



METHODOLOGY AND SPECIFICATIONS GUIDE

Metals Week

(Latest Update: January 2012)

PRICE INDEXES	2	RHENIUM	10
		RHODIUM	10
		RUTHENIUM	10
PRICE ASSESSMENTS, EXCHANGE PRICES AND LIST PRICES	2	SELENIUM	10
ALUMINUM	2	SILICOMANGANESE	10
ANTIMONY	4	SILICON	10
ARSENIC	4	SILVER	10
BISMUTH	4	STAINLESS SCRAP	11
CADMIUM	4	TANTALUM	11
COBALT	4	TIN	11
COPPER	5	TITANIUM	11
FERROCHROME	5	TUNGSTEN	11
FERROMANGANESE	6	ZINC	11
FERROMOLYBDENUM	6		
FERROSILICON	6	FOREIGN EXCHANGE	12
FERROVANADIUM	6		
GOLD	6	BACKGROUND	12
INDIUM	7	Types of prices	12
IRIDIUM	7	Effective dates	12
LEAD	7	Foreign exchange rates	12
MAGNESIUM	7	Price ranges	12
MANGANESE	8	High/low prices	13
MANGANESE ORE	8	Futures trading positions	13
MERCURY	8	Calculation of averages	13
MOLYBDENUM	8	Conversion into other currencies	13
NICKEL	9	Conversion tables	13
OSMIUM	9		
PALLADIUM	9	GLOSSARY OF TERMS	14
PLATINUM	9		

PRICE INDEXES

Each of these three indexes is a straight arithmetic average calculated in such a way that its value would have been 100.00 on Dec. 30, 1982. The prices averaged are usually from the next to last business day of the week. When the price is a range, the low end is used in calculating the average. **MW Base Index** includes Aluminum MW US Market, Copper MW Composite, Lead US Producer, Tin MW Composite, Zinc MW NA SHG, and Nickel Cathode NY Dealer. **MW Precious Index** includes Gold London Initial, Silver Comex 1st Position, Palladium MW NY Dealer and Platinum MW NY Dealer. **MW Composite Index** includes MW Base and MW Precious Indexes.

PRICE ASSESSMENTS, EXCHANGE PRICES AND LIST PRICES

ALUMINUM

Unalloyed primary ingot and billet prices:

LME – Official morning session prices on the London Metal Exchange. First price is bid, second is asked. Weekly average is the bid/asked mean; settlement is official cash asked price, with weekly average being average of that price alone. HG (high grade) is min. 99.7% purity, quoted in US dollars.

NYMEX/COMEX – Daily official settlement/closing prices of the New York Mercantile Exchange's COMEX division, for 99.7% purity, in warehouse on warrant at select COMEX-registered warehouses. To meet COMEX specs, reflected as futures prices for each active trading month.

MW US Market – Weekly estimated US free market price for prompt delivery Midwest of 99.7% purity high-grade, (arrival within 30 days). Pre-dating the LME, the price reflects an "all-in" end price for the aluminum, accounting for premiums done over the LME in a given week but also enabling for adjustments in times of LME backwardation. The assessment, published usually every Thursday, includes the LME prices and daily survey premiums for Monday through Thursday only, incorporated into a one-cent range to smooth out volatility and reflect the majority of the week's business. Monthly average of this price uses the low end of the range only, so the price tends to be lower than the Transaction price.

MW US Transaction – Daily LME HG Cash Settlement adjusted by estimated US free-market premium or discount for prompt delivery Midwest (arrival within 30 days). Premium determined based on physical business reported by a daily survey of major buyers and sellers, using a representative survey sample of producers, traders and different types of end users (sheet mills, extruders, automotive companies, etc). Includes business for North American P1020 T-bars and sows, as well as Russian A7E equivalent, meeting LME specifications. The daily premium reflects the Platts editors' assessment of the most-widely available premium for delivery to a typical-freight consumer in a broad Midwest region. Premiums that are reported as FOT, for non-Midwest locations or for particularly close or long freights (ie, outside the range of 1-1.25cts/lb) are adjusted before inclusion in the calculations. Some estimated weighting of tonnage volumes occurs.

US Aluminum Net-Cash Premium– Daily premium over LME HG Cash Settlement for prompt delivery Midwest (arrival within 30 days), net-cash payment terms. Premium determined based on physical business reported by a daily survey of major buyers and sellers, using a representative survey sample of producers, traders and different types of end users (sheet mills, extruders, automotive companies, etc). Includes business for North American P1020 T-bars and sows, as well as Russian A7E equivalent, meeting LME specifications. The daily premium reflects the Platts editors' assessment of the most widely available premium for delivery to a typical-freight consumer in a broad Midwest region. Premiums that are reported as FOT, for non-Midwest locations or for particularly close or long freights (ie, outside the range of 1-1.25cts/lb) are adjusted before inclusion in the calculations.

US Six-Months P1020 – Weekly estimated US free-market premium over LME for North American 99.7% ingot delivered Midwest for a period in time six months forward, based on a survey of quotes and sales during the current week for six months from that date. Reflects both physical and financial swaps business done by producers, traders and consumers.

US Spot 6063 Billet Upcharge – Weekly estimated US spot upcharge over current P1020 transaction price for primary, North American General Purpose 6063 billet, to Aluminum Assn. specifications, basis delivery Midwest, net 30 days terms. The range reflects the majority of spot (non-contract) business based on a survey of active sellers and buyers. Excludes secondary and import billet.

Europe-Good Western Duty-paid Premium Rotterdam – Duty-paid daily estimated \$/mt premium over LME cash for Western-origin 99.7% ingot meeting LME high grade specifications. In warehouse Rotterdam, 0-30 days terms, prompt delivery. Based on a survey of producers, traders and consumers (extruders, rolling mills). Began being assessed daily September 2003.

Europe-Good Western Duty-Unpaid Premium Rotterdam – Daily estimated \$/mt premium over LME cash for 99.7% ingot meeting LME high grade specifications. In warehouse Rotterdam, 0-30 day terms, prompt delivery, on a duty-unpaid basis. Based on a survey of producers, traders and consumers (extruders, rolling mills). Assessed daily as of September 2003.

Europe-Russian A7E Duty-Unpaid Premium Rotterdam – Daily estimated \$/mt premium over LME cash for 99.7% Russian origin ingot in warehouse Rotterdam, 0-30 day terms, prompt delivery, on a duty-unpaid basis. Based on a survey of producers, traders and consumers of aluminium. Assessed daily as of September 2003.

Europe-Russian A7E FOB Premium St. Petersburg – Daily estimated \$/mt premium over LME cash for 99.7% Russian origin ingot on a FOB St. Petersburg basis, 0-30 day terms, prompt delivery. Based on a survey of producers, traders and consumers of aluminium. Assessed daily as of September 2003.

(DISCONTINUED)Europe – Good Western Premium: Duty paid weekly estimated \$/mt premium over LME cash for Western-origin 99.7% ingot meeting LME high grade specifications. In warehouse Rotterdam, 0-30 days terms, prompt delivery. Based on a weekly survey of producers, traders and consumers (extruders, rolling mills). Replaced with daily price effective September 2003.

(DISCONTINUED)Europe – Russian A7E Premium Rotterdam: Weekly estimated \$/mt premium over LME cash for 99.7% Russian origin ingot in warehouse Rotterdam, 0-30-day terms, prompt delivery. Based on a survey of

producers, traders and consumers of aluminum. Replaced with daily price effective September 2003.

(DISCONTINUED)Europe – Russian A7E Premium St Petersburg: Weekly estimated \$/mt premium over LME cash for 99.7% Russian origin ingot on a FOB St Petersburg basis, 0-30-day terms, prompt delivery. Based on a survey of producers, traders and consumers of aluminum. Replaced with daily price effective September 2003.

(DISCONTINUED)Europe – Russian A7E Premium Novorossiysk: Weekly estimated \$/mt premium over LME cash for 99.7% Russian origin ingot on a FOB Novorossiysk basis, 0-30-day terms, prompt delivery. Based on a survey of producers, traders and consumers of aluminum. Discontinued as of September 2003.

CIF Japan Spot Premium – Daily estimated premium for 99.7% Good Western aluminum, over LME cash for CIF Japan aluminum business, CIF Yokohama, Nagoya, Osaka ports, excluding Iran, Egypt, India, LME warehouses, CBA Brazil. Cash within 3 days of bill of lading; cargo leaves port in month following month of transaction. 500-10,000mt quantities. Platts surveys market sources, gathering information from a representative sample of traders, consumers, producers and brokers deemed reliable and active in the market. Platts contacts sources based in Japan, Australia, Hong Kong, Korea and other Asian countries. Platts also gathers information from sources in North and South America, and Europe.

