

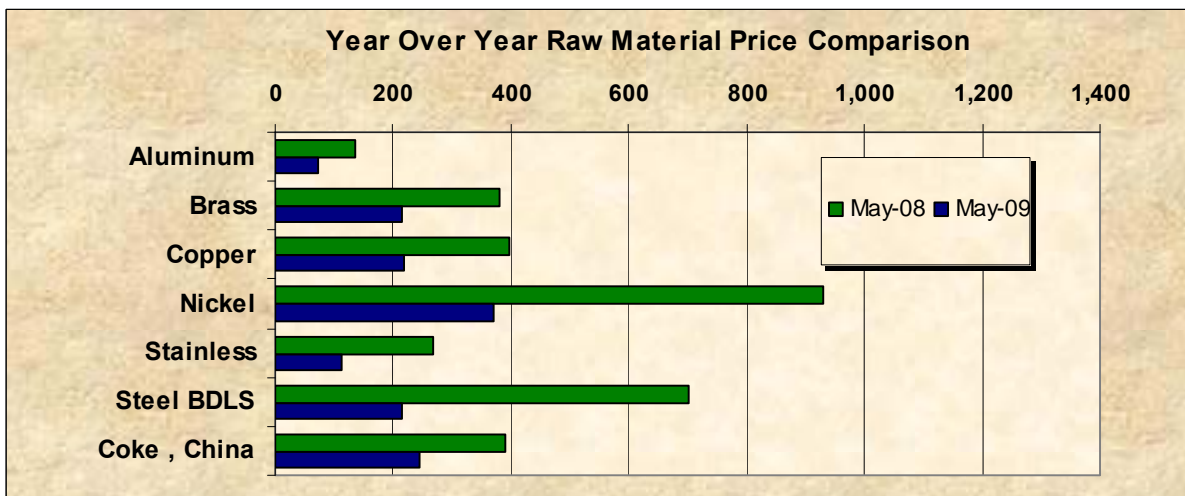


# Material Impacts On The Precision Machining Industry

June 2009

*Stasis: An abnormal state in which the normal flow is slowed or stopped*

### Executive Summary



**Quick Summary:** The prices of the raw materials that we track are down since January with the exception of copper and brass which up 40% since January. Year over year, all prices are down significantly. Price swing ( $\Delta$ ) from January 2009 to May 2009:

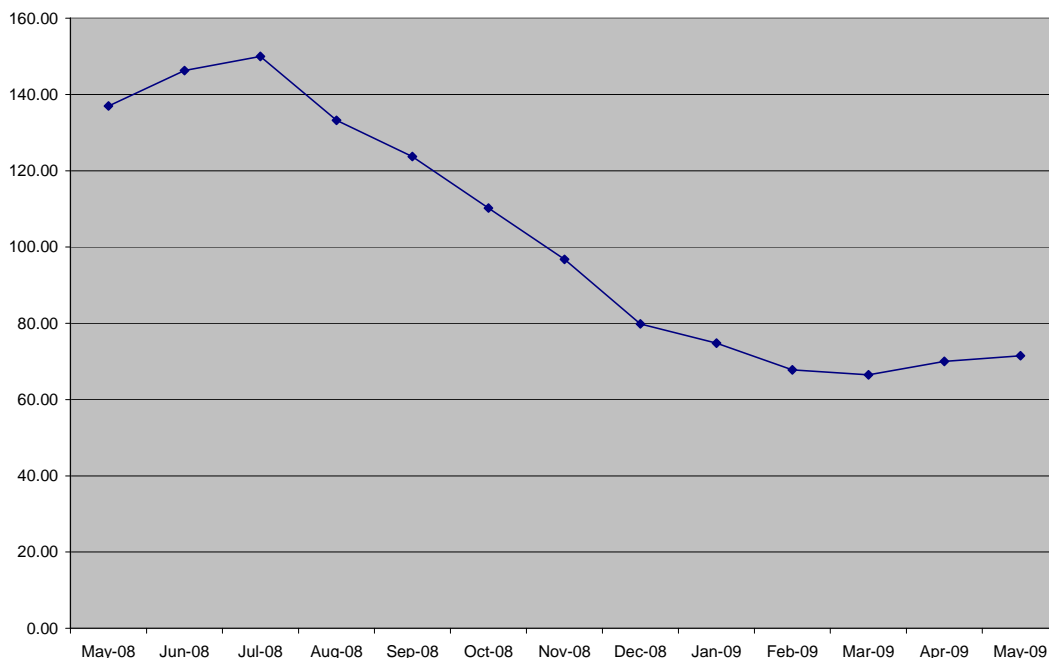
- Aluminum: Down 4.41% price variation ( $\Delta$ )
- Copper, Up 40.52% same time frame.
- Nickel: down 17.78% .
- Steel, Down 15.69% in the same period.
- China Coke, down 4.02%.

