

PLATINUM

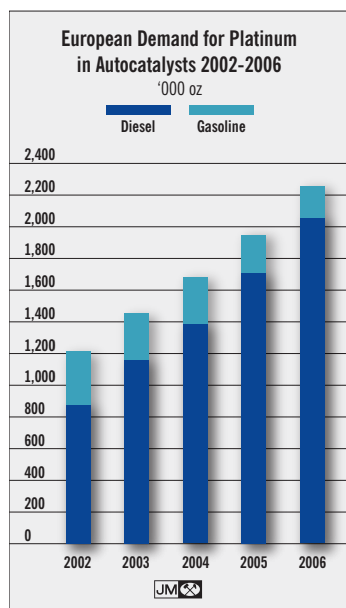
AUTOCATALYST

Demand for platinum in the autocatalyst sector is forecast to rise by 15 per cent to a record 4.38 million ounces in 2006. In Europe, diesel cars have increased their market share beyond 50 per cent. A greater number of platinum-containing catalysed soot filters (CSF) are being fitted in order to meet new legislation. Heavy duty diesel manufacturers in North America will also use a significant amount of platinum for the first time this year. Platinum's replacement by palladium in three-way catalysts will reduce demand, particularly in Japan, but this effect will be outweighed by increased vehicle production in China and the Rest of the World.

Europe

European platinum demand for autocatalyst use will rise in 2006 by a forecast 15 per cent to 2.25 million ounces, continuing its growth for a ninth successive year. This is despite a fairly flat trend in light vehicle production, which is expected only to increase by 1.2 per cent over the whole year to 17.9 million units.

The market share of diesel vehicles continues to expand, albeit at a lower rate than before. They now account for over half of all new light vehicle sales. With many new models featuring platinum-based catalysed soot filters as well as oxidation catalysts, platinum



demand has risen accordingly. The introduction of Euro IV legislation this year has increased average metal loadings per car but manufacturers, driven by rising platinum prices, have thrifted metal where possible. The replacement of platinum with palladium in some gasoline vehicles also continues.

Japan

In 2006, Japanese car production is expected to remain at levels close to 2005, at 9.1 million units for the full year. Despite this, the automotive sector is forecast

to purchase only 565,000 oz of platinum, 6 per cent less than one year previously.

High metal prices have encouraged the replacement of some platinum catalysts on gasoline vehicles by palladium versions. The record high price of platinum earlier this year appears to have accelerated the rate of this substitution, which was previously much slower

than in other markets. As a consequence, platinum demand for gasoline vehicles is expected to fall.

The use of platinum in diesel vehicles (primarily for export) is rising to meet tightening overseas emissions standards. All large trucks for domestic sale have been subject to strict emissions limits since late 2005 and most now have platinum-based aftertreatment fitted.

North America

North American light vehicle production is expected to drop by 2 per cent in 2006, falling below 14 million units for the first time since 2001, to 13.8 million. Despite this, platinum demand from the automotive industry in North America is expected to increase by 16 per cent to 950,000 oz, with strong growth in metal use in light and heavy duty diesel vehicles.

Many light diesel trucks, principally pick-ups up to 6,000 lbs in weight, will have catalysts fitted for the first time to comply with model year 2007 emissions rules. Sulphur levels in diesel fuel are falling, enabling the use of complex aftertreatment. Platinum use in larger trucks will also grow. A number of retrofit programmes continue to fit pgm-containing filters. Manufacturers are offering catalyst fitment on a variety of vehicles as either an option to customers or as a standard product.

The major Detroit manufacturers have had a downbeat year to date. The Big Three make fewer fuel-efficient models than other manufacturers, a fact which has become progressively more important given higher gasoline prices. The result has been a decrease in their domestic vehicle sales. Additionally, efforts have intensified to control costs and have caused a further substantial shift from platinum-rich catalysts to palladium technology on gasoline vehicles.

	2005	2006
Europe	1,950	2,250
Japan	600	565
North America	820	950
Rest of the World		
China	120	150
Other	330	465
Total	3,820	4,380

China

Platinum consumption by auto manufacturers in China is forecast to rise to 150,000 oz from 120,000 oz in 2005. Chinese domestic production of automobiles continues to grow strongly and, after a healthy first half of the year, could reach 4 million cars for the whole of 2006, up from 3.2 million last year. With all cars sold having to meet at least Euro II emissions standards, catalyst fitment is now almost universal. As domestic production of cars and commercial vehicles continues to climb, pgm usage is expected to rise further, aided by the next tightening of emissions regulations in 2007.

