

PLATINUM

AUTOCATALYST

Autocatalyst demand for platinum is forecast to grow by 2.3 per cent to 4.24 million ounces in 2007. Healthy sales of light duty diesel vehicles in Europe will be responsible for much of this growth. Increasing Asian gasoline vehicle production will also boost platinum demand in 2007, as will growing usage of aftertreatment in the heavy duty sector. However, there will be a minor decrease in platinum used elsewhere due to the switching of platinum to palladium in catalyst formulations.

Europe

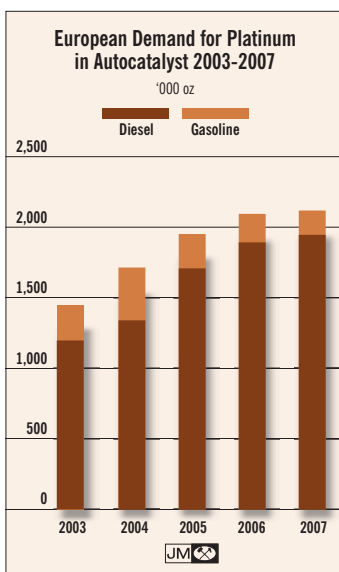
Over 90 per cent of the 2.11 million ounces of platinum used in European autocatalysts this year will be used in diesel vehicles. Although Western European passenger car sales fell one per cent in the first half of 2007, the market share of diesel vehicles continued to grow to 52 per cent of sales. In some national markets, three out of every four cars sold were diesels. With almost all catalysts on these vehicles using platinum-only or platinum-rich technology, demand has risen even in a flat sales environment.

Growth in the use of diesel particulate filters (DPFs) will add to demand. While many cars already meet current Euro 4 emissions limits without such filters, DPFs are widely used in markets such as Germany, due to tax incentives and pressure from environmentally-

conscious customers.

However, the high platinum price has led car makers to try to reduce platinum use. Little scope remains to remove platinum from gasoline, or three-way, catalysts (where a switch to palladium has been underway for some time), so development has focused on introducing palladium into diesel catalysts, limiting the rise in European platinum demand to 10,000 oz. This process of thrifting and substitution by the introduction of new catalyst technology is expected to continue for the next few years.

Platinum demand from the European autocatalyst sector will exceed two million ounces with heavy duty diesel aftertreatment augmenting light duty diesel demand.



Japan

615,000 oz of platinum are set to be purchased by the Japanese automotive sector in 2007, slightly above the figure for 2006. This marginal increase is the result of opposing trends in catalyst formulation and loadings.

Car makers in Japan have been slower than their peers in other regions in replacing the platinum in their catalysts with

palladium. However, the sustained price differential between these metals means that this process is now well underway.

At the same time, these manufacturers have increased catalyst loadings, partly in response to tighter legislation in their export markets and partly due to cautiousness in using high loadings to provide a safety margin in meeting emissions rules in all regions. Despite recent press announcements on possible thrifting, average loadings have risen, outweighing the negative effect on demand of switching metals.

Looking further forward, there are some signs of increases in diesel car production (for export markets rather than for sale in Japan itself) which would be positive for platinum demand in this region. Platinum use in the heavy duty diesel market will also grow.

North America

North American automotive platinum demand will be virtually flat at 900,000 oz, supported by increased use on medium and heavy duty diesel trucks.

Sales of all vehicles have been relatively poor so far in 2007, with credit restrictions spreading from the sub-prime lending crisis. Annual light duty vehicle output is likely to drop by between 1 and 2 per cent to 15.1 million units, with a drop in output from the Big Three only partly offset by a rise in local production from Japanese and European manufacturers.

The negative impact on North American platinum demand of this fall in production will be exacerbated by the continuing switch from platinum-rich to palladium-rich three-way catalysts. In 2006, we estimate that 2.3 grams of palladium were used in this region for

Platinum Demand: Autocatalyst '000 oz

	2006	2007
Europe	2,095	2,105
Japan	605	615
North America	905	900
Rest of the World		
China	155	210
Other	380	405
Total	4,140	4,235



every gram of platinum across these catalysts. This ratio will shift further toward palladium during 2007, to roughly 3.3 grams per gram of platinum.

The diesel vehicle market has, however, provided a significant bright spot for platinum demand. Use of platinum on filters and catalysts in the medium and heavy duty sectors is growing steadily, driven upward by Tier II and heavy duty vehicle emissions legislation. Of longer term interest, some European automakers have started introducing diesel cars into the USA. While this could boost platinum use in the next decade, it is unlikely to have a major impact in the near term.

China

China is expected to become the largest Asian market for passenger cars in 2007, surpassing Japan, with sales (including imports) likely to rise to 5.4 million units from 4.35 million in 2006. With vehicle production growing too, Chinese autocatalyst platinum purchases are set to climb 55,000 oz to 210,000 oz in 2007.