*Perhaps there is one lesson to be learned in these figures: Demand for products is the primary determinant of raw material prices for manufacturers, not supply!*

**Green shoots:** 1) While the increase in prices for copper and brass are immediate in their effect on our bottom line, they also may be indicating a recovery in the broader economy as copper is so well integrated into our lifestyle. 2) The Labor Department reported that the economy lost only 345,000 jobs in May. This is down from 504,000 in April, and 2.1 million for the prior three months. This slowing pace of job loss may be our best indicator that the bottom is near. (More at the end of this report.)

## Aluminum *(cents per pound Comex Spot close)*

Aluminum (Comex spot close)



*Aluminum in May2009 is selling for just 47% of the 2Q 2008 price of \$141.10 .*

Aluminum	Apr-09	May-09
Minimum	63.75	63.75
Maximum	70.00	71.50
\$ Δ	6.25	7.75
% Δ	9.8%	12.2%

Shipments of aluminum products from U.S. metals service centers totaled 82,000 tons, 47.6% lower than in May 2008. Sales for the year-to-date of 434,900 tons of aluminum are down 44% from last year. U.S. aluminum inventories at the end of May of 282,300 tons were off 41.7% from a year ago and, at current shipping rates, represent a 3.4-month supply.

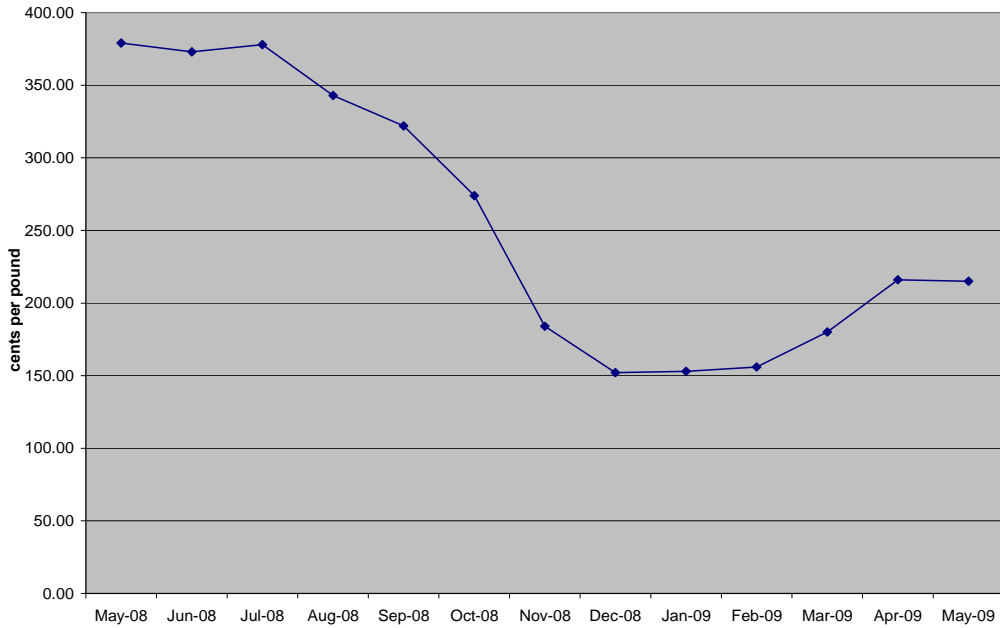
Canadian shipments of aluminum products by metals centers totaled 10,100 tons in May, 30.8% lower than a year ago. For the first five months of the year, Canadian aluminum shipments total 53,900 tons, down 26.4% from the same period a year ago. Aluminum inventories at the end of the month totaled 31,000 tons, off 14.6% from last year and, at current shipping rates, equal to a 3.1-month supply.

