Wickes dumping specialists

30 August 2014

The Director
Operations 4
Anti-Dumping Commission
5 Constitution Avenue
Canberra ACT 2601

Review 248: Primary aluminium benchmark

This submission is made on behalf of Capral Ltd, a member of the Australian aluminium extrusions industry, in relation to Review 248 of certain aluminium extrusions exported to Australia from China. We specifically refer to the cost of primary aluminium in China and submit that, while it is still appropriate to determine subsidy benefits under Program 15 by reference to a benchmark cost for primary aluminium and substitute the same benchmark cost for the cost of primary aluminium incurred by Chinese producers of aluminium extrusions in determining normal value, changes to the methodology for calculating the benchmark are warranted.

1 Competitive market cost

Customs found in the original aluminium extrusions investigation and subsequent aluminium road wheels (ARWs) investigation that the cost of primary aluminium in China does not reasonably reflect a competitive market cost in terms of the requirement of r.180(2)(b)(ii) of the *Customs Regulations 1926* (the Regulations).[1] We refer to our previous submission to this review on market situation, which highlights direct intervention by the government of China (GOC) in the country's aluminium industry, particularly in relation to the production of primary aluminium. We submit that due to ongoing distortions in the Chinese aluminium sector caused by the GOC, the Commission should continue to find that primary aluminium is not a competitive market cost as required by the Regulations.

[1] Customs Report No. 148, p.31 at 6.1.3 and Customs Report No. 181, p.37

2 Primary aluminium benchmark

2.1 Cost of primary aluminium in China

China accounts for over 40% of global production of primary aluminium,[2] yet the average cash cost to produce primary aluminium in China is around 30% higher than the for rest of the world, primarily due to the higher cost of alumina and energy. For example, in the March quarter of 2014 the cash cost in China was USD 2,097 per metric tonne (MT), compared to an average of USD 1,573 per MT for the rest of the world, and this was driven by higher alumina and energy costs (USD 210 and 388 per MT higher respectively).[3] For this same period analysis shows that 100% of China's aluminium production is unprofitable (on a cash cost basis), compared to only 6% for the rest of the world.[4]

Under these conditions China's smelters can only continue operations through subsidies and other government intervention in the market. This is consistent with previous findings by Customs that the primary aluminium market in China is distorted by GOC influence.

2.2 Benchmark methodology

One option for correcting GOC distortions in the primary aluminium sector is to calculate a benchmark in China that includes an uplift to account for the higher cash costs in China. Essentially the benchmark would be based on the price of primary aluminium in China, ie the Shanghai Futures Exchange (SHFE) price, plus a cost uplift, plus other charges applicable in the Chinese market.

Another option is to use an external benchmark that represents a price to import primary aluminium into China, including ocean freight, import duty and other relevant charges. This is the approach that the US takes whenever it applies an external benchmark consistent with US regulations.[5] Essentially the benchmark would be based on the London Metal Exchange (LME) price plus all costs to deliver physical aluminium to the exporter.

A third option would be to derive an external benchmark from published prices for primary aluminium billet and scrap. This has the advantages of removing some of the complexity associated with applying an ingot-level benchmark.

---

[2] Aluminum mineral commodity summary, United States Geological Survey, January 2013 http://minerals.usgs.gov/minerals/pubs/commodity/aluminum/mcs-2013-alumi.pdf

[3] See calculations and supporting evidence at Attachment A, p.1

[4] ibid., p.2

[5] US Code of Federal Regulations (CFR): 19 CFR 351.511(a)(2)(iv) *Use of delivered prices.* In measuring adequate remuneration under paragraph (a)(2)(i) or (a)(2)(ii) of this section, the Secretary will adjust the comparison price to reflect the price that a firm actually paid or would pay if it imported the product. This adjustment will include delivery charges and import duties.

2.3 Chinese benchmark

We submit that a suitable Chinese benchmark for primary aluminium ingot, relevant to normal value and Program 15 subsidy calculations, would comprise:

- SHFE price – as the starting reference price from a Chinese exchange, plus
- Cost uplift – to account for the higher cash costs in China, plus
- Trading premium – incurred by extruders in purchasing aluminium, plus
- Inland transport – to deliver aluminium to the extruders.

2.3.1 SHFE price

The SHFE is the main exchange for setting the price for primary aluminium in China. We have sourced published monthly average SHFE spot prices over the review period for the purposes of our calculations.[6]

2.3.2 Cost uplift

As discussed in section 2.1 above, a 'cost uplift' is required to correct the distortions caused by the GOC in the primary aluminium market. The HARBOR Aluminum Intelligence Unit (HARBOR)[7] produces quarterly 'Aluminum smelting cost curve analysis' reports, which calculate the cash cost structure of aluminium production in China and the rest of the world. Over the review period the average difference HARBOR calculated between the cash costs of primary aluminium production in China and the rest of the world was USD 515 per MT.[8]

2.3.3 Trading premium

In a recent report on aluminium extrusions, the Commission confirmed that in the original investigation the benchmark for primary aluminium included a 'trading premium' payed by the Chinese exporters investigated.[9] None of the reports produced by Customs or the Commission have explained what this premium is for, however, we understand that it is effectively a fee charged by traders who are engaged by Chinese extruders to source supply of primary aluminium and negotiate prices with the Chinese smelters. We therefore submit that this trading premium should be included in the primary aluminium benchmark. For the purposes of our calculations we have estimated the trading premium to be USD 50 per MT, based on our understanding of the Chinese market.

---

[6] http://www.metalprices.com/historical/database/aluminum/shfe-aluminum-monthly - relevant monthly prices at Attachment B

[7] http://www.harboraluminum.com

[8] See calculations and supporting evidence at Attachment C

[9] REP 214, p.17 at 4.2.2

2.3.4 Inland transport

Capral assumes that the Commission will be able to verify the inland transport costs for each exporter's primary aluminium purchases during the course of this review. However, for the purposes of our calculations we have estimated the cost to be USD 20 per MT, based on our understanding of the Chinese market.

2.4 LME-based benchmark

In both the original extrusions and ARWs cases, Customs applied the London Metal Exchange (LME) price for primary aluminium as a benchmark cost for primary aluminium ingot in China. We agree that LME prices are 'indicative' of competitive market costs, however, as Capral has stated in meetings with Customs and the Commission during the original investigation and five subsequent reviews of aluminium extrusions (Reviews 186, 194, 205, 214 and 229), the LME is a trading house, and the LME price alone is not available in any market as a cost to obtain primary aluminium in physical form.

The LME is a global futures exchange where more than 80% of all non-ferrous metals futures business is transacted. Aluminium has been traded on the LME since 1978. The LME price is not the actual price paid for delivered metal – it is the price of a warrant traded on the exchange.[10] In order to purchase physical aluminium, a premium must be paid on top of the LME price.[11]

The workings of the LME and the role of premiums was explained succinctly in a recent judgement by the England and Wales High Court, specifically in relation to the price of physical aluminium the court explained that:

> *The LME price, which is used as the global benchmark for physical contracts, is a price for metal traded 'in-warehouse'. This entails that the additional costs associated with making delivery of "free metal" outside the constraints of the LME system are not reflected in the LME price, with the result that the physical market price for aluminium will be higher than the LME price. The physical market price of aluminium, known as the "all in" price, is therefore made up of the LME price plus a premium.*[12]

Only a very small proportion of LME trades actually result in physical settlement and the LME refers to itself as the physical market of last resort.[13] Most metal in the physical market is purchased direct from smelters or merchants, however the LME provides the global reference metal price.[14]

---

[10] Europe Economics, *A Review of the possible consequences of a change in contract terms from "in warehouse" to "FOT basis", with respect to all metals traded on the London Metal Exchange*, 20 February 2007, 'Appendix 1: The LME System' at A1.20 (Attachment D)

[11] ibid. at A1.20

[12] *United Company Rusal Plc v The London Metal Exchange* [2014] EWHC 890 (Admin) http://www.bailii.org/ew/cases/EWHC/Admin/2014/890.html at paragraph 13

[13] *A Guide to the LME*, available at http://www.lme.com/about-us/

[14] Attachment D at A1.15

2.4.3 Trading premium

As discussed in section 2.3.3 above, Chinese extruders pay a 'trading premium' for traders to source supply of primary aluminium and negotiate prices with the Chinese smelters. Extruders in Australia and other competitive markets generally conduct these activities in-house, therefore we submit that the trading premium should be included in the external benchmark in addition to the regional premium.

2.4.4 Import duty and costs

The terms of the MJP are CIF major Japanese ports, therefore ocean freight is already included in the premium. We understand that there would be little if any difference in the cost of shipping aluminium to China instead of Japan, therefore no adjustment to the benchmark is required to reflect ocean freight costs. However other charges apply to import and deliver primary aluminium to the Chinese extruders, namely import duty, import charges and inland transport.

For the purposes of our calculations we have:

- Used an import duty rate of 6%, being the average of Chinese import duty rates for pure aluminium (5%) and aluminium alloy (7%)[21]
- Estimated import charges using a recent quote from a freight forwarding company, converted to a per metric tonne basis using the average capacity of a standard 20' cargo container from a survey submitted to the current administrative review of the anti-dumping and countervailing measures on aluminium extrusions in the US,[22] and
- Estimated the cost of inland transport to be USD 20 per MT based on our understanding of the Chinese market.

2.4.5 Billet premium

Capral understands that some extruders in China purchase aluminium ingot and cast their own billets. However, to the extent that exporters purchase aluminium billet, the Commission must be mindful of the need to include an additional billet premium, as the MJP is only an ingot premium.

The Australian industry generally purchases aluminium in billet form and pays additional premiums over and above the MJP. These premiums would generally include:

- Billet premium[23] – for standard grade billets delivered to premises
- Alloy upcharge – additional charge for higher grade alloys, and
- Diameter upcharge – additional charge for larger diameter billets.

---

[21] Customs Import and Export Tariff of the People's Republic of China at Attachment J

[22] See calculations and supporting documents at Confidential Attachment K

[23] Also referred in the US to the 'billet upcharge'

We submit that an external benchmark for primary aluminium in China, relevant to normal value and Program 15 subsidy calculations, would comprise:

- LME price – as the starting reference price from a global exchange, plus
- Premiums – necessary to obtain aluminium in physical form, plus
- Import duty and costs – to import and deliver aluminium to exporters.

2.4.1 LME price

LME prices are widely published. We have used the monthly average LME cash price over the review period for the purposes of our calculations.[15]

2.4.2 Regional premium

As explained above, in all markets outside China premiums must be paid in order to obtain physical aluminium. Premiums apply both to purchases from LME warehouses and purchases directly from smelters. Various premiums exist in different regions of the world as outlined in the Platts Metals Week's methodology and specifications guide (Platts Guide).[16] These regional premiums are currently at record highs.[17]

The premium used in Australia is the CIF Japan Forward Quarter Premium, referred to in the industry as the Major Japanese Ports premium (MJP), which comes from the terms of the premium being CIF Osaka, Nagoya, Yokohama ports (ie major Japanese ports). The full terms are outlined in the Platts Guide.

Customs and the Commission have consistently found that the aluminium market in China is distorted by government influence. The benchmark must represent the cost to obtain primary aluminium in physical form in a competitive market free of government influence. Premiums outside China are negotiated between private companies and we submit that these premiums represent a suitable competitive market cost to obtain primary aluminium in physical form. We further submit that the MJP would be a suitable benchmark premium, as it is used in major markets in the region including Japan and Australia.

For the purposes of our calculations we have sourced the published monthly average 'Delivered Japanese Warehouse' spot premium over the review period.[18] This premium is consistent with the Japan aluminium ingot spot premium shown in HARBOR's analysis of regional premiums from February 2014.[19] There are a number of other regional premiums as described in the Platts Guide and analysed in the HARBOR report and we note that the MJP is significantly lower than premiums in Europe and the Americas.[20]

---

[15] http://www.metalprices.com/historical/database/aluminum/lme-aluminum-cash-official - relevant monthly prices at Attachment E

[16] Platts Guide at Attachment F, p.3

[17] See recent articles discussing regional premiums at Attachment G

[18] http://www.metalprices.com/historical/database/aluminum/aluminum-p1020-spot-premium-japan - relevant monthly prices at Attachment H

[19] Attachment I, p.4

[20] ibid., pp.1-5

Capral's premiums are shown in the primary billet price schedule at Confidential Attachment L.[24] The HARBOR report also highlight that 'full billet premiums' are significantly higher than base ingot premiums in all markets.[25] We can provide further information on billet premiums if required.

2.5 Billet-level benchmark

Most extruders in Australia and other markets outside China purchase primary aluminium in billet form ready for use directly in the extrusion process. As a result there are published prices available for purchases of primary aluminium billet in markets outside China.[26] These prices reflect purchases of primary aluminium in physical form and we would welcome further discussion on the suitability of billet prices as the basis of the benchmark.

In the case of extruders that purchase primary aluminium in billet form and do not operate a remelt facility, metal waste produced in the extrusion process is sold, thus reducing the cost to make. Therefore if a billet-level benchmark were to be used, a benchmark scrap price would be needed. Suitable benchmark prices for scrap are readily available and we can provide these if required.

3 Benchmark summary

The monthly Chinese and LME-based benchmarks for primary aluminium ingot over the review period are shown in the following tables.[27]

Method 1: Chinese benchmark (USD/MT)

Aluminium ingot	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Average
SHFE cash price	2,006	2,019	2,071	2,005	1,994	2,001	2,032	2,020	2,000	1,963	1,864	1,810	
Cost uplift	479	479	479	535	535	535	523	523	523	524	524	524	
Trading premium	50	50	50	50	50	50	50	50	50	50	50	50	
Inland transport	20	20	20	20	20	20	20	20	20	20	20	20	
Benchmark - ingot	**2,555**	**2,568**	**2,620**	**2,610**	**2,599**	**2,606**	**2,625**	**2,613**	**2,593**	**2,557**	**2,458**	**2,404**	**2,567**

Method 2: External benchmark (USD/MT)

Aluminium ingot	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Average
LME cash price	1,856	1,830	1,816	1,767	1,814	1,760	1,812	1,749	1,738	1,726	1,693	1,703	
Regional premium	243	246	250	250	250	248	246	246	246	264	310	341	
Trading premium	50	50	50	50	50	50	50	50	50	50	50	50	
Import duty (6%)	129	128	127	124	127	123	126	123	122	122	123	126	
Import charges	31	31	31	31	31	31	31	31	31	31	31	31	
Inland transport	20	20	20	20	20	20	20	20	20	20	20	20	
Benchmark - ingot	**2,328**	**2,304**	**2,293**	**2,242**	**2,292**	**2,232**	**2,285**	**2,218**	**2,207**	**2,213**	**2,227**	**2,271**	**2,259**

[24] Refer tab 'Billet premium'

[25] Attachment I, p.6

[26] http://www.metalprices.com/metal/aluminum/aluminum-6063-extrusion-billet-price

[27] See calculations in the Confidential Appendix

4 Applying the benchmark

4.1 Verification of production records

The cost of aluminium is by far the most significant element in the cost to make and sell aluminium extrusions. As such, it is an area that requires critical attention. Capral believes that one of the key drivers of the dumping margins found in the original investigation was the cost of aluminium attributed to the exporters. Capral submits that Customs' approach was flawed in two areas:

- Failure to include a metal premium in the benchmark purchase price per unit of input – which has been discussed above, and
- Failure to properly assess the reasonableness of exporters' production records – in order to ensure that the benchmark per unit of output reasonably reflected the cost to make.

Applying the primary aluminium benchmark price to an exporter's records in order to reasonably reflect the costs to produce aluminium extrusions requires accurate aluminium input production records. This is made more complex by the various levels of inputs, waste factors and outputs that occur in a typical extrusion factory. As Customs observed during the original exporter verification visits, there are a number of key scrap components produced in Chinese extrusion factories, including:

- Remelt – melt loss
- Remelt – scrap (eg billet ends—which can be remelted)
- Extrusion metal waste – produced during the extrusion press and cutting process
- Finishing metal waste – produced during painting, anodising and other finishing processes, and
- Fabrication metal waste – produced during minor workings such as punching and drilling.

Verification of these wastage factors is critical in assessing the reasonableness of exporters' records in relation to:

- The total volume of primary aluminium required (from internal and external sources) to achieve the total output of finished product, and
- Costs associated with remelting – for example, given proper remelt volume assumptions, remelt energy costs can be tested for reasonableness.

The Commission will not be able to simply rely on exporters' audited financial accounts, as the production records are not directly audited. During the original investigation, Capral made a number of submissions to provide evidence of the likelihood that the exporters' records did not reasonably reflect the costs of producing like goods. For example, Capral refers the Commission to two reports on xxxxxxxxxxxxxxxxxx [company name] highlighting serious concerns about the integrity of production records and casts serious doubt over whether Chinese

companies fully account for the level of production inputs required to achieve their extrusion sales volumes.[28]

Capral is able to provide the Commission with more details on this issue and provide models to apply the benchmark, in order to derive a metal cost per unit of output that reasonably reflects the cost of producing like goods. The Commission should note that applying a billet-level primary aluminium benchmark and a scrap price benchmark as outlined above in section 2.5 would eliminate some complexity, as the Commission would only need to account for extrusion and downstream waste. Regardless of which method is used, we urge the Commission to engage an independent expert on extrusion production and accounting, as discussed below in section 5.

4.2 Circumstances of substitution

Also, we note that previous reviews have resulted in a lowering of the Chinese exporter's cost to make and sell, due to the LME cash price being lower than the actual price paid by Chinese extruders over recent years. The change of methodology as detailed above will result in a more realistic benchmark that we expect will be higher than the price paid by exporters, however to the extent that the resulting benchmark is still less than the exporter's actual cost, we submit that the actual cost should be used. We refer to our earlier submission of 31 July 2014 concerning competitive market costs, where this issue is specifically addressed.[29] We reiterate that it is unreasonable and illogical to substitute an actual cost for a benchmark cost where the actual cost is higher than the benchmark.

5 Use of an independent expert

The 2012 *Protocol for the use of experts in the anti-dumping and countervailing system*, which is still available on the Commission's website,[30] sets out general principles regarding the use of experts in anti-dumping and countervailing investigations. Matters that may warrant engagement of expert advice include:

- Industry operations
- Production processes and costs, and
- Accounting and verification.[31]

These are all matters that affect the calculation and application of a primary aluminium benchmark as outlined above. Verifying the amount of metal used in a production process employing specific technologies is only something that a person with extensive knowledge of the industry can assess. Given the complexities of this case and unresolved issues from the original investigation,

---

[28] 'xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx' at Confidential Attachment M; xxxxxxxxxxxxxxxxxxxxxx due diligence report on xxxxxxxxxxxxxxxxx at Confidential Attachment N

[29] Capral submission to Review 248 on Competitive market costs, EPR Doc#21, p.2

[30] http://www.adcommission.gov.au/reference-material/documents/ExpertsProtocol-Final.pdf

[31] ibid. at 2(b)

we strongly urge the Commission to engage an independent expert to assist in this review.

6 Summary

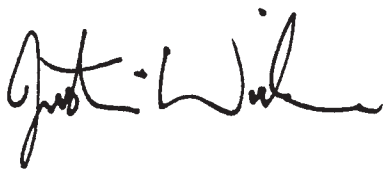
For the purpose of establishing a suitable benchmark for primary aluminium in China, we submit that either a Chinese benchmark that accounts for the higher cash costs of Chinese smelters or an external benchmark that represents a price for physical aluminium delivered to exporters should be used.

The LME price alone is not a suitable benchmark, as it does not represent a price for aluminium in physical form. However, the LME price is a suitable starting point on which to build an external benchmark, as it is used as the reference base price for the purchase of primary aluminium in global markets outside China. In those markets a premium must be paid to obtain physical aluminium and we submit that the Japanese premium (MJP) is the most suitable for inclusion in an external benchmark for China, as it is the premium used throughout the Asia-Pacific region including Australia.

The 'trading premium' included in the original primary aluminium benchmark should continue to be included, as it merely represents a fee for activities mostly conducted in-house by extruders in Australia and other markets.

Consistent with the standard US approach, an external benchmark should include all costs incurred in delivering primary aluminium to the exporters, including import charges, import duty and inland transport.

In applying the benchmark the Commission should also verify each exporter's metal usage in order to correctly calculate the full cost of primary aluminium. We finally submit that the use of an independent expert in this review would greatly assist the Commission to satisfy itself that the benchmarking methodology and each exporter's metal accounting is reliable and reasonable.



