



U.S. Department of the Interior • Bureau of Mines

MINERAL INDUSTRY SURVEYS

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Platinum, Quarterly

PLATINUM-GROUP METALS IN THE THIRD QUARTER 1990

Production of toll-refined platinum in 1990 is projected to reach about 37,000 kilograms, significantly higher than the amount produced in 1989, according to the Bureau of Mines, U.S. Department of the Interior. Toll-refined metal is metal refined on consignment, with ownership of the metal remaining unchanged. A consumer with scrap is charged against its account for having its metal refined.

A large shipment (over 2,000 kilograms) of platinum-group metals (PGM) waste and scrap was imported from the United Kingdom in the second quarter of 1990. Imports of waste and scrap PGM in the second quarter exceeded the amount imported for the entire year of 1989.

The Clean Air Act of 1990 was passed by the Congress and signed by the President. Provisions of the new law, as it applies to newly manufactured automobiles and light trucks, require a 35% reduction in emission of hydrocarbons and a 60% cut in emission of nitrogen oxides beginning in 1994. In addition, catalytic converters must be guaranteed by manufacturers to last double the current 50,000 miles. As a result of these changes, increased amounts of PGM are expected to be used in each catalytic converter. A typical catalytic converter produced for a U.S. automobile in 1990 contained a total of about 2.7 grams of PGM (approximately 2.18 grams platinum, 0.31 gram palladium, and 0.31 gram rhodium). In terms of troy ounces, these quantities are 0.07 ounce platinum, 0.01 ounce palladium, and 0.01 ounce rhodium.

As a result of an informal survey of catalytic converter manufacturers, estimates for 1990 automobile consumption for platinum, palladium, and rhodium, as shown in table 3, have been revised upward to reflect new PGM loading factors, as discussed above. Passage of the Clean Air Act of 1990 may result in further upward revision of the loading factors.

The Idaho National Engineering Laboratory, through funding provided by the Bureau of Mines, is investigating substitute catalytic materials for PGM, with initial focus on developing substitutes for platinum in catalytic converters. Various intermetallic alloys containing copper, manganese, zirconium, titanium, chromium, and nickel are being tested.

The Stillwater Mining Company (SMC) opened a new smelter in Columbus, MT, processing PGM concentrates produced from nearby Nye, MT. PGM matte containing precious metals was air-freighted to Belgium for final refining and separation of the individual PGM.

In April, one of the partners of SMC, Manville Corp., hired Salomon Brothers to begin soliciting prospective purchasers for Manville's 50% share of SMC. By October, Salomon Brothers was to reportedly receive final offers. No decision on the pending sale has been made to date.

In October, the New York Mercantile Exchange (NYMEX) introduced the trading of options on platinum futures contracts. Every commercial participant in the cash market, from refiners and fabricators to dealers and consumers,

is exposed to price risk. In the past, the platinum futures market at NYMEX as well as other foreign futures markets have helped companies protect themselves from price volatility. NYMEX platinum options were reportedly designed to provide additional hedging and trading opportunities.

All of the 1989 Mineral Yearbook chapters for PGM, gold, and silver are now available for downloading via personal computers and modems. Callers can receive the reports in electronic format from the Bureau's computer bulletin board, MINES-DATA (see header above for telephone number).

When calling the system, callers should specify that they want to download PGMYB89.EXE for the platinum-group metals, AUMYB89.EXE for gold, and AGMYB89.EXE for silver. Files are sent in compressed "ZIP" format for easier file transfer and are set up to self-extract on the caller's personal computer by simply typing the first part of the file name (exclude the period and EXE extension). The 1989 PGM and silver Mineral Yearbook chapters are also available in hard-copy paper format.

Table 1. - Platinum-group metals 1/ refined in the United States 2/
(Kilograms)

Period	Platinum	Palladium	Iridium	Osmium	Rhodium	Ruthenium	Total
1989:							
Nontoll-refined:							
First quarter--	279	638	2	---	17	1	937
Second quarter--	253	780	5	---	13	12	1,060
Third quarter--	282	662	---	---	13	7	964
Fourth quarter--	290	818	---	---	45	15	1,169
Total 3/-----	1,196	2,959	8	---	94	37	4,293
=====							
Toll-refined:							
First quarter--	6,164	4,973	128	1	443	45	11,754
Second quarter--	5,492	5,621	39	---	415	84	11,651
Third quarter--	5,481	4,022	8	---	396	135	10,043
Fourth quarter--	7,392	8,362	44	---	586	108	16,493
Total 3/-----	24,058	20,037	219	1	1,565	373	46,253
=====							
1990:							
Nontoll-refined:							
First quarter--	r/403	r/682	1	---	37	6	r/1,128
Second quarter--	r/622	r/753	2	---	23	---	r/1,400
Third quarter--	466	721	5	---	62	24	1,275

Toll-refined:							
First quarter--	9,169	5,922	32	---	699	108	15,930
Second quarter--	r/9,193	r/5,401	32	---	703	108	r/15,438
Third quarter--	9,245	5,287	32	---	709	108	15,382

r/Revised.