Source: <http://www.msci.org/news/details.aspx?ArticleID=145>

**Average price in 2008: \$1.27 per pound**

**Brass** (*cents per pound copper brass mill number 1*)

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



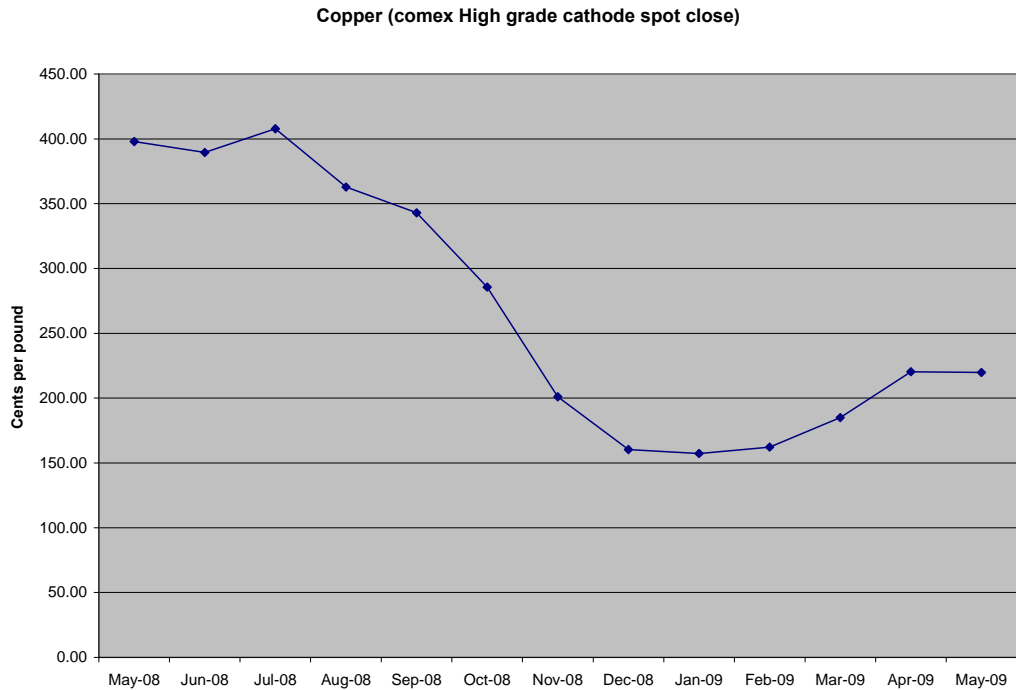
*Brass and Copper are up ~40% since January 2009.*

<b>Brass</b>	<b>Apr-09</b>	<b>May-09</b>
<b>Minimum</b>	<b>179.00</b>	<b>215.00</b>
<b>Maximum</b>	<b>216.00</b>	<b>200.00</b>
<b>\$ Δ</b>	<b>37.00</b>	<b>15.00</b>
<b>% Δ</b>	<b>20.7%</b>	<b>7.5%</b>

**Average Price in 2008** (*cents per pound*): **322.50**

According to the US bureau of Labor Statistics, the copper import price index rose 12.7 percent for May from April; the export index rose 27.5% same period.

## Copper cents (per pound Comex high grade cathode, spot close price)



*Price increases announced effective June 2, 2009. Surcharge remains Zero. The Freight Fuel surcharge now 21% over the standard freight rate.*

Copper moves in close correlation to the overall economy- it is said that “the red metal has a Ph.D. in Economics.”

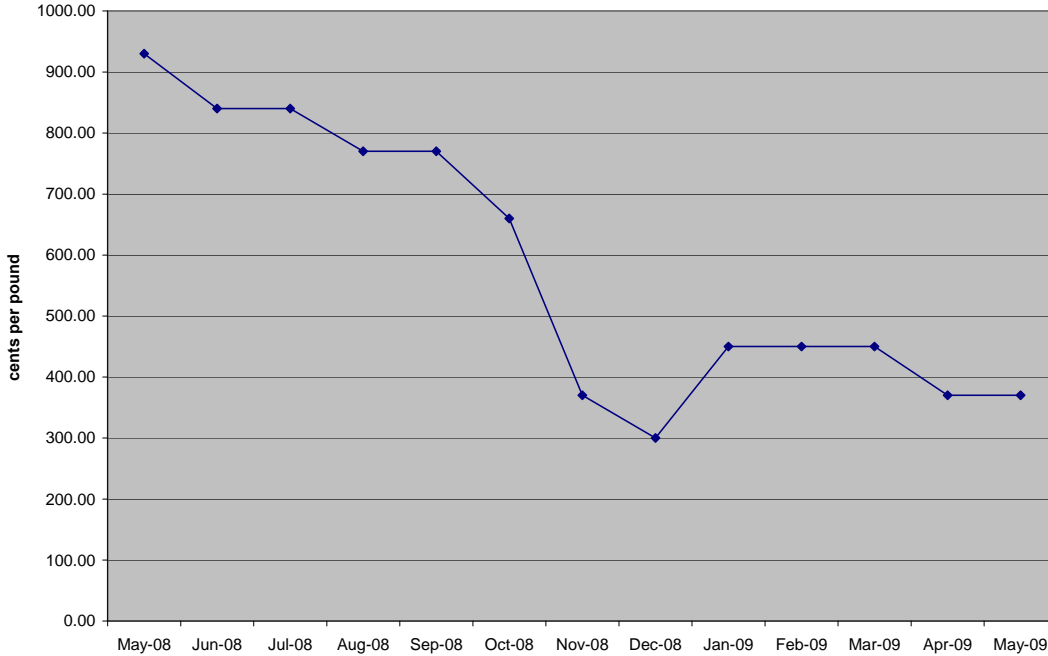
The graph above *suggests* the overall economy might be starting to improve.