Justin Wickes
Director

ATTACHMENT A

Review 248: Q1 2014 analysis of global aluminium cash cost structure

Source: HARBOR Aluminum Intelligence Unit 'Aluminum smelting cost curve analysis' reports

	China		*Rest of World (ROW)*		*Variance*
	% of cost	USD per MT	% of cost	USD per MT	USD per MT
Total cash cost	**100%**	**2,097**	**100%**	**1,573**	**524**
Alumina	34%	713	32%	503	210
Energy	41%	860	30%	472	388
Other Raw Materials*	17%	356	19%	299	58
Labour & Admin	3%	63	8%	126	(63)
Other**	5%	105	11%	173	(68)

* Other Raw materials: carbon anode, cathode, pitch, ALF3 and Cryolite

** Other: Cell rebuilding cost, maintenance, insurance, property tax and technology fees

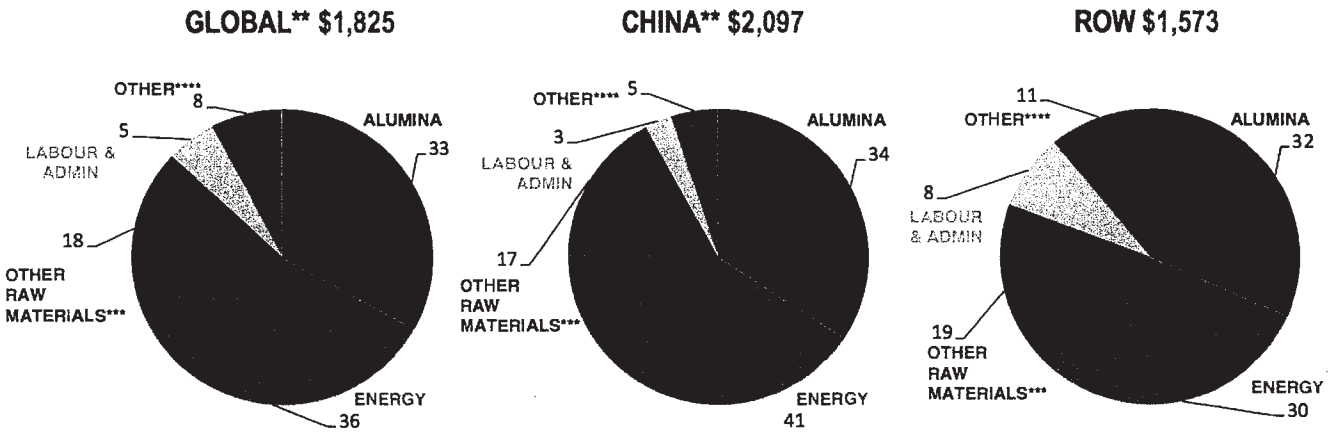
harbor aluminum

April 2014

*confidential

ALUMINUM'S PRODUCTION CASH COST STRUCTURE BEFORE CASTING Q1 2014*

(in $/mton; % of output cash cost)



** Does not include depreciation, interest payments, sustained capital expenses nor working capital*
***Excludes applicable VAT of 17% that Chinese aluminum smelters pay on raw materials, energy and services*
**** Other raw materials: carbon anode, cathode, pitch, ALF3 and Cryolite*
***** Other: Cell rebuilding cast, maintenance, insurance, property tax and technology fees*
Source: HARBOR Aluminum

SUMMARY OF UNPROFITABLE ALUMINUM OPERATING CAPACITY BY SMELTER*

(end of Q1 2014)

IN THOUSAND MTONS PER YEAR

	BEFORE CASTING, NOT CONSIDERING INCOME FROM PREMIUMS		AFTER CASTING, CONSIDERING INCOME FROM PREMIUMS***	
	Cash Cost Basis	Total Cost Basis**	Cash Cost Basis	Total Cost Basis**
ROW	5,618	15,943	1,746	7,337
CHINA	23,894	23,894	23,894	23,894
TOTAL	29,512	39,837	25,640	31,231

AS % OF TOTAL CAPACITY

	BEFORE CASTING, NOT CONSIDERING INCOME FROM PREMIUMS		AFTER CASTING, CONSIDERING INCOME FROM PREMIUMS***	
	Cash Cost Basis	Total Cost Basis**	Cash Cost Basis	Total Cost Basis**
ROW	20%	58%	6%	26%
CHINA	100%	100%	100%	100%
TOTAL	57%	77%	50%	61%

Assuming LME cash price at $1,731 per mton and SHFE 1M prices (excluding 17% VAT) at $1,767 per mton.

** Total cost = cash cost + depreciation, interest payments, sustained capital expenses and working capital.*

*** Considers actual casthouse products mix of ingot, billet, slab, PFA, high purity aluminum and hot metal for various uses per smelter*

Source: HARBOR Aluminum

ATTACHMENT B

Review 248: Monthly primary aluminium prices on the Shanghai Futures Exchange (SHFE)

Source: http://www.metalprices.com/historical/database/aluminum/shfe-aluminum-monthly

USD/MT

	Including 17% VAT		*Excluding 17% VAT*		
	Spot	Mth Avge		Spot	Mth Avge
Apr-13	2,351.48	2,347.36	Apr-13	2,009.81	2,006.29
May-13	2,377.19	2,362.36	May-13	2,031.79	2,019.11
Jun-13	2,385.59	2,422.53	Jun-13	2,038.97	2,070.54
Jul-13	2,339.89	2,345.98	Jul-13	1,999.91	2,005.11
Aug-13	2,342.63	2,332.51	Aug-13	2,002.25	1,993.60
Sep-13	2,345.68	2,341.02	Sep-13	2,004.85	2,000.87
Oct-13	2,376.24	2,377.90	Oct-13	2,030.97	2,032.39
Nov-13	2,353.02	2,363.43	Nov-13	2,011.13	2,020.03
Dec-13	2,330.67	2,340.49	Dec-13	1,992.03	2,000.42
Jan-14	2,271.30	2,296.21	Jan-14	1,941.28	1,962.57
Feb-14	2,179.19	2,181.19	Feb-14	1,862.56	1,864.26
Mar-14	2,084.30	2,117.63	Mar-14	1,781.45	1,809.94

Review 248: Monthly primary aluminium prices on the Shanghai Futures Exchange (SHFE)

Source: http://www.metalprices.com/historical/database/aluminum/shfe-aluminum-monthly

Shanghai Futures Exchange Aluminum By Month

Start Date: 01 Apr 2013 End Date: 31 Mar 2014 Unit: MT Sort Order: Most Current Last SUBMIT

Currency: US Dollar Display Monthly Average Only

Shanghai Futures Exchange Aluminum Closing Prices USD/ MT

Apr 2013	Spot	Apr 2013	May 2013	Jun 2013	Jul 2013	Aug 2013	Sep 2013	Oct 2013	Nov 2013	Dec 2013	Jan 2014	Feb 2014	Stock On Warrants	Stock Deliverable
Averages	2,351.48	2,347.36	2,354.67	2,358.69	2,363.71	2,367.84	2,372.69	2,377.33	2,384.11	2,391.01	2,397.11	2,404.37	499,473	259,250

May 2013	Spot	May 2013	Jun 2013	Jul 2013	Aug 2013	Sep 2013	Oct 2013	Nov 2013	Dec 2013	Jan 2014	Feb 2014	Mar 2014	Stock On Warrants	Stock Deliverable
Averages	2,377.19	2,362.36	2,378.19	2,377.61	2,379.58	2,382.03	2,383.63	2,385.99	2,389.96	2,392.23	2,397.16	2,399.42	453,540	256,672

Jun 2013	Spot	Jun 2013	Jul 2013	Aug 2013	Sep 2013	Oct 2013	Nov 2013	Dec 2013	Jan 2014	Feb 2014	Mar 2014	Apr 2014	Stock On Warrants	Stock Deliverable
Averages	2,385.59	2,422.53	2,384.84	2,376.65	2,373.84	2,373.53	2,374.62	2,375.65	2,380.39	2,384.59	2,392.21	2,395.35	417,007	209,664

Jul 2013	Spot	Jul 2013	Aug 2013	Sep 2013	Oct 2013	Nov 2013	Dec 2013	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014	Stock On Warrants	Stock Deliverable
Averages	2,339.85	2,345.98	2,336.07	2,333.85	2,332.83	2,332.48	2,332.59	2,335.15	2,339.93	2,339.08	2,344.22	2,351.15	389,512	141,506

Aug 2013	Spot	Aug 2013	Sep 2013	Oct 2013	Nov 2013	Dec 2013	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014	Jun 2014	Stock On Warrants	Stock Deliverable
Averages	2,342.63	2,332.51	2,344.05	2,346.41	2,346.69	2,346.87	2,347.68	2,345.49	2,352.92	2,357.71	2,361.76	2,373.57	331,118	71,965

Sep 2013	Spot	Sep 2013	Oct 2013	Nov 2013	Dec 2013	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014	Jun 2014	Jul 2014	Stock On Warrants	Stock Deliverable
Averages	2,345.68	2,341.02	2,340.66	2,329.26	2,325.11	2,320.61	2,320.67	2,320.84	2,322.10	2,325.01	2,330.29	2,334.56	249,694	26,161

Oct 2013	Spot	Oct 2013	Nov 2013	Dec 2013	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014	Jun 2014	Jul 2014	Aug 2014	Stock On Warrants	Stock Deliverable
Averages	2,376.24	2,377.90	2,371.40	2,361.45	2,356.22	2,352.62	2,352.08	2,351.68	2,351.80	2,353.79	2,355.06	2,354.00	211,250	20,480

Nov 2013	Spot	Nov 2013	Dec 2013	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014	Jun 2014	Jul 2014	Aug 2014	Sep 2014	Stock On Warrants	Stock Deliverable
Averages	2,353.82	2,363.43	2,347.24	2,335.54	2,329.35	2,328.77	2,329.13	2,330.21	2,334.80	2,337.76	2,343.39	2,350.58	200,481	18,275

Dec 2013	Spot	Dec 2013	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014	Jun 2014	Jul 2014	Aug 2014	Sep 2014	Oct 2014	Stock On Warrants	Stock Deliverable
Averages	2,330.67	2,340.45	2,324.61	2,313.94	2,306.78	2,301.13	2,299.27	2,299.22	2,299.76	2,301.46	2,305.74	2,305.58	191,731	11,165

Jan 2014	Spot	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014	Jun 2014	Jul 2014	Aug 2014	Sep 2014	Oct 2014	Nov 2014	Stock On Warrants	Stock Deliverable
Averages	2,271.30	2,256.21	2,266.36	2,271.18	2,274.57	2,277.20	2,279.29	2,279.72	2,281.02	2,283.03	2,288.45	2,286.88	193,766	17,330

Feb 2014	Spot	Feb 2014	Mar 2014	Apr 2014	May 2014	Jun 2014	Jul 2014	Aug 2014	Sep 2014	Oct 2014	Nov 2014	Dec 2014	Stock On Warrants	Stock Deliverable
Averages	2,179.19	2,181.19	2,183.47	2,196.55	2,206.72	2,214.53	2,222.53	2,228.29	2,234.91	2,241.33	2,243.52	2,256.73	258,112	44,669

Mar 2014	Spot	Mar 2014	Apr 2014	May 2014	Jun 2014	Jul 2014	Aug 2014	Sep 2014	Oct 2014	Nov 2014	Dec 2014	Jan 2015	Stock On Warrants	Stock Deliverable
Averages	2,084.36	2,117.63	2,092.87	2,107.13	2,118.55	2,125.30	2,140.85	2,143.14	2,158.08	2,168.29	2,175.62	2,185.11	330,679	133,090

ATTACHMENT C

Review 248: Quarterly global aluminium cash cost structure

Source: HARBOR Aluminum Intelligence Unit 'Aluminum smelting cost curve analysis' reports

Aluminium cash cost structure before casting

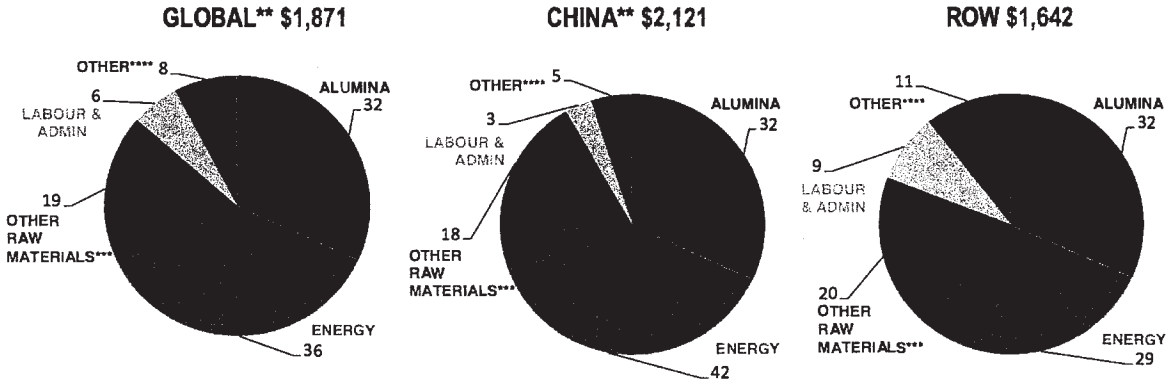
	Q2 2013	Q3 2013	Q4 2013	Q1 2014	Average
China	2,121	2,133	2,105	2,097	2,114
Rest of world (ROW)	1,642	1,598	1,582	1,573	1,599
Cost uplift	479	535	523	524	515

> aluminum intelligence unit
the global leader in aluminum industry analysis and outlook

July 2013

ALUMINUM'S PRODUCTION CASH COST STRUCTURE BEFORE CASTING Q2 2013*

(in $/mton; % of output cash cost)



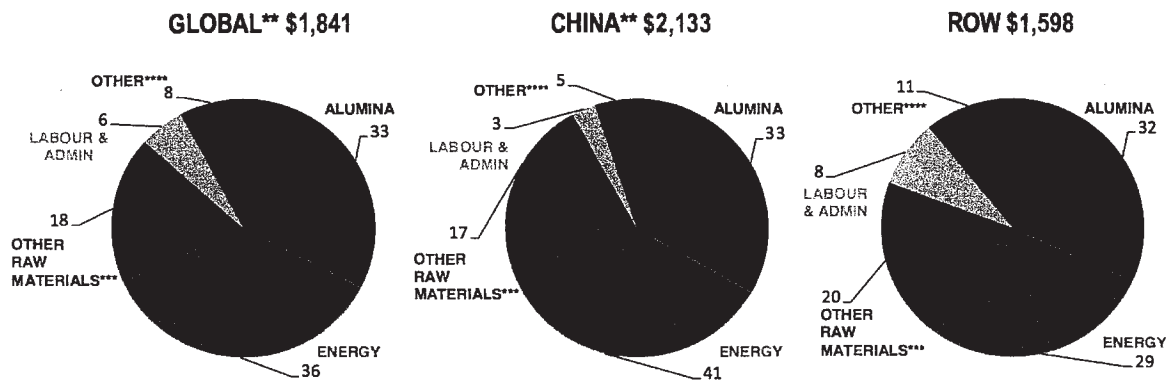
** Does not include depreciation, sustained capital expenses, working capital and amortization*
***Excludes applicable VAT of 17% that Chinese aluminum smelters pay on raw materials, energy and services*
**** Other raw materials: carbon anode, cathode, pitch, ALF3 and Cryolite*
***** Other: Cell rebuilding cost, maintenance, insurance, property tax and technology fees*
Source: HARBOR Aluminum

> aluminum intelligence unit
the global leader in aluminum industry analysis and outlook

October 2013

ALUMINUM'S PRODUCTION CASH COST STRUCTURE BEFORE CASTING Q3 2013*

(in $/mton; % of output cash cost)

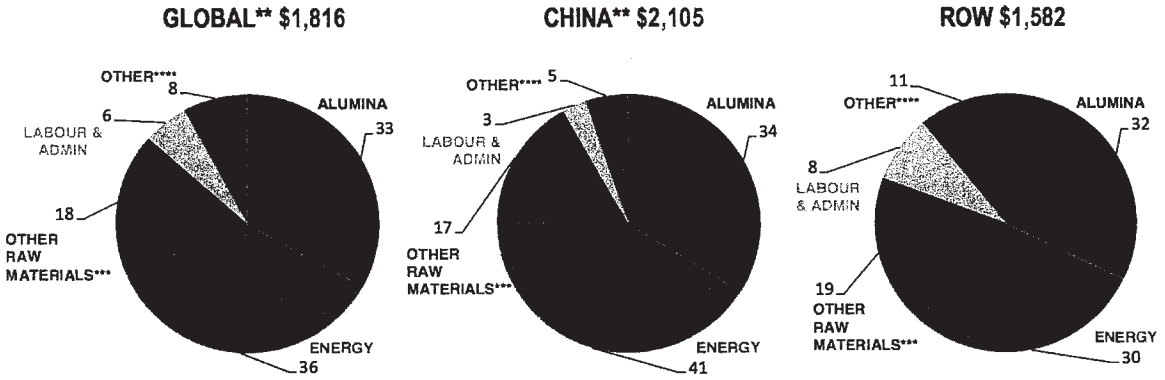


** Does not include depreciation, sustained capital expenses, working capital and amortization*
***Excludes applicable VAT of 17% that Chinese aluminum smelters pay on raw materials, energy and services*
**** Other raw materials: carbon anode, cathode, pitch, ALF3 and Cryolite*
***** Other: Cell rebuilding cost, maintenance, insurance, property tax and technology fees*
Source: HARBOR Aluminum

January 2014

ALUMINUM'S PRODUCTION CASH COST STRUCTURE BEFORE CASTING Q4 2013*

(in $/mton; % of output cash cost)



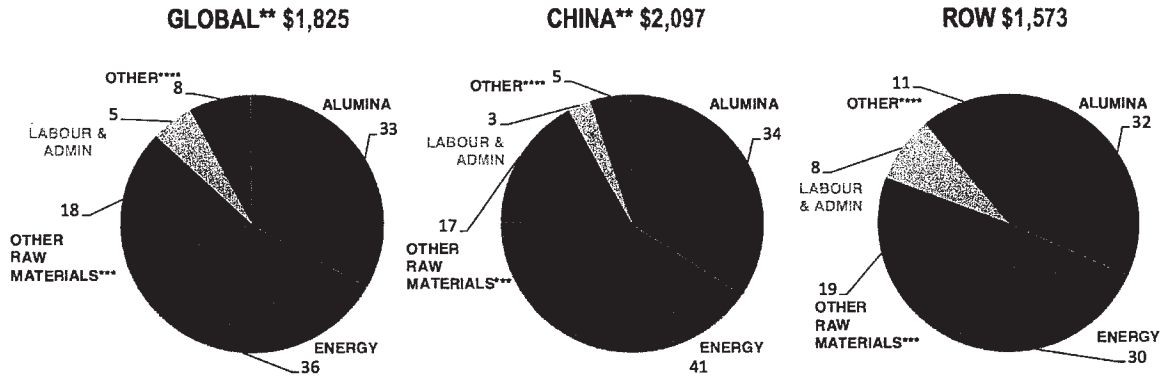
** Does not include depreciation, interest payments, sustained capital expenses and working capital*
***Excludes applicable VAT of 17% that Chinese aluminum smelters pay on raw materials, energy and services*
**** Other raw materials: carbon anode, cathode, pitch, ALF3 and Cryolite*
***** Other: Cell rebuilding cost, maintenance, insurance, property tax and technology fees*
Source: HARBOR Aluminum

April 2014

*confidential

ALUMINUM'S PRODUCTION CASH COST STRUCTURE BEFORE CASTING Q1 2014*

(in $/mton; % of output cash cost)



** Does not include depreciation, interest payments, sustained capital expenses nor working capital*
***Excludes applicable VAT of 17% that Chinese aluminum smelters pay on raw materials, energy and services*
**** Other raw materials: carbon anode, cathode, pitch, ALF3 and Cryolite*
***** Other: Cell rebuilding cost, maintenance, insurance, property tax and technology fees*
Source: HARBOR Aluminum

ATTACHMENT D

A Review of the possible consequences of a change in contract terms from "in warehouse" to "FOT basis", with respect to all metals traded on the London Metal Exchange

A study by Europe Economics

Europe Economics
Chancery House
53-64 Chancery Lane
London WC2A 1QU
Tel: (+44) (0) 20 7831 4717
Fax: (+44) (0) 20 7831 4515
www.europe-economics.com

20 February 2007

TABLE OF CONTENTS

APPENDIX 1: THE LME SYSTEM

The LME

A1.1 The London Metal Exchange (LME) has a current turnover of more than $4,500 billion per annum. The LME now trades primary aluminium, aluminium alloy, North American special aluminium alloy (NASAAC), copper, lead, nickel, tin, zinc and plastics, and plans to introduce trading in steel.[17]

A1.2 The LME is the pre-eminent world exchange for base metals. LME warrants are issued in respect of metal of specified standards deposited in approved warehouses, which are then contractually bound to deliver efficiently on demand. These warrants are therefore a convenient basis for buying and selling metal, for spot and for future delivery. The obligation that warehouses will deliver means that metal producers, users and financiers can arbitrage efficiently between the warrants and other property rights in metal.

A1.3 A variety of market players are involved in the supply or demand of physical metal in the form of LME warrants. They can be broadly categorised as:

(a) producers;

(b) fabricators;

(c) intermediaries (including merchants, traders, and brokers); and

(d) LME approved warehouses.

Roles and Responsibilities

A1.4 The LME has three primary roles:

(a) Hedging: the LME provides a market where participants can protect themselves against risks arising from movements in base metals and plastics prices;

(b) Pricing: the LME provides reference prices which are accepted globally and which are widely used in the non-ferrous metals and, to a lesser extent, in the plastics industries,

(c) Delivery: the approval and licensing of warehouse companies to house LME warranted metal to enable market participants to make or take physical delivery of approved brands of LME traded contracts.

A1.5 These services are provided to LME members and through them to non-member clients.

---

[17] The source for most information contained in this Appendix is the LME.

