

# PLATINUM

## AUTOCATALYST

Autocatalyst demand for platinum is forecast to climb by 8 per cent to 3.86 million oz in 2005, the sixth annual increase in succession. Demand is being predominantly driven by rising sales of light duty diesels in Europe and tighter restrictions on emissions from both light duty and heavy duty diesel vehicles worldwide. The ongoing growth in light vehicle production and sales in China will also make a contribution to higher autocatalyst demand for platinum this year.

### Europe

European demand for platinum in autocatalysts is forecast to increase by 16 per cent in 2005 to 1.94 million oz. Production of diesel cars in Europe continued to rise during the first nine months of the year, with diesels taking further market share from gasoline powered variants. For the year as a whole, output of diesel cars and light trucks is on course to expand by around 6 per cent, equivalent to an additional 470,000 vehicles.

Euro IV emissions standards, which will apply to light duty vehicles registered from January 2006 onwards, stipulate substantial reductions in emissions of all major classes of pollutants. As a result, average loadings for diesel oxidation catalyst have increased.

The growing regulatory (and media) focus on the issue of emissions of particulate matter in Europe has also led to increasing fitment of platinum-catalysed diesel particulate filters (DPF, also referred to as catalysed soot filters or CSF). Although the majority of passenger cars and many light duty truck models are able to meet the Euro IV limits without the use of a DPF, they are increasingly offered as optional extras.

### Japan

Japanese auto industry purchases of platinum are forecast to total 580,000 oz in 2005, down by 4 per cent

on 2004. However, because demand last year was inflated by the purchase of metal for inventories, the year on year comparison does not reflect the trend in actual use of metal in catalysts, which is expected to increase for the seventh year in succession.

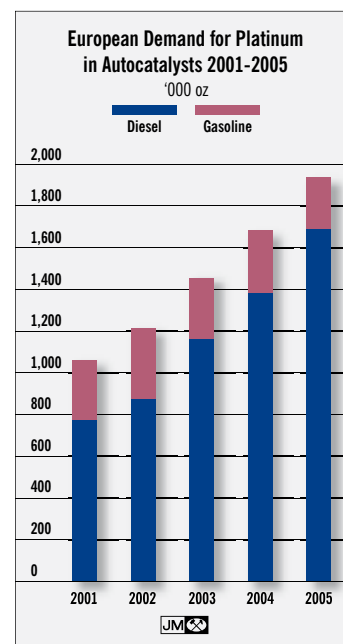
With Japanese production of light vehicles forecast to be flat or slightly lower, the growth in use of platinum will be primarily due to greater demand from the heavy duty diesel sector. New emissions standards for heavy duty diesel vehicles came into effect nationwide in October this year. In order to meet the tougher emission limits, almost all new truck models require at least one diesel oxidation catalyst, with some emissions systems comprising both an oxidation catalyst and a catalysed diesel particulate filter.

### North America

Auto industry demand for platinum in North America is forecast to edge up by 2.5 per cent to 820,000 oz in 2005. A proportion of the increase will be due to greater retrofitting of diesel oxidation catalysts to heavy duty diesel vehicles. The number of local authorities requiring catalyst after-treatment systems to be fitted to buses, refuse trucks and other municipal vehicles is steadily rising, whilst a number of corporate operators of large delivery vehicle fleets have also embarked on retrofit programmes.

US auto manufacturers continue to work towards reducing the amount of platinum used in after-treatment systems for gasoline-powered light vehicles. Total use of the metal by the big three US-based car companies is expected to continue to trend slowly downwards this year. However, non-US auto makers tend to make use of catalyst systems with higher average platinum loadings, and these companies are on course to increase their share of the North American light vehicle market this year. The net effect of this will be a moderate increase in platinum demand.

Platinum Demand: Autocatalyst '000 oz		
	2004	2005
Europe	1,680	1,940
Japan	605	580
North America	800	820
Rest of the World		
China	80	110
Other	395	410
<b>Total</b>	<b>3,560</b>	<b>3,860</b>



### China

Demand for platinum from auto manufacturers in China is forecast to climb by 30,000 oz this year to 110,000 oz. The Chinese car market has continued to grow robustly during 2005, in line with the strong domestic economy and rising disposable incomes. Sales and production of light vehicles are growing at an annualised rate of 13 to 14 per cent, with both expected to exceed 5 million units for the first time.

The introduction of progressively tighter emissions standards for light vehicles is continuing in China and is contributing to rising autocatalyst demand for pgm. Euro II equivalent standards have applied nationwide since mid-2004, whilst Euro III limits may be introduced in Beijing in 2006.

### Rest of the World

Autocatalyst demand for platinum in the Rest of the World (excluding China) is forecast to rise by 4 per cent to 410,000 oz. Much of the increase will stem from greater light vehicle output in Asia, with the South Korean auto industry in particular set to record significantly higher production in 2005 than the year before. The market in India has slowed as a result of the introduction of VAT in April by a majority of Indian states.

