PLATINUM

Net platinum demand declined by 5.0 per cent in 2008 to 6.35 million ounces. Gross autocatalyst demand fell to 3.81 million ounces, largely due to the drop in vehicle production in Western Europe and North America. Industrial demand for platinum was negatively affected by economic conditions and contracted to 1.76 million ounces. Jewellery manufacturers bought a net 1.37 million ounces of new metal with demand exceptionally strong in the final quarter of the year. Investors, especially in Japan, responded to the falling platinum price in late 2008, boosting physical investment demand by 150 per cent to 425,000 oz.

AUTOCATALYST

Gross global autocatalyst demand for platinum fell by 8.2 per cent in 2008 to 3.81 million ounces. Slowing vehicle production drove European platinum demand 1.7 per cent lower, to 2.02 million ounces. Japanese, North American and Rest of the World region platinum demand fell too but metal purchases by the automotive sector rose in China.

Europe

Platinum purchases by the European autocatalyst sector fell by 35,000 oz in 2008 to 2.02 million ounces, the first time that demand in this sector has fallen.

A worsening economic climate impacted increasingly upon the European automotive market during the year. Although Eastern European vehicle output grew, production in Western Europe fell by 1.1 million units, cutting total European production by 6 per cent. To add a further negative note for platinum, the diesel engine's share of new passenger car sales fell marginally to 52 per cent.

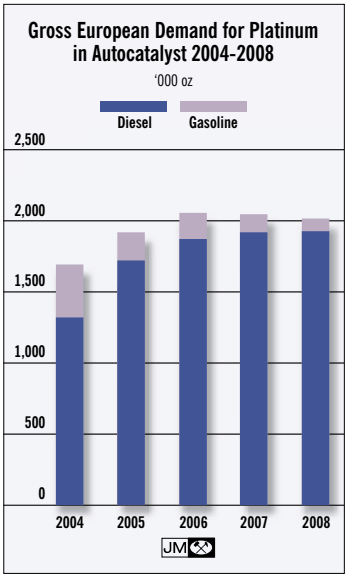
Gross Platinum Demand: Autocatalyst
'000 oz

	2007	2008
Europe	2,055	2,020
Japan	610	595
North America	850	560
China	175	185
Rest of the World	455	445
Total	**4,145**	**3,805**

JM

Some platinum was purchased for car company strategic stocks in the second half of 2008. However, this was outweighed by a decline in working stocks of catalysts, further depressing demand.

Platinum use in the gasoline sector declined to below 100,000 oz. Auto makers had already replaced platinum with palladium in catalyst formulations on most vehicles where this was possible. Little scope thus remained for further substitution and platinum demand simply fell in line with the drop in vehicle production.



A slowdown in the European automotive sector ensured that autocatalyst platinum demand in this region fell for the first time ever in 2008.

In the diesel sector, the use of platinum-based diesel particulate filters (DPFs) on new vehicles provided staunch support for demand. Between 40 and 50 per cent of all light duty diesel vehicles sold in Europe during 2008 were fitted with DPFs. This was a significant increase from 2007 as auto makers aimed to benefit from German financial incentives ahead of the new Euro 5 emissions rules. The implementation of these from late 2009 will further increase DPF fitment.

Platinum demand for diesel vehicles was trimmed by the wider use of platinum/palladium oxidation catalysts in place of platinum-only designs. The price differential between these metals increased the incentive for car makers to introduce such catalysts onto more vehicle models. (More information on this topic can be found in the special feature on page 39.)

Platinum demand from the heavy duty (HD) diesel sector increased in 2008. A looming Europe-wide recession might have been expected to drive vehicle demand lower in this market. Many orders were indeed cancelled but some fleet operators brought forward purchases to avoid the additional cost of aftertreatment imposed by the heavy duty Euro V emissions legislation taking effect in 2009. As a result, production of HD vehicles in Europe rose marginally, maintaining platinum demand at close to 50,000 oz.

Japan

Japanese passenger car production in 2008 was 9.9 million units, little changed from the previous year, as the major auto makers preferentially cut production overseas rather than in Japan itself. However, the continuing slow move towards palladium three-way catalysts in place of platinum formulations meant that

demand for platinum fell by 15,000 oz to 595,000 oz.

On vehicles destined for export to developing markets (which typically apply earlier emissions standards), Japanese car makers often fit previous generation catalyst formulations. Many of these are platinum-based and exports to Asia, Africa and South America thus support platinum demand.

