

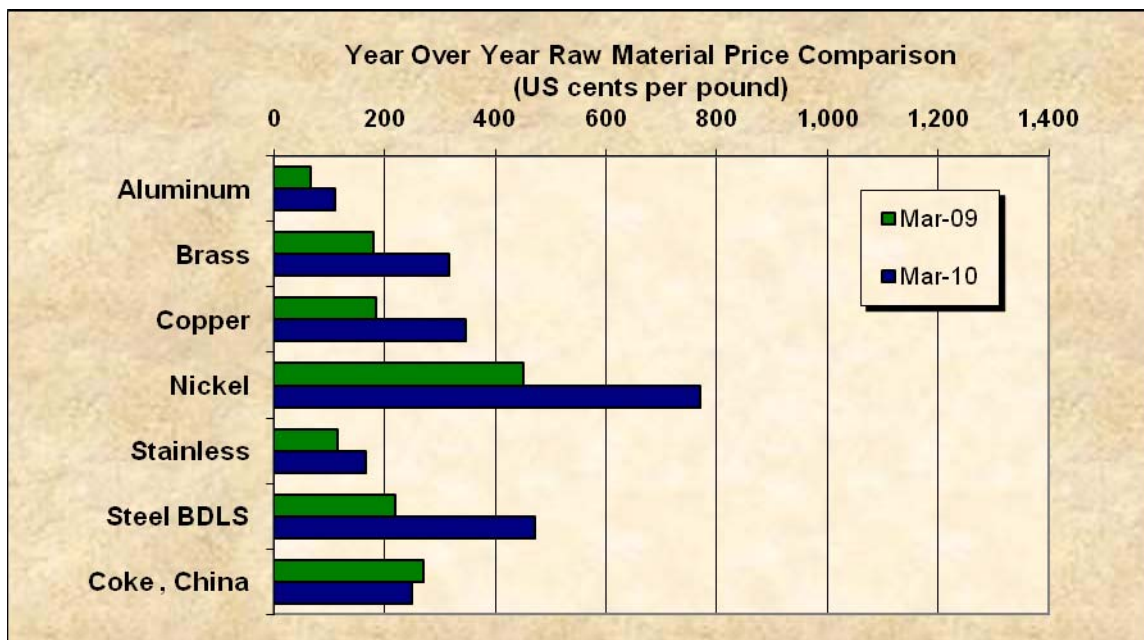


# Material Impacts On The Precision Machining Industry

April 2010

## *Through the Roof!*

### *Executive Summary*

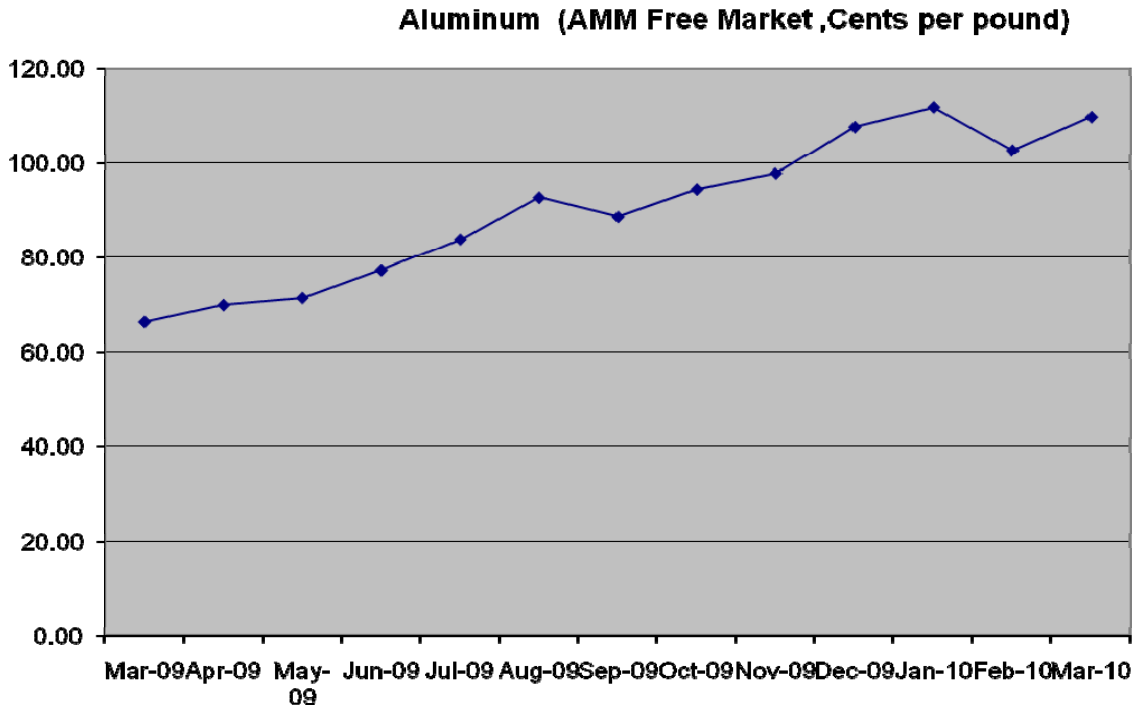


**Quick Summary:** The prices of 6 of the 7 raw materials that we track rose as follows this calendar year:

- Aluminum:** Up 65% from March 2009.
- Brass:** Up 76% from March 2009.
- Copper:** Up 87% from March 2009.
- Nickel:** Up 71% from March 2009.
- Stainless:** up 44% from March 2009.
- Steel, Busheling:** Up 114% from March 2009.
- China Coke,** Down 8% from March 2009.

