

# PLATINUM

## AUTOCATALYST

*Demand for platinum in autocatalysts is expected to decline by 70,000 oz to 1.75 million oz in 1999 as auto makers in all regions continue to make greater use of palladium catalysts to meet stricter controls on hydrocarbon emissions from gasoline vehicles. In Europe, a steady increase in sales of diesel cars has helped maintain platinum demand.*

### Europe


European demand for platinum in autocatalysts is expected to increase marginally to 555,000 oz in 1999. Sales of passenger cars are up in all the major European countries, with the exception of Italy where year-on-year comparisons are still distorted by the effect of an early scrappage tax incentive that ceased in July 1998. Sales of diesel cars have increased and now account for 26 per cent of all new car sales in Europe; this has been a key factor in maintaining platinum demand in the region. Although palladium has gained the position of the leading autocatalyst metal throughout the world over the last 3-4 years, platinum is for technical reasons the preferred catalyst metal for the lean operating conditions of diesel engines.

### Japan

Japanese demand for platinum in autocatalysts is also forecast to increase this year, by 20,000 oz to 260,000 oz. After two years of declining domestic sales, Japan has seen a recovery in 1999, with passenger car sales up 3 per cent in the first eight months compared with the same period in 1998. Sales of mini cars have been particularly strong, helped by a change in the Japanese regulations late in 1998 that permits broader and longer vehicles in this category. Much of the growth in mini car sales has been taken by vehicles fitted with platinum catalysts and this has been the main contributor to the increase in platinum demand this year.

### North America

Sales of cars in North America increased by 8 per cent in the first eight months of 1999, but those of light trucks have been even more buoyant, being 11 per cent up compared with the same

Platinum Demand: Autocatalyst		JM 
'000 oz	1998	1999
Europe	545	555
Japan	240	260
North America	795	705
Rest of the World	240	230
<b>Total</b>	<b>1,820</b>	<b>1,750</b>
<b>Autocatalyst recovery</b>	<b>(405)</b>	<b>(430)</b>

period in 1998. Despite this, North American demand for platinum for autocatalysts is expected to decline by 90,000 oz to 705,000 oz in 1999. More cars are being sold that meet Low Emission Vehicle standards and this has had a negative impact on platinum demand as most auto makers are using palladium-rich catalysts to meet the tight LEV hydrocarbon emission standards.

In May, President Clinton presented proposals from the Environmental Protection Agency (EPA) for the next stage of emissions control mandated as part of the 1990 Clean Air Act Amendments. These Tier 2 plans, which are due to take effect from 2004, envisage a substantial tightening of the legislation and will result in light duty trucks, which include the currently highly popular sports utility vehicles, having to meet the same standards as passenger cars. After a period of consultation, the EPA is scheduled to confirm before the end of 1999 the standards that will be imposed under Tier 2.

### Rest of the World

Demand for platinum for autocatalysts in the Rest of the World is expected to decrease marginally to 230,000 oz in 1999. Car sales in South America, which have been in decline since November 1997, have fallen further this year. In Brazil, sales in the first five months of 1999 are down 22 per cent on the same period in 1998, while in Argentina domestic sales are down 36 per cent in the first five months of 1999.

In contrast, Korean auto sales and production are recovering quickly from the severe slump seen in 1998. Much of the improvement has come from an increase of around 50 per cent in

domestic car sales. Production rose by 45 per cent in the first half of 1999, but the second half may be less positive, with output expected to be affected by structural changes in the industry following on from the financial crisis experienced during 1998.

China has moved closer to the introduction of autocatalysts. A national vehicle emission policy was promulgated early this year according to which passenger cars will have to meet standards equivalent to European Stage 1 in 2000, and to meet Euro II legislation by 2004. In addition, from January 2000, all petroleum enterprises must produce only lead-free fuel, and car manufacturers must make their models suitable for use with unleaded fuel. The indications are that this will result in catalytic converters being installed on all new cars from July 2000. The Chinese government is also permitting local environmental legislation, provided that such standards are stricter than the corresponding national legislation. As a result, some cities, notably Beijing and Shanghai, have brought forward the commencement of new rules to 1999.

### Autocatalyst Recovery

The amount of platinum recovered from scrapped autocatalyst continues to climb gradually and is expected to reach 430,000 oz in 1999, an increase of 25,000 oz over last year.