LME Membership

A1.6 The LME has a membership of approximately 80 firms of which 11 actively participate in ring dealing (open outcry). An additional 31 broker members also participate in the trading of futures and options through the telephone market and LME Select.[18] Members of the LME may trade either as principals or as agents of their clients.

A1.7 The LME categories of membership are as follows:

(a) Category 1 (ring dealing). Each ring dealing member is entitled to trade in the ring during the ring trading sessions. All ring dealing members, as members of the London Clearing House, are authorised under the 2000 Financial Services and Markets Act and are members of the FSA. Ring dealing members are Clearing Members who enjoy all the privileges of Membership including the right to issue client contracts and the exclusive right to trade in the Ring. They may also operate a 24 hour market by trading inter-office.

(b) Category 2 (Associate broker clearing). Associate broker clearing members have all the privileges of ring dealing members except that they may not trade inside the ring. They also operate through the 24 hour inter-office market. They are members of both the London Clearing House and the FSA, authorised under the 2000 Financial Services and Markets Act.

(c) Category 3 (Associate trade clearing). Associate trade clearing members may not issue client contracts or trade in the ring but they are entitled to clear their own business.

(d) Category 4 (Associate broker). Associate broker members may issue LME contracts but are not members of the clearing house nor may they trade in the ring. They operate through the 24 hour inter-office market, and are members of the FSA, authorised under the 2000 Financial Services and Markets Act.

(e) Category 5 (Associate trade). Category 5 members have no trading rights except as clients of a member of a higher category.

LME Contracts and Physical Delivery

A1.8 LME contracts are traded on the exchange. A number of conditions are attached to LME contracts, of which the most relevant for this study are:

---

[18] LME Select is the exchange operated electronic trading platform. Member firms are connected to the system which allows accredited traders to execute trades electronically. The system allows trading on all LME contracts, futures, options, traded average price options (TAPOs), and carries.

(a) all contracts must be for the delivery of the relevant metal or plastic on a prompt date (the term used for the settlement or delivery date);

(b) the metal or plastic to be delivered must conform to specifications set out by the LME in its Special Contract Rules, which govern matters such as quality, shape and weight;

(c) the metal or plastic must be one of the brands listed and approved by the LME;

(d) the metal or plastic must be held by one of the LME listed and approved warehouse companies and for which the warehouse company has issued a bearer receipt in the form specified for an LME warrant; and

(e) metal and plastic delivery obligations are satisfied by the transfer of a warrant from seller to buyer. The warrant is backed by a specific parcel of material, a requirement not peculiar to the LME as a commodity exchange.[19]

A1.9 Unlike metals, plastics on LME warrant cannot be withdrawn from an LME warehouse and then put on warrant again elsewhere.

A1.10 Although the bulk of the LME contracts are closed out by an opposite contract instead of actual transfer of warrants, any party to a contract can still insist on using the actual transfer of warrant to settle the contract if they so wish.[20] The possibility that an actual lot of metal could be physically delivered helps to ensure that the LME price is effectively the equivalent of metal prices in the physical market.[21]

A1.11 The physical delivery of metals and plastics is achieved through the transfer of LME warrants.[22] By holding an LME warrant, the bearer holds the equivalent of a warehouse receipt for a specified lot of metal/plastic in an LME approved warehouse, issued by the warehouse after the metal/plastic has been delivered to it. An LME warrant confers ownership of the underlying metal subject to the payment of all the legitimate charges owed to the warehouse. The warrant refers to a specific lot of metal/plastic of a defined quality and brand in a specific location. Once a warrant holder wishes to withdraw

---

19 For instance COMEX has this as well.

20 For instance, Party A and Party B enter into a one-month contract for certain amount of copper (e.g. five lots) with price of say $1,000/lot where Party A longs (buys) the metal and Party B shorts (sells) the metal. Three days before the prompt date (delivery data) of the initial contract, these two parties could agree to enter an equal and opposite contract for settlement on the same day, which means that the two parties enter into another three-day contract where Party A would deliver to Party B the same amount of copper as specified in the initial contract (e.g. five lots) with price say of $900/lot on the same prompt date of the initial contract. Thus the physical delivery obligations of these two contracts are equal and opposite, and there is no need to actually conduct physical delivery. These two contracts are thus settled by one party paying the net cash difference of these two contracts to the other party, which in this case is ($1,000 - $900) x 5 = $500 and paid by Party A to Party B.

21 The LME Warehousing Discussion Paper does briefly discuss the possibility of the LME "de-materialising" so that LME contracts will be settled instead financially. However, such de-materialising would, it is argued, place the LME in a minority of globally traded physical futures contracts. The LME system has been designed to meet the requirements of the metal industry and thus any changes not originating from the user base is regarded as damaging the LME's relevance. The paper concludes that de-materialisation and abolishing the warehouse system are not practicable propositions.

22 Technically speaking, the term 'physical delivery' may refer to the delivery of warrants (e.g. "the underlying asset"), rather than actually withdrawing metal from warehouses.

metal/plastic, he or she can present the warrant to the warehouse where the metal/plastic is stored, and the warrant will be cancelled before the metal/plastic is delivered out.

A1.12 While all LME contracts provide for physical delivery of metal, the LME is generally seen as a place of supply of last resort for physical metal, and metal users normally purchase metal directly from producers or merchants in the physical market. Metal withdrawn from LME warehouses each year generally accounts for less than five per cent of annual world metal consumption.

LME Price

A1.13 Price discovery is one of the most important functions of the LME, which provides the global reference metal price.

A1.14 In the physical metal market, prices are determined by regional supply and demand and these vary greatly by location. However, the availability of transport and financial facilities means that these prices are related to each other through arbitrage by the cost of and time taken by the movements that would be necessary to achieve price equilibrium.

A1.15 The LME has established itself as the provider of global reference metal prices for the metals traded on it, despite the fact that the majority of world metal is traded on the physical market where metal users purchase metal directly from producers or merchants.

A1.16 The reliability of the LME price depends on two conditions;

(a) Physical delivery. As explained above, all LME contracts are for physical delivery, and cannot be settled until the prompt date. Market participants can thus readily arbitrage any price discrepancies between the LME price and prices in the physical market.

(b) A liquid and deep market. Trading turnover on the LME is very high. This helps to ensure that the trades on the LME reflect the real supply and demand conditions in the physical market, and that the possibility of market manipulation is minimised.

A1.17 The LME publishes the following official LME prices daily for each metal:

(a) cash buyer;

(b) cash seller & settlement;

(c) 3-months buyer;

(d) 3-months seller;

(e) 15-months buyer;

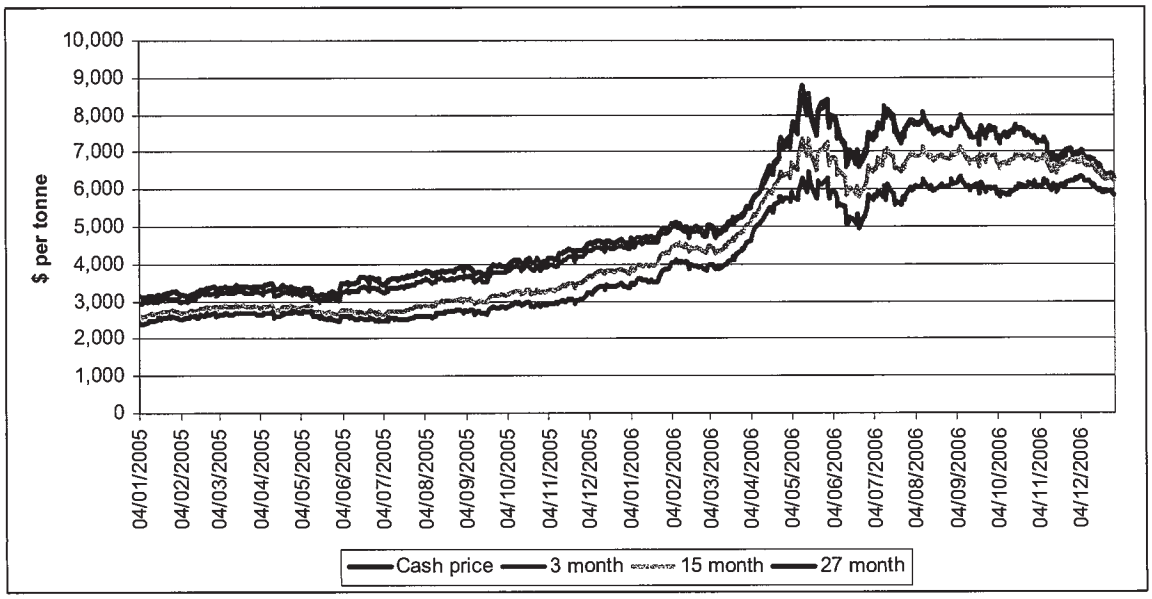
(f) 15-months seller;

(g) 27-months buyer; and

(h) 27-months seller.[23]

A1.18 The graph below shows how these prices compare, for example, for copper.

Chart A1.1: Comparison of cash, 3 month, 15 month and 27 month prices for copper (2005-2006)



Source: LME

A1.19 The term "LME price" can refer to any of these prices or to all of them as a whole, depending on the context and purpose. However, the term is most widely used to refer to the cash seller and settlement price.

A1.20 The LME price is thus not the actual price paid for delivered metal – the LME price is the price of a warrant, and the reference price for metal prices around the world. The actual metal prices, or physical prices, are normally expressed in the form of the LME price plus physical premium or discount determined, in turn, by regional differences in demand and supply, differences in brand, location and, in the case of ore or concentrates, processing costs.

London Clearing House

A1.21 London Clearing House (LCH).Clearnet is the LME's contracted central counterparty clearing house. It clears LME contracts throughout the London business day.

---

[23] The LME does not publish 27-months official prices for lead and tin.

Operation

A1.22 An LCH.Clearnet clearing member enters into a future or option contract with another clearing member. Both sides of this trade are input into the computerised matching system, which then feeds the information to LCH.Clearnet. Assuming both parties' entries agree on time of trade, price, prompt date, contracting parties and volume, the trade is accepted as matched. The single buy/sell contract is split by LCH.Clearnet into two separate buy or sell contracts between itself and each of the clearing members respectively, enabling it to take responsibility for contract performance.

A1.23 Non-clearing members' and clients' contracts with clearing members are not affected by clearing; they remain principals' contracts.

A1.24 LCH.Clearnet takes on counterparty risk (e.g. the risk that one party of the contract defaults on its contractual obligations) when it accepts trades into clearing, and it covers that risk by requiring payment of margin - amounts that cover the extent of any losses a contract might show. LCH.Clearnet looks at all the positions of a clearing member when calling margins, since a clearing member may have some positions in profit and others in a loss situation, and calls margin on the basis of the clearing member's net position. Margins may be provided in cash or by other collateral such as bank guarantees.

SWORD

A1.25 SWORD is an automated software system used by the LME to keep a record of warrants.[24] It was designed to replace the physical movement of warrants from one holder to another.

A1.26 SWORD can be accessed by its users, either on their own account or on behalf of their clients. Warrants registered on SWORD can be transferred centrally and this simplifies the trading procedure.

A1.27 SWORD impacts upon the life of a warrant in the following way:

(a) when metal is deposited in an LME warehouse (this might be metal that was already in a non-LME warehouse or has come direct from the producer/merchant to an LME warehouse) the warrant is issued by the warehouse's London Agent and is registered and held on SWORD.

(b) the SWORD system tracks the rents and ownership of the warrant as it changes hands and calculates the rents by reference to the rate published by the issuing warehouse. Note that SWORD does not record trades; it only records the transfer of the ownership of warrants.

---

[24] SWORD is co-owned by London Clearing House

(c) SWORD records the cancellation of the warrant prior to physical delivery of the product out of the warehouse.

Trading on the LME

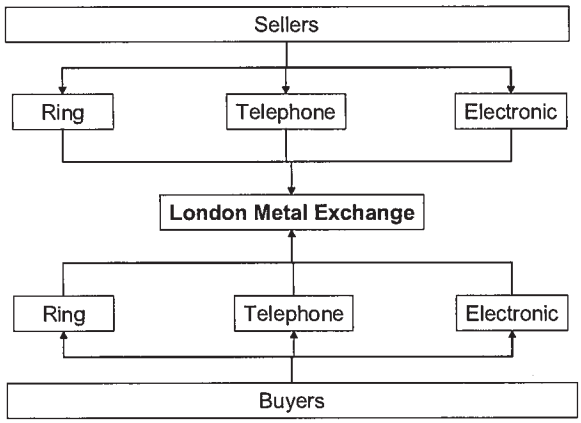
A1.28 Trading on the LME, as shown in the chart below, takes one of three forms:

(a) open outcry market (ring trading), which is attended by representatives of the LME ring dealing firms;

(b) inter-office telephone market, which is a 24 hour global market place transacted between member companies over the telephone;

(c) LME Select, which is the LME's electronic trading platform.

FigureA.1: Forms of Trading on the LME



Source: LME

A1.29 Through most of its history, the main users of the LME and those trading on it were metal producers, recyclers, fabricators, and metal merchants, all of whom were involved in the physical metal market.

A1.30 In recent years, many financial investors, such as banks, pension funds, and hedge funds, have also started trading on the LME.

A1.31 Traditional LME brokers are mostly also metal merchants in the physical market who, in the past, have provided ancillary services for metal producing and fabricating firms directly involved in the metal trade. These brokers have seen their relative importance in the LME

market decline as purely financial traders have entered the market. Interviewees in general agree that the latter category now makes up the bulk of LME trades and exerts considerable influence in determining the LME price.[25]

Price Volatility

A1.32 Price volatility is an inherent characteristic of most or all commodity markets and stems from the way these materials are produced and consumed. On one hand, any substantial increase in production levels often takes a long time to implement, and may require incremental investment; on the other hand, consumers (e.g. in the case of metals fabricators or other metal users) have a limited choice of substitutes and substitution itself may require investment. This means that neither supply nor demand is responsive quickly to a change in price and large price swings are required to balance changes in production or demand.

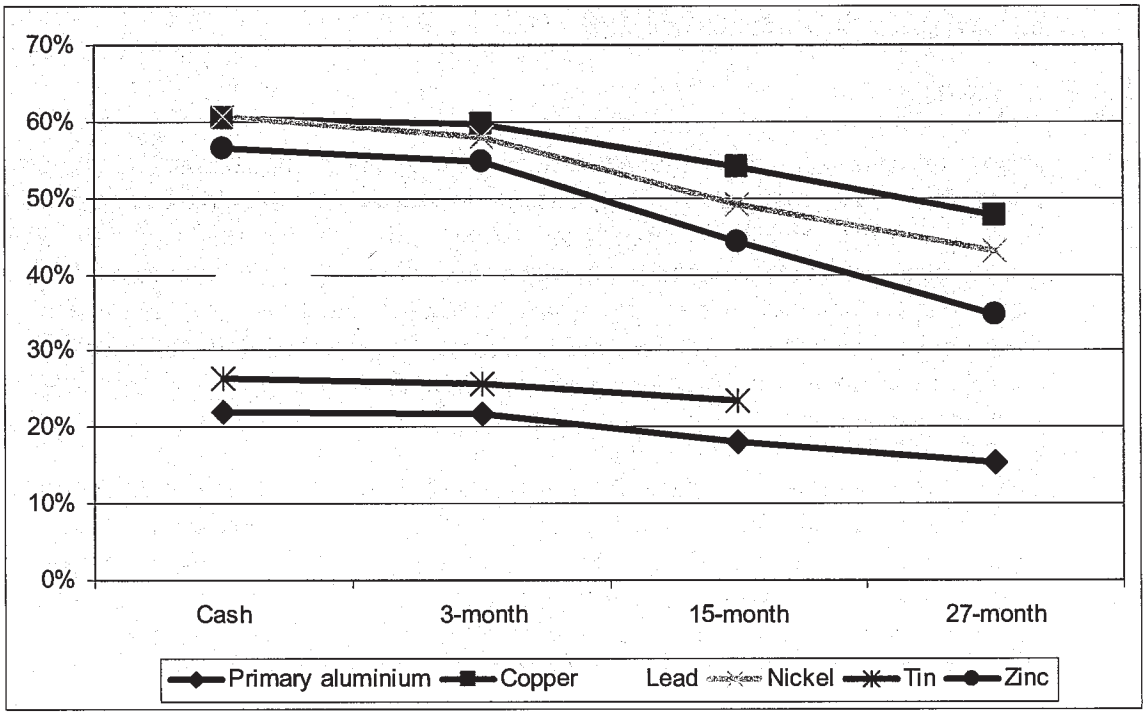
A1.33 Chart A1.2 and Table A1.1 below show a more detailed picture of the volatility of official monthly average LME prices over the past 10 years. It can be seen that prices are very volatile. Between 1996-2006, the maximum prices of copper and nickel (for example) were several times higher than the minimum prices, and the standard deviation, the parameter most frequently used to measure volatility, is more than 40 per cent of the average price for the period.[26]

---

[25] The divide of LME trades between traditional brokers and new financial traders was suggested to be 20:80 by one stakeholder.

[26] Standard deviation is defined as the spread of the values from the mean value.

Chart A1.2: Volatility of LME price (1996-2006): standard deviation from average



Volatility defined as standard deviation of LME prices as a percentage of average LME price

Source: Europe Economics

Table A1.1: Volatility of Monthly Average LME Price (1996-2006)

	Cash	3-months	15-months	27-months
Aluminium				
Maximum price	$2,861.48	$2,881.38	$2,708.57	$2,512.62
Minimum price	$1,181.96	$1,204.28	$1,278.78	$1,333.91
Mean price	$1,616.81	$1,632.28	$1,633.11	$1,619.00
Standard deviation (SE)	$355.52	$354.97	$297.47	$249.19
SE/Mean price	22%	22%	18%	15%
Copper				
Maximum price	$8,045.86	$7,905.24	$6,904.55	$6,129.32
Minimum price	$1,377.28	$1,399.76	$1,460.09	$1,499.57
Mean price	$2,526.89	$2,499.56	$2,364.04	$2,266.84
Standard deviation (SE)	$1,526.40	$1,494.25	$1,279.76	$1,079.15
SE/Mean price	60%	60%	54%	48%
Lead				
Maximum price	$1,725.50	$1,685.13	$1,508.42	
Minimum price	$412.12	$428.80	$463.00	
Mean price	$680.03	$677.64	$663.89	
Standard deviation (SE)	$272.50	$260.30	$217.15	
SE/Mean price	40%	38%	33%	
Nickel				
Maximum price	$34,570.26	$33,792.37	$28,252.63	$24,646.05
Minimum price	$3,875.00	$3,941.82	$4,173.18	$4,366.82
Mean price	$9,900.76	$9,788.94	$9,071.07	$8,508.97
Standard deviation (SE)	$6,013.02	$5,681.37	$4,461.15	$3,667.61
SE/Mean price	61%	58%	49%	43%
Tin				
Maximum price	$11,158.68	$11,033.16	$10,482.11	
Minimum price	$3,694.50	$3,735.50	$3,882.25	
Mean price	$6,027.84	$6,023.54	$5,988.71	
Standard deviation (SE)	$1,590.64	$1,551.04	$1,403.14	
SE/Mean price	26%	26%	23%	
Zinc				
Maximum price	$4,405.39	$4,320.50	$3,746.79	$3,259.32
Minimum price	$747.60	$768.21	$814.10	$832.00
Mean price	$1,251.65	$1,262.01	$1,239.10	$1,199.10
Standard deviation (SE)	$706.87	$692.15	$547.88	$416.88
SE/Mean price	56%	55%	44%	35%

Source: LME and Europe Economics

Stocks and Trading

A1.34 The LME publishes daily reports on the stocks of metal stored in LME warehouses, and such information is widely used by market participants to infer supply and demand conditions and therefore to help to form their views on the LME price. Among these reports are statistics of warrants that have been cancelled, but not yet withdrawn from warehouses. The percentage of such cancellations to total stocks is shown in the table below.

Table A1.1: Cancelled tonnages

Metal	Warrant cancelled as a percentage of closing stocks (%)				
	1998	2000	2002	2005	2006*
Aluminium Alloy	2.79	1.47	8.01	2.25	5.64
Copper	23.65	11.29	4.06	15.26	9.27
Lead	2.35	5.28	7.23	7.53	3.05
NASAAC	-	-	4.77	2.57	1.86
Nickel	3.14	10.33	10.48	15.92	17.76
Primary Aluminium	5.48	7.71	5.28	11.97	7.19
Tin	9.79	5.76	7.02	7.33	16.22
Zinc	3.19	3.04	3.84	9.49	36.08

**: Up to July 2006*

Source: LME and Europe Economics calculations

A1.35 The table below summarises the percentage of cancelled warrants as a proportion of total warrants traded.