New emissions rules, based on Euro 3 limits, were scheduled to come into force in July 2007. However, their introduction was delayed by a lack of suitable fuel and is now expected one year later. Even so, it seems that most local and global car makers are fitting Euro 3-compliant exhaust systems, leading to a rise in the average pgm content of new vehicles this year.

Rest of the World

Platinum demand for autocatalysts in the Rest of the World region (excluding China) should expand by 25,000 oz to 405,000 oz in 2007, driven by strong growth in manufacturing in non-traditional areas: Indian light duty vehicle production will rise from 1.7 million units in 2006 to a forecast 1.9 million this year. Production should also climb in South America, with growth in Brazil and Argentina adding further platinum demand.

Autocatalyst Recovery

We forecast that 885,000 oz of platinum will be reclaimed from spent autocatalysts in 2007, 3.5 per cent more than in 2006. Recovery rates continue to grow as a higher percentage of scrapped catalysts are recycled.

High commodity prices provide an incentive for the

recycling industry to maximise collection and processing of spent catalysts in all regions. Most metal will be recovered in North America. However, the amount of platinum refined from end-of-life catalysts in Europe should increase more quickly, reflecting the rise in platinum loadings on European diesel vehicles sold at the end of the last millennium, which are now being scrapped in significant numbers.

Platinum Demand: Autocatalyst Recovery		
	'000 oz	
	2006	2007
Europe	(185)	(215)
Japan	(35)	(35)
North America	(575)	(575)
Rest of the World	(60)	(60)
Total	(855)	(885)



JEWELLERY

Net global jewellery demand for platinum is forecast to fall marginally, by 25,000 oz, to 1.60 million ounces. As in 2006, strong and volatile platinum prices have been a challenge to jewellery manufacturers and retailers alike. Although consumer purchasing remains solid, considerable stock rationalisation has been reported throughout the trade. Recycling of used jewellery in Asia is also substantial, leading to headline demand figures which are well below the rate of manufacturing output.

Europe

Platinum jewellery demand is likely to grow by 15,000 oz in Europe, to 205,000 oz. Jewellery production has been healthy so far in 2007 and retail sales have risen.

While there is talk in the press of a fashion trend towards yellow gold, platinum has maintained its popularity as a result of its positioning in the bridal market. However, the high price of platinum means that it has lost ground at the lower end of the market. Some manufacturers have responded to this by reducing the average weight of an item of platinum jewellery. UK hallmarking statistics, for instance, show growth in the number of platinum pieces hallmarked but a flat trend in the total weight of metal used.

The German retail market has shown a more muted performance this year after signs of recovery in 2006. The Swiss watch industry is having a good year with platinum uptake expected to rise there as a result of higher-weight pieces.

Japan

Net platinum consumption for Japanese jewellery manufacturing has continued its long term decline and is expected to fall 15 per cent to 305,000 oz. Much of this drop is due to the recycling of old jewellery.

As in many other countries, platinum retains its strong popularity in the bridal market. Whilst the average retail price of platinum wedding rings in department stores has risen by nearly 40 per cent in the last three years, this has had little impact on platinum's dominant market share.

With Japan's population ageing, however, the number of weddings is falling, leading the industry to look at other market segments. One campaign this year has targeted platinum jewellery sales at the post-war generation which is approaching retirement with some early signs of success from this promotion.

While the impact of high prices on the bridal segment has been limited, it is more evident elsewhere. At the fashion end of the market, white gold has captured sales from platinum. The major factor in the fall in demand for new metal, however, is still the recycling of second-hand jewellery. A high platinum price was sufficient incentive to increase the level of buying back and refining of old jewellery. Pieces of all ages are returning to the market with most being recycled. Interestingly, some older jewellery is resold to consumers, demonstrating a strong residual appetite for platinum.

North America

The North American platinum jewellery market is expected to weaken in 2007, with net fabrication demand falling to 235,000 oz for the year.

Retail sales have been affected by a sustained high metal price. However, in the all-important bridal sector, sales of men's wedding bands are weaker than in 2006. Customers often approach purchasing of wedding and engagement rings with a total overall budget. Men's rings can be something of an afterthought and some sales have therefore moved to cheaper materials or simply not been made at all.

The USA has also imported more finished pieces from lower-cost manufacturing centres, particularly in Asia. The demand figure we report, which represents North American manufacturing, has therefore fallen.

China

After several years of falling demand, we expect Chinese jewellery sector purchases to rise marginally, by 20,000 oz, to 780,000 oz this year. The volume of platinum traded on the Shanghai Gold Exchange (SGE) is set to increase compared to 2006: August 2007 saw record amounts traded although volumes sold since have been lower due to higher prices. The bulk of this metal is destined for use in the jewellery trade and this reflects steady domestic market conditions.