### JEWELLERY

*Demand for platinum in the manufacture of jewellery is expected to reach a new record level of 2.73 million oz in 1999, exceeding last year's figure by 320,000 oz. Demand in China has increased sharply again and is expected to reach 850,000 oz this year. The market has expanded in the USA, while in Japan consumption by jewellery manufacturers has resumed its upward path after two years of decline.*

The Japanese economy may have bottomed out but there is evidence that consumers do not yet feel confident about spending their personal disposable income because of fears about the long-term outlook for jobs. This in turn has affected the jewellery industry, where the number of precious metal jewellery items sold in the first seven months of 1999 fell by 2 per cent. Despite this, sales of platinum items rose by 3 per cent, helped by the global fashion trend towards white metal jewellery. There are signs that this increase has led to manufacturers regaining confidence and that there has been a modest rebuilding of stocks of platinum jewellery in the distribution pipeline.

There has been a continuation of the trend in which couples are reducing the amount of money spent on marriage rings by

buying one stone-set ring and one plain band rather than having an engagement ring plus two wedding bands. This has reduced the quantity of platinum consumed in marriage rings, although the loss has been somewhat offset by a move to heavier wedding bands. Sales of fashion jewellery such as necklaces, pendants and bracelets are up strongly this year, with white metal products gaining market share. Silver and white gold jewellery have advanced at the cheaper end of the market, but lightweight items in platinum have been particularly popular. Overall, we expect demand for platinum in jewellery in Japan to rise by 30,000 oz to 1.32 million oz in 1999.

The fashion trend for jewellery in Europe has also been for white metal. In the watch industry this has been mainly satisfied by stainless steel, so that the number of Swiss platinum watches made in the first half of 1999 was unchanged from 1998. Fabrication of platinum jewellery in Switzerland and Germany has also been broadly similar to last year. Increased output of platinum jewellery in Italy, much of it for export, and from the UK, where consumer demand for platinum has grown significantly, will result in total demand in Europe rising by 6 per cent to 170,000 oz.

Platinum demand in North America is forecast to reach 300,000 oz in 1999, an increase of 20 per cent. The popularity of platinum is spreading in a generally healthy jewellery market. White jewellery is fashionable, and platinum-yellow gold combination jewellery is giving way to platinum-only items. Although bridal rings still account for the majority of platinum jewellery pieces, domestic production of platinum neckchains



has increased. Major jewellery retail stores are now carrying platinum collections and platinum jewellery is regularly featured on television shopping channels. Some of the larger US jewellery companies have had difficulty in keeping up with demand, while production by smaller manufacturers, particularly on the west coast, has grown dramatically in the last two years - hence our revision of 1998 demand from 220,000 oz to 250,000 oz. The strength and spread of consumer demand has drawn in an increasing quantity of imported platinum jewellery, with Italy, India and China being the main sources.

Demand for platinum jewellery has continued to grow within China itself. In major cities a high proportion of counter space in jewellery stores is occupied by platinum, mainly in the form of plain and gem-set rings and lightweight neckchains. Platinum jewellery is also now evident in stores in outlying regions. The popularity of platinum among consumers can be attributed to a high personal disposable income amongst middle class urban Chinese, a desire for the modern look of white metal, and the low price of platinum jewellery in China compared with other markets. Platinum jewellery also appeals to Chinese consumers because of its high purity.

Manufacturing in China is being carried out on an increasingly industrial scale with several new highly mechanised factories starting to make large quantities of platinum jewellery during the year. Some older and smaller manufacturers, on the other hand, have ceased to produce on their own account and have sub-contracted work to the new entrants. Despite the growth in demand for platinum jewellery, profit margins at all levels of distribution are far lower in China than in most other jewellery markets. Consequently, it was no surprise that manufacturers sharply reduced their purchases in September 1999 as the price of platinum rose by over 20 per cent. Although buying could remain subdued if the price continues to rise, demand for jewellery fabrication in China is unlikely to be less than 850,000 oz in 1999.

Production of platinum jewellery in most other Asian

Platinum Demand: Jewellery		
'000 oz		
	1998	1999
Europe	160	170
Japan	1,290	1,320
North America	250	300
Rest of the World	710	940
<b>Total</b>	<b>2,410</b>	<b>2,730</b>

countries is dependent on export trade and remains depressed by a lack of demand from Japan, although manufacturers in India have increased output to meet demand for their products in the USA.

## INDUSTRIAL

*Demand for platinum in industrial applications is expected to rise by 90,000 oz to reach 1.34 million oz in 1999. The largest elements of growth are in process catalysts, hard disks, and non-catalyst auto applications.*

In the chemical sector, demand for platinum has remained strong for catalysts used in the production of silicones. There has also been some limited, but significant, investment in petrochemical processes that use platinum catalysts to produce high-purity benzene for conversion to nylon.