Table A1.2: Average cancelled warrants as a proportion of total volume traded (1998-2006)*

Metal	%
Aluminium Alloy	0.38
Copper	0.10
Lead	0.14
Nickel	0.22
Primary Aluminium	0.10
Tin	0.37
Zinc	0.14
NASAAC	0.21

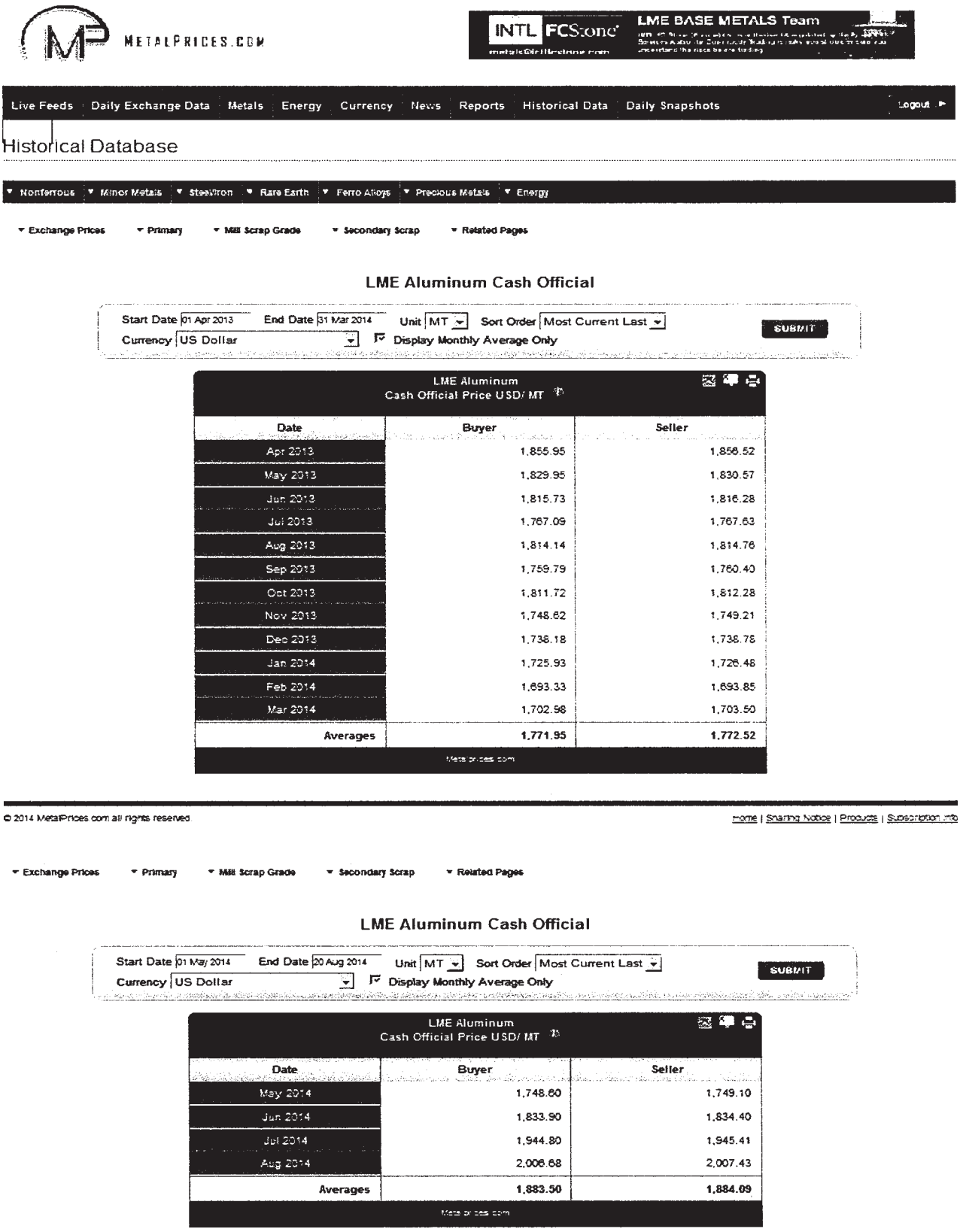
** June 2006*

Source: Europe Economics calculations

ATTACHMENT E

Review 248: Monthly primary aluminium prices on the London Metal Exchange (LME)

Source: http://www.metalprices.com/historical/database/aluminum/lme-aluminum-cash-official



METALPRICES.COM

INTL FCStone LME BASE METALS Team

Live Feeds | Daily Exchange Data | Metals | Energy | Currency | News | Reports | Historical Data | Daily Snapshots | Logout

Historical Database

Nonferrous | Minor Metals | Steel/Iron | Rare Earth | Ferro Alloys | Precious Metals | Energy

Exchange Prices | Primary | Mill Scrap Grade | Secondary Scrap | Related Pages

LME Aluminum Cash Official

Start Date 01 Apr 2013 End Date 31 Mar 2014 Unit MT Sort Order Most Current Last SUBMIT

Currency US Dollar Display Monthly Average Only

LME Aluminum
Cash Official Price USD/ MT

Date	Buyer	Seller
Apr 2013	1,855.95	1,856.52
May 2013	1,829.95	1,830.57
Jun 2013	1,815.73	1,816.28
Jul 2013	1,767.09	1,767.63
Aug 2013	1,814.14	1,814.76
Sep 2013	1,759.79	1,760.40
Oct 2013	1,811.72	1,812.28
Nov 2013	1,748.62	1,749.21
Dec 2013	1,738.18	1,738.78
Jan 2014	1,725.93	1,726.48
Feb 2014	1,693.33	1,693.85
Mar 2014	1,702.98	1,703.50
Averages	1,771.95	1,772.52

Metalprices.com

© 2014 MetalPrices.com all rights reserved

Home | Sharing Notice | Products | Subscription Info

Exchange Prices | Primary | Mill Scrap Grade | Secondary Scrap | Related Pages

LME Aluminum Cash Official

Start Date 01 May 2014 End Date 20 Aug 2014 Unit MT Sort Order Most Current Last SUBMIT

Currency US Dollar Display Monthly Average Only

LME Aluminum
Cash Official Price USD/ MT

Date	Buyer	Seller
May 2014	1,748.60	1,749.10
Jun 2014	1,833.90	1,834.40
Jul 2014	1,944.80	1,945.41
Aug 2014	2,006.68	2,007.43
Averages	1,883.50	1,884.09

Metalprices.com

METHODOLOGY AND SPECIFICATIONS GUIDE

Metals

(Latest Update: January 2014)

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 COMEX first position plus NY Dealer premium cathode weekly midpoint; Lead North American Market; Tin NY Dealer; 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 Premium – Daily premium or discount to the London Metal Exchange cash price for spot physical 99.7% high-grade aluminum, delivered, duty-paid US consumer works, arrival within 7-30 days from date of publication, net-30-day terms. Assessment is expressed in cents per pound but also available on a converted dollars/mt basis. Premium or discount is determined based on physical spot deals, bids and offers reported through a daily survey of spot buyers and sellers, using a representative sample of producers, traders and different types of end users (sheet mills, remelt billet makers, extruders, rod mills, etc). Includes business for LME-deliverable, any-origin 99.7% P1020 ingot, low-profile sow or T-bars, basis delivery US Midwest. Volumes are minimum full 45,000 lb truckloads; typical order quantities 100-500 mt. Prices for volumes that are larger or smaller than the typical order size may be normalized to the standard. The daily assessment reflects delivery to a typical-freight consumer in a broad US Midwest region via truck or rail. The typical-freight delivery location is determined to be 1.25-1.75 cents/lb from multiple suppliers or ports (freight rates updated December 2012). Deals that are reported as FDB, FCA, for non-Midwest locations or for particularly close or long freights (ie, less than/greater than the current range of 1.25-1.75 cents/lb) are normalized before inclusion in the calculations. Platts uses a matrix of typical delivery locations throughout North America and categorizes these locations as "average," "close," or "extra" freights. The "close" or "extra" freight locations are normalized to "average" based on assigned differential values of ranging from plus/minus 0.25 cents to 0.5 cents/lb, which are adjusted periodically based on market feedback on typical locational discounts or extras. Assessment reflects net-30-day payment terms from delivery (net-cash, net-5 and net-10 are normalized using typical LIBOR-plus rates or prevailing net-cash versus net-30 spreads). Deals that require a specific shape or chemistry (ie, T-bars only, no lithium) may be normalized to the stated standard specification. In the absence of repeatable concluded spot deals where a premium/discount is negotiated, the assessment takes into account firm bids and offers. Changes in the spreads on formula deals, or the premiums and discounts for other grades of aluminum basis Transaction premium, are considered for trend purposes. "Good until cancel" (GTC) deals reflecting a fixed price with non-negotiated premiums, or additional orders given as part of a frame contract, are not considered in the assessment but may be monitored for trend purposes. The assessment reflects the most-widely tradable and repeatable premium or discount value prevailing at the close of US markets, typically at 4:30pm US Eastern time. On the last business day of the month, the assessment closes by 1pm US East Coast time.

MW US Transaction – Daily London Metal Exchange high-grade aluminum cash settlement price, converted into cents per pound, adjusted by US free-market premium or discount for prompt delivery Midwest (arrival within 7-30 days from date of publication). (See specification for US Transaction Premium). 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. Includes business for LME-deliverable, any-origin 99.7% North American P1020 ingot, low-profile sow or T-bars, meeting LME specifications, basis delivery US Midwest. Volumes are minimum full 45,000 lb truckloads, typical quantities 100-500 mt.

MW US Net-cash premium – Daily premium or discount to the London Metal Exchange cash price for spot physical 99.7% high-grade aluminum, delivered, duty-paid US consumer works, arrival within 7-30 days from date of publication, net-cash payment terms, normalized to a broad Midwest region. The premium is determined based on a survey of producers, traders and end users to determine the prevailing spread between net-cash and net-30 terms, on a cents/lb basis. All other specifications are the same as for the US Transaction Premium (see separate reference).

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 spot premium or discount to the London Metal Exchange cash settlement price for high-grade aluminum. Minimum 99.7% primary aluminum meeting LME P1020A chemical specifications, CIF main Japanese ports of Yokoyama, Nagoya or Osaka, all origins, except excluding Iran, India, Egypt and LME warehouses. The assessment is expressed in a narrow price range reflecting the majority of business or spot bids/offers for ingot, T-bars and sows, minimum volumes of 250 mt, cash within 3 days of bill of lading, or cash against documents. Cargo leaves ports during or following the month of transaction. Platts surveys market sources, gathering information from a representative sample of traders, consumers, producers and brokers deemed reliable and active in the spot market. Platts contacts sources based in Japan, Australia, Russia, Europe, the Middle East and other Asian countries.

CIF Japan Forward Quarter Premium – Premium or discount to the LME price at time of shipment for minimum 99.7% primary aluminum meeting the LME P1020A chemical specifications, CIF main Japanese ports of Yokoyama, Nagoya or Osaka, origins excluding Iran, India, Egypt and LME warehouses. The premium range reflects the majority of concluded quarterly contracts for minimum 500 mt/month volumes, in ingot, T-bars or sow form, cash within 3 days of bill of lading, or cash against documents. Cargo leaves ports during or following the month of transaction. 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, Russia, Europe, the Middle East and other Asian countries. The final quarterly assessment range will be published in advance of the start of the quarter, usually by the first date of the quarter, or once the majority of buyers and sellers have concluded negotiations. The number of deals typically included in the assessment ranges from 10 to 20.

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-AlSi9Cu3 as described in DIN standard 1725; and D12S alloy, produced in conformity with Jls 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.

US 319, 356, F132, A-413.1, F-132 and B390 – Twice-weekly price assessment ranges for major secondary aluminum alloys. Delivered Midwest customer works, payment net-30 to net-60 days, 45,000-lb truckload quantities. Assessed twice per week, on Mondays and Thursdays (except for changes during holidays), through a survey of US secondary aluminum smelters, diecasters, foundries, automotive companies, traders and brokers. The assessments reflect the narrow low-high price range, in cents/lb, of the majority of concluded deals, bids and offers. The impurity levels represent the Aluminum Assn. specifications or typical market specifications for 319.1, 356.1, 332.2, A413 and B390, respectively, as follows: **319.1** – 5.5-6.5% Si; 0.8% Fe, 3.0-4.0% Cu; 0.50% Mn, 0.10% Mg, 0.35% Ni; 1.0% Zn, 0.25% Ti. **356** – 6.5-7.56% Si; 0.50% Fe; 0.25% Cu; 0.35% Mn; 0.25-0.45% Mg; 0.35% Zn; 0.25 Ti. **F-132** – 8.5-10.0% Si; 0.6% Fe; 2.0-4.0% Cu; 0.20 Mn; 0.9-1.3% Mg; 0.10% Ni; 0.10% Zn; 0.20% Ti. **A-413.1** – 11-13% Si; 1% Fe max; 0.6% Cu max; 0.35% Mn; 0.1% Mg; 0.5% Ni; 0.5% Zn; and 0.15% Sn. **B390** – 16-18% Si, 1.3% max Fe, 4.0-5.0% Cu, 0.50% Mn, 0.45-0.65% Mg, 0.10% Ni, 1.4% Zn and 0.20% Ti. Price assessments for 319, 356, and F132 started in April 1993; A413 started in 2010 and B390 in 2013.

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 GBD-AlSi9Cu3 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.

(DISCONTINUED) MW CIF Europe – LME grade A asked price.

(DISCONTINUED) 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.

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

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

(DISCONTINUED) 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

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. Started July 8, 1992.

65% High-Carbon, in-warehouse US: Weekly assessment of the repeatable, tradeable, spot price for 60-65% Cr, high-carbon ferrochrome, normalized to 65% Cr, 6-8% carbon, 2% max silicon, 0.03% max phosphorous, 0.04% max sulfur, lumps size 0.50 x 2.5 inch; US origin and imported material, free market, cents/lb Cr contained; in-bulk or 2,000-3,000 lb supersacks; duty-paid in-warehouse in key locations along the Mississippi, Chicago, Ohio and Columbia River systems and other key port warehousing locations, including Baltimore, Maryland, Long Beach, California and Portland, Oregon; delivery within 60 days from date of transaction; net-30 days payment terms from date of delivery. Transactions reported on a delivered basis normalized to an in-warehouse basis. Fines normalized to stated lump specifications. Special packaging and payment terms normalized to meet stated specifications. The assessment will reflect pricing for quantities of four truckloads and greater. Assessment made Wednesdays, or closest business day, from survey of producers, traders and end users in the carbon, stainless and specialty steel sectors, closing at 4pm New York time. Started December 15, 1971.

High-carbon 58-60% CIF China: Weekly price assessment of the repeatable, tradeable spot price for 58-60% Cr high-carbon ferrochrome, with a maximum silicon content of 5%, maximum 8% carbon, 0.04% max phosphorous, 0.05% max sulfur, in lumps, lump size 10-150 mm, all origins. The assessment will reflect a typical order quantity of a minimum 500 mt, delivered CIF main Chinese ports within 60 days from date of transaction, payment terms cash against documents or payment terms letter of credit at sight, packed in 1 mt big bags, or in bulk, and/or in ocean-going, customs-sealed containers at point of export. Assessment made Fridays (or closest business day in the case of holidays), from a survey of producers, traders and end users in the carbon, stainless and specialty steel sectors, reflecting the narrow low-high price range of the majority of spot deals, bids and offers on a cents/lb Cr contained basis.

Low Carbon 0.15% in-warehouse US: Weekly assessment of the repeatable, tradeable, spot price for 0.15% carbon, 68-74% Cr, ferrochrome, carbon 0.15% max, silicon 1% max, phosphorous 0.3% max, sulfur 0.02% max, lumps size 0.50 x 2.5 inch; US origin and imported material, free market; cents/lb Cr contained; in-bulk or 2,000-3,000 lb supersacks; duty-paid in-warehouse in key locations along the Mississippi, Chicago, Ohio and Columbia River systems and other key port warehousing locations, including Baltimore, Maryland, Long Beach, California and Portland, Oregon; delivery within 60 days from date of transaction, net-30 days payment terms from date of delivery. Transactions reported on a delivered basis normalized to an in-warehouse basis. Fines normalized to stated lump specifications. Special packaging and payment terms normalized to meet stated specifications. The assessment will reflect pricing for full truckload quantities and greater. Assessment made Wednesdays, or closest business day, from survey of producers, traders and end users in the carbon, stainless and specialty steel sectors, closing at 4pm New York time. Started October 4, 1995.

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. Started July 8, 1992.

Low Carbon 0.10% in-warehouse US: Weekly assessment of the repeatable, tradeable, spot price for 0.10% carbon, 65-74% Cr, ferrochrome, normalized to 68% Cr, carbon 0.10% max, silicon 1% max, phosphorous 0.3% max, sulfur 0.02% max, lumps size 0.50 x 2.5 inch. The assessment covers US origin and imported material, free market, cents/lb Cr contained, in-bulk or 2,000-3,000 lb supersacks; duty-paid in-warehouse in key locations along the Mississippi, Chicago, Ohio and Columbia River systems and other key port warehousing locations, including Baltimore, Maryland; Long Beach, California and Portland, Oregon; delivery within 60 days from date of transaction, net-30 days payment terms from date of delivery. Transactions reported on a delivered basis normalized to an in-warehouse basis. Fines normalized to stated lump specifications. Special packaging and payment terms normalized to meet stated specifications. The assessment will reflect pricing for full-truckload quantities and greater. Assessment made Wednesdays, or closest business day, from survey of producers, traders and end users in the carbon, stainless and specialty steel sectors, closing at 4pm New York time. Started September 1, 1992.

Low Carbon 0.05% in-warehouse US: Weekly assessment of the repeatable, tradeable, spot price for 0.05% carbon, 65-74% chrome, normalized to 68% Cr, carbon 0.05% max, silicon 1% max, phosphorous 0.3% max, sulfur 0.02% max; lumps 0.50 x 2.5 inch; US-origin and imported material, free market; cents/lb Cr contained; in-bulk or 2,000-3,000 lb supersacks; duty-paid in-warehouse in key

locations along the Mississippi, Chicago, Ohio and Columbia River systems and other key port warehousing locations, including Baltimore, Maryland, Long Beach, California and Portland, Oregon; delivery within 60 days from date of transaction, net-30 days payment terms from date of delivery. Transactions reported on a delivered basis normalized to an in-warehouse basis. Fines normalized to stated lump specifications. Special packaging and payment terms normalized to meet stated specifications. The assessment will reflect pricing for full-truckload quantities and greater. Assessment made Wednesdays, or closest business day, from survey of producers, traders and end users in the carbon, stainless and specialty steel sectors, closing at 4pm New York time. Started January 3, 1973.

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. Started July 8, 1992.

Charge Chrome 48-52% Cr, in-warehouse US: Weekly assessment of the repeatable, tradeable, spot price for 48-52%Cr charge chrome, carbon 8% max, silicon 4% max, phosphorous 0.03% max, sulfur 0.04% max, lumps size 1 x 2.5 inch; US origin and imported material, free market, cents/lb Cr contained; in-bulk or 2,000-3,000 lb supersacks; duty-paid in-warehouse in key locations along the Mississippi, Chicago, Ohio and Columbia River systems and other key port warehousing locations, including Baltimore, Maryland, Long Beach, California and Portland, Oregon; delivery within 60 days from date of transaction; net-30 days payment terms from date of delivery. Transactions reported on a delivered basis normalized to an in-warehouse basis. Fines normalized to stated lump specifications. Special packaging and payment terms normalized to meet stated specifications. The assessment will reflect pricing for quantities of four truckloads and greater. Assessment made Wednesdays, or closest business day, from survey of producers, traders and end users in the carbon, stainless and specialty steel sectors, closing at 4pm New York time. Started March 16, 1977.

Charge Chrome 48-52% CIF China: Weekly assessment of the repeatable, tradeable spot price for charge chrome CIF main Chinese ports, with chrome content of 48-52%, normalized to a maximum 9% carbon, max 0.05% sulfur, max 0.04% phosphorus and max 6% silicon, lump size 10-100 mm, all origins. The assessment will reflect a typical order quantity of minimum 500 mt, delivered CIF China within 90 days from the date of transaction, cash against documents or payment terms letter of credit at sight, packed in 1 mt big bags, or in bulk, and/or in ocean-going, customs-sealed containers at point of export. Assessment made Fridays (or closest business day in the case of holidays), from a survey of producers, traders and end users in the carbon, stainless and specialty steel sectors, reflecting the narrow low-high price range of the majority of spot deals, bids and offers on a cents/lb Cr contained basis.

NSSC Charge Chrome 50-55% Quarterly CIF Japan: Quarterly price as published by Nippon Steel & Sumikin Stainless Steel Corporation, for 50-55% Cr, 6-9% C. Started July 1, 1993.

High-carbon 60-65% CIF Japan: Weekly assessment of the repeatable, tradeable spot price for 60-65% high-carbon ferrochrome, with silicon content of 2-4%, maximum 8% carbon, 0.02-0.05% phosphorous, 0.05% max sulfur, lump size 10-100 mm, all origins. The assessment will reflect a typical order quantity of a minimum 200 mt, loading from the port of origins for shipping to Japan within 60 days from the date of transaction, CIF main Japanese port basis, payment cash against documents, or payment terms letter of credit at sight. Packed in 1 mt big bags, or in bulk, and/or in ocean-going, customs-sealed containers at point of export. Assessment to be made Fridays (or closest business day in the case of holidays), from a survey of producers, traders and end users in the carbon, stainless and specialty steel sectors, reflecting the narrow low-high price range of the majority of spot deals, bids and offers on a cents/lb Cr contained basis.

