

# Mineral Industry Surveys

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## PLATINUM-GROUP METALS IN MARCH 2008

According to Platts Metals Week, the average March prices of platinum, palladium, and rhodium increased by 2%, 4%, and 8%, respectively, as compared with prices in February. The iridium price has held steady at \$450 per troy ounce since February 13, 2007. The average price of ruthenium increased slightly in March as compared with that of February. In early March, the platinum price reached an all-time high of \$2,275 per troy ounce, the rhodium price reached an all-time high of \$9,425 per troy ounce, and the palladium price reached a 7-year high of \$585 per troy ounce. Prices of platinum and palladium were volatile throughout the month, with each dip in price followed by increased buying by the investment and industrial communities and many of the price peaks followed by profit-taking. Platinum prices hovered around the \$2,000-per-troy-ounce mark throughout the month. Reports indicated that the supply of platinum from recycled scrap was increasing in response to price rises. Palladium prices rose along with platinum because of increased interest in palladium as a substitute for the much more expensive platinum, particularly in autocatalysts. As compared with a year ago, average prices of platinum, palladium, and rhodium have increased by 67%, 39%, and 52%, respectively. In contrast, ruthenium price has dropped by 43% compared with that of a year ago.

Platinum, palladium, and rhodium prices were affected by the continuing power shortages in South Africa, the source of roughly 77% of global platinum supply. In late January, platinum mines in that country were forced to shut down for 5 days because the state-run utility company, Eskom Holdings Ltd., could not guarantee sufficient power for mines to operate safely. Since January, Eskom has faced additional power problems, with some generators breaking down, and wet weather causing difficulties with coal supplies. In mid-March, Eskom again resorted to load shedding, with homes having to endure blackouts for hours at a time on a routine basis. Eskom was able to increase power at key mines to 95% of normal requirements in early March, and this announcement was followed by a drop in platinum price. In late March, however, power was again cut back to 90%.

Unlike platinum and palladium prices, which showed overall downward trends during March, rhodium prices remained high

throughout the month because there is little above-ground stock, its price also was affected by the power problems in South Africa, and its primary end-use in catalytic converters is price-inelastic. Since January, the average rhodium price has risen by \$2,191 per troy ounce.

The large mining companies continued to hold meetings with Eskom and South African Government representatives to discuss solutions to the power crisis. Eskom agreed to increase power to mines because of the potential job loss and economic repercussions of mining production shortfalls. Individual mining companies were required to go to Eskom to request increased power, and Eskom was to make decisions on a case-by-case basis. Additional power might be imported from Zimbabwe and Mozambique (BBC News, 2008; Johnson Matthey plc, 2008a). Analysts estimated that production shortfall as a result of the power shortage would be roughly 14,600 kilograms (kg) of platinum in 2008. Some new mining projects in South Africa planned to provide at least some of their own power such as Wesizwe Platinum, Ltd. (Johannesburg, South Africa), which announced plans to begin construction of a 10,900-kilogram-per-year (kg/yr) platinum mining project in the western limb of the Bushveld Complex, South Africa. Construction was expected to begin during the third quarter of 2008, with first production scheduled for 2011 (Kruger, 2008). Likewise, Ridge Mining plc (London, United Kingdom) planned to install standby generators for its new Blue Ridge platinum mine in South Africa; the project was expected to begin production in late 2008, with production of 2,330 kg/yr of platinum (Johnson Matthey plc, 2008b). Anglo Platinum Ltd., the world's leading platinum producer, faced additional problems. The company was criticized on two fronts—miner safety and dislodging entire villages to continue their platinum mining operations. The company responded by assuring their concern and efforts to increase safety and by defending their relocation programs (Brooks, 2008; Lovesey, 2008).

With high prices causing decreased platinum demand from the jewelry sector, MMC Norilsk Nickel (Moscow, Russia) announced plans to implement a market development program for palladium jewelry (O'Connell, 2008). The announcement was made following a study by consultants and the Palladium

Alliance International under the auspices of the International Platinum Group Metals Association. The goal was to create a niche in the jewelry market for palladium. Palladium jewelry has a similar appearance to platinum as well as a much lower price tag. Stillwater Mining Co. (Billings, MT) has been working toward this goal for some time now and has seen significant results in China, Italy, and to a lesser extent in North America.

Fuel cells, some of which use platinum as the catalyst, represent a small but growing industry for platinum usage. Fuel cells generate electricity through chemical reactions producing little or no harmful emissions from automobiles and reducing pollution when used as a power source for buildings. In Japan, 2,200 homes are currently being powered by test fuel cells. The Japanese Government was investing substantially in fuel cell technology research; it planned for 10 million homes (about one-fourth of homes in Japan) to be powered by fuel cells by 2020 (Kageyama, 2008).