<b>Copper</b>	<b>Apr-09</b>	<b>May-09</b>
<b>Minimum</b>	<b>184.55</b>	<b>202.80</b>
<b>Maximum</b>	<b>220.35</b>	<b>219.75</b>
<b>\$ Δ</b>	<b>35.80</b>	<b>16.95</b>
<b>% Δ</b>	<b>19.4%</b>	<b>8.4%</b>

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

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

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



*Nickel is our exemplar for Stasis- no movement in price reported by AMM since March 2009 for new clips and solids. At \$3.65 per pound, Nickel is currently selling at 46% of last years' average.*

*Nickel metal is available in physical inventories at the present time due to low demand.*

Nickel	Apr-09	May-09
Minimum	360.00	360.00
Maximum	370.00	370.00
\$ Δ	10	10
% Δ	2.8%	2.8%

**Average price in 2008: \$7.83per pound.**

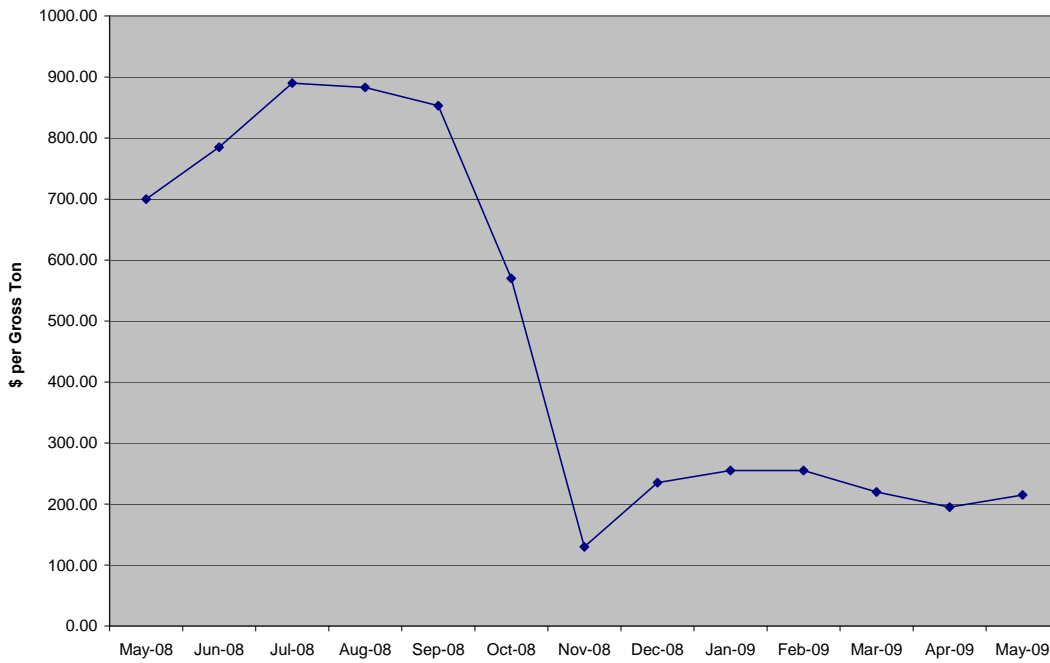
*(Nickel is a key component of many steel alloy systems, stainless steels, superalloys, and many other nickel base materials.)*

## Stainless

Stainless Surcharges: Smolz + Bickenbach USA *Stainless 303 per pound Raw Materials Surcharge*- April 2009: \$0.32; May \$0.28; June \$0.32 last posted on website. These are calculated on a two month lag.