As we previously reported, the decline last year in fresh demand for metal was largely due to increased levels of recycling brought about by a high metal price, with retailers returning poor-selling stock to manufacturers and some consumers trading-in old pieces for new. However, although the platinum price has been even higher in the first nine months of 2007 than in 2006, this has had no further impact on recycling levels – the economic incentive to recycle was apparently already great enough at the earlier prices and recycling levels may have peaked.

Growing consumer demand is therefore set to drive the figure for net demand higher. Retailers have reported steady or increased levels of consumer purchasing across the country compared to 2006. This is reflected, to some extent, in a rise in the volume of manufacturing in the Shenzhen area and elsewhere.

Chinese economic factors have also been important. When high GDP growth and a strengthening currency are factored in, the affordability of platinum and other jewellery has improved in real terms. Both the total Chinese jewellery market and the volume of platinum sold have risen accordingly as platinum retains its cachet as the metal of choice for many consumers.

Rest of the World

Platinum demand for jewellery manufacturing in the Rest of the World region will remain flat at 70,000 oz following last year's fall in demand. Most jewellery made in this region is for export to Japan and North America, both of which have had a challenging year.

Platinum Demand: Jewellery		
	'000 oz	
	2006	2007
Europe	190	205
Japan	360	305
North America	240	235
Rest of the World		
China	760	780
Other	70	70
Total	1,620	1,595



INDUSTRIAL

Industrial demand for platinum is forecast to grow by 40,000 oz to 1.91 million ounces. Demand from each of the chemical, electrical and petroleum refining sectors is expected to rise, but net platinum purchases by the glass industry should fall.

Platinum Demand: Industrial '000 oz		
	2006	2007
Chemical	380	395
Electrical	400	435
Glass	410	355
Petroleum	185	230
Other	490	490
Total	1,865	1,905

boosting demand for platinum in catalyst gauzes.

However, high platinum prices have led companies to examine thrifting of the precious metal content of many catalysts – sometimes successfully. In August, Bluestar Silicones launched a new solventless system for the manufacture of pressure-release silicones. Although platinum is still used in this new system, it is at a lower level than before, making the process more economically attractive. Platinum demand is likely to remain stable at best in this segment as a result.

Platinum uptake in the electrical sector will rise to 435,000 oz in 2007. The use of platinum in hard disks continues to be the main driving force. Flash memory, which does not use pgms, is providing competition for hard disks. However, with growth of more than 10 per cent expected in PC shipments this year, hard disk production and platinum demand will both increase.

Platinum purchases for petroleum refining are also forecast to rise this year, to a total of 230,000 oz. High oil prices have stimulated the construction of more refining capacity in South Asia and other locations.

While production facilities for cathode ray tube, or CRT, glass are being closed, manufacturers of glass for LCD and plasma televisions will continue to expand their production capacity in Asia in 2007, albeit at a slower rate than before. This industry is subject to extremely short term cyclicity and, despite apparent overcapacity earlier this year, the continuing battle for

In the chemical sector, purchases are set to grow by 3.9 per cent to 395,000 oz, with global economic growth driving demand for many bulk chemicals which need platinum-based catalysts for their manufacture.

Increasing requirements for explosives and for fertilisers – partly driven by rocketing demand for biofuels – means that nitric acid production is rising,

market share has encouraged capital spending on new factories. However, fewer new facilities are likely to be built in 2007 than in 2006. Total glass industry demand will fall from 410,000 oz to 355,000 oz.

Demand for platinum for use in dental treatment is showing some price sensitivity and should fall 4.7 per cent to 110,000 oz this year. Other smaller applications will lead to further platinum demand of 380,000 oz.

INVESTMENT

Following net disinvestment of platinum in 2006, the investment sector is set to show a positive demand of 75,000 oz this year. Combined sales of coins (such as the American Eagle) and large bars may provide a net positive contribution but, of greater importance, exchange traded funds could contain 70,000 oz of platinum by the end of 2007.

During the first eight months of 2007, Japanese investors continued to sell large platinum bars back to the market, but – despite record Yen prices – at a much lower rate than the previous year. There was significant disinvestment from January to April, as the price soared to over ¥5,000 per gram. Purchases of new metal were stimulated in July and August as the price slid to a low of ¥4,550. We expect net sales of large bars back to the Japanese market to total 20,000 oz this year, lower than the 65,000 oz which returned in 2006.

The most important development in the investment sector, however, was the launch of two exchange traded funds (ETFs), in April and May of this year respectively. Investments are held in the form of physical, allocated platinum, meaning that they contribute to demand. This marks the first time such products have been offered to investors and this segment of demand is therefore entirely new to the platinum market this year.

These funds already held 55,000 oz of metal by the start of July. Investment flows have been solid if unspectacular since then. At the end of September, these ETFs had just under 60,000 oz of platinum between them. (More information on ETFs can be found on page 27.)

Platinum Demand: Investment '000 oz		
	2006	2007
Europe	0	70
Japan	(65)	(20)
North America	20	20
Rest of the World	5	5
Total	(40)	75