In the heavy duty sector, vehicle production in Japan in 2008 was similar to output in 2007. With an increasing proportion of new vehicles fitted with aftertreatment, this sector accounted for 140,000 oz of platinum demand, slightly more than in 2007.

North America

Light duty automotive production fell sharply in North America (Canada and the USA) during 2008. Vehicle output deteriorated throughout the year and fell by roughly 2.6 million units, to 10.8 million vehicles.

The severe economic downturn in North America blunted consumer spending as many jobs were lost. With banks and other financial organisations severely restricting both lending to consumers and leasing, new vehicle sales were particularly badly affected.

The weak economy also impacted upon the mix of vehicles sold as consumers increasingly moved to smaller models. High oil prices earlier in the year had already begun to deter customers from buying the largest vehicles. Manufacturers therefore cut production of light and medium trucks by a weighty 29 per cent, significantly more than the 5.5 per cent cut in car output. With truck catalysts typically larger and containing more precious metal, this trend drove down the average platinum loading per vehicle.

As expected, the auto makers continued to make progress on thrifting platinum or replacing it with palladium in those gasoline catalysts where it remained in use, driving platinum use lower still. Platinum is still used in a number of catalysts but, with few diesel passenger vehicles either made or sold locally, demand is outweighed by the usage of palladium.

The heavy duty diesel market contributed roughly 170,000 oz of demand, less than in 2007. The haulage industry was not immune to the effects of the US recession and many firms cancelled vehicle orders.

Overall, annual gross autocatalyst platinum demand in North America fell by 34.1 per cent to 560,000 oz.

China

The Chinese passenger vehicle market recorded a tenth successive year of record sales in 2008 and autocatalyst demand for platinum rose by 5.7 per cent to 185,000 oz. Although the pace of growth slowed, over 5.3 million units were sold, 6.4 per cent more than in 2007, with most manufactured domestically.

New emissions legislation was enacted within China during 2008 in the form of Euro 4 equivalent rules in Beijing, Shanghai and Guangzhou and Euro 3 equivalent rules in the rest of the country. Manufacturers fitted new, higher-loaded catalyst formulations in order to meet these rules. Although the majority of catalysts fitted to vehicles use palladium/rhodium technology, some manufacturers continue to use platinum-based formulations – particularly on light commercial vehicles – and platinum demand climbed higher.

Rest of the World

Many markets in the Rest of the World region performed well in 2008. Production grew in countries including Argentina, Brazil, India and Russia. When combined with the trend in almost every market toward the implementation of tighter emissions standards, this drove platinum demand higher in many countries.

However, there were weak spots such as in South Korea where poor domestic sales and falling exports of diesel vehicles to Europe forced platinum demand lower. Overall, platinum demand in the Rest of the World region fell by 10,000 oz to 445,000 oz.

Autocatalyst Recovery

1.01 million ounces of platinum were recovered from spent autocatalysts in 2008, 7.5 per cent more than in the previous year.

In North America, consumers delayed purchasing new vehicles, resulting in lower numbers of old vehicles being scrapped, and the number of catalysts recovered fell. However, high metal prices provided an economic incentive for recyclers to process stocks of scrap catalysts collected in earlier years. Overall, the weight of platinum recovered from end-of-life autocatalysts in North America climbed by 5,000 oz to

Although the strong platinum price in early 2008 drove high levels of recycling of second-hand jewellery in China and in Japan, as the price fell this activity rapidly decreased in intensity.

Platinum Demand: Autocatalyst Recovery '000 oz		
	2007	2008
Europe	(215)	(245)
Japan	(35)	(60)
North America	(605)	(610)
China	(10)	(15)
Rest of the World	(70)	(75)
Total	**(935)**	**(1,005)**

610,000 oz in 2008.

In Europe, the first two thirds of 2008 saw record rates of recycling of end-of-life autocatalysts. High metal prices encouraged the processing of catalysts which had been hoarded by collectors, boosting recycling rates. Collection rates soared too as competition for spent catalysts increased. However, when metal prices and profit margins fell later in the year, some collectors were forced from the market. The volume of catalysts reprocessed fell dramatically to leave the overall weight of platinum recovered only 30,000 oz higher than in the previous year at 245,000 oz.

In other regions, recycling rates climbed slightly higher, to 15,000 oz in China, 60,000 oz in Japan and 75,000 oz in the Rest of the World region.