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

**Steel Scrap (#1 Busheling)**



*Surcharges: June 2009 Surcharges for Cold Finished Bars (per CWT) Scrap:\$ 2.50; Manganese: \$.14 (12L14 only); Alloy: 41XX= \$1.44, Total\$3.94; 86XX=\$2.56, Total \$5.06.*

***Steel scrap commodity that we track is highly volatile- at the \$170 minimum for April and May this commodity is selling for just 19% of its July 2008 high.***

Steel Busheling	Apr-09	May-09
<b>Minimum</b>	<b>170.00</b>	<b>170.00</b>
<b>Maximum</b>	<b>195.00</b>	<b>215.00</b>
<b>\$ Δ</b>	<b>25</b>	<b>45</b>
<b>% Δ</b>	<b>14.7%</b>	<b>26.5%</b>

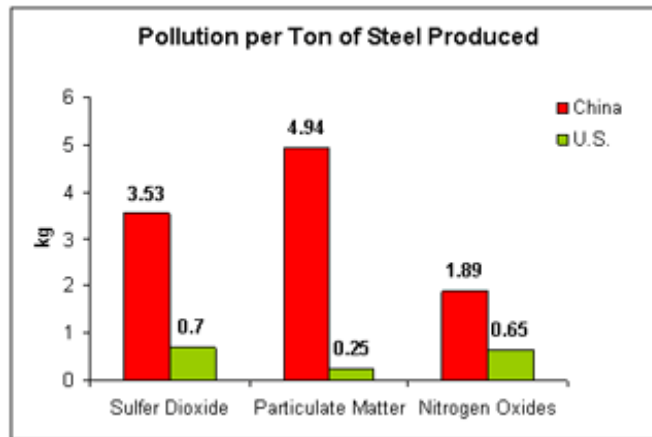
Steel shipments from U.S. metals centers totaled 2.25 million tons in May, a reduction of 48.5% from May 2008 shipments. Steel shipments for the first five months of the year, at 12.3 million tons, are down 44.3% compared with last year's period. U.S. steel inventories at

metals service centers totaled 6.46 million tons at the end of May, 38.3% lower than year-ago inventories. At current shipping rates, those stocks represented a 2.9-month supply. Canadian metals service centers shipped 375,500 tons of steel products during May, or 40.3% lower volume than a year ago. Year-to-date shipments in Canada total 2.06 million tons, down 35.6%. End-of-month stockpiles of 1.12 million tons of steel products were 30.3% lower than last year and, at current shipping rates, are equal to a 3.0-month supply.

Source: <http://www.msci.org/news/details.aspx?ArticleID=145>

According to our favorite steel analyst, Michelle Applebaum, “May{carbon}bar inventories came in at 798,600 tons, down 4.3% from 834,500 tons in April and the lowest level in our database (a 22-year low). Months’ supply of bar products at U.S. service centers climbed to 4.0 from 3.7 in April. Average daily shipments declined 50% from year-ago levels.”