They may not call it **inflation**- YET, but 6 of 7 crucial raw materials we track are up ranging from 44% to 114%. In addition to the fundamentals in our local markets, there are global issues that add more risk and thus price variability to our industry's raw materials. We expect to see freight prices climb as fuel prices escalate this summer, and urge all companies to watch pricing developments closely. See our blog for details of the Manufacturing V shaped recovery: <http://tinyurl.com/yb7r2my>

## Aluminum (AMM Free Market cents per pound)



*Due to delisting of Aluminum from Comex last fall, we are now tracking the AMM Free market indicator.*

***Aluminum is down 1.83% from January, but up 64.96% since March 2009.***

Aluminum shipments from U.S. service centers totaled 90,000 tons in February, 8.1% above the February 2009 total. Year-to-date, U.S. centers' aluminum shipments amount to 183,500 tons, **5.3% more** than the 2009 two-month total.

As February ended, aluminum inventories at U.S. centers totaled 260,800 tons, **25% less** than in 2009. At current shipping rates, those inventories represent a 2.9-month supply.

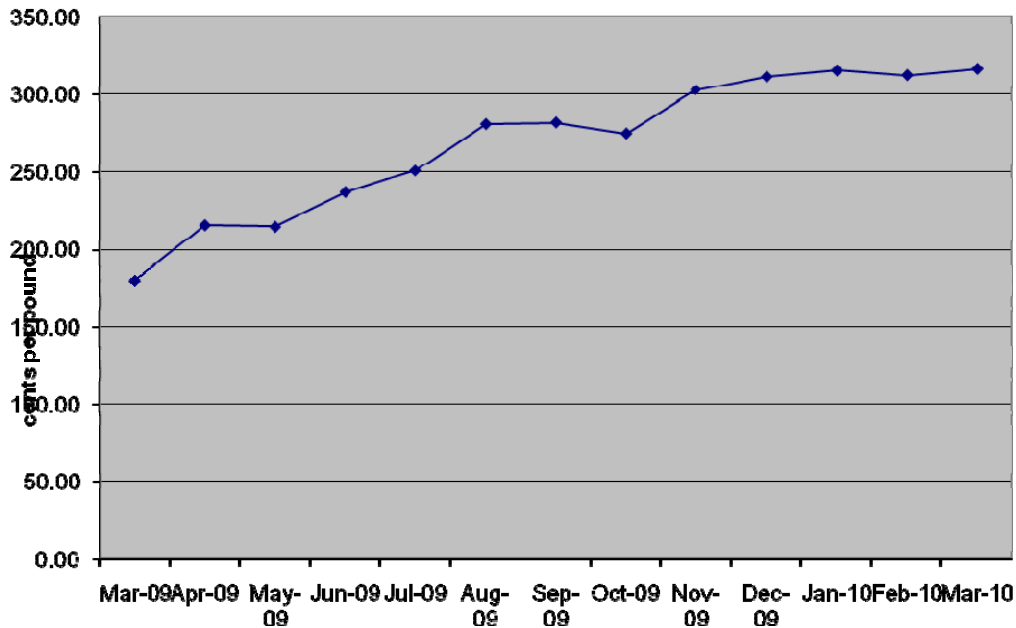
In Canada, February aluminum shipments amounted to 10,300 tons, 2.7% below the February 2009 total. Shipments for the first two months of 2010 stand at 20,900 tons, down 4.2% from 2009. Canadian aluminum inventories totaled 30,500 tons at the end of February, 6.9% less than in February 2009 and equal to a 3.0 month stockpile at current shipping rates. Source: <http://www.ssci.org/news/details.aspx?ArticleID=155>

Commentary: If US centers are shipping **5.3% more** despite a **25% lower** inventory, I think we can expect prices to climb...

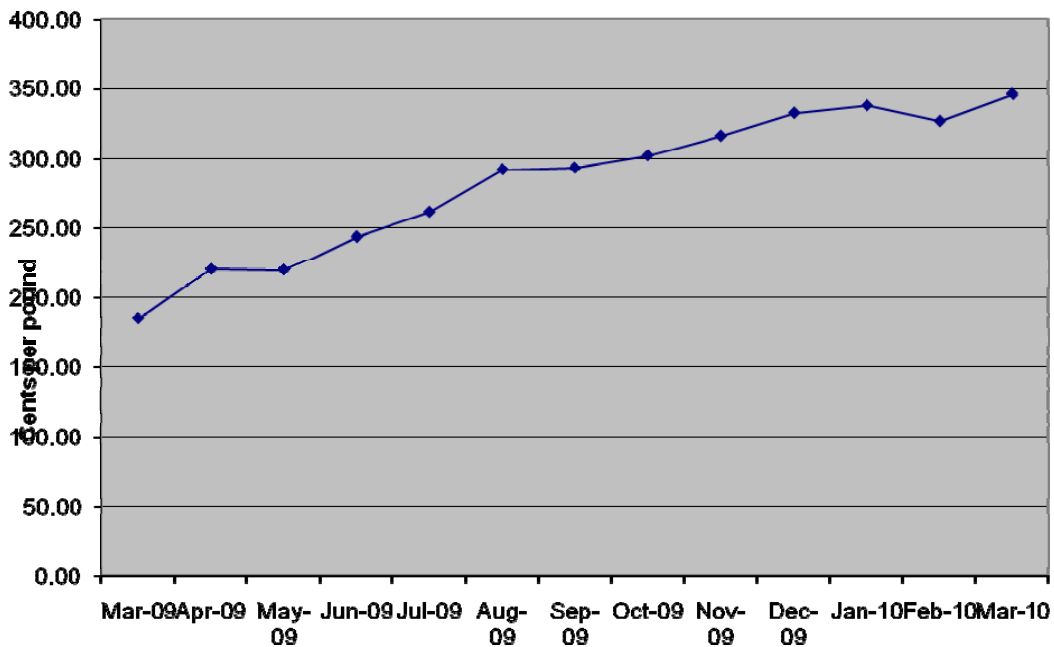
**Average price in 2009: \$.83 per pound**