CIF Japan Forward Quarter Premium – Daily estimated premium for 99.7% Good Western aluminum, over LME cash for CIF Japan aluminum business, CIF Yokohama, Nagoya, Osaka ports, excluding Iran, Egypt, India, LME warehouses, CBA Brazil. Cash within 2 days of bill of lading; cargo leaves port in the quarter following the quarter in which business is transacted. 500-10,000mt quantities. The assessment appears as “CIF Japan Q(1,2,3,4).” Q1 represents the January-March term, Q2 the April-June term, Q3 the July-September term, and Q4 the October-December term. The assessment covers business in which lifting from the producer’s port is scheduled for some time in the quarter following the one in which business was transacted (ie: business concluded in August for October lifting; the assessment would read “Q4” because October is part of the fourth quarter term). The term is rolled over when the majority of counterparties have negotiated pricing for the forward quarter.

C&F China Western – Daily estimated premium for 99.7% (0.1% Si, 0.2% Fe) Good Western aluminum in the form of ingots, sows, T-bars, over LME cash for C&F China aluminum business. Cargo leaves port upon receipt of letter of credits, usually within one month following the transaction. Delivered to main Chinese ports such as Huangpu, Shanghai, Fuzhou, Qingdao, Zhongshan, Zhuhai, and Hong Kong. Under consideration to be changed to CIF China.

C&F China Russian – Daily estimated premium for 99.7% (0.1% Si, 0.2% Fe) Russian aluminum in the form of ingots, sows, T-bars, over LME cash for C&F China aluminum business. Cargo leaves port upon receipt of letter of credits, usually within one month following the transaction. Delivered to main Chinese ports such as Huangpu, Shanghai, Fuzhou, Qingdao, Zhongshan, Zhuhai, and Hong Kong. (Under consideration for change to CIF, Chinese origin only)

In-Warehouse Singapore – Daily estimated premium for 99.7% (0.1%Si, 0.2% Fe) material of all origin, mainly Indian, Chinese, and some Russian and Western, in-warehouse Singapore. Cargo released immediately upon payment.

Secondary alloy ingot prices

LME Alloy – Official morning session prices on the LME. First price is bid, second is asked. Weekly average is the bid/asked mean; settlement is official cash asked price, with weekly average being average of that price alone. Aluminum alloy delivered under this contract shall be: A380.1 alloy produced in conformity with the Aluminum Assn. specification; 226 alloy, produced in conformity with GDB-AISi9Cu3 as described in DIN standard 1725; and D12S alloy, produced in conformity with JIs H2118-1976, Class 12. (Note: this specification to be read in conjunction with the provision that there be an allowance as follows: Others, total 0.50% max. Al balance). Lot sizes are 20 mt and in US dollar per mt. Cash price started Feb 1, 1993.

LME North American Special Aluminum Alloy Contract – Aluminum alloy conforming to the special North American A380.1 specification; size of lot is 20mt (with a tolerance of +/-2%). Delivery is daily from cash to 3 months (first prompt date two working days from cash), then every Wednesday from 3 months to 6 months. Then every third Wednesday from 7 months out to 27 months forward. The aluminum delivered under this contract shall be in the form of: ingot in the weight range of minimum 4kg to maximum 17.3kg; small sows in the weight range of minimum 408kg to maximum 590kg; large sows in the weight range of minimum 567kg to maximum 726kg; and T-bars in the weight range of minimum 408kg to maximum 726kg. Warehouses are located in Baltimore, Maryland, Chicago, Illinois; Detroit, Michigan; and St Louis, Illinois.

A-380 Alloy – 8-9.5% Si, 1% Fe, 3-4% Cu, 0.5% Mn, 0.1% Mg, 0.5% Ni, 2.9% Zn, and 0.35% Sn. Estimated twice-weekly (Monday-Thursday) market price for prompt delivery Midwest, customer works, payment net-30 to net-60 days, 45,000-lb truckload amounts. Price represents a range of spot transaction prices conducted by a survey of US secondary aluminum smelters, diecasters, foundries, automotive companies, traders and brokers. Price started in 1992.

319, 356, A-413.1 and F-132 – Estimated twice-weekly price ranges for major secondary alloys. Delivered Midwest customer works, payment net 30 to net 60 days, 45,000-lb truckload amounts. The prices, set on Monday and Thursday, represent a range of spot transaction prices conducted by a survey of major suppliers and buyers. The impurity levels represent the Aluminum Assn. specifications for 319.1, 356.1 and 332.2, respectively, as follows: **319** – Si, 5.5-6.5; Fe, 0.8; Cu, 3.0-4.0; Mn, 0.50; Mg, 0.10; Ni, 0.35; Zn, 1.0; Ti, 0.25. **356** – Si, 6.5-7.56; Fe, 0.50; Cu, 0.25; Mn, 0.35; Mg 0.25-0.45; Zn, 0.35; Ti, 0.25. **A-413.1** - Si, 11-13%; Fe, 1% max; Cu, 0.6% max; Mn, 0.35%; Mg, 0.1%; Ni, 0.5%; Zn, 0.5%; and Sn, 0.15%. **F-132** – Si, 8.5-10.0; Fe, 0.6; Cu, 2.0-4.0; Mn, 0.20; Mg, 0.9-1.3; Ni, 0.10; Zn, 0.10; Ti 0.20. Prices started in April 1993.

Europe – Secondary Aluminium 226 Price (Started Sep 1, 2003): Weekly estimated Eur/mt price for secondary aluminium alloy 226 LME grade on a delivered works basis 0-30 day terms, prompt delivery. The alloy is produced in conformity with GDB-AISi9Cu3 as described in DIN standard 1725 (1986). Based on a survey of producers, traders and consumers of aluminium. Price assessed weekly and published on Fridays.

ADC12 ex-works China: Platts assessment for ADC12 Alloy to conform to JIS standard – 9.6-12% Si, 0.9% Fe, 1.5-3.5% Cu, 0.5% Mn, 0.3% Mg, 0.5% Ni, 1% Zn, and 0.2% Sn. Spot prices assessed weekly on Tuesday or closest working day. The assessment reflects the domestic market price, on a spot trade basis, in yuan per mt, ex-plant from a typical supplier. The spot price represents a range of spot

transactions, bids and offers determined by surveying Chinese secondary aluminum smelters, diecasters, foundries, automotive companies, traders and brokers.

ADC12 FOB China: Platts assessment for ADC12 Alloy to conform to JIS standard – 9.6-12% Si, 0.9% Fe, 1.5-3.5% Cu, 0.5% Mn, 0.3% Mg, 0.5% Ni, 1% Zn, and 0.2% Sn. Spot prices assessed weekly on Tuesday or closest working day. The assessment reflects the export market price, on a spot trade basis, in \$/mt, FOB Chinese ports, mainly Shanghai and Tianjin. The spot price represents a range of spot transactions, bids and offers determined by surveying secondary aluminum smelters, diecasters, foundries, automotive companies, traders and brokers in China, Hong Kong and Japan.

Scrap prices.

US Old Cast – Aluminum castings for consumption by secondary aluminum smelters, crushed cast, shreddable, less than 1% Mg and Zn, low Fe, low contamination; minimum recovery rate 92%; cents/lb, within 30-day delivery US Midwest. Assessed twice a week, usually on Mondays and Thursdays, through a survey of secondary aluminum smelters and scrap dealers. Price started in July 2000.

US Old Sheet – Non-cast aluminum items for consumption by secondary aluminum smelters to meet ISRI “taint/tabor” specification; cents/lb, 30-day delivery US Midwest. Assessed twice a week, usually on Mondays and Thursdays, through a survey of secondary aluminum smelters and scrap dealers. Price started in July 2000.

US Mill-grade MLCCs – Mixed-low copper clips able to be consumed by aluminum rolling mills, 1000, 3000, 5000, 6000 series only; cents/lb, 30-day delivery US Midwest. Assessed twice a week, usually on Mondays and Thursdays, through a survey of secondary aluminum smelters, scrap dealers and rolling mills. Price started in July 2000.

US Smelter-grade MLCCs – Mixed-low copper clips for consumption by secondary aluminum smelters, loose, bare, new, no contamination, free of 2000 and 7000 series; cts/lb, 30-day delivery to US Midwest. Assessed twice a week, usually on Mondays and Thursdays, through a survey of secondary aluminum smelters and scrap dealers. Price started in July 2000.

US Turnings – Machine and tooling scrap for consumption by secondary aluminum smelters; high grade, clean and dry; cts/lb, 30-day delivery US Midwest. Assessed twice a week, usually on Mondays and Thursdays, through a survey of secondary aluminum smelters and scrap dealers. Price started July 2000.

US UBCs – Baled used beverage cans, to meet ISRI “taldon” specification; cents/lb, delivered US Midwest. Assessed once a week, usually on Thursdays, reflecting the range of spot business concluded by consumers and mid-to-large scrap dealer/consolidators/brokers. Business that is reported as non-Midwest or FOT (picked up) is adjusted to reflect average US Midwest delivery. Price started July 2000.

US 6063 Press Scrap – New 6063 extrusion press scrap, direct from presses, billet with butts included. Expressed as a cents/lb discount below US Midwest P1020 Transaction price, delivered US Midwest cast houses. Assessed once a week as the range of discounts most commonly concluded on a spot basis, via a survey of primary producers, extruders and scrap dealers. Price started September 2000.