JEWELLERY

Net global jewellery demand fell by 90,000 oz to 1.37 million ounces in 2008. Record platinum prices in the first half of the year inhibited demand and boosted recycling in Asia. The price slump in the second half brought a sharp increase in Chinese purchasing. The economic gloom constrained sales in Europe and North America.

Europe

Net jewellery demand in the European market decreased by 2.5 per cent to 195,000 oz in 2008. The high platinum price and its exceptional volatility in the first half of 2008 negatively affected jewellery sales. Manufacturers were forced to re-price jewellery almost on a daily basis, deterring retailers from restocking.

In the UK, platinum consumption fell despite support from the large, relatively price-insensitive bridal market. The onset of a recession hit sales of other types of platinum jewellery as consumers became less willing to spend on discretionary purchases.

With demand in the UK declining, Switzerland became the largest European market in terms of platinum demand. Although, a high metal price

Jewellery manufacturing volumes were particularly strong in China towards the end of 2008.

depressed demand for platinum jewellery, the number of platinum watches produced climbed to 20,500 from 18,000 pieces in 2007. Towards the end of 2008, even this sector was affected by economic conditions, with orders and manufacturing volumes falling sharply.

Japan

Japanese retail sales of platinum jewellery were hurt by the high metal price in early 2008. This, when combined with the effects of a weak domestic economy, made platinum jewellery a less attractive purchase for many consumers.

In the final months of the year, when the platinum price fell, some manufacturers and retailers were able to reduce their prices. Those who did so were rewarded with sharply increased sales, which saw consumer purchases recover to close to 2007 levels. Sales of kihei chain, which has a pseudo-investment

Platinum Demand: Jewellery '000 oz						
	Gross[1]		Recycling[2]		Net[3]	
	2007	2008	2007	2008	2007	2008
Europe	200	200	0	(5)	200	195
Japan	540	535	(360)	(480)	180	55
North America	225	200	(5)	(5)	220	195
China	1,070	1,060	(290)	(210)	780	850
Rest of the World	75	70	0	0	75	70
Total	**2,110**	**2,065**	**(655)**	**(700)**	**1,455**	**1,365**

NOTES TO TABLE

[1] Gross demand is equivalent to the sum of platinum jewellery manufacturing volumes and changes in unfabricated metal stocks within the industry.

[2] Recycling represents the amount of old stock and old jewellery recycled whether the metal is re-used within the jewellery industry or sold back to the market.

[3] Net demand (our headline figure) is the sum of these figures and therefore represents the industry's net requirement for new metal.

character due to its low retail mark-up, were particularly strong. Gross demand – a combination of the amount of jewellery manufactured in Japan and any changes in unfabricated metal stocks – was therefore little changed from the previous year at 535,000 oz.

We have previously commented on the growth of recycling of second-hand platinum jewellery within Japan. Very large volumes of platinum jewellery were sold during the 1970s, 1980s and 1990s. The rising platinum price in recent years and a listless economy have driven some consumers to sell this old jewellery for cash, encouraging the development of an increasingly efficient collection infrastructure.

When prices climbed to near-record Yen levels in early 2008, extremely large volumes of old jewellery – at times, more metal than was required in domestic jewellery manufacturing – were returned and recycled. However, as prices fell, consumers sold back less jewellery and recycling rates slowed dramatically. Despite this, we estimate that recovery of platinum from jewellery scrap in Japan grew from 360,000 oz in 2007 to 480,000 oz in 2008.

With recycling increasing, net demand for platinum for jewellery manufacturing in Japan decreased from 180,000 oz in 2007 to 55,000 oz in 2008.

North America

The poor state of the economy drove net platinum demand from the North American jewellery industry 11.4 per cent lower to 195,000 oz in 2008. Weak consumer sentiment made North Americans less willing to spend on luxury items and jewellery purchases fell. Despite the high metal price, there was no significant return of scrap jewellery from the general public.

In the bridal market, platinum retained its popularity for women's rings and demand remained relatively healthy. However, the pressure on wedding budgets meant that other metals continued to capture market share from platinum for men's wedding bands.

In the first six months of 2008, platinum was nearly double the price it had been a year previously and credit limits only allowed manufacturers and retailers to purchase half as much stock in weight terms as before. As platinum pieces were sold, retailers commonly replaced them with white gold, further depressing platinum demand. While the fall in the platinum price in the second half of the year reduced this pressure on the market, it did not feed through into retail prices before the end of the year and consumer purchasing remained weak.