## Copper and Brass (cents per pound Comex Cathode and cents per pound copper brass mill number 1)

**Brass (copper brass mill #1 scrap)**



**Copper (Comex High grade cathode spot close)**



*Price increase announced April 1, 2010 effective April 2, 2010 Metal selling price for brass mill products increase 10 cents to \$4.01 per pound. The Freight Fuel Surcharge increased April 7, 2010 to 30% up 3% from 27% over the standard freight rate.*

*Role of inventory on price: [https://www.chasebrass.com/company/index\\_surcharge.jsp](https://www.chasebrass.com/company/index_surcharge.jsp)*

***Brass scrap up 76% since March 2009. Copper 87.08% increase March 2009-March 2010.***

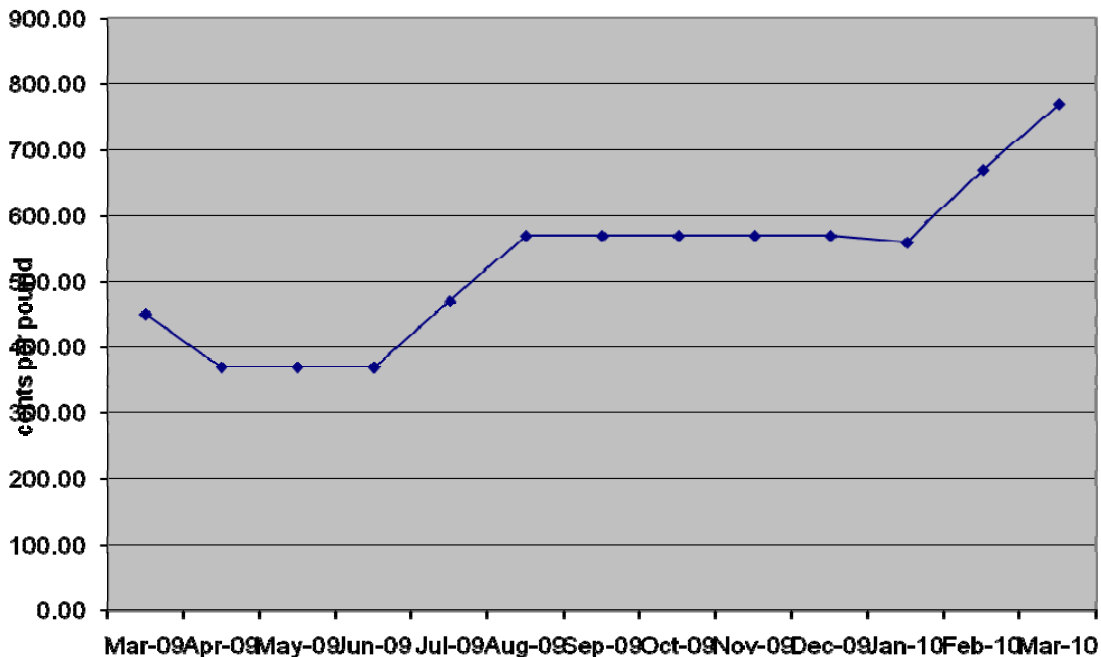
Our sensemaking on copper and brass is that these metals “have a Ph.D in economics.” As the economy goes up, so does demand for these metals. As the economy declines, so goes these metals. In addition, the investment-speculative community typically runs copper tags up in the market based on their expectations. Strong jobs reports and production orders are sending speculators signals that copper will rise. Globally China manufacturing remains strong, also creating support for optimistic demand forecasts for the red metals. Press reports show China copper prices have been higher than those in London for most of the year. However scrap imports to China fell from 337,443 tonnes in January to 276,634 in February, an 18% decline.

**Average price in 2008 (cents per pound): 338.99 per pound.**

**Average price in 2009 (cents per pound): 248.98 per pound.**

**Nickel** (cents per pound, New Clips and Solids Chicago)

**Nickel scrap (new clips and solids)**



***Nickel up 37.5% since January and 71.11 % since March 2009.***

Nickel is currently trading at levels last seen in May 2008. We believe that the strikes at mines are the leading factor. *In this pricing situation watch surcharges and inventory builds very carefully.*