US Painted Siding – Siding consisting of clean, low-copper aluminum siding scrap, painted one or two sides, free of plastic coating, iron, dirt, corrosion, fiber,

foam or fiberglass backing or other non-metallic items, for US Midwest delivery within 30 days. Assessed once a week, usually on Thursdays, through a survey of scrap dealers and rolling mill buyers. Price started in March 2006.

US High-grade auto shreds – Auto shreds generated through a heavy media-based separation process, containing at least 98% metallics and not more than 1% free zinc, to include material from the following suppliers: Huron Valley, Newell, Ferrous Processing/SLC Recycling and Fort Wayne OmniSource Corp., for US Midwest delivery within 30 days. Assessed twice a week, usually on Mondays and Thursdays, through a survey of secondary aluminum smelters and scrap dealers/processors. Price started in May 2006, replacing previous auto shreds/twitch price effective September 2006.

US Low-grade auto shreds – Auto shreds generated through an eddy current-based or hand separation process, containing at least 90% metallics and not more than 4% zinc, for US Midwest delivery within 30 days. Assessed twice a week, usually on Mondays and Thursdays, through a survey of secondary aluminum smelters and scrap dealers. Price started in May 2006, replacing previous auto shreds/twitch price effective September 2006.

ANTIMONY

MW NY Dealer – 99.65% min. antimony ingot, 0.15% max. arsenic, warehouse, 5-ton lots, duty paid.

99.65% HK – Chinese produced antimony regulus, min. 99.65% Sb, \$ per mt, FOB Hong Kong.

ARSENIC

MW Dealer – Free market price for arsenic metal lumps (fist size), minimum 99% As, 5mt lots, in-warehouse, \$/lb. Started September 2003.

BISMUTH

MW NY Dealer – Estimated NY merchant price, 99.99% min. purity, prompt delivery. Min. one ton, in-warehouse, \$/lb.

CADMIUM

MW NY Dealer – Estimated NY Dealer price, 99.95% min. purity, prompt delivery. Min 5-ton lots.

MW Free Market High Grade – Estimated NY dealer price, 99.99% minimum purity metal, prompt delivery, minimum 5-ton lots, \$/lb. Started October 2003.

COBALT

Europe - Cobalt 99.8%: Weekly estimated \$/lb price for minimum 99.8% cobalt. The price is assessed on a free market in warehouse Europe basis. Based on survey of producers, traders and consumers of cobalt. Assessed weekly, usually on Thursdays.

MW, 99.8% US Spot Cathode – US free market cobalt, 99.8%, Falconbridge (Xstrata Nickel) or equivalent, 1"x1" cut, electrolytic, cobalt cathodes, minimum 99.8% Co, packed in 250 kg steel drums, four drums per wooden pallet, strapped to pallet. Assessed in \$/lb, delivered, duty-paid US, delivery within 30 days, payment net-30 days. All Cuban origin material excluded from US cobalt assessments. Based on surveys of producers, merchants and consumers, assessed Thursdays or closest business day.

MW, 99.6% Zambian – US free market cobalt, 99.6%, Zambian, thin/broken, electrolytic cathode, minimum 99.6% Co, packed in 250 kg steel drums. Assessed in \$/lb, delivered, duty-paid US, delivery within 30 days, payment net-30 days. Based on surveys of producers, merchants and consumers. Assessed Thursdays or closest business day.

MW, 99.3% Russian – US free market cobalt, 99.3%, Russian K1A/K1Ay electrolytic ingot/granules, minimum 99.30% Co and 99.35% Co, K1A and K1Ay respectively, ingot sizes 370x110x60 mm or 270x150x50 mm for K1A, typical ingot weight 12-14 kg, or granules 5-50 mm for K1Ay, certified suitable for use in aerospace, packed in 250 kg steel drums, or packed in metal containers up to 4,500 kg net. Basis delivered, duty-paid, US, delivery within 30 days, payment net-30 days. Note: Russian K1 (99.25% Co) and K2 (98.30% Co) excluded from this assessment. Based on surveys of producers, merchants and consumers. Assessed on Thursdays or closest business day.

COPPER

COMEX – Settlement prices on New York Mercantile Exchange's COMEX division. Forward positions are indicated by footnote (C) on price pages. The high-grade contract is ASTM B115.

LME – Official morning session prices on London Metal Exchange. First price is bid, second is asked. Weekly average is the bid/asked mean. The grade A contract is 99.9935% Cu and only cathode and wirebar shapes are deliverable. Quoted as ¢/mt until June 30, 1993. Started quote in \$/mt as of July 1, 1993.

MW No. 1 Scrap – Mid-week transaction based, buy-side indications for US-delivered bare bright scrap and burnt wire, expressed as a cts/lb discount spread to the First Position COMEX price.

MW No. 2 Scrap – Estimated New York area delivered price for US-delivered clean No. 2 scrap (96% Cu) for the next to last business day of the week expressed as a cts/lb discount spread to the First Position COMEX price.

MW CIF Europe – LME grade A asked price.

MW Composite – Weighted average based on estimated US refined copper production, on a delivered cathode basis.

NY Dealer Premium/Cathode – Typical premiums expressed in cts/lb above First Position COMEX being charged by New York metal merchants on the next to last business day of the week.

MW US Producer Cathode – Weighted average based on estimated US refined copper production and published prices for delivered full-plate cathodes.

MW US Producer/Refinery – f.o.b. quotation is MW US producer/delivered prices less 1.4cts shipping cost.

US Producer Cathodes and US Producer Wirebars – Official list prices for those grades (99.9% Cu).

Europe – Grade A CIF Rotterdam: Weekly estimated \$/mt premium for Grade A LME copper on a CIF Rotterdam basis, 0-30-day terms, prompt delivery. Based on a survey of producers, traders and consumers of copper. Assessed weekly, usually on Wednesdays.

Europe – Grade A CIF Italy: Weekly estimated \$/mt premium for Grade A LME copper on a CIF Italian port basis, 0-30-day terms, prompt delivery. Based on a survey of producers, traders and consumers of copper. Assessed weekly, usually on Wednesdays.

Europe – Standard CIF Rotterdam: Weekly estimated \$/mt premium for Russian standard grade copper on a CIF Rotterdam basis, 0-30-day terms, prompt delivery. Based on a survey of producers, traders and consumers of copper. Assessed weekly, usually on Wednesdays.

Copper Concentrate – Cu 30%, CIF Japan. Daily estimated treatment and refining charges (\$/mt; cts/lb) for 25-30% copper-in-concentrate, any origin, lumpy ore, 0-30 day terms, Cargo leaves port in month following that of transaction.

Copper C&F China – Daily estimated premium for Grade A 99.95% minimum cathode, mostly of Chilean origin, over LME cash for C&F China copper business. Cargo leaves port upon receipt of letter of credits, usually within one month following the transaction. Delivered to main Chinese ports such as Huangpu, Shanghai, Guangzhou, and Hong Kong. (Under consideration to be changed to a CIF basis price)

In-Warehouse Singapore Premium – Daily estimated premium for Grade A 99.95% minimum material of all origin, mainly Philippines, Indonesia, Chilean, South Korean, and Australian, Chinese, and Japanese, in-warehouse Singapore. Cargo released immediately upon payment.

FERROCHROME

US ferrochrome prices are FOB warehouse Pittsburgh, Chicago or Houston

Charge chrome 50-55% US import – Weekly market price, South African origin.

High-C FeCr, 60-65%/US import – US import weekly spot sales.

MW US Low-C FeCr 0.05% – US import weekly spot sales

MW US Low-C FeCr 0.10% – US import weekly spot sales

MW US Low-C FeCr 0.15% – US import weekly spot sales

MW Lo-C 0.15% – 0.15% C. Price introduced week ending Oct 6, 1995.

65% 6-8% High Carbon DDP NWE: Weekly assessment for 60-70% chrome, normalized to 65% Cr, with Si content of 1.5%; P content 0.030%. The specification is for volumes of 200-500 mt, delivered, duty-paid Northwest Europe, basis for

delivery within four weeks from date of transaction, net-30 days payment terms. Assessment will be in \$/lb Cr contained and conducted on Thursdays (or closest business day in the case of holidays) through a survey of producers, traders and steel mill buyers.

Low-Carbon 0.10% DDP NWE: Weekly assessment for 60-70% chrome, normalized to an assessed grade with a Si content of 0.05% and P content 0.05%. The specification will be for volumes of 200-500 mt, delivered, duty-paid Northwest Europe basis for delivery within 4 weeks from date of transaction, net-30 days payment terms. Assessment will be in \$/lbCr contained and conducted on Thursdays (or the closest business day in the case of holidays) through a survey of producers, traders and steel mill buyers.

Charge Chrome 52% DDP NWE: Weekly assessment for 48-52% grades normalized to a Si content of maximum 6-8% and P content 0.030%. The specification will be for volumes of 200-500 mt, delivered, duty-paid Northwest Europe basis, for delivery within 4 weeks from date of transaction, net-30 days payment. Assessment will be in \$/lb Cr contained and conducted on Thursdays (or the closest business day in the case of holidays) through a survey of producers, traders and steel mill buyers.