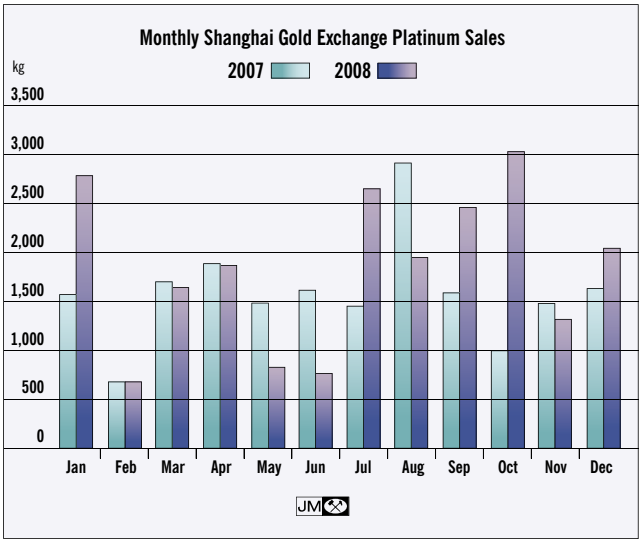
China

As we have previously reported, the high platinum price in the first half of 2008 had a large impact on the Chinese jewellery market. Manufacturers and retailers reduced their stock levels and consumers were less able or less willing to purchase jewellery. Gross purchases of metal by the industry fell below 2007 levels during these six months. Just as importantly, large volumes of jewellery were returned by consumers and by retailers and wholesalers. The flow of these large amounts of recycled metal back to the market caused net purchases of new metal by the jewellery industry to fall even more sharply than the drop in gross demand.

Once the platinum price started to fall, in mid-2008, the position quickly changed. The flow of secondary metal decreased greatly and, from August onwards, manufacturers began to increase their purchases of primary metal in order to achieve the production levels needed to meet increased retailer demand.

In the closing months of 2008, manufacturers, wholesalers and retailers alike took the opportunity to replenish depleted stocks of metal and of finished products. This was reflected in very strong purchasing of platinum by the jewellery trade on the Shanghai Gold Exchange during the second half of the year.

Purchases of platinum on the Shanghai Gold Exchange rose strongly in the second half of 2008 as the jewellery industry responded to the lower price.



Sales of physical platinum investment products in Japan were enormously strong in the final quarter of 2008.

Finally, the lower metal price enabled stores to reduce the retail price of platinum from historic highs of around 600 RMB/g. Retailers also increased the quantity of platinum jewellery on show in their stores, largely at the expense of white gold. Although these changes only occurred in late 2008, consumer purchasing of platinum strengthened in response to the lower retail prices and the greater variety of platinum jewellery on display.

We estimate that Chinese gross demand – the sum of the weight of platinum used in jewellery fabrication and any changes in unfabricated metal stocks within the industry – decreased to 1.06 million ounces in 2008. The amount of recycled metal used by the jewellery industry fell to 210,000 oz from 290,000 oz in the previous year. As a result, net platinum demand climbed 9.0 per cent in 2008 to a total of 850,000 oz.

Rest of the World

Net jewellery demand in the Rest of the World region fell by 5,000 oz to 70,000 oz during 2008. A growing proportion of production in this region takes place in India for domestic consumption. Although the Indian home market remains small, this is growing, particularly in markets such as Chennai where there have been substantial marketing efforts. The domestic market accounted for 20,000 oz of demand for new metal in 2008, offsetting the effects of falling exports of platinum jewellery to North America.

INVESTMENT

Net physical investment demand for platinum increased by 255,000 oz in 2008 to 425,000 oz.

Japanese investors purchased a net 275,000 oz of platinum in the form of large bars in 2008, compared to a net disinvestment of 60,000 oz in 2007. Initially, sales by investors back to the market continued in 2008, outweighing purchases and resulting in net disinvestment during the first six months of the year.

However, investor behaviour changed when the platinum price fell in mid-year. With the price of platinum falling, the Yen strengthening and equity investments losing much of their allure, purchasing by individual investors increased sharply in the final quarter, leading to exceptionally strong demand.