1/Typically, about 99.8% of the platinum and 99% of the palladium are secondary metal; the other metals are entirely secondary.

2/Data may not add to totals shown because of independent rounding.

3/Includes data for companies reporting annually; quarterly figures not adjusted.

Platinum & Palladium Production Toll-Refined Plus Nontoll-Refined

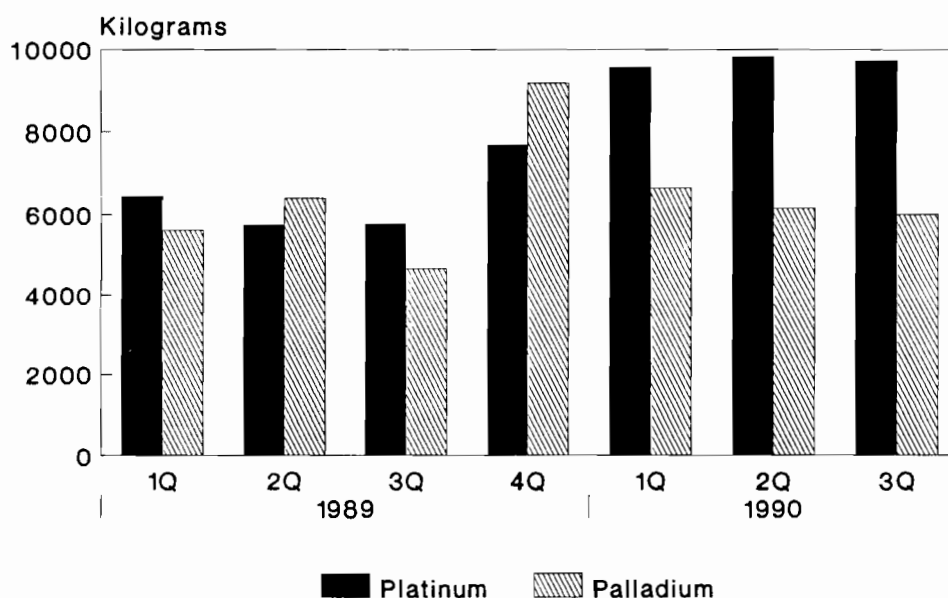


Table 2. - Stocks of platinum-group metals held by refiners, importers,
and dealers in the United States 1/
(Kilograms)

Period	Platinum	Palladium	Iridium	Osmium	Rhodium	Ruthenium	Total 2/
1989:							
Mar. 31-----	13,497	13,908	449	8	1,031	699	29,592
June 30-----	12,434	12,318	424	9	1,092	853	27,130
Sept. 30-----	13,396	12,657	475	36	1,118	899	28,581
Dec. 31 -----	14,027	12,568	521	36	993	913	29,058
Yearend 3/----	14,791	15,182	522	36	1,096	916	32,543
=====							
1990:							
Mar. 31-----	13,266	10,750	521	40	974	936	26,487
June 30 r/-----	13,173	11,855	521	44	959	921	27,473
Sept. 30-----	12,634	11,708	521	41	972	926	26,802

r/Revised.

1/Includes metals in depositories of the New York Mercantile Exchange; on Sept. 30, 1990, this comprised 4,286 kilograms of platinum and 2,050 kilograms of palladium.

2/Data may not add to totals shown because of independent rounding.

3/Includes data from companies reporting annually; quarterly figures not adjusted.

Table 3.- Platinum-group metals sold to consuming industries in the United States 1/
(Kilograms)