50-55% Regular CIF Japan – 50-55% Cr, 6-9% C Started July 1, 1993

60-65% Spot CIF Japan – 60-65% Cr, 6-9% C Started July 1, 1993

FERROMANGANESE

US Prices are Free Market weekly spot sales, FOB warehouse, Pittsburgh, Chicago, Houston.

US Standard High-C, 78% min Mn, 7% max C, \$ per lt, gross weight

US Medium-C, 1.5% max carbon, 80-85% Mn, cents/per lb/Mn.

(DISCONTINUED) Europe- High Carbon 60-65%: Free market weekly estimated cts/lb price for High Carbon ferrochrome 60-65% chrome on a delivered works Europe basis. Based on a survey of producers, traders and consumers of ferrochrome. Discontinued April 2002.

(DISCONTINUED) 73-78%/Japan – 7.3% C. Discontinued June 30, 1993.

High-Carbon 75% HK – 75% Mn, US dollar per mt, f.o.b. main Chinese ports.

FERROMOLYBDENUM

Prices based on moly content.

US Free Market ferromoly – weekly spot sales, 60% min Mo, 0.5% Cu, delivered, \$ per lb/Mo, minimum 2,400 lb lot.

Europe – Ferromoly: Free market weekly estimated \$/kg price for ferromolybdenum 70% Mo, 0.5% Cu, on a cash Rotterdam inwarehouse, duty unpaid basis. Standardized lump 2" or less, truck load lots. Based on a survey of producers, traders and consumers of ferromoly. Assessed in Europe on Thursdays.

HK Femo – Hong Kong, min 60% Mo, US dollar per kilo, f.o.b. main Chinese ports.

(DISCONTINUED) 60-70% Prod/Japan – 0.1% C, 2% Si, Mo content per kilo, Japanese producer. Discontinued June 30, 1993.

Spot CIF Japan – (min 60% Mo, max 0.1% C, max 2% Si; Mo content per kg) Japanese imports. Started July 1, 1993.

FERROSILICON

US Import 75% – Free market weekly spot sales, 75 Si content, 1.5% max Al.

75% Std DDP NWE: Weekly assessment for 75% ferrosilicon; grades will be normalized to a specification with Al content of 1.5%, S 0.02% and P 0.04%. The assessment will be for volumes of 200-800 mt, delivered, duty-paid Northwest Europe basis for delivery within four weeks, net-30 days payment terms. Assessment will be in \$/lb Si contained and conducted on Thursdays (or the closest business day in the case of holidays) through a survey of producers, traders and steel mill buyers. **(DISCONTINUED) Term Nor/Braz** – prices for Brazilian and Norwegian standard-grade contract material, delivered Japan, yen per mt. Discontinued June 30, 1993

Chinese CIF Japan (Si 75% min, 0.2% C max.) – Started July 1, 1993. (DISCONTINUED as of December 31, 2007: Regular CIF Japan, Spot CIF Japan)

(DISCONTINUED) Non-Origin yen/mt delivered (120-day usance) – Started July 1, 1993. Discontinued December 31, 2007

HK 75% Si – 75% Si, US dollar per mt, f.o.b main Chinese ports.

FERROVANADIUM

US Free Market Ferrovandium – weekly spot sales; 80% minimum V content, \$/lb/V; 2% max Si, 2% max Al, delivered.

US Free Market V₂O₅ (vanadium pentoxide) – weekly spot sales/indications; 98% minimum, delivered, price per lb/V2O5.

Europe- 70-80% V Ferrovandium: Free market weekly estimated \$/kg price for ferrovandium 70-80% V, on an inwarehouse Europe basis. Based on a survey of producers, traders and consumers of ferrovandium. Assessed in Europe on Thursdays.

(DISCONTINUED) 80% Prod/Japan – 80% V, V content ferrovandium, Japanese producer, and imported, yen per kilo. Discontinued June 30, 1993.

GOLD

COMEX – Settlement prices on the New York Mercantile Exchange's COMEX Division. Forward position is indicated by footnote (C) on price pages. These months are spot and one year out.

Handy & Harman – Daily quotation is the lowest price at which offers can be obtained by Handy & Harman for gold, min 99.95% purity, for nearby delivery in New York in quantities sufficient to meet its daily requirements.

London Final and London Initial – These spot quotations are established twice daily by consensus of major London bullion dealers. Purity: 99.5% fine.

Engelhard Unfab – base price per tr oz, asked price at 10:30 EST for 99.99% purity, unfabricated, f.o.b. Carteret, NJ, vault.

Hong Kong spot at 0700 GMT – These spot quotations are established daily at 0700 GMT, based on current trading levels quoted by Johnson Matthey. Purity: 99.5% fine minimum.

INDIUM

US Producer Indium Corp. – Indium Corp.'s price for 99.97% purity metal; 1 kilo bar in lots of 10,000 tr oz, f.o.b., Utica, NY, published in \$/kg.

MW NY Dealer Indium – Price is based on 99.99% minimum purity indium at warehouse (Rotterdam), CIF, in minimum lots of 50kg.

Indium 99.99% CIF Japan: Indium metal with 99.99% purity, primary or secondary, measured in \$/kg, shipped to Japan, delivery within 30 days. The metal should be compliant to European Union's RoHS directive, which restricts content of cadmium to less than 75 ppm, lead to less than 100 ppm, mercury to less than 100 ppm and hexavalent chromium to less than 20 ppm in 1 kilogram of the metal. 99.993% and 99.995% purity metal prices are to be considered as references. Platts assesses materials of Chinese and South Korean origins. Platts reserves the right to omit materials of unspecified origins from the assessment. Lots are 50 kg minimum and should not exceed 5 mt. Lots less than 50 kg are not to be considered as they are likely to be priced higher, and lots over 5 mt are likely to be sold with a volume discount. Platts assesses prices of the metal exported to Japan to be sold to Japanese traders, indium tin oxide manufacturers, solder and electronics equipment makers, as well as solar battery material makers. Spot prices are assessed on a weekly basis every Tuesday or closest working day based on a survey of Chinese producers, traders, South Korean producers and traders, Japanese traders, Japanese ITO makers and solder/electronics and battery makers.

IRIDIUM

MW NY Dealer – f.o.b. New York spot, estimated market price for min. 99% Ir purity.

LEAD

LME – Official morning session prices on the London Metal Exchange. First price is bid, second is asked. Weekly average is the bid/asked mean. Purity 99.97%. Quoted as œ/mt until June 30, 1993. Started quote in \$/mt on July 1, 1993.

MW NA Producer (MW NA Prod) – The weighted average, based on 1993 production figures, of the list prices of those NA (Canadian and US) primary and secondary producers still quoting list prices, in addition to those producers who have switched to LME pricing, the LME cash price plus appropriate market premiums or discounts.

MW North American Secondary Price (Lead Sec Prod) – The weighted average of the prices of NA (US and Canadian) secondary producers.

Europe – Dealer Premium 99.990% Rotterdam: Weekly estimated \$/mt premium over LME cash for 99.990% lead on an in-warehouse Rotterdam basis, duty paid. Based on a survey of producers, traders and consumers of lead. Assessed every other week, usually on Tuesdays.

Europe – 99.985% Rotterdam: Weekly estimated \$/mt premium over LME cash for 99.985% lead on an in-warehouse Rotterdam basis, duty paid. Based on a survey of producers, traders and consumers of lead. Assessed every other week, usually on Tuesdays.

Europe – 99.970% Rotterdam: Weekly estimated \$/mt premium over LME cash for 99.970% lead on an inwarehouse Rotterdam basis, duty paid. Based on a survey of producers, traders and consumers of lead. Assessed every other week, usually on Tuesdays.

In-Warehouse Singapore Premium – Daily estimated premium for 99.97% material of mainly Chinese origin, in-warehouse Singapore. Cargo released immediately upon payment.

MAGNESIUM

All prices for 40,000-lb (truckload) lots.

(DISCONTINUED) US Die Cast Alloy/Producer – US producer list price, AZ91D alloy ingot, delivered. Under consideration for discontinuation due to producers' failure to update. Discontinued December 31, 2007

(DISCONTINUED) US Primary Ingot/Producer – US producer list price, 99.8% Mg, ASTM Grade 9980A, net 30 days financing, delivered, duty paid. Under consideration for discontinuation due to producers' failure to update. Discontinued December 31, 2007

US Die Cast Alloy/Tran – Western AZ91D alloy ingot, 40,000-lb (truckload), net 30 days, delivered, duty paid, reflecting the majority of producer/customer transactions on a spot basis. Started July 1, 1993.

MW US Spot Western – Western-origin pure 99.8% Mg ingot, ASTM Grade 9980A, truckload (40,000 lb) lots, net 30 days, duty paid, prompt delivery to US customer plant (Al alloying, chemical, and Mg ferrosilicon segments). Started July 1, 1993.

MW US Dealer Import – Non-oxidized, pure 99.8-99.9% Mg ingot, primarily from CIS or China, truckload (40,000 lb) lots, net 30 days, duty paid, prompt delivery to US customer plant (Al alloying, chemical, and Mg ferrosilicon segments). Started July 1, 1993.