**Average price in 2009: \$4.82 per pound.**

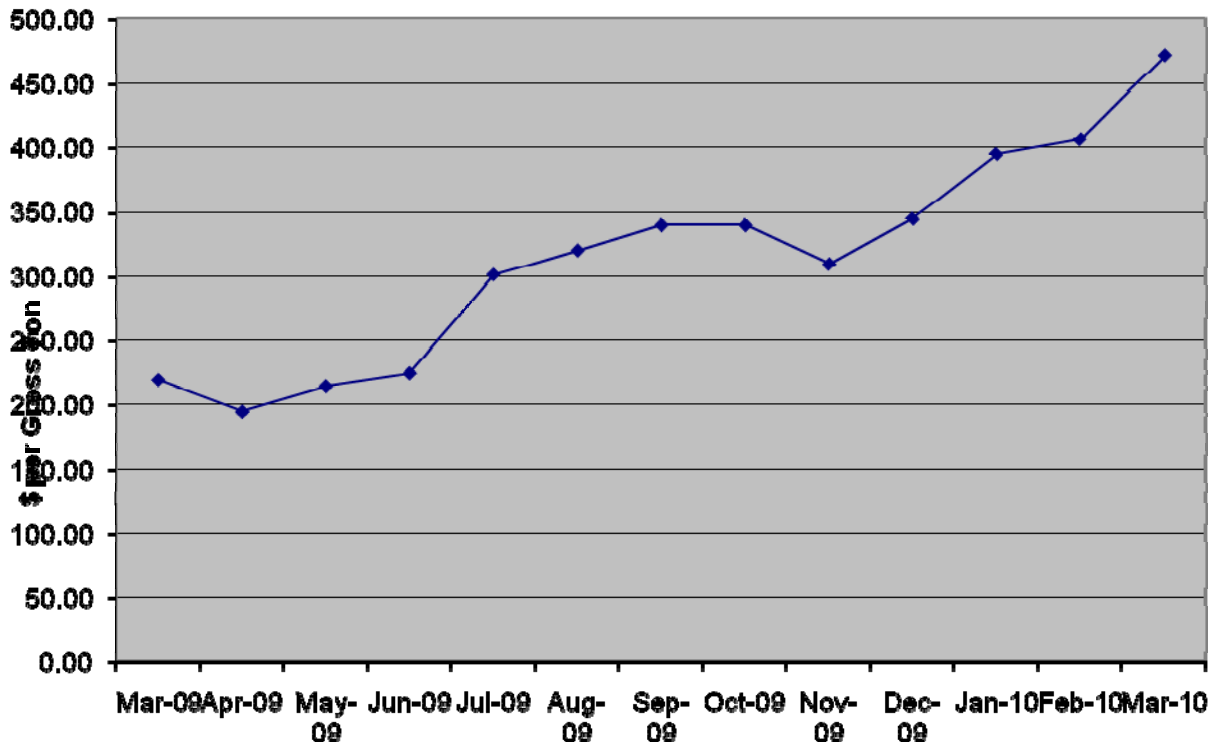
## Stainless

Stainless Surcharges: Schmolz + Bickenbach USA Stainless 303 per pound **Raw Materials Surcharges**- January \$0.67; February \$0.70; March \$0.82; April \$0.89. These are calculated on a two month lag.

We are seeing an increasing number of requests for assistance from shops trying to find various stainless steel bar items for machining in today's no-inventory environment. Spot purchases have been reported to be *highly variable* in terms of machinability. (Nickel is a key component of many steel alloy systems, especially stainless.)

**Steel** (dollars per gross ton, Number 1 Busheling composite, Chicago, Cleveland, and Pittsburgh)

### Steel Scrap (#1 Bushelling)



Surcharges					
	Scrap	Manganese	Alloy 41XX	Alloy 43XX	Alloy 86XX
January	\$11.60	\$0.42	\$2.37	\$11.47	\$4.77
February	\$13.60	\$0.36	\$2.44	\$12.98	\$5.26
March	\$14.15	\$0.35	\$3.10	\$14.01	\$5.96
April	\$15.50	\$0.13	\$3.78	\$17.27	\$7.27

*Steel busheling up 114% since March 2009, 19% since January.*

***Price Increases and Surcharges:***

***-January 1, 2010 Base price increase of \$2.00 cwt. (plus applicable surcharges)***

***-May 1 Base Price increase \$2.00/cwt.(plus applicable surcharges) announced  
March 19<sup>th</sup> 2010***

*“Steel prices set to soar”* reads the Financial Times headline Wednesday, March 31.

*“Global prices are set to leap by a third, pushing up the cost of everyday goods from cars to domestic appliances after miners and steelmakers yesterday agreed a ground breaking change in the iron ore price system.”*

Any questions?

We note that steel import licenses in March climbed 20% to 1,787,756 tonnes from February and were up more than 128% from the low in June 2009.

Shipments of steel from U.S. service centers totaled 2.66 million tons in February, or 10.4% higher than a year ago, and steel shipments for the first two months of the year of 5.24 million tons were up 4.5% from last year. Month-end steel inventories totaled 6.48 million tons, 22% below stockpiles at the same time last year and, at current shipping rates, sufficient for 2.4 months.

Steel shipments from Canadian metals service centers rose to 445,700 tons, or 15.8% more than in February 2009, bringing year-to-date shipments to 890,100 tons, up 12.4% from last year. Month-end steel inventories totaled 1.27 million tons, 5.8% higher than last year and, at current shipping rates, enough for 2.8 months.

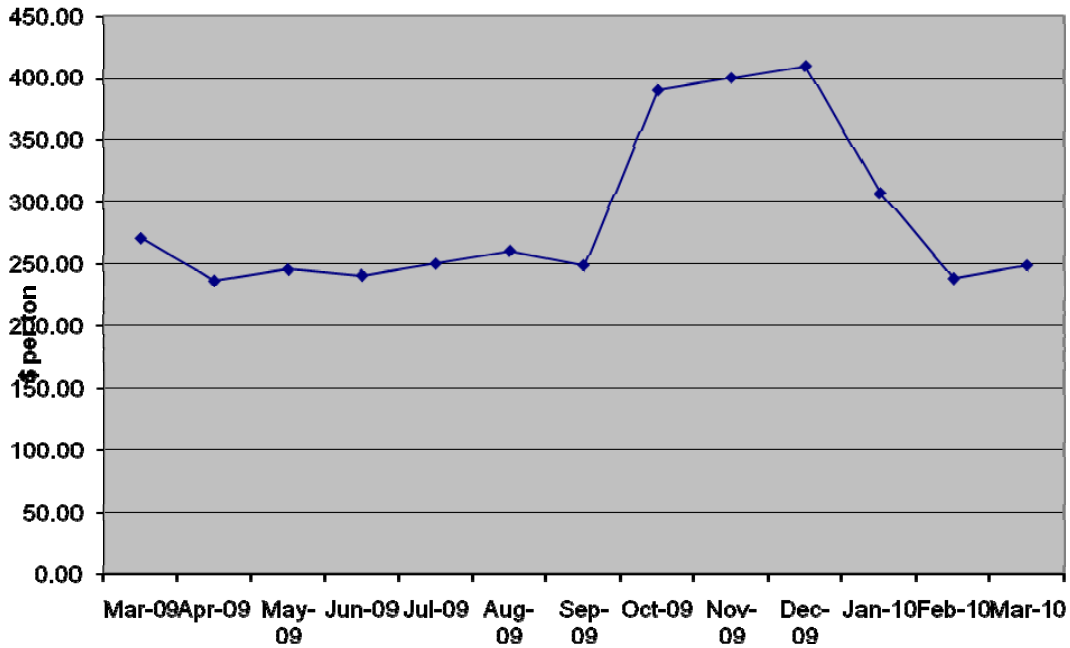
*Commentary: We have learned that shipments of hot rolled bar products have resumed from Mittal Indiana Harbor Electric Furnace and 12” mill operation. Welcome Back! It is too early for May surcharges, but with the \$2.00 price increase and the preliminary busheling numbers we are seeing:*