Period and industry	Platinum	Palladium	Iridium	Osmium	Rhodium	Ruthenium	Total
1989:							
Automotive 2/----	18,774	4,886	---	---	1,982	---	25,643
Chemical-----	2,424	1,923	95	---	189	26	4,657
Dental and medical-----	632	8,424	105	57	1	15	9,233
Electrical-----	3,894	17,352	112	---	272	1,778	23,408
Glass-----	1,130	181	---	---	177	1	1,489
Jewelry and decorative----	418	179	7	---	205	6	814
Petroleum-----	2,859	2,543	---	---	27	---	5,429
Miscellaneous----	3,566	3,786	81	---	273	61	7,766
Year-----	33,698	39,273	400	57	3,126	1,886	78,439
1990:							
First quarter r/:							
Automotive 2/--	5,070	725	---	---	725	---	6,519
Chemical-----	554	515	6	---	44	2	1,120
Dental and medical-----	145	1,808	24	11	---	2	1,990
Electrical-----	977	4,236	32	---	26	303	5,574
Glass-----	120	173	---	---	5	---	298
Jewelry and decorative---	107	45	4	---	50	1	206
Petroleum-----	272	909	---	---	---	---	1,181
Miscellaneous--	1,116	750	33	---	1	10	1,910
Total-----	8,359	9,160	98	11	850	319	18,797
Second quarter r/:							
Automotive 2/--	6,096	868	---	---	868	---	7,832
Chemical-----	939	653	6	---	44	11	1,653
Dental and medical-----	137	1,482	24	9	---	2	1,655
Electrical-----	961	4,258	29	---	25	330	5,603
Glass-----	123	173	---	---	5	---	301
Jewelry and decorative---	107	49	3	---	49	1	209
Petroleum-----	218	529	---	---	---	---	747
Miscellaneous--	1,119	731	34	---	1	10	1,894
Total-----	9,700	8,742	95	9	992	355	19,893
Third quarter:							
Automotive 2/--	4,914	700	---	---	700	---	6,314
Chemical-----	689	477	4	---	42	3	1,214
Dental and medical-----	137	1,482	24	5	---	2	1,653
Electrical-----	938	4,398	11	---	23	310	5,680
Glass-----	117	360	---	---	5	1	482
Jewelry and decorative---	105	49	3	---	49	1	207
Petroleum-----	258	449	---	---	---	---	707
Miscellaneous--	1,124	715	126	---	1	10	1,976
Total-----	8,285	8,628	168	6	819	328	18,233

r/Revised.

1/Data may not add to totals shown because of independent rounding.

2/Platinum, palladium, and rhodium sales to the automotive industry are estimated based on U.S. light truck sales and U.S. automobile production.

Platinum & Palladium Consumption Sales to Industry

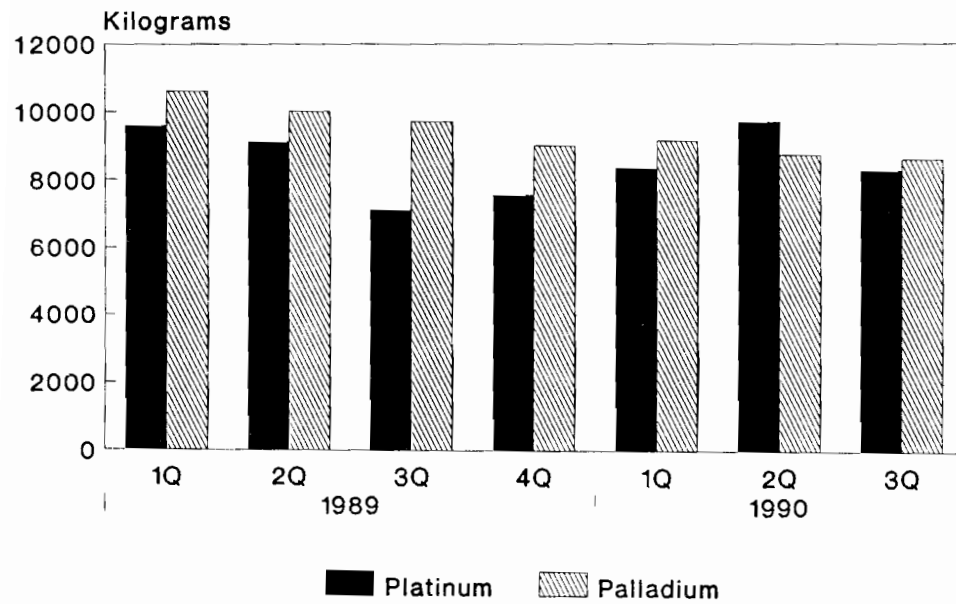


Table 4. - Monthly average producer and dealer prices of platinum-group metals 1/
(Dollars per troy ounce)

	Platinum		Palladium		Rhodium		Iridium 2/	Ruthenium	Osmium
	Pro- ducer	Dealer	Pro- ducer	Dealer	Pro- ducer	Dealer	Dealer	Dealer	Dealer
1989:									
January-----	600	528	150	135	1,275	1,247	295	64	580
February-----	600	530	150	141	1,275	1,254	293	62	580
March-----	600	534	150	145	1,275	1,271	295	62	580
April-----	600	538	150	166	1,275	1,274	300	62	570
May-----	600	515	150	152	1,275	1,280	303	62	550
June-----	600	494	150	152	1,275	1,275	305	61	550
July-----	600	500	150	150	1,275	1,269	305	61	550
August-----	600	483	150	134	1,275	1,247	305	61	550
September-----	600	476	150	137	1,275	1,265	305	62	550
October-----	600	483	150	137	1,275	1,269	305	63	529
November-----	600	504	150	138	1,275	1,302	307	63	500
December-----	600	502	150	137	1,275	1,644	313	63	500
Average-----	600	507	150	144	1,275	1,300	303	62	549
1990:									
January-----	600	492	150	134	1,275	2,031	315	63	505
February-----	600	516	150	135	1,275	2,098	310	61	444
March-----	600	494	150	130	1,275	2,058	310	61	425
April-----	600	475	150	127	1,275	2,108	310	61	421
May-----	600	484	150	118	1,275	2,308	305	61	400
June-----	600	479	150	115	1,275	2,960	305	61	400
July-----	600	475	150	116	1,275	5,040	305	61	400
August-----	600	486	150	115	1,275	5,014	305	61	400
September-----	600	319	150	103	1,275	5,271	305	61	400
October-----	600	415	150	94	1,275	4,720	305	59	400
Average-----	600	464	150	119	1,275	3,361	308	61	420