European Free Market – Dealer price, 99.9% pure Russian or Ukrainian origin, mostly unoxidized Mg, in warehouse Rotterdam, duty unpaid.

99.8% FOB China: Weekly spot assessment range for 99.8% minimum pure magnesium ingots from China, in \$/mt, FOB Tianjin, for shipment within 30 days. The assessment is based on a survey of China-based and Western traders, Chinese producers, Western consumers and analysts, assessed weekly on Tuesday or closest working day.

Magnesium Diecast Alloy FOB China – Magnesium diecast alloy, to include AZ91D, AM50 and AM60 specifications qualified by automotive companies, FOB

Tianjin port destined for export within 30 days. Assessed from Hong Kong or Singapore in dollars per metric ton on a weekly basis, on Tuesday or closest business day, through a survey of Chinese producers, Asian traders and worldwide diecasters buying on an FOB China basis. Prices which are reported on a delivered China or CIF basis to other countries will be normalized to meet the specification. Includes export tax.

MANGANESE

Manganese Metal, min 99.7% grade, Hong Kong (Chinese-origin): Weekly estimated \$/mt price on a FOB Chinese main ports basis, duty paid in US dollars per metric tonne. Based on a survey of producers, traders and consumers of manganese metal. Assessed every Thursday.

MANGANESE ORE

Platts launched on January 3, 2012, a daily spot market price assessment of **manganese ore**.

Price Assessment: Platts publishes the daily spot market price for manganese ore, reflecting the price at which a cargo could be traded on a CIF North China basis, Tianjin, at the close of the assessment period on the day of publishing. These assessed values are based on confirmed spot cargo transactions, or the tradable price falling between firm cargo bids/offers, or in the absence of liquidity, where spot market transactions would have been concluded for the benchmark grade.

Spot price bids/offers or trades basis FOB or CIF in other locations may be netted back to CIF North China using prevailing spot freight rates for dry bulk carriers on the day of assessment. For netback/netforward calculations, the appropriate vessel class freight costs are taken into consideration.

Platts spot market price assessment can also take into account fundamentals of demand/supply of manganese ore and alloys in key consumer and producer markets internationally.

Availability: The daily spot price assessment of manganese ore is published in Platts' real-time service Platts Metals Alert (PMA), in Platts Metals Week, and in Platts Metals Daily supplements. Monthly averages are published on PMA, in Platts Metals Week Price Notification Monthly Report and in Metals Week.

Frequency: The assessment CIF China is published daily and reflects market values prevailing at the close of Asian markets, typically at 6:30 pm Singapore time (1030 GMT). The assessment is published following editorial engagement with market participants such as producers, consumers, traders, shippers and other active spot market participants.

Basis & Location: Cargoes offered Cost, Insurance and Freight (CIF) Tianjin North China are the basis for delivery, with delivery to other Chinese ports normalized to Tianjin.

Unit: All prices are quoted in US dollars per dry contained manganese unit (\$/dmtu).

Timing: Platts assesses cargoes arriving CIF North China typically from 2 – 8 weeks forward from the date of publication and will normalize to the middle of the delivery window.

Quality: The assessment reflects high grade manganese ore lumps normalized to a standard specification of 44% Mn contained content. All values deemed typical; specifications with Mn content ranging from 41% to 46% are to be normalized to a standard where Fe content is 6.00%, SiO₂ is 8.00%, Al₂O₃ is 7.00% P is 0.11%, moisture is 3.00% and sizing at 5mm to 80mm, 90% passing.

Quality inspections are typically made at discharge port. Re-assessments of quality at delivered ports will not be considered for assessment of spot prices based on the principle that the original transaction was executed in good faith.

Volume: Minimum cargoes of 5,000 mt or one full hatch are assessed as standard.

Payment terms: Cash or at sight terms are standard for assessment all deviations will be normalized to this standard.

MERCURY

(DISCONTINUED) D.F. Goldsmith – Price quoted by D.F. Goldsmith for 99.995% purity mercury in 76lb flasks, 99.99%. Price was implemented on June 1, 1992. Discontinued in 1998.

Free Market International – Price based on 99.99% minimum purity HG, Prime Virgin, CIF Rotterdam, \$/fl.

US Domestic – Price based on 99.99% minimum purity Hg, Prime Virgin, FOB US East Coast warehouse, in minimum quantity of 50fl, \$/fl.

MOLYBDENUM

MW Dealer Oxide — A weekly assessment for “repeatable” dealer-to-consumer spot sales, technical-grade moly oxide (roasted molybdenum concentrates), min 57% Mo, max 0.5% Cu, 0.05% lead, drummed material, order quantities 18-24 metric tons for delivery 3-30 days forward from the date of publication, CIF Japan, in-warehouse European ports, delivered US. Molybdenum is assessed every week on Thursdays or closest prior business day.

Daily Dealer Oxide – Platts launched a daily Molybdenum Oxide assessment on October 10, 2011, which complements the weekly dealer oxide assessment. The assessment is for “repeatable” dealer-to-consumer spot sales, technical-grade moly oxide (roasted molybdenum concentrates), min 57% Mo, max 0.5% Cu, 0.05% lead, drummed material, order quantities 18-24 metric tons for delivery 3-30 days forward from the date of publication, CIF Japan, in-warehouse European ports, and delivered US. The daily assessment will take into account all transactions, bids and offers reported to Platts in the 24-hour period up to 16:30 London time each day, assessed as a range in US dollars per pound.

MW Oxide Transaction — A weekly assessment for “repeatable” dealer-to-consumer, producer-to-consumer, producer-to-dealer and/or dealer-to-dealer spot sales, technical-grade moly oxide (roasted molybdenum concentrates), min 57% Mo, max 0.5% Cu, 0.05% lead, drummed material, order quantities 18-24 metric tons for delivery 3-30 days forward from the date of publication, CIF Japan, in-warehouse European ports, delivered US, delivered duty-unpaid South Korean ports and CIF Nhava Sheva/Mumbai, India. Molybdenum is assessed every week on Thursdays or closest prior business day.

Moly oxide CIF Japan – Moly Oxide min. 57% grade — Platts assesses weekly spot prices for molybdenum oxide (roasted molybdenum concentrates) of minimum 57% molybdenum, maximum 0.5% copper, and maximum 0.05% lead, with a chemistry composition of MoS₃, exported to Japan on a CIF basis. Assessments are for moly oxide in powder form, drummed or sold in big bags, for delivery to Japanese ports. Prices for moly oxide briquettes are normalized to the price of powder, with Platts taking into consideration typical processing charges. Minimum tonnage of transactions to be considered for the assessment is 18 mt. Units for assessment are US dollar per pound.

Moly oxide FOB China – Chinese Origin — Platts assesses weekly spot prices for molybdenum oxide (roasted molybdenum concentrates) of minimum 57% molybdenum, maximum 0.5% copper, and maximum 0.05% lead, with a chemistry composition of MoS₃, exported from China on an FOB basis. Assessments are for moly oxide in powder form, drummed or sold in big bags, for delivery from Chinese ports. Prices for moly oxide briquettes are normalized to the price of powder, with Platts taking into consideration typical processing charges. Minimum tonnage of transactions to be considered for the assessment is 18 mt. Units for assessment are US dollar per pound.

NICKEL

N American Free Market – 4X4 cathode, estimated weekly market price in US and Canada; 99.9% Ni, delivered.

N American Free Market – melting grade; estimated weekly market price in US and Canada; briquettes, cathode, disc/pellets; 99.9% Ni, delivered.

N American Free Market – plating grade; estimated weekly market price in US and Canada; 99.95% Ni, various forms, delivered.

LME – Official morning session prices on the London Metal Exchange for the cash, three-month, and 15-month positions. First price is bid, second is asked. Weekly average is bid/asked mean. Meets LME specifications, duty unpaid in approved LME warehouses.

MW LME Mean – The average of the cash and three months, bid and ask positions calculated on a daily basis.

Europe — Cut Cathode: A weekly assessment for the spot premium over LME cash for nickel 4x4 inch cut cathodes, LME grade minimum 99.8% nickel, on an in-warehouse Rotterdam basis. The premium is assessed on US dollar per metric tonne basis. The assessment is based on a survey of producers, traders and consumers of nickel. Nickel cut cathode is assessed every week on Fridays or closest prior business day.

Europe — Briquettes: A weekly assessment for the spot premium over LME cash for nickel briquettes, LME grade minimum 99.8% nickel, on an in-warehouse Rotterdam basis. The premium is assessed on US dollar per metric tonne basis. The assessment is based on a survey of producers, traders and consumers of nickel. Nickel briquettes are assessed every week on Fridays or closest prior business day.

Europe — Russian Full Plate: A weekly assessment for the spot over LME cash for Russian Full Plate uncut cathode, LME grade minimum 99.8% nickel, on an in-warehouse Rotterdam basis. The premium is assessed on US dollar per

metric tonne basis. The assessment is based on a survey of producers, traders and consumers of nickel. Russian full plate is assessed every week on Fridays or closest prior business day.