Rest of the World

Autocatalyst demand for platinum in the Rest of the World region is expected to grow by 41 per cent in 2006 to 465,000 oz. Much of this increase is due to a rise in light duty vehicle output in a number of countries. Car production in South Korea should increase by 10 per cent to over 4 million and similar rates of growth will be seen in India, South America and Thailand.


The general trend of introduction of stricter emissions legislation around the world will continue. For instance, Argentina will require all new cars to meet Euro III standards from 2007, driving higher platinum usage at the end of 2006. The contribution made by heavy duty diesel vehicles in the region will also double to 60,000 oz this year, reflecting sustained political interest in improving air quality in urban environments.

Autocatalyst Recovery

The amount of platinum reclaimed from used autocatalysts will increase in 2006, moving up 8 per cent to an estimated 830,000 oz. The European End of

Life Vehicle Directive, now fully in force, has boosted recycling rates for automotive components. Growing European platinum recovery also reflects the increasing amount of platinum fitted to diesel vehicles in the late 1990s. Recovery rates remain high for scrapped vehicles in all major auto markets due, in part,

	2005	2006
Europe	(170)	(190)
Japan	(35)	(35)
North America	(505)	(545)
Rest of the World	(60)	(60)
Total	(770)	(830)



to high commodity prices. Nonetheless, rising sales of used vehicles to second tier markets will restrain the growth in global autocatalyst recycling.

JEWELLERY

Platinum demand from the jewellery industry is anticipated to fall in 2006 to a total of 1.74 million ounces, the lowest level since 1993. High precious metal prices have negatively affected the jewellery trade in general and the record platinum price has encouraged manufacturers and retailers to examine the use of other metals, including palladium. In China, the recycling of old platinum jewellery stock has increased and purchases of new metal are expected to shrink for the fourth year in a row. Demand in other major markets has weakened.

Europe

European jewellery manufacturers are expected to consume 175,000 oz of platinum, down 20,000 oz on 2005. Continued high platinum prices, both in absolute terms, and compared to gold, are having a negative effect at the lower end of the market and on fashion jewellery in particular. Demand for platinum in the bridal sector currently remains relatively strong.

Sales and production in the UK have held up well. Platinum is embedded in the bridal market and is expected to continue to be in demand at the mid to top end in particular. At the lower end of the market, though, platinum has become too expensive and has lost share. Overall, however, we anticipate that the number of pieces and amount of metal hallmarked will hold steady in 2006. Swiss platinum consumption for jewellery has dropped slightly, although production of platinum watches is fairly buoyant. By contrast, the German domestic market has been affected to a greater extent by high costs and platinum uptake is forecast to be lower than in 2005.

Japan

Japanese jewellery demand for platinum is once more expected to decrease, dropping by 60,000 oz to 450,000 oz in 2006. The domestic market for engagement and wedding rings continues to be the destination for the

majority of platinum jewellery, with the white metal dominant in this sector.

However, the long term rise in the age of the population and a steady decrease in the number of marriages is eroding this market. A trend is also developing towards the purchase of only two marriage rings instead of three. The number of engagement rings being sold is decreasing, with the money used for foreign travel or the purchase of domestic appliances.

Although the Japanese economy is growing slowly, consumer spending is flat on items such as fashion jewellery, where cheaper white gold continues to take market share. Recycling rates of old jewellery are increasing, cutting net demand further. The trade is also reducing the average weight of precious metal per piece in order to contain the final cost to the consumer and to maintain sales margins and volumes.

North America

North American platinum demand for jewellery fabrication will fall by 13 per cent to 240,000 oz in 2006. As in other areas, high prices have made it hard for manufacturers and retailers to maintain margins. This has encouraged many market participants to examine using other materials to increase their profitability. Some platinum jewellery products have been imported from lower cost manufacturing locations for retail in the USA (these are included as demand in their region of manufacture and not in North America).

White gold continues to compete at the lower end of the market but some other more esoteric materials are being considered. Several manufacturers and retailers are showing interest in the use of palladium, which threatens to compete with platinum and white gold in some metal-only jewellery. A limited amount of Pt585 (58.5 per cent platinum) has also appeared on the market. It is worth noting that US Federal Trade Commission guidelines are unique among countries where hallmarking is carried out in allowing the use of lower platinum-content alloys such as Pt585.

China

Demand for platinum for jewellery manufacture in China is forecast to drop 11 per cent to 780,000 oz in 2006. This continuing fall to the lowest level of metal

uptake since 1998 can be attributed to the high and volatile price of platinum.

Although new platinum purchases by the jewellery trade are falling, consumer interest is being supported by many more marriages during the current Chinese year, which is auspicious for weddings as it has two Springs. Since platinum wedding rings are the first choice for many couples, the bridal market remains healthy despite the high platinum price.