1/Average prices calculated at the low end of the range and rounded to the nearest dollar.

2/Producer price discontinued March 22, 1989.

Source: Metals Week.

Table 5. - U.S. imports for consumption of platinum-group metals
(Kilograms and thousand dollars)

Period and country	Platinum	Palla- dium	Rhodium	Ruthen- ium	Iridium	Os- mium	Waste and scrap	Ores	Total	
									Quantity	Value
1989:										
First quarter	12,870	13,743	1,699	246	174	23	583	8	29,346	\$364,080
Second quarter	12,956	13,037	1,988	1,104	181	5	916	1	30,188	382,450
Third quarter	11,830	11,931	1,635	755	206	5	281	4	26,647	318,124
Fourth quarter	11,587	12,424	1,783	777	128	25	379	1	27,104	317,045
Total	49,243	51,135	7,105	2,882	689	58	2,159	14	113,285	1,381,699
1990:										
First quarter	13,060	11,727	2,931	683	64	54	348	31	28,898	350,881
Second quarter:										
Belgium	205	2,212	34	---	---	---	---	---	2,451	13,801
Canada	75	249	---	---	---	---	253	46	623	7,303
France	78	5	---	---	---	---	---	---	83	1,253
Germany, Federal Republic of	857	241	63	15	2	5	---	---	1,183	18,762
Hong Kong	3	---	---	---	---	---	116	---	1,119	1,585
Japan	201	394	20	---	---	---	18	---	633	6,122
Mexico	---	---	---	---	---	---	166	---	166	379
Netherlands	---	1	---	---	---	---	---	---	1	47
South Africa, Republic of	10,641	5,531	1,834	680	154	---	---	---	18,840	249,134
Switzerland	228	183	---	---	---	---	---	1	412	5,159
Taiwan	4	165	---	---	---	---	---	---	169	1,149
U.S.S.R.	171	3,616	1,426	---	---	---	---	---	5,213	88,043
United Kingdom	1,140	2,185	424	44	37	---	2,012	---	5,842	52,234
Other	199	235	16	---	---	---	78	---	528	5,345
Total	13,802	15,017	3,817	739	193	5	2,643	47	36,263	450,316

Source: Bureau of the Census.

Table 6.--U.S. exports of platinum-group metals
(Kilograms and thousand dollars)

Period and country	Platinum	Palladium	Rhodium	Iridium, Osmium, Ruthenium	Waste and scrap	Total 1/	
						Quantity	Value
1989:							
First quarter	2,440	4,020	327	75	2,849	9,711	\$102,896
Second quarter	1,403	2,664	197	147	2,438	6,846	79,474
Third quarter	2,289	3,210	226	59	4,196	9,981	107,817
Fourth quarter	2,284	3,110	406	224	5,566	11,590	108,319
Total	8,416	13,004	1,156	505	15,049	38,128	398,506
1990:							
First quarter	1,646	3,262	324	251	5,431	10,914	106,914
Second quarter:							
Australia	33	10	---	17	---	60	615
Austria	---	3	---	---	---	3	17
Belgium	37	40	4	---	440	521	7,391
Brazil	2	2	---	---	---	4	25
Canada	79	215	40	3	89	426	6,072
China	---	493	---	---	---	493	2,039
France	---	24	---	---	34	58	269
Germany, Federal Republic of	20	153	---	2	783	958	11,045
Hong Kong	11	8	---	---	---	19	211
Italy	63	17	7	---	282	369	5,354
Japan	733	718	157	53	65	1,726	22,066
Korea, Republic of	108	11	27	8	---	154	3,474
Netherlands	---	388	---	---	---	388	1,735
Singapore	7	47	---	1	---	55	397
Sweden	---	---	---	79	52	131	589
Switzerland	53	76	15	---	---	144	1,709
Taiwan	148	51	---	---	---	199	1,890
United Kingdom	99	366	8	---	2,789	3,262	23,348
Other	33	103	2	92	---	230	1,149
Total	1,426	2,725	260	255	4,534	9,200	89,395

1/Data may not add to totals shown because of independent rounding.

Source: Bureau of the Census.