*We’re betting that what you pay for May steel will be up \$80 over April values.*

**Average price in 2009: \$276.66 per gross ton**

## China Coke (Chinese) (\$ per metric tonne)

China Coke

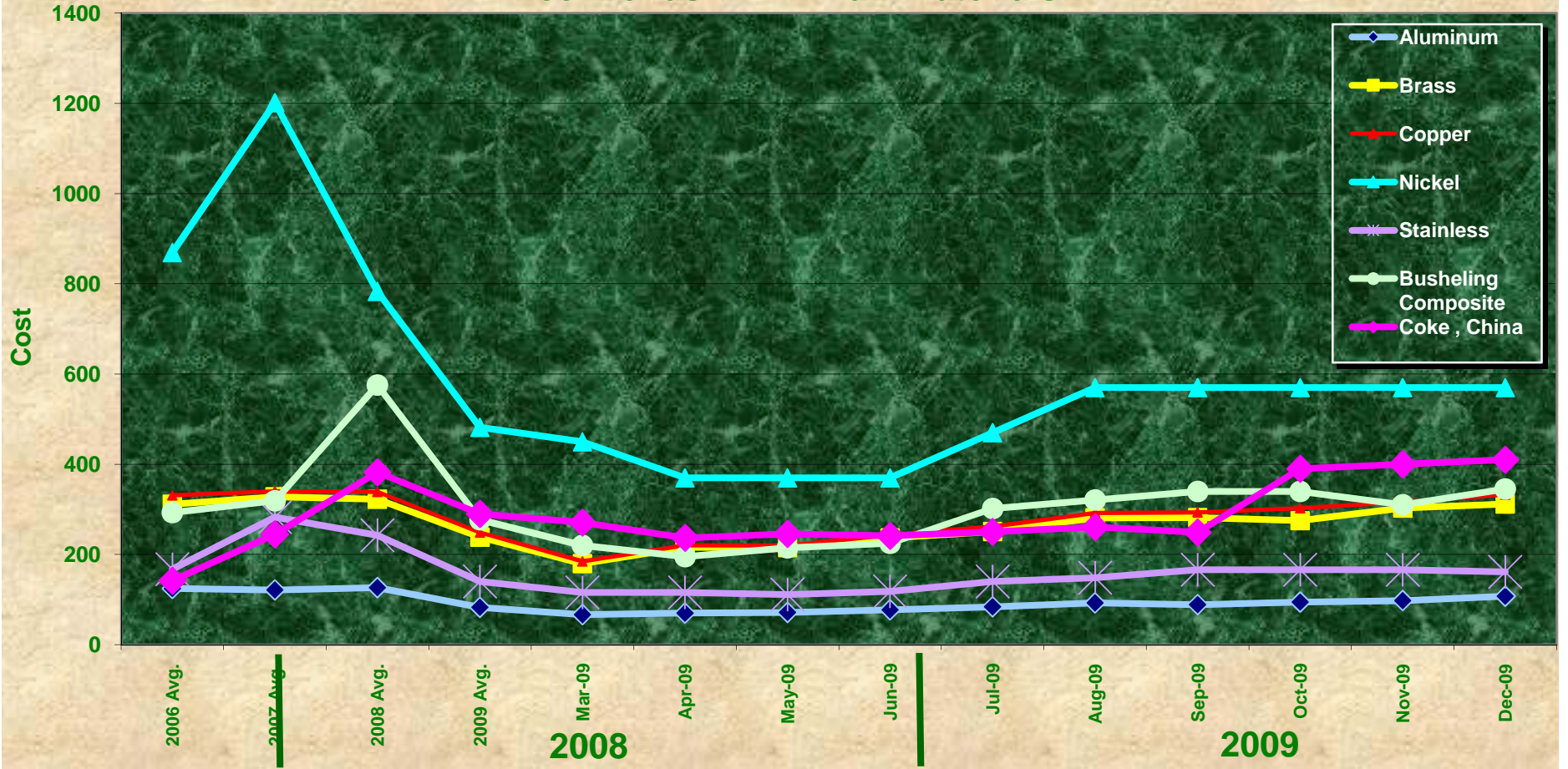


(Coke is used in blast furnaces to make hot metal iron for use in the basic oxygen steelmaking process. China accounts for half of the world's supply of coke, one third of which went to the European Union.)