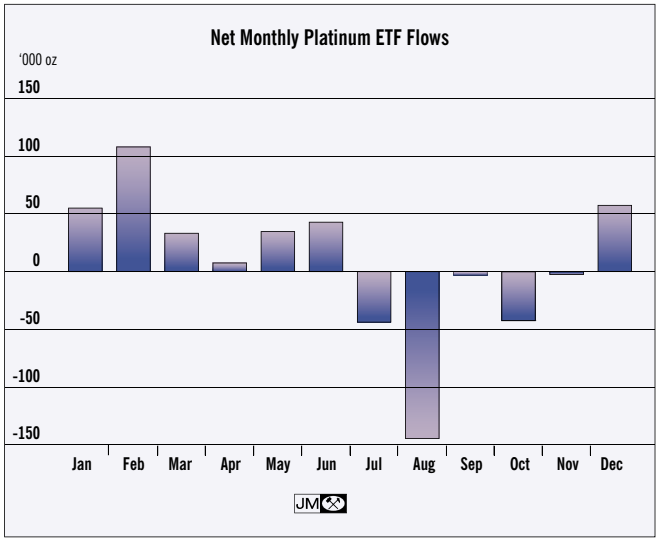
Platinum Demand: Investment
'000 oz

	2007	2008
Europe	195	105
Japan	(60)	275
North America	30	40
China	0	0
Rest of the World	5	5
Total	**170**	**425**

JM

In contrast, net purchases of platinum through Exchange Traded Funds fell by almost half to 105,000 oz in 2008 even though these funds were operational for their first full calendar year during this period. In the London fund, investment activity throughout the year showed a very strong correlation to movements in the metal price. Investors bought substantial amounts of platinum as the price rose strongly. However, as the price fell back, large amounts of metal were sold by investors keen to release cash. In contrast, investment flows in the

Investors bought very large quantities of platinum through ETFs in the first quarter of 2008 but sold much of this metal back as the price fell later in the year.



Swiss fund were significantly less volatile. Combined positions peaked at 485,000 oz during July but only 300,000 oz of platinum remained in the various ETFs at the end of the year, with net annual demand reaching only 105,000 oz.

The very high volatility of the platinum price also had an effect on sales of platinum coins. The US Mint, for example, was forced to raise prices once, lower prices twice and suspend sales of platinum coins altogether on a further two occasions during the year. However, investors and collectors were undeterred and the 2008 platinum American Eagle coin sold out during its year of minting, an unusual occurrence. As a result, demand climbed to 40,000 oz.

Platinum demand from the petroleum refining sector climbed to 245,000 oz despite a falling oil price in the second half of 2008.

CHEMICAL

The chemical sector accounted for 395,000 oz of platinum demand in 2008, 25,000 oz less than in 2007. Demand from the manufacture of silicones rose by 5,000 oz but less metal was purchased for use in heterogeneous catalysts.

In the silicone sector (where the platinum catalyst is captured in the silicones used in pressure release adhesives), thrifting has started to affect platinum demand. Although demand for silicones themselves remained strong for most of the year, a number of manufacturers have introduced curing solutions with a lower platinum content and some are looking at platinum-free ultraviolet technology. The net result of these two trends in 2008 was a small increase in platinum demand. Although the fall in the price of platinum and a lack of capital for investment may slow adoption of ultraviolet curing technology, the market share of the lower platinum content catalysts is increasing and platinum demand for this application has now peaked.

Platinum Demand: Chemical
'000 oz

	2007	2008
Europe	110	105
Japan	55	55
North America	95	95
China	70	60
Rest of the World	90	80
Total	**420**	**395**

JM

In the process catalyst arena, demand for platinum slipped lower. Manufacturing capacity for chemicals such as paraxylene grew in much of Asia in 2008. However, global demand for such commodity chemicals fell later in the year and the petrochemical and plastics industry cut its product stocks. Production was cut back severely, meaning that less platinum was required for top-up catalyst charges. Of note, however, was the cancellation of a number of projects due to the poor economic outlook, something that will limit platinum demand in the medium term.

Demand for nitric acid grew in 2008 although by a slower rate than in the previous year. Demand for platinum catalytic burner gauzes therefore differed little from 2007 levels.

PETROLEUM REFINING

The petroleum refining sector purchased a net 245,000 oz of platinum during 2008, 40,000 oz more than in 2007, despite the plunging oil price. The petroleum refining industry typically runs its operations at high throughput and maintains low product inventories in order to maximise its profitability. With petroleum demand falling only slightly, there has thus been only a modest effect on refinery operating rates.

In fact, there was new capital investment in the industry with facilities constructed in India, Japan and the Middle East in 2008, supporting platinum demand. Looking further into the future, European rules on the use of next generation biofuels seem set to drive further platinum demand in the longer term.