Exchange-traded funds (ETFs) holdings were variable in March and reached a high of 11,630 kg for platinum and 18,353 kg for palladium (CPM Group, 2008, p. 19, 23), an increase in both relative to ETFs February. (Last month's ETFs for palladium were reported erroneously; the corrected quantity is 15,619 kg.)

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TABLE 1  
PLATINUM-GROUP METALS PRICES<sup>1</sup>

(Dollars per troy ounce)

	Platinum	Palladium	Rhodium	Iridium	Ruthenium
2007:					
Low/date	1,122.00 Jan. 8	322.00 Aug. 22	5,550.00 Jan. <sup>2</sup>	400.00 Jan. and Feb. <sup>2</sup>	375.00 Jul. <sup>2</sup>
High/date	1,547.00 Dec. 27	385.00 Apr. 20	6,850.00 Dec. <sup>2</sup>	450.00 Feb.—Dec. <sup>2</sup>	870.00 Feb. <sup>2</sup>
Average	1,308.40	357.34	6,203.09	444.43	573.74
2008:					
February:					
Low/date	1,759.00/1	415.00/1	7,375.00/1	450.00 <sup>2</sup>	420.00 <sup>2</sup>
High/date	2,185.00/21	571.00/29	9,100.00 <sup>2</sup>	450.00 <sup>2</sup>	440.00 <sup>2</sup>
Average	2,002.55	473.65	8,544.50	450.00	431.50
March:					
Low/date	1,840.00/20	435.00/20	9,000.00 <sup>2</sup>	450.00 <sup>2</sup>	425.00 <sup>2</sup>
High/date	2,275.00/4	585.00/4	9,425.00 <sup>2</sup>	450.00 <sup>2</sup>	440.00 <sup>2</sup>
Average	2,043.65	490.35	9,244.00	450.00	436.25
Year-to-date:					
Low/date	1,534.00 Jan. 7	368.00 Jan. 22	6,850.00 Jan. 2	450.00 Jan.—Mar. <sup>2</sup>	405.00 Jan. <sup>2</sup>
High/date	2,275.00 Mar. 4	585.00 Mar. 4	9,425.00 Mar. <sup>2</sup>	450.00 Jan.—Mar. <sup>2</sup>	440.00 Feb. and Mar. <sup>2</sup>
Average	1,878.17	447.15	8,280.64	450.00	426.75

<sup>1</sup>Quotes from Engelhard Industries.

<sup>2</sup>Occured multiple days in month(s) listed.

Source: Platts Metals Week.

TABLE 2  
U.S. IMPORTS FOR CONSUMPTION OF PLATINUM METAL, BY COUNTRY<sup>1</sup>

(Kilograms metal content, unless otherwise specified)