FERROMANGANESE

High-Carbon 76% Mn in-warehouse US: Weekly assessment of the repeatable, tradeable, spot price for high-carbon ferromanganese 74-78% Mn, normalized to 76% Mn, carbon 7.5% max, silicon 1.2%, phosphorous 0.5%, sulfur 0.02%; lumps 0.5- x 4.00 inch; US-origin and imported material, $/long ton Mn contained; in-buik or 2,000-3,000 lb supersacks; duty-paid in-warehouse in key locations along the Mississippi, Chicago, Ohio and Columbia River systems and other key port warehousing locations, including Baltimore, Maryland, Long Beach, California and Portland, Oregon; delivery within 60 days from date of transaction, net-30 days payment terms from date of delivery. Transactions reported on a delivered basis normalized to an in-warehouse basis. Fines normalized to stated lump specifications. Special packaging and payment terms normalized to meet stated specifications. The specification will be for a minimum of four truckload quantities and greater. The assessment will reflect pricing for minimum quantities of four truckloads and greater. Assessment made Wednesdays, or closest business day, from survey of producers, traders and end users in the carbon, stainless and specialty steel sectors, closing at 4pm New York time.

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

Medium Carbon 85% Mn in-warehouse US: Weekly assessment of the repeatable, tradeable, spot price for medium-carbon ferromanganese 80-85% Mn, carbon 1.5% max, silicon 1.5% max, phosphorous 0.40% max, sulfur 0.2%; lumps size 0.50 x 2.5 inch; US-origin and imported material; cents/lb Mn contained; in-bulk or 2,000-3,000 lb supersacks; duty-paid in-warehouse in key locations along the Mississippi, Chicago, Ohio and Columbia River systems and other key port warehousing locations, including Baltimore, Maryland, Long Beach, California and Portland, Oregon; delivery within 60 days from date of transaction, net-30 days payment terms from date of delivery. Transactions reported on a delivered basis normalized to an in-warehouse basis. Fines normalized to stated lump specifications. Special packaging and payment terms normalized to meet stated specifications. The assessment will be for minimum quantities of four truckloads and greater. Assessment made Wednesdays, or closest business day, from survey of producers, traders and end users in the carbon, stainless and specialty steel sectors, closing at 4pm New York time.

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 paid 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.

Ferromolybdenum 60% FOB China (MMAFP00) – Weekly assessment of the repeatable, tradable spot price ferromolybdenum exported from Chinese ports for 60-65% molybdenum contained, normalized to 60% molybdenum, maximum 0.1% carbon, maximum 1.5% silicon, maximum 0.06% phosphorous, maximum 0.1% sulfur, and maximum 0.5% copper; packed in drums 100 kg/250 kg) or bags (1 mt/bag), normalized to 1mt bags; FDB Chinese ports; payment cash against documents or LC at site. Deliveries to customers within one month after the date of purchase agreement. Standard volume will be a container, or 20 mt. Assessed in dollars per kilogram, in a narrow price range reflecting the majority of business. Assessment made weekly on Thursdays or closest business day from a survey of producers, traders and consumers.

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

Ferromolybdenum 60% CIF Japan (MMAFM00) – Weekly assessment of the repeatable, tradable spot price ferromolybdenum imported into Japan, with 60-65% molybdenum and normalized to 60% molybdenum, maximum 0.1% carbon, maximum 2.0% silicon, maximum 0.06% phosphorous, maximum 0.1% sulfur, and maximum 0.5% copper; packed in 1mt big bags, 25-kg paper boxes, steel drums or other packaging, normalized to 1 mt big bags; CIF main port Japan; payment cash against documents or LC at site, loading less than 60 days after the date of transaction. Minimum volume 18 mt per transaction. Assessed in dollars per kilogram in a narrow price range that reflects the majority of business. Assessment made Thursdays or closest business day from survey of producers, traders and end-users in steel and other metal sectors.

FERROSILICON

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.

75% Si, in-warehouse US: Weekly assessment of the repeatable, tradeable, spot price for 73-79% Si, normalized to 75% Si, aluminum 0.5% min-1.5% max, calcium 1.5% max; carbon 0.10% max, lumps 2x0.50 inch, 2x1 inch, or 4x1 inch; US-origin and imported material; in cents/lb Si contained; in-bulk or 2,000-3,000 lb supersacks; duty-paid in-warehouse in key locations along the Mississippi, Chicago, Dhio and Columbia River systems and other key port warehousing locations, including Baltimore, Maryland, Long Beach, California, and Portland, Oregon; delivery within 60 days from date of transaction, net-30 days payment terms from date of delivery. Transactions reported on a delivered basis will be normalized to an in-warehouse basis. Fines normalized to stated lump specifications. The assessment will be for a minimum of four truckload quantities and greater. Special packaging and payment terms normalized to meet stated specifications. Assessment made Wednesdays or closest business day from survey of producers, traders and end users in the carbon, stainless and specialty steel sectors, closing at 4pm New York time.

Chinese CIF Japan (Si 75% min, 0.2% C max.) – Started July 1, 1993.

Ferrosilicon 75% FOB China (MMAKB00) – Weekly assessment of the repeatable, tradable, spot price for Chinese-origin ferrosilicon with 73-79% silicon, normalized to 75% Si; maximum 1.5% aluminum, maximum 0.02% sulfur, maximum 0.04% phosphorous, maximum 0.2% carbon; lumps 10-50 mm; FOB main Chinese sea ports, packed in 1 mt big bags loaded on oceangoing vessel or packed in seagoing 20-foot (18-24-mt) containers and customs sealed, export tariff-paid, within 30 days of date of transaction. Assessment is made in dollars per metric ton reflecting the narrow range where the majority of business is occurring. Payment by telegraphic transfer, cash against documents, irrevocable letter of credit drawn against approved bank at site or equivalent. Assessment quantities are 18 mt and greater. Assessment made Thursdays or closest business day from a survey of producers, traders and consumers.

(DISCONTINUED) Regular CIF Japan, Spot CIF Japan. 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

FERROVANADIUM

US Free Market Ferrovanadium – 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 Ferrovanadium: Free market weekly estimated $/kg price for ferrovanadium 70-80% V, on an inwarehouse Eurpoe basis. Based on a survey of producers, traders and consumers of ferrovanadium. Assessed in Europe on Thursdays.

(DISCONTINUED) 80% Prod/Japan – 80% V, V content ferrovanadium, 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.

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 ¢/mt until June 30, 1993. Started quote in $/mt on July 1, 1993.

(DISCONTINUED) 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.

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

US Lead Premium: US premium to the LME settlement price for 99.97% pure corroding-grade lead, in 2,000-lb blocks (sows) or 55-100 lb pigs (ingots), maximum 0.025% bismuth, max 0.0050% silver, max 0.0010% Cu, max 0.001 Fe, delivered US within 30 days, normalized to a delivered Midwest basis, net-30 days payment terms. Minimum quantity one truckload (42,000-44,000 lb), typical order size one to five truckloads. Assessed weekly on Tuesday or closest business day in the event of holidays, through a survey of primary and secondary lead producers, traders and consumers of refined lead.

North American Lead Market Price: Daily formula assessment reflecting the current day's LME lead cash settlement price in cents per pound plus the weekly US premium. (See separate entry).

US Used Lead-Acid Batteries – Weekly assessment for 50% lead-acid, starter-lighter ignition automotive batteries, picked up US Midwest, assessed in cents/lb, suitable for delivery to secondary smelters within 30 days, net-30 days payment terms. Minimum quantity one truckload (42,000-44,000 lb), with typical order size one to five truckloads, packaged in shrink-wrapped pallets or skids, pallet size 40" or 44" by 48", maximum 3,600 lb per skid, no more than three battery layers separated by cardboard sheets. Assessed weekly through a survey of secondary lead smelter buyers, scrap dealers/processors, traders and brokers. Input from scrap yards will also be considered for trend purposes. The lead prices will be assessed weekly on Tuesdays (or closest business day in the event of holidays).

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, FDB 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 FDB 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

Electrolytic Manganese 99.7% Mn FOB China: Weekly assessment of the repeatable, tradeable, spot price for 99.7-99.9% Mn; flakes. size 10mm x 150mm x 1.5 mm, normalized to 99.7%; silicon 0.05%, sulfur 0.04%, carbon 0.04%, iron 0.03%, phosphorous 0.004%, lead 0.001%; Chinese-origin and imported material, free market, $/mt, packaging in 250 kg drums, in Customs-sealed, 20 ft containers, export duty paid; shipment loading within 30 days from date of transaction, payment cash against documents, including original bill of lading. Reported CIF and CFR transactions normalized back to FOB China specification, using prevailing freight rates. Special packaging and payment terms normalized back to stated specification. Assessment made Thursdays, or closest business day, from survey of producers, traders and consumers of electrolytic manganese metal flake.

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%, SiD2 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

Daily Dealer Oxide (MMAYQ00) – Platts launched a daily Molybdenum Oxide assessment on October 10, 2011. The assessment is 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. Reported sales of powdered material packed in big bags or cans, and of oxide briquettes, are normalized to an equivalent price for powdered material in drums. The daily assessment takes into account all transactions, bids and offers reported to Platts in the 24-hour period up to 4:30 pm London time each day, except on the last business day of the calendar month, when the cut-off point for transactions to be included is 1:00 pm London time. The price is assessed as a range in US dollars per pound, reflecting the narrow price band where the majority of transactions took place or, in the absence of business, where most typical buyers and sellers would be likely to conclude a deal. The Daily Dealer Oxide price assessment is published in Platts' real-time service Platts Metals Alert (PMA) on page PMA398, in Platts Metals Daily and in the Platts Metals Week supplement. Weekly and monthly averages of the high, low and mean of the daily assessment ranges are published on PMA and in Platts Metals Daily on the last business day of the week and the month, respectively, after close of business US East Coast time. Platts publishes weekly volume figures to show total tonnage by region for concluded deals accounted for in the assessment. Before January 3, 2012, the assessment only reflected dealer-to-consumer sales, CIF Japan, in-warehouse European ports and delivered US.

MW Dealer Oxide (MMAGQ00) – 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. Price history begins in April 1971. Before January 3, 2012, the assessment only reflected dealer-to-consumer sales, CIF Japan, in-warehouse European ports and delivered US. Consolidated with the Daily Dealer Oxide assessment effective January 2, 2013, when the methodology changed to become the weekly average of the Daily Dealer Oxide assessment.

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. Discontinued July 2, 2012.

(DISCONTINUED) Moly oxide CIF Japan – Moly Oxide min. 57% grade — Platts assesses weekly spot prices for molybdenum oxide (roasted molybdenum comcentrates) 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. Discontinued May 1, 2013.

(DISCONTINUED) 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. Discontinued May 1, 2013.

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 – Dfficial 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.

(DISCONTINUED) 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 briquetes 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 perrhenate), 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

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.

65% Mn, in-warehouse US: Weekly assessment of the repeatable, tradeable, spot price for 65-72% Mn, normalized to 65% Mn, silicon 16-18%, carbon 2% max, phosphorous 0.35% max, sulfur 0.04% max; lumps size 2.5x0.50 inch; in-bulk or 2,000-3,000 lb supersacks; US-origin and imported material; cents/lb Mn contained, duty-paid in-warehouse in key locations along the Mississippi, Chicago, Ohio and Columbia River systems and other key port warehousing locations, including Baltimore, Maryland, Long Beach, California,

and Portland, Oregon; delivery within 60 days from date of transaction, net-30 days payment terms from date of delivery. Transactions reported on a delivered basis normalized to an in-warehouse basis. Fines normalized to stated lump specifications. Special packaging and payment terms normalized to meet stated specifications. The assessment will reflect pricing for minimum quantities of four truckloads and greater. Assessment made Wednesdays or closest business day from survey of producers, traders and end users in the carbon, stainless and specialty steel sectors, closing at 4pm New York time.

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.

Chinese CIF Japan – (Mn 65% min, Si 16% min). Started July 1, 1993.

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

(DISCONTINUED): CIS CIF Japan. Discontinued as of December 31, 2007.

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

SILICON

Silicon 553 Grade, Delivered US Midwest: Weekly assessment of the repeatable, tradeable, spot price for US and imported 553 grade silicon metal with minimum 98.50% silicon; maximum 0.50% iron; maximum 0.30% calcium and 0.2-0.5% aluminum; lumps size 4 inches; cents/lb, in bulk or 2,000-3,000 lb supersacks, duty-paid, delivered Midwest, delivery within 30 days from date of transaction; net-30 days payment terms from date of delivery. Reported in-warehouse, or picked-up, transactions normalized to delivered US Midwest. Fines normalized to stated lump specifications. Special packaging and payment terms to be normalized to meet stated specifications. Assessment quantities are three truckloads and upward. Smaller quantities to be normalized to stated quantity. Assessment made Wednesdays or closest business day, based on a survey of producers, traders and consumers, closing at 4pm New York time. Assessment started October 22, 1975.

Silicon, 553 grade, in-warehouse EU: Weekly assessment of the repeatable, tradeable, spot price for EU origin and imported 553 grade silicon metal with minimum 98.50% silicon; maximum 0.50% iron; maximum 0.30% calcium and 0.2-0.5% aluminum; lumps size 50-100 mm; euros/mt, in bulk/1 mt big bags in-warehouse, duty-paid, EU main ports, producer plants and major EU warehousing hubs; delivery within 60 days from date of transaction; net-30 days payment terms from date of delivery. Reported delivered transactions normalized back to in-warehouse basis. Special packaging and payment terms to be normalized to meet stated specifications. Transaction quantities are three truckloads and greater. Smaller quantities to be normalized to stated quantity. Assessment made Thursdays or closest business day from a survey of producers, traders and consumers. Assessment started March 7, 2002.

Silicon 553 grade, FDB China: Weekly assessment of the repeatable, tradeable, spot price for Chinese origin and imported 553 grade silicon metal with minimum 98.50% silicon; maximum 0.50% iron; maximum 0.30% calcium and 0.2-0.5% aluminum; lumps size 50-100 mm; $/mt, FOB main Chinese sea ports, in bulk/1 mt big bags loaded on oceangoing vessel or packed in seagoing 20ft or 40 ft containers and customs sealed, export tariff-paid, within 30 days of date of transaction. Payment by telegraphic transfer, cash against documents, including original bill of lading and irrevocable letter of credit drawn against approved bank at site or equivalent. Assessment quantities are 20 mt and greater, with smaller volumes normalized to stated quantity. Special packaging and payment terms to be normalized to meet stated specifications. Assessment made Thursdays or closest business day from a survey of producers, traders and consumers. Assessment started June 27, 1991.

Silicon 553 grade, CIF Japan: Weekly assessment of the repeatable, tradeable, spot price for any origin silicon metal with minimum 98.50% silicon; maximum 0.50% iron; maximum 0.30% calcium and 0.2-0.5% aluminum; lumps size 50-100 mm; $/mt, CIF main Japan sea ports, loaded in bulk or 1 mt big bags on oceangoing vessel or packed in seagoing 20ft or 40 ft containers and customs sealed at point of origin. Payment by telegraphic transfer, cash against documents, including original bill of lading and irrevocable letter of credit drawn against approved bank at site or equivalent. Assessment quantities are 20 mt and greater, with smaller volumes normalized to stated quantity. Assessment made Thursdays or closest business day from a survey of producers, traders and consumers. Assessment 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%.

(DISCONTINUED) 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.

(DISCONTINUED) 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, œ 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.

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

MW Alloyer 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
Ag	Silver
AK	Alaska
AL	aluminum
A1203	alumina, or aluminum oxide
ally	alloy
APT	ammonium paratungstate
AR	Arkansas
Ar	argon
As	arsenic
Atl	Atlantic
Au	gold
AZ	Arizona

B	Boron
backwardation	A situation in which the cash (nearby) price of a commodity is higher than the futures price.
Be	beryllium
Bi	bismuth
BOM	Bureau of Mines
BPA	Bonneville Power Administration
C	carbon
(C)	Comex footnote
CA	California
Ca	calcium
carb	carbon
cath	cathode
Cb205	columbium pentoxide, not the mineral columbite
CBOT	Chicago Board of Trade
Cd	cadmium
CFTC	(US) Commodity Futures Trading Commission
c.i.f.	cost, insurance, and freight paid by shipper
CIPEC	Conseil Intergouvernmental 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.
Cl	chlorine
CO	Colorado
Co	cobalt
Comex	The COMEX division of the New York Mercantile Exchange. A hedge market on which gold and silver are traded.
conc	concentrates
contango	A situation in which the futures price of a commodity is higher than the cash (nearby) price.
Cr	chromium
Cr2O3	chromite
CT	Connecticut
Cu	copper
DC	District of Columbia
DE	Delaware
del	delivered
DLA	Defense Logistics Agency, responsible for US government stockpile metal sales, acquisitions, and upgrading.
DM	German Deutschmark
electrltc	electrolytic
EPA	(US)Environmental Protection Agency
eqv	equivalent
F	fluorine
f.a.s.	free alongside ship
Fe	iron
ferromoly	ferromolybdenum
FeSi	ferrosilicon
FL	Florida
fl	Flask. A unit of measure for mercury, equal to 76 lb.
fndry	foundry
f.o.b.	Free on board. Consignment to customer with all prior charges onto customer's conveyance, usually ship, railcar, or truck.
force majeure	act of God
FTC	(US)Federal Trade Commission
GA	Georgia
GAO	(US) General Accounting Office
Ge	germanium
gm	gram
GOB	good ordinary brand [European prime western-grade zinc]
H	hydrogen
He	helium
Hf	hafnium
HG	high grade [copper, tin, and zinc]
Hg	mercury
HI	Hawaii
hi	high
IA	Iowa
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
IMF	International Monetary Fund
IMM	International Monetary Market. Also known as the Chicago Mercantile Exchange.
impt	imported
IN	Indiana
In	indium
ingt	ingot
Ir	iridium
IRS	(US) Internal Revenue Service
ITA	International Trade Administration
ITC	(US) International Trade Commission
K	potassium
kg	kilogram
KLCE	Kuala Lumpur Commodity Exchange
KLTM	Kuala Lumpur Tin Market
KS	Kansas
kW	kilowatt
kWh	kilowatt-hour
KY	Kentucky
œ	British pound sterling
LA	Louisiana

lb	pound
Li	lithium
LIA	Lead Industries Association
lo	low
lt	long ton or gross ton (2,240 lb).
ltpy	long tons per year
ltu	long ton unit
(M)	New York Mercantile Exchange footnote
MA	Massachusetts
maj	major
mast	master
max	maximum
MD	Maryland
ME	Maine
mean	averaged high and low price
med	medium
Merc Ex	New York Mercantile Exchange
mesh	The number of wires per linear inch of a screen. Used for fine sizing.
Mg	magnesium
MI	Michigan
micro	One-millionth of a meter. Used for fine sizing.
min	minimum
MITI	Ministry of International Trade and Industry, a Japanese government body
MN	Minnesota
Mn	manganese
MO	Missouri
Mo	molybdenum
MS	Mississippi
MT	Montana
mt	metric ton (2204.62 lb)
mtl	metal
mtpd	metric tons per day
mtpm	metric tons per month
mtpy	metric tons per year
mtu	metric ton unit
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."
MW	Metals Week or Mid West
N	nitrogen
NA	North America
NA	not available
Na	sodium
Nb	niobium
NC	North Carolina
ND	North Dakota
NE	Nebraska
NH	New Hampshire
Ni	nickel
NJ	New Jersey
NM	New Mexico
NUM	(South Africa)National Union of Mineworkers
NV	Nevada
NY	New York
NYMEX	New York Mercantile Exchange
O	oxygen
official session	The morning session of the London Metal Exchange
OH	Ohio
OK	Oklahoma
OPIC	Overseas Private Investment Corp. Authorized by the US government to provide expropriation insurance for private corporations operating outside the US.
OR	Oregon
Os	osmium
OSHA	Occupational Safety and Health Administration
P	phosphorous
p	British pence
PA	Pennsylvania
Pb	lead
Pd	palladium
pellt	pellet
pos	position
prem	premium
primary production	The process of producing metal from its ore, as distinct from secondary production from scrap metal.
prod	producer
Pt	platinum
PW	prime western [zinc]
Rb	rubidium
Re	rhenium
ref	refinery
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.
Rh	rhodium
RI	Rhode Island
ring dealer	A member of the London Metal Exchange allowed to trade metal in the ring
Ru	ruthenium
S	sulfur
Sb	antimony
SC	South Carolina

SD	South Dakota
Se	selenium
settlement price	The last price at which a commodity is traded in a particular session.
SG	standard grade
SHG	special high grade
Si	silicon
smelter	In copper, lead, and zinc, a plant which reduces concentrate to metal. In aluminum, a plant which upgrades alumina into metal.
Sn	tin
Sr	strontium
stu	short ton unit
Ta	tantalum
Ta2O5	tantalum pentoxide, not the mineral tantalite
Te	tellurium
thr-mo	three-month
TiO2	titanium dioxide, a paint base
TN	Tennessee
ton	short ton (2,000 lb)
tpm	short tons per month
tpy	short tons per year
tr oz	troy ounce
TVA	Tennessee Valley Authority
TX	Texas
U	Uranium
UAW	United Auto Workers
UNCTAD	United Nations Conference on Trade and Development
unfab	unfabricated
USBM	United States Bureau of Mines
USTR	United States Trade Representative
USW	(US) United Steelworkers Union
UT	Utah
V	vanadium
V2O5	vanadium pentoxide
VA	Virginia
VT	Vermont
W	tungsten
WA	Washington
WI	Wisconsin
WO3	tungsten trioxide, common designation for tungsten content
WV	West Virginia
WY	Wyoming
Y	yttrium
Zn	zinc

ATTACHMENT G

Bloomberg

Aluminum Premiums Seen by Rusal Exceeding $500 on Demand

By Agnieszka Gus | June 3, 2014

Premiums paid to secure aluminum are poised to exceed $500 a metric ton as soon as the coming quarter on stronger demand and limited supplies, according to United Co. Rusal (486), implying a jump of at least 20 percent.

