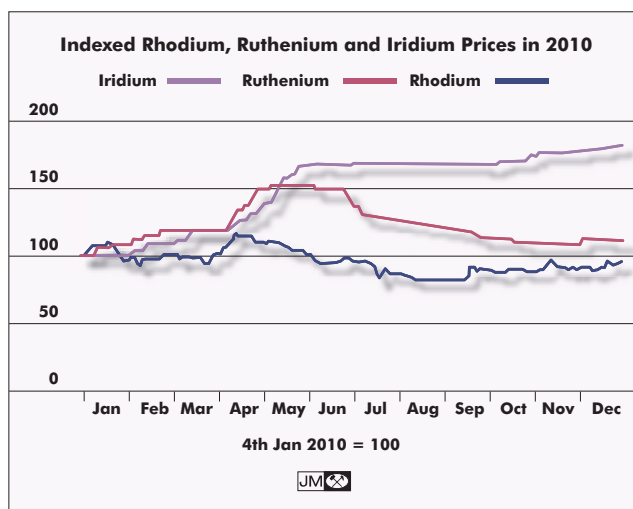
Supplies of rhodium fell by around 3% to 751,000 oz in 2010. Despite mine output increasing in South Africa in late 2010, a build-up of pipeline and refined metal stocks resulted in total shipments falling by 3% to 642,000 oz. Production of rhodium in North America declined by 23% to 12,000 oz, due to labour disputes and lower grades. The Zimbabwean mining sector produced an additional 5,000 oz of rhodium, bringing its 2010 total to 24,000 oz.

The increase in worldwide vehicle production in 2010 benefited rhodium in autocatalysts, the largest demand sector. Gross purchasing strengthened by 17% to reach 724,000 oz. Due to the recent trend to thrift rhodium this was still some way short of the 2008 level. The largest share of demand came from use of rhodium in gasoline three way catalyst (TWC) formulations. Most vehicles produced worldwide are gasoline, and therefore use palladium–rhodium catalysts.

All markets apart from Europe saw an increase in demand for rhodium in autocatalysts. In Europe, rhodium demand softened due to continuing efforts to reduce loadings in gasoline catalysts in response to previous high prices. Although overall production grew in 2010, manufacturing of gasoline vehicles in Europe fell slightly relative to 2009. In the biggest market for automotive rhodium demand, Japan, higher levels of gasoline vehicle production helped drive up demand. Purchasing of rhodium also

increased strongly in North America, mainly for use in gasoline vehicles but also in some light duty diesel vehicles. Chinese demand rose to 141,000 oz with good sales of domestically-produced gasoline vehicles.

Industrial demand for rhodium increased with better economic conditions worldwide in 2010. The glass industry increased purchases by 200% compared with 2009 as new demand for TFT-LCD glass in electronic goods and for glass fibre in the construction industry prompted the building of new and replacement manufacturing capacity. Although some rhodium was returned to the market through closure of redundant plant, unlike in 2009 this did not offset new demand significantly. Demand for rhodium from the chemical sector increased by 25% to 68,000 oz as plants were run at higher capacity and new oxo-alcohol plants were constructed.



Iridium's price performed strongly in the first half of 2010. Ruthenium also performed well in early 2010, but corrected downwards as purchasing by the electrical sector slowed.

Recycling of rhodium in the autocatalyst sector increased by 26% to 236,000 oz, driven by higher metal prices which encouraged greater recovery from scrap. Levels of recycling were also boosted by end-of-life vehicles from car scrappage schemes which worked their way through the recycling chain during 2010.

With strong recovery in the automotive sector, the rhodium price traded on average 54% higher than in 2009, at \$2,458, supported by good physical purchasing in early 2010.

Ruthenium

Demand for ruthenium increased by 79% to 1.03 million ounces in 2010 with a resurgence in purchasing for use in hard disk drives as well as high levels of purchasing in the electrochemical sector for chlor-alkali plants. Chemical demand for ruthenium was also strong. Ruthenium demand exceeded supplies from mined output in 2010, however the shortfall was met from above-ground stocks and some release of speculative holdings.

Strong purchasing of ruthenium from the hard disk drive sector in the first half of the year helped drive up demand and also the price. Ruthenium is used along with platinum in perpendicular magnetic recording hard disk drives, which are ubiquitous in computer equipment. Improved economic conditions compared with 2009 led many individuals and businesses to upgrade IT equipment, boosting sales of computers and stimulating demand for ruthenium by producers of hard drives. The magnitude of the increase was reminiscent of the first wave of stock building of ruthenium in the hard disk drive sector in 2006 and 2007 and had a similar effect on the price. Electrical purchases of ruthenium for the full year of 2010, most of which were for use in hard disk drives, more than doubled to 754,000 oz. The average annual price for ruthenium in 2010 was \$197, an increase of 107% compared with 2009. Much of the price rise came in the first half of the year, supported by strong buying.

Demand for ruthenium increased from the electrochemical sector as a result of replacing mercury-based chlor-alkali plants in China with ruthenium-iridium membrane cells. Demand from the chemical sector for replacement ruthenium catalysts and promoters increased by 12% as chemical plants were run at higher capacity.

Iridium

Iridium demand increased to 334,000 oz in 2010 from 81,000 oz in 2009 as a number of factors coincided: improved general economic conditions, technology changes, and stock building in certain sectors. The biggest increase in iridium demand came from the electrical sector. This was principally for use in crucibles designed for the manufacture of single crystal sapphire, used in the manufacture of LEDs. Supplies of iridium expanded to meet higher levels of demand by drawing down refined stocks.

Iridium demand increased suddenly and rapidly in 2010, adding an extra 253,000 oz to demand mainly from the electrical sector. A rise in consumer purchasing of backlit LED televisions stimulated demand for single crystal sapphire, which uses iridium crucibles in manufacturing. The re-fitting of the Chinese chlor-alkali industry generated additional demand for iridium. Growth in the worldwide automotive sector in 2010 also led to increased demand for iridium-tipped spark plugs. The sharp increase in demand in the small, relatively illiquid market of iridium had a significant impact on the price, which traded on average 51% higher than in 2009 at \$642.