Period and country	Platinum grain and nuggets		Platinum sponge		Other unwrought platinum		Platinum, other		Platinum waste and scrap		Platinum coins	
	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
2007:												
December	69	\$1,870	4,600	\$176,000	97	\$3,610	824	\$30,100	16,500	\$63,900	--	--
Year	621	20,100	65,900	2,620,000	3,940	145,000	10,200	330,000	206,000	504,000	58	\$964
2008:												
January	39	774	2,780	135,000	128	5,190	737	25,200	11,700	37,700	(2)	8
February:												
Australia	--	--	--	--	--	--	187	13,300	--	--	--	--
Belgium	--	--	309	14,900	--	--	--	--	--	--	--	--
Bolivia	--	--	--	--	--	--	--	--	967 <sup>3</sup>	68	--	--
Brazil	--	--	--	--	--	--	--	--	1,590 <sup>3</sup>	3,560	--	--
Canada	1	36	3	160	--	--	35	2,180	1,340 <sup>3</sup>	3,520	1 <sup>3</sup>	33
Chile	--	--	--	--	--	--	--	--	163 <sup>3</sup>	5,320	--	--
Colombia	--	--	--	--	105	4,270	--	--	20 <sup>3</sup>	662	--	--
France	--	--	--	--	--	--	--	--	21 <sup>3</sup>	821	--	--
Germany	46 <sup>3</sup>	1,410	212	12,100	76	4,000	341 <sup>3</sup>	11,700	2,570 <sup>3</sup>	21,300	--	--
Greece	--	--	--	--	--	--	--	--	7 <sup>3</sup>	278	--	--
Hong Kong	--	--	--	--	--	--	--	--	45	2,890	--	--
Israel	--	--	--	--	--	--	--	--	3 <sup>3</sup>	130	--	--
Italy	--	--	61	4,090	--	--	85	5,000	--	--	--	--
Japan	--	--	--	--	(2)	22	6 <sup>3</sup>	224	102	5,100	--	--
Jordan	--	--	--	--	--	--	--	--	776 <sup>3</sup>	85	--	--
Korea, Republic of	--	--	--	--	--	--	(2)	15	1,600 <sup>3</sup>	1,650	--	--
Mexico	--	--	--	--	3 <sup>3</sup>	178	--	--	--	--	--	--
Norway	--	--	63	3,280	--	--	--	--	--	--	--	--
Philippines	--	--	--	--	--	--	--	--	14 <sup>3</sup>	310	--	--
Russia	--	--	165	9,790	353	23,600	--	--	--	--	--	--
South Africa	--	--	4,370	220,000	4 <sup>3</sup>	36	98	5,690	--	--	--	--
Switzerland	--	--	--	--	--	--	22	1,460	--	--	--	--
Taiwan	--	--	--	--	--	--	--	--	47 <sup>3</sup>	558	--	--
United Kingdom	--	--	1,790	111,000	--	--	88	5,140	(2) <sup>3</sup>	54	1 <sup>3</sup>	248
Venezuela	--	--	--	--	--	--	--	--	940 <sup>3</sup>	51	--	--
Other	2 <sup>3</sup>	57	--	--	--	--	--	--	2 <sup>3</sup>	18	--	--
Total	49	1,500	6,980	375,000	541	32,100	862	44,600	10,200	46,300	1	281
Year to date	88	2,280	9,760	511,000	669	37,300	1,600	69,800	21,900	84,100	2	289

-- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Less than ½ unit.

<sup>3</sup>All or part of these data have been referred to the U.S. Census Bureau for verification.

Source: U.S. Census Bureau.

TABLE 3  
U.S. IMPORTS FOR CONSUMPTION OF PLATINUM-GROUP METALS, BY COUNTRY<sup>1</sup>

(Kilograms metal content, unless otherwise specified)

Period and country	Unwrought palladium		Palladium, other		Iridium <sup>2</sup>		Osmium <sup>2</sup>		Ruthenium <sup>2</sup>		Rhodium <sup>2</sup>	
	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
2007:												
December	8,140	\$81,100	1,420	\$16,300	195 <sup>r</sup>	\$2,810	--	--	4,740	\$58,600	1,300	\$237,000
Year	101,000	1,120,000	11,600	129,000	3,410	41,900	23	\$192	48,700	655,000	16,600	2,650,000
2008:												
January	11,500	135,000	1,010	13,000	154	2,260	4	46	2,380	25,500	1,400	212,000
February:												
Belgium	400	5,470	40	486	--	--	--	--	62	840	60	14,000
Canada	--	--	133 <sup>3</sup>	3,510	--	--	--	--	--	--	--	--
China	50	573	--	--	--	--	--	--	--	--	--	--
Estonia	--	--	--	--	--	--	--	--	312	3,910	--	--
Germany	24	323	12	210	16	214	--	--	1,860	19,600	91 <sup>3</sup>	24,200
Italy	146	1,980	1 <sup>3</sup>	31	--	--	--	--	--	--	22 <sup>3</sup>	5,370
Japan	385 <sup>3</sup>	1,790	41 <sup>3</sup>	72	--	--	--	--	46	529	--	--
Norway	803	9,720	--	--	--	--	--	--	--	--	36 <sup>3</sup>	1,800
Russia	4,290	56,500	736	11,500	--	--	--	--	--	--	126	30,000
South Africa	2,200	26,700	--	--	82	1,140	--	--	1,760	21,600	682 <sup>3</sup>	136,000
Switzerland	--	--	110	1,650	--	--	--	--	--	--	--	--
United Kingdom	1,560	22,200	11 <sup>3</sup>	369	91	1,470	--	--	481	7,480	119 <sup>3</sup>	27,400
Total	9,870	125,000	1,080	17,800	189	2,820	--	--	4,520	53,900	1,140	239,000
Year to date	21,400	261,000	2,090	30,800	343	5,080	4	46	6,900	79,400	2,530	450,000

<sup>r</sup>Revised. -- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Unwrought and other forms.

<sup>3</sup>All or part of these data have been referred to the U.S. Census Bureau for verification.

Source: U.S. Census Bureau.