In-Warehouse Singapore Premium – Daily estimated premium for 99.8% minimum material of mainly Brazilian and Russian origin, in-warehouse Singapore. Cargo sold in the form of squares, full plates, or briquettes. Cargo released immediately upon payment.

OSMIUM

MW New York Dealer – f.o.b. New York, spot, estimated market price, min 99.5% purity osmium.

PALLADIUM

New York Mercantile Exchange – 99.95% purity palladium in 100-oz lots. Settlement prices on the New York Mercantile Exchange for the nearest active delivery month. These months are January, April, July and October.

MW New York Dealer – Estimated market price for 99.95% purity spot metal, f.o.b. New York.

JM Base Asia, JM Base Europe, JM Base NA – Quoted by Johnson Matthey to customers for 99.95% purity palladium, f.o.b. JM refinery.

Hong Kong spot at 0700 GMT – These spot quotations are established daily at 0700 GMT, based on current trading levels quoted by Johnson Matthey. Purity: 99.95% purity.

Engelhard Unfab – base per tr oz asked price at 10:30 EST for 99.95% purity, unfabricated, f.o.b. Carteret, NJ, vault.

London AM Fix – Based on Good Delivery metal of 99.95% purity in the form of plate or ingot with a minimum weight of 1 kg and maximum of 6 kg.

London PM Fix – Based on Good Delivery metal of 99.95% purity in the form of plate or ingot with a minimum weight of 1 kg and maximum of 6 kg.

PLATINUM

New York Mercantile Exchange – 99.95% purity platinum in 50-oz lots. Settlement prices on the New York Mercantile Exchange for the nearest active delivery month. These months are January, April, July, and October.

MW New York Dealer – Estimated market price for spot 99.95% purity metal, f.o.b. New York.

JM Base Asia, JM Base Europe, JM Base NA – Quoted by Johnson Matthey to customers for 99.95% purity platinum, f.o.b. JM refinery.

Hong Kong spot at 0700 GMT – These spot quotations are established daily at 0700 GMT, based on current trading levels quoted by Johnson Matthey. Purity: 99.95% purity.

Engelhard Unfab – base price per tr oz, asked price at 10:30 EST for 99.95% purity, unfabricated, f.o.b. Carteret, NJ, vault.

London AM Fix – Based on Good Delivery metal of 99.95% purity in the form of plate or ingot with a minimum weight of 1 kg and maximum of 6 kg.

London PM Fix – Based on Good Delivery metal of 99.95% purity in the form of plate or ingot with a minimum weight of 1 kg and maximum of 6 kg.

RHENIUM

MW NY Dealer – Free market price based on 69.4% Re contained (ammonium perrenate), delivered to US customer works, quoted in \$/kg, basis shipment and payment within 30 days. Based on a weekly survey of merchants, producers and consumers. Assessed Thursdays or closest business day.

RHODIUM

MW New York Dealer – f.o.b. New York, spot, estimated market price for 99.9% purity.

JM Base Asia, JM Base Europe, JM Base NA – Quoted by Johnson Matthey to customers for 99.9% purity Rh, f.o.b. JM refinery.

Engelhard Unfab – base price per tr. oz. asked price at 10:30 EST for 99.9% purity, unfabricated, f.o.b. Carteret, NJ, vault.

RUTHENIUM

MW New York Dealer – f.o.b. New York, spot, estimated market price for 99.9% purity metal.

JM Base NA – Quoted by Johnson Matthey to customers for 99.9% purity Ru, f.o.b. JM refinery.

Engelhard Unfab – base price per tr.oz. asked price at 10:30 EST for 99.9% purity, unfabricated, f.o.b. Carteret, NJ, vault.

SELENIUM

MW New York Dealer – Selenium metal powder, minus 200 mesh, min. Se 99.5% in warehouse, 5-ton lots. Assessed in \$/lb, basis shipment and payment within 30 days. Assessed on Thursdays or closest business day based on a survey of merchants and producers.

SILICOMANGANESE

US Free Market – 2% C, FOB Pittsburgh, Chicago, Houston warehouse, cents/lb gross weight; 65-68% Mn, 16-18.5% Si, 0.2% max Phos.

Silicomanganese 65:16 DDP NWE: Weekly assessment for grades will be normalized to a specification with P content 0.25% and C content 1.5%. The assessment will be for volumes of 300-1,000 mt delivered, duty-paid Northwest Europe basis for delivery within four weeks. Assessment will be in Eur/mt Mn contained and conducted on Thursdays (or the closest business day in the case of holidays) through a survey of producers, traders and steel mill buyers.

60-70%/Japan – 60-70% silicomanganese, 16-20% Si imported, () per mt. HK 65% Mn – min 65% Mn. max 17% Si, US dollar per kilo, f.o.b. main Chinese ports. Discontinued June 30, 1993.

(DISCONTINUED) Regular CIF Japan – (S Africa, Norway, Brazil) \$/mt (Mn 65% min, Si 16% min). Started July 1, 1993. Discontinued December 31, 2007.

Chinese CIF Japan – (Mn 65% min, Si 16% min). Started July 1, 1993. **(DISCONTINUED: CIS CIF Japan, as of December 31, 2007)**

(DISCONTINUED) Non-Origin – yen/mt delivered (120-day usance). Started July 1, 1993. Discontinued December 31, 2007.

SILICON

MW US Import – Free Market, , weekly spot sales, per lb/silicon, delivered, 0.35-0.50% Fe.

Min 98% Europe – Free market, euros per mt.

HK 98.5% Si – Chinese produced silicon metal, min 98.5% Si, US dollars per mt, f.o.b. main Chinese ports.

Spot CIF Japan – Japanese spot imports for secondary aluminum (Chinese origin), \$/mt CIF Japan. Started July 1, 1993.

SILVER

COMEX – Settlement prices on the New York Mercantile Exchange's COMEX division. Forward positions are indicated by footnote (C) on price pages. These months are spot, three months out, and one year out.

Handy & Harman – Lowest price at which offers can be obtained by Handy & Harman for silver in commercial bar form, in accordance with ASTM designation B413-69. Specification for refined silver, grade 99.9%, for nearby delivery at New York, in quantities sufficient to meet its daily requirements.

London Fix – This fix is established at 12:05 London time by consensus of major silver dealers.

London Spot/US Equivalent – Official US dollar equivalent of London Spot price as quoted by major London bullion dealers.

Engelhard Unfab – base price per tr oz asked price at 12:30 EST for 99.9% purity, unfabricated, f.o.b. Carteret, NJ, vault.

Hong Kong spot at 0700 GMT – These spot quotations are established daily at 0700 GMT, based on current trading levels quoted by Johnson Matthey. Purity: 99.9% purity.

STAINLESS SCRAP

North American Free Market 18-8 – weekly spot sales, \$/long ton gross weight; 7-9% Ni, 17% min chrome, delivered plant, minimum quantity 1,000st.

TANTALUM

Spot Tantalite Ore – US import, dealer quote, \$/lb, price based on Ta₂O₅ content.

TIN

LME – Official morning session prices on the London Metal Exchange. First price is bid, second is asked. Weekly average is the bid/asked mean. Purity 99.85%.

MW Composite – the price is calculated using an average of the KLTM price and the LME price, plus fixed charges, finance charges, Malaysian exchange rate, and a risk factor representing the cost to US consumers for Grade A tin, ex-dock, major port, duty paid.

MW New York Dealer – New York Grade A tin quotation by major dealers for spot material. Duty paid, ex-dock. Prices usually set Monday and Thursday.

MW New York low lead tin – New York low lead tin (i.e. 50 ppm lead content max) quotation by major dealers for spot material. Duty paid, ex-dock, for delivery within 30 days. Prices usually set Monday and Thursday. Price is in cents/lb.

Europe – 99.85% Malay origin: Weekly estimated \$/mt premium for Malay origin 99.85% tin on a CIF Rotterdam basis, 0-30-day terms, prompt delivery. Based on a survey of producers, traders and consumers of tin. Assessed weekly, usually on Wednesdays.

Europe – 99.9% Chinese origin: Weekly estimated \$/mt premium for Chinese origin 99.9% tin on a CIF Rotterdam basis, 0-30-day terms, prompt delivery. Based on a survey of producers, traders and consumers of tin. Assessed weekly, usually on Wednesdays.

KLTM – Daily settlement price for Straits tin (min 99.85% purity) on the Kuala Lumpur Tin Market, Malaysia, converted into US cents per lb, using the spot Citibank Malaysian exchange rate.

TITANIUM

MW US 70% Ferrotitanium – Estimated spot market price for 70% Ti ferrotitanium, lump form, max. 5% Al, 2-3% V, 0.5% tin, duty paid, delivered, per lb of Ti contained.

European 70% Ferrotitanium – Spot market transaction price for European standard grade 70% Ti ferrotitanium, max. 5% Al, 2-3% V, 0.5% tin, max. 0.5% N, duty paid, delivered, ¢ per kg Ti contained.

MW US Turning 0.5% – Free market price for US unprocessed turnings, 90% Ti, 6% Al, 4% V, 0.5% tin, delivered, duty paid.