Emissions legislation will also continue to push autocatalyst demand for platinum up. Euro II equivalent standards have applied to all new cars in India since April 2005, whilst several of the largest Indian cities have introduced Euro III equivalent emissions limits. In South Korea, changes to emissions regulations have resulted in the increased retrofitment of oxidation catalysts to heavy duty diesel vehicles.

### Autocatalyst Recovery

The volume of platinum recovered from recycled autocatalysts is expected to grow by 13 per cent in 2005, reaching an estimated 800,000 oz. Double-digit increases in recovery are forecast in both North America and Europe, reflecting the historical pattern of pgm use on catalysts in the former and the imminent implementation of the European End of Life Vehicle directive in the latter. The strength of the platinum

price has also encouraged participants in the autocatalyst recycling sector to maximise catalyst collection rates and pgm recovery. Autocatalyst recovery of platinum in Japan, however, is likely to show little change from the previous year as collection rates have reached a plateau.

Platinum Demand: Autocatalyst Recovery		
	'000 oz	
	2004	2005
Europe	(145)	(170)
Japan	(60)	(60)
North America	(440)	(510)
Rest of the World	(60)	(60)
<b>Total</b>	<b>(705)</b>	<b>(800)</b>

### JEWELLERY

**Purchases of platinum for jewellery manufacture are forecast to decline by 6 per cent in 2005 to 2.02 million oz. Demand in China is expected to contract for the third year in succession, largely as a result of the performance of the platinum price. Demand in Japan and North America is also likely to be weaker than in 2004, but is projected to be flat in Europe and the Rest of the World.**

### Europe

Demand for platinum for jewellery manufacture in Europe is forecast to be unchanged at 195,000 oz in 2005. After several years of exceptional growth, UK demand for platinum for jewellery manufacture appears likely to be flat in 2005. The number of items hallmarked during the first three quarters of the year slipped lower and whilst this was largely offset by a consumer preference for heavier rings, UK manufacturers also faced increased competition from imported jewellery. Although platinum has established a strong presence in the UK bridal market, the rise in the price has held back development of the fashion sector.

Demand for platinum from Swiss jewellery manufacturers is also forecast to be unchanged in 2005, following a strong increase in 2004. Sales and orders for platinum watches are likely to slip behind the levels seen last year, but this decline should be countered by a rise in output of Swiss manufactured rings and other platinum jewellery.

Purchases of platinum by German and Italian jewellery companies will also reflect a mixed picture at the retail end of the market. Increased promotion and marketing of non-bridal platinum jewellery is likely

to encourage growth at the upper end of the market. At the lower-priced end of the spectrum, however, platinum remains under pressure from alternative precious and non-precious white metals.

### Japan

Japanese demand for platinum in jewellery is forecast to soften once again in 2005 but the decline is expected to be marginal: from 560,000 oz in 2004 to 550,000 oz this year.

Platinum retains a strong hold on the engagement and wedding ring sectors of the market, although over the longer term the marriage rate in the country is in steady decline. In the non-bridal side of the market, the squeeze on retail sales of platinum jewellery from white gold has been exacerbated by the rise in the platinum price, which increased by around 20 per cent in yen terms over the first nine months of the year.

One positive factor for platinum purchases by jewellery manufacturers is that the volume of metal being recycled from trade inventories is unlikely to increase this year, and may actually decline as fewer wholesalers and retailers exit the business. However, the flow of metal from consumers trading in old pieces of platinum jewellery appears to be steady, if not increasing.

### North America

Purchases of platinum by the North American jewellery trade are forecast to decline by 10 per cent to 260,000 oz in 2005, more than 100,000 oz below the recent peak in demand in 2000.

As elsewhere, the pattern of retail sales to date has been mixed. Some growth in sales has been recorded in the upper end of the market, with platinum jewellery benefiting from increased celebrity endorsements and marketing. At the lower end of the market, however, platinum has continued to lose ground to white gold as the price of the metal has risen.

### China

Chinese purchases of platinum for the manufacture of jewellery are forecast to fall by 10 per cent in 2005 to 910,000 oz, the lowest level of demand since 1998.

Demand has declined as a result of the increase in the platinum price and the speed at which it has risen on several occasions during 2005 to date.

The increased cost of financing inventories of platinum jewellery has led to an ongoing reduction in stock levels throughout the trade. The volume of outdated plain platinum products returned by retailers to manufacturers for recycling has risen; wholesalers have cut back their inventories; and the number of consumers trading in pieces of old platinum jewellery for new ones has increased.

At the same time, substantial inventories of diamond set precious metal jewellery have accumulated throughout the trade, reflecting previously over-optimistic production rates. This has led to a marked reduction in the manufacture of diamond set platinum jewellery so far this year.

The majority of jewellery manufacturers have expanded their production of palladium products, as the trade takes advantage of higher margins per piece and lower metal financing costs, and many are now only producing platinum to order.