At least 75 percent of stockpiles in London Metal Exchange warehouses are tied into financing transactions and unavailable for immediate withdrawal, Deputy Chief Executive Officer Oleg Mukhamedshin said today in a telephone interview from Moscow, where the company is based. The "overall" global surcharge, added to the price on the LME, will be "well above" $500 a ton in the third quarter, he said.

Buyers in Japan, Europe and the U.S. are paying record premiums for supplies of the lightweight metal. Stockpiles tracked by the LME fell in 19 of 20 sessions as of today to the lowest since May 2013. Aluminum for delivery in three months rose 2.5 percent this year to $1,846 a ton on the LME. A $500 premium would make up about 21 percent of total buying costs.

"There is quite a deficit in the spot market," Mukhamedshin said. Surging premiums "should be a concern for the consumers who need to hedge."

Buyers in Japan, Asia's largest importer, agreed to pay a record premium for this quarter at $400 a ton. Spot premiums in Europe gained 47 percent this year to $412.50 a ton, including the European Union import duty, while the U.S. surcharge jumped 61 percent to 18.9 cents a pound ($417 a ton), according to Metal Bulletin data.

'Strong Demand'

Aluminum usage outside China will exceed production by 1.3 million to 1.4 million tons this year on "quite strong demand," Mukhamedshin said. Producers outside the Asian nation reduced output by about 3 million tons since 2012 and should cut a further 1.6 million tons this year, he said.

The market in China, the biggest producer and consumer of the metal, should be balanced as local output falls further, according to Rusal. The nation's producers are losing money at current prices and output is set to slow as banks cut credit to loss-making companies, Mukhamedshin said.

Financing transactions, involving a simultaneous purchase of nearby metal and forward sale, are intended to capitalize on a market in contango, when prices rise for later deliveries. Changes in borrowing costs and storage fees affect the accords' profitability. Aluminum for immediate delivery on the LME settled today at a $22-a-ton discount to the three-month contract, the narrowest gap since December 2012, according to data compiled by Bloomberg. That compares with $45 on Jan. 2.

Off-Warrant

"The contango is OK and interest rates are still low, so financial transactions are still profitable and the stock which goes off-warrant is still not available," Mukhamedshin said, referring to supplies held outside the LME's network. "This is exactly why the premiums are going up, and we expect more record-high premiums in the third quarter, well above $500 per ton."

To contact the reporter on this story: Agnieszka Troszkiewicz in London at atroszkiewic@bloomberg.net

To contact the editors responsible for this story: Claudia Carpenter at ccarpenter2@bloomberg.net Dan Weeks, Sharon Lindores

Aluminum Physical Delivery Premiums at Record Levels

Long-Time Surplus Now a Deficit Amid Rising Demand and Delivery Constraints

By KJETIL MALKENES HOVLAND
Updated July 22, 2014 7:29 a.m. ET

OSLO—Aluminum producer Norsk Hydro AS NHY.OS -0.41% A's Chief Executive Svein Richard Brandtzaeg said Tuesday that premiums for the physical delivery of aluminum had risen to record levels this year amid a tighter market, a rise that could continue for the rest of the year.

"There's been a surplus situation for many years, but now we are in a situation where there's a deficit of aluminum, which right now is about 1 million tons in the world outside of China," said Mr. Brandtzaeg.

Global demand for aluminum, excluding China, increased 4% on the year in the second quarter to an annualized 27.5 million tons, while production is expected to reach about 26 million tons this year, Norsk Hydro said.

"This is because of curtailments [to production], but also high demand growth," said Mr. Brandtzaeg.

Aluminum prices at the London Metal Exchange dropped 2% on the year in the second quarter, but the drop was compensated for by record-high premiums for the physical delivery of aluminum to factory doors, amid delivery constraints at global aluminum warehouses.

Premiums rose to above $400 per metric ton in the second quarter in Japan, the U.S. and Europe, said Mr. Brandtzaeg, and if the market remains tight, "we see a possibility that they may increase further."

Premiums have kept rising in the third quarter, to between $450 and $460 a ton this week, Norsk Hydro said. The company's Chief Financial Officer Eivind Kallevik said there could still be an upside to premiums, but he declined to quantify it.

"As long as there's a deficit of metal, with long queues at the LME warehouses, we'd expect premiums to stay at a decent level," Mr. Kallevik said.

He said big warehouses had started to deliver more aluminum, with LME inventories dropping to 5.1 million tons from 5.4 million tons during the quarter, but that capacity was still limited, with a delivery time of nearly two years from major warehouses in Detroit and Vlissingen in the Netherlands.

An executive at Russian aluminum producer Rusal said last month he expected premiums to reach a new record of between $500 and $550 a ton in the next two or three months.

Norsk Hydro said Tuesday its second-quarter net profit rose to 185 million Norwegian kroner ($29.8 million), up from a net loss of 637 million kroner in the year-earlier period but below analysts' expectations of 400 million kroner due to lower energy production and prices. The company owns a number of hydroelectric power plants.

The company said Monday that Mr. Brandtzaeg is stepping down early next year to become chief executive of Norwegian fertilizer producer Yara International AS YAR.OS -0.03% A, which demerged from Norsk Hydro in 2004.

Write to Kjetil Malkenes Hovland at kjetilmalkenes.hovland@wsj.com

Rio Tinto seeks Oct-Dec aluminium premium of $420 per tonne from Japan buyers

Tue, Aug 26 2014

TOKYO (Reuters) - Rio Tinto (RIO.AX: Quote, Profile, Research) (RIO.L: Quote, Profile, Research) has offered Japanese buyers aluminium at a record premium of $420 (253 pounds) per tonne for October-December primary metal shipments, up 3-5 percent from the previous quarter, four sources involved in pricing talks said on Tuesday.

Japan is Asia's biggest importer of the metal and the premiums for primary metal shipments it agrees to pay each quarter over the London Metal Exchange (LME) cash price CMAL0 set the benchmark for the region.

Rio Tinto's offer was below the $460 offer made by Russia's United Company Rusal Plc (0486.HK: Quote, Profile, Research) last week.

Rio Tinto could not be reached by phone to comment on its offer.

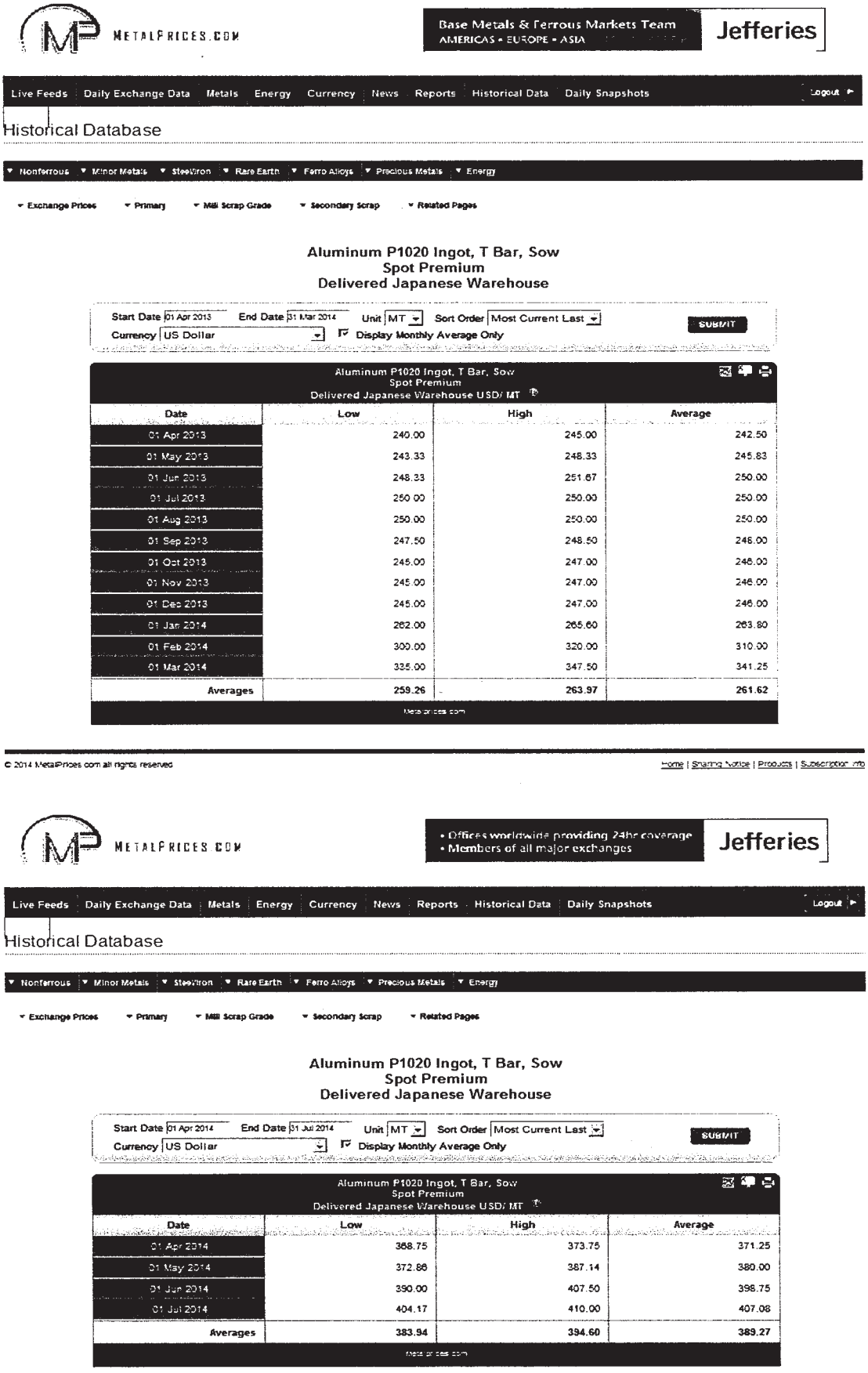
For the July-September quarter, Japanese aluminium buyers mostly agreed to pay record high premiums of $400-$408 per tonne PREM-ALUM-JP, over LME prices, up 8-12 percent from the quarter before that.

(Reporting by Yuka Obayashi; Editing by Tom Hogue)

ATTACHMENT H

Review 248: Monthly major Japanese Ports (MJP) spot premium

Source: http://www.metalprices.com/historical/database/aluminum/aluminum-p1020-spot-premium-japan



METALPRICES.COM

Base Metals & Ferrous Markets Team
AMERICAS • EUROPE • ASIA

Jefferies

Live Feeds | Daily Exchange Data | Metals | Energy | Currency | News | Reports | Historical Data | Daily Snapshots | Logout

Historical Database

Nonferrous | Minor Metals | Steel/Iron | Rare Earth | Ferro Alloys | Precious Metals | Energy

Exchange Prices | Primary | Mill Scrap Grade | Secondary Scrap | Related Pages

Aluminum P1020 Ingot, T Bar, Sow
Spot Premium
Delivered Japanese Warehouse

Start Date 01 Apr 2013 End Date 31 Mar 2014 Unit MT Sort Order Most Current Last SUBMIT
Currency US Dollar Display Monthly Average Only

Aluminum P1020 Ingot, T Bar, Sow
Spot Premium
Delivered Japanese Warehouse USD/ MT

Date	Low	High	Average
01 Apr 2013	240.00	245.00	242.50
01 May 2013	243.33	248.33	245.83
01 Jun 2013	248.33	251.67	250.00
01 Jul 2013	250.00	250.00	250.00
01 Aug 2013	250.00	250.00	250.00
01 Sep 2013	247.50	248.50	248.00
01 Oct 2013	245.00	247.00	246.00
01 Nov 2013	245.00	247.00	246.00
01 Dec 2013	245.00	247.00	246.00
01 Jan 2014	262.00	265.60	263.80
01 Feb 2014	300.00	320.00	310.00
01 Mar 2014	335.00	347.50	341.25
Averages	259.26	263.97	261.62

Metalprices.com

METALPRICES.COM

• Offices worldwide providing 24hr coverage
• Members of all major exchanges

Jefferies

Live Feeds | Daily Exchange Data | Metals | Energy | Currency | News | Reports | Historical Data | Daily Snapshots | Logout

Historical Database

Nonferrous | Minor Metals | Steel/Iron | Rare Earth | Ferro Alloys | Precious Metals | Energy

Exchange Prices | Primary | Mill Scrap Grade | Secondary Scrap | Related Pages

Aluminum P1020 Ingot, T Bar, Sow
Spot Premium
Delivered Japanese Warehouse

Start Date 01 Apr 2014 End Date 31 Jul 2014 Unit MT Sort Order Most Current Last SUBMIT
Currency US Dollar Display Monthly Average Only

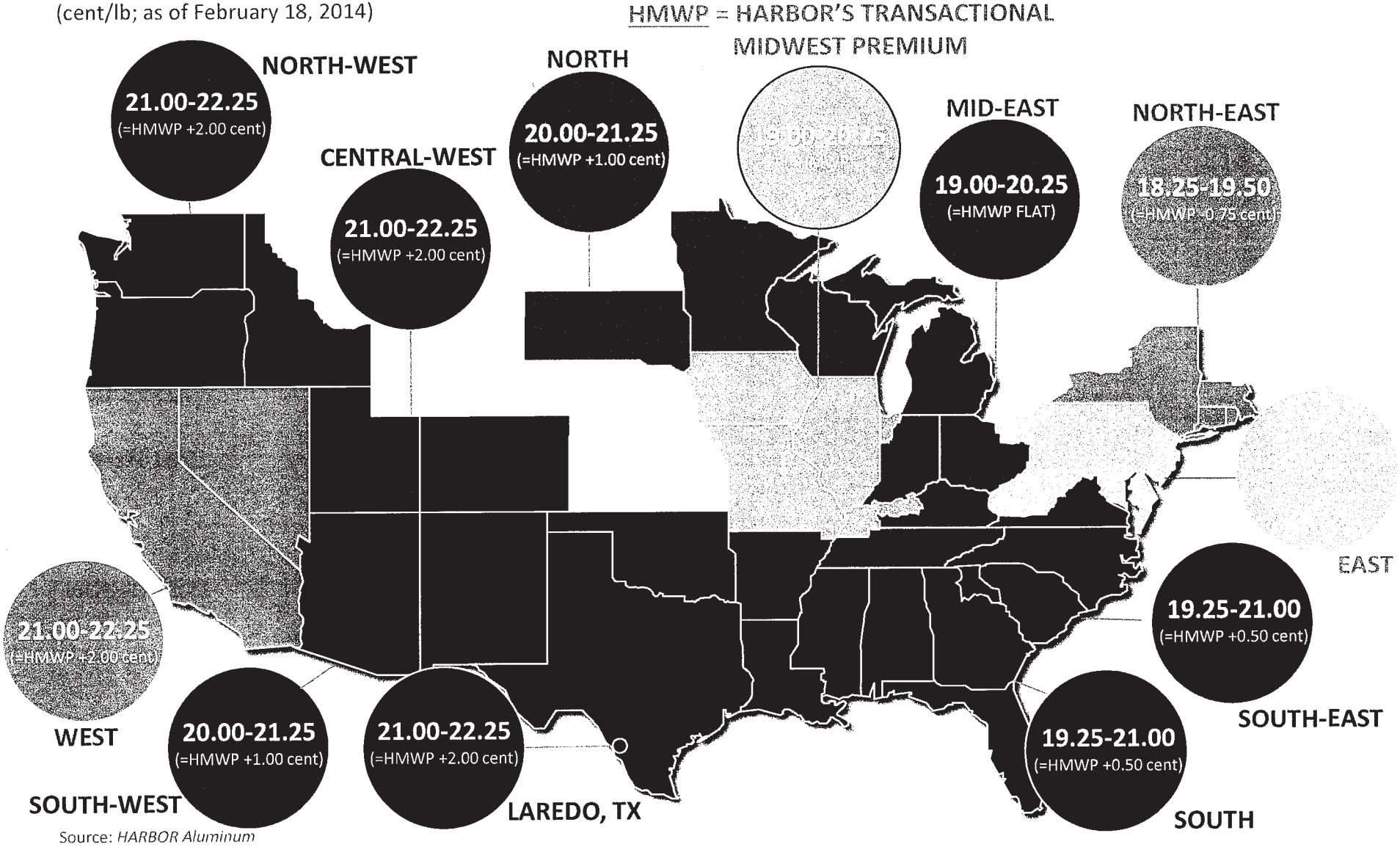
Aluminum P1020 Ingot, T Bar, Sow
Spot Premium
Delivered Japanese Warehouse USD/ MT

Date	Low	High	Average
01 Apr 2014	368.75	373.75	371.25
01 May 2014	372.86	387.14	380.00
01 Jun 2014	390.00	407.50	398.75
01 Jul 2014	404.17	410.00	407.08
Averages	383.94	394.60	389.27

Metalprices.com

HARBOR'S ASSESSMENT OF SPOT P1020 INGOT PREMIUMS BY SUBREGION IN THE US

(cent/lb; as of February 18, 2014)



Source: *HARBOR Aluminum*

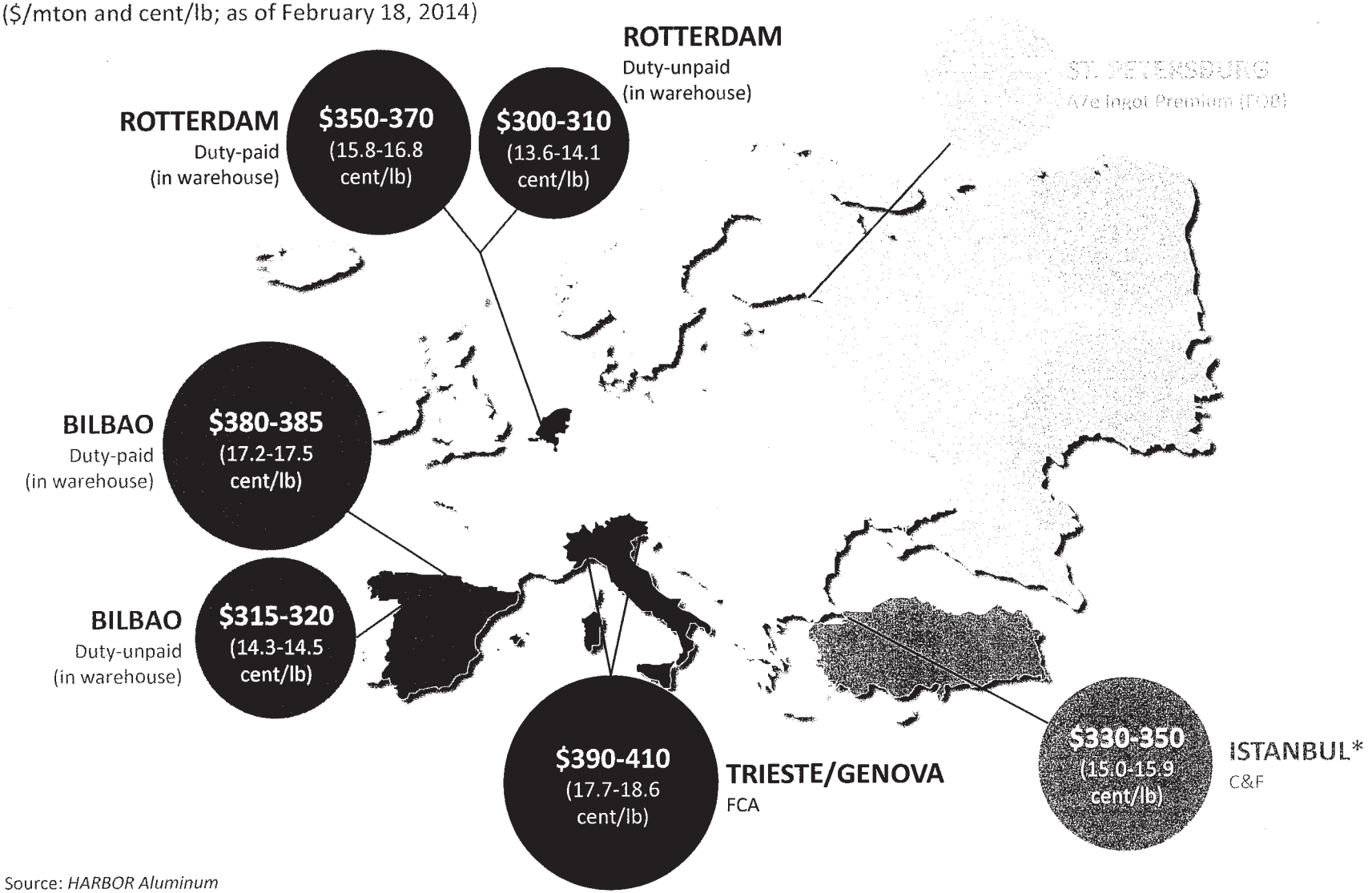
STATES INCLUDED IN EACH US SUBREGION

NORTH-EAST	ONTARIO & QUEBEC, NY, CT, MA AND NORTH EAST OHIO
EAST	PA, NJ, WV, MD
SOUTH-EAST	VA, NC, SC AND NORTH EAST GA
MID-EAST	MI, TN, REST OF OH, IN EXCEPT NORTH WEST, KY EXCEPT WEST
SOUTH	REST OF GA, FL, MS, AR, LA
MID-WEST	NORTH WEST KY, IL, IA, NORTH WEST IN, MO
SOUTH-WEST	TX, NM, OK, AZ
LAREDO, TX	BORDER WITH MEXICO
NORTH	WI, MN, SD
CENTRAL-WEST	UT, CO
WEST	CA, NV
NORTH-WEST	WA, OR, ID