**Average price in 2008: \$575.50 per gross ton**

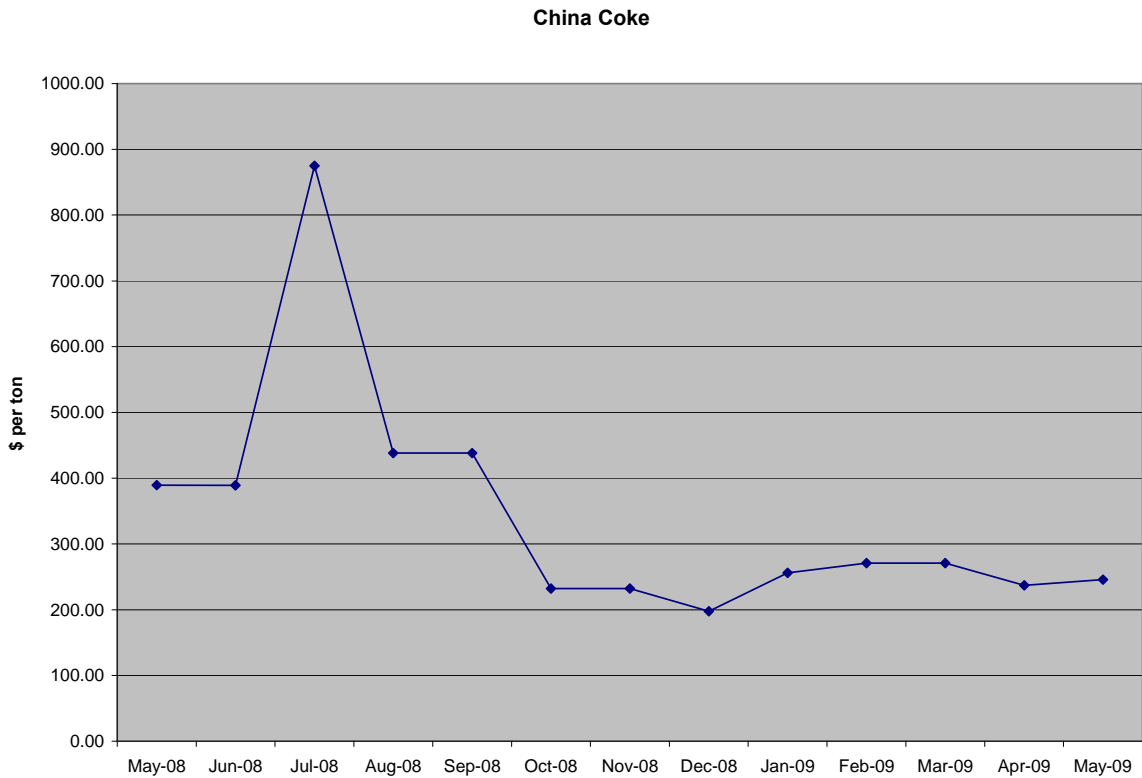


Source: National Bureau of Statistics, “China Environmental Statistics Yearbook,” 2006 (China); 2002 National Emissions Inventory Data and Documentation,” September 2007 (U.S.)

"The fact that China is now responsible for at least 50 percent of total global steelmaking CO<sub>2</sub> emissions generated and levels of pollution nearly 20 times higher per ton of steel in overall emissions of particulate matter than in the U.S, makes it obvious that any CO<sub>2</sub> regulatory scheme in the U.S. involving the American steel industry that does not provide for similar measures to be taken by other major steel-producing nations such as China on a contemporary time line, will distort or adversely impact the competitiveness of U.S. steelmakers in comparison to global steelmakers."- Thomas J. Gibson, president and CEO, AISI

**Read More:** <http://www.americanmanufacturing.org/wordpress/wp-content/uploads/2009/03/chinaenvironmental-report-march-2009.pdf>

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



China Coke	Apr-09	May-09
Minimum	236.93	245.71
Maximum		
\$ Δ	0	0
% Δ	0%	0%

*China coke is down ~\$137 from last year's average.*

**Average price in 2008: \$382.34 per tonne.**

(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.)

***We're watching closely for opening salvos in a trade war here, the ITC ruled last week that Chinese tire manufacturers are dumping their products on the U.S. market and causing unemployment in the domestic tire industry. <http://tinyurl.com/ngczps>  
The Chinese commerce ministry was not pleased... <http://english.caijing.com.cn/2009-06-22/110187597.html>***

### ***Green shoots for our industry April and May?***

1) While the increase in prices for copper and brass are immediate in their effect on our bottom line, they also may be indicating a recovery in the broader economy as copper is so well integrated into our lifestyle. Growth in copper demand correlates to growth in GDP.

2) The Labor Department reported that the economy lost only 345,000 jobs in May. This is down from 504,000 in April, and 2.1 million for the prior three months. This slowing pace of job loss may be our best indicator that the bottom is near.

3) Average daily steel production in the US rose in May to 139,000 tons per day (tpd) from 126,600 tpd in April. (That is almost 10%!) Weekly steel production data from the American Iron and Steel Institute (AISI) has increased for seven consecutive weeks; and production for the latest week ending June 13, was up some 18% from the recent low for the week ending April 4.

4) New orders for manufactured durable goods bounced back in April, rising 1.9 percent, the second rise in the past three months. Orders for primary and fabricated metals, machinery, and electrical equipment were up in the month. Motor vehicle orders and shipments rose for the first time in six months as well.

5) The Conference Board index of consumer confidence surged again in May. The index jumped to 54.9 from April's 40.8 (upwardly revised from 39.2). The expectations component again led the rise, increasing to 72.3 from 51 (previously 49.5).

6) Housing starts increased a strong 17 percent in May, to 532,000 annualized units. This marks the second increase in the past four months. Permitting is up as well, completions are down slightly. This report is held to be consistent with a bottom in residential construction.