In contrast, the fashion end of the market has been less insulated from the price movements of the last nine months. There has been significant competition for platinum, from palladium and from carat gold, which is being promoted widely in this segment under the brand name K Gold and, together with white gold, has been quite successful in capturing market share.

Chinese demand has proved to be less elastic than many commentators had expected, and there is still strong manufacturer and retailer interest in platinum, even at levels significantly above \$1,000 per oz. However, sales on the Shanghai Gold Exchange (which represents a substantial part of overall Chinese jewellery industry purchases) have been

quiet, with volumes lower than in 2005. Nonetheless, any drops in price during the first nine months of 2006 were met with large amounts of physical buying by manufacturers.

Even after 2005's reduction of metal and jewellery stocks across the industry, there has been scope for further cuts. Recycling has continued at high levels, with consumers trading-in second-hand jewellery and the industry scrapping outdated or unpopular designs in an effort to control its working capital.

Rest of the World

Demand for platinum from jewellery manufacturers in the Rest of the World region is anticipated to fall to 95,000 oz in 2006. Fabrication of jewellery for export has declined, in line with weaker demand in the major markets. Although the gold jewellery market in India has been hit by high precious metal

	2005	2006
Europe	195	175
Japan	510	450
North America	275	240
Rest of the World		
China	875	780
Other	110	95
Total	1,965	1,740

prices, the platinum market has been more resilient, and reasonable, albeit modest, levels of consumer purchasing have been seen.

INDUSTRIAL

Purchases of platinum for industrial use will grow this year, reflecting the price inelasticity of most applications. Total demand is expected to increase by 6 per cent to 1.76 million ounces. Once again, strong sales of computers and other electronic devices continue to spur the use of platinum in hard disks. Platinum use will rise in the chemical sector and will drop in the glass industry although it will remain at historically high levels.

Platinum Demand: Industrial '000 oz		
	2005	2006
Chemical	325	345
Electrical	360	425
Glass	360	325
Petroleum	150	185
Other	465	480
Total	1,660	1,760

hard disks in computers and other devices such as personal music players and digital video recorders.

Net purchases of platinum for petroleum refining will move 35,000 oz higher in 2006, reaching 185,000 oz. With oil prices above \$70 for much of the year, there has been pressure on refineries to operate at full capacity. This has led to high replacement rates and more top-up charges for their catalysts. Significant refining capacity is presently scheduled for construction around the Rest of the World region, further improving the prospects for platinum uptake from this application in the future.

The chemical sector's platinum requirements are expected to climb 20,000 oz higher, to an annual 345,000 oz. Demand for platinum gauze for nitric acid production should be stable this year but the use of platinum-based process catalysts, such as those used in the manufacture of silicones, will grow.

By contrast, purchases of platinum in the glass industry are forecast to decrease by 35,000 oz in 2006, to a still respectable 325,000 oz. There has been increased uptake of metal by North American glass

fibre manufacturers after the small amounts bought in 2005. This will be used in expanding capacity and replacing operating losses from the platinum-rhodium bushings used in the manufacturing process. A number of television glass plants are expected to close this year, releasing metal back onto the market.

Elsewhere, demand for platinum from the glass industry is down, particularly in Asia. Manufacturers there have invested in production facilities for LCD glass, which are not yet operating at full capacity. This is expected to lead to a slight downturn in the rate of new furnace construction and platinum demand, despite the increasing use of LCD glass in televisions and monitors.

Other industrial applications will consume 480,000 oz of platinum in 2006, slightly up on last year. High prices are negatively affecting some segments, such as the European dental market where demand is likely to fall. However, many other minor uses should still show modest increases in metal requirements.

INVESTMENT

Demand for physical investment products is forecast to be negative for 2006, with net sales of 30,000 oz back into the market, primarily due to disinvestment of large bars in Japan.

Demand for the minting of platinum coins is expected to total 30,000 oz in 2006. The introduction of a new proof coin, in the form of the Discover Australia series, will offset falling demand for American-minted Platinum Eagles.

In Japan, high Yen prices stimulated net selling back of large investment bars by investors in the first nine months of 2006. Sales were particularly high as platinum moved above the ¥4,000 mark in February and around May's peak. At the same time, high prices decreased the weight of platinum bought. The net result is that the Japanese investment sector is expected to supply 60,000 oz of platinum back onto the market over the course of the year. Retail investment demand in other regions remains at low levels.

Platinum Demand: Investment '000 oz		
	2005	2006
Coins and small bars		
Europe	0	0
Japan	0	0
North America	25	25
Rest of the World	5	5
Large bars in Japan	(15)	(60)
Total	15	(30)