TABLE 4  
U.S. EXPORTS OF PLATINUM-GROUP METALS, BY COUNTRY<sup>1</sup>

(Kilograms of metal content, unless otherwise specified)

Period and country	Platinum <sup>2</sup>		Platinum waste and scrap		Palladium <sup>2</sup>		Iridium, osmium, and ruthenium <sup>2,3</sup>		Rhodium <sup>2</sup>	
	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
2007:										
December	2,640	\$94,300	7,040	\$92,200	3,020	\$19,000	227	\$3,530	151	\$20,700
Year	28,900	763,000	54,400	924,000	41,800	298,000	8,190	145,000	2,210	401,000
2008:										
January	431	16,500	5,390	94,900	2,800	21,100	321	3,420	316	30,300
February:										
Argentina	113	4,910	--	--	--	--	--	--	--	--
Australia	2 <sup>4</sup>	138	--	--	58	730	--	--	--	--
Austria	9 <sup>4</sup>	255	--	--	--	--	--	--	--	--
Belgium	1 <sup>4</sup>	17	2,170	7,750	1	13	1 <sup>4</sup>	10	--	--
Brazil	14 <sup>4</sup>	561	--	--	19	230	--	--	10	2,370
Canada	78 <sup>4</sup>	2,560	78 <sup>4</sup>	2,420	399	3,850	27	430	28	7,920
China	160	6,000	--	--	9	101	--	--	8	1,910
Colombia	(5)	7	--	--	2	31	--	--	--	--
Denmark	(5) <sup>4</sup>	3	--	--	7 <sup>4</sup>	118	--	--	--	--
France	4 <sup>4</sup>	135	--	--	55 <sup>4</sup>	408	--	--	--	--
Germany	490 <sup>4</sup>	24,900	3,010 <sup>4</sup>	36,400	351	3,110	--	--	21	4,970
Hong Kong	3 <sup>4</sup>	541	--	--	368	5,290	--	--	(5)	33
Iceland	--	--	--	--	1	12	--	--	--	--
India	3	123	--	--	(5)	4	--	--	(5)	24
Ireland	18	767	--	--	8 <sup>4</sup>	39	--	--	--	--
Israel	--	--	--	--	322	1,190	--	--	--	--
Italy	52	2,880	(5) <sup>4</sup>	8	166	1,420	--	--	--	--
Japan	315 <sup>4</sup>	10,000	198	12,700	68	920	84 <sup>4</sup>	1,160	144	28,900
Korea, Republic of	10 <sup>4</sup>	142	--	--	39 <sup>4</sup>	163	--	--	--	--
Kuwait	--	--	--	--	3	58	--	--	--	--
Lebanon	--	--	--	--	2	17	--	--	--	--
Mexico	139 <sup>4</sup>	4,840	--	--	14 <sup>4</sup>	67	3 <sup>4</sup>	93	(5)	44
Netherlands	(5) <sup>4</sup>	76	--	--	2	29	--	--	--	--
New Zealand	(5) <sup>4</sup>	18	--	--	8	140	--	--	--	--
Norway	1 <sup>4</sup>	14	--	--	6	144	--	--	--	--
Philippines	(5) <sup>4</sup>	50	--	--	1	12	--	--	--	--
Romania	1	19	--	--	2	11	--	--	--	--
Singapore	1	41	--	--	--	--	3 <sup>4</sup>	52	--	--
Spain	2 <sup>4</sup>	43	--	--	14	152	--	--	--	--
Sweden	2	163	--	--	1	22	--	--	--	--
Switzerland	59	3,550	--	--	126 <sup>4</sup>	1,640	--	--	--	--
Taiwan	6 <sup>4</sup>	220	--	--	59 <sup>4</sup>	286	--	--	110 <sup>4</sup>	2,340
Thailand	(5) <sup>4</sup>	82	--	--	3	42	--	--	--	--
United Kingdom	155	8,820	912 <sup>4</sup>	48,700	863 <sup>4</sup>	5,300	40 <sup>4</sup>	515	--	--
Other	1 <sup>4</sup>	28	--	--	4 <sup>4</sup>	56	--	--	--	--
Total	1,640	72,000	6,370	108,000	2,980	25,600	158	2,260	320	48,500
Year to date	2,070	88,500	11,800	203,000	5,790	46,700	479	5,680	636	78,900

-- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Unwrought and other forms.

<sup>3</sup>Gross weight.

<sup>4</sup>All or part of these data have been referred to the U.S. Census Bureau for verification.

<sup>5</sup>Less than ½ unit.

Source: U.S. Census Bureau.