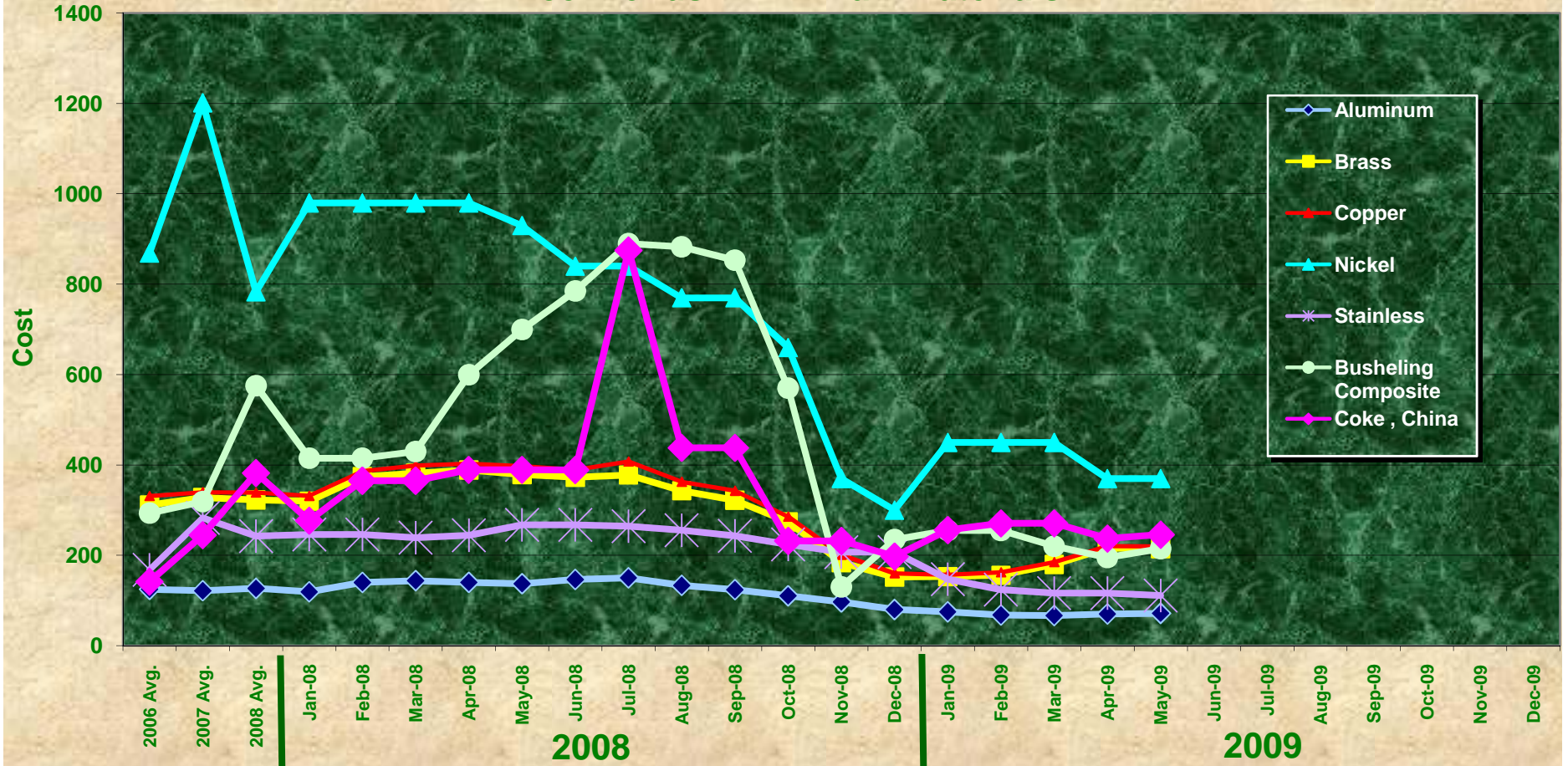
7) Producer prices for finished goods rose in May by 0.2 percent, primarily due to rising prices for energy products. When food and energy prices are excluded, core prices edged down (-0.1 percent) last month, marking the first decline since October 2006

Keep working on your continuous improvements. That way you'll be ready to say "Yes we can," when the economy finally realizes that it misses you.