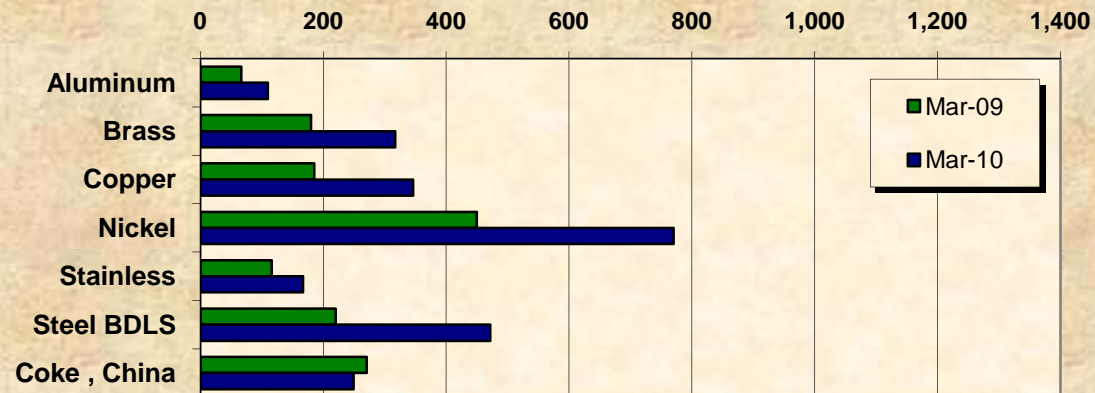
***China coke is up 60% over Dec 2008.***  
**Average price in 2009: \$290.12 per tonne.**

***-Miles Free***  
***Director, Industry Research and Technology***  
***PMPA***  
***8 April 2010***

## Price Trends PMPA Raw Materials



### Year Over Year Raw Material Price Comparison



## PMPA Raw Materials Index

	Aluminum	Brass	Copper	Nickel	Stainless	Busheling Composite	Coke , China
<b>2006 Avg.</b>	124.62	311.58	331.19	869.17	167.50	293.25	141.75
<b>2007 Avg.</b>	121.49	328.17	339.86	1201.67	282.65	319.17	244.75
<b>2008 Avg.</b>	126.64	322.50	338.99	783.33	242.43	575.50	382.34
<b>2009 Avg.</b>	82.77	238.42	248.98	481.67	140.12	276.86	290.12
<b>Mar-09</b>	66.50	180.00	184.95	450.00	116.00	220.00	270.80
<b>Apr-09</b>	70.00	216.00	220.35	370.00	116.00	195.00	236.93
<b>May-09</b>	71.50	215.00	219.75	370.00	110.90	215.00	245.71
<b>Jun-09</b>	77.25	237.00	243.80	370.00	118.00	225.00	241.22
<b>Jul-09</b>	84.00	251.00	261.65	470.00	140.00	301.67	250.24
<b>Aug-09</b>	92.75	281.00	292.30	570.00	148.50	320.67	260.73
<b>Sep-09</b>	88.75	282.00	293.45	570.00	166.50	340.00	249.01
<b>Oct-09</b>	94.48	275.00	302.65	570.00	166.50	340.00	390.00
<b>Nov-09</b>	97.81	303.00	316.60	570.00	166.50	310.00	400.00
<b>Dec-09</b>	107.62	312.00	332.75	570.00	161.50	345.00	410.00
<b>Jan-10</b>	111.75	316.00	338.00	560.00	153.00	395.00	308.00
<b>Feb-10</b>	102.71	313.00	327.00	670.00	156.00	406.67	238.80
<b>Mar-10</b>	109.70	317.00	346.00	770.00	166.75	471.67	249.00
Jan10- Jan 09	<b>36.95</b>	<b>163.00</b>	<b>180.80</b>	<b>110.00</b>	<b>6.00</b>	<b>140.00</b>	<b>52.00</b>
<b>\$Change</b>							
Jan10-Jan09	<b>49.40</b>	<b>106.54</b>	<b>115.01</b>	<b>24.44</b>	<b>4.08</b>	<b>54.90</b>	<b>20.31</b>
<b>%Change</b>							
Jan 10- Mar 10	<b>-2.05</b>	<b>1.00</b>	<b>8.00</b>	<b>210.00</b>	<b>13.75</b>	<b>76.67</b>	<b>-59.00</b>
<b>\$Change</b>							
Jan 10- Mar 10	<b>-1.83</b>	<b>0.32</b>	<b>2.37</b>	<b>37.50</b>	<b>8.99</b>	<b>19.41</b>	<b>-19.16</b>
<b>%Change</b>							
Mar 09-Mar 10	<b>43.20</b>	<b>137.00</b>	<b>161.05</b>	<b>320.00</b>	<b>50.75</b>	<b>251.67</b>	<b>-21.80</b>
<b>\$Change</b>							
Mar 09-Mar 10	<b>64.96</b>	<b>76.11</b>	<b>87.08</b>	<b>71.11</b>	<b>43.75</b>	<b>114.40</b>	<b>-8.05</b>
<b>%Change</b>							
2009 Average	<b>82.77</b>	<b>238.42</b>	<b>248.98</b>	<b>481.67</b>	<b>140.12</b>	<b>276.86</b>	<b>290.12</b>

Prices are as published, do not include surcharges.

**Aluminum**, Amm Free Market after September 2009, cents/pc

**Brass Scrap**, Copper Brass mill #1, cents/pound

**Copper**, Comex High Grade Cathode, cents/pound

**Nickel**, Scrap clips and solids, cents per pound

**Stainless**, 303 CD bars, cents/pound

**Steel Busheling**, #1, AMM Composite, \$/gross Ton

**Coke**- anecdotal press reports

## PMPA Raw Materials Index

### ***About the commodities selected for tracking:***

The items selected were chosen as indicators of costs for the materials commonly used by our industry. They were selected because they were available and published, rather than a transaction price which might be confounded with other commercial objectives or geographic market peculiarities.