European Turning 0.5% – Spot price for US- or European-generated turnings, 90% Ti, 6% Al, 4% V, 0.5% tin, delivered, duty paid.

TUNGSTEN

MW US Free Market Tungsten Ore Import – weekly estimate of market price; Min 65% WO₃, price based on stu of WO₃.

APT US – weekly estimate of market price; min 88.5% WO₃, \$/stu, delivered.

MW US Free Market Ferrotungsten – weekly estimate of market price; min 75% W, max 0.5% Cu, \$/lb W, delivered.

APT European – Min 88.5% WO₃, US dollar per mtu, c.i.f. Rotterdam, cash, duty free.

APT-HK – Chinese #1 grade, min, 88.5% WO₃, US dollar per mtu, f.o.b main Chinese ports.

HK Ferrotungsten – min 75% W, US dollar per kilo, f.o.b. main Chinese ports.

ZINC

LME SHG – Official morning session price for 99.95% or better zinc.

MW North American SHG (MW NA SHG) – Price based on LME base price plus premiums or discounts, depending on market conditions.

MW North American GAL (MW NA GAL) – A formula-based quote aimed at zinc users in the galvanized and steel markets. Factors considered are the LME cash price plus premiums or discounts, financing by the consumer, and other market-related conditions. Varies on a daily basis.

MW Four Corners – (Formerly MPR, EPP) LME SHG cash and three-month bid and asked prices, averaged on a daily basis.

MW Alloy No. 3 – US alloyer quote for No. 3 die casting alloy, 30,000-lb lots and over, delivered, based on LME cash price plus premiums for alloying. Varies on a daily basis.

Europe – SHG Rotterdam: Weekly estimated \$/mt premium over LME cash for Special High Grade zinc on an inwarehouse Rotterdam basis, 0-60-day terms, prompt delivery. Based on a survey of producers, traders and consumers of zinc. Assessed every other week, usually on Tuesdays.

In-Warehouse Singapore Premium – Daily estimated premium for 99.995% minimum material of mainly Chinese origin, in-warehouse Singapore. Cargo released immediately upon payment.

FOREIGN EXCHANGE

Pound Sterling (Spot) and Three-Month Midpoint, Deutschemark, Canadian dollar, and Yen. The exchange rates as quoted by the New York Federal Reserve Bank. The Pound Sterling, Deutschemark, Canadian dollar spot, and Yen are set at noon New York time, while the Pound Sterling and Canadian Dollar Three-Month 10 AM Midpoint are set at 10 AM New York time. The Malaysian ringgit is the Citibank selling rate taken at approximately 10:15 AM New York time. The London Metal Exchange Sterling, Three-Month Sterling, LME Deutschemark and LME Yen are as quoted on LME Official morning session.

BACKGROUND

Since January 2, 1930, *Platts Metals Week* (originally *E&MJ Metal & Mineral Markets*) has served as an independent price authority for the international nonferrous metals industry. *Platts Metals Week's* prices are widely used by the industry and government for evaluating pricing of metals and ores, levying taxes and tariffs, determining freight rates, and evaluating new projects.

Because of the large variety of prices and the different methods used to determine each, it is important to understand the ground rules which *Platts Metals Week* uses to keep the price series as consistent as possible. An overview of how the *Platts Metals Week* prices are gathered, computed, and averaged follows.

Types of prices

As distinguished by frequency, *Platts Metals Week* publishes the following types of prices:

- Daily
- Weekly averages of dailies
- Monthly averages of dailies
- Weekly (set or quoted once a week)
- Bi-weekly (set or quoted twice a week, e.g. NY Dealer Tin)
- Monthly averages of weeklies
- Monthly mean averages of select weeklies
- Annual averages of monthly averages

These prices, according to their source or method of calculation, may be further categorized as follows (examples in parentheses):

- Producer list prices (Lead North American Secondary)
- Consumer buying prices (Silver-Handy & Harman)
- *Platts Metals Week* canvas of dealers, producers, and consumers (Molybdenum-MW Dealer Oxide)
- *Platts Metals Week* weighted averages calculated using confidential prices and tonnages (Lead-MW NA Producer)
- *Platts Metals Week* weighted averages calculated using published prices and estimated tonnages (Copper-MW Composite)
- Prices computed by a formula (Tin-MW Composite)
- Consensus prices set by specialized groups (Gold-London Final)
- Quoted prices on metal and commodity exchanges (Zinc-LME SHG Cash)
- Prices converted from other currencies and units (Copper-MW c.i.f. Europe)

Exclusive *Platts Metals Week* quotations are usually preceded by **MW** in the price description. Weekly averages of the quoted prices on the London Metal Exchange, the New York Mercantile Exchange's NYMEX/COMEX divisions also are published in *Platts Metals Week*.

Price descriptions usually refer to the source of the price, although they may also include references to the form or purity of the metal as well as to quantity and delivery information.

Effective dates

The fact that there are many types of prices makes it necessary to use three dating conventions: 1) the producer list price effective date, 2) the day the market was last surveyed, and 3) the day a price last changed.

Producer prices usually carry effective dates. When more than one producer is involved, the date is the last time a producer price change affected the price published in *Platts Metals Week*.

The day the market was last surveyed is usually the next-to-last business day of the week. Most dealer prices and others that change frequently are dated in this manner.

The day a price last changed is used for prices which do not have effective dates and which may change infrequently. It is also occasionally used with certain inactive dealer prices.

Foreign exchange rates

Four daily foreign exchange rates are published by *Platts*: the British pound sterling (both spot and three-months), the Canadian dollar (both spot and three-months), the London Metal Exchange sterling (both spot and three-months), the LME European Euro and the Japanese yen. The British (spot), Canadian (spot) and Japanese exchange rates are the official noon buying rates as quoted by the New York Federal Reserve Bank. These rates are averaged to six decimal places on a weekly, monthly and annual basis.

The British pound sterling spot exchange rate is used to convert *Platts Metals Week* weekly prices into pounds sterling on a weekly basis and to convert several London prices into US dollars on a daily basis. When an exchange rate is not available (because of a US holiday which does not apply in London, for example) the previous day's exchange rate is used. This procedure minimizes fluctuations in the converted price. The Malaysian dollar exchange rate is used to convert Malaysian tin prices into US dollars and to calculate the MW Composite tin price.

Price ranges

A weekly price may be quoted as a range to reflect either divergent pricing by competing producers and dealers or a week's dealer business. The bottom end of the range is used for calculating the monthlies in all cases except where the price is listed as a MEAN price.

The double prices quoted on the London Metal Exchange are daily bid and asked prices. The arithmetic means of these are used to calculate weekly and monthly averages.

High/low prices

Most of the “High” and “Low” price listings which appear on the monthly and annual price pages of *Metals Week* apply to the quoted daily prices. Exceptions to this rule are: 1) for weekly prices, the high/low quotes are determined by the bottom of the weekly range if one exists; 2) for London Metal Exchange prices, the high/low applies to the daily bid/asked quotation; and 3) for monthly LME settlement prices (which are monthly averages of the applicable daily LME cash asked price), the high/low is the applicable monthly LME Settlement price.

Futures trading positions

The New York Mercantile Exchange’s NYMEX/COMEX divisions quote constantly changing futures positions on several metals. *Platts Metals Week* has selected convenient positions and reduced them to numerical designations (1st positions, 2nd position, etc.). The actual trading months quoted are footnoted each week in *Platts Metals Week*. The nearest (spot), three months, and approximate twelve months from spot positions are generally quoted.

When trading months shift in the middle of a week, the quoted prices reflect the new trading month applicable to the numerical position designation.

Calculation of averages

There are three types of *Platts Metals Week* averages: 1) those derived from daily prices, 2) those derived from weekly prices, and 3) those derived from monthly prices.

1) All prices quoted on a daily basis are arithmetically averaged to create weekly and monthly averages in the currency and units in which the prices originate. For bid and ask prices, the mean of the bid and ask price is used for the calculation, holidays, and other no-quote situations are excluded from the calculation.

2) In calculating monthly averages, prices quoted only on a weekly basis are considered to represent the full business week (beginning Monday) and therefore are weighted according to the number of business days in that week for which the New York Federal Reserve Bank published an exchange rate.

For example, the monthly averages for March 1993 were based on four weeks with five business days and one week with three business days; the price quoted for each week is weighted by the number of business days in that week, and the total is divided by the number of business days in the month – in this case 21.

Monthly averages of weekly prices in most cases use the low end of a price range, if one exists. The exceptions to this rule are prices that are listed as mean. The mean price is an average of the low and high end of a range. *Platts Metals Week* reserves the right to drop a low quote at any time it becomes unrepresentative of the market.

Because monthly averages must be available to industry on the first day of the following month, a discrepancy can result in the monthly average for prices set weekly when the month ends early in a given week. In such an instance, when a month ends on Monday, Tuesday, or Wednesday, the previous week’s price applies to those days. If the month ends on Thursday or Friday, that week’s price applies

to the entire week. (In particularly volatile markets, *Platts Metals Week* may set a given week’s price earlier than usual to assure that the resulting monthly average more accurately reflects the market.) Weekly prices are intended to apply to the week as a whole, and producer effective dates are not taken into consideration in calculating monthly averages. This is done to minimize the problem of having arbitrarily to determine which of several producer effective dates should be applied.