Platinum Demand: Industrial		
'000 oz		
	1998	1999
Chemical	280	320
Electrical	320	350
Glass	220	200
Petroleum	125	130
Other	305	340
<b>Total</b>	<b>1,250</b>	<b>1,340</b>

The use of platinum in hard disks, which was described in a special feature in *Platinum 1999*, continues to grow apace. Part of the growth arises from higher production of disks, with output worldwide expected to increase by more than 10 per cent to reach 450 million. In addition, the use of a platinum-containing layer to increase the magnetic coercivity of the disks, and hence their memory storage, is widening. Although demand in other electrical applications of platinum such as thermocouples, varistors and multi-layer ceramic capacitors is expected to be static, its increased use in hard disks should boost platinum demand in the electrical sector by 30,000 oz to 350,000 oz in 1999.

A developing use for platinum is in fuel cells, which we report on in the electrical sector. Although the quantity of metal used at present is small, the prospects of substantial demand in proton exchange membrane (PEM) fuel cells in the medium to long term have improved again in 1999. The holy grail for fuel cell manufacturers is the incorporation of their products in cars, and this year plans were announced by at least six major auto makers to start limited production of cars powered by PEM fuel

cells in either 2004 or 2005. There has also been progress in the development of small PEM fuel cells, with power outputs of 5-10kW, for use in domestic applications, providing power and hot water for individual homes. These may well result in significant demand for platinum before the fuel cell car is fully commercialised.

Sales of liquid crystal displays (LCD) for laptop and notebook computers are growing at more than 10 per cent a year and this has led to strong demand for the high quality thin glass used in these units, which is normally manufactured in platinum equipment. There has been substantial investment in new plants to produce such glass over the last few years but expansion of capacity has now slowed, with the result that demand for platinum has been a little weaker in 1999. With LCD's share of the computer monitor market predicted to double by 2002, further investment in new plants to produce the required glass is likely over the next few years.

Purchases of platinum for petroleum refining catalysts are expected to be 5,000 oz higher in 1999, at 130,000 oz. Growth in ownership of cars, and the popularity of sports utility vehicles in the USA, is leading to increased gasoline consumption and the need for further refining capacity. The principal increases in platinum demand for this application in 1999 are in North America and Europe; demand in other regions of the world will be slightly lower than last year.



The buoyant sales of autos referred to earlier in this chapter has led to increased demand for platinum in the non-catalyst applications associated with the auto industry. Pre-eminent is its use in spark plugs, where the addition of platinum tips to the electrodes substantially increases resistance to erosion, leading to longer life and better performance. This increase has helped boost demand in all other applications by 35,000 oz in 1999 to 340,000 oz.

## INVESTMENT

*Lower sales of platinum coins in the USA and large bars in Japan will result in a steep drop in investment demand in 1999, with offtake expected to decline by 115,000 oz to 200,000 oz.*

Sales of the US Mint's platinum Eagle coins in the first nine months of 1999 were 57,750 oz, a fall of 41 per cent from the corresponding period of 1998. At the beginning of this year it was thought that sales might be stimulated by concerns about the stability of the financial sector at the end of 1999 due to the potential Y2K computer problem. Sales of silver and gold coins by the US Mint have indeed risen sharply, by 162 per cent and 45 per cent respectively in the first nine months of the year, but this speculative interest has not spilled over into platinum. Although sales of the platinum Eagle have fallen, the coin is still

Platinum Demand: Investment		JM	
'000 oz			
	1998	1999	
<b>Coins and small bars</b>			
<i>Europe</i>	5	5	
<i>Japan</i>	25	20	
<i>North America</i>	175	90	
<i>Rest of the World</i>	5	5	
	<u>210</u>	<u>120</u>	
<b>Large bars in Japan</b>	<u>105</u>	<u>80</u>	
<b>Total</b>	<b>315</b>	<b>200</b>	

increasing its market share at the expense of the Canadian Maple Leaf and the Australian Koala. The US Mint has produced an edition of proof platinum Eagle coins; all 14,595 oz of these are expected to be sold, as were previous proof editions in 1997 and 1998. Total sales of bullion coins and small investment bars in 1999 are expected to be 43 per cent lower than last year, at 120,000 oz.

In Japan, the local price of platinum in yen terms has been less volatile than in 1998, peaking at ¥1,500 per gram in February and then drifting down to approach ¥1,200 per gram in August as the yen strengthened against the dollar. In these conditions, investor interest in platinum investment bars has been muted. Another factor may be that the gold price in yen terms has fallen even further, and in June fell below the psychologically important ¥1,000 per gram level for the first time since 1973. As a result, investment in gold bars has seen much greater speculative interest from the general public and gold has gained share in the physical investment market for precious metals. We expect demand for large platinum bars in Japan to fall by 24 per cent to 80,000 oz in 1999.