**Aluminum-** Delisted on Comex in September 2009, AMM Free Market price thereafter.

**Brass Scrap, Copper Brass mill, #1** was chosen as indicative of the general trend for high quality Brass Scrap for recycling.

**Copper, Comex High Grade Cathode** was chosen as indicative of costs for "new Copper" to be added to the existing Brass Metal inventory available.

**Nickel, Scrap clips and solids** was chosen as a proxy indicator for understanding Stainless Steel and High Temp alloys which typically are high % Nickel content.(303-8-10%; 316 10-12%; Hastelloy- Greater than 50%)

**Stainless-** 303 bars this number is published but we do not see it as realistic and provide it strictly for information.

**Steel- Busheling Composite.** This indicator was selected as it correlated to the #1 bundles we used prior, now obsolete. It is a factor in the determination of most mill surcharges.

**Coke-** Coke is used in blast furnace production of Iron in order to produce steel by the Basic Oxygen Process (BOP). Blast furnaces use the coke to provide support for the burden (iron ore, limestone, bushellings, sinter etc.), sensible heat, and carbon monoxide reactant to reduce the oxide in the ore to pure iron. Coke itself is produced by blending a mixture of low- and high- volatility and ash coals and processing them at very high temperatures to distill out volatile organics leaving a strong porous cellular solid which is the critical ingredient for the Blast furnace- BOP producer. This process is daunting from an environmental impact point of view. ***Without coke, there is no blast furnace iron; Without blast furnace iron, there is no BOP steel.***

***Quarterly averages have been calculated and used for this report for years prior to 2005 in order to tidy up the presentation of data.***

Miles Free

**Quarterly Averages  
PMPA Material Impacts**

	Aluminum	Brass	Copper	Nickel	Stainless	Steel BDLS	Coke , China
<b>2003</b>	65.60	77.50	78.21	310.23	111.00	114.55	
	65.84	79.48	80.15	312.50	105.00	124.05	
	66.77	81.93	82.02	325.12	102.00	131.00	
<b>3rd Qtr.</b>	66.07	79.64	80.13	315.95	106.00	123.20	
	69.79	87.04	88.20	359.67	102.00	132.00	
	70.67	92.22	92.76	419.72	105.33	145.33	
	73.52	98.76	99.67	452.50	106.00	162.43	
<b>4th Qtr.</b>	71.33	92.67	93.54	410.63	104.44	146.59	
<b>2004</b>	76.29	108.80	110.28	562.50	106.00	182.00	
	80.40	120.00	121.60	565.00	106.00	275.00	182.00
	84.65	137.00	139.70	525.00	121.50	295.00	460.00
<b>1st Qtr.</b>	80.45	121.93	123.86	550.83	111.17	250.67	321.00
	88.65	136.00	137.10	500.00	121.50	270.00	450.00
	80.85	123.50	124.70	425.00	121.50	240.00	410.00
	83.45	128.00	129.25	500.00	121.50	250.00	325.00
<b>2nd Qtr.</b>	84.32	129.17	130.35	475.00	121.50	253.33	395.00
	84.30	130.00	131.30	550.00	121.50	395.00	
	84.30	131.00	131.55	520.00	121.50	395.00	
	90.95	135.00	139.90	520.00	153.50	375.00	310.5
<b>3rd Qtr.</b>	86.52	132.00	134.25	530.00	132.17	388.33	310.50
	91.30	142.00	147.35	600.00	157.00	415.00	239.00
	89.45	140.00	144.50	500.00	157.00	430.00	239.00
	94.25	145.00	149.10	500.00	157.00	430.00	280.00
<b>4th Qtr.</b>	91.67	142.33	146.98	533.33	157.00	425.00	252.67
<b>2005</b>	93.60	145.00	149.50	500.00	157.00	370.00	280.00
	95.05	144.00	150.25	550.00	157.00	315.00	230.00
	96.65	146.00	151.05	550.00	157.00	255.00	230.00
<b>1st Qtr.</b>	95.10	145.00	150.27	533.33	157.00	313.33	246.67
	93.50	149.00	154.20	600.00	157.00	270.00	230.00
	85.50	144.00	161.40	650.00	160.00	215.00	230.00
	80.25	149.00	153.00	650.00	160.00	145.00	210.00
<b>2nd Qtr.</b>	86.42	147.33	156.20	633.33	159.00	210.00	223.33
	84.40	153.00	163.00	560.00	160.00	170.00	210.00
	89.80	168.00	177.95	540.00	160.00	230.00	210.00
	89.00	173.00	187.65	540.00	160.00	285.00	210.00
<b>3rd Qtr.</b>	87.73	164.67	176.20	546.67	160.00	228.33	210.00
	91.90	181.00	196.80	520.00	166.00	235.00	185.00
	101.55	193.00	218.00	480.00	166.00	285.00	130.00
	105.10	208.00	228.00	500.00	166.00	280.00	150.00
<b>4th Qtr.</b>	99.52	194.00	214.27	500.00	166.00	266.67	155.00
<b>2005 Average</b>	92.19	162.75	174.23	553.33	160.50	254.58	208.75