3) Annual averages are arithmetic averages of monthly quotations in the currency and units in which the price originates.

Conversion into other currencies

The way a price is converted from one currency and measure of weight into another depends on whether the price is a daily, weekly, or monthly one. (see page 13 for a description of the different types of prices.)

1) Prices which originate as weekly quotations are converted into other currencies using the applicable exchange rates for the next to last business day of the week (usually Thursday). Monthly averages of weekly prices are converted into other currencies by using the published average monthly exchange rates, which reflect the New York Federal Reserve Bank business day schedule.

2) Weekly and monthly averages of daily prices are converted using an average of the daily exchange rates as they apply to each individual price. Because of differing holiday schedules from one country or industry to another, a number of different (unpublished) average exchange rates may be used to convert weekly and monthly averages of daily prices into other currencies. For any month in which there are no holidays, the published weekly and monthly average exchange rates are used to convert the daily prices into other currencies.

3) Annual averages are converted into other currencies using arithmetic averages of the published monthly exchange rates. It should be noted that only annual averages stated in the originating currency are true averages. The conversion of these averages into other currencies is accomplished using a single average annual exchanges rate. As a result, that conversion will not exactly agree with an annual average (which one might calculate for oneself) of monthly averages which are not stated in the originating currency. The same is true of monthly averages of prices which originate as weekly prices.

Conversion tables

To convert a price from a per-unit basis to a per-ton-of-ore basis, multiply the unit price by the percentage of unit-based material in the ore. For example, if 50% manganese ore were priced at \$1.00 per long ton unit, the price per long ton of ore would be \$50.00

GLOSSARY OF TERMS

ABMS	American Bureau of Metal Statistics	Cr	chromium
Ag	Silver	Cr2O3	chromite
AK	Alaska	CT	Connecticut
AL	aluminum	Cu	copper
A1203	alumina, or aluminum oxide	DC	District of Columbia
ally	alloy	DE	Delaware
APT	ammonium paratungstate	del	delivered
AR	Arkansas	DLA	Defense Logistics Agency, responsible for US government stockpile metal sales, acquisitions, and upgrading.
Ar	argon	DM	German Deutschmark
As	arsenic	electrltc	electrolytic
Atl	Atlantic	EPA	(US)Environmental Protection Agency
Au	gold	eqv	equivalent
AZ	Arizona	F	fluorine
B	Boron	f.a.s.	free alongside ship
backwardation	A situation in which the cash (nearby) price of a commodity is higher than the futures price.	Fe	iron
Be	beryllium	ferromoly	ferromolybdenum
Bi	bismuth	FeSi	ferrosilicon
BOM	Bureau of Mines	FL	Florida
BPA	Bonneville Power Administration	fl	Flask. A unit of measure for mercury, equal to 76 lb.
C	carbon	foundry	foundry
(C)	Comex footnote	f.o.b.	Free on board. Consignment to customer with all prior charges onto customer's conveyance, usually ship, railcar, or truck.
CA	California	force majeure	act of God
Ca	calcium	FTC	(US)Federal Trade Commission
carb	carbon	GA	Georgia
cath	cathode	GAO	(US) General Accounting Office
Cb2O5	columbium pentoxide, not the mineral columbite	Ge	germanium
CBOT	Chicago Board of Trade	gm	gram
Cd	cadmium	GOB	good ordinary brand [European prime western-grade zinc]
CFTC	(US) Commodity Futures Trading Commission	H	hydrogen
c.i.f.	cost, insurance, and freight paid by shipper	He	helium
CIPEC	Conseil Intergouvernemental des Pays Exportateurs de Cuivre (Intergovernmental Council of Copper-Exporting Countries). The copper exporters' organization, formed in 1967, headquartered in Paris whose principal members are Chile, Peru, Zaire, and Zambia.	Hf	hafnium
Cl	chlorine	HG	high grade [copper, tin, and zinc]
CO	Colorado	Hg	mercury
Co	cobalt	HI	Hawaii
Comex	The COMEX division of the New York Mercantile Exchange. A hedge market on which gold and silver are traded.	hi	high
conc	concentrates	IA	Iowa
contango	A situation in which the futures price of a commodity is higher than the cash (nearby) price.	IBA	International Bauxite Association. The bauxite producers' group, formed in March 1974 and headquartered in Kingston, Jamaica.
		ID	Idaho
		IL	Illinois

ILZSG	International Lead and Zinc Study Group	MITI	Ministry of International Trade and Industry, a Japanese government body
IMF	International Monetary Fund	MN	Minnesota
IMM	International Monetary Market. Also known as the Chicago Mercantile Exchange.	Mn	manganese
impt	imported	MO	Missouri
IN	Indiana	Mo	molybdenum
In	indium	MS	Mississippi
ingt	ingot	MT	Montana
Ir	iridium	mt	metric ton (2204.62 lb)
IRS	(US) Internal Revenue Service	mtl	metal
ITA	International Trade Administration	mtpd	metric tons per day
ITC	(US) International Trade Commission	mtpm	metric tons per month
K	potassium	mtpy	metric tons per year
kg	kilogram	mtu	metric ton unit
KLCE	Kuala Lumpur Commodity Exchange	MW	Megawatt. A unit of power equal to one-million watts. Often used in describing the capacity of a power plant; e.g. "a 300-MW hydroelectric plant."
KLTM	Kuala Lumpur Tin Market		
KS	Kansas	MW	Metals Week or Mid West
kW	kilowatt	N	nitrogen
kWh	kilowatt-hour	NA	North America
KY	Kentucky	NA	not available
£	British pound sterling	Na	sodium
LA	Louisiana	Nb	niobium
lb	pound	NC	North Carolina
Li	lithium	ND	North Dakota
LIA	Lead Industries Association	NE	Nebraska
lo	low	NH	New Hampshire
lt	long ton or gross ton (2,240 lb).	Ni	nickel
ltpy	long tons per year	NJ	New Jersey
ltu	long ton unit	NM	New Mexico
(M)	New York Mercantile Exchange footnote	NUM	(South Africa)National Union of Mineworkers
MA	Massachusetts	NV	Nevada
maj	major	NY	New York
mast	master	NYMEX	New York Mercantile Exchange
max	maximum	O	oxygen
MD	Maryland	official session	The morning session of the London Metal Exchange
ME	Maine	OH	Ohio
mean	averaged high and low price	OK	Oklahoma
med	medium	OPIC	Overseas Private Investment Corp. Authorized by the US government to provide expropriation insurance for private corporations operating outside the US.
Merc Ex	New York Mercantile Exchange	OR	Oregon
mesh	The number of wires per linear inch of a screen. Used for fine sizing.	Os	osmium
Mg	magnesium	OSHA	Occupational Safety and Health Administration
MI	Michigan	P	phosphorous
micro	One-millionth of a meter. Used for fine sizing.	p	British pence
min	minimum		

PA	Pennsylvania	Sr	strontium
Pb	lead	stu	short ton unit
Pd	palladium	Ta	tantalum
pellt	pellet	Ta2O5	tantalum pentoxide, not the mineral tantalite
pos	position	Te	tellurium
prem	premium	thr-mo	three-month
primary production	The process of producing metal from its ore, as distinct from secondary production from scrap metal.	TiO2	titanium dioxide, a paint base
prod	producer	TN	Tennessee
Pt	platinum	ton	short ton (2,000 lb)
PW	prime western [zinc]	tpm	short tons per month
Rb	rubidium	tpy	short tons per year
Re	rhenium	tr oz	troy ounce
ref	refinery	TVA	Tennessee Valley Authority
refinery	In copper and lead, a plant which further purifies metal produced in a smelter. In zinc, a plant which produces purer metal than could be produced in a smelter. In aluminum, a plant which refines bauxite into alumina.	TX	Texas
Rh	rhodium	U	Uranium
RI	Rhode Island	UAW	United Auto Workers
ring dealer	A member of the London Metal Exchange allowed to trade metal in the ring	UNCTAD	United Nations Conference on Trade and Development
Ru	ruthenium	unfab	unfabricated
S	sulfur	USBM	United States Bureau of Mines
Sb	antimony	USTR	United States Trade Representative
SC	South Carolina	USW	(US) United Steelworkers Union
SD	South Dakota	UT	Utah
Se	selenium	V	vanadium
settlement price	The last price at which a commodity is traded in a particular session.	V2O5	vanadium pentoxide
SG	standard grade	VA	Virginia
SHG	special high grade	VT	Vermont
Si	silicon	W	tungsten
smelter	In copper, lead, and zinc, a plant which reduces concentrate to metal. In aluminum, a plant which upgrades alumina into metal.	WA	Washington
Sn	tin	WI	Wisconsin
		W03	tungsten trioxide, common designation for tungsten content
		WV	West Virginia
		WY	Wyoming
		Y	yttrium
		Zn	zinc