Outside the largest metropolitan areas, some stores have reduced the display space devoted to platinum in favour of more profitable palladium, although retailers vary considerably in their approach to stocking and promoting it. In addition, the strong rally in the platinum price in September had a detrimental impact on the amount of stock that retailers were prepared to order ahead of the National Day holiday period at the beginning of October. This in turn fed through to lower purchases of metal by manufacturers.

Nevertheless, sales of platinum jewellery have remained relatively firm in cities such as Beijing and Shanghai, where few of the leading retailers have stocked palladium. Profit margins on platinum jewellery have been largely stable throughout 2005 to date as retail prices have tended to move more closely in line with the price of the metal. Higher prices in the stores have not yet had a discernable impact on consumer purchases and have, if anything, reinforced the status of platinum.

Platinum Demand: Jewellery		
	'000 oz	
	2004	2005
Europe	195	195
Japan	560	550
North America	290	260
Rest of the World		
China	1,010	910
Other	105	105
<b>Total</b>	<b>2,160</b>	<b>2,020</b>

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### Rest of the World

Demand for platinum from jewellery manufacturers in the Rest of the World is projected to be unchanged at 105,000 oz in 2005. Manufacturers in India, Taiwan and elsewhere in the Asia-Pacific region have increased their share of certain export markets, but this has been offset by the contraction in demand in North America and Japan. Sales of platinum jewellery in the Indian domestic market continue to develop, and production of platinum jewellery in South Africa is expanding, albeit from a very small base.

### INDUSTRIAL

**Purchases of platinum for use in industrial applications are forecast to climb by 5 per cent to 1.615 million oz in 2005. Greater production of hard disks will generate good growth in demand from the electrical sector and purchases by the glass industry are expected to rise. Demand for platinum for use in chemical catalysts is projected to soften but this is likely to be outweighed by increased sales of platinum-based petroleum refining catalysts.**

Demand for platinum used in electrical applications is forecast to grow by 18 per cent in 2005, reaching 355,000 oz. The growth will be predominantly a result of a strong increase in production of hard disks on the back of substantially higher sales of computers and consumer electronics, such as personal digital music players. The hard disk manufacturing industry in Asia has been expanding rapidly to meet this demand.

After a strong 2004, demand for platinum from the glass manufacturing industry is set to increase further in 2005, rising to 315,000 oz. The rate at which glass manufacturers are investing in new production plants in Asia is continuing at a remarkable pace – in line with industry projections of continued rapid growth in demand for flat panel displays. In 2005, more than 20 new glass tanks for the production of LCD and other flat panel display glass are scheduled to be completed in Japan, Taiwan, South Korea and Singapore.

Demand for platinum in chemical applications is forecast to soften slightly in 2005 to 320,000 oz, although this is still at the top end of the recent historical range. The rate of expansion in the global paraxylene industry is expected to slow compared to 2004, and demand for

platinum gauze from nitric acid manufacturers is also projected to soften.

With strong global demand and tightness in supply, a majority of petroleum refineries have been operating close to or at effective capacity this year. As a result of the high operating rates the frequency at which installed catalyst beds have had

to be topped up has increased, leading to a forecast increase in platinum demand of almost 7 per cent in 2005 to 160,000 oz.

Demand for platinum in most other industrial applications, including turbine blade coatings and biomedical equipment, is also expected to rise this year. In contrast, use of the metal in dental alloys will fall as a direct result of the increase in the price.

### INVESTMENT

**Demand for physical investment products in both North America and Japan is forecast to fall in 2005, largely as a consequence of the strength of the platinum price. As a result, total investment demand is expected to decline to just 15,000 oz.**

Sales of the US Mint's Platinum Eagle series of bullion coins during the first three quarters of the year were 26 per cent down on 2004, with only around 10,000 oz of coins sold. Sales of Platinum Eagle proof coins to collectors generally lag those of the bullion series, and are unlikely to exceed 10,000 oz for the year as a whole. With some sales being made back to the market, net demand for platinum investment products in North America is forecast to fall to 15,000 oz in 2005.

In Japan, the average rate of sales of large investment bars to private investors has also slowed compared with 2004 as the price of platinum has increased. At the same time, the volume of bars sold back to dealers has risen and is projected to outweigh new purchases by 5,000 oz over the course of the year.

Platinum Demand: Industrial '000 oz		
	2004	2005
Chemical	325	320
Electrical	300	355
Glass	290	315
Petroleum	150	160
Other	470	465
<b>Total</b>	<b>1,535</b>	<b>1,615</b>

Platinum Demand: Investment '000 oz		
	2004	2005
<b>Coins and small bars</b>		
Europe	0	0
Japan	5	0
North America	20	15
Rest of the World	0	5
<b>Large bars in Japan</b>	<b>15</b>	<b>-5</b>
<b>Total</b>	<b>40</b>	<b>15</b>