Table A Supplemental Calculations

**Quarterly Averages  
PMPA Material Impacts**

	Aluminum	Brass	Copper	Nickel	Stainless	Steel BDLS	Coke , China
<b>2006</b>	115.50	221.00	229.65	550.00	166.00	280.00	120.00
	122.25	229.00	233.65	550.00	166.00	275.00	148.00
	116.50	245.00	250.35	550.00	135.00	294.00	148.00
<b>1st Qtr.</b>	118.08	231.67	237.88	550.00	155.67	283.00	138.67
	130.60	320.00	348.30	700.00	135.00	294.00	138.00
	146.00	373.50	407.55	810.00	135.00	315.00	138.00
	120.00	345.00	369.10	810.00	135.00	342.00	140.00
<b>2nd Qtr.</b>	132.20	346.17	374.98	773.33	135.00	317.00	138.67
	121.50	357.00	382.95	910.00	135.00	342.00	140.00
	116.60	351.00	366.50	1150.00	135.00	342.00	125.00
	122.25	348.00	372.20	1150.00	135.00	285.00	125.00
<b>3rd Qtr.</b>	120.12	352.00	373.88	1070.00	135.00	323.00	130.00
	129.10	327.50	356.00	1050.00	245.00	275.00	164.50
	127.10	318.00	334.55	1050.00	245.00	245.00	164.50
	128.00	304.00	323.45	1150.00	243.00	230.00	150.00
<b>4th Qtr.</b>	128.07	316.50	338.00	1083.33	244.33	250.00	159.67
<b>2006 Average</b>	124.62	311.58	331.19	869.17	167.50	293.25	141.75
<b>2007</b>	128.50	266.00	265.15	1250.00	243.00	260.00	185.00
	130.00	281.00	285.25	1250.00	253.00	295.00	185.00
	125.50	306.50	314.35	1350.00	265.00	365.00	190.00
<b>1st Qtr.</b>	128.00	284.50	288.25	1283.33	253.67	306.67	186.67
	128.85	358.00	367.40	1350.00	287.00	365.00	185.00
	129.25	367.00	375.05	1350.00	335.00	335.00	190.00
	125.35	338.50	346.55	1350.00	335.00	295.00	245.00
<b>2nd Qtr.</b>	127.82	354.50	363.00	1350.00	319.00	331.67	206.67
	122.65	353.00	375.40	1350.00	342.80	295.00	260.00
	117.30	339.00	359.50	1250.00	342.80	305.00	250.00
	110.00	347.00	363.60	980.00	262.63	330.00	250.00
<b>3rd Qtr.</b>	116.65	346.33	366.17	1193.33	316.08	310.00	253.33
	113.25	359.00	374.95	980.00	235.04	330.00	360.00
	117.25	320.00	335.60	980.00	245.25	320.00	360.00
	110.00	303.00	315.50	980.00	245.25	335.00	277.00
<b>4th Qtr.</b>	113.50	327.33	342.02	980.00	241.85	328.33	332.33
<b>2007 Average</b>	121.49	328.17	339.86	1201.67	282.65	319.17	244.75

Table A Supplemental Calculations

**Quarterly Averages  
PMPA Material Impacts**

	<b>Aluminum</b>	<b>Brass</b>	<b>Copper</b>	<b>Nickel</b>	<b>Stainless</b>	<b>Steel BDLS</b>	<b>Coke , China</b>
<b>2008</b>	119.00	320.00	331.70	980.00	246.06	415.00	277.00
	139.75	374.00	386.35	980.00	246.06	415.00	365.30
	143.75	382.00	398.95	980.00	238.62	430.00	365.30
<b>1st Qtr.</b>	134.17	358.67	372.33	980.00	243.58	420.00	335.87
	140.00	389.00	402.80	980.00	244.09	600.00	389.40
	137.00	379.00	397.85	930.00	267.10	700.00	389.40
	146.30	373.00	389.55	840.00	267.10	785.00	389.00
<b>2nd Qtr.</b>	141.10	380.33	396.73	916.67	259.43	695.00	389.27
	150.00	378.00	407.75	840.00	264.47	890.00	875.00
	133.25	343.00	362.85	770.00	255.35	883.00	438.07
	123.75	322.00	342.95	770.00	243.21	853.00	438.07
<b>3rd Qtr.</b>	135.67	347.67	371.18	793.33	254.34	875.33	583.71
	110.25	274.00	285.70	660.00	223.94	570.00	232.00
	96.75	184.00	201.10	370.00	206.58	130.00	232.00
	79.85	152.00	160.35	300.00	206.58	235.00	197.50
<b>4th Qtr.</b>	95.62	203.33	215.72	443.33	212.37	311.67	220.50
<b>2008 Average</b>	126.64	322.50	338.99	783.33	242.43	575.50	382.34
<b>2009</b>	74.80	153.00	157.20	450.00	147.00	255.00	256.00
	67.75	156.00	162.25	450.00	124.00	255.00	270.80
	66.50	180.00	184.95	450.00	116.00	220.00	270.80
<b>1st Qtr.</b>	69.68	163.00	168.13	450.00	129.00	243.33	265.87
	70.00	216.00	220.35	370.00	116.00	195.00	236.93
	71.50	215.00	219.75	370.00	110.90	215.00	245.71
	77.25	237.00	243.80	370.00	118.00	225.00	241.22
<b>2nd Qtr.</b>	72.92	222.67	227.97	370.00	114.97	211.67	241.29
	84.00	251.00	261.65	470.00	140.00	301.67	250.24
	92.75	281.00	292.30	570.00	148.50	320.67	260.73
	88.75	282.00	293.45	570.00	166.50	340.00	249.01
<b>3rd Qtr.</b>	88.50	271.33	282.47	536.67	151.67	320.78	253.33
	94.48	275.00	302.65	570.00	166.50	340.00	390.00
	97.81	303.00	316.60	570.00	166.50	310.00	400.00
	107.62	312.00	332.75	570.00	161.50	345.00	410.00
<b>4th Qtr.</b>	99.97	296.67	317.33	570.00	164.83	331.67	400.00
<b>2009 Average</b>	82.77	238.42	248.98	481.67	140.12	276.86	290.12