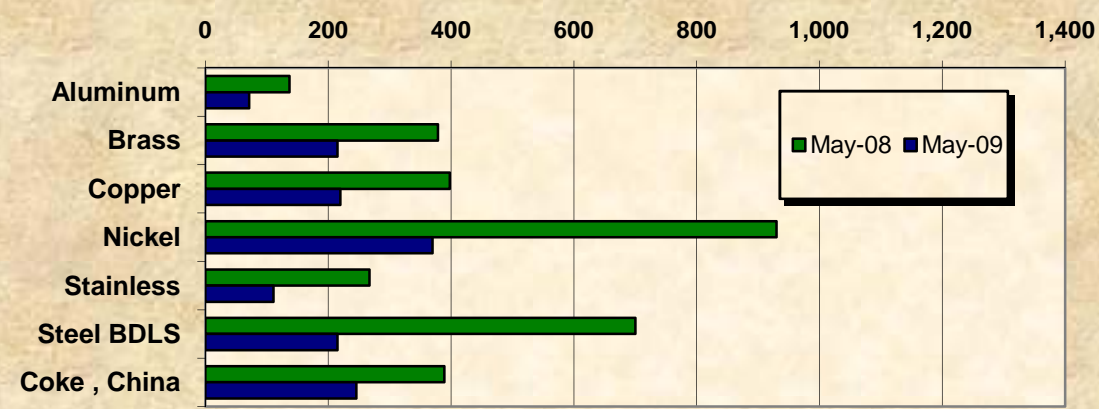
***-Miles Free***

Director, Industry Research and Technology  
Precision Machined Products Association

## 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>Jan-08</b>	119.00	320.00	331.70	980.00	246.06	415.00	277.00
<b>Feb-08</b>	139.75	374.00	386.35	980.00	246.06	415.00	365.30
<b>Mar-08</b>	143.75	382.00	398.95	980.00	238.62	430.00	365.30
<b>Apr-08</b>	140.00	389.00	402.80	980.00	244.09	600.00	389.40
<b>May-08</b>	137.00	379.00	397.85	930.00	267.10	700.00	389.40
<b>Jun-08</b>	146.30	373.00	389.55	840.00	267.10	785.00	389.00
<b>Jul-08</b>	150.00	378.00	407.75	840.00	264.47	890.00	875.00
<b>Aug-08</b>	133.25	343.00	362.85	770.00	255.35	883.00	438.07
<b>Sep-08</b>	123.75	322.00	342.95	770.00	243.21	853.00	438.07
<b>Oct-08</b>	110.25	274.00	285.70	660.00	223.94	570.00	232.00
<b>Nov-08</b>	96.75	184.00	201.10	370.00	206.58	130.00	232.00
<b>Dec-08</b>	79.85	152.00	160.35	300.00	206.58	235.00	197.50
<b>Jan-09</b>	74.80	153.00	157.20	450.00	147.00	255.00	256.00
<b>Feb-09</b>	67.75	156.00	162.25	450.00	124.00	255.00	270.80
<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>							
<b>Jul-09</b>							
<b>Aug-09</b>							
<b>Sep-09</b>							
<b>Oct-09</b>							
<b>Nov-09</b>							
<b>Dec-09</b>							
Jan09- Jan 08	<b>-44.20</b>	<b>-167.00</b>	<b>-174.50</b>	<b>-530.00</b>	<b>-99.06</b>	<b>-160.00</b>	<b>-21.00</b>
\$Change							
Jan09-Jan08	<b>-37.14</b>	<b>-52.19</b>	<b>-52.61</b>	<b>-54.08</b>	<b>-40.26</b>	<b>-38.55</b>	<b>-7.58</b>
%Change							
May 09- Jan 09	<b>-3.30</b>	<b>62.00</b>	<b>62.55</b>	<b>-80.00</b>	<b>-36.10</b>	<b>-40.00</b>	<b>-10.29</b>
\$Change							
May 09-Jan09	<b>-4.41</b>	<b>40.52</b>	<b>39.79</b>	<b>-17.78</b>	<b>-24.56</b>	<b>-15.69</b>	<b>-4.02</b>
%Change							
2008 Average	<b>126.64</b>	<b>322.50</b>	<b>338.99</b>	<b>783.33</b>	<b>242.43</b>	<b>575.50</b>	<b>382.34</b>

## PMPA Raw Materials Index

Prices are as published, do not include surcharges.

**Aluminum** , Comex Spot close, cents/pound

**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 reports

### ***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**- The use of the Comex Spot close price should need no explanation.

**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