



A blast in the open pit at Eastern Platinum
(courtesy Lonrho Plc)

Table 3.6

Historical industrial, Government, and private stocks of PGM in the USA, as well as imports and exports

Type	Period	Average output kg/y	Annual growth decline %	Distribution, %						
				Pt	Pd	Ru	Rh	Ir	Os	Other
Stocks*	1976-80	30 816	- 4,92	45,9	42,2	-	-	1,8	-	10,1
	1981-85	26 884	-47,02	48,7	40,1	-	-	1,6	-	9,6
	1986-90	1 101	- 7,03	48,6	44,5	-	-	1,5	-	5,4
NYMEX stocks†	1983-86	7 956	+ 2,07	100,0	-	-	-	-	-	-
	1987-91	5 527	-17,67	100,0	-	-	-	-	-	-
	1983-86	2 883	- 3,80	-	100,0	-	-	-	-	-
	1987-91	2 501	- 5,56	-	100,0	-	-	-	-	-
Industrial stocks‡	1981-84	1 725	- 1,41	-	-	100,0	-	-	-	-
	1985-89	1 306	-25,91	-	-	100,0	-	-	-	-
	1982-86	1 605	+10,65	-	-	-	100,0	-	-	-
	1987-91	1 073	- 0,32	-	-	-	100,0	-	-	-
	1981-84	518	+ 7,23	-	-	-	-	100,0	-	-
	1984-89	526	- 6,53	-	-	-	-	100,0	-	-
	1981-84	15	+230,2	-	-	-	-	-	100,0	-
	1985-89	14	+26,46	-	-	-	-	-	100,0	-
Imports	1976-80	86 267	+ 8,51	42,3	45,6	-	-	-	-	12,1
	1981-85	93 040	+12,34	41,3	47,5	-	-	-	-	11,2
	1986-90	67 448	-61,32	42,4	46,8	-	-	-	-	10,8
Exports	1987-89	29 649	+31,56	-	-	-	-	-	-	All

Other The individual PGM not shown under their heading are lumped together under this category. Unfortunately no data on the toll-refined metal is available for the later periods

* Stocks on hand by refiners, importers and dealers

† Depository stocks held at the New York Merchantile Exchange (NYMEX)

‡ Stocks held by all US industries

Sources: US Bureau of Mines (CPM group and others), US trade statistics and statistics released by NYMEX, the New York Merchantile Exchange. Also from Christopher Munford, editor AMM Ferroalloys, in (1992) Metal Statistics, American Metal Market, 84th edition, New York, pp. 102-110.

Non-toll refining of PGM (primary metal) is undertaken in plants belonging to the various mining companies, in which case the cost is absorbed internally. Apparently this may not include SMC's production, although this is not clear. Toll refining occurs when ores or concentrates from one company are refined by a second company, for which a charge (toll) is levied. In the past, the main output of non-toll metals in the USA was derived from domestic copper ores by Amax's US Metals Refining Co., Asarco Inc., and Kennecott Copper Corp. This source has dwindled due to depressed copper prices and ensuing low production levels — but should be replaced by the output from Stillwater. Before 1976, such concentrates were derived from Goodnews Bay and toll-refined by Matthey Bishop Inc. Toll-refined primary metals were derived from Canada (Falconbridge's output refined by Engelhard, Columbia, and South Africa production from Western Platinum before it built its own refinery). From the tables, it is clear that US production of refined PGM is decreasing. Secondary metal is derived from PGM scrap

and refined by some 20 to 30 companies, the most important being Engelhard and Matthey Bishop. Refining of secondary metal may also be undertaken on a toll basis, mainly from chemical companies recycling catalysts, but there are many companies buying PGM scrap (also from abroad) and refining it internally on a non-toll basis. Table 3.6 also shows details of private and government stocks of the PGM, most of which show delining tendencies, with the exception of ruthenium, iridium, and, rather unexpectedly, osmium. Available import and export data are also provided — imports show a surprising decline and exports an escalation, which can be attributed only to the projected output from Stillwater.

3.5. Other Producers

The following section gives details of the minor producers in alphabetical order.

3.5.1. Australia

Australia produces PGM only from Western Mining Co's nickel refinery at Kwinana in Western Australia,