Source: *HARBOR Aluminum*

HARBOR'S ASSESSMENT OF SPOT P1020 INGOT PREMIUMS BY SUBREGION IN EUROPE

($/mton and cent/lb; as of February 18, 2014)

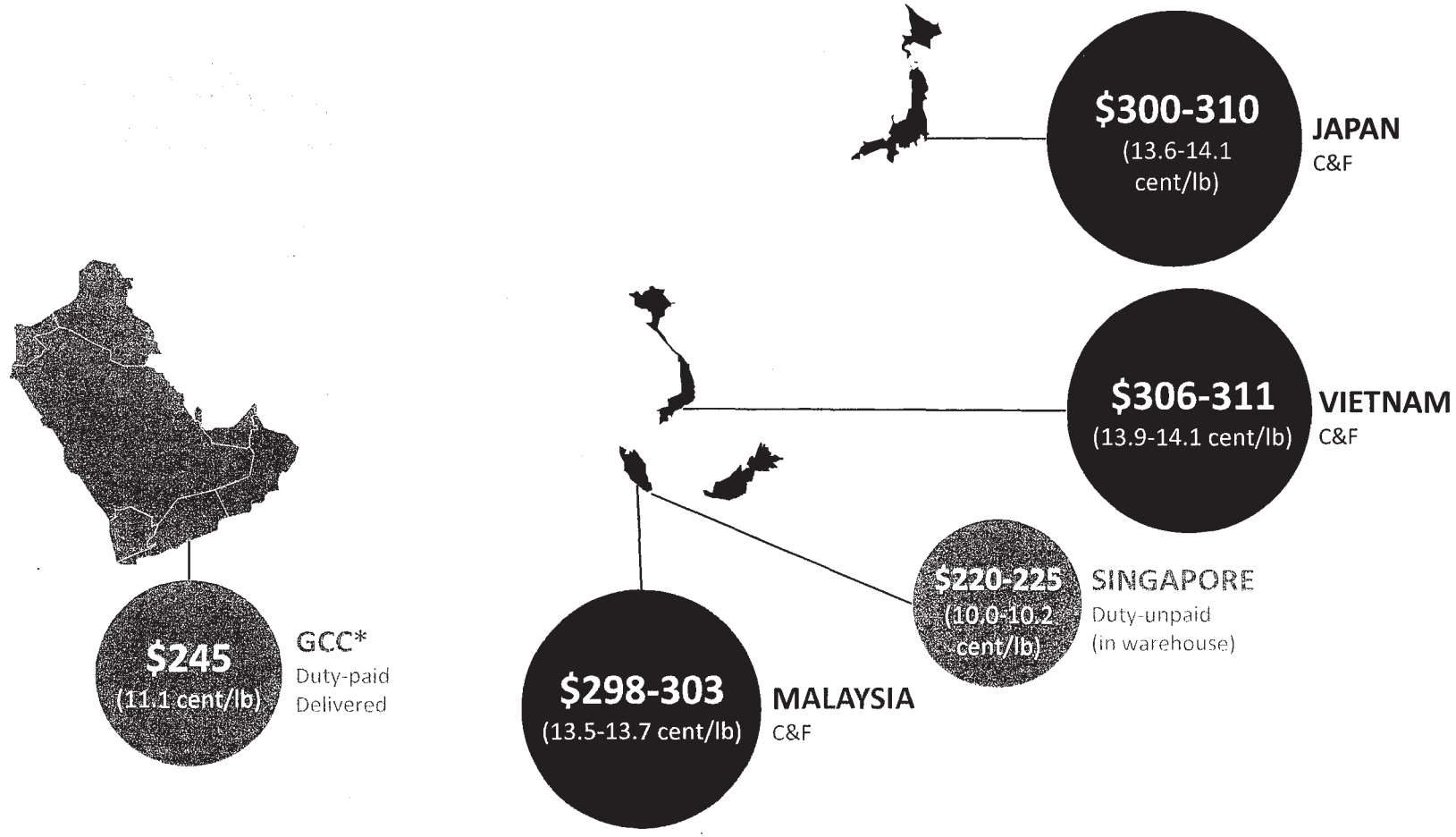


Source: *HARBOR Aluminum*

*Considered as part of Asia

HARBOR'S ASSESSMENT OF SPOT P1020 INGOT PREMIUMS BY SUBREGION IN ASIA & GCC

($/mton; as of February 18, 2014)



Source: *HARBOR Aluminum*

*Based on 2014 1Q contracts

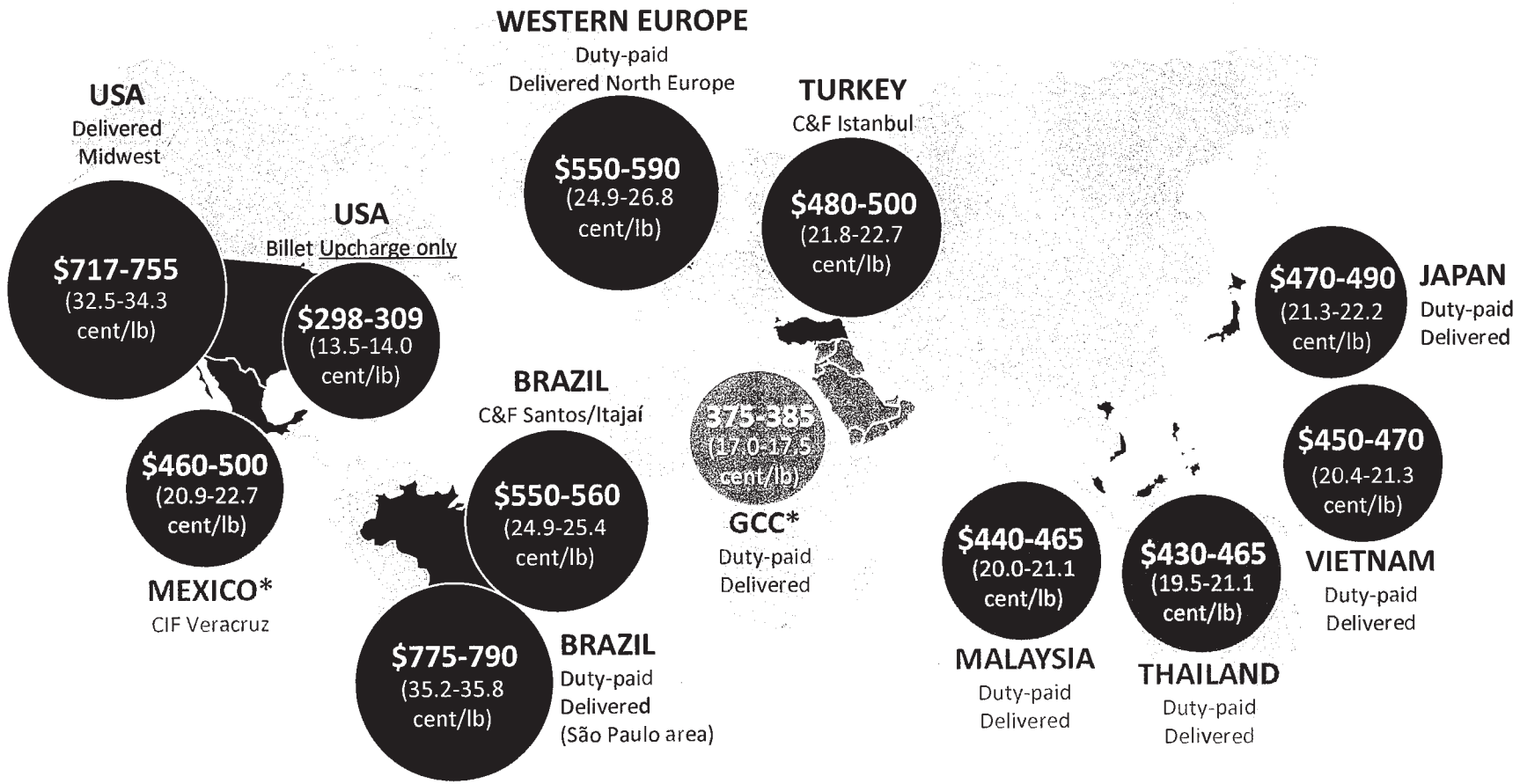
HARBOR'S ASSESSMENT OF SPOT P1020 INGOT PREMIUMS BY SUBREGION IN LATIN AMERICA

($/mton and cent/lb; as of February 18, 2014)

Source: *HARBOR Aluminum*

HARBOR'S ASSESSMENT OF FULL BILLET PREMIUMS AROUND THE GLOBE

($/mton; as of February 18, 2014)

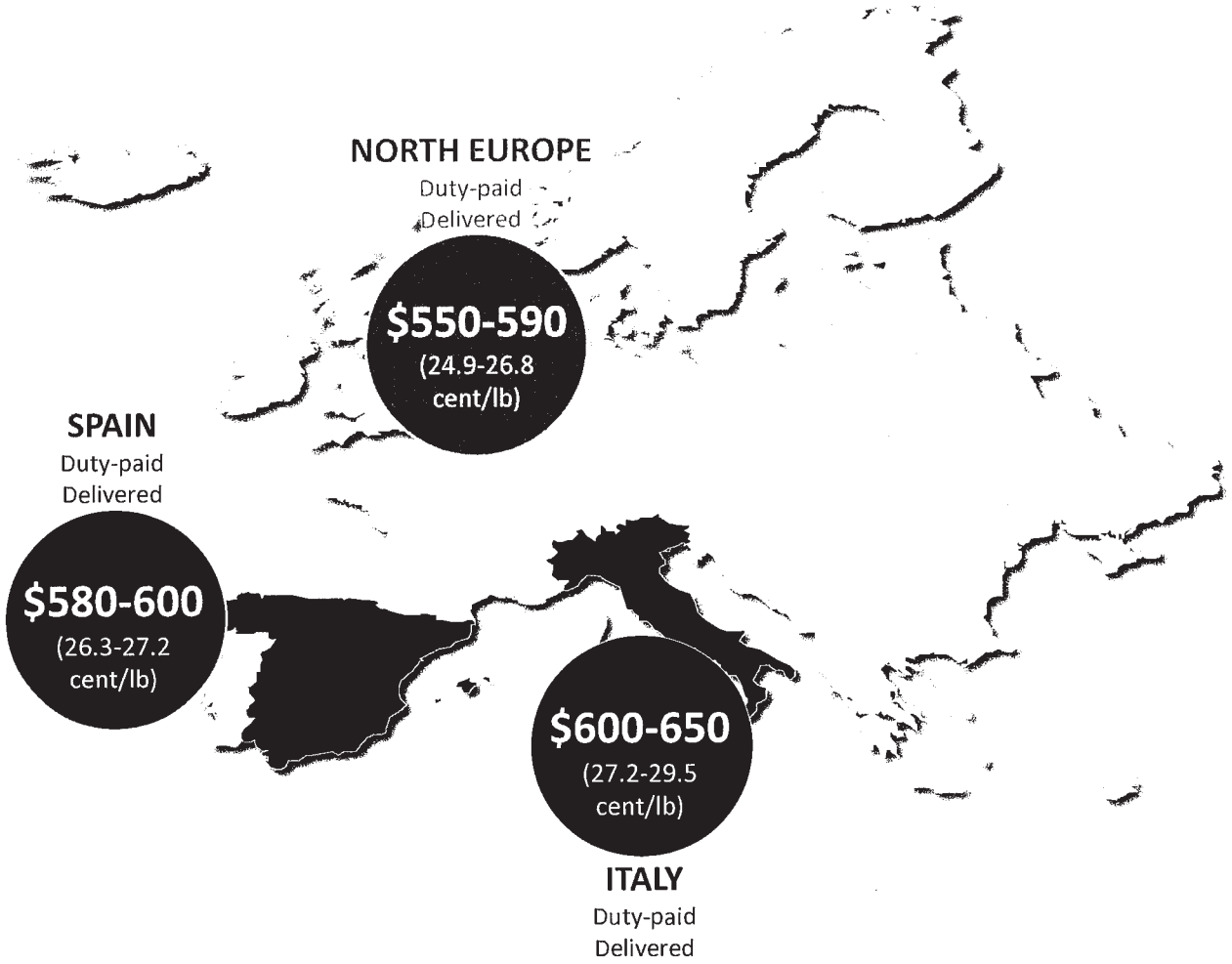


Source: *HARBOR Aluminum*

*Based on 2014 1Q contracts

HARBOR'S ASSESSMENT OF FULL BILLET PREMIUMS IN EUROPE

($/mton and cent/lb; as of February 18, 2014)



Source: *HARBOR Aluminum*

HARBOR > the global leader in aluminum industry analysis and outlook

HARBOR Aluminum Alert

February 18, 2014

LME ALUMINUM FORWARD PRICES TODAY

(average; $ per mton)

DATE	($/mton)	(cent/lb)
Mar-14	1,736	78.7
Apr-14	1,750	79.4
May-14	1,767	80.1
Jun-14	1,781	80.8
Jul-14	1,793	81.3
Aug-14	1,805	81.9
Sep-14	1,815	82.3
Oct-14	1,824	82.7
Nov-14	1,833	83.1
Dec-14	1,838	83.4
2014	**1,794**	**81.4**
Jan-15	1,844	83.6
Feb-15	1,849	83.9
Mar-15	1,855	84.1
Apr-15	1,861	84.4
May-15	1,868	84.7
Jun-15	1,873	85.0
Jul-15	1,878	85.2
Aug-15	1,885	85.5
Sep-15	1,890	85.7
Oct-15	1,897	86.0
Nov-15	1,902	86.3
Dec-15	1,907	86.5
2015	**1,876**	**85.1**
2016	**1,946**	**88.3**
2017	**2,015**	**91.4**

Source: *HARBOR Aluminum* with *LME* data

HARBOR'S TRANSACTIONAL ALUMINUM SPOT PREMIUMS

LOCATION	GRADE	PREMIUM
North America		
US Midwest Ingot Premium Delivered (cent/lb)	P1020	19.0-20.25
US Laredo Ingot Premium Delivered (cent/lb)	P1020	21.00-22.25
US Los Angeles Ingot Premium Delivered (cents/lb)	P1020	21.00-22.25
US Billet Upcharge (cent/lb)	6063	13.5-14.0
Asia		
Japan Ingot Premium C&F Duty-unpaid ($/mton)	P1020	300-310
Singapore Ingot Premium Duty-unpaid in warehouse ($/mton)	P1020	220-225
Turkey Ingot Premium C&F Istanbul ($/mton)	P1020	330-350
Turkey Full Billet Premium C&F Istanbul ($/mton)	6063	480-500
Latin America		
Mexico Full Billet Premium CIF Veracruz (1Q14 contract) ($/mton)	6063	460-500
Brazil Ingot Premium C&F Duty-unpaid Santos/Itajai ($/mton)	P1020	360-380
Brazil Ingot Premium Duty-paid Delivered Sao Paulo area ($/mton)	P1020	570-590
Brazil Full Billet Premium C&F Duty-unpaid Santos/Itajai ($/mton)	6063	550-560
Europe		
European Ingot Premium Duty-unpaid in warehouse Rottedam ($/mton)	P1020	300-310
European Ingot Premium Duty-paid in warehouse Rotterdam ($/mton)	P1020	350-370
Bilbao Ingot Premium Duty-unpaid in warehouse ($/mton)	P1020	315-320
Bilbao Ingot Premium Duty-paid in warehouse ($/mton)	P1020	380-385
Trieste/Genova Ingot Premium FCA Duty-paid ($/mton)	P1020	390-410
St. Petersburg Ingot Premium FOB Duty-unpaid ($/mton)	A7e	285-300
North Europe Full Billet Premium Duty-paid Delivered ($/mton)	6063	550-590
Italy Full Billet Premium Duty-paid Delivered ($/mton)	6063	600-650
Spain Full Billet Premium Duty-paid Delivered ($/mton)	6063	580-600
Europe Wire Rod Premium for 2014 Duty-paid Delivered ($/mton)	Standard EC*	590-610

*Standard EC grade , b233, 99.7 percentage min, 9.5mm diameter slds

Source: *HARBOR Aluminum*

HARBOR > the global leader in aluminum industry analysis and outlook

HARBOR Aluminum Alert

February 18, 2014

Russian and Chinese units coming to the Americas, LME prices close above key resistance level on Alcoa's curtailment

Note: Today is Aluminum's Premium Map Day, don't forget to see pdf file in link below with all intel on sub-regional aluminum premiums.

LME 3M aluminum prices closed the session up by 1.9% or $32.85 (1.5 cent/lb) at $1,766.0 per ton (80.1 cent/lb). LME prices rose to a one-month high and re-entered the $1,750-1,900 per mton range (79-86 cent/lb) as fund buying emerged (open interest in aluminum is now at the highest level in two months) on the back of mounting evidence that the primary aluminum market should be increasingly tighter as the year advances. *Alcoa* announced yesterday it will close its 190 ktpy Point Henry primary aluminum smelter in Australia by August (suggesting increased market tightness and an even wider global primary aluminum deficit for 2014) and *UC Rusal* stated it expects its primary output to decline further in 2014 (as a result of last year's cuts program). Aluminum prices along with the rest of the base metal complex also received some support today from a weaker US dollar (amid worse-than-expected US regional manufacturing activity data). If prices manage to confirm in the upcoming sessions a break above $1,750 per mton (previous four-year-old support level that has turned into resistance), the technical downward trend in which prices have been trading since late January will be officially over. HARBOR sees prices range trading in the next months between $1,650 (75 cent/lb) and 1,850 per mton (84 cent/lb), but higher prices later in the year.

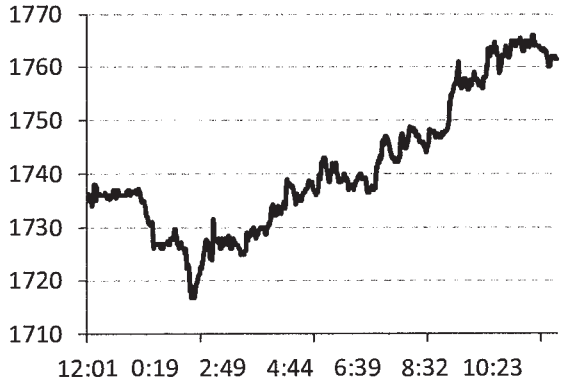
***Alcoa* announces Point Henry's closure; ROW primary aluminum market tightens.** *Alcoa* announced yesterday "it will permanently close its Point Henry aluminum smelter and two rolling mills in Australia" this year, with the smelter closing in August and the rolling mills (one adjacent to the smelter) by year-end. The smelter produced around 190,000 mtons in 2013, of which 110,000 mtons were remelt ingot and the rest was sold as hot metal. HARBOR estimates the smelter's cash cost before casting is of $1,807 per mton, and the smelter's total cost is of $1,971 per mton (without considering the government subsidy which expires in June). HARBOR expects global output to grow by 3.7 million mtons (7.4%) in 2014, of which 2.7 million mtons will come from China and 1 million mtons from the rest of the world (ROW), resulting in an expected global primary aluminum market deficit (demand exceeding output) of 916,000 mtons, (834,000 mton deficit in ROW and an 82,000 mton deficit in China). Meanwhile, the closure of the rolling mills will "reduce Alcoa's can sheet capacity by 200,000 metric tons".

Moreover, highly-likely smelter curtailments in Brazil, Argentina and South Africa are expected to widen regional and global physical primary aluminum production shortfall.

Brazil exploring importing Chinese metal. HARBOR hears that given the expected output cuts in Brazil and the ongoing tightness in the physical market, some local suppliers in Brazil are reaching out to Chinese aluminum players to import metal from China. As HARBOR explained on Friday, Brazil is suffering one of the worst droughts in its history. Domestic electricity prices have increased to a record of over $800 per MW/h. HARBOR is picking up that at least two smelters with combined 2013 production of almost 500,000 tons (one smelter in the south and another in the north; producing remelt, billet and slab) will highly likely curtail some of its primary aluminum production in order to sell power to the market and capture the attractive value that current record energy prices are offering. It is more profitable at this point to sell power to the market than to produce aluminum.