Platinum Demand: Petroleum Refining
'000 oz

	2007	2008
Europe	25	35
Japan	5	10
North America	30	25
China	10	10
Rest of the World	135	165
Total	**205**	**245**

JM

ELECTRICAL

Platinum demand from the global electrical sector fell by 11.8 per cent in 2008 to 225,000 oz, with lower net purchases of metal by the hard disk industry largely responsible. Demand for platinum for use in other electronic components fell too.

Platinum Demand: Electrical
'000 oz

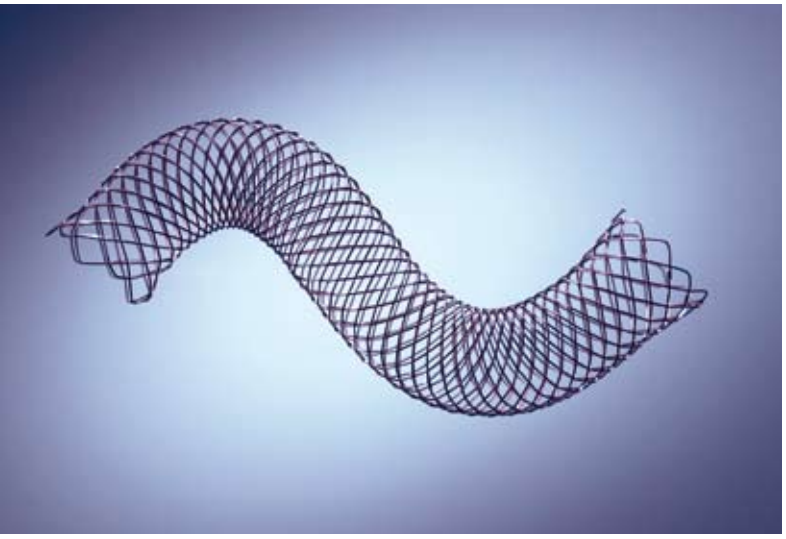
	2007	2008
Europe	15	15
Japan	35	30
North America	55	30
China	20	30
Rest of the World	130	120
Total	**255**	**225**

JM

Despite a difficult end to the year, production of computer hard disk drives grew in 2008. Rising areal storage density (the amount of information that can be saved per unit area of a hard disk) also increased. This allowed manufacturers to maintain the average number of disks per electronic device while still improving performance. As a result, platinum consumption increased by a similar rate to the growth in computer production.

However, demand for platinum varied substantially during 2008. With sales of consumer electronics slowing rapidly in the final quarter of the year, their production was also cut. Destocking, whether of sputtering targets, hard disk drives or complete computers, became a widespread feature of the supply chain. This combination of falling industry stocks and weak consumer purchasing had a strong negative impact on platinum purchases by disk manufacturers in the closing months of 2008 (and in early 2009). Platinum demand therefore fell despite the increase in the total weight of metal actually coated onto the hard disks produced during the year.

The introduction of new products such as this stent helped to drive biomedical demand for platinum higher in 2008.



GLASS

Platinum Demand: Glass
'000 oz

	2007	2008
Europe	15	(5)
Japan	85	80
North America	25	(5)
China	180	125
Rest of the World	165	195
Total	**470**	**390**

JM

Demand for platinum from the glass industry decreased by 80,000 oz to 390,000 oz in 2008. Most demand from this sector is for the construction of new facilities and a slowdown in industrial demand for fibre glass delayed the construction of a number of factories. The closure of CRT glass plants in China also reduced demand there.

In Europe and North America, platinum demand from the glass sector was once again negative with the closure of factories, due to the relocation of manufacturing capacity to other regions, releasing some metal back to the market.

In Asia, demand was strongly positive, although lower than in 2007. Despite the deceleration of Chinese economic growth, demand for fibre glass increased and manufacturers installed new production capacity.

The global flat screen (LCD and plasma) television market grew strongly during 2008 and producers installed new flat glass manufacturing capacity in Japan and elsewhere in Asia. However, the closure of a number of cathode-ray tube (CRT) television glass facilities in China returned some platinum to the market last year, driving demand lower.

OTHER

Demand for platinum for other applications grew by 5,000 oz in 2008 to 500,000 oz. Platinum demand for use in biomedical components and aircraft turbine blades increased. However, dental sector use of platinum fell. Platinum is used as a component in high-gold content dental alloys in North America and the rise in the gold price drove a move towards the use of other alloys which do not contain platinum.

Platinum Demand: Other
'000 oz

	2007	2008
Europe	185	185
Japan	45	45
North America	215	215
China	15	20
Rest of the World	35	35
Total	**495**	**500**

JM