LME 3M ALUMINUM PRICES

(intraday basis)



(Official prices; $/ton)

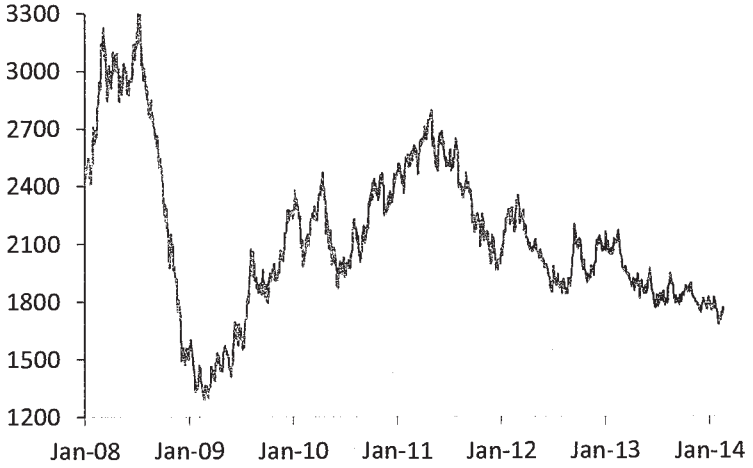
Cash	d/d
1,694	-7
3M	d/d
1,737	-9
*15M	d/d
1,868	32
*27M	d/d
1,938	32
*63M	d/d
2,140	32

*Daily close

Source: *HARBOR Aluminum* with *LME* data

HISTORICAL LME 3M ALUMINUM PRICES

(daily close basis)



Source: *HARBOR Aluminum* with *LME* data

HARBOR Aluminum Alert

February 18, 2014

More Russian-origin P1020, billet and PFA inflows expected in the US; more metal coming to the US from China and expired financing deals. HARBOR´s incoming intel indicates the shipment of Russian-origin units are expected to arrive in New Orleans next month. Incoming intel suggests more than 50,000 tons when including billet and PFA. HARBOR continues to hear increasing volumes of Chinese units coming to the US (P1020 sold in the form of plate). Metal units are also reported coming to the market from expired financing deals in Detroit and the Netherlands. As explained previously by HARBOR, around 2 million tons of aluminum (US, Europe and South East Asia) under financing deals structures will expire within the next two months with another 2-3 million tons within the next ten months. The economics are not attractive to renew these deals as long as premiums remain above 12 cent/lb ($264 per mton). All the way around, there is an economic attractiveness to liquidate the units at today´s record premiums in order to realize considerable mark-to-market premium gains.

HARBOR continues to see factors suggesting that premiums in the US may have peaked while the catching-up momentum in spot premiums in other regions may be close to completion. As mentioned above, expiring financing deals and Chinese metal units are reported flowing to the market.

Downside pressure on premiums expected to gradually increase as expired financing deals accumulate, scrap supply increases with better weather and as new LME regulations start to hit the physical market in May and fully in August. LME is still seen as dysfunctional to reflect physical supply and demand dynamics while premiums are still seen as the pricing mechanism reflecting industry fundamentals (evident since January).

Scrap availability in the US continues to be reported as tight. HARBOR hears of reports of incoming shipments of scrap being consumed by the purchaser the same day of arrival and some purchasers failing to find expected scrap volumes and needing to buy more P1020 (primary aluminum) than expected.

HARBOR's Transactional Midwest ingot spot premium remained unchanged at 19.00-20.25 cent/lb, while regional premiums around the globe were unchanged. Premiums in the US seem to have peaked while momentum in other regions seems to be waning.

Incoming CME deals in backwardation. Friday data showed that 46 lots traded for February at a premium of 18.5 cent/lb, slightly down from 18.65 cent/lb on Thursday. Other 20 lots traded for March at 17.50 cent/lb, slightly up from 17.25 cent/lb on Thursday, as well. Other 36 lots traded for April at 17.50 cent/lb, down from 17.90 cent/lb. HARBOR confirmed next week multiple physical forward transactions that also traded at a backwardation.

Ingot premiums in Europe, Brazil and Asia stable after reaching a record high last week. HARBOR's Transactional European duty-paid spot ingot premium (in warehouse Rotterdam) remained at $350-370 per mton, up from $345-360 per mton two weeks ago. The European duty-unpaid ingot premium range (in-warehouse Rotterdam) remained unchanged at $300-310 per mton. HARBOR understands that the market seems to be tighter for duty-unpaid metal. HARBOR confirmed last week offers by a trader at $325 per mton for FCA duty-unpaid metal in warehouse Rotterdam and another trader offering at $325 per mton FCA duty-unpaid in warehouse Vlissingen (off-warrant metal). HARBOR confirmed some deals for 3Q settled at $315 per mton for duty-unpaid metal (in warehouse Rotterdam).

SHFE ALUMINUM PRICES VS CASH LME PRICES DATA

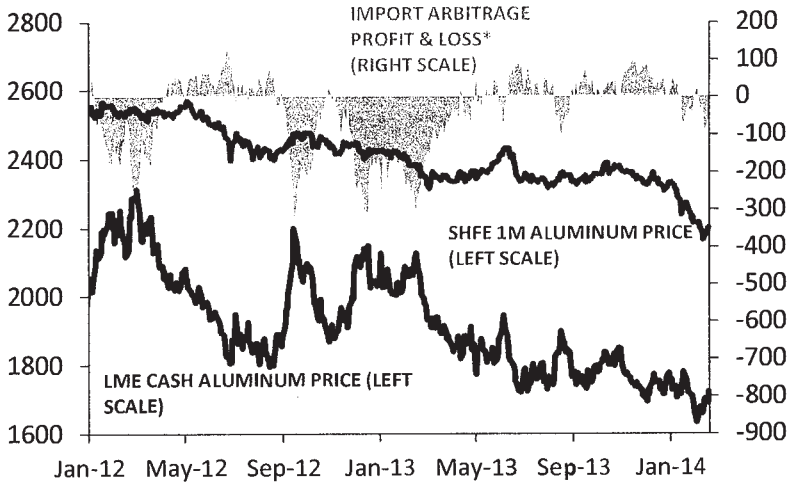
(daily data)

Date	SHFE (yuans)	SHFE (USD)	LME (USD)	Spread (USD)
12-Feb-14	13,155	2,170	1,686	484
13-Feb-14	13,190	2,175	1,687	488
14-Feb-14	13,245	2,183	1,711	473
17-Feb-14	13,300	2,193	1,701	493
18-Feb-14	13,360	2,202	1,694	508

Source: *HARBOR Aluminum* with *LME* data and *SHFE* data

LME CASH ALUMINUM PRICES VS SHFE ALUMINUM PRICES AND SPREAD

(daily data, $/mton)



HARBOR Daily Aluminum Commentary

February 18, 2014

HARBOR's Transactional spot ingot premium duty-paid delivered Brazil (Sao Paulo area) increased last week to $570-590 per mton, a fresh record high, up from $550-565 per mton two weeks ago. However, HARBOR confirmed that quotes stand at $550-600 per mton for duty-paid metal and as high as $700 per mton for very low volume deals. HARBOR's Transactional spot ingot premium CNF duty-unpaid Brazil (Santos) increased last week to $360-380 per mton, a fresh record high, up from 345-360 per mton two weeks ago. HARBOR confirmed this week that traders are offering metal at premiums as high as $420 per mton for duty-unpaid metal CNF Brazil (Santos/Itajai). This equates to $630-640 per mton duty-paid delivered into Sao Paulo area. HARBOR also confirmed that a local smelter is asking for $590 per mton FOB, this equates to around $620 per mton delivered to Sao Paulo. HARBOR expects continued upward pressure on Brazilian premiums in the short-term as premiums chase up US Midwest premiums (which seem to have already peaked).

HARBOR' spot ingot premium assessment for Singapore (in warehouse) climbed last week to $220-225 per mton, up from $215-220 per mton two weeks ago. HARBOR confirmed a bank is offering Indian-origin metal at $220 per mton. Meanwhile, HARBOR's MJP (Main Japanese Port) spot ingot premium remains at $300-310 per mton. Spot premiums in Malaysia climbed last week to $306-311 per mton, up from $283-293 per mton two weeks ago.

South Korea's *Public Procurement Service* (*PPS*) bought 6,000 mtons of P1020 ingot at fresh record-high premiums in its most recent tender. It bought 1,500 mtons of good-western origin ingot at premiums of $281 per mton (1,000 mtons from Prime Global) and $295 per mton (500 mtons from LG). This compared to previous purchases settled at $269-278 per mton. Meanwhile, the *PPS* bought 4.500 mtons of non-western ingot at premiums of $291 per mton (1,000 tons from Prime Global), $300 per mton (2,000 mtons from LG) and $323 per mton (1,500 mtons from Dreample). This compares to previous purchases settled at $289-294 per mton.

Spot ingot premiums in Turkey (CNF duty-unpaid) climbed last week to $330-350 per mton, up from $315-325 per mton two weeks ago.

Billet. HARBOR's Transactional billet premium duty-paid delivered for Italy inched up last week to $600-650 per mton, up from $580-600 per mton after HARBOR confirmed several deals done between producers and consumers among which was a deal for over 175 tons per month for the March-December period at an equivalent of $650 per mton (after adjusting for payment terms).

HARBOR's intelligence indicates that metal under expired financing deals is being increasingly offered to the market in Detroit and Rotterdam/Vlissingen. Spot metal coming out expired financing deals was heard offered at 16-17 cent/lb in Detroit. HARBOR's intelligence indicates that Detroit has around 200,000 tons of off-warrant material while the Netherlands (Rotterdam/Vlissingen) as high as 5 million tons.

The LME Cash-3M spread widened slightly again. The LME Cash-3M price spread stands at $44.25 per mton (annualized yield of 10.7%). The 3M-15M price spread stands at $101.50 per mton (annualized yield of 5.7%). The 3M-27M spread stands at $171.5 per mton (4.7% annualized yield) and the 3M-63M spread stands at $373.5 per mton (3.99% annualized yield).

There's still a wide negative spread between LME primary aluminum and aluminum alloy prices. The LME 3M primary aluminum contract is trading at a discount of $99.0 per mton versus the LME 3M aluminum alloy contract. Primary prices are trading at a discount of $94.0 per mton below the price of the NASAAC 3M contract. Cheaper LME primary prices relative to secondary prices are historically associated with a subsequent bounce in LME prices.

HARBOR's view of LME prices. HARBOR sees prices range trading in the next months between $1,650 (75 cent/lb) and 1,850 per (84 cent/lb) but higher prices later in the year given expectations of a second year-in-a-row market deficit in ROW (more production than demand), declining LME inventories, negative economics of production (will highly likely cause further production cuts), higher production costs (alumina and energy), firmer physical demand growth and a possible re-adjustment of fund's portfolio to reduce aluminum short positions/establish or increase long positions.

Under HARBOR's base forecast scenario (50% odds), prices are now expected to average $2,017 per mton in 2014 (91.5 cent/lb). Under a downside scenario (40% odds), prices are now expected to average $1,734 per mton in 2014 (78.7 cent/lb).

LME 3M aluminum official prices closed at $1,736.50 from $1,745.50 per mton (78.8 from 79.20 cent/lb). LME prices for 2014 stand at $1,785, and at $1,876 per mton for 2015. The LME 3M-cash price contango widened by $1.00 at $44.25 per mton. LME primary aluminum inventories increased by 1,000 mtons and canceled warrants increased by 23,975 mtons. SHFE 1M aluminum prices increased by 0.4% to $2,211 per mton. The US dollar weakened by 0.2%, trading at $1.3755 per euro.

ATTACHMENT J

中华人民共和国海关进出口税则

十位编码·监管条件·申报目录·出口退税·政策法规·海关代征税一览表

2013年中英文对照版　附光盘

中华人民共和国海关进出口税则 编委会　编

Customs Import and Export Tariff of the People's Republic of China

Decade Coding of HS, Customs Control Conditions, Declare Contents, Export Drawback, Regulations Detailed Customs Duties Levied on Commission Basis

Compiled by the Editorial Department of the Customs Import and Export Tariff of the People's Republic of China

经济日报出版社
Economic Daily Press

第七十六章
铝及其制品

注释：

本章所列有关名词解释如下：

一、条、杆

轧、挤、拉或锻制的实心产品，非成卷的，其全长截面均为圆形、椭圆形、矩形（包括正方形）、等边三角形或规则外凸多边形（包括相对两边为弧线形，另外两边为等长平行直线的"扁圆形"及"变形矩形"）。对于矩形（包括正方形）、三角形或多边形截面的产品，其全长边角可经磨圆。矩形（包括"变形矩形"）截面的产品其厚度应大于宽度的十分之一。所述条、杆也包括同样形状及尺寸的铸造或烧结产品，该产品在铸造或烧结后再经加工（简单修整或去氧化皮的除外），但不具有其他税目所列制品或产品的特征。

二、型材及异型材

轧、挤、拉、锻制的产品或其他成型产品，不论是否成卷，其全长截面相同，但与条、杆、丝、板、片、带、箔、管的定义不相符合，同时也包括同样形状的铸造或烧结产品。该产品在铸造或烧结后再经加工（简单修整或去氧化皮的除外），但不具有其他税目所列制品或产品的特征。

三、丝

盘卷的轧、挤或拉制实心产品，其全长截面均为圆形、椭圆形、矩形（包括正方形）等边三角形或规则外凸多边形（包括相对两边为弧线形，另外两边为等长平行直线的"扁圆形"及"变形矩形"）。对于矩形（包括正方形）、三角形或多边形截面的产品，其全长边角可经磨圆。矩形（包括"变形矩形"）截面的产品，其厚度应大于宽度的十分之一。

四、板、片、带、箔

成卷或非成卷的平面产品（税目76.01的未锻轧产品除外），截面均为厚度相同的实心矩形（不包括正方形），不论边角是否磨圆（包括相对两边为弧线形，另外两边为等长平行直线的"变形矩形"），并且符合以下规格：

1. 矩形（包括正方形）的，厚度不超过宽度的十分之一；
2. 矩形或正方形以外形状的，任何尺寸，但不具有其他税目所列制品或产品的特征。

税目76.06和76.07还适用于具有花样（例如，凹槽、筋条形、格纹、珠粒及菱形）的板、片、带、箔以及穿孔、抛光、涂层或制成瓦楞形的这类产品，但不具有其他税目所列制品或产品的特征。

Chapter 76
Aluminium and articles thereof

Notes:

In this Chapter the following expressions have the meanings hereby assigned to them:

1. Bars and rods

Rolled, extruded, drawn or forged products, not in coils, which have a uniform solid cross-section along their whole length in the shape of circles, ovals, rectangles (including squares), equilateral triangles or regular convex polygons (including "flattened circles" and "modified rectangles", of which two opposite sides are convex arcs, the other two sides being straight, of equal length and parallel). Products with a rectangular (including square), triangular or polygonal cross-section may have corners rounded along their whole length. The thickness of such products which have a rectangular (including "modified rectangular") cross-section exceeds one-tenth of the width. The expression also covers cast or sintered products, of the same forms and dimensions, which have been subsequently worked after production (otherwise than by simple trimming or descaling), provided that they have not thereby assumed the character of articles or products of other headings.

2. Profiles

Rolled, extruded, drawn, forged or formed products, coiled or not, of a uniform cross-section along their whole length, which do not conform to any of the definations of bars, rods, wire, plates, sheets, strip, foil, tubes or pipes. The expression also covers cast or sintered products, of the same forms, which haveboen subsequently worked after production (otherwise than by simple trimming or de-scaling), provided that they have not thereby assumed the character of articles or products of other headings.

3. Wire

Rolled, extruded or drawn products, in coils, which have a uniform solid cross-section along their whole length in the shape of circles, ovals, rectangles (including squares), equilateral triangles or regular convex polygons (including "flattened circles" and "modified rectangles", of which two opposite sides are convex arcs, the other two sides being straight, of equal length and parallel). Products with a rectangular (including square), triangular or polygonal cross-section may have corners rounded along their whole length. The thickness of such products which have a rectangular (including "modified rectangular") cross-section exceeds one-tenth of the width.

4. Plates, sheets, strip and foil

Flat-surfaced products (other than the unwrought products of heading No.76.01), coiled or not, of solid rectangular (other than square) cross-section with or without rounded corners (including "modified rectangles" of which two opposite sides are convex arcs, the other two sides being straight, of equal length and parallel) of a uniform thickness, which are:

- of rectanglular (including square) shape with a thickness not exceeding one-tenth of the width,
- of a shape other than rectangular or square, of any size, provided that they do not assume the character of articles or products of other headings.

Headings No.76.06 and 76.07 apply, *inter alia*, to plates, sheets, strip and foil with patterns (for example, grooves, ribs, chequers, tears, buttons, lozenges) and to such products which have been perforated, corrugated, polished or coated, provided that they do not thereby assume the character of articles or products of other headings.

五、管

全长截面及管壁厚度相同并只有一个闭合空间的空心产品，成卷或非成卷的，其截面为圆形、椭圆形、矩形（包括正方形）、等边三角形或规则的凸多边形。对于截面为矩形（包括正方形）、等边三角形或规则的凸多边形的产品，不论全长边角是否磨圆，只要其内外截面为同一圆心并为同样形状及同一轴向，也可视为管子。上述截面的管子可经抛光、涂层、弯曲、攻丝、钻孔、缩颈、胀口、或镶制法兰、箍圈或套环。

5. Tubes and pipes

Hollow products, coiled or not, which have a uniform cross-section with only one enclosed void along their whole length in the shape of circles, ovals, rectangles (including squares), equilateral triangles or regular convex polygons, and which have a uniform wall thickness. Products with a rectangular (including square), equilateral triangular or regular convex polygonal cross-section, which may have corners rounded along their whole length, are also to be considered as tubes and pipes provided the inner and outer cross-sections are concentric and have the same form and orientation. Tubes and pipes of the foregoing cross-sections may be polished, coated, bent, threaded, drilled, waisted, expanded, cone-shaped or fitted with flanges, collars or rings.

子目注释：

一、本章所用有关名词解释如下：

Subheading Notes:

1. In this Chapter the following expressions have the meanings hereby assigned to them:

（一）非合金铝

按重量计含铝量至少为99%的金属，但其他各种元素的含量不超过下表中规定的限量；

其他元素表

元　　素	所含重量百分比
Fe+Si(铁+硅)	1
其他元素(1)，每种	0.1(2)
(1)其他元素，例如，铬、铜、镁、锰、镍、锌。 (2)含铜成分可大于0.1%，但不得大于0.2%，且铬和锰的含量均不得超过0.05%。	

(a) Aluminium, not alloyed

Metal containing by weight at least 99% of aluminium, provided that the content by weight of any other element does not exceed the limit specified in the following table:

TABLE - Other elements

Element	Limiting content % by weight
Fe + Si (iron plus silicon)	1
Other elements (1), each	0.1 (2)
(1) Other elements are, for example, Cr, Cu, Mg, Mn, Ni, Zn. (2) Copper is permitted in a proportion greater than 0.1% but not more than 0.2%, provided that neither the chromium nor manganese content exceeds 0.05%.	

（二）铝合金

按重量计含铝量大于其他元素单项含量的金属物质，但：

1. 按重量计至少有一种其他元素或铁加硅的含量大于上表中规定的限量；

2. 按重量计其他元素的总含量超过1%。

(b) Aluminium alloys

Metallic substances in which aluminium predominates by weight over each of the other elements, provided that:

(1) the content by weight of at least one of the other elements or of iron plus silicon taken together is greater than the limit specified in the foregoing table;

(2) the total content by weight of such other elements exceeds 1%.

二、子目7616.91所称"丝"，不受本章注释三的限制，仅适用于截面尺寸不超过6毫米的任何截面形状产品，不论是否盘卷。

2. Notwithstanding the provisions of Chapter Note 1 (c), for the purposes of subheading No. 7616.91 the term "wire" applies only to products, whether or not in coils, of any cross-sectional shape, of which no cross-sectional dimension exceeds 6mm.

税则号列	货　品　名　称	最惠(%)	普通	增值税率	出口退税	计量单位	监管条件	Article Description
76.01	未锻轧铝：							**Unwrought aluminium:**
	-非合金铝：							-Aluminium, not alloyed:
7601.1010	--按重量计含铝量在99.95%及以上	5	14	17		千克		--Containing by weight 99.95% or more of aluminium
7601.1090*	--其他	0	14	17		千克		--Other
7601.2000	-铝合金	7	14	17		千克		-Aluminium alloys
76.02	铝废碎料：							**Aluminium waste and scrap:**
7602.0000*	铝废碎料	0	14	17		千克		Aluminium waste and scrap
7602.0000*10	以回收铝为主的废电线等（包括废电线、电缆、五金电器）	0	14	17		千克	7AP	Aluminium waste wires, cables, hardware and electric appliance, mainly for recovering aluminium
7602.0000*90	其他铝废碎料	0	14	17		千克	7AP	Aluminium waste and scrap
76.03	铝粉及片状粉末：							**Aluminium powders and flakes:**
7603.1000	-非片状粉末	6	30	17		千克		-Powders of non-lamellar structure
7603.1000 10	颗粒＜500μm的微细球形铝粉（雾化的），铝含量≥97%	6	30	17		千克	3A	Microspherical aluminium powder, granularity < 500μm, containing≥97% by weight of aluminium
7603.1000 90	其他非片状铝粉	6	30	17		千克		Other powders of non-lamellar structure, of aluminium